

ETSI TS 129 579 V17.1.0 (2022-10)



**5G;
5G System;
Interworking MSC For Short Message Services;
Stage 3
(3GPP TS 29.579 version 17.1.0 Release 17)**



Reference

RTS/TSGC-0429579vh10

Keywords

5G

ETSI

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
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

If you find a security vulnerability in the present document, please report it through our

Coordinated Vulnerability Disclosure Program:

<https://www.etsi.org/standards/coordinated-vulnerability-disclosure>

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

No representation or warranty is made that this deliverable is technically accurate or sufficient or conforms to any law and/or governmental rule and/or regulation and further, no representation or warranty is made of merchantability or fitness for any particular purpose or against infringement of intellectual property rights.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2022.
All rights reserved.

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

Legal Notice

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

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Intellectual Property Rights	2
Legal Notice	2
Modal verbs terminology.....	2
Foreword.....	5
1 Scope	7
2 References	7
3 Definitions and abbreviations.....	8
3.1 Definitions	8
3.2 Abbreviations	8
4 Overview	8
4.1 Introduction	8
5 Services offered by the SMS-IW MSC	9
5.1 Introduction	9
5.2 Nwmsc_SMS Service	9
5.2.1 Service Description.....	9
5.2.2 Service Operations	9
5.2.2.1 Introduction.....	9
5.2.2.2 MoForwardSm	9
5.2.2.2.1 General	9
5.2.2.2.2 SBI-based MO SM transfer	9
6 API Definitions	10
6.1 Nwmsc_SMS Service API.....	10
6.1.1 Introduction.....	10
6.1.2 Usage of HTTP.....	10
6.1.2.1 General	10
6.1.2.2 HTTP standard headers	11
6.1.2.2.1 General	11
6.1.2.2.2 Content type	11
6.1.2.3 HTTP custom headers	11
6.1.2.4 HTTP multipart messages	11
6.1.3 Resources.....	12
6.1.3.1 Overview.....	12
6.1.3.2 Resource: MoSmInfo	12
6.1.3.2.1 Description	12
6.1.3.2.2 Resource Definition.....	12
6.1.3.2.3 Resource Standard Methods	13
6.1.3.2.4 Resource Custom Operations	13
6.1.4 Custom Operations without associated resources	15
6.1.5 Notifications	15
6.1.6 Data Model	15
6.1.6.1 General	15
6.1.6.2 Structured data types	15
6.1.6.3 Simple data types and enumerations	16
6.1.6.3.1 Introduction	16
6.1.6.3.2 Simple data types.....	16
6.1.6.4 Data types describing alternative data types or combinations of data types	16
6.1.6.5 Binary data	16
6.1.6.5.1 Binary Data Types.....	16
6.1.6.5.2 SMS Payload Information	16
6.1.7 Error Handling	16
6.1.7.1 General	16
6.1.7.2 Protocol Errors	16

6.1.7.3	Application Errors	16
6.1.8	Feature negotiation	17
6.1.9	Security	17
6.1.10	HTTP redirection	17
Annex A (normative):	OpenAPI specification.....	18
A.1	General	18
A.2	Niwmsc_SMSservice API	18
Annex B (informative):	Withdrawn API versions.....	21
B.1	General	21
B.2	Niwmsc_SMSservice API	21
Annex C (informative):	Change history	22
History		23

Foreword

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

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

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
- should not** indicates a recommendation not to do something
- 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 Niwmsc Service Based Interface. It provides stage 3 protocol definitions and message flows, and specifies the API for each service offered by the SMS-IWMSC.

The 5G System stage 2 architecture and procedures are specified in 3GPP TS 23.501 [2] and 3GPP TS 23.502 [3].

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].

Stage 2 requirements for the Niwmsc services are specified in 3GPP TS 23.540 [14].

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 23.540: "Technical realization of Service Based Short Message Service; Stage 2".
- [15] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces Stage 3".
- [16] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".
- [17] 3GPP TS 29.577: "5G System; IP Short Message Gateway and SMS Router For Short Message Service; Stage 3".
- [18] 3GPP TS 24.011: " Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

3 Definitions 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].

Niwmsc: Service-based interface exhibited by the SMS-IWMSC

3.2 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].

SM MO Short Message Mobile Originated

4 Overview

4.1 Introduction

The SMS-IWMSC offers services to the SMSF via the Niwmsc service based interface (see 3GPP TS 23.501 [2], 3GPP TS 23.502 [3], and 3GPP TS 23.540 [14]).

Figure 4.1-1 provides the reference model (in service based interface representation and in reference point representation), with focus on the SMS-IWMSC.

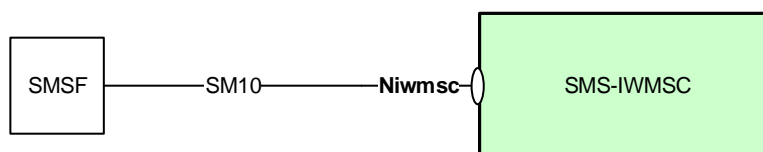


Figure 4.1-1: Reference model – SMS-IWMSC

The functionalities supported by the SMS-IWMSC are listed in clause 6.3 of 3GPP TS 23.540 [14].

5 Services offered by the SMS-IWMSC

5.1 Introduction

The SMS-IWMSC offers the following services via the Niwmsc interface:

- Niwmsc_SMSservice Service

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
Niwmsc_SMSservice	6.1	SMS-IWMSC short message service	TS29579_Niwmsc_SMSservice.yaml	niwmsc-smservice	A.2

5.2 Niwmsc_SMSservice Service

5.2.1 Service Description

See 3GPP TS 23.540 [14] clause 6.3.1

5.2.2 Service Operations

5.2.2.1 Introduction

For the Niwmsc_SMSservice service the following service operations are defined:

- MoForwardSm

The Niwmsc_SMSservice Service is used by Consumer NFs (SMSF) to transfer MO short message by means of the MoForwardSm service operation.

5.2.2.2 MoForwardSm

5.2.2.2.1 General

This clause provides a general description of the MoForwardSm service operation.

5.2.2.2.2 SBI-based MO SM transfer

The MoForwardSm service operation shall be used to transmit uplink SMS message via SMS-IWMSC.

It is used in the following procedures:

- Successful Mobile Originated short message transfer via SMS-IWMSC (see clause 5.2.2 of 3GPP TS 23.540 [14]).
- Unsuccessful Mobile Originated short message transfer via SMS-IWMSC (see clause 5.2.3 of 3GPP TS 23.540 [14]).

The NF Service Consumer (e.g. SMSF) shall transmit uplink SMS message to the SMS-IWMSC by using the HTTP POST method as shown in Figure 5.2.2.2.1-1.

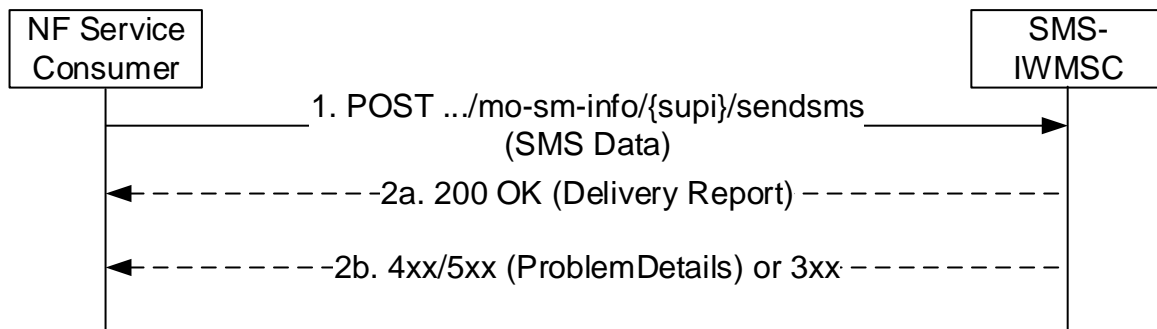


Figure 5.2.2.2-1: SBI-based MO SM transfer

1. The NF Service Consumer shall send a POST request to the resource representing the UE's Mobile Originated Short Message Information resource (i.e. .../mo-sm-info/{supi}/sendsms) of the SMS-IWMSC. The payload body of the POST request shall contain the SMS message to be sent.
- 2a. On success, "200 OK" shall be returned with "SmsDeliveryData" object contains the MO SMS Delivery Report in the response body.
- 2b. On failure, or redirection, one of the HTTP status code listed in Table 6.1.3.2.4.2.2-2 shall be returned.

6 API Definitions

6.1 Niwmsc_SMSservice Service API

6.1.1 Introduction

The Niwmsc_SMSservice shall use the Niwmsc_SMSservice API.

The API URI of the Niwmsc_SMSservice API 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 "niwmsc-smservice".
- 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 Niwmsc_SMSservice API is contained in Annex A.

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".

"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].

Multipart messages shall also be supported (see clause 6.1.2.4) using the content type "multipart/related", comprising:

- one JSON body part with the "application/json" content type; and
- one binary body part with 3gpp vendor specific content subtypes.

The 3gpp vendor specific content subtypes defined in Table 6.1.2.2.2-1 shall be supported.

Table 6.1.2.2.2-1: 3GPP vendor specific content subtypes

content subtype	Description
vnd.3gpp.sms	Binary encoded payload, encoding SMS payload, as specified in 3GPP TS 23.040 [16] and 3GPP TS 24.011 [17].
NOTE:	Using 3GPP vendor content subtypes allows to describe the nature of the opaque payload (e.g. SMS payload) without having to rely on metadata in the JSON payload.

See clause 6.1.2.4 for the binary payloads supported in the binary body part of multipart messages.

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.

6.1.2.4 HTTP multipart messages

HTTP multipart messages shall be supported, to transfer opaque SMS payload (e.g. SMS message, CP Ack, etc.), in the following service operations (and HTTP messages):

- MoForwardSm service operation;

HTTP multipart messages shall include one JSON body part and one binary body part comprising content of SMS payload content (see clause 6.1.6.5).

The JSON body part shall be the "root" body part of the multipart message. It shall be encoded as the first body part of the multipart message. The "Start" parameter does not need to be included.

The multipart message shall include a "type" parameter (see IETF RFC 2387 [18]) specifying the media type of the root body part, i.e. "application/json".

- NOTE: The "root" body part (or "root" object) is the first body part the application processes when receiving a multipart/related message, see IETF RFC 2387 [18]. The default root is the first body within the multipart/related message. The "Start" parameter indicates the root body part, e.g. when this is not the first body part in the message.

A binary body part shall include a Content-ID header (see IETF RFC 2045 [19]), and the JSON body part shall make a reference to the binary body part using the Content-ID header field.

Examples of multipart/related messages can be found in Annex B.

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 Niwmsc_SMSservice API.

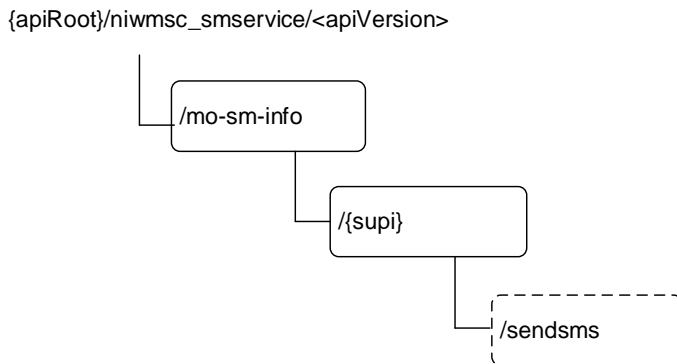


Figure 6.1.3.1-1: Resource URI structure of the Niwmsc_SMSservice API

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)
SMSservice	/mo-sm-info/{supi}/sendsms	sendsms (POST)	MO short message transfer

6.1.3.2 Resource: MoSmInfo

6.1.3.2.1 Description

This resource represents the collection of Mobile Originated Short Message Information in SMS-IWMSC.

This resource is modelled with the Document resource archetype (see clause C.1 of 3GPP TS 29.501 [5]).

6.1.3.2.2 Resource Definition

Resource URI: {apiRoot}/<apiName>/<apiVersion>/mo-sm-info{supi}

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
supi	Supi	Represents the Subscription Permanent Identifier (see 3GPP TS 23.501 [2] clause 5.9.2) pattern: See pattern of type Supi in 3GPP TS 29.571 [15]

6.1.3.2.3 Resource Standard Methods

No HTTP method has been defined for the Mobile Originated Short Message Information collection resource.

6.1.3.2.4 Resource Custom Operations

6.1.3.2.4.1 Overview

Table 6.1.3.2.4.1-1: Custom operations

Operation name	Custom operation URI	Mapped HTTP method	Description
sendsms	/mo-sm- infos/{supi}/sendsms	POST	Send MO SMS message or the related Delivery Report.

6.1.3.2.4.2 Operation: sendsms

6.1.3.2.4.2.1 Description

This custom operation is used for NF Service Consumers to send SMS message in uplink direction.

6.1.3.2.4.2.2 Operation Definition

This custom operation is used to send a SMS payload to an UE's Mobile Originated Short Message Information resource in the SMS-IWMSC.

This operation shall support the request data structures specified in table 6.1.3.2.4.2.2-1 and the response data structure and response codes specified in table 6.1.3.2.4.2.2-2.

Table 6.1.3.2.4.2.2-1: Data structures supported by the POST Request Body on this resource

Data type	P	Cardinality	Description
SmsData	M	1	Representation of the MO SMS message to be sent.

Table 6.1.3.2.4.2.2-2: Data structures supported by the POST Response Body on this resource

Data type	P	Cardinality	Response codes	Description
SmsDeliveryData	M	1	200 OK	This case represents the successful of sending SMS message in uplink direction, with necessary response data on the received delivery report.
RedirectResponse	O	0..1	307 Temporary Redirect	Temporary redirection. The response shall include a Location header field containing a different URI, or the same URI if this is a redirection triggered by an SCP to the same target resource via another SCP. In the former case, the URI shall be an alternative URI of the resource located on an alternative service instance within the same SMS-IW MSC or SMS-IW MSC (service) set. (NOTE 2)
RedirectResponse	O	0..1	308 Permanent Redirect	Permanent redirection. The response shall include a Location header field containing a different URI, or the same URI if this is a redirection triggered by an SCP to the same target resource via another SCP. In the former case, the URI shall be an alternative URI of the resource located on an alternative service instance within the same SMS-IW MSC or SMS-IW MSC (service) set. (NOTE 2)
ProblemDetails	O	0..1	400 Bad Request	This case represents an unsuccessful delivery of SMS message. The "cause" attribute may be used to indicate one of the following application errors: <ul style="list-style-type: none"> - SMS_PAYLOAD_MISSING, if the expected SMS payload content is missing; - SMS_PAYLOAD_ERROR, if error exists in the SMS payload content.
ProblemDetails	O	0..1	403 Forbidden	This case represents an unsuccessful delivery of SMS message. The "cause" attribute may be used to indicate one of the following application errors: <ul style="list-style-type: none"> - UNKNOWN_SERVICE_CENTRE_ADDRESS, if the SMS-SC was unknown; - SERVICE_CENTRE_CONGESTION, if the SMS-SC was in congestion; - USER_NOT_SERVICE_CENTER, if the user didn't belongs to the SMS-SC; - FACILITY_NOT_SUPPORTED, if the facility not supported; - INVALID_SME_ADDRESS, if the SME address is invalid..
ProblemDetails	O	0..1	504 Gateway Timeout	This case represents an unsuccessful delivery of SMS message. The "cause" attribute may be used to indicate one of the following application errors: <ul style="list-style-type: none"> - UNREACHABLE_SMS_SC, if the response is timeout.
NOTE: The mandatory HTTP error status code for the POST method listed in Table 5.2.7.1-1 of 3GPP TS 29.500 [4] also apply.				

Table 6.1.3.2.4.2.2-3: 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 on an alternative service instance within the same SMS-IW MSC or SMS-IW MSC (service) set. Or the same URI, if a request is redirected to the same target resource via a different SCP.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance ID towards which the request is redirected

Table 6.1.3.2.4.2-4: 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 on an alternative service instance within the same SMS-IW MSC or SMS-IW MSC (service) set. Or the same URI, if a request is redirected to the same target resource via a different SCP.
3gpp-Sbi-Target-Nf-Id	string	O	0..1	Identifier of the target NF (service) instance ID towards which the request is redirected

6.1.4 Custom Operations without associated resources

In this release of this specification, no custom operations without associated resources are defined.

6.1.5 Notifications

In this release of this specification, no notification procedures are defined.

6.1.6 Data Model

6.1.6.1 General

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

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

Table 6.1.6.1-1: Niwmsc_SMSservice specific Data Types

Data type	Clause defined	Description	Applicability
N/A			

Table 6.1.6.1-2 specifies data types re-used by the Niwmsc_SMSservice 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 Niwmsc_SMSservice service based interface.

Table 6.1.6.1-2: Niwmsc_SMSservice re-used Data Types

Data type	Reference	Comments	Applicability
ProblemDetails	3GPP TS 29.571 [15]	Common Data Type used in response bodies	
RedirectResponse	3GPP TS 29.571 [15]	Redirect Response	
Supi	3GPP TS 29.571 [15]	Subscription Permanent Identifier	
RefToBinaryData	3GPP TS 29.571 [15]	Information for indicating the binary content of SMS payload.	
Ipv4Addr	3GPP TS 29.571 [15]	IPv4 address	
Ipv6Addr	3GPP TS 29.571 [15]	IPv6 address	
SupportedFeatures	3GPP TS 29.571 [15]	Supported Features	
SmsData	3GPP TS 29.577 [17]	Information within request message invoking MoForwardSm service operation, for delivering MO SMS.	
SmsDeliveryData	3GPP TS 29.571 [17]	Information within response message invoking MoForwardSm service operation, for delivering MO SMS Delivery Report.	

6.1.6.2 Structured data types

In this release of this specification, no structure to be used in resource representations is defined.

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
N/A			

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

None.

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
SMS Payload Information	6.1.6.4.2	vnd.3gpp.sms

6.1.6.5.2 SMS Payload Information

SMS Payload Information shall encode a SMS payload as specified in 3GPP TS 23.040 [16] and 3GPP TS 24.011 [18], using the vnd.3gpp.sms content-type.

SMS Payload Information may encode e.g. the following content:

- CP-DATA, CP-ACK, CP-ERROR as specified in 3GPP TS 23.040 [16] and 3GPP TS 24.011 [18].

6.1.7 Error Handling

6.1.7.1 General

For the N1wmsc_SMSservice 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 N1wmsc_SMSservice API.

6.1.7.2 Protocol Errors

No specific procedures for the N1wmsc_SMSservice service are specified.

6.1.7.3 Application Errors

The application errors defined for the N1wmsc_SMSservice service are listed in Table 6.1.7.3-1.

Table 6.1.7.3-1: Application errors

Application Error	HTTP status code	Description
SMS_PAYLOAD_MISSING	400 Bad Request	The expected SMS payload content is missing.
SMS_PAYLOAD_ERROR	400 Bad Request	Errors exist in the format of SMS payload.
SERVICE_CENTRE_CONGESTION	403 Forbidden	The delivery of the MO short message failed because SMS-SC was in congestion.
USER_NOT_SERVICE_CENTER	403 Forbidden	The delivery of the short message failed because the user didn't belongs to the SMS-SC.
FACILITY_NOT_SUPPORTED	403 Forbidden	The delivery of the MO short message failed because of facility not supported.
INVALID_SME_ADDRESS	403 Forbidden	The delivery of the MO short message failed because the SME address is invalid.
UNREACHABLE_SMS_SC	504 Gateway Timeout	The delivery of the MO short message failed because the response is timeout.

6.1.8 Feature negotiation

The optional features in table 6.1.8-1 are defined for the Niwmsc_SMSservice 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
N/A		

6.1.9 Security

As indicated in 3GPP TS 33.501 [8] and 3GPP TS 29.500 [4], the access to the Niwmsc_SMSservice 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 Niwmsc_SMSservice 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 Niwmsc_SMSservice service.

The Niwmsc_SMSservice API defines a single scope "niwmsc-smservice" for the entire service, and it does not define any additional scopes at resource or operation level.

6.1.10 HTTP redirection

An HTTP request may be redirected to a different SMS-IWMSC service instance, within the same SMS-IWMSC or a different SMS-IWMSC of an SMS-IWMSC set, e.g. when an SMS-IWMSC service instance is part of an SMS-IWMSC (service) set or when using indirect communications (see 3GPP TS 29.500 [4]).

An SCP that reselects a different SMS-IWMSC producer instance will return the NF Instance ID of the new SMS-IWMSC producer instance in the 3gpp-Sbi-Producer-Id header, as specified in clause 6.10.3.4 of 3GPP TS 29.500 [4].

If an SMS-IWMSC within an SMS-IWMSC set redirects a service request to a different SMS-IWMSC of the set using a 307 Temporary Redirect or 308 Permanent Redirect status code, the identity of the new SMS-IWMSC towards which the service request is redirected shall be indicated in the 3gpp-Sbi-Target-Nf-Id header of the 307 Temporary Redirect or 308 Permanent Redirect response as specified in clause 6.10.9.1 of 3GPP TS 29.500 [4].

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 clause 5.3.1 of 3GPP TS 29.501 [5] and clause 5B of 3GPP TR 21.900 [7]).

A.2 Niwmsc_SMSservice API

```

openapi: 3.0.0
info:
  title: 'Niwmsc_SMSservice'
  version: '1.0.1'
  description: |
    SMS-IWMSM Short Message Service.
    © 2022, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC).
    All rights reserved.

externalDocs:
  description: 3GPP TS 29.579 V17.1.0; 5G System; SMS Services; Stage 3.
  url: https://www.3gpp.org/ftp/Specs/archive/29_series/29.579/

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

security:
  - oAuth2ClientCredentials:
    - niwmsc-smsservice
  - {}

paths:
  /mo-sm-infos/{supi}/sendsms:
    post:
      summary: Send SMS payload for a given UE
      operationId: SendsSMS
      tags:
        - Send MO SMS message and the delivery report
      parameters:
        - name: supi
          in: path
          required: true
          description: Subscription Permanent Identifier (SUPI)
          schema:
            type: string
      requestBody:
        content:
          multipart/related: # message with a binary body part
            schema:
              type: object
              properties:
                jsonData:

```

```

    $ref: '#/components/schemas/SmsData'
    binaryPayload:
      type: string
      format: binary
    encoding:
      jsonData:
        contentType: application/json
      binaryPayload:
        contentType: application/vnd.3gpp.sms
      headers:
        Content-Id:
          schema:
            type: string
    required: true
  responses:
    '200':
      description: sending delivery report
      content:
        multipart/related: # message with a binary body part
          schema:
            type: object
            properties:
              jsonData:
                $ref: '#/components/schemas/SmsDeliveryData'
              binaryPayload:
                type: string
                format: binary
            encoding:
              jsonData:
                contentType: application/json
              binaryPayload:
                contentType: application/vnd.3gpp.sms
            headers:
              Content-Id:
                schema:
                  type: string
    '307':
      $ref: 'TS29571_CommonData.yaml#/components/responses/307'
    '308':
      $ref: 'TS29571_CommonData.yaml#/components/responses/308'
    '400':
      $ref: 'TS29571_CommonData.yaml#/components/responses/400'
    '404':
      $ref: 'TS29571_CommonData.yaml#/components/responses/403'
    '503':
      $ref: 'TS29571_CommonData.yaml#/components/responses/504'
    default:
      $ref: 'TS29571_CommonData.yaml#/components/responses/default'

```

components:

```

securitySchemes:
  oAuth2ClientCredentials:
    type: oauth2
    flows:
      clientCredentials:
        tokenUrl: '{nrfApiRoot}/oauth2/token'
        scopes:
          niwmsc-smsservice: Access to the niwmsc-smsservice API

```

schemas:

```

SmsData:
  description: >
    Information within request message invoking MoForwardSm service operation,
    for delivering MO SMS.
  type: object
  required:
    - smsPayload
  properties:
    smsPayload:
      $ref: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'

SmsDeliveryData:
  description: >
    Information within response message invoking MoForwardSm service operation,
    for delivering MO SMS Delivery Report.
  type: object

```

```
required:
- smsPayload
properties:
  smsPayload:
    $ref: 'TS29571_CommonData.yaml#/components/schemas/RefToBinaryData'
```

COMPLEX TYPES:

SIMPLE TYPES:

ENUMS:

Annex B (informative): Withdrawn API versions

B.1 General

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

B.2 Niwmsc_SMSservice API

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

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

API version number	Remarks

Annex C (informative): Change history

Change history							
Date	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
2022-04	CT4#109e	C4-222331				C4-222331 as basis	0.1.0
2022-04	CT4#109e	C4-222343				Implementation of C4-222343 in CT4#109e	0.2.0
2022-05	CT4#110e	C4-223452				Implementation of C4-223219 and C4-223224 in CT4#110e	0.3.0
2022-06	CT#96	CP-221080				TS presented for information and approval	1.0.0
2022-06	CT#96	CP-221080				TS approved at CT#95	17.0.0
2022-09	CT#97e	CP-222027	0002	-	B	Add 3xx for the service operation	17.1.0
2022-09	CT#97e	CP-222027	0003	-	F	Alignment on the service name used with template	17.1.0
2022-09	CT#97e	CP-222027	0004	-	F	Corrections on the table name and NOTE	17.1.0
2022-09	CT#97e	CP-222027	0005	-	F	Update on the content type for OpenAPI	17.1.0
2022-09	CT#97e	CP-222027	0006	1	F	Update on the reference model	17.1.0
2022-09	CT#97e	CP-222058	0007	-	F	29.579 Rel-17 API version and External doc update	17.1.0

History

Document history		
V17.0.0	July 2022	Publication
V17.1.0	October 2022	Publication