

SNAP Mobile: Device and Network Test Instructions

Version 2.2; October 28, 2008

SNAP Mobile

NOKIA

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Change history

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|------------------|-------------|---|
| June 21, 2006 | Version 1.0 | Initial document release. |
| May 2, 2008 | Version 2.0 | Document renamed to SNAP Mobile: Handset and Network Test Instructions. Document updated with new procedures and screenshots for new version of test application: "SNAP Mobile Handset and Network Test". |
| July 10, 2008 | Version 2.1 | Document renamed to SNAP Mobile: Device and Network Test Instructions. Procedures in Section 2.5 updated. |
| October 28, 2008 | Version 2.2 | Minor edits in Sections 2.3, 2.5, and Chapter 5 on verifying APN access settings. |

1 Introduction

SNAP Mobile, Nokia's connected gaming and community solution for the Java™ platform, is designed to work on all Mobile Information Device Profile (MIDP) 2.0 and Connected Limited Device Configuration (CLDC) 1.1 devices. However, there has been some variance among different device types and different manufacturers. In addition, some operators have port or APN settings configured to block the SNAP Mobile API, or any other third-party game data packet, from going through a gateway.

The SNAP Mobile Device and Network testing tool was designed so developers could verify the compatibility of certain mobile devices and networks before investing time in developing applications for incompatible devices or networks.

Setting up the SNAP Mobile Device and Network testing tool takes about 10 to 15 minutes, and it is recommended that the test be run for at least 30 to 60 minutes for each target operator network test. However, the network test can be run for much longer periods of time to acquire information on different periods of high or low activity on the target network.

1.1 Document purpose and target audience

This document provides detailed instructions on:

- Setting up the SNAP Mobile Device and Network testing tool on the mobile device(s) to be tested;
- Conducting the test;
- Reviewing test results.

The document is primarily intended for developers or other testers conducting these tests, but it may also be useful for other interested stakeholders.

1.2 Test objectives

The purpose of the SNAP Mobile Device and Network testing tool is twofold: first, to determine whether the SNAP Mobile API can successfully operate on a selected mobile device, and second, to determine whether the wireless operator network can support the required traffic.

To accomplish this, the testing tool does the following:

- Conducts a device compatibility test;
- Conducts a network test to gather information about operator network performance and errors;
- Uploads (to server) and presents results.

Note: Before developing actual SNAP Mobile games, Nokia strongly recommends that developers conduct their tests on target devices under the same network environment they will operate in, using the provided SNAP Mobile Device and Network testing tool.

2 Install and set up test application

These instructions are based on Nokia devices and may vary for devices from different manufacturers. Check the respective manufacturer's instructions to download and install applications on their device.

2.1 Select a target device

Developers should select any device from the set of target devices on which they plan to develop SNAP Mobile games.

Caution: If developers plan to run the Network test part of this application, they must configure the device to not prompt the user to select the access point (APN) or to allow network access for each network connection attempt. Otherwise, the user's response time to these prompts will be included in the "round-trip time" measurement, tainting the test results. See Section 2.5, "Set up default APN access for the test application," for instructions on how to set the APN.

2.2 Insert the SIM card into the device

Select an operator network for which the SNAP Mobile games are being developed. Insert the SIM card from that network into the selected target device.

2.3 Verify the APN settings

Verify the Access Point Name (APN) settings by checking the settings on the device and then using it to access the Internet and see the results. Devices with improper APN settings generate an error or fail when attempting a network connection. To resolve any problems, see Chapter 5, "Device setting tips".

2.4 Download the MIDlet (*.jad and *.jar files) to the device

After downloading the SDK, developers will find the MIDlet (*.jad and *.jar files) here: `<SDK root directory>\tools\DeviceNetworkTest\DeviceNetworkTest.jad/jar`. These files can be transferred to the device using a cable, or the PC's Bluetooth connection or infrared port. In some cases, download and installation will be a seamless process, while in others additional steps will be required to install the MIDlet after download. If there are questions, consult the documentation provided by the device manufacturer or the network operator.

2.4.1 Over the air (OTA)

When downloading the MIDlet over the air (OTA), place the MIDlet on a server that can be accessed over the Internet, and use the Internet browser on the device to download the MIDlet. This method can also be used to verify the device's OTA capability under the target operator's network.

Note: Depending on the network and device being used, there is a small risk that OTA downloads could restrict access to Java™ Platform, Micro Edition (Java™ ME) APIs. In this case, check with the respective manufacturer for the proper instructions when downloading and installing the application on the target device.

2.4.2 Bluetooth, cable, or infrared

When using Bluetooth, cable, or infrared, once the transfer from the PC to the device is complete, the *.jad and *.jar files are stored somewhere on the device's file system. To install them, launch the *.jad file. The platform then installs the application, using the *.jar file during the installation. In some cases, however, developers may need to open and install both files separately to the device.

2.5 Set up default APN access for the test application

The default APN access settings must be set correctly so the test application does not return false results. If they are not, the application may prompt the user to accept every time a connection is established, adding the user's response time to the RTT in the test results. If developers see these prompts during the test, they should immediately cancel the test application so that it does not upload the invalid results to the server.

There are two types of settings (the names of which may vary depending on the device) that should be checked in the test application.

- **APN access point:** The desired access point for connecting to the Internet must be set up as the default in the test application.
- **APN access permissions:** The permission level for accessing the Internet (or using packet data) must be set to ask only once, or not at all, by default in the test application

The steps for making these settings in the test application may vary by device. Additionally, adjusting these APN access settings may be done at the device level (see Chapter 5, "Device setting tips"). The following two sections provide example steps based on Nokia Series 40 and S60 devices, respectively.

2.5.1 Series 40 devices

The following steps are based on a Series 40 device and are provided only as an example. The actual steps may depend on the selected device.

1. From the **Application Folder**, select the SNAP Mobile Device and Network test application.
2. Select **Options**.
3. Select **Application Access**.
4. Select **Data Access**.
5. Select **Add Edit Data**.
6. Choose the **Always Allow** setting.
7. Save these settings.

2.5.2 S60 devices

The following steps are based on an S60 device and are provided only as an example. The actual steps may depend on the selected device.

1. From the **Application Manager**, select the SNAP Mobile Device and Network test application.
2. Select **Open**.
3. Select **Network Access**.
4. Choose the **Ask First Time** setting.
5. Save these settings.

Note: After following these procedures, developers should attempt to access the Internet with the device to verify that the settings work and that there are no prompts, error messages, or other problems conducting the test. If there are problems, they may need to retry the APN access settings or consult the device manual or technical support for instructions on adjusting the settings.

3 Conduct the test

This section provides step-by-step instructions for conducting the test.

3.1.1 Launching the test application

Click the application icon on the menu screen to launch the installed application.

3.1.2 Filling in test parameters

After launching the application, provide the correct information for the following required fields:

- **Tester:** Name of the person conducting the test.
- **Manufacturer:** Company that made the device being used in the test, for example, Nokia.
- **Model:** Identifying name or number for the device being used in the test.
- **Operator:** Wireless network operator that is being used in the test.
- **Country:** Country in which the test is being conducted.

Note: For the Operator and Country fields there is a list that can be used to populate the fields (the UI to access the list may vary depending on the device). When browsing the list, press one or a series of keys to filter the list to display only those options that contain the characters entered. For example, pressing “2” and “3” will display names of operators that contain a combination of a, b, or c, and d, e, or f, as shown in Figure 1. The left arrow key deletes the last character from the search filter.

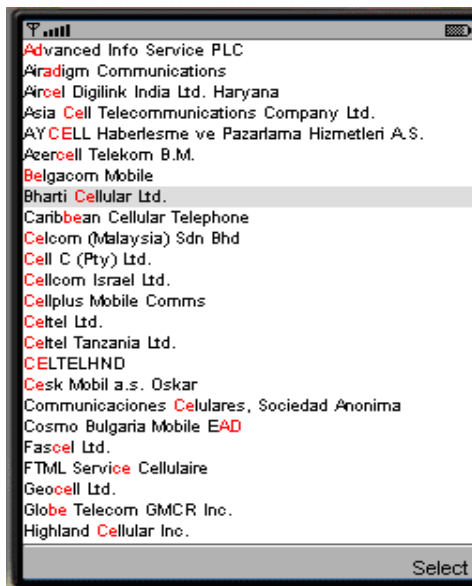


Figure 1: Operator selection menu, options example

- **Plan type:** Select Contract or Prepaid.
- **Network type:** Select from the options provided, for example, GPRS, WCDMA, CDMA 1x, CDMA-EV-DO, or “unspecified” if not known.
- **APN:** The APN name selected for the test.
- **Network test run time (sec):** Enter the number of seconds the network test will run (minimum is 30 seconds). The test will run twice the amount of time entered, once for the TCP protocol and then again for the HTTP protocol.

- **Tests to run:** Check “Device compatibility test”, “Network test”, or both. Both are checked by default.

Note: If both options are checked, the Device test will run first, followed by the Network tests.

After filling in all the required fields, select **Start tests** to begin the test application.

3.1.3 Running the tests

If the Device compatibility test option was checked, then this test begins first. Otherwise, it is skipped and the Network test begins.

1. If prompted to accept a network connection, respond yes.
2. Watch for other prompts during the test and respond accordingly.

Note: If there are problems with messages such as “GPRS connection not available” or “Subscribe to GPRS first” followed by “Application error”, the SIM may not have a proper data plan enabled, or the device settings may not be correct. See Chapter 5, “Device setting tips”, for more information.

3. If both Device compatibility and Network test options were checked, then the developer may be prompted to accept network connection when the Network test begins. Respond yes to the prompt.

The Network test application automatically runs the network probe test using first TCP protocol and then HTTP protocol. While these tests run, the device screen displays a log with the test information as shown in Figure 2.



Figure 2: Scrolling network test messages

The following white and green log messages scroll over the mobile device’s screen to show the test progress:

- `Sending probe` followed by a protocol indicator (TCP or HTTP) and a sequential number.
- `Response received`: If an error occurs, a red error message will be shown here instead. The information about the error will also be shown in the test summary.
- `Probe[<number>] successful`.

- `RTT`: This shows the “round-trip time” for the network probe, and the response, in milliseconds.
- `Retry count`: The SNAP Mobile API has a built-in retry mechanism that will resend a message if there is no response in 15 seconds (default setting). These retries are counted here. The value is 0 if successful, more if there are errors.

4 Review the test results

This chapter provides information on how to interpret the test results.

4.1 Device compatibility test alone

When the Device compatibility test is run alone, the test results are displayed on the device screen. Figure 3 shows the desired results below Device compatibility test, that is:

- HTTP support: true
- TCP support: true

```

===== Results =====
Device compatibility test:
  HTTP support: true
  TCP support: true
[Network test using TCP not run]
[Network test using HTTP not run]
=====
Please wait, uploading handset compatibility test results..
Uploading handset compatibility test results successful.
Thank You! All done, you may now exit the app.

```

Figure 3: Device compatibility test results

4.2 Network test alone

When the Network test is run alone, the test results are displayed on the device screen as shown in Figure 4, including the following statistics on TCP protocol and HTTP protocol probes.

- Min RTT: The minimum “round-trip time” (in milliseconds) for the network probes.
- Avg RTT: The average “round-trip time”.
- Max RTT: The maximum “round-trip time”.
- Successful probes, without retries: Probes that succeeded on first attempt.
- Successful probes, with retries: Probes that succeeded after failing first attempt.
- Failed probes: Probes that failed after all attempts.
- Total probe count: Probes that were attempted during the test.

```

===== Results =====
[Device compatibility test not run]
Network test with protocol TCP:
  MinRTT: 15ms
  AvgRTT: 27ms
  MaxRTT: 109ms
  Successful probes, without retries: 1084
  Successful probes, with retries: 0
  Failed probes: 0
  Total probe count: 1084 probes.
Network test with protocol HTTP:
  MinRTT: 15ms
  AvgRTT: 30ms
  MaxRTT: 125ms
  Successful probes, without retries: 980
  Successful probes, with retries: 0
  Failed probes: 0
  Total probe count: 980 probes.
=====
Please wait, uploading network test results...
Uploading network test results successful.
Thank You! All done, you may now exit the app.

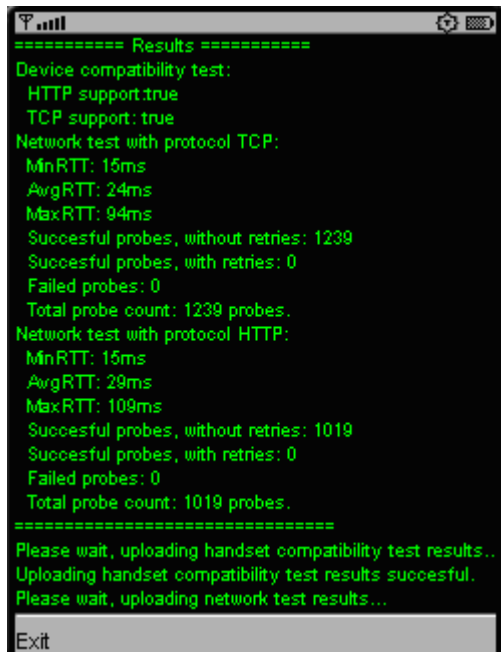
```

Figure 4: Network test results

Note: If a red line with the message “Message expired!” appears, it means that a probe received no response within the defined time period (default 90 seconds). This usually happens when a mobile device completely loses the signal. During game play, this would be a fatal error.

4.3 Both tests together

When both the Device compatibility test and the Network test are run together, the test results displayed on the device screen are a combination of the results and statistics described for each test individually (see Figure 5).



```
===== Results =====
Device compatibility test:
  HTTP support: true
  TCP support: true
Network test with protocol TCP:
  MinRTT: 15ms
  AvgRTT: 24ms
  MaxRTT: 94ms
  Successful probes, without retries: 1239
  Successful probes, with retries: 0
  Failed probes: 0
  Total probe count: 1239 probes.
Network test with protocol HTTP:
  MinRTT: 15ms
  AvgRTT: 29ms
  MaxRTT: 109ms
  Successful probes, without retries: 1019
  Successful probes, with retries: 0
  Failed probes: 0
  Total probe count: 1019 probes.
=====
Please wait, uploading handset compatibility test results..
Uploading handset compatibility test results successful.
Please wait, uploading network test results...
Exit
```

Figure 5: Test results of both tests

5 Device setting tips

The following steps are typically followed when developers are having issues with device settings. Example values used are for U.S. operators, and the tested devices are Nokia Series 40 devices. This means that these instructions may not apply in other situations, and so developers are encouraged to check with their own operator for the correct values and setting instructions. Developers can also have these settings sent to their Nokia devices from the support area of <http://www.nokiausa.com/> for the U.S. and <http://europe.nokia.com/> for Europe and other countries.

1. From the main device screen, select **Menu**, and then open **Settings**, followed by **Configuration Settings** and **Personal Configuration Settings**.
2. If there is an access point listed, select it. If there is no access point listed on the screen, select **Add New**, and select **Access Point** from the list.
3. Skip the first option, **Account Name**, since it is not required.
4. Open **Access Point Settings**.
5. Where it says **Data Bearer**, select **GPRS**, or **Packet Data**.
6. Open **Bearer Settings**.
7. Set **GPRS Access Point** to the correct information specified by the operator.
8. Set **User Name** to the correct information specified by the operator.
9. Set **Password** to the correct information specified by the operator.

Note: In general, the “correct information” means not to change any of the values in steps 7, 8, and 9. Many operators do not require a user name or password, and some do not even require the access point name to be different from the default name that is assigned when the access point is created. In some cases, however, the default settings might not work. If this occurs, developers should contact their operator for the correct values and setting instructions, because each operator has its own requirements for access point name, user name, and password.

10. Save the settings and select **Back** three times to see where the correct access point appears on the list.
11. Select **Options**, and then **Activate**, and wait for the message “**Activated as preferred access point**” to be displayed.

Note: After following these procedures, developers should attempt to access the Internet with the mobile device to verify that the settings work and that there are no unforeseen problems conducting the test. Developers should also be able to run Java ME MIDlets on their devices to access the Internet over HTTP or TCP protocols.

6 Evaluate this resource

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