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ETSI Standard

Open Service Access (OSA);
Application Programming Interface (API);
Part 7: Terminal Capabilities SCF
(Parlay 3)

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Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

The present document is part 7 of a multi-part deliverable covering Open Service Access (OSA); Application Programming Interface (API), as identified below. The API specification (ES 201 915) 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";

Part 10:   "Connectivity Manager SCF";

Part 11:   "Account Management SCF";

Part 12:   "Charging SCF".

The present document has been defined jointly between ETSI, The Parlay Group (http://www.parlay.org) and the 3GPP, in co-operation with a number of JAIN™ Community (http://www.java.sun.com/products/jain) member companies.

The present document forms part of the Parlay 3.3 set of specifications.

The present document is equivalent to 3GPP TS 29.198-7 V4.5.0 (Release 4).

1 Scope

The present document is part 7 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 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).

2 References

The references listed in clause 2 of ES 201 915-1 contain provisions which, through reference in this text, constitute provisions of the present document.

ETSI ES 201 915-1: "Open Service Access (OSA); Application Programming Interface (API); Part 1: Overview (Parlay 3)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ES 201 915-1 apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations defined in ES 201 915-1 apply.

4 Terminal Capabilities SCF

The following clauses describe each aspect of the Terminal Capabilities Service 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 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 clause 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 the present document.

4.1   General requirements on support of methods

An implementation of this API which supports or implements a method described in the present document, shall support or implement the functionality described for that method, for at least one valid set of values for the parameters of that method.

Where a method is not supported by an implementation of a Service interface, the exception P_METHOD_NOT_SUPPORTED shall be returned to any call of that method.

Where a method is not supported by an implementation of an Application interface, a call to that method shall be possible, and no exception shall be returned.

5   Sequence Diagrams

There are no Sequence Diagrams for the Terminal Capabilities SCF.

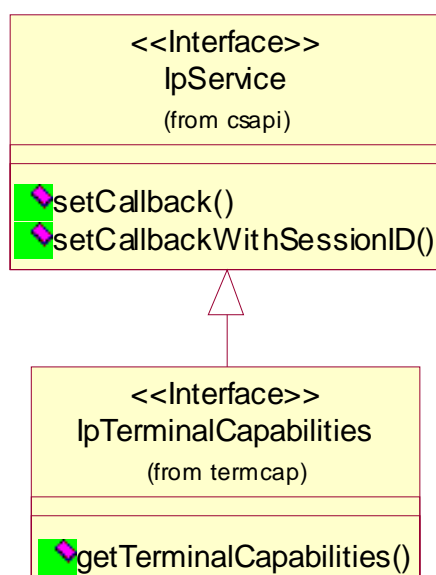# 6   Class Diagrams

Terminal Capabilities Class Diagram:

Figure 1: 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: IpService.

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).

This interface shall be implemented by a Terminal Capabilities SCF. The getTerminalCapabilities()method shall be implemented as a minimum requirement.

<<Interface>>
IpTerminalCapabilities
getTerminalCapabilities (terminalIdentity : in TpString) : TpTerminalCapabilities

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 the present document). 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 ES 201 915-2.

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
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 (see [6] in ES 201 915-1) and adopted in the WAP UAProf specification (see [9] in ES 201 915-1). It contains URLs; terminal attributes and values, in RDF format; or a combination of both.
StatusCode	TpBoolean	Indicates whether or not the TerminalCapabilities are available.

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 es_20191507v010401p0.ZIP) which accompanies the present document.

Annex B (informative):
Contents of 3GPP OSA R4 Terminal Capabilities

All of the present document is relevant for TS 129 198-7 V4 (Release 4).

Annex C (informative):
Record of changes

The following is a list of the changes made to the present document for each release. The list contains the names of all changed, deprecated, added or removed items in the specifications and not the actual changes. Any type of change information that is important to the reader is put in the final clause of this annex.

Changes are specified as changes to the prior major release, but every minor release will have its own part of the table allowing the reader to know when the actual change was made.

C.1 Interfaces

C.1.1 New

Identifier	Comments
Interfaces added in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.1.2 Deprecated

Identifier	Comments
Interfaces deprecated in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.1.3 Modified

Identifier	Comments
Interfaces modified in ES 201 915-7 version 1.4.1 (Parlay 3.3)	
IpTerminalCapabilities	Changed to inherit from IpService

C.1.4 Removed

Identifier	Comments
Interfaces removed in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.2 Methods

C.2.1 New

Identifier	Comments
Methods added in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.2.2   Deprecated

Identifier	Comments
Methods deprecated in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.2.3   Modified

Identifier	Comments
Methods modified in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.2.4   Removed

Identifier	Comments
Methods removed in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.3   Data Definitions

C.3.1   New

Identifier	Comments
Data Definitions added in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.3.2   Modified

Identifier	Comments
Data Definitions modified in ES 201 915-7 version 1.4.1 (Parlay 3.3)	
TpTerminalCapabilities	Order of elements in struct changed in document to match IDL

C.3.3   Removed

Identifier	Comments
Data Definitions removed in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.4 Service Properties

C.4.1 New

Identifier	Comments
Service Properties added in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.4.2 Deprecated

Identifier	Comments
Service Properties deprecated in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.4.3 Modified

Identifier	Comments
Service Properties modified in ES 202 915-7 version 1.1.1 (Parlay 4.0)	

C.4.4 Removed

Identifier	Comments
Service Properties removed in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.5 Exceptions

C.5.1 New

Identifier	Comments
Exceptions added in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.5.2 Modified

Identifier	Comments
Exceptions modified in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.5.3 Removed

Identifier	Comments
Exceptions removed in ES 201 915-7 version 1.4.1 (Parlay 3.3)	

C.6 Others

History

Document history		
V1.1.1	February 2002	Publication
V1.2.1	July 2002	Publication
V1.3.1	October 2002	Publication
V1.4.1	May 2003	Membership Approval Procedure MV 20030725: 2003-05-27 to 2003-07-25
V1.4.1	July 2003	Publication