

SNAP Mobile: Game Developer's FAQ for Java™ ME Clients

Version 1.3; July 9, 2007

SNAP Mobile

NOKIA

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Change history

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|----------------|-------------|--|
| March 20, 2006 | Version 1.0 | Initial document release |
| May 9, 2006 | Version 1.1 | Questions 3, 7, 8, 9, 10, 11, and 16 updated. |
| June 21, 2006 | Version 1.2 | Question 19 added. Questions 10 and 18 updated. |
| July 9, 2007 | Version 1.3 | Questions 10, 20, 22, 23, 24, 25, and 26 added. Questions 5, 6, and 9 updated. |

1 What is SNAP Mobile?

SNAP Mobile is an industry solution providing connected mobile game-playing communities that use the same mobile online game and community back-end technology as N-Gage™ Arena. The SNAP Mobile end-to-end solution ranges from client and server technology, service hosting, and community management to developer tools and support, content certification, and SNAP Mobile content catalog availability.

Nokia is closely cooperating with several leading game developers to ensure that mobile operators and service providers interested in offering Java™ Platform Micro Edition (Java™ ME), formerly Java™ 2 Platform, Micro Edition (J2ME™), connected games and game-playing communities to consumers have immediate access to compelling content.

2 What are the community services?

SNAP Mobile relies on an infrastructure consisting of SNAP Game, Instant Messaging and Presence System (IMPS), Web, and Authentication services (community services). The game and authentication services belong to the Scalable Network Application Platform (SNAP). As the name implies, SNAP Mobile also belongs to the SNAP system and integrates with its components.

SNAP Authentication services securely identify users of online games based on their user names and passwords. The authentication services use policy-driven rules and custom properties to regulate user access to games and other services.

Web services provide user account management, a rankings engine, and user authentication. The Web services also maintain a special ID required by some operators for user login and authentication. All Web service data is centralized for use by game applications.

Instant Messaging and Presence System (IMPS) services provide Friends list and user chat functionality. The IMPS services also transport player and game settings during the setup of network multiplayer.

SNAP Game services provide network multiplayer functionality. The key SNAP Game service components include Game class, Lobby, Game room, and User.

3 What features does SNAP Mobile offer?

SNAP Mobile offers a feature set that is ideal for connected Java™ games:

Community features including

- Unique user identity
- Friends list
- Presence
- Chat/Instant messaging
- Rankings

Connected gameplay features including

- Head-to-head connected gameplay
- Pervasive world games

- Versatile matchmaking
- Lobbies and game rooms

SNAP Mobile takes into account the size and power restrictions of mobile devices, providing optimal developer efficiency and robust playability in the Java ME environment. The SNAP Mobile Client API allows game developers to create connected Java games without mastering the complexities of network programming. SNAP Mobile also overcomes difficulties inherent in mobile operation, where connection instability and short playing intervals are the norm.

4 What benefits does SNAP Mobile offer to game developers?

SNAP Mobile offers substantial benefits to mobile game developers including:

- New revenue opportunities
- Ability to focus on gameplay instead of technology
- Decreased development times and budgets for connected mobile games

5 What is a SNAP Mobile application?

A SNAP Mobile application is a mobile application that meets all the compliance testing requirements described in the following guides: [SNAP Mobile: Standard Game Requirements](#) and [SNAP Mobile: Compliance Test Criteria](#). These documents are included in the SNAP Mobile Client SDK.

6 What mobile devices support SNAP Mobile games?

Devices using the SNAP Mobile Client API run on a Java virtual machine (JVM) that supports the Connected Limited Device Configuration (CLDC 1.0 required) and Mobile Information Device Profile 2.0 (MIDP 2.0). These include S60 as well as Series 40 devices.

To verify that the SNAP Mobile Client API works in a particular device, you can run the SNAP Mobile Client API compatibility test MIDlet in that device to verify the compatibility.

7 How can I learn about requirements and best practices for developing SNAP Mobile games?

The [SNAP Mobile: Standard Game Requirements](#) guide, included in the SNAP Mobile Client SDK, lists the requirements for creating a certified SNAP Mobile game. In addition to the SNAP Mobile Client API, the SDK also offers sample applications with source code, Javadocs, development guidelines, a community service emulator, and other resources that help developers create high-quality, certified SNAP Mobile games. Requirements for developing registration and login functionality are in [SNAP Mobile: Registration and Login Guidelines for Java™ ME Clients](#).

8 Does SNAP Mobile offer developer support?

Developer support is handled through the world's largest mobile developer support organization: Forum Nokia (<http://www.forum.nokia.com>), reaching more than 2 million mobile developers. Developers can download the SNAP Mobile Client SDK and use the SNAP Mobile discussion board to post questions and share their ideas. Furthermore, Nokia and Sun have collaborated to integrate SNAP Mobile terminal libraries into the Sun Java Wireless Toolkit, currently available for downloading.

9 What is a game class ID (GCID), and how can I get one for my game?

A game class ID serves as a global identifier for a SNAP Mobile game. All SNAP Mobile games require a game class ID. A game class is the base unit of a SNAP Mobile game. Game classes contain three discrete components: game lobbies, game rooms, and users. In practice, there is a 1:1 correspondence between a game and a game class. Game classes are typically implemented across a cluster of servers, with each cluster able to support multiple game classes.

The SNAP Mobile Emulation Environment provides a mechanism for creating a game class ID and game configuration for your application. This game class ID is valid only in your emulation environment. When you acquire access to the live server environment (see Question 10), the SNAP Mobile team will assign a game class ID for you.

10 How can I gain access to the live development environment?

You can purchase development cluster access from the Forum Nokia [eStore](#) for 6 months at a time. Although you can start game development against the emulation environment, you should develop against the live development server at some point in your process. Developing against a live server provides you the opportunity to run your game with more simultaneous users, to test your game in a live network and server environment, and to gain access to more features, such as asset uploads to the server. The SNAP Mobile development cluster is hosted in San Francisco.

11 What is in the SNAP Mobile Client SDK?

The following resources support the SNAP Mobile technology:

SNAP Mobile Client SDK: Set of resources supporting SNAP Mobile game development, available from www.forum.nokia.com/games/snapmobile and through the Sun Java Wireless Toolkit. The SDK includes the SNAP Mobile Client API, Javadocs, game development requirements (including standard game requirements and registration and login requirements), a community service emulator, sample applications with source code and documentation, a game developer's guide, and other resources. Additional SNAP Mobile development and other resources are available from www.snapmobile.nokia.com.

Sun Java Wireless Toolkit: The most current version of the toolkit includes the SNAP Mobile community sample application with source code and Javadocs. Available from <http://java.sun.com/products/sjwtoolkit/>.

Table 1 provides a complete listing of the resources in the SNAP Mobile Client SDK.

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| SNAP Mobile Web Site for Game Developers: www.forum.nokia.com/games/snapmobile |
| SNAP Mobile: Standard Game Requirements: Document that serves as a standard reference document for game and documentation certification. The document details the technical, usability, and publishing requirements that apply to SNAP Mobile game applications. |
| SNAP Mobile: Technical Overview: Document that provides a high-level introduction to the SNAP Mobile technology and the community services that support it. |
| SNAP Mobile: Game Developer's Guide for Java™ ME Clients: Document that introduces developers to SNAP Mobile and provides guidance on using the SNAP Mobile Client API to add community features to online games. |
| SNAP Mobile: Hello World Tutorial for Java™ ME Clients: Document that introduces Java ME developers to basic SNAP Mobile game development practices. |

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| SNAP Mobile Web Site for Game Developers: www.forum.nokia.com/games/snapmobile | |
| SNAP Mobile: Ranking Guide for Java™ ME Game Developers: Document that provides requirements for using ranking features of the SNAP Mobile Client API. | |
| Javadocs for the SNAP Mobile Client API (<code>sm-api-javadocs</code>) specify the following packages: <ul style="list-style-type: none"> <code>com.nokia.sm.net</code> — Classes supporting communication with a SNAP Mobile game server <code>com.nokia.sm.util</code> — Utility classes | |
| SNAP Mobile: Sample Game User's Guide: Document that provides procedures for using a sample game (Maze Racer) and its SNAP Mobile community features. This game is part of the Sun Java Wireless Toolkit. | Sun Java Wireless Toolkit 2.3 beta: http://java.sun.com/products/sjwtoolkit/ SNAP Mobile Sample Game: User application with sample code that demonstrates common uses of the SNAP Mobile Client API; for example, playing a game, logging in to the online community, initiating multiplayer game sessions, messaging, retrieval of rankings and game scores, and so on. |
| SNAP Mobile: Emulation Environment User's Guide: Document that provides procedures for using the SNAP Mobile Emulation Environment to simulate a networked communication between a game client and the community services, to debug your game application, and to run pre-certification testing (part of the SNAP Mobile game certification process). | SNAP Mobile Emulation Environment: An application that allows game developers to test the portions of their game code that rely on the SNAP Mobile Client API, without requiring a network connection to the community services. Available from www.snapmobile.nokia.com . |
| SNAP Mobile: Registration and Login Guidelines for Java™ ME Clients: Document that supplements SNAP Mobile: Game Developer's Guide for Java™ ME Clients by providing guidelines and specific requirements to follow when developing registration and login functionality for a SNAP Mobile game. | |

Table 1: Contents of the SNAP Mobile Client SDK for the Java ME client

12 What does SNAP Mobile add to games and applications?

SNAP Mobile adds the community service technology that connects users all over the world through their mobile devices.

Ways for mobile users to meet, chat, and play games including:

- **Lobbies and Game rooms**
 - Users send text messages to other users in a lobby or game room.
 - Games submit game data packets to a game room.
- **Player Matchmaking Services**
 - Users can play against random users.
 - Users can play against their friends.
- **Friend Lists**
 - Users can create a list of friends.
 - Users can see which of their friends are online.

- Users can challenge their friends to games.
- Users can send messages to their friends.

User registration and login to the community services:

The SNAP Mobile Client API allows users to submit a user name and password through their devices to log in to the community services. SNAP Authentication services process the login requests. Other specialized login models are available to developers and some mobile operators. See [SNAP Mobile: Registration and Login Guidelines for Java™ ME Clients](#) for information about them.

High performance and scalability:

The SNAP Mobile gateway offloads client requests to the community services, which consist of enterprise-quality server configurations that scale efficiently to meet user demands.

SNAP Mobile games communicate with one another through a routing cluster. In no case do the clients communicate with one another directly. This design conserves client resources and provides a higher level of performance than traditional peer-to-peer models. The SNAP Mobile architecture supports the efficient use of network resources and scales well with the number of players in a game.

SNAP Mobile also offers developers a matchmaking option (sort mode) that balances the load of requests to play a game.

13 What is a game room?

To an end user, a game room is a place to engage in gameplay. Gameplay begins once the minimum number of players required by the game enters the game room. Technically, a game room is a dynamic object created in a lobby. A game room terminates when all users exit it.

14 What is a lobby?

To an end user, a lobby is a place that contains game rooms. Technically, it is a static object that can hold multiple game rooms. Lobbies persist until they are explicitly deleted. As a matter of policy, game applications are not allowed to create or delete lobbies.

15 What is a Friends list?

A Friends list is a user-created contact list designed for sending messages and game challenges to people on the list. Presence indicators typically identify which friends are online (and perhaps available to play a game or to engage in a chat session). Users invite one another to join their Friends lists, and users who are invited can opt to join or decline the invitation.

16 Where can I find a glossary that defines SNAP Mobile terminology?

[SNAP Mobile: Game Developer's Guide for Java™ ME Clients](#), part of the SNAP Mobile Client SDK, includes a glossary that defines important terms that are specific to SNAP Mobile and supporting technologies.

17 What player matchmaking services does SNAP Mobile offer?

SNAP Mobile offers a variety of matchmaking options, allowing users to play against randomly selected users (random mode) or to challenge their friends to a game (challenge mode). A user can opt to accept a challenge and enter the game. Users can join a specified lobby or game room (join mode). SNAP Mobile also offers developers a matchmaking option (sort mode) that uses a configurable load balancer to match players in a game room.

18 Can users send messages to one another?

Yes, users can send messages to their friends and to users in game rooms and lobbies.

19 What is the SNAP Mobile Emulation Environment?

In addition to simulating a connection to the community services, the emulation environment extends the functionality of its predecessor (the SNAP Mobile Community Service Emulator, released in version 1.1.1 of the SNAP Mobile Client SDK) by including debugging and pre-certification testing features. It also replaces the command line interface with a graphical user interface. The emulation environment is highly configurable, allowing you to set up users and game class IDs, and to match its lobby, presence, and other attributes to your game. Its pre-certification functionality allows you to run required checks on your game before submitting it for certification.

20 How many users does SNAP Mobile support?

The SNAP Mobile Emulation Environment supports up to 10 simultaneous users. The live SNAP Mobile cluster supports thousands of simultaneous users.

The number of users supported per game is usually limited by the game design itself — if your game is designed to handle a given number of users, the servers should support them. However, generally it is not recommended to allow more than 100 users per game lobby, so your game should be able to switch users to a new lobby once the one in use is full.

21 Why do I see duplicate game packets sent during a game?

Many SNAP Mobile games use a send queue for outgoing game packets. For example, the `Community` class of the SNAP Mobile game sample (Maze Racer) does this. Game packets pass into this class as `ItemList` instances. If a game reuses the same `ItemList` instance for game packets, the following issue can occur:

The `Community` class stores a reference to the `ItemList` in the outgoing queue. Before the item is sent, the game creates a “new” game packet using the same `ItemList` as before, and adds it to the outgoing queue. Because the queue has a reference to the first `ItemList` instance instead of the deep copy, both references now point to the last created packet. Thus, the packet is sent twice, and worse, the packet that was entered into the queue first is lost.

How to avoid this issue: Do not reuse packet objects when using a send queue.

22 Does SNAP Mobile have a certification program?

Yes. SNAP Mobile has a certification program – SNAP Mobile Compliance Testing Program. This test verifies that the SNAP Mobile application follows the SNAP Mobile Standard Game Requirements and that the application works with SNAP Mobile community services and with other applications on the SNAP Mobile platform.

23 What is the cost for the Compliance Testing?

The cost of SNAP Mobile compliance testing is among the lowest in the industry because the developer does most of the testing. In pre-compliance testing, developers must test all of the devices that the game supports (for example, 30 types of devices) and submit the test results to SNAP Mobile. Then the developer is given 1 week of live server access to verify whether the application works properly with the devices. After that, the application is sent to the testing facility for final testing. The testing facility examines the application on one of each manufacturer's devices. So, if 30 devices are from 3 manufacturers, the testing facility tests only 3 devices, and the developer pays the testing fee for three devices only, rather than paying to test all 30. For further information about the testing facilities and processes, please contact cert.snapmobile@nokia.com.

24 Is Java Verified required?

The SNAP Mobile platform does not require Java Verified, and the SNAP Mobile testing criteria does not follow the same testing criteria that Java Verified uses. So, if the application needs to meet Java Verified requirements, the verification process should take place after SNAP Mobile compliance testing.

25 How long does SNAP Mobile game development take, and what is the cost?

SNAP Mobile application development usually takes from 3 to 6 months. The time depends on the development resources. The cost for developing a SNAP Mobile application can include the SNAP Mobile live development server cost for 6 months (up to 1000 euros) and the compliance testing cost (see Question 26).

26 Why do developers need to follow the Standard Game Requirements?

The Standard Game Requirements ensure that all the SNAP Mobile games and applications work with each other in the same live environment. The Standard Game Requirements consist of a set of rules that help users understand the game behavior better and unify the user experience of SNAP Mobile games. These requirements also verify that the games work well with the community services in the live environment.

27 Evaluate this resource

Please spare a moment to help us improve documentation quality and recognize the resources you find most valuable, by [rating this resource](#).