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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
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Contents

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

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In the present document, modal verbs have the following meanings:

shall indicates a mandatory requirement to do something

shall not indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

should indicates a recommendation to do something

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may indicates permission to do something

need not indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

can indicates that something is possible

cannot indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

will indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

will not indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document

might indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

1 Scope

The present document specifies the stage 3 protocol and data model for the Nmbsf Service Based Interface. It provides stage 3 protocol definitions and message flows, and specifies the API for each service offered by the MBSF.

The 5G System stage 2 architecture and procedures are specified in 3GPP TS 23.501 [2] and 3GPP TS 23.502 [3]. The stage 2 architecture and procedures for 5G Multicast/Broadcast Services are specified in 3GPP TS 23.247 [14] and 3GPP TS 26.502 [15].

The Technical Realization of the Service Based Architecture and the Principles and Guidelines for Services Definition are specified in 3GPP TS 29.500 [4] and 3GPP TS 29.501 [5].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".

[4] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[5] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".

[6] OpenAPI: "OpenAPI Specification Version 3.0.0", https://spec.openapis.org/oas/v3.0.0.

[7] 3GPP TR 21.900: "Technical Specification Group working methods".

[8] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

[9] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".

[10] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".

[11] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".

[12] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".

[13] IETF RFC 7807: "Problem Details for HTTP APIs".

[14] 3GPP TS 23.247: "Architectural enhancements for 5G multicast-broadcast services; Stage 2".

[15] 3GPP TS 26.502: "5G Multicast-Broadcast User Service Architecture".

[16] 3GPP TS 29.554: "5G System; Background Data Transfer Policy Control Service; Stage 3".

[17] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[18] 3GPP TS 29.122: "T8 reference point for northbound Application Programming Interfaces (APIs)".

[19] OMA: "OMNA BCAST Service Class Registry", https://technical.openmobilealliance.org/OMNA/bcast/bcast-service-class-registry.html.

[20] 3GPP TS 29.581: "5G System; Multicast/Broadcast Service Transport Services; Stage 3".

[21] IANA: "Reliable Multicast Transport (RMT) FEC Encoding IDs and FEC Instance IDs", https://www.iana.org/assignments/rmt-fec-parameters/rmt-fec-parameters.xhtml#rmt-fec-parameters-1

[22] IETF RFC 7396: "JSON Merge Patch".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

For the purpose of the present document, the terms and definitions given in clause 3 of 3GPP TS 23.247 [14] and clause 3 of 3GPP TS 26.502 [15] also apply, including the ones referencing other specifications.

3.2 Symbols

Void.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

FEC	Forward Erasure Correction
MBS	Multicast/Broadcast Service.
MBSF	Multicast/Broadcast Service Function
MBSTF	Multicast/Broadcast Service Transport Function
TMGI	Temporary Mobile Group Identity
URI	Uniform Resource Identifier

4 Overview

In the frame of Multicast/Broadcast Services (MBS), the Multicast/Broadcast Service Function (MBSF) provides services to NF service consumers (e.g. AF, NEF) via the Nmbsf service based interface. The MBSF supports for this purpose the functionalities defined in 3GPP TS 26.502 [15] and 3GPP TS 23.247 [14], i.e. service level functionalities to support MBS and the control of the MBSTF, when used.

Figures°4-1 and 4.2 depict the Multicast/Broadcast related reference architecture of the MBSF respectively in SBI representation and reference point representation.

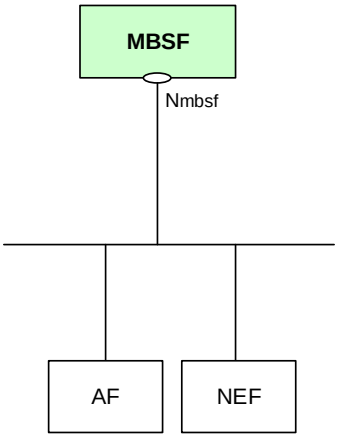

Figure 4-1: Reference model for the MBSF Services – SBI representation

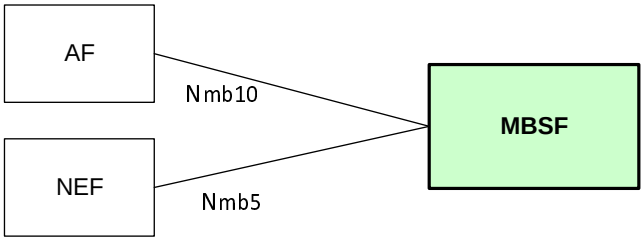

Figure 4-2: Reference Model for the MBSF Services – Reference point representation

5 Services offered by the MBSF

5.1 Introduction

The MBSF provides the following services:

- Nmbsf_MBSUserService
- Nmbsf_MBSUserDataIngestSession

Table 5.1-1 summarizes the corresponding APIs defined for this specification.

Table 5.1-1: API Descriptions

Service Name	Clause	Description	OpenAPI Specification File	apiName	Annex
Nmbsf_MBSUserService	5.2	MBS User Management Service	TS29580_Nmbsf_MBSUserService.yaml	nmbsf-mbs-us	A.2
Nmbsf_MBSUserDataIngestSession	5.3	MBS User Data Ingest Session Management Service	TS29580_Nmbsf_MBSUserDataIngestSession.yaml	nmbsf-mbs-ud-ingest	A.3

5.2 Nmbsf_MBSUserService Service

5.2.1 Service Description

The Nmbsf_MBSUserService service exposed by the MBSF enables an NF service consumer to:

- request the creation of a new MBS User Service;
- retrieve the properties of an existing MBS User Service;
- request the update/modification of the properties of an existing MBS User Service; and
- request the deletion of an existing MBS User Service.

5.2.2 Service Operations

5.2.2.1 Introduction

The service operations defined for the Nmbsf_MBSUserService service are shown in table 5.2.2.1-1.

Table 5.2.2.1-1: Nmbsf_MBSUserService Service Operations

Service Operation Name	Description	Initiated by
Nmbsf_MBSUserService_Create	This service operation enables the NF service consumer to request the creation of a new MBS User Service.	AF, NEF
Nmbsf_MBSUserService_Retrieve	This service operation enables the NF service consumer to retrieve the properties of an existing MBS User Service.	AF, NEF
Nmbsf_MBSUserService_Update	This service operation enables the NF service consumer to request the update/modification of an existing MBS User Service.	AF, NEF
Nmbsf_MBSUserService_Delete (NOTE)	This service operation enables the NF service consumer to request the deletion of an existing MBS User Service.	AF, NEF
NOTE: This service operation corresponds to the Nmbsf_MBSUserService_Destroy service operation defined in 3GPP TS 26.502 [15].		

5.2.2.2 Nmbsf_MBSUserService_Create service operation

5.2.2.2.1 General

This service operation is used by an NF service consumer to request the creation of a new MBS User Service at the MBSF.

The following procedures are supported by the "Nmbsf_MBSUserServie_Create" service operation:

- MBS User Service Creation.

5.2.2.2.2 MBS User Service Creation

Figure 5.2.2.2.2-1 depicts a scenario where an NF service consumer requests the creation of a new MBS User Service at the MBSF.

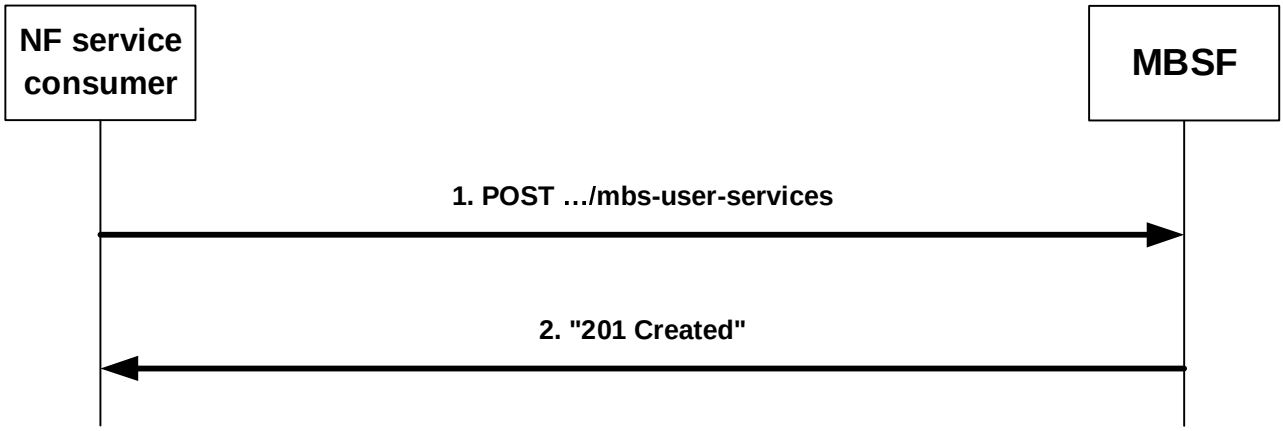

Figure 5.2.2.2.2-1: MBS User Service Creation procedure

1. In order to request the creation of a new MBS User Service, the NF service consumer (e.g. AF, NEF) shall send an HTTP POST request message to the MBSF targeting the "MBS User Services" collection resource, with the request body containing the MBSUserService data structure which shall include:

   - a list of external service identifier(s), within the "extServiceIds" attribute;
   - the service type, within the the "servType" attribute;
   - the service class, within the "servClass" attribute;
   - the supported MBS User Service Announcement mode(s), within the "servAnnModes" attribute;
   - one or several set(s) of per language service name and/or service description, within the "servNameDescs" attribute; and
   - the list of supported features, if feature negotiation needs to take place, within the "suppFeat" attribute;

   and may include:

   - the main service language, within the "mainServLang" attribute.

2. Upon success, the MBSF shall create a new "Individual MBS User Service" resource and respond to the NF service consumer with a "201 Created" status code, including an HTTP Location header field containing the URI of the created resource, and the response body containing a representation of the created "Individual MBS User Service" resource within the MBSUserService data structure.

   On failure, the MBSF shall take proper error handling actions, as specified in clause 6.1.7, and respond to the NF service consumer with an appropriate error status code.

5.2.2.3 Nmbsf_MBSUserService_Retrieve service operation

5.2.2.3.1 General

This service operation is used by an NF service consumer to retrieve the properties of an existing MBS User Service at the MBSF.

The following procedures are supported by the "Nmbsf_MBSUserServie_Retrieve" service operation:

- MBS User Service Retrieval.

5.2.2.3.2 MBS User Service Retrieval

Figure 5.2.2.3.2-1 depicts a scenario where an NF service consumer requests the retrieval of the properties of an existing "Individual MBS User Service" resource from the MBSF.

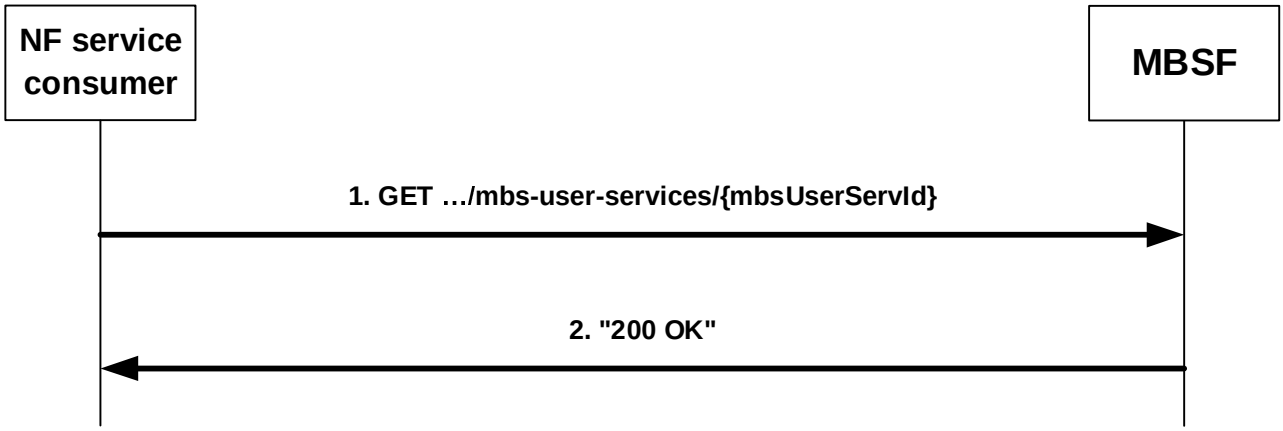

Figure 5.2.2.3.2-1: MBS User Service Retrieval procedure

1. In order to retrieve the properties of an existing MBS User Service, the NF service consumer (e.g. AF, NEF) shall send an HTTP GET request message targeting the corresponding "Individual MBS User Service" resource.

   If the MBSF determines that the received HTTP GET request needs to be redirected, the MBSF shall respond with an HTTP redirect response, as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

2. Upon success, the MBSF shall respond to the NF service consumer with an HTTP "200 OK" status code with the response body containing a representation of the requested "Individual MBS User Service" resource within the MBSUserService data structure.

   On failure, the MBSF shall take proper error handling actions, as specified in clause 6.1.7, and respond to the NF service consumer with an appropriate error status code.

5.2.2.4 Nmbsf_MBSUserService_Update service operation

5.2.2.4.1 General

This service operation is used by an NF service consumer to request the update or modification of an existing MBS User Service at the MBSF.

The following procedures are supported by the "Nmbsf_MBSUserServie_Update" service operation:

- MBS User Service Update.

5.2.2.4.2 MBS User Service Update

Figure 5.2.2.4.2-1 depicts a scenario where an NF service consumer requests the update of an existing "Individual MBS User Service" resource at the MBSF.

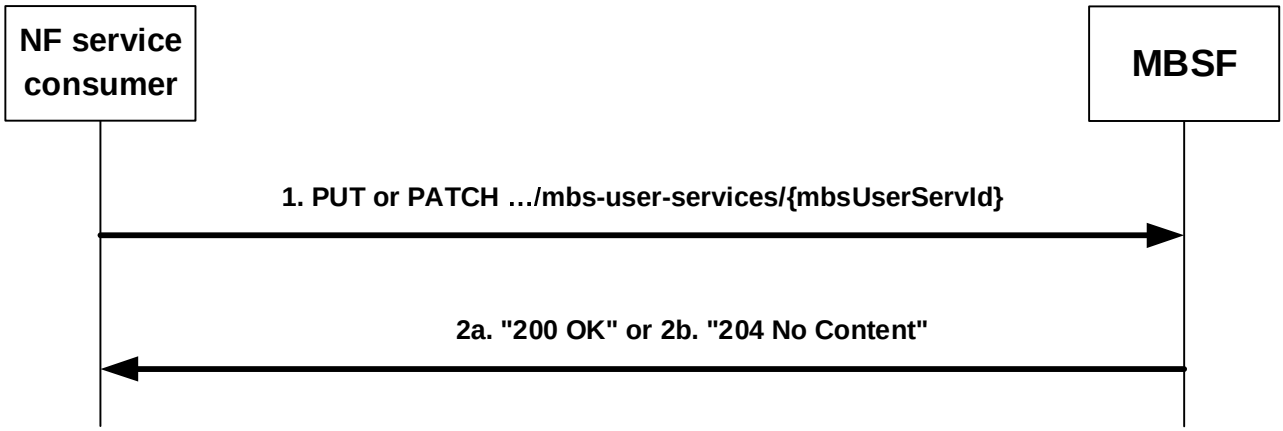

Figure 5.2.2.4.2-1: MBS User Service Update procedure

1. In order to request the update or modification of an existing MBS User Service, the NF service consumer (e.g. AF, NEF) shall send an HTTP PUT or PATCH request message targeting the corresponding "Individual MBS User Service" resource, with the request body containing the MBSUserService data structure (when HTTP PUT is used) or the MBSUserServicePatch data structure (when HTTP PATCH is used). Only the "servType" attribute shall not be updated.

   If the MBSF determines that the received HTTP PUT or PATCH request message needs to be redirected, the MBSF shall respond with an HTTP redirect response, as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

2. Upon success, the MBSF shall update the concerned "Individual MBS User Service" resource and respond to the NF service consumer with either:

   a) an HTTP "200 OK" status code with the response body containing the updated representation of the resource within the MBSUserService data structure; or

   b) an HTTP "204 No Content" status code.

   On failure, the MBSF shall take proper error handling actions, as specified in clause 6.1.7, and respond to the NF service consumer with an appropriate error status code.

5.2.2.5 Nmbsf_MBSUserService_Delete service operation

5.2.2.5.1 General

This service operation is used by the NF service consumer to request the deletion of an existing MBS User Service at the MBSF.

The following procedures are supported by the "Nmbsf_MBSUserServie_Delete" service operation:

- MBS User Service Deletion.

5.2.2.5.2 MBS User Service Deletion

Figure 5.2.2.5.2-1 depicts a scenario where an NF service consumer requests the deletion of an existing "Individual MBS User Service" resource at the MBSF.

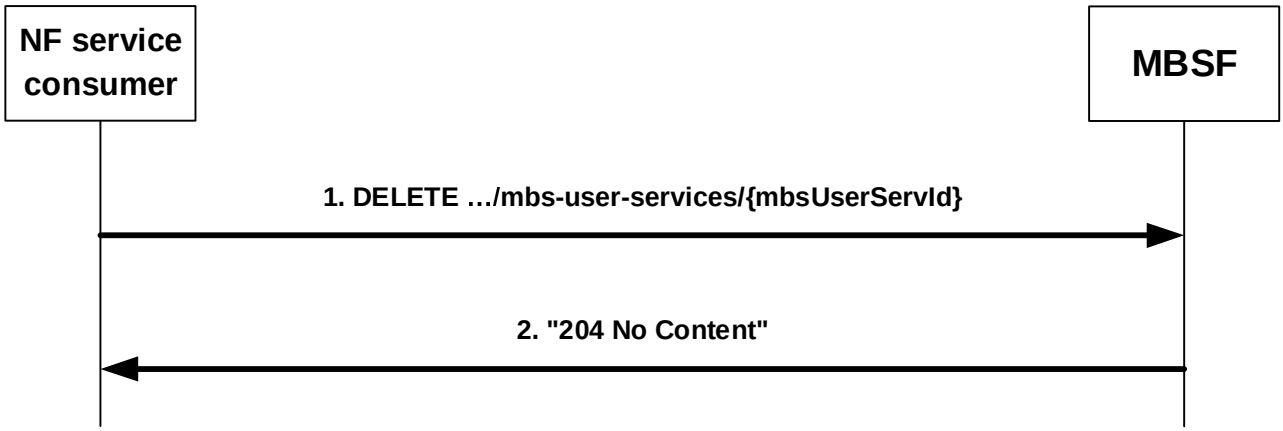

Figure 5.2.2.5.2-1: MBS User Service Deletion procedure

1. In order to request the deletion of an existing MBS User Service, the NF service consumer (e.g. AF, NEF) shall send an HTTP DELETE request message targeting the corresponding "Individual MBS User Service" resource.

   If the MBSF determines that the received HTTP DELETE request needs to be redirected, the MBSF shall respond with an HTTP redirect response, as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

2. Upon success, the MBSF shall:

   - delete the targeted "Individual MBS User Service" resource; and
   - respond to the NF service consumer with an HTTP "204 No Content" status code.

   On failure, the MBSF shall take proper error handling actions, as specified in clause 6.1.7, and respond to the NF service consumer with an appropriate error status code.

5.3 Nmbsf_MBSUserDataIngestSession Service

5.3.1 Service Description

The Nmbsf_MBSUserDataIngestSession service exposed by the MBSF enables an NF service consumer to:

- create an MBS User Data Ingest Session, including a set of subordinate MBS Distribution Session(s);
- retrieve the properties of an existing MBS User Data Ingest Session;
- update an existing MBS User Data Ingest Session and its set of subordinate MBS Distribution Session(s);
- delete an MBS User Data Ingest Session along with its subordinate MBS Distribution Session(s);
- create a subscription to monitor event(s) related to the MBS User Data Ingest Session;
- update or modify an existing subscription to MBS User Data Ingest Session event(s) monitoring;
- delete an existing subscription to MBS User Data Ingest Session event(s) monitoring; and
- receive notification(s) about the event(s) related to the MBS User Data Ingest Session.

5.3.2 Service Operations

5.3.2.1 Introduction

The service operations defined for the Nmbsf_MBSUserDataIngestSession service are shown in table 5.3.2.1-1.

Table 5.3.2.1-1: Nmbsf_MBSUserDataIngestSession Service Operations

Service Operation Name	Description	Initiated by
Nmbsf_MBSUserDataIngestSession_Create	This service operation enables the NF service consumer to request the creation of an MBS User Data Ingest Session, including a set of subordinate MBS Distribution Session(s).	AF, NEF
Nmbsf_MBSUserDataIngestSession_Retrieve	This service operation enables the NF service consumer to retrieve the properties of an existing MBS User Data Ingest Session.	AF, NEF
Nmbsf_MBSUserDataIngestSession_Update	This service operation enables the NF service consumer to update an existing MBS User Data Ingest Session and its set of subordinate MBS Distribution Session(s).	AF, NEF
Nmbsf_MBSUserDataIngestSession_Delete (NOTE)	This service operation enables the NF service consumer to delete an existing MBS User Data Ingest Session along with its subordinate MBS Distribution Session(s).	AF, NEF
Nmbsf_MBSUserDataIngestSession_StatusSubscribe	This service operation enables the NF service consumer to request the creation of a subscription to monitor event(s) related to an MBS User Data Ingest Session.	AF, NEF
Nmbsf_MBSUserDataIngestSession_StatusSubscribeMod	This service operation enables the NF service consumer to request the update or modification of an existing subscription to monitor event(s) related to an MBS User Data Ingest Session.	AF, NEF
Nmbsf_MBSUserDataIngestSession_StatusUnsubscribe	This service operation enables the NF service consumer to request the deletion of an existing subscription to MBS User Data Ingest Session event(s) monitoring.	AF, NEF
Nmbsf_MBSUserDataIngestSession_StatusNotify	This service operation enables the NF service consumer to receive notification(s) from the MBSF about the event(s) related to an MBS User Data Ingest Session.	MBSF
NOTE: This service operation corresponds to the Nmbsf_MBSUserDataIngestSession_Destroy service operation defined in 3GPP TS 26.502 [15].		

5.3.2.2 Nmbsf_MBSUserDataIngestSession_Create service operation

5.3.2.2.1 General

This service operation is used by the NF service consumer to request the creation of an MBS User Data Ingest Session including a set of subordinate MBS Distribution Session(s).

The following procedures are supported by the "Nmbsf_MBSUserDataIngestSession_Create" service operation:

- MBS User Data Ingest Session Creation.

5.3.2.2.2 MBS User Data Ingest Session Creation

Figure 5.3.2.2.2-1 depicts a scenario where an NF service consumer requests the creation of an MBS User Data Ingest Session, including a set of subordinate MBS Distribution Session(s), at the MBSF.

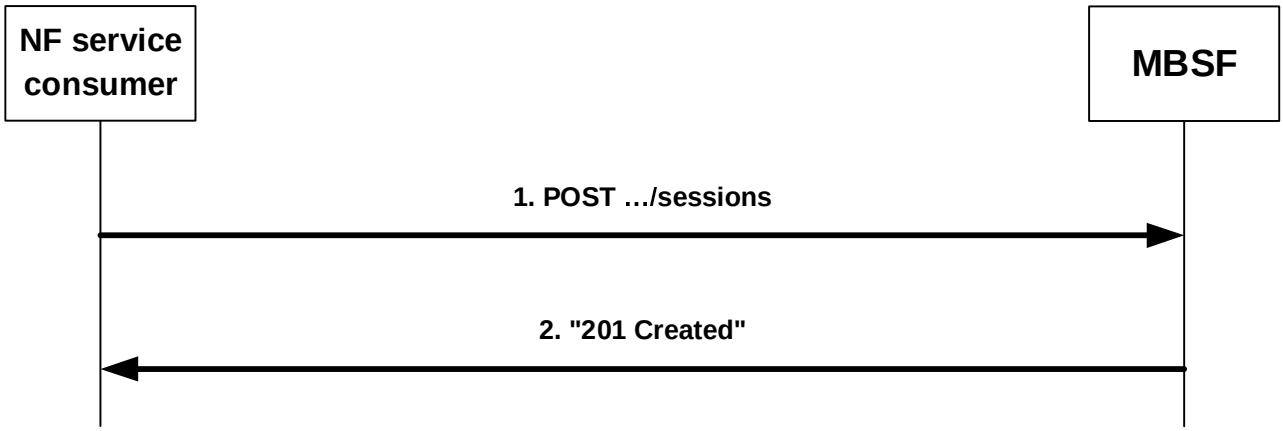

Figure 5.3.2.2.2-1: MBS User Data Ingest Session Creation procedure

1. In order to create a new MBS User Data Ingest Session, including a set of subordinate MBS Distribution Session(s), the NF service consumer (e.g. AF, NEF) shall send an HTTP POST request message targeting the "Individual MBS User Data Ingest Sessions" collection resource, with the request body containing the MBSUserDataIngSession data structure that shall include:

   - the identifier of the parent MBS User Service, within the "mbsUserServId" attribute;
   - one or several MBS Distribution Session(s), within the "mbsDisSessInfos" attribute; and
   - the list of supported features, if feature negotiation needs to take place, within the "suppFeat" attribute;

   and may include:

   - one or several set(s) of period(s) of time during which the MBS User Data Ingest Session is active in the MBS System, within the "actPeriods" attribute.

NOTE: At the end of the last time period provided within the "actPeriods" attribute, the MBS User Data Ingest Session is automatically released and deleted by the MBSF.

   Within the "mbsDisSessInfos" attribute, the parameters of each MBS Distribution Session to be created are provided within the MBSDistributionSessionInfo data structure encoding the corresponding map entry, and:

   - if no MBS session identifier is provided, i.e. the "mbsSessionId" attribute is not present, the MBSF shall later request TMGI allocation as part of the creation of the corresponding MBS session at the MB-SMF; and
   - if a source specific multicast address (SSM) is provided within the "mbsSessionId" attribute and the "locationDependent" attribute is present and set to "true" (i.e. to indicate a location dependent MBS service), the MBSF shall also request TMGI allocation as part of the creation of the corresponding MBS session at the MB-SMF.

2. Upon success, the MBSF shall create a new "Individual MBS User Data Ingest Session" resource and respond to the NF service consumer with an HTTP "201 Created" status code, including an HTTP Location header field containing the URI of the created resource, and the response body containing a representation of the created "Individual MBS User Data Ingest Session" resource within the MBSUserDataIngSession data structure.

   On failure, the MBSF shall take proper error handling actions, as specified in clause 6.2.7, and respond to the NF service consumer with an appropriate error status code.

5.3.2.3 Nmbsf_MBSUserDataIngestSession_Retrieve service operation

5.3.2.3.1 General

This service operation is used by the NF service consumer to retrieve the properties of an existing MBS User Data Ingest Session.

The following procedures are supported by the "Nmbsf_MBSUserDataIngestSession_Retrieve" service operation:

- MBS User Data Ingest Session Retrieval.

5.3.2.3.2 MBS User Data Ingest Session Retrieval

Figure 5.3.2.3.2-1 depicts a scenario where an NF service consumer retrieves the properties of an existing "Individual MBS User Data Ingest Session" resource from the MBSF.

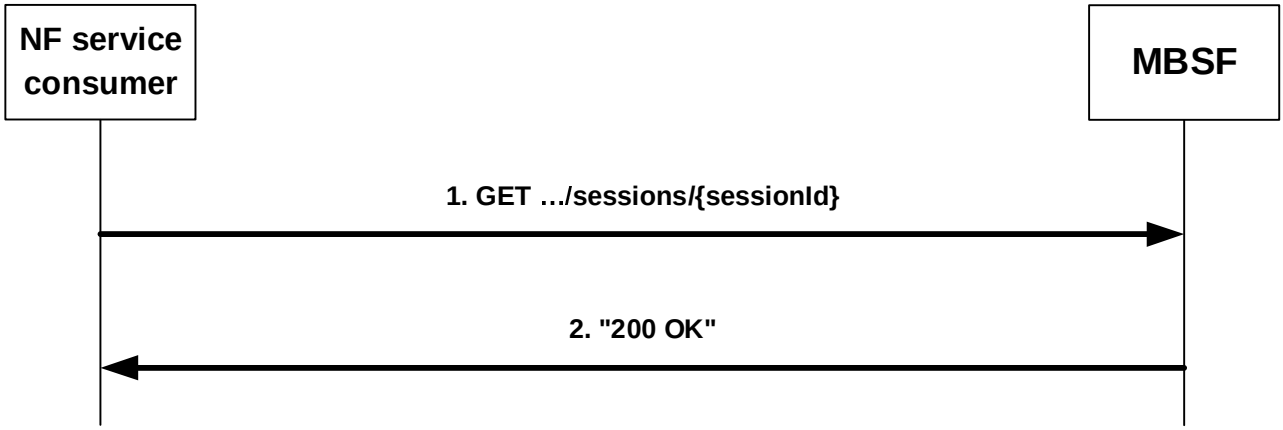

Figure 5.3.2.3.2-1: MBS User Data Ingest Session Retrieval procedure

1. In order to retrieve the properties of an existing MBS User Data Ingest Session, the NF service consumer (e.g. AF, NEF) shall send an HTTP GET request message targeting the corresponding "Individual MBS User Data Ingest Session" resource.

   If the MBSF determines that the received HTTP GET request message needs to be redirected, the MBSF shall respond with an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

2. Upon success, the MBSF shall respond with an HTTP "200 OK" status code with the response body containing a representation of the requested "Individual MBS User Data Ingest Session" resource within the MBSUserDataIngSession data structure.

   On failure, the MBSF shall take proper error handling actions, as specified in clause 6.2.7, and respond to the NF service consumer with an appropriate error status code.

5.3.2.4 Nmbsf_MBSUserDataIngestSession_Update service operation

5.3.2.4.1 General

This service operation is used by the NF service consumer to request the update of an existing MBS User Data Ingest Session and potentially also its set of subordinate MBS Distribution Session(s) at the MBSF.

The following procedures are supported by the "Nmbsf_MBSUserDataIngestSession_Update" service operation:

- MBS User Data Ingest Session Update.

5.3.2.4.2 MBS User Data Ingest Session Update

Figure 5.3.2.4.2-1 depicts a scenario where an NF service consumer requests the update or modification of an existing "Individual MBS User Data Ingest Session" resource at the MBSF.

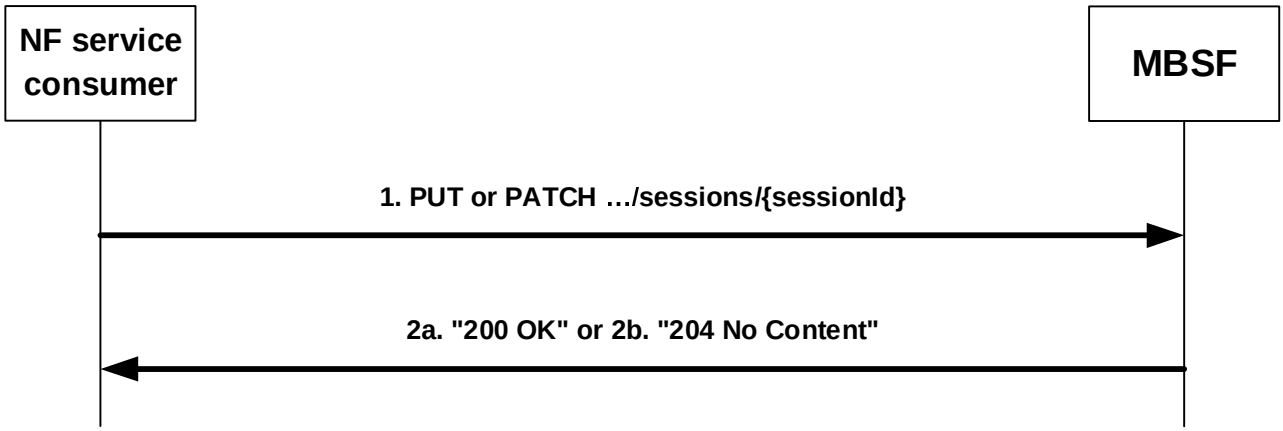

Figure 5.3.2.4.2-1: MBS User Data Ingest Session Update procedure

1. In order to request the update or modification of an existing MBS User Data Ingest Session and potentially also its set of subordinate MBS Distribution Session(s), the NF service consumer (e.g. AF, NEF) shall send an HTTP PUT or PATCH request message targeting the corresponding "Individual MBS User Data Ingest Session" resource, with the request body containing the MBSUserDataIngSession data structure (for an HTTP PUT request) or the MBSUserDataIngSessionPatch data structure (for an HTTP PATCH request).

   The attributes that may be updated/modified at any time are as follows:

   - the set(s) of active period(s) of the MBS User Data Ingest Session, within the "actPeriods" attribute; and
   - within each map entry of the "mbsDisSessInfos" attribute encoded using the MBSDistributionSessionInfo data structure (for an HTTP PUT request) or the MBSUserDataIngSessionPatch data structure (for an HTTP PATCH request):
     - the MBS Service Information, within the "mbsServInfo" attribute;
     - the MBS Frequency Selection Area (FSA) Identifier, for a broadcast service type, within the "mbsFSAId" attribute; and
     - the target service area(s), within the "tgtServAreas" attribute.

     The other attributes, except for the "mbsSessionId", the "mbsDisSessionId" and the "locationDependent" attributes, which shall never be updated after being provisioned, all the other attributes within each map entry of the "mbsDisSessInfos" attribute encoded using the MBSDistributionSessionInfo data structure (for an HTTP PUT request) or the MBSUserDataIngSessionPatch data structure (for an HTTP PATCH request) may be updated only if the corresponding MBS Distribution Session is in the "INACTIVE" state.

   As part of an MBS User Data Ingest Session update/modification procedure, the AF may also add new MBS Distribution Session(s) and/or remove existing MBS Distribution Session(s). In order to do so:

   - if a new MBS Distribution Session shall be created, the AF shall include its properties encoded using the MBSDistributionSessionInfo data structure as a new map entry within the "mbsDisSessInfos" attribute with a newly assigned string-based map key that shall be unique within the scope of the parent MBS User Data Ingest Session; and
   - if an existing MBS Distribution Session shall be deleted, the AF shall include the corresponding map entry set to the value "NULL" within the "mbsDisSessInfos" attribute with the map key set to its string-based map key provisioned during the request that initially created the MBS Distribution Session.

   If the MBSF determines that the received HTTP PUT or PATCH request needs to be redirected, the MBSF shall respond with an HTTP redirect response, as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

2. Upon success, the MBSF shall respond with either:

   a) an HTTP "200 OK" status code with the response body containing the updated representation of the "Individual MBS User Data Ingest Session" resource within the MBSUserDataIngSession data structure; or

   b) an HTTP "204 No Content" status code.

On failure, the MBSF shall take proper error handling actions, as specified in clause 6.2.7, and respond to the NF service consumer with an appropriate error status code.

5.3.2.5 Nmbsf_MBSUserDataIngestSession_Delete service operation

5.3.2.5.1 General

This service operation is used by the NF service consumer to request the deletion of an MBS User Data Ingest Session along with its subordinate MBS Distribution Session(s) at the MBSF.

The following procedures are supported by the "Nmbsf_MBSUserDataIngestSession_Delete" service operation:

- MBS User Data Ingest Session Deletion.

5.3.2.5.2 MBS User Data Ingest Session Deletion

Figure 5.3.2.5.2-1 depicts a scenario where an NF service consumer requests the deletion of an existing "Individual MBS User Data Ingest Session" resource at the MBSF.

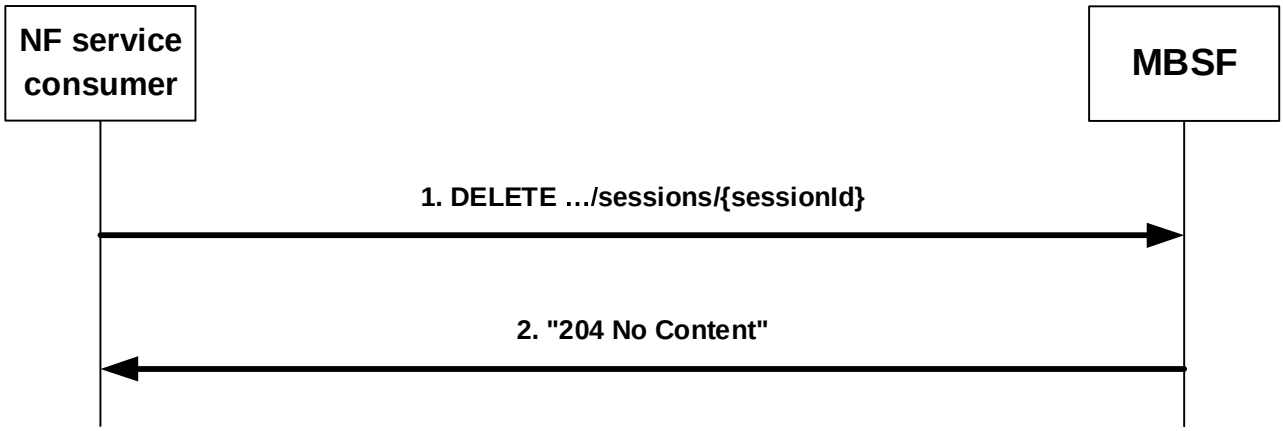

Figure 5.3.2.5.2-1: MBS User Data Ingest Session Deletion procedure

1. In order to request the deletion of an existing MBS User Data Ingest Session along with its subordinate MBS Distribution Session(s), the NF service consumer (e.g. AF, NEF) shall send an HTTP DELETE request message targeting the corresponding "Individual MBS User Data Ingest Session" resource.

   If the MBSF determines that the received HTTP DELETE request message needs to be redirected, the MBSF shall respond with an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

2. Upon success, the MBSF shall:

   - delete the targeted "Individual MBS User Data Ingest Session" resource; and
   - respond with an HTTP "204 No Content" status code.

   On failure, the MBSF shall take proper error handling actions, as specified in clause 6.2.7, and respond to the NF service consumer with an appropriate error status code.

5.3.2.6 Nmbsf_MBSUserDataIngestSession_StatusSubscribe service operation

5.3.2.6.1 General

This service operation is invoked by an NF service consumer to request the creation of a subscription to MBS User Data Ingest Session Status event(s) reporting at the MBSF.

The following procedures are supported by the "Nmbsf_MBSUserDataIngestSession_StatusSubscribe" service operation:

- MBS User Data Ingest Session Status Subscription Creation.

5.3.2.6.2 MBS User Data Ingest Session Status Subscription Creation

Figure 5.3.2.6.2-1 depicts a scenario where an NF service consumer requests the creation of a subscription to MBS User Data Ingest Session Status event(s) reporting at the MBSF.

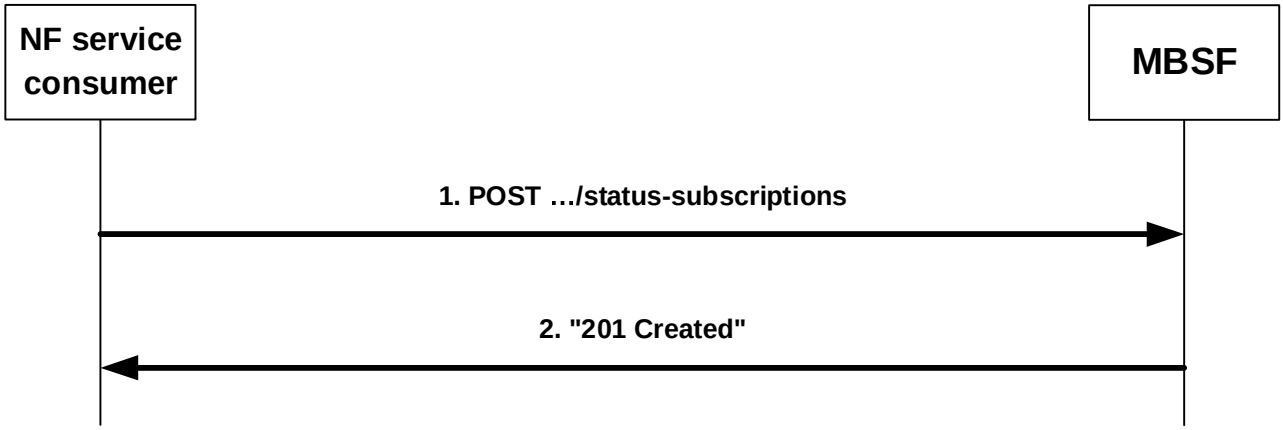

Figure 5.3.2.6.2-1: MBS User Data Ingest Session Status Subscription Creation procedure

1. In order to request the creation of a new MBS User Data Ingest Session Status Subscription, the NF service consumer shall send an HTTP POST request message targeting the "MBS User Data Ingest Session Status Subscriptions" resource, with the request body containing the MBSUserDataIngStatSubsc data structure that shall include:

   - the identifier of the MBS User Data Ingest Session to which the subscription is related, within the "mbsIngSessionId" attribute;

   - the list of subscribed MBS User Data Ingest Session Status event(s), within the "eventSubscs" attribute; and

   - the URI towards which the notifications should be sent, within the "notifUri" attribute.

2. Upon success, the MBSF shall create a new "Individual MBS User Data Ingest Session Status Subscription" resource and respond to the NF service consumer with an HTTP "201 Created" status code including an HTTP Location header field containing the URI of the created resource, i.e. "{apiRoot}/nmbsf-mbs-ud-ingest/<apiVersion>/status-subscriptions/{subscriptionId}", and the response body containing a representation of the created "Individual MBS User Data Ingest Session Status Subscription" resource within the MBSUserDataIngStatSubsc data structure.

   On failure, the MBSF shall take proper error handling actions, as specified in clause 6.2.7, and respond to the NF service consumer with an appropriate error status code.

5.3.2.7 Nmbsf_MBSUserDataIngestSession_StatusSubscribeMod service operation

5.3.2.7.1 General

This service operation is invoked by an NF service consumer to request the update/modification of a subscription to MBS User Data Ingest Session Status event(s) reporting at the MBSF.

The following procedures are supported by the "Nmbsf_MBSUserDataIngestSession_StatusSubscribeMod" service operation:

- MBS User Data Ingest Session Status Subscription Update.

5.3.2.7.2 MBS User Data Ingest Session Status Subscription Update

Figure 5.3.2.7.2-1 depicts a scenario where an NF service consumer requests the update/modification of an existing "Individual MBS User Data Ingest Session Status Subscription" resource at the MBSF.

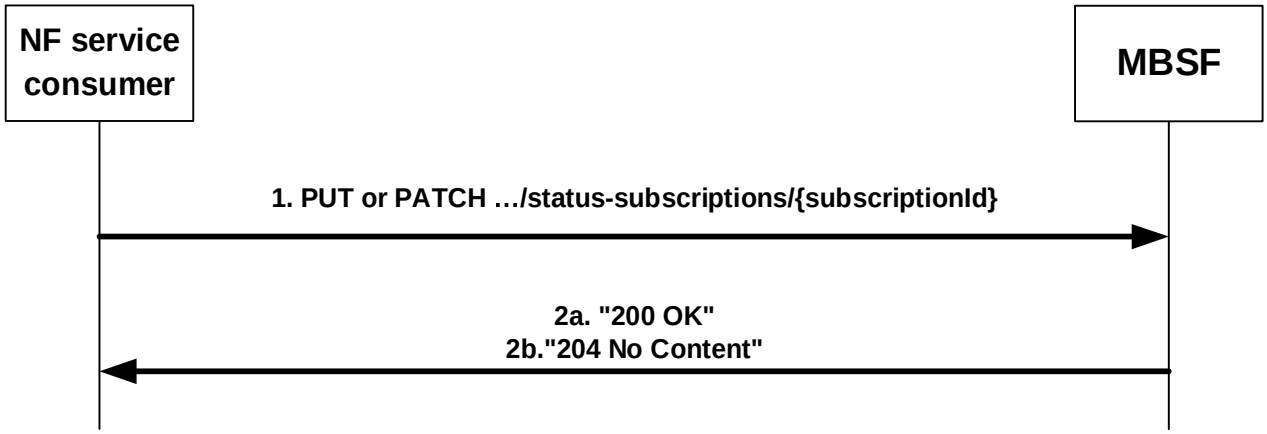

Figure 5.3.2.7.2-1: MBS User Data Ingest Session Status Subscription Update procedure

1. In order to request the update or modification of an existing MBS User Data Ingest Session Status Subscription, the NF service consumer shall send an HTTP PUT or PATCH request message targeting the corresponding "Individual MBS User Data Ingest Session Status Subscription" resource, with the request body including the MBSUserDataIngStatSubsc data structure (for an HTTP PUT request) or the MBSUserDataIngStatSubscPatch (for an HTTP PATCH request).

   Only the list of subscribed events (i.e. the "eventSubscs" attribute) and/or the notification URI (i.e. the "notifURI" attribute) may be updated/modified by the NF service consumer.

   If the MBSF determines that the received HTTP PUT or PATCH request message needs to be redirected, the MBSF shall respond with an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

2. Upon success, the MBSF shall update/modify the corresponding "Individual MBS User Data Ingest Session Status Subscription" resource and respond to the NF service consumer with either:

   a) an HTTP "200 OK" status code with the response body containing the updated representation of the "Individual MBS User Data Ingest Session Status Subscription" resource within the MBSUserDataIngStatSubsc data structure; or

   b) an HTTP "204 No Content" status code.

   On failure, the MBSF shall take proper error handling actions, as specified in clause 6.2.7, and respond to the NF service consumer with an appropriate error status code.

5.3.2.8 Nmbsf_MBSUserDataIngestSession_StatusUnsubscribe service operation

5.3.2.8.1 General

This service operation is used by an NF service consumer to request the deletion of an existing MBS User Data Ingest Session Status Subscription at the MBSF.

The following procedures are supported by the "Nmbsf_MBSUserDataIngestSession_StatusUnsubscribe" service operation:

- MBS User Data Ingest Session Status Subscription Deletion.

5.3.2.8.2 MBS User Data Ingest Session Status Subscription Deletion

Figure 5.3.2.8.2-1 depicts a scenario where an NF service consumer requests the deletion of an existing "Individual MBS User Data Ingest Session Status Subscription" resource at the MBSF.

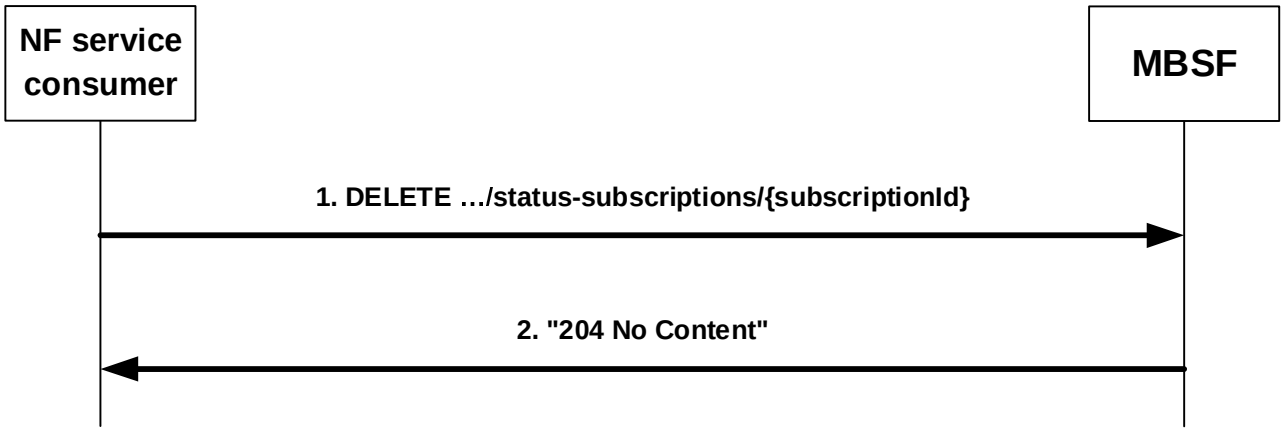

Figure 5.3.2.8.2-1: MBS User Data Ingest Session Status Subscription Deletion procedure

1. In order to request the deletion of an existing MBS User Data Ingest Session Status Subscription, the NF service consumer shall send an HTTP DELETE request message targeting the corresponding "Individual MBS User Data Ingest Session Status Subscription" resource.

   If the MBSF determines that the received HTTP DELETE request message needs to be redirected, the MBSF shall respond with an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

2. Upon success, the MBSF shall:

   - delete the corresponding "Individual MBS User Data Ingest Session Status Subscription" resource; and
   - respond to the NF service consumer with an HTTP "204 No Content" status code.

   On failure, the MBSF shall take proper error handling actions, as specified in clause 6.2.7, and respond to the NF service consumer with an appropriate error status code.

5.3.2.9 Nmbsf_MBSUserDataIngestSession_StatusNotify service operation

5.3.2.9.1 General

This service operation is used by the MBSF to notify a previously subscribed NF service consumer on MBS User Data Ingest Session Status event(s).

The following procedures are supported by the "Nmbsf_MBSUserDataIngestSession_StatusNotify" service operation:

- MBS User Data Ingest Session Status Notification.

5.3.2.9.2 MBS User Data Ingest Session Status Notification

Figure 5.3.2.9.2-1 depicts a scenario where the MBSF sends a notification request to a previously subscribed NF service consumer on MBS User Data Ingest Session Status event(s).

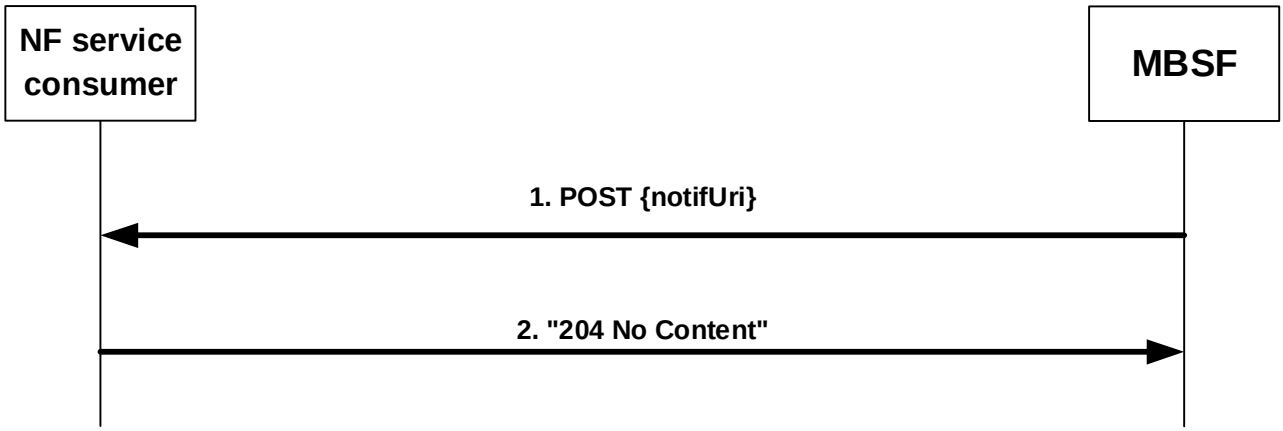

Figure 5.3.2.9.2-1: MBS User Data Ingest Session Status Notification procedure

1. In order to notify the NF service consumer on the occurrence of previously subscribed MBS User Data Ingest Session Status event(s), the MBSF shall send an HTTP POST request targeting the URI "{notifUri}", with the "notifUri" variable set to the notification URI received during the creation of the corresponding MBS User Data Ingest Session Status Subscription as specified in clause 5.3.2.6.2, and the request body including the MBSUserDataIngStatNotif data structure that shall include:

   - the identifier of the MBS User Data Ingest Session to which the notification is related, within the "mbsIngSessionId" attribute; and

   - the reported MBS User Data Ingest Session Status event(s), within the "eventNotifs" attribute.

   If the NF service consumer determines that the received HTTP POST request message needs to be redirected, the NF service consumer shall respond with an HTTP redirect response as specified in clause 6.10.9 of 3GPP TS 29.500 [4].

2. Upon success, the NF Service Consumer shall respond to the MBSF with an HTTP "204 No Content" status code.

   On failure, the NF service consumer shall take proper error handling actions, as specified in clause 6.2.7, and respond to the MBSF with an appropriate error status code.

6 API Definitions

6.1 Nmbsf_MBSUserService Service API

6.1.1 Introduction

The Nmbsf_MBSUserService service shall use the Nmbsf_MBSUserService API.

The API URI of the Nmbsf_MBSUserService Service shall be:

{apiRoot}/<apiName>/<apiVersion>

The request URIs used in HTTP requests from the NF service consumer towards the NF service producer shall have the Resource URI structure defined in clause 4.4.1 of 3GPP TS 29.501 [5], i.e.:

{apiRoot}/<apiName>/<apiVersion>/<apiSpecificResourceUriPart>

with the following components:

- The {apiRoot} shall be set as described in 3GPP TS 29.501 [5].
- The <apiName> shall be "nmbsf-mbs-us".
- The <apiVersion> shall be "v1".
- The <apiSpecificResourceUriPart> shall be set as described in clause 6.1.3.

6.1.2 Usage of HTTP

6.1.2.1 General

HTTP/2, IETF RFC 7540 [11], shall be used as specified in clause 5 of 3GPP TS 29.500 [4].

HTTP/2 shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [4].

The OpenAPI [6] specification of HTTP messages and content bodies for the Nmbsf_MBSUserService API is contained in Annex A.2.

6.1.2.2 HTTP standard headers

6.1.2.2.1 General

See clause 5.2.2 of 3GPP TS 29.500 [4] for the usage of HTTP standard headers.

6.1.2.2.2 Content type

JSON, IETF RFC 8259 [12], shall be used as content type of the HTTP bodies specified in the present specification as specified in clause 5.4 of 3GPP TS 29.500 [4]. The use of the JSON format shall be signalled by the content type "application/json".

JSON object used in the HTTP PATCH request shall be encoded according to "JSON Merge Patch" and shall be signalled by the content type "application/merge-patch+json", as defined in IETF RFC 7396 [22].

The "Problem Details" JSON object shall be used to indicate additional details of the error in an HTTP response body and shall be signalled by the content type "application/problem+json", as defined in IETF RFC 7807 [13].

6.1.2.3 HTTP custom headers

The mandatory HTTP custom header fields specified in clause 5.2.3.2 of 3GPP TS 29.500 [4] shall be supported, and the optional HTTP custom header fields specified in clause 5.2.3.3 of 3GPP TS 29.500 [4] may be supported.

6.1.3 Resources

6.1.3.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 6.1.3.1-1 depicts the resource URIs structure for the Nmbsf_MBSUserService API.

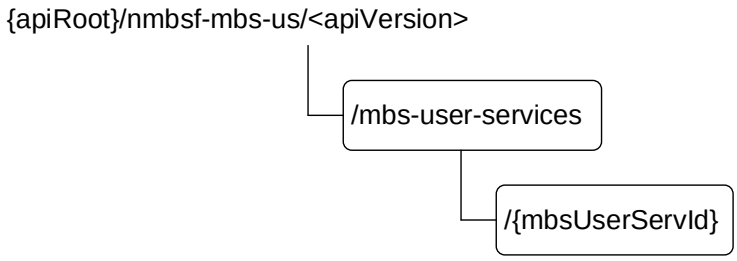

Figure 6.1.3.1-1: Resource URI structure of the Nmbsf_MBSUserService API

Table 6.1.3.1-1 provides an overview of the resources and applicable HTTP methods.

Table 6.1.3.1-1: Resources and methods overview

Resource purpose/name	Resource URI (relative path after API URI)	HTTP method or custom operation	Description (service operation)
MBS User Services	/mbs-user-services	GET	Retrieve all the active MBS User Service(s) managed by the MBSF.
		POST	Request the creation of a new MBS User Service.
Individual MBS User Service	/mbs-user-services/{mbsUserServId}	GET	Retrieve an existing MBS User Service managed by the MBSF.
		PUT	Request the update of an existing MBS User Service managed by the MBSF.
		PATCH	Request the modification of an existing MBS User Service managed by the MBSF.
		DELETE	Request the deletion of an existing MBS User Service managed by the MBSF.

6.1.3.2 Resource: MBS User Services

6.1.3.2.1 Description

This resource represents the collection of MBS User Services managed by the MBSF.

6.1.3.2.2 Resource Definition

Resource URI: **{apiRoot}/nmbsf-mbs-us/<apiVersion>/mbs-user-services**

This resource shall support the resource URI variables defined in table 6.1.3.2.2-1.

Table 6.1.3.2.2-1: Resource URI variables for this resource

Name	Data type	Definition
apiRoot	string	See clause 6.1.1.

6.1.3.2.3 Resource Standard Methods

6.1.3.2.3.1 GET

The GET method allows an NF service consumer (e.g. AF, NEF) to retrieve all the active MBS User Service(s) managed by the MBSF.

This method shall support the URI query parameters specified in table 6.1.3.2.3.1-1.

Table 6.1.3.2.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.1.3.2.3.1-2 and the response data structures and response codes specified in table 6.1.3.2.3.1-3.

Table 6.1.3.2.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.1.3.2.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
array(MBSUserService)	M	0..N	200 OK	Successful case. All the active MBS User Service(s) managed by the MBSF are returned.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The mandatory HTTP error status codes for the HTTP GET method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.1.3.2.3.1-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.1.3.2.3.1-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.1.3.2.3.2 POST

The POST method allows an NF service consumer (e.g. AF, NEF) to request the creation of a new MBS User Service.

This method shall support the URI query parameters specified in table 6.1.3.2.3.2-1.

Table 6.1.3.2.3.2-1: URI query parameters supported by the POST method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.1.3.2.3.2-2 and the response data structures and response codes specified in table 6.1.3.2.3.2-3.

Table 6.1.3.2.3.2-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
MBSUserService	M	1	Contains the parameters to request the creation of a new MBS User Service.

Table 6.1.3.2.3.2-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserService	M	1	201 Created	Successful case. The MBS User Service is successfully created and a representation of the created "Individual MBS User Service" resource is returned. An HTTP "Location" header that contains the URI of the created "Individual MBS User Service" resource shall also be included.
NOTE: The mandatory HTTP error status codes for the HTTP POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.1.3.2.3.2-4: Headers supported by the 201 response code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	Contains the URI of the newly created resource, according to the structure: {apiRoot}/nmbsf-mbs-us/<apiVersion>/mbs-user-services/{mbsUserServId}

6.1.3.2.4 Resource Custom Operations

There are no resource custom operations defined for this resource in this release of the specification.

6.1.3.3 Resource: Individual MBS User Service

6.1.3.3.1 Description

This resource represents an "Individual MBS User Service" resource managed by the MBSF.

6.1.3.3.2 Resource Definition

Resource URI: **{apiRoot}/nmbsf-mbs-us/<apiVersion>/mbs-user-services/{mbsUserServId}**

This resource shall support the resource URI variables defined in table 6.1.3.3.2-1.

Table 6.1.3.3.2-1: Resource URI variables for this resource

Name	Data type	Definition
apiRoot	string	See clause 6.1.1.
mbsUserServId	string	Represents the unique identifier of the "Individual MBS User Service" resource, assigned by the MBSF.

6.1.3.3.3 Resource Standard Methods

6.1.3.3.3.1 GET

The GET method allows an NF service consumer (e.g. AF, NEF) to retrieve an existing "Individual MBS User Service" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.1.3.3.3.1-1.

Table 6.1.3.3.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.1.3.3.3.1-2 and the response data structures and response codes specified in table 6.1.3.3.3.1-3.

Table 6.1.3.3.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.1.3.3.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserService	M	1	200 OK	Successful case. The requested "Individual MBS User Service" resource is returned.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The mandatory HTTP error status codes for the HTTP GET method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.1.3.3.3.1-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.1.3.3.3.1-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.1.3.3.3.2 PUT

The PUT method allows an NF service consumer (e.g. AF, NEF) to request the update of an existing "Individual MBS User Service" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.1.3.3.3.2-1.

Table 6.1.3.3.3.2-1: URI query parameters supported by the PUT method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.1.3.3.3.2-2 and the response data structures and response codes specified in table 6.1.3.3.3.2-3.

Table 6.1.3.3.3.2-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
MBSUserService	M	1	Contains the updated representation of the existing "Individual MBS User Service" resource that is to be updated.

Table 6.1.3.3.3.2-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserService	M	1	200 OK	Successful case. The concerned "Individual MBS User Service" resource is successfully updated and a representation of the updated resource is returned in the response body.
n/a			204 No Content	Successful case. The concerned "Individual MBS User Service" resource is successfully updated and no content is returned in the response body.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The mandatory HTTP error status codes for the HTTP PUT method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.1.3.3.3.2-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.1.3.3.3.2-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.1.3.3.3 PATCH

The PATCH method allows an NF service consumer (e.g. AF, NEF) to request the modification of an existing "Individual MBS User Service" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.1.3.3.3.3-1.

Table 6.1.3.3.3.3-1: URI query parameters supported by the PATCH method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.1.3.3.3.3-2 and the response data structures and response codes specified in table 6.1.3.3.3.3-3.

Table 6.1.3.3.3.3-2: Data structures supported by the PATCH Request Body on this resource

Data type	P	Cardinality	Description
MBSUserServicePatch	M	1	Contains the parameters to request the modification of an existing "Individual MBS User Service" resource.

Table 6.1.3.3.3.3-3: Data structures supported by the PATCH Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserService	M	1	200 OK	Successful case. The concerned "Individual MBS User Service" resource is successfully modified and a representation of the updated resource is returned in the response body.
n/a			204 No Content	Successful case. The concerned "Individual MBS User Service" resource is successfully modified and no content is returned in the response body.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The mandatory HTTP error status codes for the HTTP PATCH method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.1.3.3.3.3-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.1.3.3.3.3-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.1.3.3.3.4 DELETE

The DELETE method allows an NF service consumer (e.g. AF, NEF) to request the deletion of an existing "Individual MBS User Service" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.1.3.3.3.4-1.

Table 6.1.3.3.3.4-1: URI query parameters supported by the DELETE method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.1.3.3.3.4-2 and the response data structures and response codes specified in table 6.1.3.3.3.4-3.

Table 6.1.3.3.3.4-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.1.3.3.3.4-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Successful case. The concerned "Individual MBS User Service" resource is successfully deleted.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The mandatory HTTP error status codes for the HTTP DELETE method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.1.3.3.3.4-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.1.3.3.3.4-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.1.4 Custom Operations without associated resources

There are no custom operations without associated resources defined for this API in this release of the specification.

6.1.5 Notifications

There are no notifications defined for this API in this release of the specification.

6.1.6 Data Model

6.1.6.1 General

This clause specifies the application data model supported by the Nmbsf_MBSUserService API.

Table 6.1.6.1-1 specifies the data types defined for the Nmbsf_MBSUserService service based interface protocol.

Table 6.1.6.1-1: Nmbsf_MBSUserService specific Data Types

Data type	Clause defined	Description	Applicability
MBSUserService	6.1.6.2.2	Represents the parameters of an MBS User Service.	
MBSUserServicePatch	6.1.6.2.4	Represents the requested modifications to the parameters of an MBS User Service.	
ServiceAnnouncementMode	6.1.6.3.3	Represents a service announcement mode.	
ServiceNameDescription	6.1.6.2.3	Represents a set of per language service Name and/or service description.	

Table 6.1.6.1-2 specifies data types re-used by the Nmbsf_MBSUserService service based interface protocol from other specifications, including a reference to their respective specifications, and when needed, a short description of their use within the Nmbsf_MBSUserService service based interface.

Table 6.1.6.1-2: Nmbsf_MBSUserService re-used Data Types

Data type	Reference	Comments	Applicability
MbsServiceType	3GPP TS 29.571 [17]	Indicates whether this MBS User Service is distributed via Multicast MBS Session(s) or Broadcast MBS Session(s).	
SupportedFeatures	3GPP TS 29.571 [17]	Used to negotiate the applicability of optional features.	
Uri	3GPP TS 29.571 [17]	Represents a URI.	

6.1.6.2 Structured data types

6.1.6.2.1 Introduction

This clause defines the structures to be used in resource representations.

6.1.6.2.2 Type: MBSUserService

Table 6.1.6.2.2-1: Definition of type MBSUserService

Attribute name	Data type	P	Cardinality	Description	Applicability
extServiceIds	array(Uri)	M	1..N	Represents the external service identifier(s) of this MBS User Service. This/these identifier(s) may be used to correlate the MBS User Service with the same service delivered by a different system.	
servType	MbsServiceType	M	1	Indicates the requested MBS service type (i.e. multicast or broadcast).	
servClass	Uri	M	1	Represents the class of the MBS User Service, expressed as a term identifier from the "OMA BCAST Service Class Registry" [19], e.g.: *urn:oma:bcast:oma_bsc:st:1.0*.	
servAnnModes	array(ServiceAnnouncementMode)	M	1..N	Represents the MBS User Service Announcement Mode(s), i.e. how the MBS User Service Announcement compiled by the MBSF is advertised to the MBSF Client.	
servNameDescs	array(ServiceNameDescription)	M	1..N	Contains one or several set(s) of per language distinguishing service name and/or service description for this MBS User Service.	
mainServLang	string	O	0..1	Represents the main service language of this MBS User Service.	
suppFeat	SupportedFeatures	C	0..1	Used to negotiate the supported optional features of the API described in clause 6.1.8. This attribute shall be provided in an HTTP POST/PUT request and response, if feature negotiation needs to take place.	

6.1.6.2.3 Type: ServiceNameDescription

Table 6.1.6.2.3-1: Definition of type ServiceNameDescription

Attribute name	Data type	P	Cardinality	Description	Applicability
servName	string	C	0..1	Represents a distinguishing name for this MBS User Service in the language specified in the "language" attribute. (NOTE)	
servDescrip	string	C	0..1	Contains a description of this MBS User Service in the language specified in the "language" attribute. (NOTE)	
language	string	M	1	Represents the language of the service name and service description for this MBS User Service provided within the "servName" attribute and the "servDescrip" attribute respectively.	
NOTE: At least one of the "servName" attribute and the "servDescrip" attribute shall be included.					

6.1.6.2.4 Type: MBSUserServicePatch

Table 6.1.6.2.4-1: Definition of type MBSUserServicePatch

Attribute name	Data type	P	Cardinality	Description	Applicability
extServiceIds	array(Uri)	O	1..N	Represents the updated set of external service identifier(s) of the MBS User Service.	
servClass	Uri	O	0..1	Represents the updated class of the MBS User Service, expressed as a term identifier from the "OMNA BCAST Service Class Registry" [19].	
servAnnModes	array(ServiceAnnouncementMode)	O	1..N	Represents the updated MBS User Service Announcement Mode(s).	
servNameDescs	array(ServiceNameDescription)	O	1..N	Contains the updated set(s) of per language distinguishing service name and/or service description for the MBS User Service.	
mainServLang	string	O	0..1	Represents the updated main service language of the MBS User Service.	

6.1.6.3 Simple data types and enumerations

6.1.6.3.1 Introduction

This clause defines simple data types and enumerations that can be referenced from data structures defined in the previous clauses.

6.1.6.3.2 Simple data types

The simple data types defined in table 6.1.6.3.2-1 shall be supported.

Table 6.1.6.3.2-1: Simple data types

Type Name	Type Definition	Description	Applicability

6.1.6.3.3 Enumeration: ServiceAnnouncementMode

The enumeration ServiceAnnouncementMode represents MBS User Service Announcement Modes. It shall comply with the provisions of table 6.1.6.3.3-1.

Table 6.1.6.3.3-1: Enumeration ServiceAnnouncementMode

Enumeration value	Description	Applicability
VIA_MBS_5	Indicates that the MBS User Service Announcement compiled by the MBSF is advertised to the MBSF Client at reference point MBS-5.	
VIA_MBS_DISTRIBUTION_SESSION	Indicates that the MBS User Service Announcement compiled by the MBSF is advertised to the MBSF Client via the MBS Distribution Session at reference point MBS-4-MC.	
PASSED_BACK	Indicates that the MBS User Service Announcement compiled by the MBSF is passed back to the MBS Application Provider by the MBSF, and then advertised to the MBSF Client via application-private means at reference point MBS-8.	

6.1.6.4 Data types describing alternative data types or combinations of data types

There are no data types describing alternative data types or combinations of data types defined for this API in this release of the specification.

6.1.6.5 Binary data

6.1.6.5.1 Binary Data Types

Table 6.1.6.5.1-1: Binary Data Types

Name	Clause defined	Content type

6.1.7 Error Handling

6.1.7.1 General

For the Nmbsf_MBSUserService API, HTTP error responses shall be supported as specified in clause 4.8 of 3GPP TS 29.501 [5]. Protocol errors and application errors specified in table 5.2.7.2-1 of 3GPP TS 29.500 [4] shall be supported for an HTTP method if the corresponding HTTP status codes are specified as mandatory for that HTTP method in table 5.2.7.1-1 of 3GPP TS 29.500 [4].

In addition, the requirements in the following clauses are applicable for the Nmbsf_MBSUserService API.

6.1.7.2 Protocol Errors

No specific procedures for the Nmbsf_MBSUserService service are specified.

6.1.7.3 Application Errors

The application errors defined for the Nmbsf_MBSUserService service are listed in Table 6.1.7.3-1.

Table 6.1.7.3-1: Application errors

Application Error	HTTP status code	Description

6.1.8 Feature negotiation

The optional features listed in table 6.1.8-1 are defined for the Nmbsf_MBSUserService API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [4].

Table 6.1.8-1: Supported Features

Feature number	Feature Name	Description

6.1.9 Security

As indicated in 3GPP TS 33.501 [8] and 3GPP TS 29.500 [4], the access to the Nmbsf_MBSUserService API may be authorized by means of the OAuth2 protocol (see IETF RFC 6749 [9]), based on local configuration, using the "Client Credentials" authorization grant, where the NRF (see 3GPP TS 29.510 [10]) plays the role of the authorization server.

If OAuth2 is used, an NF Service Consumer, prior to consuming services offered by the Nmbsf_MBSUserService API, shall obtain a "token" from the authorization server, by invoking the Access Token Request service, as described in 3GPP TS 29.510 [10], clause 5.4.2.2.

NOTE: When multiple NRFs are deployed in a network, the NRF used as authorization server is the same NRF that the NF Service Consumer used for discovering the Nmbsf_MBSUserService service.

The Nmbsf_MBSUserService API defines a single scope "nmbsf-mbs-us" for the entire service, and it does not define any additional scopes at resource or operation level.

6.2 Nmbsf_MBSUserDataIngestSession Service API

6.2.1 Introduction

The Nmbsf_MBSUserDataIngestSession service shall use the Nmbsf_MBSUserDataIngestSession API.

The API URI of the Nmbsf_MBSUserDataIngestSession Service shall be:

{apiRoot}/<apiName>/<apiVersion>

The request URIs used in HTTP requests from the NF service consumer towards the NF service producer shall have the Resource URI structure defined in clause 4.4.1 of 3GPP TS 29.501 [5], i.e.:

{apiRoot}/<apiName>/<apiVersion>/<apiSpecificResourceUriPart>

with the following components:

- The {apiRoot} shall be set as described in 3GPP TS 29.501 [5].
- The <apiName> shall be "nmbsf-mbs-ud-ingest".
- The <apiVersion> shall be "v1".
- The <apiSpecificResourceUriPart> shall be set as described in clause 6.2.3.

6.2.2 Usage of HTTP

6.2.2.1 General

HTTP/2, IETF RFC 7540 [11], shall be used as specified in clause 5 of 3GPP TS 29.500 [4].

HTTP/2 shall be transported as specified in clause 5.3 of 3GPP TS 29.500 [4].

The OpenAPI [6] specification of HTTP messages and content bodies for the Nmbsf_MBSUserDataIngestSession API is contained in Annex A.3.

6.2.2.2 HTTP standard headers

6.2.2.2.1 General

See clause 5.2.2 of 3GPP TS 29.500 [4] for the usage of HTTP standard headers.

6.2.2.2.2 Content type

JSON, IETF RFC 8259 [12], shall be used as content type of the HTTP bodies specified in the present specification as specified in clause 5.4 of 3GPP TS 29.500 [4]. The use of the JSON format shall be signalled by the content type "application/json".

JSON object used in the HTTP PATCH request shall be encoded according to "JSON Merge Patch" and shall be signalled by the content type "application/merge-patch+json", as defined in IETF RFC 7396 [22].

The "Problem Details" JSON object shall be used to indicate additional details of the error in a HTTP response body and shall be signalled by the content type "application/problem+json", as defined in IETF RFC 7807 [13].

6.2.2.3 HTTP custom headers

The mandatory HTTP custom header fields specified in clause 5.2.3.2 of 3GPP TS 29.500 [4] shall be supported, and the optional HTTP custom header fields specified in clause 5.2.3.3 of 3GPP TS 29.500 [4] may be supported.

6.2.3 Resources

6.2.3.1 Overview

This clause describes the structure for the Resource URIs and the resources and methods used for the service.

Figure 6.2.3.1-1 depicts the resource URIs structure for the Nmbsf_MBSUserDataIngestSession API.

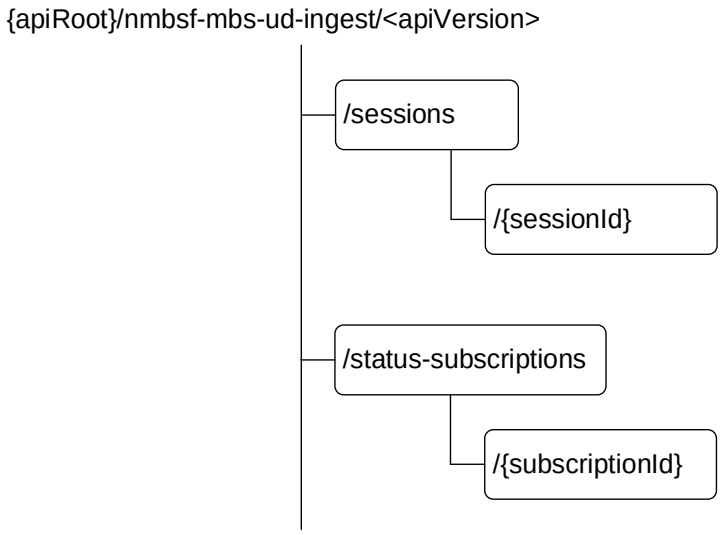

Figure 6.2.3.1-1: Resource URI structure of the Nmbsf_MBSUserDataIngestSession API

Table 6.2.3.1-1 provides an overview of the resources and applicable HTTP methods.

Table 6.2.3.1-1: Resources and methods overview

Resource purpose/name	Resource URI (relative path after API URI)	HTTP method or custom operation	Description (service operation)
MBS User Data Ingest Sessions	/sessions	GET	Retrieve all the active MBS User Data Ingest Sessions managed by the MBSF.
		POST	Request the creation of a new MBS User Data Ingest Session.
Individual MBS User Data Ingest Session	/sessions/{sessionId}	GET	Retrieve an existing MBS User Data Ingest Session managed by the MBSF.
		PUT	Update an existing MBS User Data Ingest Session managed by the MBSF.
		PATCH	Modify an existing MBS User Data Ingest Session managed by the MBSF.
		DELETE	Delete an existing MBS User Data Ingest Session managed by the MBSF.
MBS User Data Ingest Session Status Subscriptions	/status-subscriptions	GET	Retrieve all the active MBS User Data Ingest Session Status Subscriptions managed by the MBSF.
		POST	Request the creation of a new MBS User Data Ingest Session Status Subscription.
Individual MBS User Data Ingest Session Status Subscription	/status-subscriptions/{subscriptionId}	GET	Retrieve an existing MBS User Data Ingest Session Status Subscription managed by the MBSF.
		PUT	Update an existing MBS User Data Ingest Session Status Subscription managed by the MBSF.
		PATCH	Modify an existing MBS User Data Ingest Session Status Subscription managed by the MBSF.
		DELETE	Delete an existing MBS User Data Ingest Session Status Subscription managed by the MBSF.

6.2.3.2 Resource: MBS User Data Ingest Sessions

6.2.3.2.1 Description

This resource represents the collection of MBS User Data Ingest Sessions managed by the MBSF.

6.2.3.2.2 Resource Definition

Resource URI: **{apiRoot}/nmbsf-mbs-ud-ingest/<apiVersion>/sessions**

This resource shall support the resource URI variables defined in table 6.2.3.2.2-1.

Table 6.2.3.2.2-1: Resource URI variables for this resource

Name	Data type	Definition
apiRoot	string	See clause 6.2.1.

6.2.3.2.3 Resource Standard Methods

6.2.3.2.3.1 GET

The GET method allows an NF service consumer (e.g. AF, NEF) to retrieve all the active MBS User Data Ingest Sessions managed by the MBSF.

This method shall support the URI query parameters specified in table 6.2.3.2.3.1-1.

Table 6.2.3.2.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.2.3.1-2 and the response data structures and response codes specified in table 6.2.3.2.3.1-3.

Table 6.2.3.2.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.3.2.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
array(MBSUserDataIngSession)	M	0..N	200 OK	Successful case. All the active MBS User Data Ingest Sessions managed by the MBSF are returned.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The manadatory HTTP error status codes for the HTTP GET method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.2.3.1-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.2.3.2.3.1-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.2.3.2.3.2 POST

The POST method allows an NF service consumer (e.g. AF, NEF) to request the creation of a new MBS User Data Ingest Session including one or several subordinate MBS Distribution Session(s).

This method shall support the URI query parameters specified in table 6.2.3.2.3.2-1.

Table 6.2.3.2.3.2-1: URI query parameters supported by the POST method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.2.3.2-2 and the response data structures and response codes specified in table 6.2.3.2.3.2-3.

Table 6.2.3.2.3.2-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
MBSUserDataIngSession	M	1	Contains the parameters to request the creation of a new MBS User Data Ingest Session.

Table 6.2.3.2.3.2-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserDataIngSession	M	1	201 Created	Successful case. The MBS User Data Ingest Session is successfully created and a representation of the created "Individual MBS User Data Ingest Session" resource is returned. An HTTP "Location" header that contains the resource URI of the created "Individual MBS User Data Ingest Session" resource is also included.
NOTE: The manadatory HTTP error status codes for the HTTP POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.2.3.2-4: Headers supported by the 201 response code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	Contains the URI of the newly created resource, according to the structure: {apiRoot}/nmbsf-mbs-ud-ingest/<apiVersion>/sessions/{sessionId}

6.2.3.2.4 Resource Custom Operations

There are no resource custom operations defined for this resource in this release of the specification.

6.2.3.3 Resource: Individual MBS User Data Ingest Session

6.2.3.3.1 Description

This resource represents an "Individual MBS User Data Ingest Session" resource managed by the MBSF.

6.2.3.3.2 Resource Definition

Resource URI: **{apiRoot}/nmbsf-mbs-ud-ingest/<apiVersion>/sessions/{sessionId}**

This resource shall support the resource URI variables defined in table 6.2.3.3.2-1.

Table 6.2.3.3.2-1: Resource URI variables for this resource

Name	Data type	Definition
apiRoot	string	See clause 6.2.1.
sessionId	string	Represents the unique identifier of the "Individual MBS User Data Ingest Session" resource, assigned by the MBSF.

6.2.3.3.3 Resource Standard Methods

6.2.3.3.3.1 GET

The GET method allows an NF service consumer (e.g. AF, NEF) to retrieve an existing "Individual MBS User Data Ingest Session" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.2.3.3.3.1-1.

Table 6.2.3.3.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.3.3.1-2 and the response data structures and response codes specified in table 6.2.3.3.3.1-3.

Table 6.2.3.3.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.3.3.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserDataIngSession	M	1	200 OK	Successful case. The requested "Individual MBS User Data Ingest Session" resource is successfully returned.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The manadatory HTTP error status codes for the HTTP GET method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.3.3.1-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.2.3.3.3.1-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.2.3.3.3.2 PUT

The PUT method allows an NF service consumer (e.g. AF, NEF) to update an existing "Individual MBS User Data Ingest Session" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.2.3.3.3.2-1.

Table 6.2.3.3.3.2-1: URI query parameters supported by the PUT method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.3.3.2-2 and the response data structures and response codes specified in table 6.2.3.3.3.2-3.

Table 6.2.3.3.3.2-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
MBSUserDataIngSession	M	1	Contains the updated representation of the existing "Individual MBS User Data Ingest Session" resource that is to be updated.

Table 6.2.3.3.3.2-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserDataIngSession	M	1	200 OK	Successful case. The concerned "Individual MBS User Data Ingest Session" resource is successfully updated and a representation of the updated resource is returned to the NF service consumer in the response body.
n/a			204 No Content	Successful case. The concerned "Individual MBS User Data Ingest Session" resource is successfully updated and no content is returned in the response body.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The mandatory HTTP error status codes for the HTTP PUT method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.3.3.2-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.2.3.3.3.2-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.2.3.3.3.3 PATCH

The PATCH method allows an NF service consumer (e.g. AF, NEF) to modify an existing "Individual MBS User Data Ingest Session" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.2.3.3.3.3-1.

Table 6.2.3.3.3.3-1: URI query parameters supported by the PATCH method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.3.3.3-2 and the response data structures and response codes specified in table 6.2.3.3.3.3-3.

Table 6.2.3.3.3.3-2: Data structures supported by the PATCH Request Body on this resource

Data type	P	Cardinality	Description
MBSUserDataIngSessionPatch	M	1	Contains the parameters to request the modification of an existing "Individual MBS User Data Ingest Session" resource.

Table 6.2.3.3.3.3-3: Data structures supported by the PATCH Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserDataIngSession	M	1	200 OK	Successful case. The concerned "Individual MBS User Data Ingest Session" resource is successfully modified and a representation of the updated resource is returned to the NF service consumer in the response body.
n/a			204 No Content	Successful case. The concerned "Individual MBS User Data Ingest Session" resource is successfully modified and no content is returned in the response body.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The mandatory HTTP error status codes for the HTTP PATCH method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.3.3.3-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.2.3.3.3.3-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.2.3.3.3.4 DELETE

The DELETE method allows an NF service consumer (e.g. AF, NEF) to delete an existing "Individual MBS User Data Ingest Session" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.2.3.3.3.4-1.

Table 6.2.3.3.3.4-1: URI query parameters supported by the DELETE method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.3.3.4-2 and the response data structures and response codes specified in table 6.2.3.3.3.4-3.

Table 6.2.3.3.3.4-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.3.3.3.4-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Successful case. The concerned "Individual MBS User Data Ingest Session" resource is successfully deleted.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The mandatory HTTP error status codes for the HTTP DELETE method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.3.3.4-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.2.3.3.3.4-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.2.3.3.4 Resource Custom Operations

There are no resource custom operations defined for this resource in this release of the specification.

6.2.3.4 Resource: MBS User Data Ingest Session Status Subscriptions

6.2.3.4.1 Description

This resource represents the collection of MBS User Data Ingest Session Status Subscriptions managed by the MBSF.

6.2.3.4.2 Resource Definition

Resource URI: **{apiRoot}/nmbsf-mbs-ud-ingest/<apiVersion>/status-subscriptions**

This resource shall support the resource URI variables defined in table 6.2.3.4.2-1.

Table 6.2.3.4.2-1: Resource URI variables for this resource

Name	Data type	Definition
apiRoot	string	See clause 6.2.1.

6.2.3.4.3 Resource Standard Methods

6.2.3.4.3.1 GET

The GET method allows an NF service consumer (e.g. AF, NEF) to retrieve all the active MBS User Data Ingest Session Status Subscriptions managed by the MBSF.

This method shall support the URI query parameters specified in table 6.2.3.4.3.1-1.

Table 6.2.3.4.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.4.3.1-2 and the response data structures and response codes specified in table 6.2.3.4.3.1-3.

Table 6.2.3.4.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.3.4.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
array(MBSUserDataIngStatSubsc)	M	0..N	200 OK	Successful case. All the active MBS User Data Ingest Session Status Subscriptions managed by the MBSF are returned.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The manadatory HTTP error status codes for the HTTP GET method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.4.3.1-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.2.3.4.3.1-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.2.3.4.3.2 POST

The POST method allows an NF service consumer (e.g. AF, NEF) to request the creation of a new MBS User Data Ingest Session Status Subscription.

This method shall support the URI query parameters specified in table 6.2.3.4.3.2-1.

Table 6.2.3.4.3.2-1: URI query parameters supported by the POST method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.4.3.2-2 and the response data structures and response codes specified in table 6.2.3.4.3.2-3.

Table 6.2.3.4.3.2-2: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
MBSUserDataIngStatSubsc	M	1	Contains the parameters to request the creation of a new MBS User Data Ingest Session Status Subscription.

Table 6.2.3.4.3.2-3: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserDataIngStatSubsc	M	1	201 Created	Successful case. The MBS User Data Ingest Session Status Subscription is successfully created and a representation of the created "Individual MBS User Data Ingest Session Status Subscription" resource is returned. An HTTP "Location" header that contains the resource URI of the created "Individual MBS User Data Ingest Session Status Subscription" resource shall also be included.
NOTE: The manadatory HTTP error status codes for the HTTP POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.4.3.2-4: Headers supported by the 201 response code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	Contains the URI of the newly created resource, according to the structure: {apiRoot}/nmbsf-mbs-ud-ingest/<apiVersion>/status-subscriptions/{subscriptionId}

6.2.3.4.4 Resource Custom Operations

There are no resource custom operations defined for this resource in this release of the specification.

6.2.3.5 Resource: Individual MBS User Data Ingest Session Status Subscription

6.2.3.5.1 Description

This resource represents an "Individual MBS User Data Ingest Session Status Subscription" resource managed by the MBSF.

6.2.3.5.2 Resource Definition

Resource URI: **{apiRoot}/nmbsf-mbs-ud-ingest/<apiVersion>/status-subscriptions/{subscriptionId}**

This resource shall support the resource URI variables defined in table 6.2.3.5.2-1.

Table 6.2.3.5.2-1: Resource URI variables for this resource

Name	Data type	Definition
apiRoot	string	See clause 6.2.1.
subscriptionId	string	Represents the unique identifier of the "Individual MBS User Data Ingest Session Status Subscription" resource, assigned by the MBSF.

6.2.3.5.3 Resource Standard Methods

6.2.3.5.3.1 GET

The GET method allows an NF service consumer (e.g. AF, NEF) to retrieve an existing "Individual MBS User Data Ingest Session Status Subscription" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.2.3.5.3.1-1.

Table 6.2.3.5.3.1-1: URI query parameters supported by the GET method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.5.3.1-2 and the response data structures and response codes specified in table 6.2.3.5.3.1-3.

Table 6.2.3.5.3.1-2: Data structures supported by the GET Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.3.5.3.1-3: Data structures supported by the GET Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserDataIngStatSubsc	M	1	200 OK	Successful case. The requested "Individual MBS User Data Ingest Session Status Subscription" resource is returned.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The manadatory HTTP error status codes for the HTTP GET method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.5.3.1-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.2.3.5.3.1-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.2.3.5.3.2 PUT

The PATCH method allows an NF service consumer (e.g. AF, NEF) to update an existing "Individual MBS User Data Ingest Session Status Subscription" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.2.3.5.3.2-1.

Table 6.2.3.5.3.2-1: URI query parameters supported by the PUT method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.5.3.2-2 and the response data structures and response codes specified in table 6.2.3.5.3.2-3.

Table 6.2.3.5.3.2-2: Data structures supported by the PUT Request Body on this resource

Data type	P	Cardinality	Description
MBSUserDataIngStatSubsc	M	1	Contains the updated representation of the existing "Individual MBS User Data Ingest Session Status Subscription" resource that is to be updated.

Table 6.2.3.5.3.2-3: Data structures supported by the PUT Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserDataIngStatSubsc	M	1	200 OK	Successful case. The concerned "Individual MBS User Data Ingest Session Status Subscription" resource is successfully updated and a representation of the updated resource is returned to the NF service consumer in the response body.
n/a			204 No Content	Successful case. The concerned "Individual MBS User Data Ingest Session Status Subscription" resource is successfully updated and no content is returned in the response body.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The mandatory HTTP error status codes for the HTTP PUT method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.5.3.2-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.2.3.5.3.2-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.2.3.5.3.3 PATCH

The PATCH method allows an NF service consumer (e.g. AF, NEF) to modify an existing "Individual MBS User Data Ingest Session Status Subscription" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.2.3.5.3.3-1.

Table 6.2.3.3.3.2-1: URI query parameters supported by the PATCH method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.5.3.3-2 and the response data structures and response codes specified in table 6.2.3.5.3.3-3.

Table 6.2.3.5.3.3-2: Data structures supported by the PATCH Request Body on this resource

Data type	P	Cardinality	Description
MBSUserDataIngStatSubscPatch	M	1	Contains the parameters to request the modification of an existing "Individual MBS User Data Ingest Session Status Subscription" resource.

Table 6.2.3.5.3.3-3: Data structures supported by the PATCH Response Body on this resource

Data type	P	Cardinality	Response codes	Description
MBSUserDataIngStatSubsc	M	1	200 OK	Successful case. The concerned "Individual MBS User Data Ingest Session Status Subscription" resource is successfully modified and a representation of the updated resource is returned to the NF service consumer in the response body.
n/a			204 No Content	Successful case. The concerned "Individual MBS User Data Ingest Session Status Subscription" resource is successfully modified and no content is returned in the response body.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The mandatory HTTP error status codes for the HTTP PATCH method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.5.3.3-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.2.3.5.3.3-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.2.3.5.3.4 DELETE

The DELETE method allows an NF service consumer (e.g. AF, NEF) to delete an existing "Individual MBS User Data Ingest Session Status Subscription" resource managed by the MBSF.

This method shall support the URI query parameters specified in table 6.2.3.5.3.4-1.

Table 6.2.3.5.3.4-1: URI query parameters supported by the DELETE method on this resource

Name	Data type	P	Cardinality	Description	Applicability
n/a					

This method shall support the request data structures specified in table 6.2.3.5.3.4-2 and the response data structures and response codes specified in table 6.2.3.5.3.4-3.

Table 6.2.3.5.3.4-2: Data structures supported by the DELETE Request Body on this resource

Data type	P	Cardinality	Description
n/a			

Table 6.2.3.5.3.4-3: Data structures supported by the DELETE Response Body on this resource

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	Successful case. The concerned "Individual MBS User Data Ingest Session Status Subscription" resource is successfully deleted.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI of the resource located in an alternative MBSF (service) instance.
NOTE: The mandatory HTTP error status codes for the HTTP DELETE method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.3.5.3.4-4: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

Table 6.2.3.5.3.2-5: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI of the resource located in an alternative MBSF (service) instance.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the request is redirected.

6.2.3.5.4 Resource Custom Operations

There are no resource custom operations defined for this resource in this release of the specification.

6.2.4 Custom Operations without associated resources

There are no custom operations without associated resources defined for this API in this release of the specification.

6.2.5 Notifications

6.2.5.1 General

Notifications shall comply to clause 6.2 of 3GPP TS 29.500 [4] and clause 4.6.2.3 of 3GPP TS 29.501 [5].

Table 6.2.5.1-1: Notifications overview

Notification	Callback URI	HTTP method or custom operation	Description (service operation)
MBS User Data Ingest Session Status Notification	{notifUri}	POST	This operation enables the MBSF to notify the NF service consumer (e.g. AF, NEF) on status changes of an MBS User Data Ingest Session.

6.2.5.2 MBS User Data Ingest Session Status Notification

6.2.5.2.1 Description

The MBS User Data Ingest Session Status Notification is used by the MBSF to notify the NF service consumer (e.g. AF, NEF) about event(s) related to an MBS User Data Ingest Session.

6.2.5.2.2 Target URI

The Callback URI **"{notifUri}"** shall be used with the callback URI variables defined in table 6.2.5.2.2-1.

Table 6.2.5.2.2-1: Callback URI variables

Name	Definition
notifUri	String formatted as URI with the Callback URI towards which the MBS User Data Ingest Session Status Notifications should be sent.

6.2.5.2.3 Standard Methods

6.2.5.2.3.1 POST

This method shall support the request data structures specified in table 6.2.5.2.3.1-1 and the response data structures and response codes specified in table 6.2.5.2.3.1-2.

Table 6.2.5.2.3.1-1: Data structures supported by the POST Request Body

Data type	P	Cardinality	Description
MBSUserDataIngStatNotif	M	1	Represents an MBS User Data Ingest Session Status Notification.

Table 6.2.5.2.3.1-2: Data structures supported by the POST Response Body

Data type	P	Cardinality	Response codes	Description
n/a			204 No Content	The MBS User Data Ingest Session Status Notification is successfully received.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF service consumer (service) instance where the notification should be sent.
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing an alternative URI representing the end point of an alternative NF service consumer (service) instance where the notification should be sent.
NOTE: The mandatory HTTP error status codes for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.2.5.2.3.1-3: Headers supported by the 307 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the notification request is redirected.

Table 6.2.5.2.3.1-4: Headers supported by the 308 Response Code on this resource

Name	Data type	P	Cardinality	Description
Location	string	M	1	An alternative URI representing the end point of an alternative NF consumer (service) instance towards which the notification should be redirected.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance towards which the notification request is redirected.

6.2.6 Data Model

6.2.6.1 General

This clause specifies the application data model supported by the Nmbsf_MBSUserDataIngestSession API.

Table 6.2.6.1-1 specifies the data types defined for the Nmbsf_MBSUserDataIngestSession service based interface protocol.

Table 6.2.6.1-1: Nmbsf_MBSUserDataIngestSession specific Data Types

Data type	Clause defined	Description	Applicability
AddFecParams	6.2.6.2.15	Represents additional scheme-specific parameters for AL-FEC configuration.	
DistributionMethod	6.2.6.3.3	Represents the MBS Distribution method.	
Event	6.2.6.3.4	Represents MBS User Data Ingest Session Status events.	
EventNotification	6.2.6.2.10	Represents an MBS User Data Ingest Session Status event notification related information.	
FECConfig	6.2.6.2.14	Represents FEC configuration information.	
MBSDistSessionAnmt	6.2.6.2.12	Represents the set of MBS Distribution Session Announcement information associated with an MBS User Service Announcement.	
MBSDistributionSessionInfo	6.2.6.2.3	Represents an MBS Distribution Session.	
MBSUserDataIngSession	6.2.6.2.2	Represents an MBS User Data Ingest Session.	
MBSUserDataIngSessionPatch	6.2.6.2.4	Represents the requested modifications to an MBS User Data Ingest Session.	
MBSUserDataIngStatNotif	6.2.6.2.9	Represents an MBS User Data Ingest Session Status Notification.	
MBSUserDataIngStatSubsc	6.2.6.2.7	Represents an MBS User Data Ingest Session Status Subscription.	
MBSUserDataIngStatSubscPatch	6.2.6.2.16	Represents the requested modifications to an MBS User Data Ingest Session Status Subscription.	
MBSUserServAnmt	6.2.6.2.11	Represents the MBS User Service Announcement associated with the MBS User Data Ingest Session.	
ObjectDistMethAnmtInfo	6.2.6.2.13	Represents MBS Distribution Session Announcement information for the Object Distribution Method.	
ObjectDistrMethInfo	6.2.6.2.5	Represents additional MBS Distribution Session parameters for the case where the Object Distribution Method is used.	
PacketDistrMethInfo	6.2.6.2.6	Represents additional MBS Distribution Session parameters for the case where the Packet Distribution Method is used.	
SubscribedEvent	6.2.6.2.8	Represents a subscribed MBS User Data Ingest Session Status event and the related information.	

Table 6.2.6.1-2 specifies data types re-used by the Nmbsf_MBSUserDataIngestSession service based interface protocol from other specifications, including a reference to their respective specifications, and when needed, a short description of their use within the Nmbsf_MBSUserDataIngestSession service based interface.

Table 6.2.6.1-2: Nmbsf_MBSUserDataIngestSession re-used Data Types

Data type	Reference	Comments	Applicability
BitRate	3GPP TS 29.571 [17]	Represents a Bit Rate.	
DateTime	3GPP TS 29.122 [18]	Represents an absolute date time with the format "date-time", as defined in OpenAPI Specification [6].	
DistSessionState	3GPP TS 29.581 [19]	Represents the state of an MBS Distribution Session.	
ExternalMbsServiceArea	3GPP TS 29.571 [17]	Represents an external MBS Service Area.	
MbsFsaId	3GPP TS 29.571 [17]	Represents an MBS Frequency Selection Area ID, for a broadcast MBS session.	
MbsServiceArea	3GPP TS 29.571 [17]	Represents an MBS service area.	
MbsServiceInfo	3GPP TS 29.571 [17]	Represents MBS Service Information.	
MbsSessionId	3GPP TS 29.571 [17]	Represents an MBS Session Identifier.	
MbStfIngestAddr	3GPP TS 29.581 [19]	Represents MBSTF ingest endpoint addresses.	
ObjAcquisitionMethod	3GPP TS 29.581 [19]	Represents the Object Acquisition Method.	
ObjDistributionOperatingMode	3GPP TS 29.581 [19]	Represents the operation mode for an Object distribution method.	
PacketDelBudget	3GPP TS 29.571 [17]	Represents a Packet Delay Budget expressed in milliseconds.	
PktDistributionOperatingMode	3GPP TS 29.581 [19]	Represents the operation mode for a Packet distribution method.	
PktIngestMethod	3GPP TS 29.581 [19]	Represents packets ingest method.	
ServiceNameDescription	Clause 6.1.6.2.3	Represents a set of per language service Name and/or service description.	
SupportedFeatures	3GPP TS 29.571 [17]	Used to negotiate the applicability of optional features.	
TimeWindow	3GPP TS 29.122 [18]	Represents a time window.	
Uri	3GPP TS 29.571 [17]	Represents a Uniform Resource Identifier.	

6.2.6.2 Structured data types

6.2.6.2.1 Introduction

This clause defines the structures to be used in resource representations.

6.2.6.2.2 Type: MBSUserDataIngSession

Table 6.2.6.2.2-1: Definition of type MBSUserDataIngSession

Attribute name	Data type	P	Cardinality	Description	Applicability
mbsUserServId	string	M	1	Represents the Identifier of the parent MBS User Service instance.	
mbsDisSessInfos	map(MBSDistributionSessionInfo)	M	1..N	Represents one or more MBS Distribution Session(s) composing the MBS User Data Ingest Session. The key of the map shall be set to the value of the "mbsDistSessionId" attribute of the MBSDistributionSessionInfo data structure encoding the corresponding map entry.	
actPeriods	array(TimeWindow)	O	1..N	Represents periods of time during which the MBS User Data Ingest Session is active in the MBS System. If omitted, the MBS User Data Ingest Session shall stay active until it is explicitly terminated by the AF or later provided by the AF.	
mbsUserServAnmt	MBSUserServAnmt	O	0..1	Represents the MBS User Service Announcement currently associated with the MBS User Data Ingest Session. This attribute may be present only in an HTTP PUT/PATCH response to an MBS User Data Ingest Session update/modification request and only if all the constituent MBS Distribution Session(s) are in the "ESTABLISHED" or "ACTIVE" state and the "PASSED_BACK" MBS User Service Announcement mode is provisioned within the MBS User Service Announcement mode(s) supported by the parent MBS User Service instance identified by the "mbsUserServId" attribute. This attribute is deprecated. The "mbsUserServiceAnmt" attribute should be used instead.	
mbsUserServiceAnmt	UserServiceDescription	O	0..1	Represents the MBS User Service Announcement currently associated with the MBS User Data Ingest Session. This attribute may be present only in an HTTP PUT/PATCH response to an MBS User Data Ingest Session update/modification request and only if all the constituent MBS Distribution Session(s) are in the "ESTABLISHED" or "ACTIVE" state and the "PASSED_BACK" MBS User Service Announcement mode is provisioned within the MBS User Service Announcement mode(s) supported by the parent MBS User Service instance identified by the "mbsUserServId" attribute.	

mbsUserServiceAnmtUrl	Uri	O	0..1	Represents the URL via which the MBS User Service Announcement should be retrieved (by the UE/MBS client). This attribute may be present only in an HTTP PUT/PATCH response to an MBS User Data Ingest Session update/modification request and only if all the constituent MBS Distribution Session(s) are in the "ESTABLISHED" or "ACTIVE" state and the "VIA_MBS_5" MBS User Service Announcement mode is provisioned within the MBS User Service Announcement mode(s) supported by the parent MBS User Service instance identified by the "mbsUserServId" attribute.	
suppFeat	SupportedFeatures	C	0..1	Used to negotiate the supported optional features (defined in clause 6.2.8) of the API . This attribute shall be present in an HTTP POST/PUT request and response, if feature negotiation needs to take place.	

6.2.6.2.3 Type: MBSDistributionSessionInfo

Table 6.2.6.2.3-1: Definition of type MBSDistributionSessionInfo

Attribute name	Data type	P	Cardinality	Description	Applicability
mbsDistSessionId	string	C	0..1	Represents the identifier of the MBS Distribution Session. This attribute shall only be present in the response to an MBS User Data Ingest Session creation request or a subsequent MBS User Data Ingest Session update/modification request.	
mbsDistSessState	DistSessionState	C	0..1	Represents the state of the MBS Distribution Session. This attribute shall only be present in the HTTP POST/PUT/PATCH response to the corresponding MBS User Data Ingest session creation or update/modification request.	
mbsSessionId	MbsSessionId	O	0..1	Represents the identifier of the MBS Session to which the MBS Distribution Session is related. It is set to either the Temporary Mobile Group Identity (TMGI) allocated for the MBS Session corresponding to this MBS Distribution Session, the Source-Specific Multicast (SSM) IP address of the MBS Session corresponding to this MBS Distribution Session or both. (NOTE 1, NOTE 2)	
mbsServInfo	MbsServiceInfo	O	0..1	Contains the MBS Service Information for the MBS session.	
maxContBitRate	BitRate	M	1	Represents the maximum bit rate for content distribution in this MBS Distribution Session.	
maxContDelay	PacketDelBudget	O	0..1	Represents the maximum end-to-end distribution delay that is tolerated for content distribution in this MBS Distribution Session.	
distrMethod	DistributionMethod	M	1	Represents the distribution method for this MBS Distribution Session.	
fecConfig	FECConfig	O	0..1	Represents the AL-FEC (Application Level – Forward Error Correction) configuration information to be used by the MBSTF to protect this MBS Distribution Session.	

objDistrInfo	ObjectDistrMethInfo	C	0..1	Represents the MBS Distribution Session parameters for the case where the Object Distribution Method is used. This attribute shall be present only when the "distrMethod" attribute value is set to "OBJECT". (NOTE 3)	
pckDistrInfo	PacketDistrMethInfo	C	0..1	Represents the MBS Distribution Session parameters for the case where the Packet Distribution Method is used. This attribute shall be present only when the "distrMethod" attribute is set to "PACKET". (NOTE 3)	
trafficMarkingInfo	string	O	0..1	Contains traffic marking information (e.g. a Differentiated Services Code Point) to be applied by the MBSTF to outgoing traffic. This attribute shall be encoded as a two octets string in hexadecimal representation. The first octet shall contain the DSCP value in the IPv4 Type-of-Service or the IPv6 Traffic-Class field, and the second octet shall contain the ToS/Traffic Class mask field, which shall be set to "0xFC".	
tgtServAreas	MbsServiceArea	O	0..1	Represents the set of target service area(s) constituting the MBS Service Area of the MBS Distribution Session. This attribute may be present only over the Nmb10 interface and only provided by a trusted/internal AF (i.e. MBS Application Provider). (NOTE 4)	
extTgtServAreas	ExternalMbsServiceArea	O	0..1	Represents the set of target service area(s) constituting the external MBS Service Area (i.e. list of geographical area(s) or civic address(es)) of the MBS Distribution Session. This attribute may be present only over the N33, Nmb5 or Nmb10 interfaces and only provided by the NEF (over Nmb5) or an untrusted/external AF (MBS Application Provider). (NOTE 4)	

mbsFSAId	MbsFsaId	O	0..1	Represents MBS Frequency Selection Assistance information corresponding to this MBS Distribution Session. It is used to guide frequency selection at the UE for a broadcast MBS Session. This attribute may be included only if the parent MBS User Service is of broadcast service type.	
locationDependent	boolean	O	0..1	Represents an indication that this MBS Distribution Session belongs to a location-dependent MBS. This attribute shall be: - set to "true" to indicate that the MBS Distribution Session belongs to a location-dependent MBS; or - set to "false" to indicate that the MBS Distribution Session does not belong to a location-dependent MBS. The default value is "false", if omitted.	
multiplexedServFlag	boolean	O	0..1	Represents an indication that this MBS Distribution Session belongs to a multiplex, i.e. forms part of a set of MBS Distribution Sessions under the same parent MBS User Data Ingest Session with identical or empty set(s) of target service areas and multiplexed onto the same MBS Session. This attribute shall be: - set to "true" to indicate that the MBS Distribution Session belongs to a multiplex; or - set to "false" to indicate that the MBS Distribution Session does not belong to a multiplex. The default value is "false", if omitted.	

restrictedFlag	boolean	O	0..1	Represents an indication that this MBS Distribution Session is not open to any UE, i.e. restricted to a set of UEs according to their MBS related subscription information. This attribute may be included only if the parent MBS User Service is of multicast service type. This attribute shall be: - set to "true" to indicate that this MBS Distribution Session is restricted to a set of UE(s); or - set to "false" to indicate that this MBS Distribution Session is open to any UE. The default value is "false", if omitted.	

NOTE 1: If this attribute is absent, TMGI allocation shall be performed by the MBSF and this attribute may be present in the HTTP POST response to the corresponding MBS User Data Ingest session creation request and contain the allocated TMGI value. It shall also be present, if available, in the HTTP PUT/PATCH response to the corresponding MBS User Data Ingest session update/modification request and contain the allocated TMGI value.

NOTE 2: If this attribute is present and contains only a source specific multicast address (SSM) and the "locationDependent" attribute is present and set to "true", then TMGI allocation shall be performed by the MBSF and this attribute may be present in the HTTP POST response to the corresponding MBS User Data Ingest session creation request and include the allocated TMGI value. It shall also be present, if available, in the HTTP PUT/PATCH response to the corresponding MBS User Data Ingest session update/modification request and contain the allocated TMGI value.

NOTE 3: The "objDistrInfo" attribute and the "pckDistrInfo" attribute are mutually exclusive. Either one of them shall be present.

NOTE 4: The "tgtServAreas" attribute and the "extTgtServAreas" attribute are mutually exclusive. Either one of them may be present.

6.2.6.2.4 Type: MBSUserDataIngSessionPatch

Table 6.2.6.2.4-1: Definition of type MBSUserDataIngSessionPatch

Attribute name	Data type	P	Cardinality	Description	Applicability
actPeriods	array(TimeWindow)	O	1..N	Represents the updated period(s) of time during which the MBS User Data Ingest Session is active in the MBS System.	
mbsDisSessInfos	map(MBSDistributionSessionInfo)	O	1..N	Contains the requested modifications/additions/removals to the set of MBS Distribution Session(s) composing the MBS User Data Ingest Session.	

6.2.6.2.5 Type: ObjectDistrMethInfo

Table 6.2.6.2.5-1: Definition of type ObjectDistrMethInfo

Attribute name	Data type	P	Cardinality	Description	Applicability
operatingMode	ObjDistribution OperatingMode	M	1	Represents the desired operating mode for the Object distribution method.	
objAcqMethod	ObjAcquisitionMethod	M	1	Represents the object(s) acquisition method.	
objAcqIds	array(Uri)	M	1..N	Represents the URL (expressed as a path relative to the object ingest base URL provided in the "objIngUri" attribute) pointing to the root object (single object or manifest) to be pulled by or pushed to the MBSTF and then ingested and distributed during this MBS Distribution Session. (NOTE 1)	
objIngUri	Uri	O	0..1	Represents the object ingest base URI. It contains a URL prefix that is replaced by the object distribution base URL by the MBSTF to derive the object distribution URI prior to the distribution of the ingested objects. When the "objDistrUri" attribute is present, this attribute shall also be present. (NOTE 2, NOTE 3)	
objDistrUri	Uri	O	0..1	Represents the object distribution base URL. It contains a URL prefix with which the MBSTF replaces the object ingest base URL to derive the object distribution URL prior to the distribution of the ingested objects. (NOTE 3)	
objRepairUri	Uri	O	0..1	Represents the object repair base URI. It contains a URL prefix with which the MBSTF Client replaces the object distribution base URI when repairing objects that were not received completely intact from this MBS Distribution Session. The URL prefix value shall point to the MBS AS. This attribute may only be present in responses to MBS User Data Ingest Session creation/update/modification requests and only when object repair is provisioned for this MBS Distribution Session.	

NOTE 1: In this release of the specification, the "objAcqIds" attribute shall not contain more than one array element.
NOTE 2: When the "objAcqMethod" attribute is set to "PULL", this attribute may be provided by the AF during the creation and/or update/modification of the corresponding MBS User Data Ingest Session. When the "objAcqMethod" attribute is set to "PUSH", this attribute may be provided by the MBSF in the response to the creation and/or update/modification request of the corresponding MBS User Data Ingest Session.
NOTE 3: When the "objDistrUri" attribute is omitted, nothing is replaced/removed from the object ingest URL when deriving the object distribution URL.

6.2.6.2.6 Type: PacketDistrMethInfo

Table 6.2.6.2.6-1: Definition of type PacketDistrMethInfo

Attribute name	Data type	P	Cardinality	Description	Applicability
operatingMode	PktDistributionOperatingMode	M	1	Contains the desired operating mode for the Packet distribution method.	
pckIngMethod	PktIngestMethod	M	1	Represents the packets ingest method, i.e. unicast ingest or multicast ingest. When the "operatingMode" attribute is set to "PACKET_FORWARD_ONLY", only the value "UNICAST" is applicable for this attribute.	
ingEndpointAddrs	MbStfIngestAddr	M	1	The endpoint addresses used by the AF (e.g. MBS Application Provider) and the MBSTF to establish a connection at reference point Nmb8 prior to the commencement of the MBS User Data Ingest Session.	

6.2.6.2.7 Type MBSUserDataIngStatSubsc

Table 6.2.6.2.7-1: Definition of type MBSUserDataIngStatSubsc

Attribute name	Data type	P	Cardinality	Description	Applicability
mbsIngSessionId	string	M	1	Represents the identifier of the MBS User Data Ingest Session to which the subscription is related.	
eventSubscs	array(SubscribedEvent)	M	1..N	Represents the list of subscribed MBS User Data Ingest Session Status event(s).	
notifUri	Uri	M	1	Represents the notification URI to be used for MBS User Data Ingest Session Status event(s) reporting.	

6.2.6.2.8 Type SubscribedEvent

Table 6.2.6.2.8-1: Definition of type SubscribedEvent

Attribute name	Data type	P	Cardinality	Description	Applicability
statusEvent	Event	M	1	Represents the subscribed MBS User Data Ingest Session Status event.	
mbsDistSessionId	string	C	0..1	Represents the identifier for the MBS Distribution Session to which the subscribed MBS User Data Ingest Session Status event is related. This attribute shall be provided if the subscribed event is related to a particular MBS Distribution Session within the concerned Individual MBS User Data Ingest Session.	

6.2.6.2.9 Type MBSUserDataIngStatNotif

Table 6.2.6.2.9-1: Definition of type MBSUserDataIngStatNotif

Attribute name	Data type	P	Cardinality	Description	Applicability
mbsIngSessionId	string	M	1	Represents the identifier for the MBS User Data Ingest Session to which the notification is related .	
eventNotifs	array(EventNotification)	M	1..N	Represents the set of reported MBS User Data Ingest Session Status event(s) and the related information.	

6.2.6.2.10 Type EventNotification

Table 6.2.6.2.10-1: Definition of type EventNotification

Attribute name	Data type	P	Cardinality	Description	Applicability
statusEvent	Event	M	1.	Represents the reported MBS User Data Ingest Session Status event.	
mbsDisSessionId	string	C	0..1	Represents the identifier for the MBS Distribution Session to which the reported event is related. This attribute shall be provided if the reported event relates to a particular MBS Distribution Session within the concerned MBS User Data Ingest Session instance.	
mbsSessionId	MbsSessionId	C	0..1	Represents the identifier of the MBS Session to which the MBS Distribution Session is related. This attribute shall be provided, if available and the reported event relates to a particular MBS Distribution Session within the concerned MBS User Data Ingest Session instance.	
statusAddInfo	string	O	0..1	Represents additional information on the reported MBS User Data Ingest Session Status event within the "statusEvent" attribute.	
timeStamp	DateTime	M	1	Represents the time at which the MBS User Data Ingest Session Status event is observed.	

6.2.6.2.11 Type MBSUserServAnmt

Table 6.2.6.2.11-1: Definition of type MBSUserServAnmt

Attribute name	Data type	P	Cardinality	Description	Applicability
extServiceId	array(string)	M	1..N	Represents the external service identifier(s) of this MBS User Service.	
servClass	string	M	1	Represents the class of the MBS User Service, expressed as a term identifier from the OMA BCAST Service Class Registry [19].	
startTime	DateTime	O	0..1	Represents the start time from which this MBS User Service Announcement is valid. If not present, the announcement is already valid.	
endTime	DateTime	O	0..1	Represents the end time after which this MBS User Service Announcement is no longer valid. If not present, the announcement is valid indefinitely.	
servNameDescs	array(ServiceNameDescription)	M	1..N	Contains one or several set(s) of per language distinguishing service name and/or service description for this MBS User Service.	
mainServLang	string	O	0..1	Represents the main service language of this MBS User Service.	
mbsDistSessAnmt	map(MBSDistSessionAnmt)	C	1..N	Represents the set of MBS Distribution Session Announcements currently associated with this MBS User Service Announcement. The key of the map shall be set to any string value.	

6.2.6.2.12 Type MBSDistSessionAnmt

Table 6.2.6.2.12-1: Definition of type MBSDistSessionAnmt

Attribute name	Data type	P	Cardinality	Description	Applicability
mbsSessionId	MbsSessionId	O	0..1	Represents the MBS Distribution Session Identifier with the Temporary Mobile Group Identity (TMGI) or Source-Specific Multicast (SSM) IP address of the MBS Session supporting this MBS Distribution Session.	
mbsFSAId	MbsFsaId	O	0..1	Represents MBS Frequency Selection Assistance information corresponding to the MBS Distribution Session. This attribute may be included only if the parent MBS User Service is of Broadcast service type.	
distrMethod	DistributionMethod	M	1	Represents the distribution method of this MBS Distribution Session.	
objDistrAnnInfo	ObjectDistMethAnmtInfo	O	0..1	Represents MBS Distribution Session Announcement parameters for Object Distribution Method. May only be present when the "distrMethod" attribute value is set as "OBJECT".	
sesDesInfo	array(string)	M	1..N	Represnts the additional parameters needed to receive the MBS Distribution Session from which this announcement is derived, including relevant User Plane traffic flow parameters.	

6.2.6.2.13 Type ObjectDistMethAnmtInfo

Table 6.2.6.2.13-1: Definition of type ObjectDistMethAnmtInfo

Attribute name	Data type	P	Cardinality	Description	Applicability
objDistrSched	TimeWindow	O	0..1	Represents a schedule indicating when individual objects are to be delivered on the corresponding MBS Distribution Session. This attribute may be present only when this information has been provided in the Object acquisition identifiers of the corresponding MBS Distribution Session.	
objDistrBaseUri	Uri	O	0..1	Represents a URI prefix substituted by the MBSTF Client with the *Object repair base URI* when repairing objects not received completely intact from the corresponding MBS Distribution Session. This attribute may be present only when object repair is provisioned for the corresponding MBS Distribution Session.	
objRepBaseUri	Uri	O	0..1	Represents the base URI of the MBS AS to be used for object repair of the corresponding MBS Distribution Session. This attribute may be present only when object repair is provisioned for the corresponding MBS Distribution Session.	

6.2.6.2.14 Type: FECConfig

Table 6.2.6.2.14-1: Definition of type FECConfig

Attribute name	Data type	P	Cardinality	Description	Applicability
fecScheme	Uri	M	1	Contains the AL-FEC scheme to be used by the MBSTF. It shall be identified using a term from the IANA: "Reliable Multicast Transport (RMT) FEC Encoding IDs and FEC Instance IDs" [20] expressed as a URN, e.g.: urn:ietf:rmt:fec:encoding:0	
fecOverhead	integer	M	1	The overhead of AL-FEC protection, corresponding to a proportion of the (unprotected) MBS data, expressed in the form of a percentage.	
additionalParams	array(AddFecParams)	O	1..N	Represents additional scheme-specific parameters for AL-FEC configuration, encoded using uncontrolled {name, value} pairs.	

6.2.6.2.15 Type: AddFecParams

Table 6.2.6.2.15-1: Definition of type AddFecParams

Attribute name	Data type	P	Cardinality	Description	Applicability
paramName	string	M	1	Contains the name of the FEC configuration parameter.	
paramValue	string	M	1	Contains the value of the FEC configuration parameter.	

6.2.6.2.16 Type MBSUserDataIngStatSubscPatch

Table 6.2.6.2.16-1: Definition of type MBSUserDataIngStatSubscPatch

Attribute name	Data type	P	Cardinality	Description	Applicability
eventSubscs	array(SubscribedEvent)	O	1..N	Represents the updated list of subscribed MBS User Data Ingest Session Status event(s).	
notifUri	Uri	O	0..1	Represents the updated notification URI to be used for MBS User Data Ingest Session Status event(s) reporting.	

6.2.6.3 Simple data types and enumerations

6.2.6.3.1 Introduction

This clause defines simple data types and enumerations that can be referenced from data structures defined in the previous clauses.

6.2.6.3.2 Simple data types

The simple data types defined in table 6.2.6.3.2-1 shall be supported.

Table 6.2.6.3.2-1: Simple data types

Type Name	Type Definition	Description	Applicability

6.2.6.3.3 Enumeration: DistributionMethod

The enumeration DistributionMethod represents the MBS Distribution Method. It shall comply with the provisions of table 6.2.6.3.3-1.

Table 6.2.6.3.3-1: Enumeration DistributionMehod

Enumeration value	Description	Applicability
OBJECT	Indicates the Object Distribution Method.	
PACKET	Indicates the Packet Distribution Method.	

6.2.6.3.4 Enumeration: Event

The enumeration Event represents the MBS User Data Ingest Session Status events. It shall comply with the provisions of table 6.2.6.3.4-1.

Table 6.2.6.3.4-1: Enumeration Event

Enumeration value	Description	Applicability
USER_DATA_ING_SESS_STARTING	Indicates that the MBS User Data Ingest Session is starting. This is an "MBS User Data Ingest Session" level event.	
USER_DATA_ING_SESS_STARTED	Indicates that the MBS User Data Ingest Session started. This is an "MBS User Data Ingest Session" level event.	
USER_DATA_ING_SESS_TERMINATED	Indicates that the MBS User Data Ingest Session is terminated. This is an "MBS User Data Ingest Session" level event.	
DIST_SESS_STARTING	Indicates that the MBS Distribution Session is starting. This is an "MBS Distribution Session" level event.	
DIST_SESS_STARTED	Indicates that the MBS Distribution Session started. This is an "MBS Distribution Session" level event.	
DIST_SESS_TERMINATED	Indicates that the MBS Distribution Session is terminated. This is an "MBS Distribution Session" level event.	
DIST_SESS_SERV_MNGT_FAILURE	Indicates that the MBS Distribution Session could not be started (e.g. the necessary resources could not be allocated by the MBS system). This is an "MBS Distribution Session" level event.	
DIST_SESS_POL_CRTL_FAILURE	Indicates that the MBS Distribution Session could not be started because of a policy authorization/control failure or rejection. This is an "MBS Distribution Session" level event.	
DATA_INGEST_FAILURE	The MBS User Data Ingest failed because the MBSTF is expecting data (the MBS Session is active), but not receiving it. This is an "MBS Distribution Session" level event.	
DELIVERY_STARTED	The MBS User Data delivery is started.	
SESSION_TERMINATED	The MBS User Data Ingest Session is terminated.	

6.2.6.4 Data types describing alternative data types or combinations of data types

There are no data types describing alternative data types or combinations of data types defined for this API in this release of the specification.

6.2.6.5 Binary data

6.2.6.5.1 Binary Data Types

Table 6.2.6.5.1-1: Binary Data Types

Name	Clause defined	Content type

6.2.7 Error Handling

6.2.7.1 General

For the Nmbsf_MBSUserDataIngestSession API, HTTP error responses shall be supported as specified in clause 4.8 of 3GPP TS 29.501 [5]. Protocol errors and application errors specified in table 5.2.7.2-1 of 3GPP TS 29.500 [4] shall be supported for an HTTP method if the corresponding HTTP status codes are specified as mandatory for that HTTP method in table 5.2.7.1-1 of 3GPP TS 29.500 [4].

In addition, the requirements in the following clauses are applicable for the Nmbsf_MBSUserDataIngestSession API.

6.2.7.2 Protocol Errors

No specific procedures for the Nmbsf_MBSUserDataIngestSession service are specified.

6.2.7.3 Application Errors

The application errors defined for the Nmbsf_MBSUserDataIngestSession service are listed in Table 6.2.7.3-1.

Table 6.2.7.3-1: Application errors

Application Error	HTTP status code	Description

6.2.8 Feature negotiation

The optional features listed in table 6.2.8-1 are defined for the Nmbsf_MBSUserDataIngestSession API. They shall be negotiated using the extensibility mechanism defined in clause 6.6 of 3GPP TS 29.500 [4].

Table 6.2.8-1: Supported Features

Feature number	Feature Name	Description

6.2.9 Security

As indicated in 3GPP TS 33.501 [8] and 3GPP TS 29.500 [4], the access to the Nmbsf_MBSUserDataIngestSession API may be authorized by means of the OAuth2 protocol (see IETF RFC 6749 [9]), based on local configuration, using the "Client Credentials" authorization grant, where the NRF (see 3GPP TS 29.510 [10]) plays the role of the authorization server.

If OAuth2 is used, an NF Service Consumer, prior to consuming services offered by the Nmbsf_MBSUserDataIngestSession API, shall obtain a "token" from the authorization server, by invoking the Access Token Request service, as described in 3GPP TS 29.510 [10], clause 5.4.2.2.

NOTE: When multiple NRFs are deployed in a network, the NRF used as authorization server is the same NRF that the NF Service Consumer used for discovering the Nmbsf_MBSUserDataIngestSession service.

The Nmbsf_MBSUserDataIngestSession API defines a single scope "nmbsf-mbs-ud-ingest" for the entire service, and it does not define any additional scopes at resource or operation level.

Annex A (normative): OpenAPI specification

A.1 General

This Annex specifies the formal definition of the API(s) defined in the present specification. It consists of OpenAPI specifications in YAML format.

This Annex takes precedence when being discrepant to other parts of the specification with respect to the encoding of information elements and methods within the API(s).

NOTE 1: The semantics and procedures, as well as conditions, e.g. for the applicability and allowed combinations of attributes or values, not expressed in the OpenAPI definitions but defined in other parts of the specification also apply.

Informative copies of the OpenAPI specification files contained in this 3GPP Technical Specification are available on a Git-based repository that uses the GitLab software version control system (see 3GPP TS 29.501 [5] clause 5.3.1 and 3GPP TR 21.900 [7] clause 5B).

A.2 Nmbsf_MBSUserService API

```
openapi: 3.0.0
info:
  title: nmbsf-mbs-us
  version: 1.0.2
  description: |
    API for MBS User Service.
    © 2023, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).
    All rights reserved.

externalDocs:
  description: >
    3GPP TS 29.580 V17.2.0; 5G System; Multicast/Broadcast Service Function Services.
  url: 'https://www.3gpp.org/ftp/Specs/archive/29_series/29.580/'

servers:
  - url: '{apiRoot}/nmbsf-mbs-us/v1'
    variables:
      apiRoot:
        default: https://example.com
        description: apiRoot as defined in clause 4.4 of 3GPP TS 29.501

security:
  - {}
  - oAuth2ClientCredentials: []


paths:
  /mbs-user-services:
    get:
      summary: Retrieve all the active MBS User Service(s) managed by the MBSF.
      tags:
        - MBS User Services (Collection)
      operationId: RetrieveMBSUserServices
      responses:
        '200':
          description: >
            OK. All the active MBS User Services managed by the MBSF are returned.
          content:
            application/json:
              schema:
                type: array
                items:
                  $ref: '#/components/schemas/MBSUserService'
                minItems: 0
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '406':
          $ref: 'TS29571_CommonData.yaml#/components/responses/406'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

    post:
      summary: Request the creation of a new MBS User Service.
      tags:
        - MBS User Services (Collection)
      operationId: CreateMBSUserService
      requestBody:
        description: >
          Contains the parameters to request the creation of a new MBS User Service at the MBSF.
```

```
      required: true
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/MBSUserService'
    responses:
      '201':
        description: >
          Created. A new MBS User Service is successfully created and a representation of the
          created Individual MBS User Service resource is returned.
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/MBSUserService'
        headers:
          Location:
            description: >
              Contains the URI of the newly created resource, according to the structure
              {apiRoot}/nmbsf-mbs-us/v1/mbs-user-services/{mbsUserServId}
            required: true
            schema:
              type: string
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '403':
        $ref: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        $ref: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        $ref: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        $ref: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        $ref: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'


  /mbs-user-services/{mbsUserServId}:
    parameters:
      - name: mbsUserServId
        in: path
        description: Identifier of the Individual MBS User Service resource.
        required: true
        schema:
          type: string

    get:
      summary: Retrieve an existing Individual MBS User Service resource.
      tags:
        - Individual MBS User Service (Document)
      operationId: RetrieveIndMBSUserService
      responses:
        '200':
          description: >
            OK. The requested Individual MBS User Service resource is successfully returned.
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/MBSUserService'
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
```

```
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '406':
        $ref: 'TS29571_CommonData.yaml#/components/responses/406'
      '429':
        $ref: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'

  put:
    summary: Request the update of an existing Individual MBS User Service resource.
    tags:
      - Individual MBS User Service (Document)
    operationId: UpdateIndMBSUserService
    requestBody:
      description: >
        Contains the updated representation of the Individual MBS User Service resource.
      required: true
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/MBSUserService'
    responses:
      '200':
        description: >
          OK. The concerned Individual MBS User Service resource is successfully updated and a
          representation of the updated resource is returned in the response body.
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/MBSUserService'
      '204':
        description: >
          No Content. The concerned Individual MBS User Service resource is successfully updated
          and no content is returned in the response body.
      '307':
        $ref: 'TS29571_CommonData.yaml#/components/responses/307'
      '308':
        $ref: 'TS29571_CommonData.yaml#/components/responses/308'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '403':
        $ref: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        $ref: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        $ref: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        $ref: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        $ref: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'

  patch:
    summary: Request the modification of an existing Individual MBS User Service resource.
    tags:
      - Individual MBS User Service (Document)
    operationId: ModifyIndMBSUserService
    requestBody:
      description: >
        Contains the parameters to request the modification of the Individual MBS User Service
        resource.
      required: true
      content:
        application/merge-patch+json:
```

```
            schema:
              $ref: '#/components/schemas/MBSUserServicePatch'
      responses:
        '200':
          description: >
            OK. The concerned Individual MBS User Service resource is successfully modified and a
            representation of the updated resource is returned in the response body.
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/MBSUserService'
        '204':
          description: >
            No Content. The concerned Individual MBS User Service resource is successfully modified
            and no content is returned in the response body.
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '411':
          $ref: 'TS29571_CommonData.yaml#/components/responses/411'
        '413':
          $ref: 'TS29571_CommonData.yaml#/components/responses/413'
        '415':
          $ref: 'TS29571_CommonData.yaml#/components/responses/415'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

    delete:
      summary: Request the deletion of an existing Individual MBS User Service resource.
      tags:
        - Individual MBS User Service (Document)
      operationId: DeleteIndMBSUserService
      responses:
        '204':
          description: >
            No Content. The concerned Individual MBS User Service resource is successfully deleted.
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'


components:
  securitySchemes:
    oAuth2ClientCredentials:
      type: oauth2
      flows:
```

```
        clientCredentials:
          tokenUrl: '{tokenUri}'
          scopes: {}
      description: >
        When the Nmbsf_MBSUserService is consumed by a trusted or internal AF, then
        'nmbsf-mbs-us' shall be used as the scope (i.e. within the 'scopes' property) and
        '{nrfApiRoot}/oauth2/token' shall be used as the URI to retrieve the token
        (i.e. 'tokenUri').

#
# STRUCTURED DATA TYPES
#
  schemas:
    MBSUserService:
      description: Represents the parameters of an MBS User Service.
      type: object
      properties:
        extServiceIds:
          type: array
          items:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
          minItems: 1
        servType:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/MbsServiceType'
        servClass:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
        servAnnModes:
          type: array
          items:
            $ref: '#/components/schemas/ServiceAnnouncementMode'
          minItems: 1
        servNameDescs:
          type: array
          items:
            $ref: '#/components/schemas/ServiceNameDescription'
          minItems: 1
        mainServLang:
          type: string
        suppFeat:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
      required:
        - extServiceIds
        - servType
        - servClass
        - servAnnModes
        - servNameDescs

    ServiceNameDescription:
      description: >
        Represents a set of per language service name and/or service description.
      type: object
      properties:
        servName:
          type: string
        servDescrip:
          type: string
        language:
          type: string
      required:
        - language
      anyOf:
        - required: [servName]
        - required: [servDescrip]

    MBSUserServicePatch:
      description: >
        Represents the requested modifications to the parameters of an MBS User Service.
      type: object
      properties:
        extServiceIds:
          type: array
          items:
            $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
          minItems: 1
        servClass:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
        servAnnModes:
          type: array
```

```
          items:
            $ref: '#/components/schemas/ServiceAnnouncementMode'
          minItems: 1
        servNameDescs:
          type: array
          items:
            $ref: '#/components/schemas/ServiceNameDescription'
          minItems: 1
        mainServLang:
          type: string

# SIMPLE DATA TYPES
#

#
# ENUMERATIONS
#
    ServiceAnnouncementMode:
      anyOf:
      - type: string
        enum:
          - VIA_MBS_5
          - VIA_MBS_DISTRIBUTION_SESSION
          - PASSED_BACK
      - type: string
        description: >
          This string provides forward-compatibility with future extensions to the enumeration
          and is not used to encode content defined in the present version of this API.
      description: |
        Possible values are:
        - VIA_MBS_5: Indicates the MBS User Service Announcement compiled by the MBSF is advertised
to the MBSF Client at reference point MBS-5.
        - VIA_MBS_DISTRIBUTION_SESSION: Indicates the MBS User Service Announcement compiled by the
MBSF is advertised to the MBSF Client via the MBS Distribution Session at reference point MBS-4-MC.
        - PASSED_BACK: Indicates the MBS User Service Announcement compiled by the MBSF is passed
back to the MBS Application Provider by the MBSF, and then advertised to the MBSF Client via
application-private means at reference point MBS-8.
```

A.3 Nmbsf_MBSUserDataIngestSession API

```
openapi: 3.0.0

info:
  title: nmbsf-mbs-ud-ingest
  version: 1.0.2
  description: |
    API for MBS User Data Ingest Session Service.
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    All rights reserved.

externalDocs:
  description: >
    3GPP TS 29.580 V17.2.0; 5G System; Multicast/Broadcast Service Function Services.
  url: 'https://www.3gpp.org/ftp/Specs/archive/29_series/29.580/'

servers:
  - url: '{apiRoot}/nmbsf-mbs-ud-ingest/v1'
    variables:
      apiRoot:
        default: https://example.com
        description: apiRoot as defined in clause 4.4 of 3GPP TS 29.501

security:
  - {}
  - oAuth2ClientCredentials: []

paths:
  /sessions:
    get:
      summary: Retrieve all the active MBS User Data Ingest Sessions managed by the MBSF.
      tags:
        - MBS User Data Ingest Sessions (Collection)
      operationId: RetrieveMBSUserDataIngSessions
      responses:
        '200':
          description: >
            OK. All the active MBS User Data Ingest Sessions managed by the MBSF are returned.
          content:
            application/json:
              schema:
                type: array
                items:
                  $ref: '#/components/schemas/MBSUserDataIngSession'
                minItems: 0
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '406':
          $ref: 'TS29571_CommonData.yaml#/components/responses/406'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

    post:
      summary: Request the creation of a new MBS User Data Ingest Session.
      tags:
        - MBS User Data Ingest Sessions (Collection)
      operationId: CreateMBSUserDataIngSession
      requestBody:
        description: >
          Contains the parameters to request the creation of a new MBS User Data Ingest Session
```

```
        at the MBSF.
      required: true
      content:
        application/json:
          schema:
            $ref: '#/components/schemas/MBSUserDataIngSession'
    responses:
      '201':
        description: >
          Created. A new MBS User Data Ingest Session is successfully created and a representation
          of the created Individual MBS User Data Ingest Session resource is returned.
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/MBSUserDataIngSession'
        headers:
          Location:
            description: >
              Contains the URI of the newly created resource, according to the structure
              {apiRoot}/nmbs-mbs-ud-ingest/v1/sessions/{sessionId}
            required: true
            schema:
              type: string
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '403':
        $ref: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        $ref: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        $ref: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        $ref: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        $ref: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'


  /sessions/{sessionId}:
    parameters:
      - name: sessionId
        in: path
        description: Identifier of the Individual MBS User Data Ingest Session resource.
        required: true
        schema:
          type: string

    get:
      summary: Retrieve an existing Individual MBS User Data Ingest Session resource.
      tags:
        - Individual MBS User Data Ingest Session (Document)
      operationId: RetrieveIndMBSUserDataIngSession
      responses:
        '200':
          description: >
            OK. The requested Individual MBS User Data Ingest Session resource is successfully
            returned.
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/MBSUserDataIngSession'
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
```

```
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '406':
          $ref: 'TS29571_CommonData.yaml#/components/responses/406'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

    put:
      summary: Request the update of an existing Individual MBS User Data Ingest Session resource.
      tags:
        - Individual MBS User Data Ingest Session (Document)
      operationId: UpdateIndMBSUserDataIngSession
      requestBody:
        description: >
          Contains the updated representation of the Individual MBS User Data Ingest Session
          resource.
        required: true
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/MBSUserDataIngSession'
      responses:
        '200':
          description: >
            OK. The concerned Individual MBS User Data Ingest Session resource is successfully
            updated and a representation of the updated resource is returned in the response body.
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/MBSUserDataIngSession'
        '204':
          description: >
            No Content. The concerned Individual MBS User Data Ingest Session resource is
            successfully updated and no content is returned in the response body.
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '411':
          $ref: 'TS29571_CommonData.yaml#/components/responses/411'
        '413':
          $ref: 'TS29571_CommonData.yaml#/components/responses/413'
        '415':
          $ref: 'TS29571_CommonData.yaml#/components/responses/415'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

    patch:
      summary: Request the modification of an existing Individual MBS User Data Ingest Session
resource.
      tags:
        - Individual MBS User Data Ingest Session (Document)
      operationId: ModifyIndMBSUserDataIngSession
      requestBody:
        description: >
          Contains the parameters to request the modification of the Individual MBS User Data Ingest
```

```
        Session resource.
      required: true
      content:
        application/merge-patch+json:
          schema:
            $ref: '#/components/schemas/MBSUserDataIngSessionPatch'
    responses:
      '200':
        description: >
          OK. The concerned Individual MBS User Data Ingest Session resource is successfully
          modified and a representation of the updated resource is returned in the response body.
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/MBSUserDataIngSession'
      '204':
        description: >
          No Content. The concerned Individual MBS User Data Ingest Session resource is
          successfully modified and no content is returned in the response body.
      '307':
        $ref: 'TS29571_CommonData.yaml#/components/responses/307'
      '308':
        $ref: 'TS29571_CommonData.yaml#/components/responses/308'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '403':
        $ref: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '411':
        $ref: 'TS29571_CommonData.yaml#/components/responses/411'
      '413':
        $ref: 'TS29571_CommonData.yaml#/components/responses/413'
      '415':
        $ref: 'TS29571_CommonData.yaml#/components/responses/415'
      '429':
        $ref: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'

  delete:
    summary: Request the deletion of an existing Individual MBS User Data Ingest Session resource.
    tags:
      - Individual MBS User Data Ingest Session (Document)
    operationId: DeleteIndMBSUserDataIngSession
    responses:
      '204':
        description: >
          No Content. The Individual MBS User Data Ingest Session resource is successfully
          deleted.
      '307':
        $ref: 'TS29571_CommonData.yaml#/components/responses/307'
      '308':
        $ref: 'TS29571_CommonData.yaml#/components/responses/308'
      '400':
        $ref: 'TS29571_CommonData.yaml#/components/responses/400'
      '401':
        $ref: 'TS29571_CommonData.yaml#/components/responses/401'
      '403':
        $ref: 'TS29571_CommonData.yaml#/components/responses/403'
      '404':
        $ref: 'TS29571_CommonData.yaml#/components/responses/404'
      '429':
        $ref: 'TS29571_CommonData.yaml#/components/responses/429'
      '500':
        $ref: 'TS29571_CommonData.yaml#/components/responses/500'
      '503':
        $ref: 'TS29571_CommonData.yaml#/components/responses/503'
      default:
        $ref: 'TS29571_CommonData.yaml#/components/responses/default'
```

```
  /status-subscriptions:
    get:
      summary: Retrieve all the active MBS User Data Ingest Session Status Subscription resources
managed by the MBSF.
      tags:
        - MBS User Data Ingest Session Status Subscriptions (Collection)
      operationId: RetrieveMBSUserDataIngStatSubscs
      responses:
        '200':
          description: >
            OK. All the active MBS User Data Ingest Session Status Subscriptions managed by the MBSF
            are returned.
          content:
            application/json:
              schema:
                type: array
                items:
                  $ref: '#/components/schemas/MBSUserDataIngStatSubsc'
                minItems: 0
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '406':
          $ref: 'TS29571_CommonData.yaml#/components/responses/406'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

    post:
      summary: Request the creation of a new MBS User Data Ingest Session Status Subscription.
      tags:
        - MBS User Data Ingest Session Status Subscriptions (Collection)
      operationId: CreateMBSUserDataIngStatSubsc
      requestBody:
        description: >
          Contains the parameters to request the creation of a new MBS User Data Ingest Session
          Status Subscription.
        required: true
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/MBSUserDataIngStatSubsc'
      responses:
        '201':
          description: >
            Created. Successful creation of a new Individual MBS User Data Ingest Session
            Status Subscription resource.
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/MBSUserDataIngStatSubsc'
          headers:
            Location:
              description: >
                Contains the URI of the newly created resource, according to the structure
                {apiRoot}/nmbs-mbs-ud-ingest/v1/status-subscriptions/{subscriptionId}
              required: true
              schema:
                type: string
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
```

```
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '411':
          $ref: 'TS29571_CommonData.yaml#/components/responses/411'
        '413':
          $ref: 'TS29571_CommonData.yaml#/components/responses/413'
        '415':
          $ref: 'TS29571_CommonData.yaml#/components/responses/415'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'
      callbacks:
        mbsUserDataIngestSessionStatusNotif:
          '{request.body#/notifUri}':
            post:
              requestBody:
                required: true
                content:
                  application/json:
                    schema:
                      $ref: '#/components/schemas/MBSUserDataIngStatNotif'
              responses:
                '204':
                  description: No Content. Successful reception of the notification.
                '307':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/307'
                '308':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/308'
                '400':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/400'
                '401':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/401'
                '403':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/403'
                '404':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/404'
                '411':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/411'
                '413':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/413'
                '415':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/415'
                '429':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/429'
                '500':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/500'
                '503':
                  $ref: 'TS29571_CommonData.yaml#/components/responses/503'
                default:
                  $ref: 'TS29571_CommonData.yaml#/components/responses/default'


  /status-subscriptions/{subscriptionId}:
    parameters:
      - name: subscriptionId
        in: path
        description: >
          Identifier of the Individual MBS User Data Ingest Session Status Subscription resource.
        required: true
        schema:
          type: string

    get:
      summary: Retrieve an existing Individual MBS User Data Ingest Session Status Subscription
resource.
      tags:
        - Individual MBS User Data Ingest Session Status Subscription (Document)
      operationId: RetrieveIndMBSUserDataIngStatSubsc
      responses:
        '200':
          description: >
            OK. Successful retrieval of the requested Individual MBS User Data Ingest Session
```

```
            Status Subscription resource.
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/MBSUserDataIngStatSubsc'
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '406':
          $ref: 'TS29571_CommonData.yaml#/components/responses/406'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

    put:
      summary: Request the update of an existing Individual MBS User Data Ingest Session Status
Subscription resource.
      tags:
        - Individual MBS User Data Ingest Session Status Subscription (Document)
      operationId: UpdateIndMBSUserDataIngStatSubsc
      requestBody:
        description: >
          Contains the updated representation of the Individual MBS User Data Ingest Session Status
          Subscription resource.
        required: true
        content:
          application/json:
            schema:
              $ref: '#/components/schemas/MBSUserDataIngStatSubsc'
      responses:
        '200':
          description: >
            OK. The concerned Individual MBS User Data Ingest Session Status Subscription resource
            is successfully updated and a representation of the updated resource is returned in the
            response body.
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/MBSUserDataIngStatSubsc'
        '204':
          description: >
            No Content. The concerned Individual MBS User Data Ingest Session Status Subscription
            resource is successfully updated and no content is returned in the response body.
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '411':
          $ref: 'TS29571_CommonData.yaml#/components/responses/411'
        '413':
          $ref: 'TS29571_CommonData.yaml#/components/responses/413'
        '415':
          $ref: 'TS29571_CommonData.yaml#/components/responses/415'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
```

```
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

    patch:
      summary: Request the modification of an existing Individual MBS User Data Ingest Session
Status Subscription resource.
      tags:
        - Individual MBS User Data Ingest Session Status Subscription (Document)
      operationId: ModifyIndMBSUserDataIngStatSubsc
      requestBody:
        description: >
          Contains the parameters to request the modification of the Individual MBS User Data Ingest
          Session Status Subscription resource.
        required: true
        content:
          application/merge-patch+json:
            schema:
              $ref: '#/components/schemas/MBSUserDataIngStatSubscPatch'
      responses:
        '200':
          description: >
            OK. The concerned Individual MBS User Data Ingest Session Status Subscription resource
            is successfully modified and a representation of the updated resource is returned in the
            response body.
          content:
            application/json:
              schema:
                $ref: '#/components/schemas/MBSUserDataIngStatSubsc'
        '204':
          description: >
            No Content. The concerned Individual MBS User Data Ingest Session Status Subscription
            resource is successfully modified and no content is returned in the response body.
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '411':
          $ref: 'TS29571_CommonData.yaml#/components/responses/411'
        '413':
          $ref: 'TS29571_CommonData.yaml#/components/responses/413'
        '415':
          $ref: 'TS29571_CommonData.yaml#/components/responses/415'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'

    delete:
      summary: Request the deletion of an existing Individual MBS User Data Ingest Session Status
Subscription resource.
      tags:
        - Individual MBS User Data Ingest Session Status Subscription (Document)
      operationId: DeleteMBSUserDataIngStatSubsc
      responses:
        '204':
          description: >
            No Content. Successful deletion of the existing Individual MBS User Data Ingest Session
            Status Subscription resource.
        '307':
          $ref: 'TS29571_CommonData.yaml#/components/responses/307'
        '308':
          $ref: 'TS29571_CommonData.yaml#/components/responses/308'
        '400':
```

```
          $ref: 'TS29571_CommonData.yaml#/components/responses/400'
        '401':
          $ref: 'TS29571_CommonData.yaml#/components/responses/401'
        '403':
          $ref: 'TS29571_CommonData.yaml#/components/responses/403'
        '404':
          $ref: 'TS29571_CommonData.yaml#/components/responses/404'
        '429':
          $ref: 'TS29571_CommonData.yaml#/components/responses/429'
        '500':
          $ref: 'TS29571_CommonData.yaml#/components/responses/500'
        '503':
          $ref: 'TS29571_CommonData.yaml#/components/responses/503'
        default:
          $ref: 'TS29571_CommonData.yaml#/components/responses/default'


components:
  securitySchemes:
    oAuth2ClientCredentials:
      type: oauth2
      flows:
        clientCredentials:
          tokenUrl: '{tokenUrl}'
          scopes: {}
      description: >
        When the Nmbsf_MBSUserDataIngestSession is consumed by a trusted or internal AF, then
        'nmbsf-mbs-ud-ingest' shall be used as the scope (i.e. with the 'scopes' property) and
        '{nrfApiRoot}/oauth2/token' shall be used as the URI to retrieve the token
        (i.e. 'tokenUri').

#
# STRUCTURED DATA TYPES
#
  schemas:
    MBSUserDataIngSession:
      description: Represents MBS User Data Ingest Session information.
      type: object
      properties:
        mbsUserServId:
          type: string
        mbsDisSessInfos:
          type: object
          additionalProperties:
            $ref: '#/components/schemas/MBSDistributionSessionInfo'
          minProperties: 1
          nullable: true
          description: >
            Represents one or more MBS Distribution Session(s) composing the MBS User Data Ingest
            Session. The key of the map shall be set to the value ofthe "mbsDistSessionId" attribute
            of the MBSDistributionSessionInfo data structure encoding the corresponding map entry.
        actPeriods:
          type: array
          items:
            $ref: 'TS29122_CommonData.yaml#/components/schemas/TimeWindow'
          minItems: 1
        mbsUserServAnmt:
          $ref: '#/components/schemas/MBSUserServAnmt'
        mbsUserServiceAnmt:
          $ref: 'TS26517_MBSUserServiceAnnouncement.yaml#/components/schemas/UserServiceDescription'
        mbsUserServiceAnmtUrl:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
        suppFeat:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/SupportedFeatures'
      required:
        - mbsUserServId
        - mbsDisSessInfos

    MBSDistributionSessionInfo:
      description: Represents MBS Distribution Session information.
      type: object
      properties:
        mbsDistSessionId:
          type: string
        mbsDistSessState:
          $ref: 'TS29581_Nmbstf_DistSession.yaml#/components/schemas/DistSessionState'
        mbsSessionId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/MbsSessionId'
```

```
      mbsServInfo:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/MbsServiceInfo'
      maxContBitRate:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/BitRate'
      maxContDelay:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/PacketDelBudget'
      distrMethod:
        $ref: '#/components/schemas/DistributionMethod'
      fecConfig:
        $ref: '#/components/schemas/FECConfig'
      objDistrInfo:
        $ref: '#/components/schemas/ObjectDistrMethInfo'
      pckDistrInfo:
        $ref: '#/components/schemas/PacketDistrMethInfo'
      trafficMarkingInfo:
        type: string
      tgtServAreas:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/MbsServiceArea'
      extTgtServAreas:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/ExternalMbsServiceArea'
      mbsFSAId:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/MbsFsaId'
      locationDependent:
        type: boolean
        description: >
          Represents an indication that this MBS Distribution Session belongs to a location-
          dependent MBS. This attribute shall be set to "true" to indicate that the MBS
          Distribution Session belongs to a location-dependent MBS; or set to "false" to
          indicate that the MBS Distribution Session does not belong to a location-dependent MBS.
          The default value is "false", if omitted.
        default: false
      multiplexedServFlag:
        type: boolean
        description: >
          Represents an indication that this MBS Distribution Session belongs to a multiplex, i.e.
          forms part of a set of MBS Distribution Sessions under the same parent MBS User Data
          Ingest Session with identical or empty sets of target service areas and multiplexed onto
          the same MBS Session at the MB-SMF.
        default: false
      restrictedFlag:
        type: boolean
        description: >
          Represents an indication that this MBS Distribution Session is not open to any UE, i.e.
          restricted to a set of UEs according to their MBS related subscription information.
          This attribute may be included only if the parent MBS User Service is of Multicast
          service type. This attribute shall be set to "true" to indicate that this MBS
          Distribution Session is restricted to a set of UE(s); or set to "false" to indicate that
          this MBS Distribution Session is open to any UE.
          The default value is "false", if omitted.
        default: false
    required:
      - distrMethod
      - maxContBitRate

  MBSUserDataIngSessionPatch:
    description: >
      Represents the requested modifications to an MBS User Data Ingest Session Status
      Subscription.
    type: object
    properties:
      mbsDisSessInfos:
        type: object
        additionalProperties:
          $ref: '#/components/schemas/MBSDistributionSessionInfo'
        minProperties: 1
        nullable: true
        description: >
          Contains the requested modifications to one or more MBS Distribution Session(s)
          composing the MBS User Data Ingest Session.
      actPeriods:
        type: array
        items:
          $ref: 'TS29122_CommonData.yaml#/components/schemas/TimeWindow'
        minItems: 1

  ObjectDistrMethInfo:
    description: >
      Represents additional MBS Distribution Session parameters for the case of an Object
```

```
      Distribution Method.
    type: object
    properties:
      operatingMode:
        $ref: 'TS29581_Nmbstf_DistSession.yaml#/components/schemas/ObjDistributionOperatingMode'
      objAcqMethod:
        $ref: 'TS29581_Nmbstf_DistSession.yaml#/components/schemas/ObjAcquisitionMethod'
      objAcqIds:
        type: array
        items:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
        minItems: 1
      objIngUri:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      objDistrUri:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
      objRepairUri:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    required:
      - operatingMode
      - objAcqMethod
      - objAcqIds

  PacketDistrMethInfo:
    description: >
      Represents additional MBS Distribution Session parameters for the case of Packet
      Distribution Method.
    type: object
    properties:
      operatingMode:
        $ref: 'TS29581_Nmbstf_DistSession.yaml#/components/schemas/PktDistributionOperatingMode'
      pckIngMethod:
        $ref: 'TS29581_Nmbstf_DistSession.yaml#/components/schemas/PktIngestMethod'
      ingEndpointAddrs:
        $ref: 'TS29581_Nmbstf_DistSession.yaml#/components/schemas/MbStfIngestAddr'
    required:
      - operatingMode
      - pckIngMethod
      - ingEndpointAddrs

  MBSUserDataIngStatSubsc:
    description: >
      Represents an MBS User Data Ingest Session Status Subscription.
    type: object
    properties:
      mbsIngSessionId:
        type: string
      eventSubscs:
        type: array
        items:
          $ref: '#/components/schemas/SubscribedEvent'
        minItems: 1
      notifUri:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
    required:
      - mbsIngSessionId
      - eventSubscs
      - notifUri

  MBSUserDataIngStatSubscPatch:
    description: >
      Represents the requested modifications to an MBS User Data Ingest Session Status
      Subscription.
    type: object
    properties:
      eventSubscs:
        type: array
        items:
          $ref: '#/components/schemas/SubscribedEvent'
        minItems: 1
      notifUri:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'

  SubscribedEvent:
    description: >
      Represents a subscribed MBS User Data Ingest Session Status event and the related
      information.
    type: object
```

```
    properties:
      statusEvent:
        $ref: '#/components/schemas/Event'
      mbsDistSessionId:
        type: string
    required:
      - statusEvent

  MBSUserDataIngStatNotif:
    description: >
      Represents an MBS User Data Ingest Session Status Notification.
    type: object
    properties:
      mbsIngSessionId:
        type: string
      eventNotifs:
        type: array
        items:
          $ref: '#/components/schemas/EventNotification'
        minItems: 1
    required:
      - mbsIngSessionId
      - eventNotifs

  EventNotification:
    description: Represents Event Notification.
    type: object
    properties:
      statusEvent:
        $ref: '#/components/schemas/Event'
      mbsDisSessionId:
        type: string
      mbsSessionId:
        $ref: 'TS29571_CommonData.yaml#/components/schemas/MbsSessionId'
      statusAddInfo:
        type: string
      timeStamp:
        $ref: 'TS29122_CommonData.yaml#/components/schemas/DateTime'
    required:
      - statusEvent
      - timeStamp

  MBSUserServAnmt:
    deprecated: true
    description: >
      Represents the MBS User Service Announcement currently associated with the MBS User Data
      Ingest Session.
    type: object
    properties:
      extServiceId:
        type: array
        items:
          type: string
        minItems: 1
      servClass:
        type: string
      startTime:
        $ref: 'TS29122_CommonData.yaml#/components/schemas/DateTime'
      endTime:
        $ref: 'TS29122_CommonData.yaml#/components/schemas/DateTime'
      servNameDescs:
        type: array
        items:
          $ref: 'TS29580_Nmbsf_MBSUserService.yaml#/components/schemas/ServiceNameDescription'
        minItems: 1
      mainServLang:
        type: string
      mbsDistSessAnmt:
        additionalProperties:
          $ref: '#/components/schemas/MBSDistSessionAnmt'
        minProperties: 1
        description: >
          Represents the set of MBS Distribution Session Announcements currently associated with
          this MBS User Service Announcement.
    required:
      - extServiceId
      - servClass
      - servNameDescs
```

```
    MBSDistSessionAnmt:
      description: >
        Represents the set of MBS Distribution Session Announcements currently associated with this
        MBS User Service Announcement.
      type: object
      properties:
        mbsSessionId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/MbsSessionId'
        mbsFSAId:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/MbsFsaId'
        distrMethod:
          $ref: '#/components/schemas/DistributionMethod'
        objDistrAnnInfo:
          $ref: '#/components/schemas/ObjectDistMethAnmtInfo'
        sesDesInfo:
          type: array
          items:
            type: string
          minItems: 1
      required:
        - distrMethod
        - sesDesInfo

    ObjectDistMethAnmtInfo:
      description: >
        Represents MBS Distribution Session Announcement parameters for Object Distribution Method.
      type: object
      properties:
        objDistrSched:
          $ref: 'TS29122_CommonData.yaml#/components/schemas/TimeWindow'
        objDistrBaseUri:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
        objRepBaseUri:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'

    FECConfig:
      description: Represents FEC configuration information.
      type: object
      properties:
        fecScheme:
          $ref: 'TS29571_CommonData.yaml#/components/schemas/Uri'
        fecOverHead:
          type: integer
        additionalParams:
          type: array
          items:
            $ref: '#/components/schemas/AddFecParams'
          minItems: 1
      required:
        - fecScheme
        - fecOverHead

    AddFecParams:
      description: Represents additional scheme-specific parameters for AL-FEC configuration.
      type: object
      properties:
        paramName:
          type: string
        paramValue:
          type: string
      required:
        - paramName
        - paramValue

# SIMPLE DATA TYPES
#

#
# ENUMERATIONS
#
    DistributionMethod:
      anyOf:
      - type: string
        enum:
          - OBJECT
          - PACKET
      - type: string
```

```
      description: >
        This string provides forward-compatibility with future extensions to the enumeration
        and is not used to encode content defined in the present version of this API.
    description: |
      Possible values are:
      - OBJECT: Indicates the Object Distribution Method.
      - PACKET: Indicates the Packet Distribution Method.

  Event:
    anyOf:
    - type: string
      enum:
        - USER_DATA_ING_SESS_STARTING
        - USER_DATA_ING_SESS_STARTED
        - USER_DATA_ING_SESS_TERMINATED
        - DIST_SESS_STARTING
        - DIST_SESS_STARTED
        - DIST_SESS_TERMINATED
        - DIST_SESS_SERV_MNGT_FAILURE
        - DIST_SESS_POL_CRTL_FAILURE
        - DATA_INGEST_FAILURE
        - DELIVERY_STARTED
        - SESSION_TERMINATED
    - type: string
      description: >
        This string provides forward-compatibility with future extensions to the enumeration
        and is not used to encode content defined in the present version of this API.
    description: |
      Possible values are:
      - USER_DATA_ING_SESS_STARTING: >
          Indicates that the MBS User Data Ingest Session is starting. This is an "MBS User Data
          Ingest Session" level event.
      - USER_DATA_ING_SESS_STARTED: >
          Indicates that the MBS User Data Ingest Session started. This is an "MBS User Data
          Ingest Session" level event.
      - USER_DATA_ING_SESS_TERMINATED: >
          Indicates that the MBS User Data Ingest Session is terminated. This is an "MBS User Data
          Ingest Session" level event.
      - DIST_SESS_STARTING: >
          Indicates that the MBS Distribution Session is starting. This is an "MBS Distribution
          Session" level event.
      - DIST_SESS_STARTED: >
          Indicates that the MBS Distribution Session started. This is an "MBS Distribution
          Session" level event.
      - DIST_SESS_TERMINATED: >
          Indicates that the MBS Distribution Session is terminated. This is an "MBS Distribution
          Session" level event.
      - DIST_SESS_SERV_MNGT_FAILURE: >
          Indicates that the MBS Distribution Session could not be started (e.g. the necessary
          resources could not be allocated by the MBS system). This is an "MBS Distribution
          Session" level event.
      - DIST_SESS_POL_CRTL_FAILURE: >
          Indicates that the MBS Distribution Session could not be started because of a policy
          authorization/control failure or rejection. This is an "MBS Distribution Session"
          level event.
      - DATA_INGEST_FAILURE: >
          The MBS User Data Ingest is failed because the MBSTF is expecting data (the MBS Session
          is active), but not receiving it. This is an "MBS Distribution Session" level event.
      - DELIVERY_STARTED: >
          The MBS User Data delivery is started.
      - SESSION_TERMINATED: >
          The MBS User Data Ingest Session is terminated.
```

Annex B (informative): Withdrawn API versions

B.1 General

This Annex lists withdrawn API versions of the APIs defined in the present specification. Clause 4.3.1.6 of 3GPP TS 29.501 [5] describes the withdrawal of API versions.

B.2 Nmbsf_MBSUserService API

The API versions listed in table B.2-1 are withdrawn for the Nmbsf_MBSUserService API.

Table B.2-1: Withdrawn API versions of the Nmbsf_MBSUserService service

API version number	Remarks

B.3 Nmbsf_MBSUserDataIngestSession API

The API versions listed in table B.3-1 are withdrawn for the Nmbsf_MBSUserDataIngestSession API.

Table B.3-1: Withdrawn API versions of the Nmbsf_MBSUserDataIngestSession service

API version number	Remarks

Annex C (informative): Change history

Change history							
Date	**Meeting**	**TDoc**	**CR**	**Rev**	**Cat**	**Subject/Comment**	**New version**
2022-02	CT3#120-e		-	-	-	Skeleton for the new MBSF Services TS	0.0.0
2022-02	CT3#120-e	C3-221312	-	-	-	Inclusion of C3-221312, C3-221313.	0.1.0
2022-04	CT3#121-e	C3-222484	-	-	-	Inclusion of C3-222373, C3-222374, C3-222408, C3-222475, C3-222476.	0.2.0
2022-05	CT3#122-e	C3-223507	-	-	-	Inclusion of C3-223604, C3-223310, C3-223311, C3-223605, C3-223313, C3-223314, C3-223315, C3-223316, C3-223317, C3-223410, C3-223543, C3-223412, C3-223544, C3-223545, C3-223546, C3-223547, C3-223417, C3-223418, C3-223419, C3-223745, C3-223421, C3-223422, C3-223423, C3-223747, C3-223748, C3-223750.	0.3.0
2022-06	CT#96	CP-221098				Presentation to TSG CT for information	1.0.0
2022-09	CT#97e					Inclusion of C3-224776, C3-224495, C3-224387, C3-224653, C3-224654, C3-224712, C3-224713, C3-224438, C3-224439	1.0.1
2022-09	CT#97e	CP-222130				Presentation to TSG CT for approval	2.0.0
2022-09	CT#97e	CP-222130				Approved by TSG CT	17.0.0
2022-12	CT#98e	CP-223167	0001	1	F	attribute and Misc corrections in the description and data model clause in Nmbsf_MBSUserDataIngestSession service	17.1.0
2022-12	CT#98e	CP-223166	0002	-	F	Data type Cardinality corrections for GET response in Nmbsf_MBSUserDataIngestSession API	17.1.0
2022-12	CT#98e	CP-223166	0003	-	F	Data type Cardinality corrections for GET response in Nmbsf_MBSUserService Service API	17.1.0
2022-12	CT#98e	CP-223166	0005	-	F	Corrections on MBS User Data Ingest Session Status Subscription Update	17.1.0
2022-12	CT#98e	CP-223166	0006	-	F	Correct the Cardinality of the FECConfig definition	17.1.0
2022-12	CT#98e	CP-223167	0007	1	F	Enumeration and data type definitions in the OpenAPI files	17.1.0
2022-12	CT#98e	CP-223166	0008	-	F	Correction to content type of Nmbsf service	17.1.0
2022-12	CT#98e	CP-223167	0009	-	F	Corrections on MBS User Data Ingest Session Status subscribed events	17.1.0
2022-12	CT#98e	CP-223167	0010	1	F	Correct the attribute names	17.1.0
2022-12	CT#98e	CP-223188	0014	-	F	Update of info and externalDocs fields	17.1.0
2023-03	CT#99	CP-230131	0017	1	F	Miscellaneous essential corrections to the MBSF APIs	17.2.0
2023-03	CT#99	CP-230160	0020	-	F	Update of info and externalDocs fields	17.2.0

History

Document history		
V17.0.0	September 2022	Publication
V17.1.0	January 2023	Publication
V17.2.0	April 2023	Publication