**3GPP TSG-SA4 MBS Post # 122S4-230505**

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| *CR-Form-v12.2* | | | | | | | | |
| **Draft CHANGE REQUEST** | | | | | | | | |
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|  | **26.502** | **CR** | **0022** | **rev** | **1** | **Current version:** | **17.4.0** |  |
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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:*** | [5MBUSA] Correction of Object Distribution Parameters | | | | | | | | | |
|  |  | | | | | | | | | |
| ***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 *Object ingest base URL* is a mandatory parameter in case of PUSH mode operation. It is used as the resource locator for ingesting objects (using HTTPS) into the MBSTF at Nmb8. However, the parameter description is only focusing on the substituation of the object ingest base URL with the object distribution base URL.  The usage of the Object ingest base URL and the Object acquisition identifiers parameters in Annex B are not consistent with the normative definition. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The definition the object ingest base URL is corrected by making it mandatory for PUSH mode and defining its purpose.  Annex B is clarified. The pictures in Annex C are replaced with high resolution versions. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | Not functional PUSH mode. Inconsistent Specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.5.6, Annex B.2.1, Annex B.2.2, Annex C | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | | Revision of CR S4aI230089 | | | | | | | | |

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

### 4.5.6 MBS Distribution Session parameters

This entity models an MBS Distribution Session, as provisioned by the MBS Application Provider and as managed by the MBSF. This MBSF subsequently uses this information to provision a corresponding MBS Distribution Session in the MBSTF.

The following parameters assigned by the MBS Application Provider may be updated by the MBS Application Provider at any time:

- Target service areas,

- MBS Frequency Selection Area (FSA) Identifier (applicable only to broadcast Service type)

- QoS information.

With the exception of the *MBS Session Identifier* (which is immutable after initial assignment) and the *Location-dependent service flag* (which is immutable after creation), all other parameters assigned by the MBS Application Provider may be updated by the MBS Application Provider when the MBS Distribution Session is in the INACTIVE state.

The baseline parameters for an MBS Distribution Session that are common to all distribution methods are listed in table 4.5.6‑1 below. All parameters are exposed to the MBS Application Provider except where noted otherwise.

Table 4.5.6‑1: Common baseline parameters of MBS Distribution Session entity

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Cardinality | Assigner | Description |
| Distribution Session Identifier | 1..1 | MBSF | An identifier for this MBS Distribution Session that is unique within the scope of the MBS User Service (see clause 4.5.3). |
| State | 1..1 |  | The current state of the MBS Distribution Session: INACTIVE, ESTABLISHED, ACTIVE or DEACTIVATING (see clause 4.6.1). |
| MBS Session Context | 1..\* |  | As defined in clause 6.9 of TS 23.247 [5] (see NOTE 1).  There shall be one MBS Session Context associated with the MBS Distribution Session unless multiple *Target service areas* are specified (see below). |
| MB‑UPF tunnel endpoint address | 0..1 |  | The tunnel endpoint address of the MB‑UPF that supports this MBS Distribution Session at reference point Nmb9 (see NOTE 1, NOTE 4). |
| MBMS GW tunnel endpoint address | 0..1 |  | The tunnel endpoint address of the MBMS GW that supports this MBS Distribution Session at reference point SGi‑mb (see NOTE 1, NOTE 4). |
| User Plane traffic flow information | 0..1 |  | Details of the MBS-4-MC User Plane traffic flow to be used by the MBSTF for this MBS Distribution Session, including the multicast group destination address and port number to be used inside the unicast tunnel at reference point Nmb9 (see NOTE 1).  This parameter is mandatory except in the case of Packet Distribution Method operating in Forward-only mode, in which case multicast-addressed packets ingested at reference point Nmb8 are relayed to Nmb9 without changing their address. |
| MBS Session Identifier | 0..1 | MBSF or MBS Application Provider | The Temporary Mobile Group Identity (TMGI) or Source-Specific Multicast (SSM) IP address of the MBS Session supporting this MBS Distribution Session (see NOTE 2).  Multiple MBS Distribution Sessions within the scope of the same MBS User Service may share the same value if they are location-dependent MBS Services, as defined in clause 6.2.3 of TS 23.247[5].  TMGI values are allocated by the MBSF in conjunction with the MB‑SMF unless supplied by the MBS Application Provider at the time of provisioning. |
| Target service areas | 0..\* | MBS Application Provider | The set of regions comprising the MBS service area in which this MBS Distribution Session is to be made available (see NOTE 2).  The provided set of regions shall be disjoint with that of every other MBS Distribution Session sharing the same MBS Session Identifier.  A unique MBS Session Context shall be associated with the MBS Distribution Session for each declared service area, distinguishable by its Area Session Identifier. |
| MBS Frequency Selection Area (FSA) Identifier | 0..1 |  | (Applicable only to broadcast *Service type*.) Identifies a preconfigured area within which, and in proximity to, the cell(s) announce the MBS FSA ID and the associated frequency corresponding to this MBS Distribution Session (see NOTE 3). |
| Location-dependent service flag | 0..1 |  | An indication that this MBS Distribution Session corresponds to a location-dependent MBS Session.  If the flag is unset or omitted, the MBS Distribution Session is not location-dependent. |
| Multiplexed service flag | 0..1 |  | If set, all MBS Distribution Sessions in the scope of the same parent MBS User Data Ingest Session with identical or empty sets of *Target service areas* shall be multiplexed onto the same MBS Session.  All MBS Distribution Sessions in the multiplex shall be assigned the same MBS Session Identifier. |
| Restricted membership flag | 0..1 |  | (Applicable only to multicast *Service type*.) An indication that this MBS Distribution Session is restricted to a set of UEs according to their current subscription status in the MBS System.  If the flag is set, only UEs in the restricted set are permitted to join thls MBS Distribution Session; otherwise, any UE is permitted to join. |
| QoS information | 0..1 |  | A 5G QoS Identifier (5QI) [2] to be applied to the traffic flow for this MBS Distribution Session (see NOTE 2).  The 5QI information is used by the MBSF to set the Quality of Service for the MBS Session by interacting with the PCF at reference point Nmb12. |
| Maximum content bit rate | 1..1 |  | The maximum bit rate for content in this MBS Distribution Session. |
| Maximum content delay | 0..1 |  | The maximum end-to-end content distribution delay that is tolerated for this MBS Distribution Session by the MBS Application Provider. |
| Distribution method | 1..1 |  | The distribution method for this MBS Distribution Session, as defined in clause 6. |
| Operating mode | 0..1 |  | The operating mode in the case where multiple modes are defined in clause 6 for the indicated distribution method. |
| FEC configuration | 0..1 |  | Configuration for Application Level FEC (AL-FEC) information added by the MBSTF to protect this MBS Distribution Session.  The AL‑FEC scheme shall be identified using a term from the Reliable Multicast Transport (RMT) controlled vocabulary of FEC Encoding IDs [17] expressed as a fully-qualified URI, e.g. urn:ietf:rmt:fec:encoding:0.  The overhead of AL‑FEC protection shall be specified as a proportion of the (unprotected) MBS data, e.g. 1.1 for 10% overhead.  Additional scheme-specific parameters may be signalled in the form of uncontrolled name–value pairs. |
| Traffic marking information | 0..1 | MBS Application Provider or MBSF | Information (e.g. a Differentiated Services Code Point) used by the MBSTF to mark the multicast packets that it conveys to the MB‑UPF at reference point Nmb9. |
| NOTE 1: Internal parameter not exposed to the MBS Application Provider.  NOTE 2: Parameter not relevant to the MBSTF.  NOTE 3: Used to guide frequency selection by the UE for a broadcast MBS Session.  NOTE 4: At least one of *MB‑UPF tunnel endpoint address* or *MBMS GW tunnel endpoint address* shall be present. | | | |

An MBS Distribution Session Announcement (see clause 4.5.8 below) shall be associated with an MBS Distribution Session when the latter is in the ESTABLISHED or ACTIVE state.

The following MBS Distribution Session parameters are additionally relevant when the distribution method is the Object Distribution Method:

Table 4.5.6‑2: Additional MBS Distribution Session parameters for Object Distribution Method

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Cardinality | Assigner | Description |
| Object acquisition method | 1..1 | MBS Application Provider | Indicates whether the objects(s) are to be pushed into the MBSTF by the MBS Application Provider or whether they are to be pulled from the MBS Application Provider by the MBSTF as part of the corresponding MBS User Data Ingest Session.  In the latter case, the *Object acquisition method* indicates whether the object(s) are to be retrieved once from the MBS Application Provider at the start of each active period of the corresponding MBS User Data Ingest Session, or whether the MBSTF is required to check their validity periodically, for example once per rotation of an object carousel. |
| Object acquisition identifiers | 0..\* |  | Identifies the object(s) to be ingested using pull based object acquisition and distributed by the MBSTF during this MBS Distribution Session.  The object acquisition identifiers (when present) are inserted into service announcement.  This could be a reference into a manifest describing a set of objects. |
| Object ingest base URL | 0..1 | MBS Application Provider or MBSF | In the case of push-based object acquisition, a URL indicating the host part and base path on the MBSTF to which objects are published. In this case, the value shall be nominated by the MBSF and shall be unique for all MBS Distribution Sessions within the MBS System.  In the case of pull-based object acquisition, the value shall be nominated by the MBS Application Provider or MBSF and need not be unique.  When present, this URL prefix is replaced by the MBSTF with the *Object distribution base URL* prior to distribution of ingested objects.  If omitted, nothing is substituted in the content ingest URL when forming the object distribution URL |
| Object distribution base URL | 0..1 | MBS Application Provider | A URL prefix substituted by the MBSTF in place of the *Object ingest base URL* prior to distribution of ingested objects.  If present, the optional *Object ingest base URL* shall also be present.  If omitted, the object distribution URL is the same as the object ingest base URL. |
| Object repair base URL | 0,,1 | MBSF | A URL prefix substituted by the MBSTF Client in place of the *Object distribution base URL* when repairing objects not received completely intact from this MBS Distribution Session (see NOTE). The value shall point to the MBS AS.  Present only when object repair is provisioned for this MBS Distribution Session. |
| NOTE: Parameter not relevant to the MBSTF. | | | |

The following MBS distribution session are additionally relevant when the distribution method is the Packet Distribution Method:

Table 4.5.6‑3: Additional MBS Distribution Session parameters for Packet Distribution Method

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Cardinality | Assigner | Description |
| Packet ingest method | 1..1 | MBS Application Provider | Indicates whether packets are to be ingested using multicast ingest or unicast ingest.  Multicast ingest is valid for Proxy mode only. In this case, the MBSTF shall join a Source-Specific Multicast (SSM) group indicated in *MBSTF ingest endpoint addresses* parameter.  Unicast ingest is valid for Proxy mode and Forward-only mode. In this case, the MBSTF shall allocate a listening IP address and port number for packet ingest and shall return it to the MBSF in the *MBSTF ingest endpoint addresses* parameter below. |
| MBSTF ingest endpoint addresses | 1..1 | MBS Application Provider, MBSF, MBSTF | The endpoint addresses used by the MBS Application Provider and MBSTF to establish a connection at reference point Nmb8 prior to the commencement of this MBS User Data Ingest Session.  In the case of Proxy mode, this shall be the Source-Specific Multicast (SSM) endpoint addresses (including the source IP address, destination multicast group address and destination UDP port) nominated by the MBS Application Provider or else by the MBSF.  In the case of Forward-only mode, this shall be the IP addresses and UDP port numbers at the source and destination ends of the content ingest tunnel, nominated respectively by the MBS Application Provider and the MBSTF. |

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

## B.2.1 Object Distribution Method with pull-based ingest

Figure B.2.1-1 illustrates a setup in which the MBS Application Provider (AF/AS) provides an object manifest to the MBSF listing the URLs of objects to be ingested and distributed. This is passed to the MBSTF at reference point Nmb2, and the MBSTF then fetches these objects using HTTP. The MBSTF handles all MBS-related complexity, e.g. converting the HTTP message payload into an IP multicast suitable protocol, adding AL-FEC, etc. The AF/AS delegates to the MBSF the delivery of MBS Service Announcement metadata to the MBS Client (i.e. IP multicast protocol details, etc).



Figure B.2.1-1: Object Distribution Method using Pull ingest mode (HTTP GET)

The following Parameters are used by the MBS Application Provider (AF/AS) at reference point Nmb10 to provision this setup:

*- Distribution method* is set to *Object*.

*- Object acquisition method* (property specific to the distribution method) is set to *Pull*.

*-* *Operating mode* is set to OBJECT\_SINGLE or OBJECT\_COLLECTION or OBJECT\_CAROUSEL or OBJECT\_STREAMING, as appropriate.

- OBJECT\_SINGLE: *Object acquisition identifiers* refers to a single object.

- OBJECT\_COLLECTION: *Object acquisition identifiers* refers to a manifest describing the set of objects to be distributed once.

- OBJECT\_CAROUSEL: *Object acquisition identifiers* refers to a manifest describing the set of objects and their repetition and update pattern.

- OBJECT\_STREAMING: *Object acquisition identifiers* refers to a presentation manifest such as a DASH MPD. The MBSTF pulls the objects according to the presentation manifest.

- *Object acquisition identifiers* contain thepresentation manifest for ingesting objects. The *Object acquisition identifiers*areinserted into Service Announcement.

## B.2.2 Object Distribution Method with push-based ingest

Figure B.2.2-1 illustrates a setup in which the MBS Application Provider (AF/AS) pushes objects directly into the MBSTF at Nmb8 using HTTP PUT. The MBSTF handles all MBS-related complexity, e.g. converting the HTTP message payload into an IP multicast suitable protocol, adding AL-FEC, etc. The AF/AS delegates MBS delivery of Service Announcement metadata destined for the MBS Client (i.e. DASH MPD, IP multicast protocol details, etc.) to the MBSTF via MBSF.



Figure B.2.2-1: Object Distribution Method using Push ingest mode (HTTP PUT)

The following MBS Distribution Session properties are used by the MBS Application Provider (AF/AS) at reference point Nmb10 to provision this setup:

*- Distribution method* is set to *Object*.

*- Object acquisition method* is set to *Push*.

*- Operating mode* is set to OBJECT\_SINGLEor OBJECT\_STREAMING, as appropriate.

- OBJECT\_SINGLE: Each pushed object is distributed once.

- OBJECT\_COLLECTION: Not used.

- OBJECT\_CAROUSEL: Not used.

- OBJECT\_STREAMING: Each pushed object is distributed once.

*- Distribution operating mode* is set to *File* or *Collection* or *Carousel* or *Real-time*, as appropriate.

- *Object acquisition identifiers*, when present, are ignored.

- *Object ingest base URL* (assigned by the MBSF) containsthe base URL at the MBSTF to which objects are published..

*- Distribution base URL* contains the base URL for the objects. The MBSF replaces the *Object ingest base URL* part of the object ingest URL with the value of the *Distribution base URL* for inclusion in FLUTE FDT instance(s) and (in some cases) in the Service Announcement.

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

# C.2 Object Distribution Method with push-based ingest

## C.2.1 DASH content distribution with push-based ingest

This example focuses on DASH content distribution with push-based ingest. The DASH segment packager continuously publishes media segments to the MBSTF as they become available. Media segments from all relevant DASH Adaptation Sets and Representations are multiplexed into the same MBS Distribution session. The data model parameters are provided in Figure C.2.1-1.



Figure C.2.1-1: DASH content distribution with push-based ingest

The DASH segment packager is configured to use the *Object ingest base URL* to upload media segments using HTTP. Each segment is identified by a unique URL relative to this base. The distribution URL generated by the MBSTF is formed by replacing the *Object ingest base URL* prefix with the value of *Object distribution base URL*.

EXAMPLE:

URL of ingested object: https://<mbstf>:443/base/<tmgi#1>/video/segment\_1000.m4s

URL of distributed object: https://<CSP#1>/srv1/video/segment\_1000.m4s

where:

- The string ip\_mbupf#A:port#A refers to the IP address and port for the tunnel at which the MB-UPF expects the data for the MBS Session.

- The string <mbstf> refers to the IP address or the hostname of the MBSTF function.

- The string <tmgi#1> refers to the TMGI, which is assigned to the MBS Session.

NOTE: The TMGI of the MBS Session is used in this example to make the ingest URL uniqueue within the 5G System. Other solutions to ensure uniqueness are possible.

- The term <CSP#1> refers to a fully qualified domain name of the CSP.

The MBSF needs access to the MPD URL in order to compile the MBS Distribution Session Announcement. The MBSF may also modify the contents of the MPD ("conditioning") before compiling it into the Session Announcement and/or publishing it for retrieval at reference point MBS‑4‑UC.

The MBSTF does not need to inspect the contents of the DASH MPD.

The MBSTF uses a unicast tunnel to inject the generated MBS data into the MB-UPF at reference point Nmb9, using the *Maximum bit rate* parameter to pace these packets.

## C.2.2 DASH content distribution with push-based ingest using separate MBS Distribution Sessions for audio and video

This example focuses on DASH content distribution with push-based ingest. The DASH segment packager continuously publishes media segments to the MBSTF as they become available. In this case, media segments from the video and audio Adaptation Sets are multiplexed into different MBS Distribution Sessions. In this case, the MBS User Service is provisioned to distribute the audio and video segments on separate MBS Distribution Sessions, with the two resulting MBS Distribution Sessions multiplexed onto the same MBS Session.



Figure C.2.2-1: DASH content distribution with push-based ingest  
using separate MBS Distribution Sessions for audio and video

For each MBS Session, the MBSTF uses a specific *Maximum bit rate* parameter to pace the packets towards the MB-UPF (here 5 Mbps for video segments and 200 kbps for audio segments). For the ingest session, two separate Object ingest base URLs are provided, namely:

https://<mbstf>:443/base/<tmgi#1#1>/ and

https://<mbstf>:443/base/<tmgi#1#2>/

The strings <tmgi#1#1> and <tmgi#1#2> are used to make the ingest URLs unique within the 5G System. The last portion is a suffix for the individual MBS Distribution Session. The usage of the TMGI of the MBS Session is one example to make the ingest URL unique within the 5G System.

The MBSTF uses the same unicast tunnel to inject the data into the MB-UPF at reference point Nmb9, so that the data is distributed via the same MBS Session.

## C.2.3 Generic object distribution with push-based ingest

This example focuses on generic object distribution using push-based ingest. In this case, a series of objects are pushed by the MBS Application Provider (AF/AS) into the MBSTF where an MBS Distribution Session is provisioned to use the OBJECT\_SINGLE operating mode, which requires no manifest.



Figure C.2.3-1: Generic object distribution with push-based ingest

The case is very similar to the previous DASH content distribution cases, with the difference that no *Object acquisition identifiers* are provisioned. Any object pushed to the *Object ingest base URL* nominated by the MBSF is distributed in the MBS Distribution Session by the MBSTF after substituting the *Object ingest base URL* prefix with the *Object distribution base URL*.

# C.3 Object Distribution Method with pull-based ingest

## C.3.1 DASH content distribution with pull-based ingest

This example focuses on DASH content distribution with pull-based ingest. The DASH segment packager publishes media segments to an external origin server and the MBSTF pulls them according to the timing model of a DASH presentation specified in an MPD.



Figure C.3.1-1: DASH content with pull-based ingest

The *Object ingest base URL* remains empty, since the DASH media segments are fetched according to the DASH presentation manifest referenced by the *Object Acquisition identifiers* property.

In this example, the *Object ingest base URL* and *Object distribution base URL* are both omitted, resulting in the same URL used for fetching each media segment being used for its distribution.

## C.3.2 DASH content distribution with pull-based ingest using separate MBS Distribution Sessions for audio and video

This example focuses on DASH content distribution with pull-based ingest. The DASH segment packager publishes media segments to an external origin server and the MBSTF pulls them according to the timing model of a DASH presentation specified in an MPD. In this case, the MBS User Service is provisioned to distribute the audio and video segments on separate MBS Distribution Sessions, which are multiplexed onto the same MBS Session.



Figure C.3.2-1: DASH content distribution with pull-based ingest  
using separate MBS Distribution Sessions for audio and video

The *Object ingest base URL* is ignored in this case because the media segments are fetched according to the DASH MPD referenced by the *Object acquisition identifiers* property.

In this example, the *Object distribution base URL* is also omitted, resulting in the same URL used for fetching each media segments being used for its distribution.

## C.3.3 Generic object distribution with pull-based ingest

This example focuses on generic object distribution using pull-based ingest. In this case, objects are pulled into the MBSTF according to an object manifest.



Figure C.3.3-1: Generic object distribution with pull-based ingest

The URL of the object manifest is provisioned by the MBS Application Provider using the *Object acquisition identifiers* parameter.

In this example, the *Object ingest base URL* and *Object distribution base URL* are both omitted, resulting in the same URL used for fetching each object being used for its distribution.

# C.4 Location-dependent Object Distribution Method using push-based ingest

## C.4.1 Location-dependent DASH content distribution using push-based ingest

A location-dependent MBS Serivce allows regional content variants to be distributed to different MBS Service Areas within the scope of a common MBS Session. The UE receives the content variant appropriate to its current location. This feature allows realization of MBS User Services such as local traffic information.



Figure C.4.1-1: Location-dependent DASH content distribution using push-based ingest

Two MBS Distribution Sessions with different *Target service areas* are provisioned. Each MBS Distribution Session has a different *Object ingest base URL* so that two content sources can push different media objects to the two MBS Distribution Sessions. Each content source uses a different DASH presentation manifest.

The MBSF provisions a different MBS Session in the MB-SMF for each MBS Distribution Session and arranges for the user plane traffic of each one to be distributed to the correct MBS Service Area.

The MBSTF uses a separate tunnel to inject the MBS data for each MBS Distribution Session into the MB-UPF.

The MB-UPF listens on two separate UDP ports (port#A and port#B) for the location-specific MBS data streams.

## C.4.2 Location-dependent generic object distribution with push-based ingest

The location-dependent MBS Serivce described in this clause is very similar to that in clause C.4.1. The difference is the distribution of a generic object stream which is not described by a manifest.



Figure C.4.2-1: Location-dependent generic object distribution with push-based ingest

As in clause C.2.3, no *Object acquisition identifiers* are provisioned. Any object pushed to one of the *Object ingest base URL*s nominated by the MBSF is distributed to the corresponding MBS Distribution Session by the MBSTF after substituting the relevant *Object ingest base URL* prefix with the corresponding *Object distribution base URL*.

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