

1 3GPP2 S.R0057
2 Version 1.0
3 Version Date: July 9, 2002
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10 IP-based Service Architecture

11 12 *System Requirements*

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6 **REVISION HISTORY**

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REVISION HISTORY		
1.0	<i>Initial publication</i>	<i>July 9, 2002</i>

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1 **1 INTRODUCTION AND SCOPE**

2 This document specifies the requirements for the “IP-based Service
3 Architecture” from the perspective of the user(s) and/or the network
4 operator for the support of IP multimedia applications.

5 IP multimedia applications are supported by IP multimedia sessions that
6 use IP connectivity bearers of the All-IP network. This document
7 identifies Stage 1 architectural requirements for the All IP network to
8 support the applications.

9 The objective is to define and to standardize the “IP-based Service
10 Architecture” that can be incorporated into the operations of cdma2000
11 based wireless telecommunications networks.

12

13 **2 REFERENCES**

14

15 None Identified

16

17 **3 DEFINITIONS AND ABBREVIATIONS**

18 The terms and abbreviations which are used within this specification are
19 defined as follows:

API	Application Programming Interface
Application	A set of related functionality that use the underlying network capabilities to establish and maintain communication with other applications and/or to control and provide service to a user.
Background Mode	Mode of service delivery that does not require user interaction
ENUM	Telephone number mapping
Foreground Mode	Mode of service delivery that requires user interaction
Maintenance and Diagnostic mode	Maintenance and diagnostic mode of delivery that is directed to a specific mobile station
OMSA	Operator Managed Service Application

SA	Service Architecture
Session	Is a set of data flows between sender(s) and receiver(s). Typically, a session has a unique ID.

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4 GENERAL FEATURE DESCRIPTION

To allow implementation of operator and 3rd party service provider specific IP multimedia applications, the IP-based Service Architecture is designed to support rapid service creation and deployment using core network capabilities.

An open service architecture that provides standard Application Programming Interfaces (APIs) will allow OMSAs to access core network service capabilities and resources in a transparent way. The APIs enable OMSAs to make use of the network capabilities and resources in a secure manner.

5 DETAILED FUNCTIONALITY REQUIREMENTS

An IP-based service architecture shall support flexibility in the network servers as well as in the end user devices. This should be similar to the concept used in the Internet. The architectural framework enables operators and 3rd party service providers to efficiently deploy IP multimedia applications in their network. Furthermore, the architecture and its service capabilities shall support IP multimedia applications in a vendor independent environment. This document includes the requirements for:

- ?? Service Architecture (SA)
- ?? Service Interaction Management
- ?? Service Interface (SI)
- ?? Service Applications and Provisioning (SAP)
- ?? Support for IPv4 and IPv6 (IP4/6).

1 **5.1 Detailed Feature Characteristics and Requirements**

2 **5.1.1 Service Architecture**

3 The Service Architecture (SA) provides the access to the core network
4 capabilities and resources needed during OMSAs execution.
5

6 **5.1.1.1 Service Application Interaction**

7 **SA-1001** Service Provider or third party application vendors may
8 provide the service requested by the call instance. The SA
9 shall route information pertaining to the call instance to the
10 appropriate application server or other destination based on
11 configurable application routing information and the type of
12 processing requested for OMSAs.

13 **SA-1002** The SA shall support service logic invocations using
14 standard APIs.

15 **SA-1003** The SA shall have the capability to establish a mapping
16 between the subscriber, service, and call/session instance.

17 **SA-1004** The SA shall have the capability to process SIP requests.

18 **SA-1005** The SA shall be able to process requests for geographic
19 position information.

20 **SA-1006** The SA shall have the capability to obtain and update
21 subscriber profile information.

22 **SA-1007** The SA shall have the capability to obtain and update
23 subscriber contact information in the routing database (e.g.
24 ENUM).

25 **SA-1008** The SA shall have the capability to obtain and update
26 subscriber registration information and subscriber current
27 subscriber status (e.g., available, busy, offline).

28 **SA-1009** The SA shall have the capability to retrieve the policy
29 information (e.g. Network, security, etc).

30 **SA-1010** The SA shall interface with legacy MS Domain, thereby
31 allowing OMSAs to reach mobile devices served in legacy MS
32 Domain.

33 **SA-1011** The SA shall have the capability to invoke IP multimedia
34 applications.

35 **SA-1012** The SA shall support negotiation of its service capabilities
36 and resources with IP multimedia service application

1 platforms. This capability negotiation may be initiated by
2 either the user, operator or an application.

3
4 **5.1.1.2 Accounting**

5 **SA-1013** The SA shall be able to create accounting records and
6 forward them into the AAA of the activity and the traffic
7 processed through the elements of the service architecture.

8 **SA-1014** SA shall provide an interface that allows OMSAs to record
9 activities or traffic information.

10
11 **5.1.1.3 Service Authentication and Authorization**

12 **SA-1015** The SA shall be able to authenticate and authorize the user
13 via the AAA function.

14 **SA-1016** The SA shall have the capability to retrieve or update
15 authentication and authorization information.

16 **SA-1017** The SA shall provide a controlled access (via authentication
17 and authorization) to the core network functionality in line
18 with the network operator policy.

19 **SA-1018** The SA shall be able to authenticate and authorize the
20 OMSA via the AAA function.

21
22 **5.1.1.4 Service Delivery Mode**

23 **SA-1019** The SA shall support different service delivery modes
24 including but not limited to foreground mode, background
25 mode, and maintenance and diagnostic mode.

26
27 **5.1.1.5 Service Interaction Management**

28 The Service Interaction Management functionality is part of the SA. The
29 Service Interaction Management functionality is responsible for
30 managing service interactions for individual sessions. Any session may
31 involve the use of one or more services. These services may be offered by
32 the network operator, by third party Application Service Providers, or by
33 both simultaneously.

- 1 **SA-1020** The Service Interaction Management functionality shall be
2 responsible for interacting with the OMSA that provides the
3 required services.
- 4 **SA-1021** The SA shall manage interactions between services for
5 OMSA.
- 6 **SA-1022** The SA shall be capable of managing service interactions
7 based on static and/or dynamic information about the
8 subscriber.
- 9 **SA-1023** The SA shall manage service invocation of the OMSA.
- 10 **SA-1024** The SA shall have the capability to determine the sequence
11 of actions to be performed for a session.
- 12 **SA-1025** The SA shall be able to manage interaction among the
13 OMSA with and without user interaction.
- 14 **SA-1026** The user shall be able to establish two or more concurrent IP
15 multimedia sessions.
- 16 **SA-1027** The user shall be able to activate concurrent IP multimedia
17 applications within each IP multimedia session.
- 18 **SA-1028** The SA shall support prioritizing service offerings that may
19 activate single or multiple services in a single session.

20

21 **5.1.2 Service Interface**

22 The Service Interface provides a common interface which allows for
23 interworking between the OMSAs and the capabilities of the core
24 network. The service interface enables service providers to use of the
25 core network functionality.

- 26 **SI-1001** The service interface shall support standardized API's for
27 OMSA interactions.
- 28 **SI-1002** The service interface shall be independent of the core
29 network configuration.
- 30 **SI-1003** The service interface shall be independent of protocols used
31 within the network.
- 32 **SI-1004** The service interface shall provide a standard interface that
33 allows registration/ de-registration of the OMSA with SA.
34

1 **5.1.3 Service Applications Provisioning**

2 **SAP-1001** The SA shall contain the service applications provisioning
3 engine. The provisioning engine shall be able to add, remove
4 or update OMSAs.
5

6 **5.1.3.1 Adding a Service Application**

7 **SAP-1002** The SA shall be notified when a new OMSA is added. The SA
8 shall be provisioned with the IP address and routing
9 information necessary for the SA to route messages to the
10 new OMSA. When a new OMSA is provisioned, the Service
11 Interaction Manager module shall be updated with the new
12 information.

13 **SAP-1003** The provisioning information shall include a default service
14 delivery mode (e.g. Foreground, background, etc.).

15 **SAP-1004** The invocation of an OMSA may depend on the user
16 registration information, the user status and/or service
17 delivery mode.
18

19 **5.1.3.2 Removing a Service Application**

20 **SAP-1005** If an OMSA is removed from the network, or an OMSA
21 becomes unavailable, the SA shall be notified. The Service
22 Interaction Manager module shall be updated with the new
23 information.

24 **SAP-1006** If the OMSA is returned to the network, or is brought out of
25 a maintenance state, the OMSA shall be notified with the
26 SA. The Service Interaction Manager module shall be
27 updated with the new information.
28

29 **5.1.3.3 Updating a Service Application**

30 **SAP-1007** The SA shall be notified when an OMSA is updated. The
31 updated IP address and routing information necessary for
32 the SA shall be updated. Once the OMSA is updated, the
33 Service Interaction Manager module shall be updated with
34 the new information.
35

1 **5.1.3.4 Support of Local Service Applications**

2 **SAP-1008** Users roaming outside their Home Environment shall be
3 able to access OMSAs of a local nature offered to them by
4 the visited network.

5 **SAP-1009** The SA shall support offering of local services by the visited
6 network, e.g., Services that are dependent on the
7 geographical location of the user.

8

9 **5.1.4 IPv4/IPv6 Support**

10 **IP-1001** IPv4-IPv6 interoperability shall be provided for any services
11 defined within the SA (e.g. SIP).

12