Game Service API Architecture

Approved Version – 11 Sep 2012

Open Mobile Alliance

OMA-AD-GSAPI-V1_0-20120911-A

Contents

Figures

1. Scope (Informative)

The scope of the GSAPI (Game Service API) architecture document is to define the architecture for the GSAPI Enabler. This document provides the functional capabilities needed to support the Enabler as described in GSAPI requirements document [GSAPI-RD].

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3. Terminology and Conventions

3.1 Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [**Error! Reference source not found.**].

All sections are normative, unless they are explicitly indicated to be informative.

3.2 Definitions

game player	The human being who is playing a game.
Connected (multiplayer) mobile game	A mobile game in which some of the User’s experience involves entities that are not resident on the User’s device; a Lottery is a connected mobile game, as is a game that admits high-score posting, or the downloading of ghost racers. (A mobile game in which multiple players simultaneously interact with one another through, or as a necessary part of, the game fiction)
Device	Equipment which is normally used by Users for communications and related activities, however also includes equipment where there is no User present, but the communications to and from the Device use the same communications channels as when used by Users. A Device can be seen as a network entity that is capable of sending and/or receiving information and has a unique device address. It can act as either a client or a server within a given context or across multiple contexts. For example, a device can service a number of Clients (as a Server) while being a Client to another Server.
Game Client	The portion of a mobile game (connected, multiplayer) that executes on the User’s device that is specifically concerned with interacting with the OMA Game Service. General reference to the game client excludes device-resident game fiction.
Game Service	The collection of end-to-end functionality provided that enables connected and/or multiplayer mobile games.
Game Service Provider	The business entity that provides the functionality of a Game Service to Users. A GSP may provide and manage all Game Service functionality itself, or make these available through business-to-business relationships.
Matchmaking	The process whereby a User indicates interest in participating in a multiplayer mobile application (multiplayer game), possibly specifying criteria that the other participants must meet. The result is either a game session in which the User has been placed, or an indication that it is not possible to meet the specified criteria.
Mobile application (game)	An application that executes on a mobile device. (A mobile application that is a game)
Service Provider	An entity that provides and administers Service to a Subscriber and / or User. The Service Provider may or may not be the provider of the network and content
Turn-based Game	A game in which, at each point in time, only a subset of players are allowed to make a move that alters the game’s shared state.

3.3 Abbreviations

API	Application Programming Interface
JSON	JavaScript Object Notation
MSISDN	Mobile Subscriber ISDN Number
MSN	Mobile Social Network
NNI	Network to Network Interface
OMA	Open Mobile Alliance
RCS	Rich Communication Suite

RDF	Resource Description Framework
RSS	Really Simple Syndication
SDO	Standards Development Organization
SMTP	Simple Mail Transfer Protocol
SN	Social Network
SNS	Social Network Service
SSL	Secure Sockets Layer
TLS	Transport Layer Security
UNI	User to Network Interface
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
XML	Extensible Markup Language
XMPP	Extensible Messaging and Presence Protocol

4. Introduction (Informative)

This Architecture Document defines the architecture of GSAPI (Game Service API) Enabler based on the GSAPI requirements defined in [GSAPI-RD].

This Architecture Document will define the functional interfaces between the Game Service Server and Game client and Game Developer.

This document will also describe and define the following functions and capabilities:

- Functions of Game Server
- Functions of Game Client
- Functions of Game Developer
- Interactivity between Game client and Game Server.
- Interactivity between Game client and Game Content
- Interactivity between Game Developer and Game Server
- Interactivity between Game Server and External Billing Server
- Getting data by GS API
- Statistics collection and reporting of data and service usage
- Security related function

4.1 Version 1.0

The Architecture Document of GSAPI Enabler 1.0 addresses the requirements targeted for this release that are solved by architecture design.

However, this release of the AD does not address the requirements that were deferred for future releases, such as requirements on peer-to-peer implementation, charging third parties for delivering the information to them and etc.

5. Architectural Model

The architecture model is based on the requirements defined in [GSAPI-RD].

5.1 Dependencies

The GS API Enabler technical specifications are dependent on the following technologies:

- The HTTP 1.1 [RFC2616] as the default mandatory protocol for interfaces.

5.2 Architectural Diagram

Figure 1 shows the architectural diagram of OMA GSAPI.

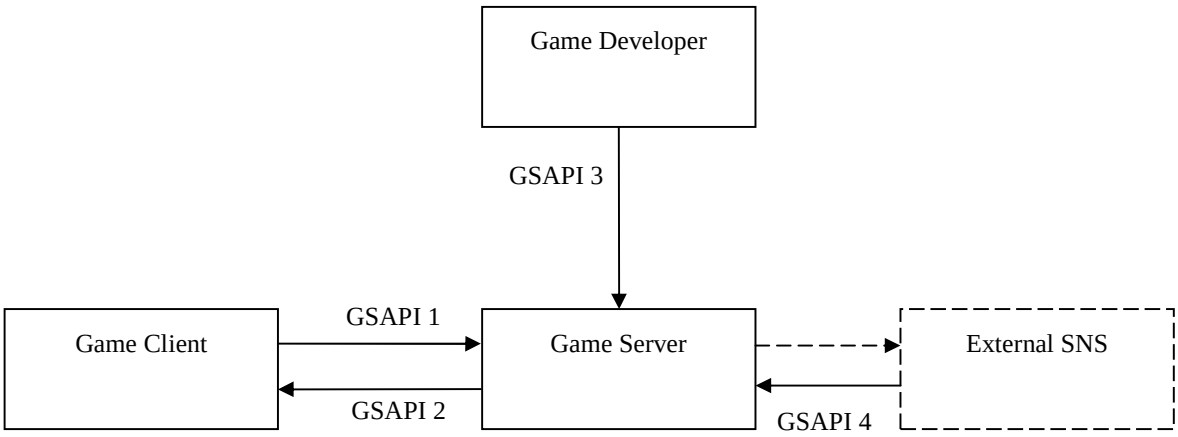

Figure 1 Main Architecture of GSAPI 1.0

5.2.1 Architecture principle

GSAPI architecture consists of logical entities (i.e., Game Client, Game and Game Server). From the architectural perspective, the physical deployments are not restricted as far as capability of physical devices allow.

5.3 Functional Components and Interfaces definition

5.3.1 Functional Components

This section describes the OMA GSAPI functional components.

5.3.1.1 Game Server

The Game Server is a GSAPI Enabler component that resides in the core network performs the following functions:

- GSAPI data delivery function
- Usage Statistics Collection & Reporting
- Handling game SNS data.
- Game Player / service data management function
- Connection between game users to enable match-making service.
- Delivering billing data to billing server(optional)
- Notify some messages to the Game Client

5.3.1.2 Game Client

The Game Client is enabler to deliver and aquisit game data from/to Game Server

- Game SNS data delivery and getting notification.
- Management for data(buddies, messages, game comments)
- Delivering game data to other game users' game client.

5.3.1.3 Game Developer

Game Developer is the provider of Game and Game items to Game Players

- Game item provider.
- Game Application provider

5.3.1.4 External SNS

The External SNS is the external SNS Service.

- Game server can send game comment or other game data to this entity.
- External SNS can get game data like game comment, game information by GSAPI.

5.3.2 Functional Interfaces

This section describes the OMA GSAPI functional interfaces.

5.3.2.1 GSAPI-1

This interface is for gathering game data from game server by using API.

This inter face send or get the data by using proper authentication way.

- Game player registration and login
- Getting game ranking and score
- Adding Buddy to user's buddy list
- Getting game users' buddy list
- Getting buddy's game list

- Getting game comments
- Getting counter game player for match-making
- Getting item list which is bought by the game user
- Getting item list for selling
- Getting message data from other game users
- Sending Game comment to the Game Server
- Sending message to the Game Server.
- Sending request for the match making
- Sending request for buying some game items.
- Security

5.3.2.2 GSAPI-2

This interface is for push notification for match making or for other messages.

- delivering push notification to the game player for the match making
- delivering message notification
- Security

5.3.2.3 GSAPI-3

This interface is for registering games and game items by game developer.

- Sending game information to the game server
- Sending game item information to the game server
- Getting billing statistics.
- Security

5.3.2.4 GSAPI-4

This interface enable to the external service to getting GSAPI data by using API. External SNS can get data in GSAPI by authentification key like token.

- Getting game information, game comment, game item information
- Security

5.4 Security Considerations

The security considerations described in this section apply to any GSAPI Enabler implementation, and these considerations may result in different deployment models. Any particular security mechanism that proves to be intrinsic to the GSAPI Enabler specification will be addressed in the GSAPI Technical Specifications.

The Service Provider deploying the GSAPI Enabler implementation needs to ensure that all entities requiring access to information provided via the interfaces exposed by the functional components of the GSAPI Enabler are subject to the following security considerations:

- Authentication/authorization of Game Users.
- Protection of data integrity and confidentiality
- Security-key (i.e. Entity User Key and Group Key) management
- Secure content/service sharing inside Service Groups by Group Key

5.5 Charging Considerations

GSAPI contains item purchasing function which should be considered by charging enablers.

Game users can buy some game items for enjoying game and those game items can be various figure. it is kind of character design, game playing time ticket , etc.

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
Approved version: OMA-AD-GSAPI-V1_0	11 Sep 2012	Status changed to Approved by TP: TP ref#: OMA-TP-2012-0333-INP_GS_API_V1_0_RRP_for_Final_Approval

Appendix B. Flows (Informative)

B.1 Basic Work flow GSAPI-1

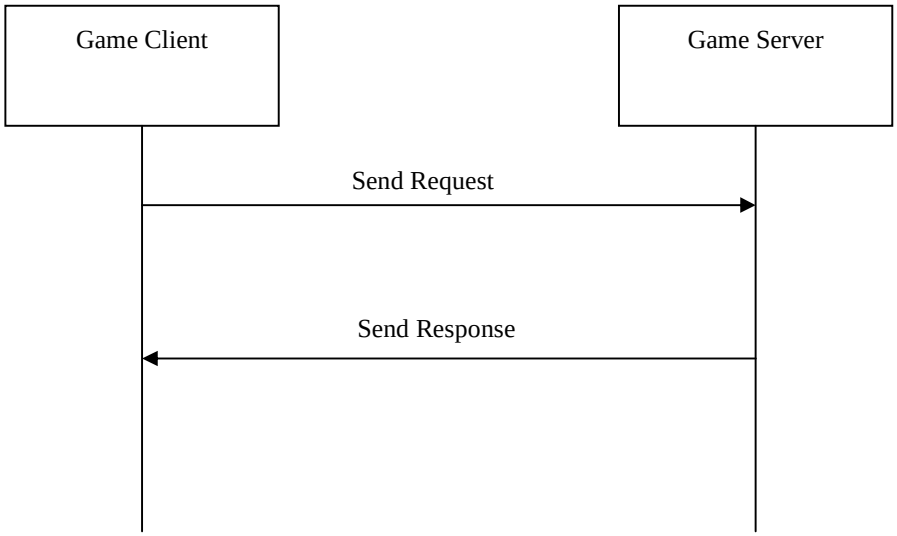

Figure 2: GSAPI-1 Work flow

Game user wants to getting some data, then the game client send the request to the server.

For example, If Game player wants to see the game ranking, the game client send request to the game server and the game server retrieve result data to the game client.

The game player can see the ranking list.

B.2 Basic Work flow GSAPI-2

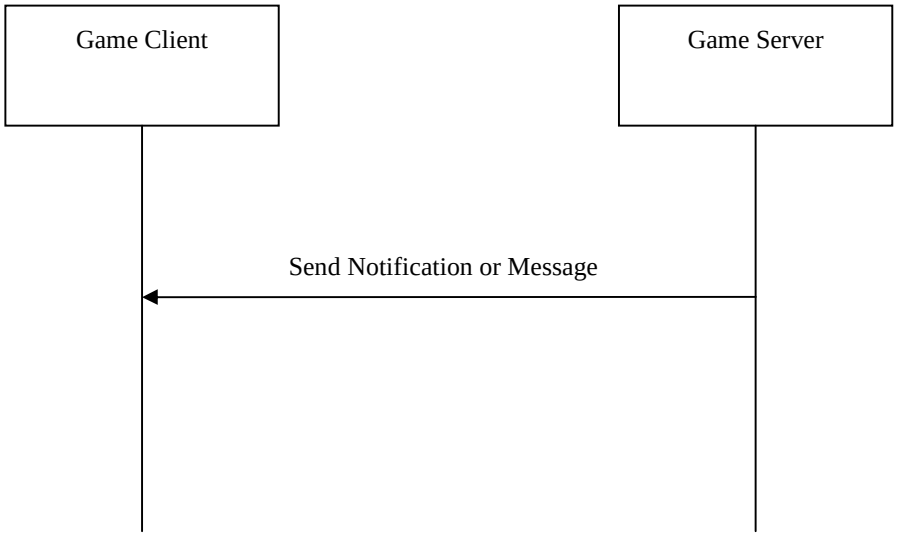

Figure 3: GSAPI-2 Work flow

When a game player sends request match making to the server, the server find proper game player in login and send push notification to play a game with other game player.

B.3 Basic Work flow GSAPI-3

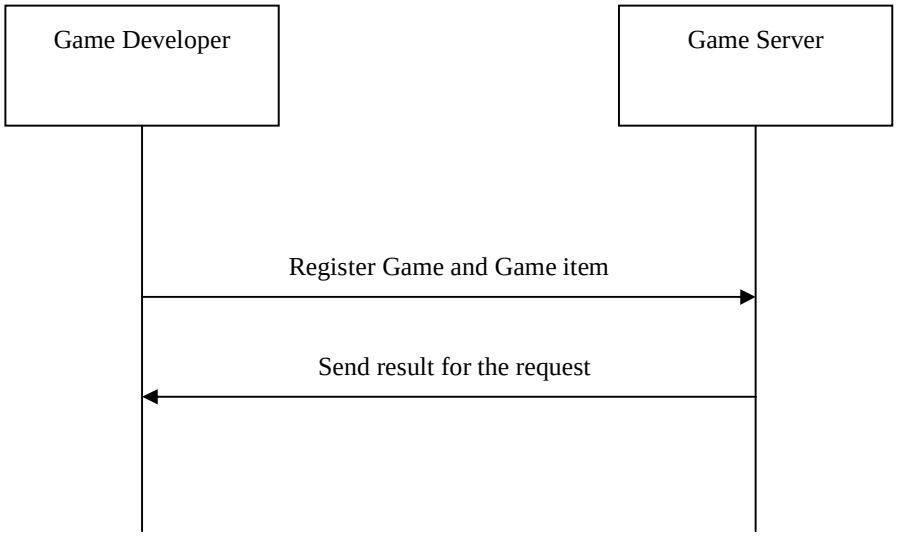

Figure 4: GSAPI-3 Work flow

Game developer requests to register his/her game information.

Game developer request to register his/her game item.

Game server save the game and game item information and send result of the request

B.4 Basic Work flow GSAPI-4

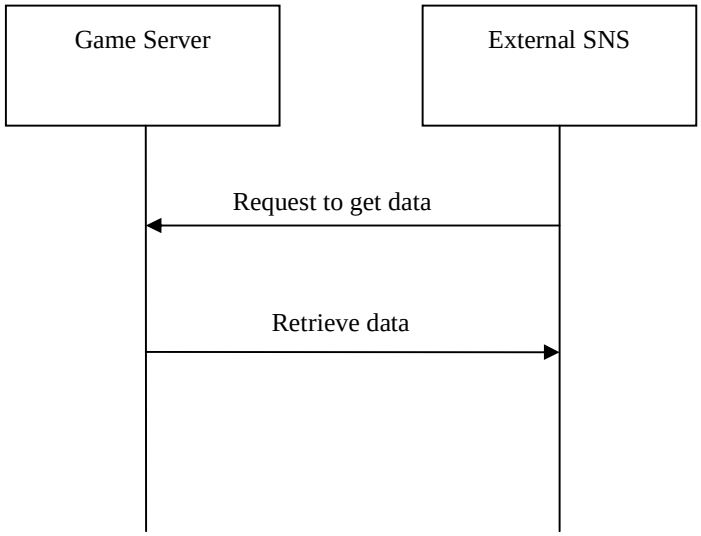

Figure 5: GSAPI-4 Work flow

External SNS requests to get game data like game comment, game information, game item information with proper authentication like token.

Game server send the data to the External SNS.