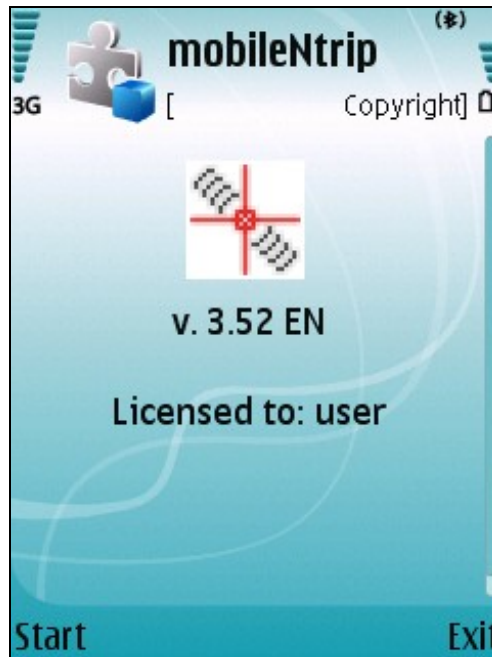


mobileNtrip ©

v. 3.52 Bluetooth User Manual



1. Introduction.

mobileNtrip is a Java application installed on a mobile phone and is used for direct communication and transferring special correction data between a server and GPS receivers (rovers) via Internet and GPRS.

Communication is based on Networked Transport of RTCM via Internet Protocol (NTRIP). It is an application-level protocol that supports streaming of Global Navigation Satellite System (GNSS) data over the Internet.

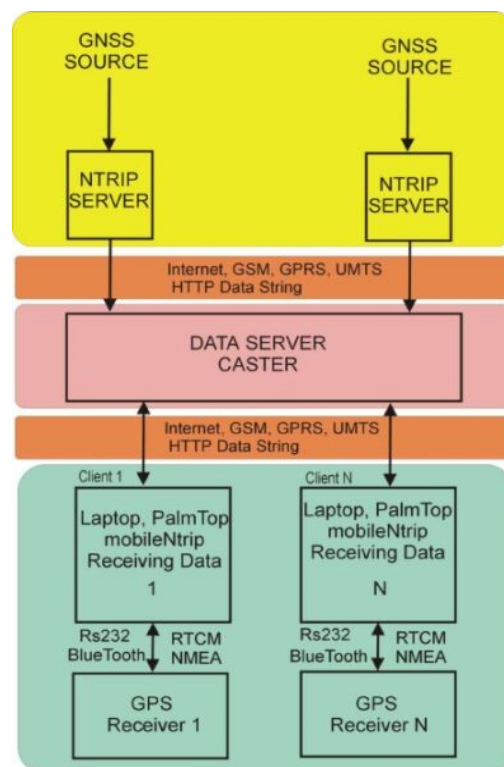
mobileNtrip also allows the use of non-Ntrip streaming based on pure TCP/IP connection to the remote host.

Since 3.52 version a user is able to set a frequency of the sent NMEA strings to the NTRIP Caster.

NTRIP is designed to disseminate differential correction data or other kinds of GNSS streaming data to stationary or mobile users over the Internet, allowing simultaneous connections to the broadcasting host. Using NTRIP, it is possible to decrease GPS rovers' position measurement errors (10-15 meters) to sub-metre (DGPS format) or even centimetre level (RTK format) accuracy.

NTRIP system consists of the following elements:

- GNSS Sources, which generate data streams at a specific location,
- Servers, which transfer the data streams from Sources to the Caster, they also define Source IDs called Mountpoints,
- Clients, which access data streams of desired Mountpoints on the Caster.
- Caster, the major system component, a HTTP server supporting requests/responses from Servers and Clients.



NTRIP network schema

More about NTRIP you can read at NTRIP Documentation:

http://igs.bkg.bund.de/root_ftp/NTRIP/documentation/NtripDocumentation.pdf

mobileNtrip application acts as a NTRIP Client.

mobileNtrip has a VRS (Virtual Reference Station) option which enables reading NMEA format data from the GPS rover with sending it to the NTRIP Caster before receiving correction data.

Normally, to assure the above, a set of different devices must be used. Apart from the GPS rover, data transfer connection is established using a mobile phone as a modem and a laptop computer or a palmtop with the NTRIP client application installed.

Now, thanks to mobileNtrip, correction data can be received from the server and transferred to the GPS rover without the use of a laptop or a palmtop.

A mobile phone is responsible for everything: connecting to the Caster via GPRS, sending NMEA string, receiving correction data, sending data via Bluetooth to the GPS rover and showing all needed parameters on the phone display.

2. Hardware.

To operate with mobileNtrip, you need:

- ✓ GPS rover – with differential correction data function and Bluetooth module, a separate COM-Bluetooth converter with battery can be used also, e.g.

<http://www.sena.com/products/industrial>,

- ✓ mobile phone – with at least Java MIDP 2.0 environment and Java Bluetooth API (JSR-82) support.

List of supported phones you can check at:

<http://www.mobilentrip.com/devices.htm>

When selecting a phone, you should choose the one with a long life battery in order to provide enough power for Bluetooth module operation.

A good choice is to have a spare phone battery during measurement works.

3. WAP & GPRS Settings.

For downloading the application from a proper WAP site and later use you need different connection settings respectively (some phone models allow connection to WAP sites via Internet Gateway).

The application is installed automatically after downloading from a WAP site.

Connection to the Caster is done by Internet APN Gateway.

These settings will vary depending on a country and a carrier.

Normally, they are set by your GSM provider.

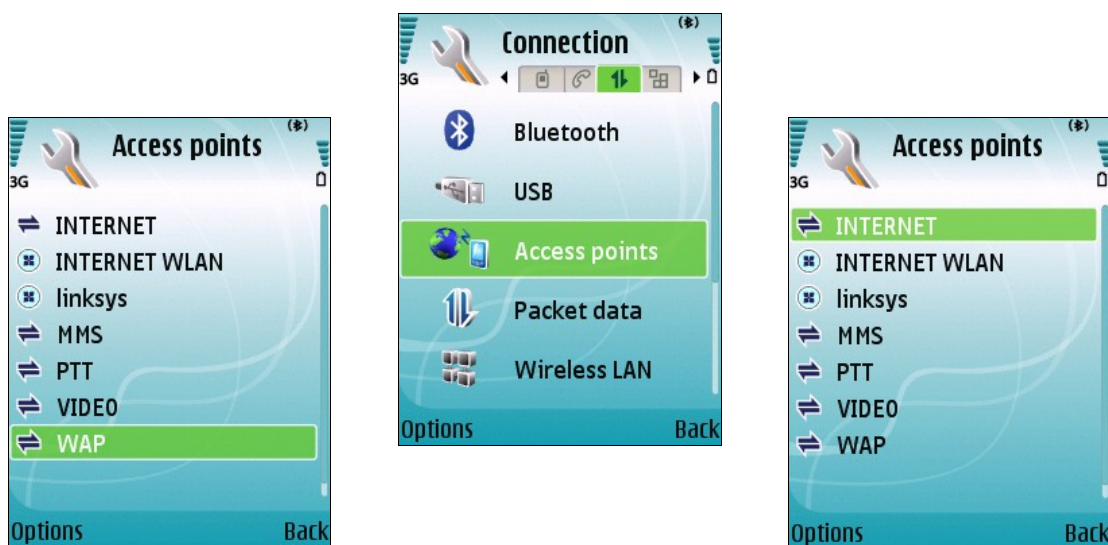
Otherwise, you need to set connection parameters by yourself.

Below, some examples and hints for setting GPRS parameters on different phone models (this info can no longer be valid due to new versions of phones firmwares!):

Nokia S60 phones

Most important are Access points for WAP and Internet APN Gateways. If your provider has not set the above, please ask for and do it yourself.

You can find these parameters in phone's *Connection Settings* menu:



Access point details are showed below.



Nokia Series 40 phones

Go to *Settings -> Configuration*

1. In *Default configuration settings* you should have some to select for example 'Internet GPRS' – if you see nothing, go to p.4

2. Go to: *Activate default in applications* and select *YES*

3. In *Preferred access point* select the same settings: in our example: 'Internet GPRS'. Then run the application.

4. Go to *Settings -> Configuration -> Personal configuration settings*

5. Press *Add New* (visible if you don't have a previous *Personal Setting Created*) or press the *Options* button. When you have pressed the *Options* button, choose *Add new*.

6. Within new menu scroll down and choose the *Access point* and press *Select*.

7. Then go to *Access point Settings -> Bearer settings -> Packet data access point*

8. Enter you APN name corresponding to your provider. Then Press *OK*

9. Go back out to the *Personal configurations settings* menu, where you now should be able to see an Access Point selected.

10. Now press the *Options* button, and then choose to activate this Access Point.

Then run the application.

After proper registration please try to connect to the Caster and download Sourcetable.

This connection uses sockets so Nokia system treats this quite differently.

Look what Nokia system is displaying:

You should see something like this:

'Allow network access?' press *YES*

then you will see: Web setting: with default setting name (in our example: 'Internet GPRS')

If you see different name regarding i.e. WAP connection - it is wrong, so you must check Access Point settings.

Next, in some cases Nokia system will ask then for access point authentication: 'Access point user:' write your user, mostly empty and 'Access point password:' also mostly empty.

Sony Ericsson phones

First, if not prepared by your GSM provider, you must create a proper GPRS account:

Select *Menu* option

Go to *Settings -> Connectivity -> Data comm.*

Select *Data Accounts* and create *New account* entering account's name.

Then edit and enter your: APN name, Username and Password. Save settings.

Next step is setting the Internet profile.

Go to: *Connectivity -> Internet profiles* and create new profile.

Enter the Name, then for *Connect* using select your data account you've created in first step.

For Internet mode set HTTP and do not use proxy.

Finally, on *Connectivity* screen select *Settings for Java* and set the first one.

Motorola phones

On Motorola phones, 2 different Web Sessions must be configured, one for accessing WAP APN gateway and other for Internet APN gateway. Usually, your GSM provider prepares them for you. These settings will vary depending on country and carrier, of course.

If they are missed you should get relevant information from GSM provider and create them according to the following:

To create a new Web Session select:

Menu -> Web Access -> Web Sessions -> [New Entry]

A. WAP access used for downloading and registering the application.

Name the new entry as you like, for example 'WAP GPRS'.

Enter the relevant Gateway IP, Port and GPRS APN information for your GSM provider's network. Some operators require also proper User Name and Password. The rest should be left unchanged.

Below are some example settings:

Name: WAP GPRS

Homepage: any

Service Type 1: WAP

IP Gateway 1: Your provider gateway IP

Port 1: 9201

Domain 1: none

Service Type 1: WAP

IP Gateway 2: 000.000.000.000

Port 2: 9201

Domain 2: none

DNS1: none

DNS2: none

Timeout: 15 minutes

CSD No. 1: none

User Name 1: none

Password 1: none

Speed (Bps) 1: 9600

Line Type 1: Modem

CSD No. 2: none

User Name 2: none

Password 2: none

Speed (Bps) 2: 9600

Line Type 2: Modem

GPRS APN: Your provider WAP APN gateway

User Name: if required

Password: if required

B. Internet access used for connection to Caster.

The name of this Web Session is quite important. While connecting to Internet within Java application, the Motorola system looks first for a Web Session called: 'Java Session'. If it is not present, a Session which is set to default is used. So, even if your GSM provider has prepared such Web Session, we advise to create it manually. Then, there is no matter which Session is a default one.

Below you will find the settings which are important for using Java applications:

Name: Java Session

Homepage: none

Service Type 1: WAP

IP Gateway 1: 000.000.000.000

Port 1: 9201

Domain 1: none

Service Type 1: WAP

IP Gateway 2: 000.000.000.000

Port 2: 9201

Domain 2: none

DNS1: none

DNS2: none

Timeout: 15 minutes

CSD No. 1: none

User Name 1: none

Password 1: none

Speed (Bps) 1: 9600

Line Type 1: Modem

CSD No. 2: none

User Name 2: none

Password 2: none

Speed (Bps) 2: 9600

Line Type 2: Modem

GPRS APN: Your provider Internet APN gateway

User Name: if required

Password: if required

If you experience connection problems using application, try entering the DNS IP address for your GSM provider:

Select *Menu -> Settings -> Java Settings* and insert the DNS IP address.

4. Application download and installation.

To get the application connect to our WAP address:

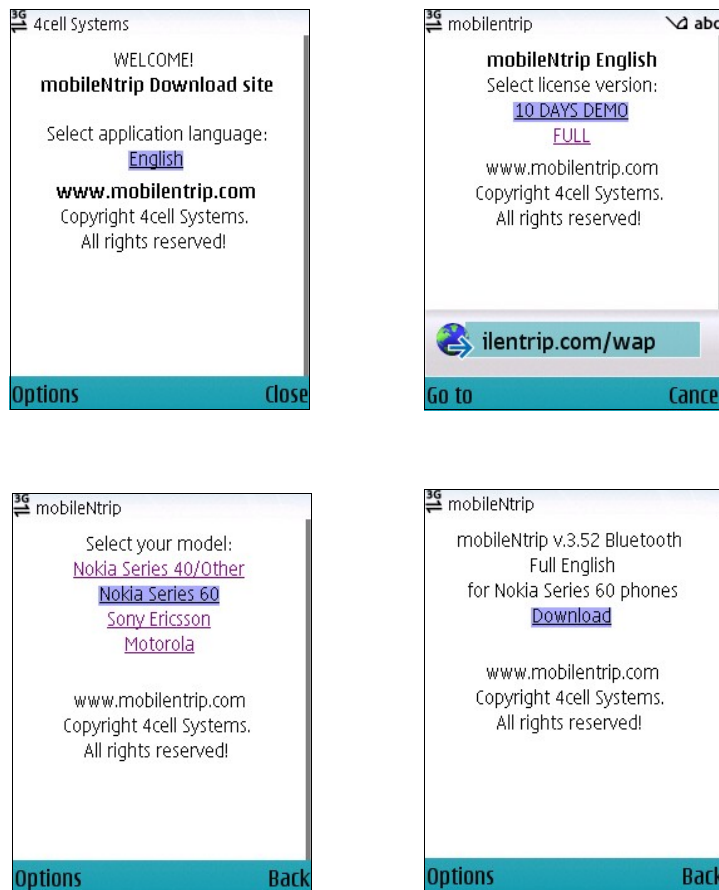
<http://mobilentrip.com/wap>

using WAP Gateway access point.

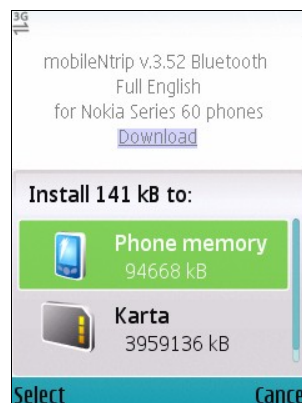
Nokia S60 3rd Edition phones allow connection to WAP sites using Internet Gateway too.

If your connection settings are OK you should connect to mobileNtrip WAP site.

Select a proper version, model and press *Download*.



If you have a memory card inside the phone, we advise to choose Phone memory for installation of the application instead, due to possible card corruption.



After successful installation, the application icon should be visible in the applications folder.



Motorola phones

As mentioned earlier, you must first choose a proper Web Session to enter WAP sites.

After pressing *Launch* you will see a default WAP site.

To get the application select *Go to URL* option using *Menu* function (middle button) and write an address: <http://mobilentrip.com/wap>

Then you can select a proper application.

After selecting *Downld* option, the application will be downloaded and installed.

When it is done, system will ask to run it. You must answer *NO* and exit WAP browser.

IMPORTANT!

You must not delete the application!

Because the registration code is one time use, after deleting you will have to contact us to unblock a chance to pass the registration process again.

5. Installation of the new version.

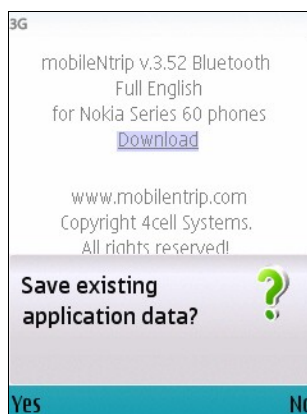
4cell Systems still works on mobileNtrip improvement, so new versions will be released in the future and available to download.

To install a new version you must download the application from the same WAP site and overwrite the old version.

During upgrade, the system will discover the old version and ask for replacement:



Then system should ask:

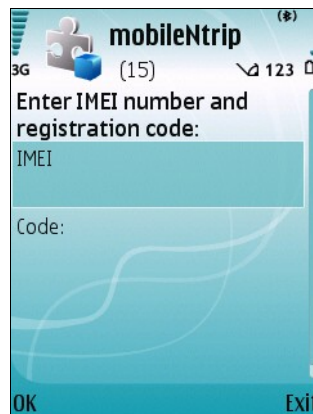


IMPORTANT!

Please answer Yes to keep your registration data in phone memory. Then, there is no need to take registration once again.

6. Registration

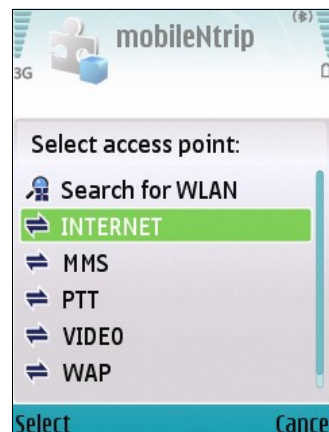
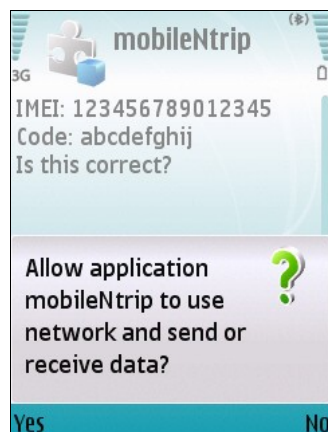
During first startup a registration screen is displayed:



You should enter your IMEI phone number and a registration code received from us. IMEI is the unique number set to your phone by the manufacturer. To get it, simply dial: ***#06#**

After this, mobileNtrip will contact a registration server to verify your user data. When everything is correct, the application is ready to use.

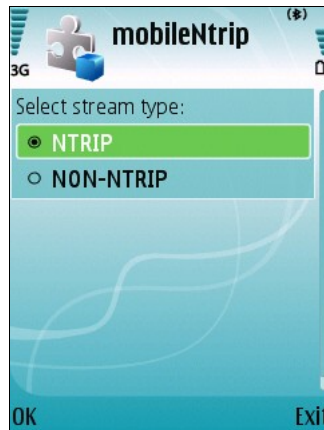
When starting GPRS connection you should allow the application to use network and select a correct access point:



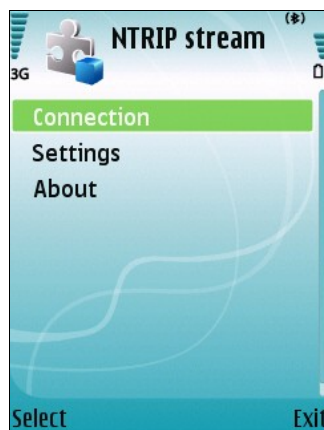
7. mobileNtrip Overview.

NTRIP STREAM

After application registration, to work with NTRIP Caster you should select NTRIP stream:

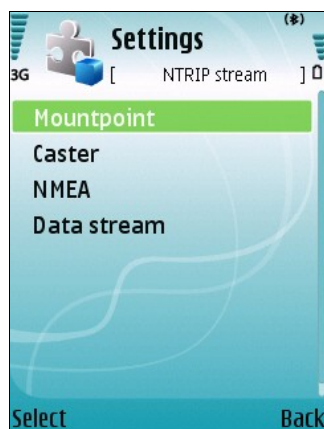


then the main menu appears:



Settings menu

Before making a connection you can set connection parameters at *Settings* menu:



Main parameters are: default NTRIP Mountpoint and Caster:



Mountpoint: a default reference station for data correction with NMEA option.

Caster: a default NTRIP broadcasting server which sends correction data.

As an example EUREF-IP Caster needs user login and password to download corrections. Free registration is available at:

<http://igs.bkg.bund.de/ntrip/registeruser>

Above parameters can also be set directly (except user/password) from downloaded Sourcetable – see following pages.

IMPORTANT!

Phone ports 80 and 8080 are blocked for socket connections due to security reasons. If your Caster port has a default port 80 or 8080, you should ask your Caster provider for allowing connections to other ports, e.g. 2101.

NMEA

If you want to retrieve correction data from virtual reference stations (VRS) you need to send your approximate position in NMEA format.

After Sourcetable download, in Mountpoint details you will find parameter: NMEA.

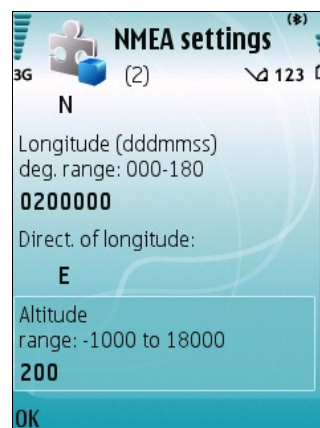
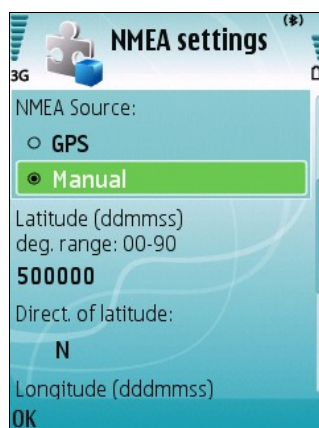
If NMEA = 1 it means that the chosen Mountpoint requires NMEA string to be sent to the Caster in order to get corrections.

You can set NMEA string to be sent only once to the Caster at the beginning of connection or to send it frequently within the range: 1 to 3600 sec.

The second option is valuable for those who need a regular position send for fast-changed measurement points.



mobileNtrip also allows you to set a manual NMEA string which will be sent to the Caster instead of the GPS one. This option can be used when the GPS rover cannot send and receive data simultaneously on the same serial port.



Finally, you are able to control the size of correction data buffer which is sent to the GPS rover via Bluetooth.

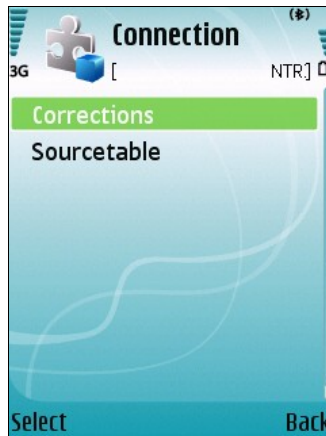


This setting is needed when there is no EOL character (<LF>) inside data stream. The size depends on the correction data type, so you should find an optimal value for your Mountpoint. Default value is: 256 bytes.

All the above settings are saved in the phone memory, so mobileNtrip will remember them after the application restart.

After setting parameters, go to *Connection* menu, where you can select a connection type.

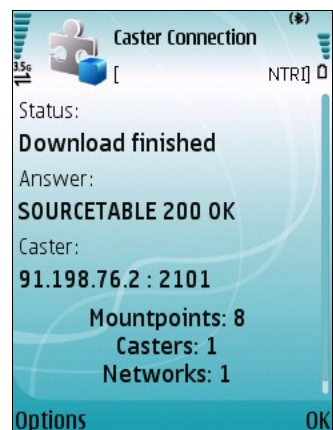
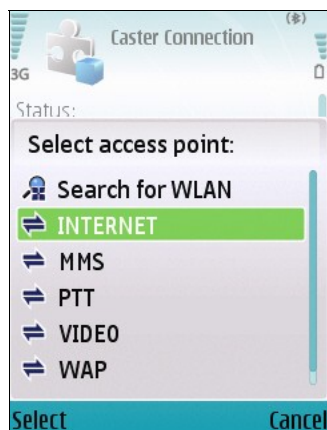
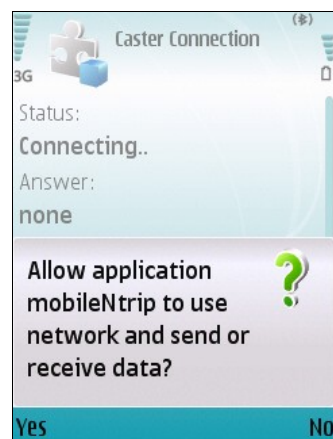
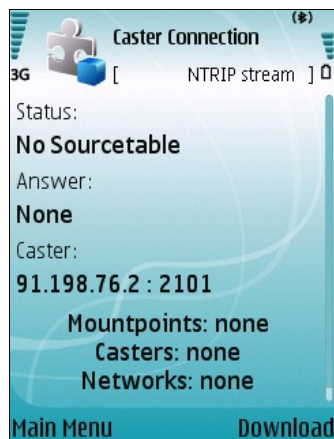
Connection menu



Sourcetable

Before starting receiving corrections you can download the Sourcetable from the Caster. The Sourcetable is a set of information about reference stations (Mountpoints), Casters and Networks currently available on the default Caster. Downloading the Sourcetable is not necessary for proper receiving data correction but is recommended every time the application is started because of changing constantly the number of available Mountpoints and possibility to view their parameters.

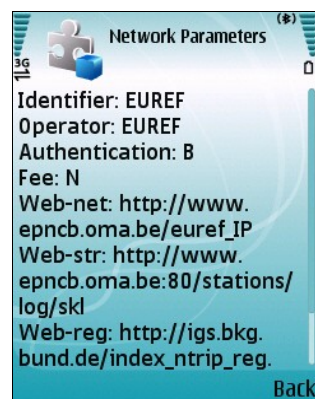
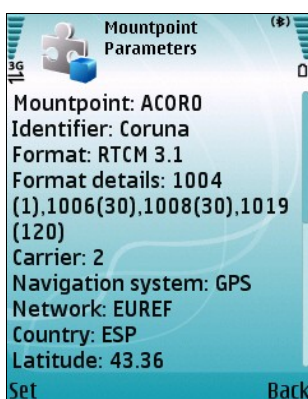
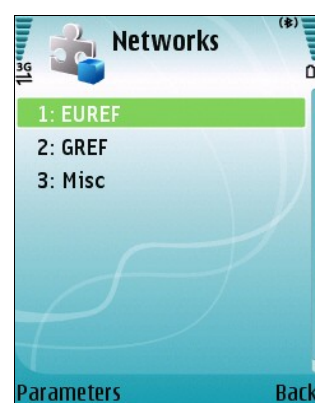
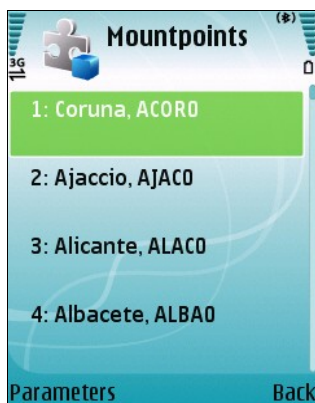
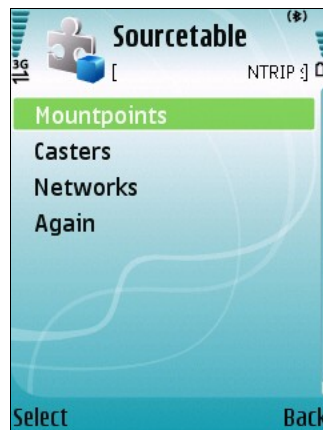
After first time download, you can receive the Sourcetable once again, selecting *Again* at the *Sourcetable* screen.



Thanks to the Sourcetable, it is possible to select and set default Mountpoint and default Caster.

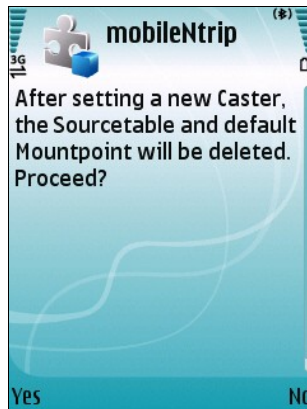
You can also view a lot of parameters of each Mountpoint, Caster and Network as shown below.

Sourcetable menu



To set Mountpoint or Caster as a default press Set from Options.

The change of an existing default Caster to a new one will cause deleting an old Sourcetable (if downloaded) and default Mountpoint:



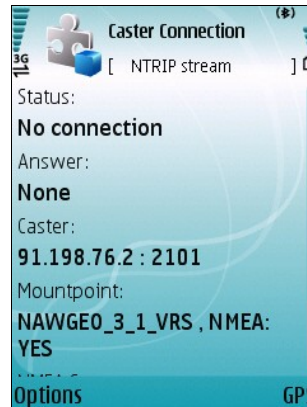
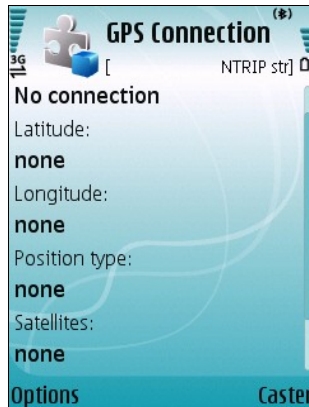
Then you should download a new Sourcetable from a new Caster.

Corrections

After setting a default Mountpoint, Caster and (if required) user and password, you can start receiving correction data and send it to GPS rover by selecting *Corrections* from the *Connection* menu.

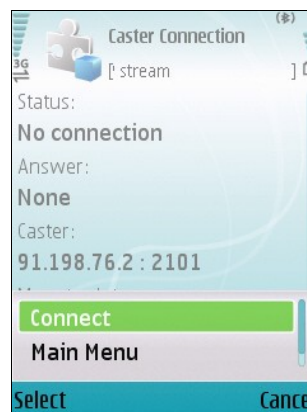
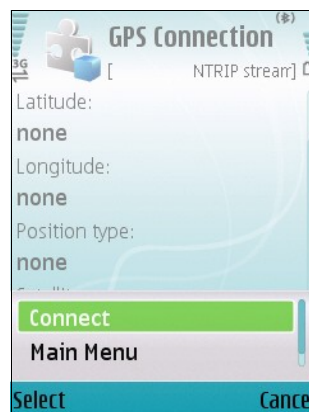
You will see 2 most important application screens showing all parameters of two kinds of connection:

- to GPS rover via Bluetooth
- to Caster via GPRS



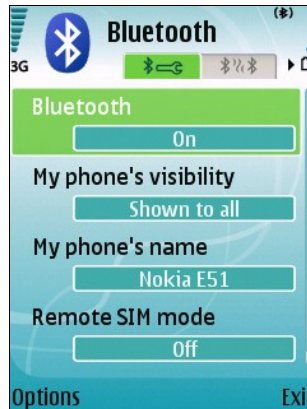
These screens can be simply switched using the *Caster* or the *GPS* option. Also, the main menu of the application is available at every moment by selecting *Main Menu* from *Options* on the left.

To connect to GPS or the Caster just simply select *Connect* from *Options*:

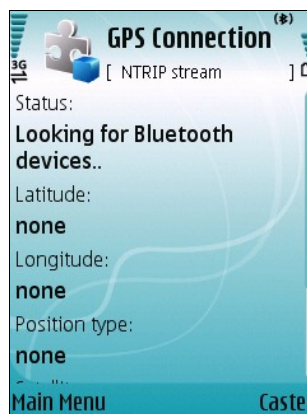


We recommend to start connection with the GPS rover first.

Remember to turn ON the Bluetooth module in your phone settings. Best way is to do it before starting the application.



After selecting *Connect* option you will see the changed Status:



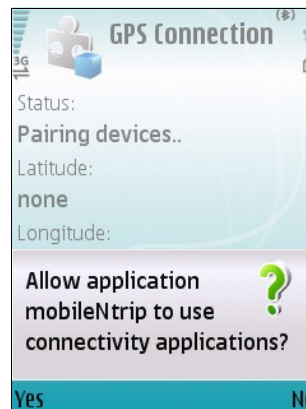
If both devices (GPS and phone) are in Bluetooth range, the application will show a list of available devices:



Select your target device, then you will see the name and Bluetooth address.

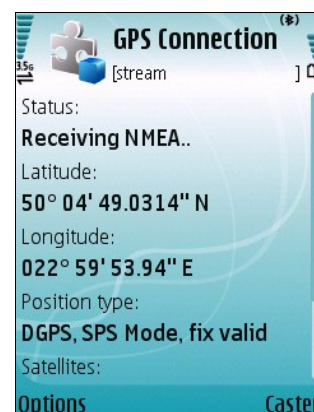


This address will be memorized, so there will be no need for another search procedure every time you disconnect.
Then a confirmation screen may appear:

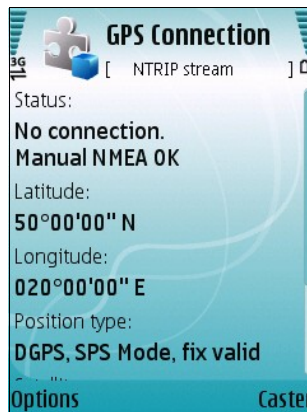


After confirmation, you will see changed Status info on the GPS screen. Status can display different information mainly depending on NMEA options.

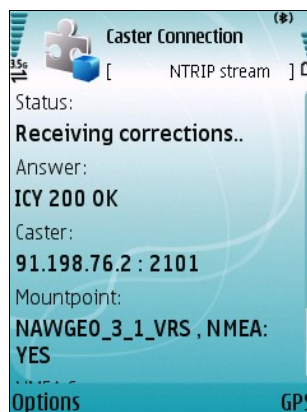
If your GPS rover sends NMEA string correctly, its more important parameters will be shown on the screen:



If you set Manual NMEA option, your values will also be visible on the screen:



After successful connection to the Caster, when your user/password and Mountpoint are correct, requested corrections will start to download.
It will be indicated by Status: "*Receiving corrections..*"



IMPORTANT!

Correction data will be transferred only in the case of the Caster's answer: "*ICY 200 OK*"!

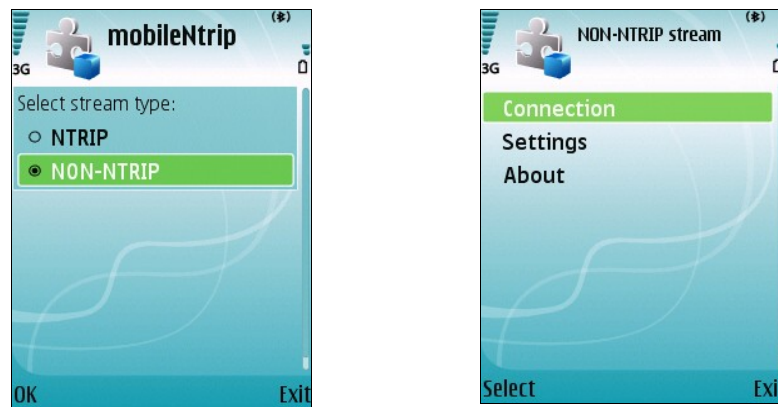
Other possible answers:

SOURCETABLE 200 OK: default Mountpoint is not available,
HTTP /1.0 401 Unauthorized : bad user/password or missing,
HTTP/1.1 403 : access denied.

Pressing *STOP* option will stop connection to the Caster and will end receiving data.
You can connect to the Caster once again by selecting the *Connect* option.

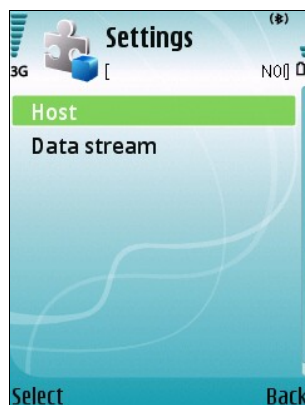
NON-NTRIP STREAM

To use a non-Ntrip stream function please select a proper option when the application starts:

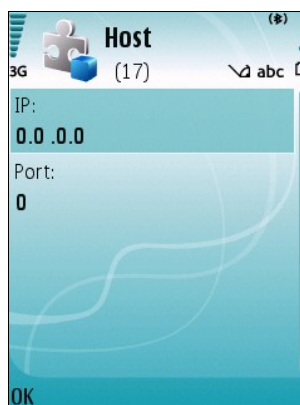


Settings menu

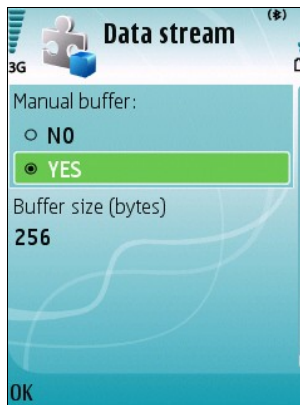
Similarly to the NTRIP stream, before making a connection you should set connection parameters at the *Settings* menu:



Main parameters are: default Host IP and Port:



Also, you are able to control the size of a correction data buffer which is sent to the GPS rover via Bluetooth.



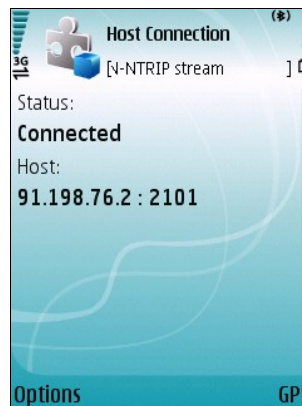
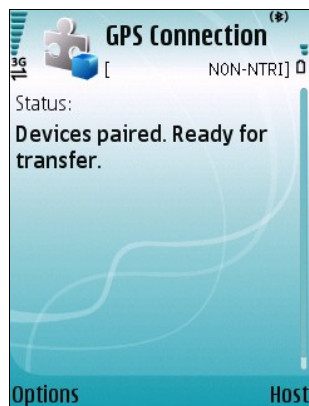
This setting is needed when there is no EOL character (<LF>) inside the data stream. The size depends on a correction data type, so you should find an optimal value for your stream. The default value is: 256 bytes.

Correction data

You can start receiving correction data and send it to the GPS rover by selecting *Connection* from the main menu.

You will see 2 application screens showing all parameters of two kinds of connection:

- to GPS rover via Bluetooth
- to Host via GPRS



Similarly to the NTRIP option these screens can be simply switched using *Host* or the *GPS* option.

Also, the main menu of the application is available at every moment by selecting *Main Menu* from *Options* on the left.

To connect to the GPS rover or Host just select *Connect* from *Options*.

Do you have any questions or comments? Please mail to: support@mobilentrip.com

Have a nice work with mobileNtrip!
4cell Systems Team
www.mobilentrip.com