**C3GPP TSG-SA4 MBS Post # 122S4-230507**

**Online, - revision of S4aI230060**

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| *CR-Form-v12.2* | | | | | | | | |
| **Draft CHANGE REQUEST** | | | | | | | | |
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|  | **26.517** | **CR** | **0009** | **rev** | **-** | **Current version:** | **17.2.0** |  |
|  | | | | | | | | |
| *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 | **x** | Radio Access Network |  | Core Network | **x** |

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| ***Title:*** | [5MBP3] Correction of parameter usage for Byte Range Object Repair | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson LM | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5MBUSA | | | | |  | ***Date:*** | | | 11.2.2023 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | The operation of Byte Range Object Repair is not clear for MBS User Services:   * eMBMS (TS 26.346) uses the FDT Instance elements Alternate-Content-Location-1 and Alternate-Content-Location-2 to provide the URLs to the CDN for unicast repair. * In TS 26.517, there is a NOTE in Clause 6.2.1: The use of Alternate-Content-Location-1 and Alternate-Content-Location-2 is not supported.   TS 26.502 CR0014r2 defines the "Object repair base URL" parameter for provisioning Object Repair in the MBSTF, but there is no description of how the MBS Client should construct URLs for Object Repair.  Stage 3 Object Repair Parameters do not include a Object distribution base URL or a Object repair base URL. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The *objectDistributionBaseURL* parameter and the *objectRepairBaseURL* parameter are added to the MBS Object Repair Parameters metedata unit. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The object repair procedure is broken and cannot be used in deployments. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5.2.8, 6.2.1, Annex A.1.2, Annex A.2.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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's revision history:*** | | S4aI230060 | | | | | | | | |

\*\*\*\* First Change \*\*\*\*

### 5.2.8 MBS Object Repair Parameters metadata unit

An Object Repair Parameters metadata unit may be delivered to MBS Clients to support the object repair procedure:

- Prior to the MBS Distribution Session becoming active, along with the MBS Distribution Session Description metadata unit (out of band of that session); or

- in band within an MBS Distribution Session such as the MBS User Service Announcement Channel.

The most recently delivered Object Repair Parameters metadata unit shall take priority, such that configuration parameters received prior to – and out-of-band of – the MBS Distribution Session they apply to are regarded as "initial defaults", and configuration parameters received during – and in band with – the MBS Distribution Session, override the earlier received parameters. Thus, a method to update parameters dynamically on a short timescale is provided but, as would be desirable where dynamics are minimal, is not mandatory.

When represented as a separate XML document according to the syntax specified in clause A.1.2, the Object Repair Parameters metadata unit is clearly identified using a URI in the MBS User Service Announcement to enable UE cross-referencing by the MBS Client of instance documents delivered in band and out of band.

Table 5.2.8-1 provides the detailed semantics for the objectRepairParameters information element.

Table 5.2.8-1: Semantics of objectRepairParameters information element

| Propertyname | | Use | Type | Description |
| --- | --- | --- | --- | --- |
| objectRepairParameters | |  | Object‌Repair‌Parameters‌Type | Root element of the Object Repair Parameters metadata unit. |
|  | offsetTime | 0..1 | Duration‌Sec | If present, the MBS Client shall wait for this period of time, expressed in seconds, before attempting the object repair procedure. |
|  | randomTimePeriod | 1 | Duration‌Sec | The MBS Client shall wait for an additional number of seconds randomly chosen between zero and this number, before attempting the object repair procedure. |
|  | object‌Distribution‌BaseURL | 0..1 | Uri | If present, this prefix of the object URI is replaced by the MBS Client with the value specified in objectRepairBaseURL below in order to construct the repair URL.  If present, objectRepairBaseURL shall also be present. |
|  | object‌Repair‌BaseURL | 0..1 | Uri | If present, the MBS Client replaces objectDistributionBaseURL with this value in order to construct the repair URL.  If present, objectDistributionBaseURL shall also be present. |

\*\*\*\* Next Change \*\*\*\*

### 6.2.1 General

If FLUTE [12] is used to realise the Object Distribution Method, the MBS Distribution Session shall conform to the MBMS Download Profile as defined in clause L.4 of TS 26.346 [7] with the additional requirements in clause 6.2 of the present document.

The usage of this distribution method is identified in the MBS Session Description metadata unit as defined in clause 6.2.3, in particular by the indication of the protocol FLUTE/UDP in combination with the MBS service type.

The MBSTF shall use the Profiled FDT Schema according to clause L.6 of TS 26.346 [7] to describe the object list currently being transmitted in the MBS Distribution Session.

Generally, the end of transmission of an object is the expiry time for the latest FDT instance describing the object. Objects shall be described in an FDT Instance with the Expires attribute. Depending on the operating mode (clause 6.2.4), different settings of the expiry time and different numbers of objects per FDT Instance are recommended.

Inclusion of the @Content-MD5 and @File-ETag FDT Instance attributes is optional.

- The @File-ETag represents the value of the HTTP entity tag as defined in section 3.11 of RFC 2616 [13] which may also serve as the version identifier of the File object described by the FDT Instance.

In order to fetch missing portions of an object, the MBS Client may use the Object Repair service provided by the MBS AS at reference point MBS‑4‑UC, using the MBS User Service Announcement parameters specified in clause 5.2.8 to identify its endpoint address. The Object Repair service is realized as a Byte-Range based File Repair, as specified in clause 9.3.6.2 of TS 26.346 [7].

NOTE: The use of Alternate-Content-Location-1 and Alternate-Content-Location-2 to advertise the Object Repair parameters in the FLUTE FDT instance is not supported.

\*\*\*\* Next Change \*\*\*\*

## A.1.2 Object Repair Parameters schema

Below is the formal XML syntax of associated distribution procedure description instances. Documents following this schema can be identified with the MIME type "application/mbs‑object-repair-parameters+xml". The schema filename of distribution procedure description is objectrepairparameters.xsd.

|  |
| --- |
| <?xml version="1.0" encoding="UTF-8"?>  <xs:schema  xmlns="urn:3gpp:metadata:2020:MBS:objectRepairParameters"  xmlns:xs="http://www.w3.org/2001/XMLSchema"  targetNamespace="urn:3gpp:metadata:2022:MBS:objectRepairParameters"  elementFormDefault="qualified"  version="1">  <xs:element name="objectRepairParameters" type="ObjectRepairParametersType"/>  <xs:complexType name="ObjectRepairParametersType">  <xs:sequence>  <xs:element name="postObjectRepair" type="basicProcedureType" minOccurs="0"/>  <xs:any namespace="##other" processContents="skip" minOccurs="0" maxOccurs="unbounded"/>  </xs:sequence>  </xs:complexType>  </xs:element>  <xs:complexType name="basicProcedureType">  <xs:sequence>  <xs:element name="serviceURI" type="xs:anyURI" maxOccurs="unbounded"/>  </xs:sequence>  <xs:attribute name="offsetTime" type="xs:unsignedLong" use="optional"/>  <xs:attribute name="randomTimePeriod" type="xs:unsignedLong" use="required"/>  <xs:attribute name="objectDistributionBaseURL" type="xs:anyURI" use="optional"/>  <xs:attribute name="objectRepairBaseURL" type="xs:anyURI" use="optional"/>  </xs:complexType>  </xs:schema> |

\*\*\*\* Next Change \*\*\*\*

## A.2.1 MBS User Service Announcement schema

The following schema shall have the filename "TS26517\_MBSUserServiceAnnouncement.yaml".

|  |
| --- |
| openapi: 3.0.0  info:  title: 'MBS User Service Announcement Element units’ definition'  version: 1.2.0  description: |  MBS User Service Announcement Element units.  © 2023, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).  All rights reserved.  externalDocs:  description: 3GPP TS 26.517 V17.2.0; 5G System; 5G MBSF; Stage 3.  url: http://www.3gpp.org/ftp/Specs/archive/26\_series/26.517/  paths: {}  components:  schemas:  BundleDescription:  type: array  items:  $ref: '#/components/schemas/UserServiceDescription'  minItems: 1  UserServiceDescription:  type: object  properties:  name:  type: array  items:  type: string  serviceLanguage:  type: array  items:  type: string  serviceId:  type: string  distributionSessionDescription:  $ref: '#/components/schemas/DistributionSessionDescription'  appServiceDescription:  $ref: '#/components/schemas/AppServiceDescription'  scheduleDescription:  $ref: '#/components/schemas/ScheduleDescription'  availabilityInfo:  $ref: '#/components/schemas/AvailabilityInformation'  required:  - distributionMethod  - serviceId  DistributionSessionDescription:  type: object  properties:  conformanceProfile:  type: string  sessionDescriptionURI:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'  objectRepairParameters:  $ref: '#/components/schemas/AssociatedProcedureDescription'  dataNetworkName:  type: string  mbsAppService:  type: array  items:  $ref: '#/components/schemas/ApplicationService'  unicastAppServices:  type: array  items:  type: object  properties:  unicastAppService:  type: array  items:  $ref: '#/components/schemas/ApplicationService'  required:  - sessionDescriptionURI  AppServiceDescription:  type: object  properties:  mediaManifestDescriptionURI:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'  mimeType:  type: string  identicalContents:  type: array  items:  type: object  properties:  unicastAppService:  type: array  items:  $ref: '#/components/schemas/ApplicationService'  minItems: 2  alternativeContents:  type: array  items:  type: array  items:  $ref: '#/components/schemas/ApplicationService'  ApplicationService:  type: object  properties:  basePattern:  type: string  required:  - basePattern  AvailabilityInformation:  type: array  items:  $ref: '#/components/schemas/AvailabilityInformationBinding'  AvailabilityInformationBinding:  type: object  properties:  mbsServiceArea:  type: array  items:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/MbsServiceArea'  mbsFSAId:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/MbsFsaId'  radioFrequency:  type: array  items:  type: integer  minimum: 0  AssociatedProcedureDescription:  type: object  properties:  postObjectRepair:  $ref: '#/components/schemas/PostObjectRepair'  PostObjectRepair:  type: object  required:  - offsetTime  properties:  serviceURIs:  type: array  items:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'  offsetTime:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'  randomTimePeriod:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec'  objectDistributionBaseURL:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'  objectRepairBaseURL:  $ref: 'TS26512\_CommonData.yaml#/components/schemas/AbsoluteUrl'  ScheduleDescription:  type: array  items:  $ref: '#/components/schemas/ServiceSchedule'  ServiceSchedule:  type: object  properties:  sessionSchedule:  $ref: '#/components/schemas/SessionSchedule'  sessionScheduleOverride:  $ref: '#/components/schemas/SessionScheduleOverride'  objectSchedule:  $ref: '#/components/schemas/ObjectSchedule'  serviceId:  type: string  serviceClass:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'  required:  - serviceId  - serviceClass  - serviceSchedule  SessionSchedule:  type: array  items:  type: object  properties:  start:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'  stop:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'  reoccurencePattern:  type: string  numberOfTimes:  type: integer  minimum: 1  reoccurenceStopTime:  type: string  index:  type: integer  FDTInstanceURI:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'  required:  - start  - stop  SessionScheduleOverride:  type: array  items:  type: object  properties:  start:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'  stop:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'  index:  type: integer  cancelled:  type: boolean  sessionDescriptionURI:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'    ObjectSchedule:  type: array  items:  type: object  properties:  objectURI:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri'  sessionId:  type: string  objectEtag:  type: string  unicastOnly:  type: boolean  deliveryInfo:  type: array  items:  type: object  properties:  start:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime'  stop:  $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime' |

\*\*\*\* Last Change \*\*\*\*