

# ETSI TS 103 275 V1.1.1 (2015-05)



TECHNICAL SPECIFICATION

**Satellite Earth Stations and Systems (SES);  
Broadband Satellite Multimedia (BSM);  
Common air interface specification;  
Satellite Independent Service Access Point (SI-SAP) interface:  
Services**

---

Reference

DTS/SES-00351

---

Keywords

BSS, interface, MSS, protocol, satellite

**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 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

---

**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 only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

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  
<http://portal.etsi.org/tb/status/status.asp>

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>

---

**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.

© European Telecommunications Standards Institute 2015.  
All rights reserved.

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

# Contents

Intellectual Property Rights .....	6
Foreword.....	6
Modal verbs terminology.....	6
Introduction .....	6
1 Scope .....	7
2 References .....	7
2.1 Normative references .....	7
2.2 Informative references.....	8
3 Definitions and abbreviations.....	9
3.1 Definitions .....	9
3.2 Abbreviations .....	10
4 Document overview .....	11
4.1 Relations with other ETSI documents .....	11
4.2 Structure of the present document .....	12
5 ETSI BSM architecture .....	13
5.1 General .....	13
5.2 Architecture definition .....	13
5.3 Services .....	14
5.4 SI-SAP interface.....	16
5.5 Defined SI-SAP interface service primitives.....	17
5.6 Update of SI-SAP interface service primitives.....	18
6 SI-SAP interface service primitives .....	18
6.1 General .....	18
6.2 Logon .....	19
6.2.1 Service definition .....	19
6.2.2 Primitives involved in the service.....	19
6.2.3 Parameters.....	19
6.2.4 Service primitive: SI-C-LOGON .....	19
6.2.4.1 SI-C-LOGON primitive specification .....	19
6.2.4.2 SI-C-LOGON-IND .....	19
6.3 Logoff.....	19
6.3.1 Service definition.....	19
6.3.2 Primitives involved in the service.....	20
6.3.3 Parameters.....	20
6.3.4 Service primitive: SI-C-LOGOFF .....	20
6.3.4.1 SI-C-LOGOFF primitive specification .....	20
6.3.4.2 SI-C-LOGOFF-IND .....	20
6.4 SI layer configuration.....	20
6.4.1 Service definition.....	20
6.4.2 Primitives involved in the service.....	21
6.4.3 Parameters.....	21
6.4.4 Service primitive: SI-C-SICONF.....	22
6.4.4.1 SI-C-SICONF primitive specification.....	22
6.4.4.2 SI-C-SICONF-REQ .....	22
6.4.4.3 SI-C-SICONF-CFM.....	22
6.4.4.4 SI-C-SICONF-IND .....	22
6.4.4.5 SI-C-SICONF-RES .....	22
6.5 Group transmit.....	23
6.5.1 Service definition.....	23
6.5.2 Primitives involved in the service.....	23
6.5.3 Parameters.....	23
6.5.4 Service primitive: SI-C-MCGROUP_ADD.....	23
6.5.4.1 SI-C-MCGROUP_ADD primitive specification.....	23

6.5.4.2	SI-C-MCGROUP_ADD-REQ .....	23
6.5.4.3	SI-C-MCGROUP_ADD-CFM .....	24
6.5.5	Service primitive: SI-C-MCGROUP_REMOVE .....	24
6.5.5.1	SI-C-MCGROUP_REMOVE primitive specification .....	24
6.5.5.2	SI-C-MCGROUP_REMOVE-REQ .....	24
6.5.5.3	SI-C-MCGROUP_REMOVE-CFM .....	24
6.6	Data transfer .....	24
6.6.1	Service definition .....	24
6.6.2	Primitives involved in the service .....	24
6.6.3	Parameters .....	25
6.6.4	Service primitive: SI-U-UNITDATA .....	25
6.6.4.1	SI-U-UNITDATA primitive specification .....	25
6.6.4.2	SI-U-UNITDATA-REQ .....	25
6.6.4.3	SI-U-UNITDATA-IND .....	25
6.7	Summary of SI-SAP interface service primitives .....	26
<b>Annex A (informative): Use of the SI-SAP interface service primitives .....</b>		<b>27</b>
A.1	General .....	27
A.2	Use-Cases .....	27
A.3	Use of SI-SAP interface service primitives .....	27
A.3.1	General .....	27
A.3.2	Logon/logoff .....	27
A.3.3	SI layer configuration .....	29
A.3.4	Address resolution .....	31
A.3.5	Multicast management .....	32
A.3.5.1	General .....	32
A.3.5.2	Group creation .....	32
A.3.5.3	Group join .....	32
A.3.5.4	Group leave .....	34
A.3.6	Resource reservation .....	35
A.3.6.1	General .....	35
A.3.6.2	Request of a new resource reservation .....	35
A.3.6.3	Modification of an existing resource reservation .....	35
A.3.6.4	Release of an existing resource reservation .....	36
A.3.6.5	Status of an existing resource reservation .....	37
A.3.7	Data transfer .....	37
A.4	Interaction of SI-SAP interface service primitives .....	38
A.4.1	General .....	38
A.4.2	System initialization .....	38
A.4.3	Data communication .....	39
A.4.3.1	General .....	39
A.4.3.2	Unicast .....	40
A.4.3.3	Multicast .....	41
<b>Annex B (informative): Implementation of the SI-SAP as external interface .....</b>		<b>44</b>
B.1	Introduction .....	44
B.2	Message format .....	45
B.2.1	General and syntax definition .....	45
B.2.2	SI-SAP header .....	45
B.2.3	SI-SAP interface primitive messages .....	46
B.2.3.1	Data transfer .....	46
B.2.3.2	Logon/logoff .....	47
B.2.3.3	SI layer configuration .....	47
B.2.3.4	Address resolution .....	49
B.2.3.5	Multicast management .....	51
B.2.3.6	Resource reservation .....	53
B.3	Protocol encapsulation .....	57
B.3.1	General .....	57

B.3.2	Option 1.....	57
B.3.2.1	Datagram encapsulation.....	57
B.3.2.2	UDP datagram encapsulation.....	57
B.3.2.3	TCP segment encapsulation.....	58
B.3.2.4	IP datagram encapsulation.....	58
B.3.3	Option 2.....	58
History	.....	59

---

## Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is 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 (<http://ipr.etsi.org>).

Pursuant to the ETSI IPR Policy, no investigation, 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.

---

## Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Satellite Earth Stations and Systems (SES).

---

## 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.

---

## Introduction

The SI-SAP interface implements the concept of hardware abstraction layer, aimed at logically separating Satellite Independent (SI) from Satellite Dependent (SD) layers of the protocol stack. In particular, it enables address resolution, multicast management, resource reservation and data transfer services so as to keep the implementation of the involved functionalities at SI and SD layer independent. To this regard, the present document identifies the functional areas for which SI-SAP interface service primitives are actually missing and provides guidance to the use and the implementation of the complete set of SI-SAP interface service primitives.

It can be noted that the definition of SI-SAP interface services and the technical specification of inherent primitives complements and completes the material already available in the existing ETSI documents relating to SI-SAP interface ETSI TS 102 292 [1] to ETSI TS 102 461 [9]. Hence, the present document along with technical specifications ETSI TS 102 292 [1] to ETSI TS 102 461 [9] should be considered as the reference documentation for SI-SAP interface services' definition and primitives' specification.

---

# 1 Scope

The present document specifies the SI-SAP interface service and related primitives preliminarily defined in [1] and [7].

The scope of the document is twofold. On the one hand, revision of existing service specifications is carried out in order to reflect services' update demanded by current satellite systems. On the other hand, new services are defined in order to bridge the gaps in the following functional areas:

- Logon/logoff.
- Satellite Independent (SI) layer configuration.
- Group transmit.

Accordingly, the specification of new primitives for the aforementioned services is also provided in the present document.

Final notes about the use and the implementation of SI-SAP interface service primitives are provided as two independent annexes at the end of the present document. In more detail, illustration of SI-SAP interface and primitives' implementation in specific use-cases is given in the annex A. Details about the implementation of a SI-SAP interface in real satellite system are provided in the annex B, where the focus is on the SI-SAP interface implementation as i) local interface (mandatory) or ii) external interface to a BSM subsystem (optional).

---

## 2 References

### 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI TS 102 292 (V1.1.1): "Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia (BSM) services and architectures; Functional architecture for IP interworking with BSM networks".
- [2] ETSI TS 102 464 (V1.1.1): "Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia (BSM); Interworking with DiffServ QoS".
- [3] ETSI TS 102 463 (V1.1.1): "Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia (BSM); Interworking with IntServ QoS".
- [4] ETSI TS 102 462 (V1.1.1): "Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia (BSM); QoS Functional Architecture".
- [5] ETSI TS 102 460 (V1.1.1): "Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia (BSM); Address Management at the SI-SAP".
- [6] ETSI TS 102 856-2 (V1.1.1): "Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia (BSM); Multi-Protocol Label Switching (MPLS) interworking over satellite; Part 2: Negotiation and management of MPLS labels and MPLS signalling with attached networks".
- [7] ETSI TS 102 357 (V1.1.1): "Satellite Earth Stations and Systems (SES); Broadband Satellite Multimedia (BSM); Common Air interface specification; Satellite Independent Service Access Point SI-SAP".