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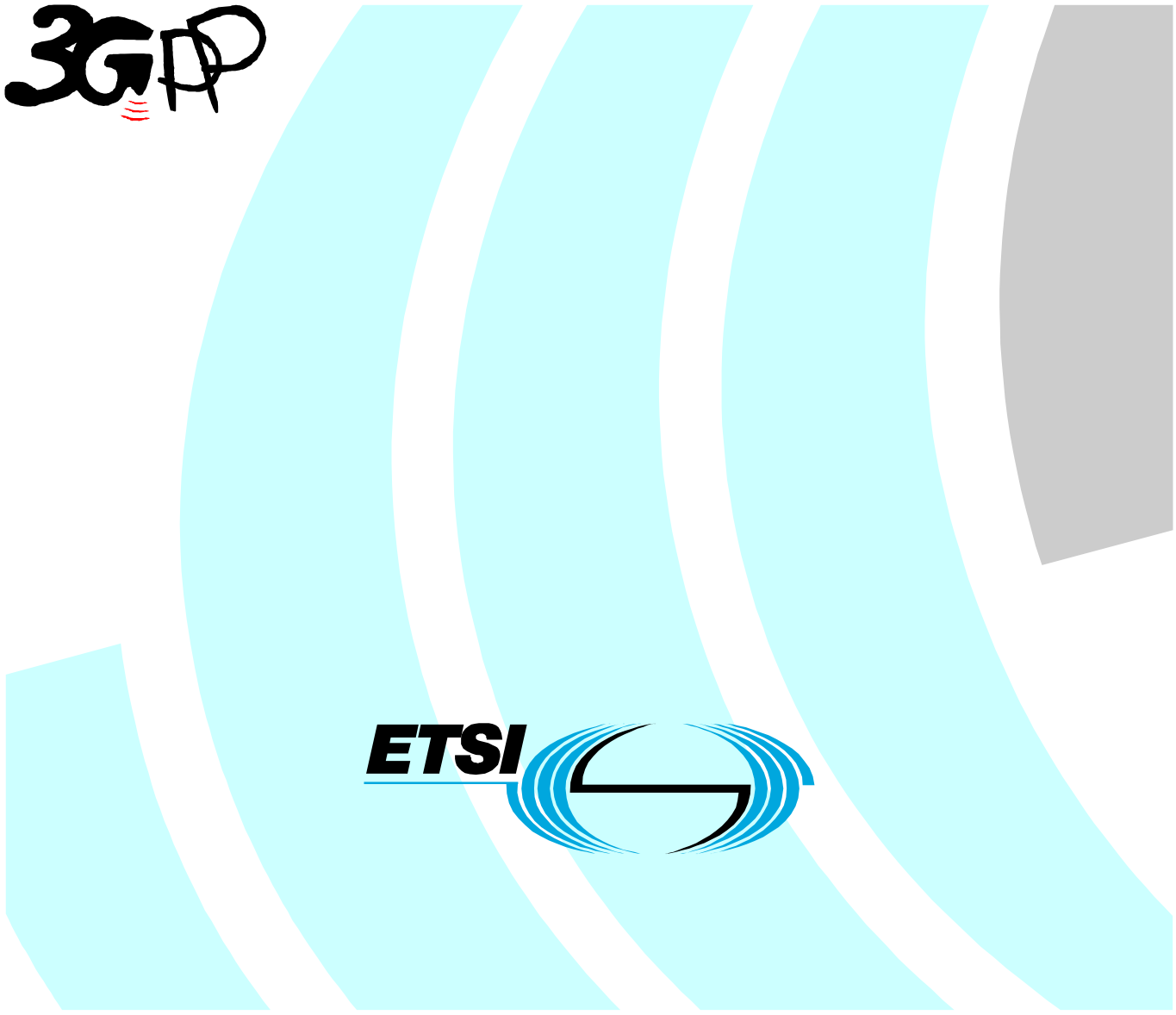
Technical Specification

Universal Mobile Telecommunications System (UMTS);
Open Service Access (OSA);
Application Programming Interface (API);
Part 7: Terminal capabilities
(3GPP TS 29.198-7 version 4.4.0 Release 4)



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Foreword

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Contents

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.

Introduction

The present document is part 7 of a multi-part TS covering the 3rd Generation Partnership Project: Technical Specification Group Core Network; Open Service Access (OSA); Application Programming Interface (API), as identified below. The **API specification** (3GPP TS 29.198) is structured in the following Parts:

Part 1:	Overview	
Part 2:	Common Data Definitions	
Part 3:	Framework	
Part 4:	Call Control SCF	
Part 5:	User Interaction SCF	
Part 6:	Mobility SCF	
Part 7:	**Terminal Capabilities SCF**	
Part 8:	Data Session Control SCF	
Part 9:	Generic Messaging SCF	(not part of 3GPP Release 4)
Part 10:	Connectivity Manager SCF	(not part of 3GPP Release 4)
Part 11:	Account Management SCF	
Part 12:	Charging SCF	

The **Mapping specification of the OSA APIs and network protocols** (3GPP TR 29.998) is also structured as above. A mapping to network protocols is however not applicable for all Parts, but the numbering of Parts is kept. Also in case a Part is not supported in a Release, the numbering of the parts is maintained.

OSA API specifications 29.198-family		OSA API Mapping - 29.998-family	
29.198-1	**Part 1: Overview**	**29.998-1**	**Part 1: Overview**
29.198-2	**Part 2: Common Data Definitions**	*29.998-2*	*Not Applicable*
29.198-3	**Part 3: Framework**	*29.998-3*	*Not Applicable*
29.198-4	**Part 4: Call Control SCF**	**29.998-4-1**	**Subpart 1: Generic Call Control – CAP mapping**
		29.998-4-2	
29.198-5	**Part 5: User Interaction SCF**	**29.998-5-1**	**Subpart 1: User Interaction – CAP mapping**
		29.998-5-2	
		29.998-5-3	
		29.998-5-4	**Subpart 4: User Interaction – SMS mapping**
29.198-6	**Part 6: Mobility SCF**	**29.998-6**	**User Status and User Location – MAP mapping**
29.198-7	**Part 7: Terminal Capabilities SCF**	*29.998-7*	*Not Applicable*
29.198-8	**Part 8: Data Session Control SCF**	**29.998-8**	**Data Session Control – CAP mapping**
29.198-9	*Part 9: Generic Messaging SCF*	*29.998-9*	*Not Applicable*
29.198-10	*Part 10: Connectivity Manager SCF*	*29.998-10*	*Not Applicable*
29.198-11	**Part 11: Account Management SCF**	*29.998-11*	*Not Applicable*
29.198-12	**Part 12: Charging SCF**	*29.998-12*	*Not Applicable*

1 Scope

The present document is part of the Stage 3 specification for an Application Programming Interface (API) for Open Service Access (OSA).

The OSA specifications define an architecture that enables application developers to make use of network functionality through an open standardised interface, i.e. the OSA APIs. The concepts and the functional architecture for the OSA are contained in 3GPP TS 23.127 [3]. The requirements for OSA are contained in 3GPP TS 22.127 [2].

The present document specifies the Terminal Capabilities Service Capability Feature (SCF) aspects of the interface. All aspects of the Terminal Capabilities SCF are defined here, these being:

- Sequence Diagrams
- Class Diagrams
- Interface specification plus detailed method descriptions
- State Transition diagrams
- Data definitions
- IDL Description of the interfaces

The process by which this task is accomplished is through the use of object modelling techniques described by the Unified Modelling Language (UML).

This specification has been defined jointly between 3GPP TSG CN WG5, ETSI SPAN 12 and the Parlay Consortium, in co-operation with a number of JAIN™ Community member companies.

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 TS 29.198-1 "Open Service Access; Application Programming Interface; Part 1: Overview".

[2] 3GPP TS 22.127: "Stage 1 Service Requirement for the Open Service Access (OSA) (Release 4)".

[3] 3GPP TS 23.127: "Virtual Home Environment (Release 4)".

[4] World Wide Web Consortium Composite Capability/Preference Profiles (CC/PP): A user side framework for content negotiation (www.w3.org)

[5] Wireless Application Protocol (WAP), Version 1.2, UAProf Specification (www.wapforum.org)

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 29.198-1 [1] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TS 29.198-1 [1] apply.

4 Terminal Capabilities SCF

The following clauses describe each aspect of the Terminal Capability Feature (SCF).

The order is as follows:

- The Sequence diagrams give the reader a practical idea of how each of the SCF is implemented.
- The Class relationships clause show how each of the interfaces applicable to the SCF, relate to one another.
- The Interface specification clause describes in detail each of the interfaces shown within the Class diagram part.
- The State Transition Diagrams (STD) show the the transition between states in the SCF. The states and transitions are well-defined; either methods specified in the Interface specification or events occurring in the underlying networks cause state transitions.
- The Data definitions section show a detailed expansion of each of the data types associated with the methods within the classes. Note that some data types are used in other methods and classes and are therefore defined within the Common Data types part of this specification.

5 Sequence Diagrams

There are no Sequence Diagrams for the Terminal Capabilities SCF.

6 Class Diagrams

Terminal Capabilities Class Diagram:

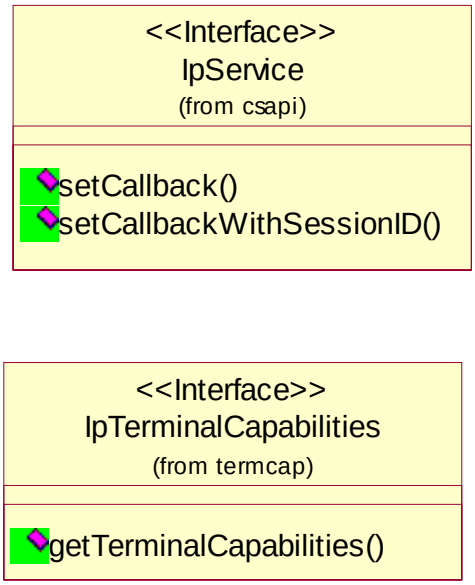


Figure: Package Overview

7 The Service Interface Specifications

7.1 Interface Specification Format

This clause defines the interfaces, methods and parameters that form a part of the API specification. The Unified Modelling Language (UML) is used to specify the interface classes. The general format of an interface specification is described below.

7.1.1 Interface Class

This shows a UML interface class description of the methods supported by that interface, and the relevant parameters and types. The Service and Framework interfaces for enterprise-based client applications are denoted by classes with name `Ip<name>`. The callback interfaces to the applications are denoted by classes with name `IpApp<name>`. For the interfaces between a Service and the Framework, the Service interfaces are typically denoted by classes with name IpSvc<name>, while the Framework interfaces are denoted by classes with name IpFw<name>.

7.1.2 Method descriptions

Each method (API method "call") is described. Both synchronous and asynchronous methods are used in the API. Asynchronous methods are identified by a '`Req`' suffix for a method request, and, if applicable, are served by asynchronous methods identified by either a '`Res`' or '`Err`' suffix for method results and errors, respectively. To handle responses and reports, the application or service developer must implement the relevant `IpApp<name>` or `IpSvc<name>` interfaces to provide the callback mechanism.

7.1.3 Parameter descriptions

Each method parameter and its possible values are described. Parameters described as "in" represent those that must have a value when the method is called. Those described as "out" are those that contain the return result of the method when the method returns.

7.1.4 State Model

If relevant, a state model is shown to illustrate the states of the objects that implement the described interface.

7.2 Base Interface

7.2.1 Interface Class IpInterface

All application, framework and service interfaces inherit from the following interface. This API Base Interface does not provide any additional methods.

<<Interface>> IpInterface

7.3 Service Interfaces

7.3.1 Overview

The Service Interfaces provide the interfaces into the capabilities of the underlying network - such as call control, user interaction, messaging, mobility and connectivity management.

The interfaces that are implemented by the services are denoted as "Service Interface". The corresponding interfaces that must be implemented by the application (e.g. for API callbacks) are denoted as "Application Interface".

7.4 Generic Service Interface

7.4.1 Interface Class IpService

Inherits from: IpInterface

All service interfaces inherit from the following interface.

<<Interface>> IpService
setCallback (appInterface : in IpInterfaceRef) : void setCallbackWithSessionID (appInterface : in IpInterfaceRef, sessionID : in TpSessionID) : void

Method
`setCallback()`

This method specifies the reference address of the callback interface that a service uses to invoke methods on the application. It is not allowed to invoke this method on an interface that uses SessionIDs.

Parameters

appInterface : in IpInterfaceRef

Specifies a reference to the application interface, which is used for callbacks

Raises

TpCommonExceptions, P_INVALID_INTERFACE_TYPE

Method

setCallbackWithSessionID()

This method specifies the reference address of the application's callback interface that a service uses for interactions associated with a specific session ID: e.g. a specific call, or call leg. It is not allowed to invoke this method on an interface that does not use SessionIDs.

Parameters

appInterface : in IpInterfaceRef

Specifies a reference to the application interface, which is used for callbacks

sessionID : in TpSessionID

Specifies the session for which the service can invoke the application's callback interface.

Raises

TpCommonExceptions, P_INVALID_SESSION_ID, P_INVALID_INTERFACE_TYPE

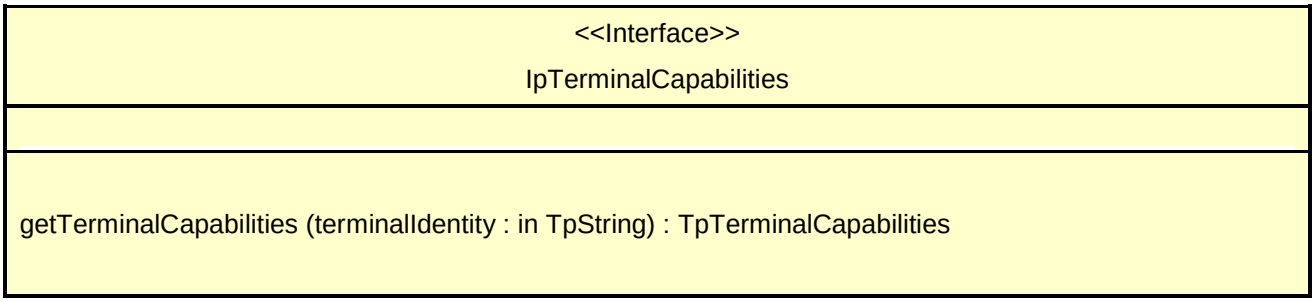
8 Terminal Capabilities Interface Classes

The Terminal Capabilities SCF enables the application to retrieve the terminal capabilities of the specified terminal. The Terminal Capabilities service provides a SCF interface that is called IpTerminalCapabilities. There is no need for an application interface, since IpTerminalCapabilities only contains the synchronous method getTerminalCapabilities.

8.1 Interface Class IpTerminalCapabilities

Inherits from: IpInterface.

The Terminal Capabilities SCF interface IpTerminalCapabilities contains the synchronous method getTerminalCapabilities. The application has to provide the terminaIdentity as input to this method. The result indicates whether or not the terminal capabilities are available in the network and, in case they are, it will return the terminal capabilities (see the data definition of TpTerminalCapabilities for more information).



Method

`getTerminalCapabilities()`

This method is used by an application to get the capabilities of a user's terminal. Direction: Application to Network.

Returns result : Specifies the latest available capabilities of the user´s terminal.

This information, if available, is returned as CC/PP headers as specified in W3C and adopted in the WAP UAProf specifications (see references in Part 1 of this specification). It contains URLs; terminal attributes and values, in RDF format; or a combination of both.

Parameters

`terminalIdentity : in TpString`

Identifies the terminal. It may be a logical address known by the WAP Gateway/PushProxy.

Returns

`TpTerminalCapabilities`

Raises

`TpCommonExceptions, P_INVALID_TERMINAL_ID`

9 State Transition Diagrams

There are no State Transition Diagrams for the Terminal Capabilities SCF.

10 Terminal Capabilities Data Definitions

The constants and types defined in the following clauses are defined in the *org.csapi.termcap* package.

All data types referenced but not defined in this clause are common data definitions which may be found in 3GPP TS 29.198-2.

10.1 terminalIdentity

Identifies the terminal.

Name	Type	Documentation
`terminalIdentity`	`TpString`	Identifies the terminal. It may be a logical address known by the WAP Gateway/PushProxy.

10.2 TpTerminalCapabilities

This data type is a Sequence of Data Elements that describes the terminal capabilities. It is a structured type that consists of:

Sequence Element Name	Sequence Element Type	Documentation
StatusCode	TpBoolean	Indicates whether or not the TerminalCapabilities are available.
TerminalCapabilities	TpString	Specifies the latest available capabilities of the user's terminal. This information, if available, is returned as CC/PP headers as specified in W3C [4] and adopted in the WAP UAProf specification [5]. It contains URLs; terminal attributes and values, in RDF format; or a combination of both.

10.3 TpTerminalCapabilitiesError

Defines an error that is reported by the Terminal Capabilities SCF.

Name	Value	Description
P_TERMCAP_ERROR_UNDEFINED	0	Undefined.
P_TERMCAP_INVALID_TERMINALID	1	The request can not be handled because the terminal id specified is not valid.
P_TERMCAP_SYSTEM_FAILURE	2	System failure. The request cannot be handled because of a general problem in the terminal capabilities service or the underlying network.

11 Exception Classes

The following are the list of exception classes which are used in this interface of the API.

Name	Description
P_INVALID_TERMINAL_ID	The request can not be handled because the terminal id specified is not valid.

Each exception class contains the following structure:

Structure Element Name	Structure Element Type	Structure Element Description
ExtraInformation	TpString	Carries extra information to help identify the source of the exception, e.g. a parameter name

Annex A (normative): OMG IDL Description of Terminal Capabilities SCF

The OMG IDL representation of this interface specification is contained in a text file (termcap.idl contained in archive 2919807IDL.ZIP) which accompanies the present document.

Annex B (informative): Differences between this draft and 3GPP TS 29.198 R99

getTerminalCapabilities now throws TpCommonExceptions and individual, identified exceptions

All methods now return void or the former out parameter.

IpService

setCallback() and setCallbackWithSessionID() now both raise P_INVALID_INTERFACE_TYPE.

Annex C (informative): Change history

Change history							
Date	**TSG #**	**TSG Doc.**	**CR**	**Rev**	**Subject/Comment**	**Old**	**New**
Mar 2001	CN_11	NP-010134	047	--	CR 29.198: for moving TS 29.198 from R99 to Rel 4 (N5-010158)	3.2.0	4.0.0
Jun 2001	CN_12	NP-010330	001	--	Corrections to OSA API Rel4	4.0.0	4.1.0
Sep 2001	CN_13	NP-010470	002	--	Changing references to JAIN	4.1.0	4.2.0
Dec 2001	CN_14	NP-010600	003	--	Replace Out Parameters with Return Types	4.2.0	4.3.0
Mar 2002	CN_15	NP-020109	004	--	Add P_INVALID_INTERFACE_TYPE exception to IpService.setCallback() and IpService.setCallbackWithSessionID()	4.3.0	4.4.0

History

Document history		
V4.0.0	March 2001	Publication
V4.1.0	June 2001	Publication
V4.2.0	September 2001	Publication
V4.3.0	December 2001	Publication
V4.4.0	March 2002	Publication