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Supplement 40

(11/2002)

SERIES Q: SWITCHING AND SIGNALLING

Technical Report: Reference document on API/object interface between network control and application layer

ITU-T Q-series Recommendations – Supplement 40

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Technical Report: Reference document on API/object interface between network control and application layer

Summary

There are many API/Object Interface-related activities outside of ITU-T SG11. Many API/Object Interface specifications have already been released from such activities and a lot of discussions for new APIs/Object Interfaces are starting within them. However, there is no good reference material to help introduce the API/Object Interface specifications under current discussion and it is difficult to know what kind of APIs are released or discussed. This Supplement provides high-level descriptions of API/Object Interface-related activities outside of ITU-T, covering the interface between network control and application layers. This Supplement should be used as a reference to the other API/Object Interface activities outside of ITU-T. This Supplement will also help to avoid the overlapping of the standardization effort.

Source

Supplement 40 to ITU-T Q-series Recommendations was prepared by ITU-T Study Group 11 (2001-2004) and approved under ITU-T Recommendation A.13 (10/2000) procedure on 22 November 2002.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this publication, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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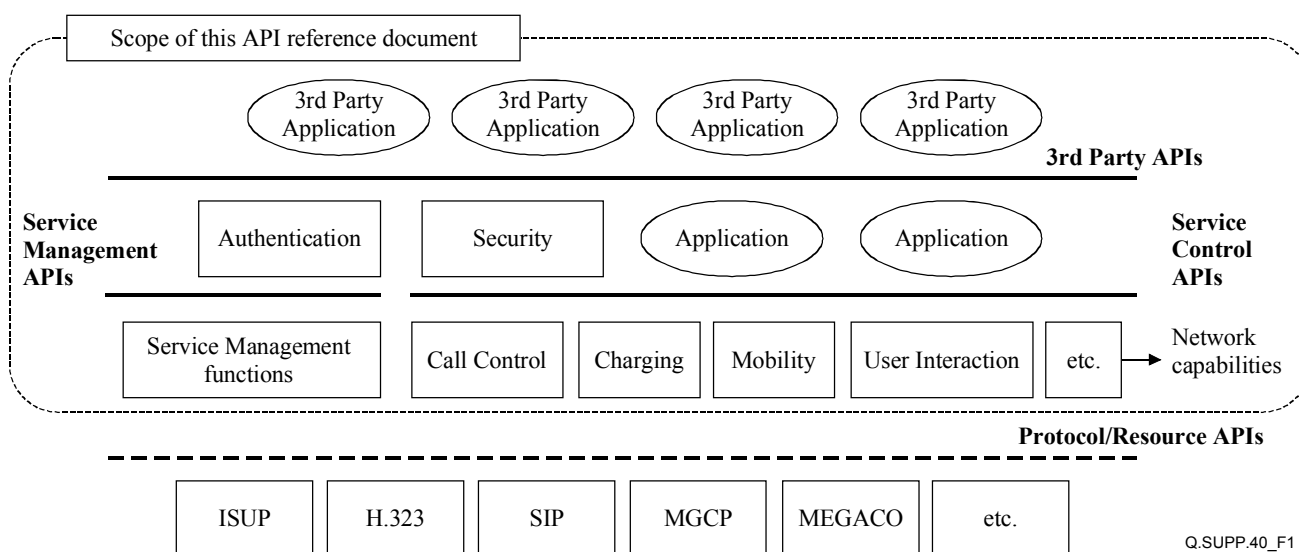
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Supplement 40 to ITU-T Q-series Recommendations

Technical Report: Reference document on API/object interface between network control and application layer

1 Scope

This Supplement provides high level descriptions of API/Object Interface related activities outside of ITU-T and clarifies the applicability of each API/Object Interface specification. It focuses on the specifications of API/Object Interface between network control and application layers. It will also help to avoid the overlapping of the standardization effort. The scope of this Supplement is shown in Figure 1.



Q.SUPP.40_F1

Figure 1 – Reference layered model of network

The outline of Each API category is as follows.

3rd Party APIs: The APIs in this category are the APIs open for 3rd Party and they provide authentication and security functions. 3rd Party can utilize Service Control APIs and Service Management APIs through these APIs.

Service Control APIs: The APIs in this category provide network capabilities to control services. The example APIs included in this category are Call Control, Charging, Mobility, User Interaction, etc. Network operators or 3rd Party can develop their applications making use of these APIs.

Service Management APIs: The APIs in this category provide service management functions such as to support execution, deployment and observation of services, etc. The example APIs included in this category are Service Execution, Deployment, etc. Network operators can manage services based on these APIs.

Protocol/Resource APIs: The APIs in this category provide protocol/resource oriented functions to network capability functions. The APIs in this category are not within the scope of this Supplement.

2 References

2.1 Website References

- [w1] Parlay website: <http://www.parlay.org/>
- [w2] ETSI website: <http://docbox.etsi.org/span/open/span12/osa.html>
- [w3] 3GPP website: <http://www.3gpp.org/>
- [w4] JAIN website: <http://java.sun.com/products/jain/>
- [w5] OMG website: <http://www.omg.org/>
- [w6] TINA website: <http://www.tinac.com>

2.2 Document References

- [d1] 3GPP TS 21.903 Vocabulary document
- [d2] Parlay website for downloading documents: <http://www.parlay.org/specs/index.asp>
- [d3] ETSI website for downloading documents: <http://pda.etsi.org/pda/queryform.asp>
- [d4] 3GPP website for downloading documents: <http://www.3gpp.org/TB/cn/cn5/specs.htm>
- [d5] JAIN website for downloading documents:
http://java.sun.com/products/jain/api_specs.html
- [d6] JAIN White Paper: http://java.sun.com/products/jain/wp_articles.html
- [d7] OMG website for downloading documents:
http://www.omg.org/technology/documents/spec_catalog.htm
- [d8] TINA website for downloading documents:
<http://www.tinac.com/specifications/specifications.htm>

3 Definitions

The definitions in this Supplement follow the definitions in each standard body (e.g. 3GPP vocabulary document [d1]).

4 Abbreviations

The abbreviations in this Supplement follow the abbreviations in each standard body (e.g. 3GPP vocabulary document [d1]).

5 Activity in each standard body

This clause provides introduction to each activity of API-related standard bodies.

5.1 Parlay/ETSI/3GPP

5.1.1 Overview of joint activity

5.1.1.1 Overview

The Parlay Group [w1], ETSI [w2], and 3rd Generation Partnership Project (3GPP) [w3] are working jointly to define common API for Open Service Access (OSA). Hereafter, the API developed by this joint group is called OSA/Parlay API.

A detailed description of each standard body is given in the following clauses.

The OSA/Parlay APIs are intended to enable a new generation of off-the-shelf network applications and components (e.g. messaging, mobility, end-to-end quality of service) to be developed by application providers (Independent Software Vendor (ISV)/Application Service Provider (ASP)) independent of the underlying voice/multimedia network. Faster time-to-market and a less complex development cycle are some of the expected key benefits of the OSA/Parlay APIs. The OSA/Parlay APIs consist of two categories of interface:

- Service Interfaces. These offer applications access to a range of network capabilities and information.
- Framework Interfaces. These provide the supporting capabilities necessary for the Service Interfaces to be secure and manageable.

5.1.1.2 Description

The OSA/Parlay API uses the Unified Modelling Language (UML) to describe access to Third Party Service applications.

The API is not a piece of code but provides a mechanism whereby objects transparently make requests to, and receive responses from, other objects on different platforms in heterogeneous environments like Intelligent Networks.

Where the OSA/Parlay API is located in the network is shown in Figure 2.

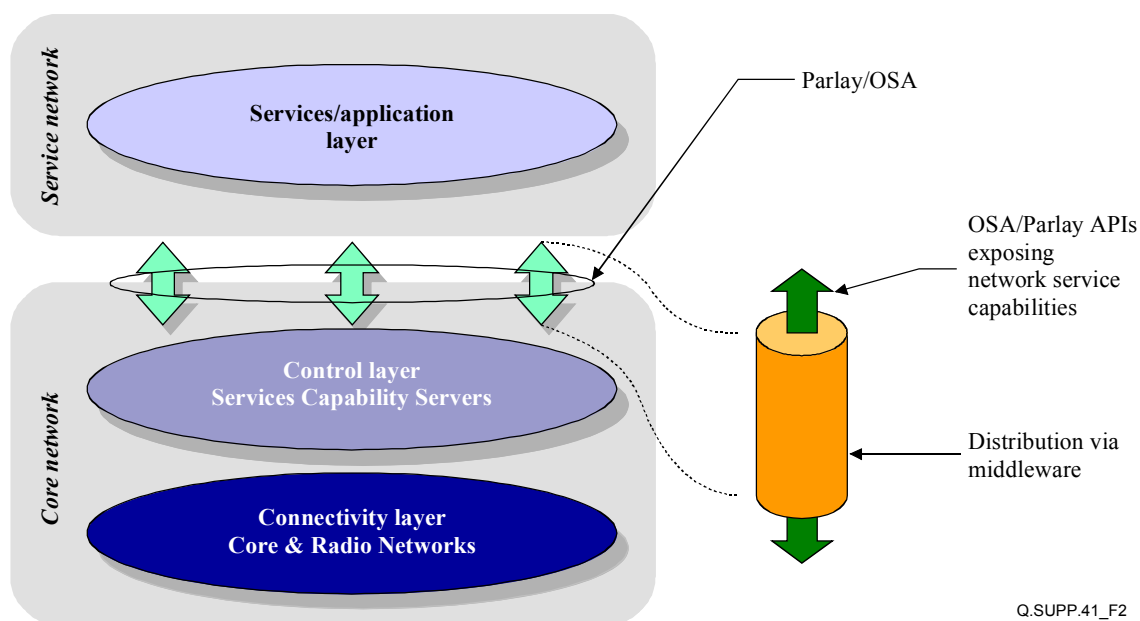


Figure 2 – Where the Parlay/OSA API is located

The architecture of Parlay/OSA API is shown in Figure 3.

Functions provided by the service interfaces allow access to traditional network capabilities such as call management, messaging, and user interaction. The service interfaces also include generic application interfaces to ease the deployment of communications applications.

Functions provided via the framework interfaces in the Parlay/OSA API specifications:

- Service Registration & subscription & discovery;
- Authentication and Authorisation;
- Integrity Management.

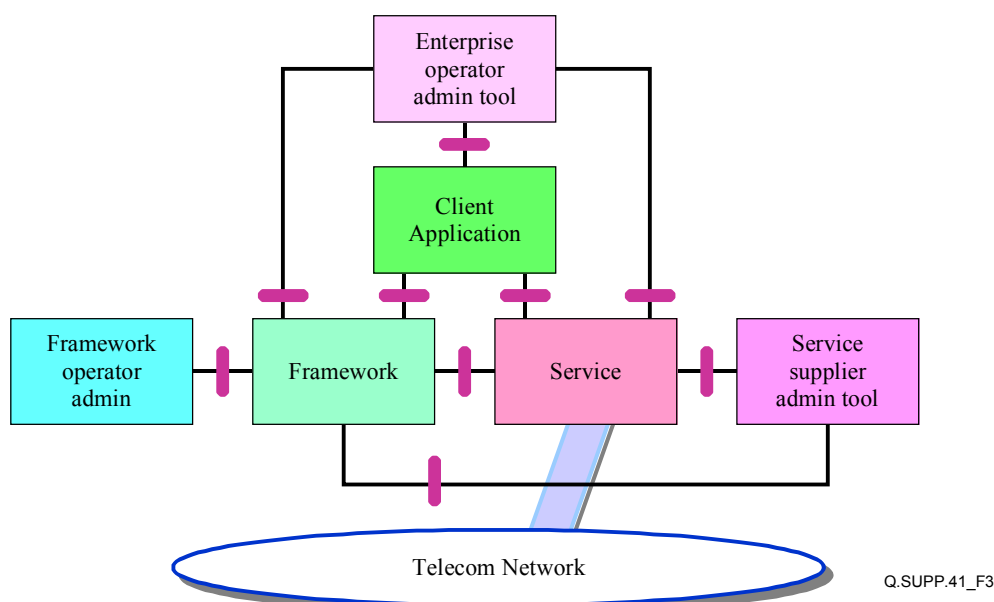


Figure 3 – The architecture of the Parlay/OSA APIs

The current Parlay/OSA API Service Capability Features (SCFs) are shown in Table 1.

Table 1 – Current Parlay/OSA SCFs

Call Control	The Call control family, with capabilities ranging from setting up basic calls to manipulating multimedia conference calls
Framework	Infrastructure capabilities such as authentication, SCF discovery, SCF registration, fault management, etc.
User Interaction	Obtain information from the end-user, play announcements, send short text messages, etc.
User location/User status	Obtain location and status information
Terminal capabilities	Obtain the capabilities of an end-user terminal
Data session control	Control of data sessions
Generic Messaging	Access to mailboxes
Connectivity Management	Provisioned QoS
Account Management	Access end-user accounts
Content based Charging	Charge end-users for use of applications / data
Policy Management	Tasks include the creation, update, deletion and viewing of Policy information
Presence and Availability Management	Management of information relating to presence, such as the dynamic state of devices / software and their owners

The API is object-oriented and consists of several categories of interfaces.

Generic service interfaces

The API is split into two types of interface class descriptions, Service and Framework. Framework classes are those that are perceived to be applicable to the interface irrespective of the type of service that is being implemented at a specific moment in time e.g. Authentication, whereas Service Interface classes are individual services that may be required by the client or network operator to enable the running of third party applications over the interface, e.g. Messaging type service.

Each of the service capability feature description defines the interfaces, parameters and state models that form part of the API specification. UML is used to specify the interface classes. As such, it provides a UML interface class description of the methods (API calls) supported by that interface and the relevant parameters and types.

Framework interfaces

The Framework is split into two different sections, the first addressing the Client view. The second addresses the relationship between the Service and Framework providers. The client-to-Framework section is split into 5 parts, these being; Trust and Security Framework (which includes Authentication), Fault Management, Integrity Management, Service Subscription and Service Discovery. The Service-to-framework interface contains all of the same interfaces except for Service Subscription.

Service data definitions

Service Data Definitions provides the Data Definitions necessary to support the Generic Service interface. For instance the Generic Call Control Service Data Definitions describes each of the Data types that were shown in the detailed parameter descriptions made in the 'Generic Call Control Service Interface' part and so on.

Framework data definitions

Framework Data Definitions once again provide the Data Definitions necessary to support the Framework interface.

Common data definitions

Common Data Definitions provide the Data definitions that are common to both the Framework and Generic Service API parameters.

Sequence Transition Diagrams (STDs)

Sequence Transition Diagrams contains the sequence transition diagrams from each service. They are used to enhance the understanding of each service in more detail.

OMG IDL

OMG IDL provides an OMG IDL version of the whole API. It was felt useful that a working version of the API be produced so that the API could be realizable in the marketplace of today.

5.1.2 Parlay

5.1.2.1 Overview

The Parlay Group is an open, multi-vendor forum organized to create open, technology-independent Application Programming Interfaces (APIs) which enable IT companies, ASPs, ISVs, Internet Companies, e-Business Companies, software creators, service bureaux, and large and small enterprises as well as network providers, network equipment vendors and application suppliers to develop applications across multiple networks.

The Parlay Group is studying the enhancement of its APIs for enlarging their field of application in addition to Parlay/OSA APIs discussed in the joint group.

5.1.2.2 Description

The architecture of Parlay API is the same as that of Parlay/OSA API and it is shown in Figure 3.

The implementation of Parlay is based on application servers outside the network domain, running Parlay applications. A Parlay Gateway, provided by the network operator, ensures secure, manageable access to capabilities in the service provider's network (see Figure 4).