Eos Server

User's Guide

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1. Introduction

Eos Server is a stand-alone application designed to broadcast your own Arrow GNSS base station corrections over the Internet. There are lots of advantages for users who need RTK/DGNSS corrections to achieve submeter, subfoot or centimeter accuracy when an RTK Network or base station is unavailable nearby. Eos Server includes several features such as:

- Emulates NTRIP protocol with client username/password database
- Direct IP connection
- Allows the configuration of the receiver from a script file
- Mirror mode for a remote base station over TCP/IP
- Dual broadcast channel
- Ability to connect to an NTrip Caster as a mountpoint

Eos Server requires a one-time activation license fee. The app also runs in demo mode with full functionality for one hour at a time.

2. Installing Eos Server

Note: We strongly suggest installing and running a licensed version of Eos Server on a USB key. This allows the migration of the app from one computer to another.
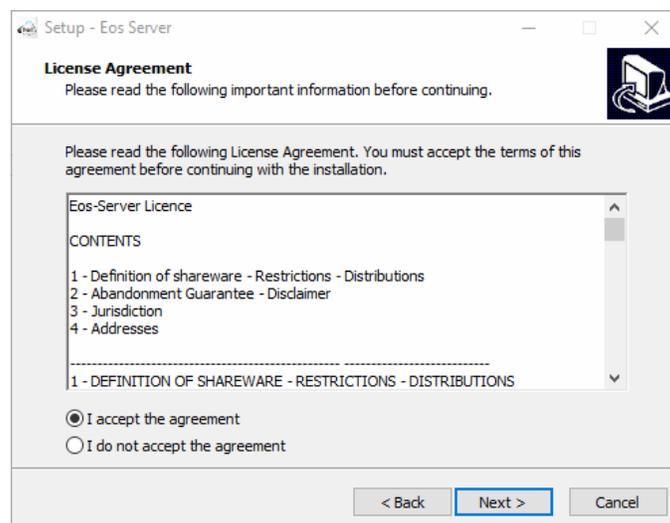
You can download the latest version of Eos Server from the following link:

http://www.eos-gnss.com/download-eos-app-soft/#1446476861077-2fd08bdb-0741

Below is the procedure to install Eos Server on a desktop PC. Locate the Eos Server executable file on your PC and double click on it. Click on **Next**.
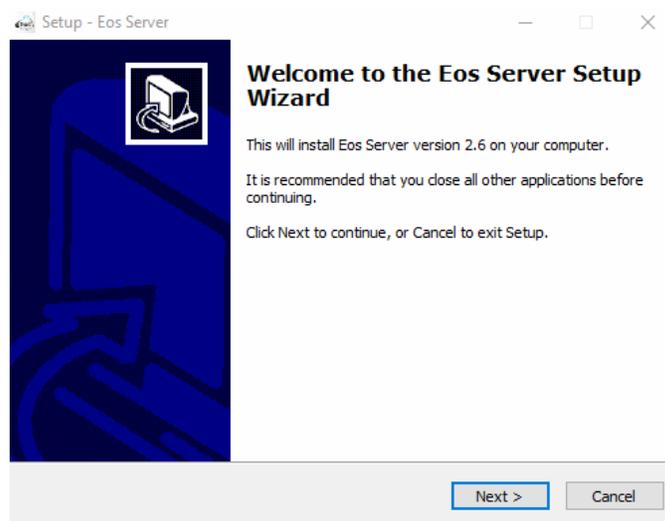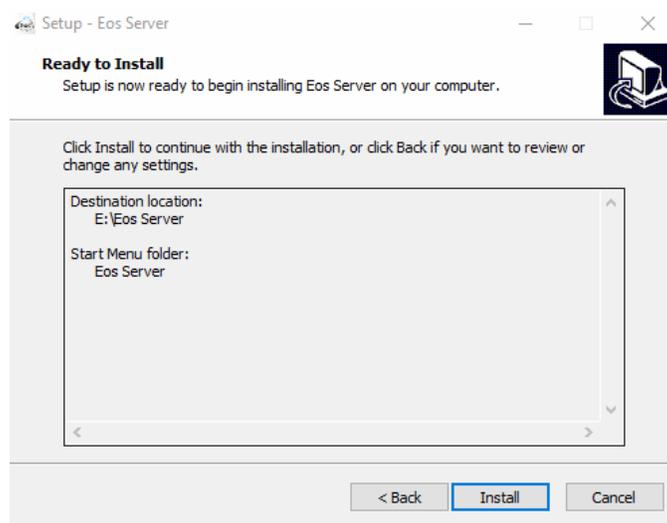
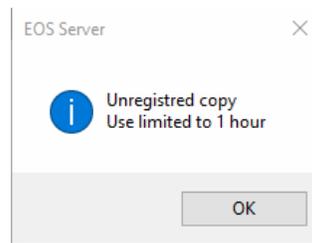

Accept the license agreement and click **Next**.

Choose the Install location on your drive and click **Next**.

Select a Start Menu folder (or leave the default) then click **Next**.
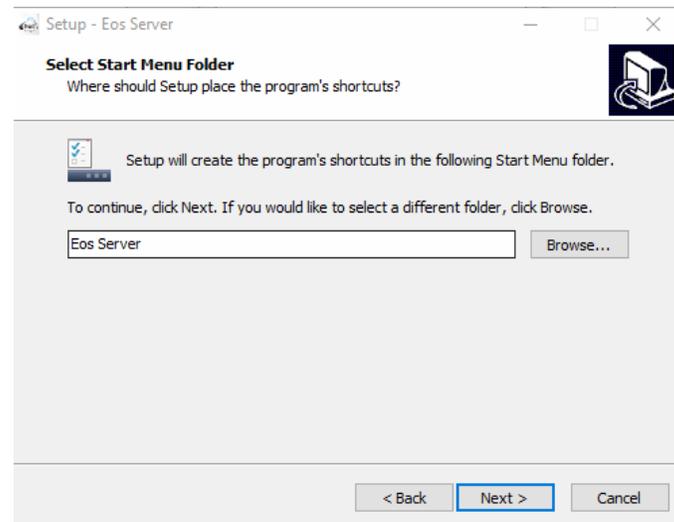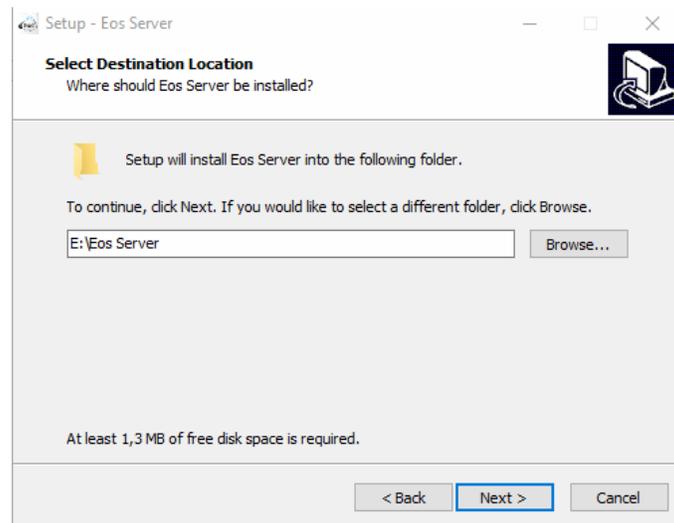
Click on **Install** to finish the process.

If the ''Launch Eos Server'' box was previously checked, Eos server will start automatically. Note: Without a license key, the software will work normally for 1 hour.


To permanently activate Eos Server, you will need to purchase a license key. Contact your local reseller with the "Pass key" that you will find in the About menu. You can copy and paste the key using the ''Copy to clipboard'' button.

3. Principle of Operation

An RTK Network (or RTN, Real-Time Network) consists of three segments: the Server, the Ntrip Broadcaster (Caster) and the Client. The server commonly hosts the GNSS base station receiver that is computing the differential corrections with an antenna set at known coordinates. A client can connect directly to the server using a Direct IP address and a TCP port number. This is what is referred to as a DIP in Eos Tools Pro. This is a direct link from the client to the server.
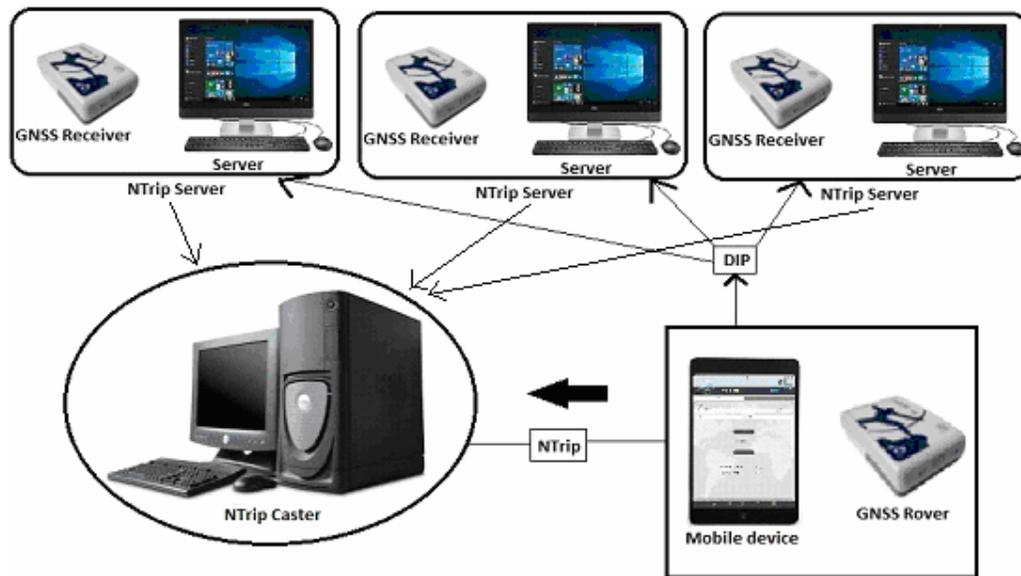
In an RTK Network, the servers are connected to one or more Casters. The Caster follows a standard protocol called NTrip (**N**etworked **T**ransport of **R**TCM via **I**nternet **P**rotocol) to stream differential GNSS data over the Internet. Connection to an NTrip Caster requires an address, a port number, a user ID and a password. The Caster holds the *Source Table* which contains the list of all the *Mountpoints* (Servers) in the Network. From this table, the Client can choose a single baseline solution (a specific server) or, if the caster features it, a virtual reference solution (a correction specific to the client's location; in this case the client sends its position to the network via a standard NMEA GGA string. Eos Tools Pro client handles this automatically).

4. Server Configuration

4.1 Server Status
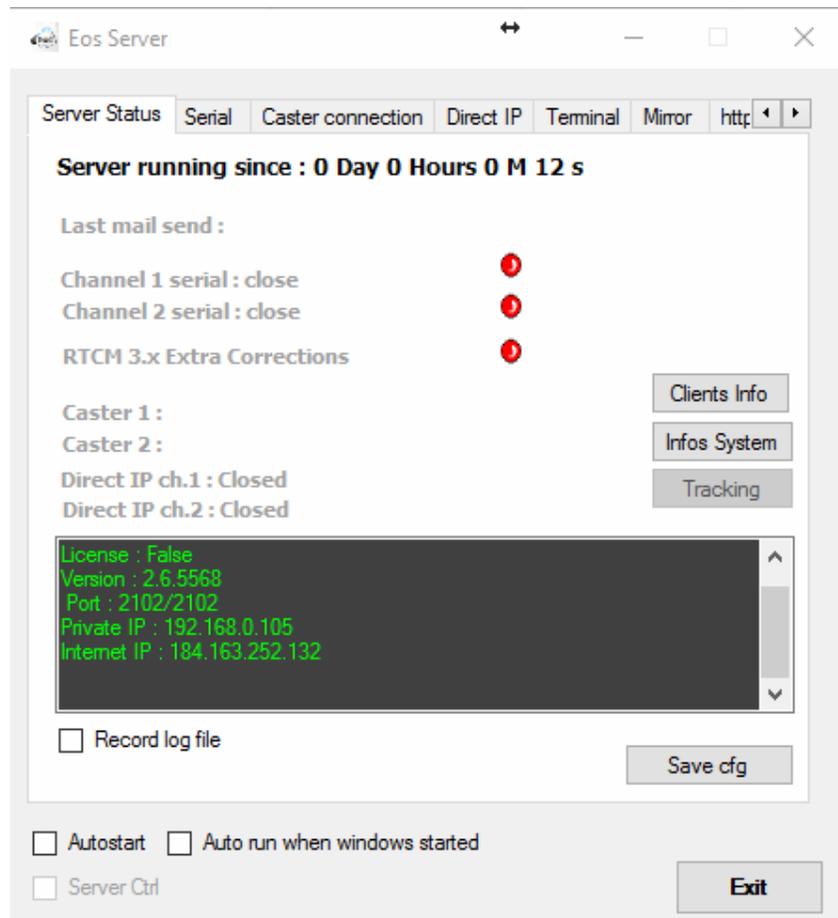
The Server Status displays the status of the server in real-time and also the history since it was last started. The "**Save cfg**" saves all current settings of the app.

A log file of all activities can be recorded by enabling the "**Record log file**" option. This will generate a file in the working/install directory of Eos Server.

The "**Auto run…**" option when enabled will start the application after a computer reboot. The **Autostart** feature, when checked, automatically starts all server activities with the last settings.

Note: Make sure to save your config after initial setup or after a change in the settings.
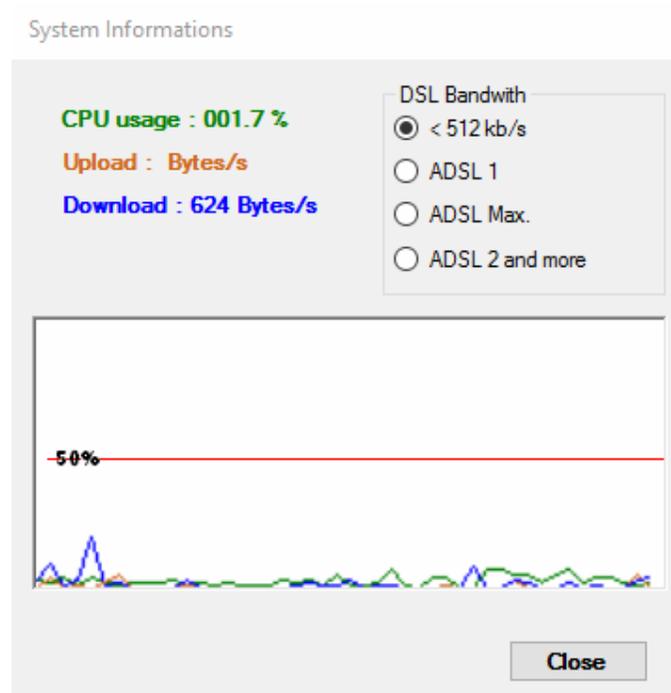
4.1.1 Clients Information

Clients Info

Clicking on the **Clients Info** button, it will show the users that are currently connected to the two channels.

Info Clients   ✕

ⓘ   DIP1 : Not enabled
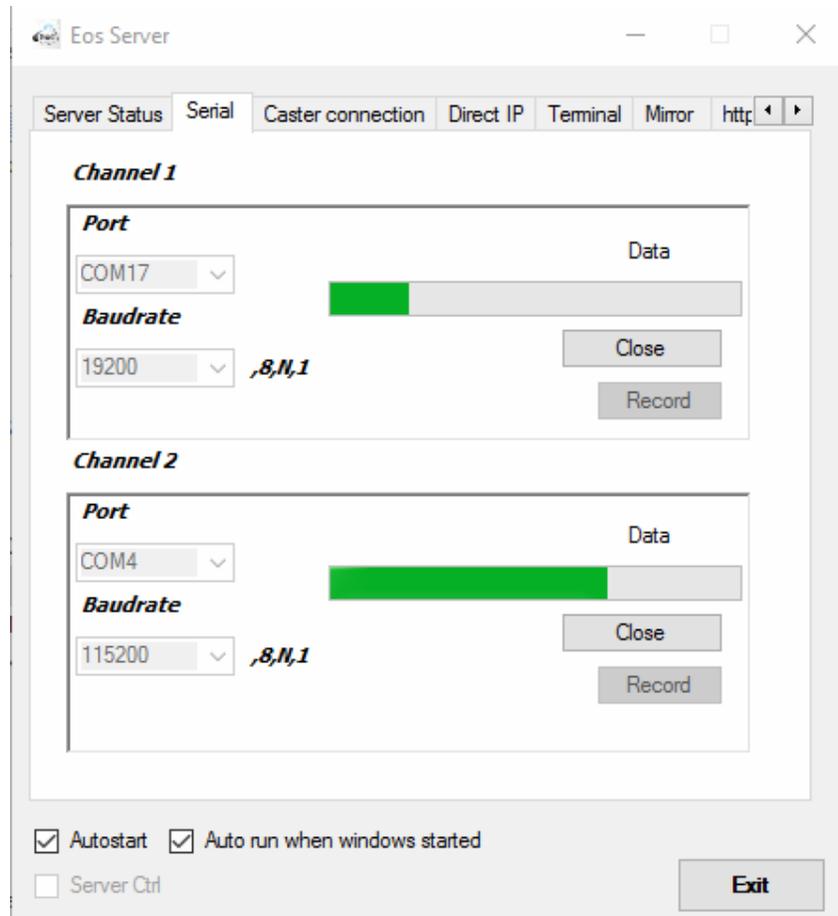
       DIP2 : Not enabled

OK
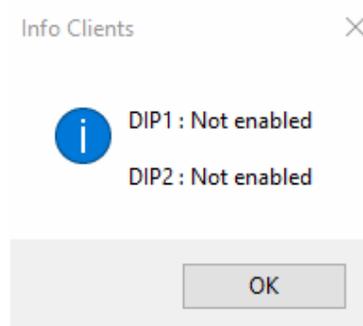
4.1.2 System Information

Infos System

The **Info System** button displays various information on the system such as CPU usage, download/upload speeds and DSL Bandwidth.

System Informations

CPU usage : 001.7 %

Upload : Bytes/s

Download : 624 Bytes/s

DSL Bandwith
◉ < 512 kb/s
◯ ADSL 1
◯ ADSL Max.
◯ ADSL 2 and more

50%

Close

4.2 Serial

In the Serial menu, you can connect the app to the Arrow receiver set as a base station. The Arrow must be configured properly:
- with proper coordinates of the antenna location
- to output RTCM3 corrections and/or other correction formats. For example, your Arrow can be configured to output RTCM3 on the Bluetooth port and proprietary format on the USB port.

Note: The default baud rate to connect to an Arrow via the USB port is 19200. For Bluetooth connection, the over-the-air baud rate is irrelevant and connection will be successful regardless of the baud rate.

4.3 Caster connection
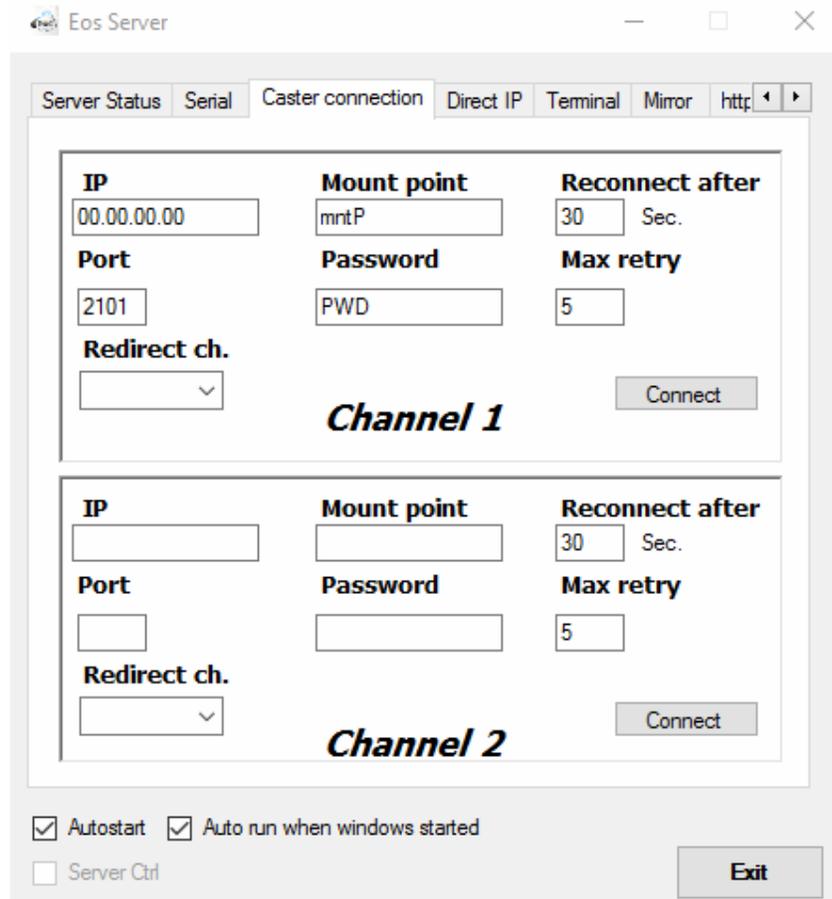
The **Caster connection** tab allows you to push the correction streams to an NTrip Caster. Eos Server channels will then be seen as mountpoints in the sourcetable of the caster.

To Configure the Caster connection, the caster administrator should provide you with the IP address, the Mount point, the port and the password to use. You can then select which of the two streams are to be routed to the caster. Users have the possibility to output the corrections streams from either channel 1 or 2.

If there is failure with the connection, Eos Server will attempt to reconnect after the specified number of seconds (Reconnect after) and for the specified number of attempts (Max retry).

Click on "**Connect**" to mount the selected channel on the Caster.

4.4 Direct IP
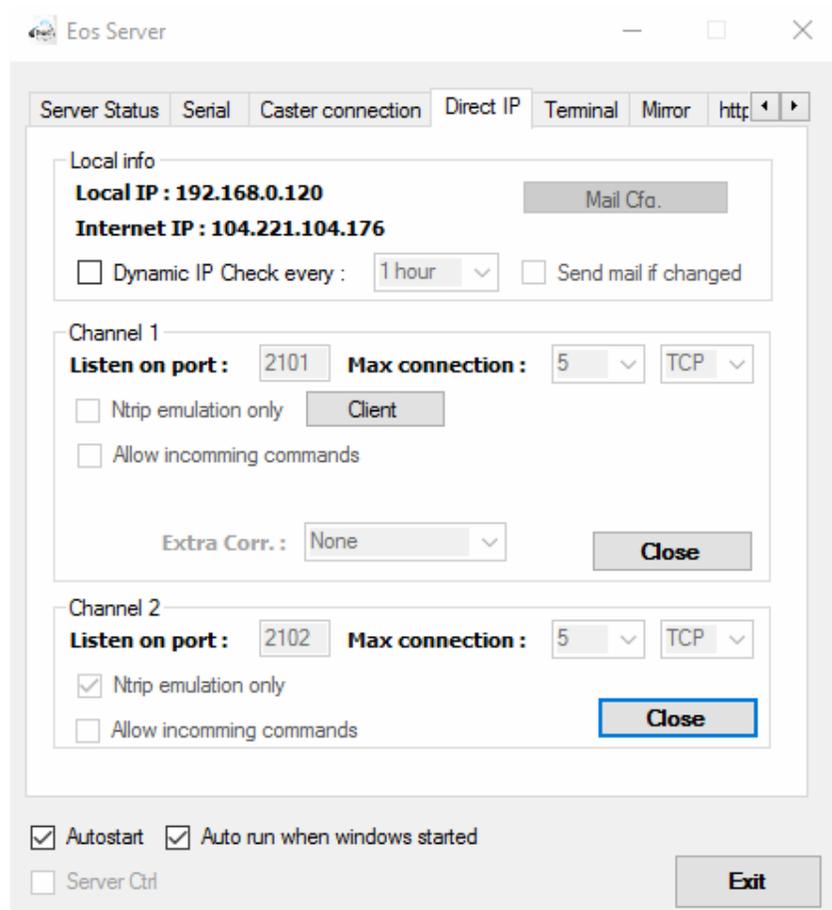
This menu is the one in which you actually configure Eos Server to allow access to users and set the "listening ports" on your network. Eos Server displays both the Local IP of the host computer and the Internet IP (the IP that will be entered in the settings of your NTrip client or Eos Tools Pro). It is highly recommended that both IPs be static (fixed). If Internet IP cannot be static, then notifications can be set via email to be aware of the changes of IP.

Here are the steps to configure the app properly and that should involve your Network administrator:
- The computer hosting Eos Server must obtain and be configured with a fixed IP address within the intranet
- Enable "port forwarding" for one to three ports based on your needs (we recommend 2101, 2102 and 2103) from the main router to the host PC. (one of the ports can be used for mirror mode)
- If required, allow also incoming requests in your local firewall for the same three ports

Channel 1 and 2 are the connections that were made to the Arrow receiver in the Serial menu to receive the corrections. Assign for example port 2101 to Channel 1 in TCP mode and a maximum number of allowed connections if desired. Click on "**Start**" to start the stream of differential correction and make the TCP port available to the clients.

If "**Ntrip emulation only**" is not checked, then the client can access the channel's stream via port 2101 either using Direct IP (DIP) or via an NTrip client. If this option is checked, then only an Ntrip client can be used to access the corrections. In this case, a list of allowed connections, with usernames and passwords, must be set with the "**Client**" button.

To add a client, click on the **Client** box. Select **New** and enter the password ''**INNOV2006**''.
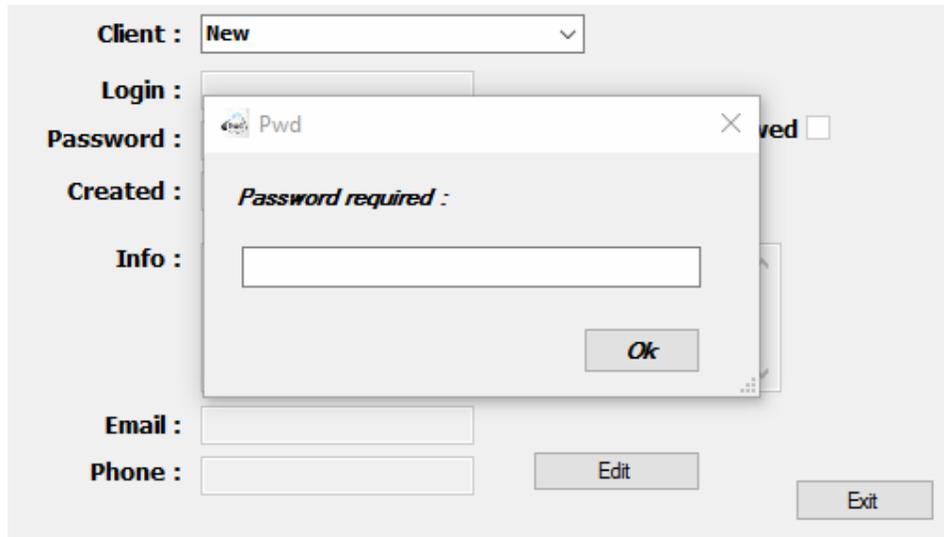
After entering the client's login credentials - username and password are mandatory - check the box **Connection allowed**. Click on **Save** then **Exit** to finish the process. The other fields of information in the menu are optional.
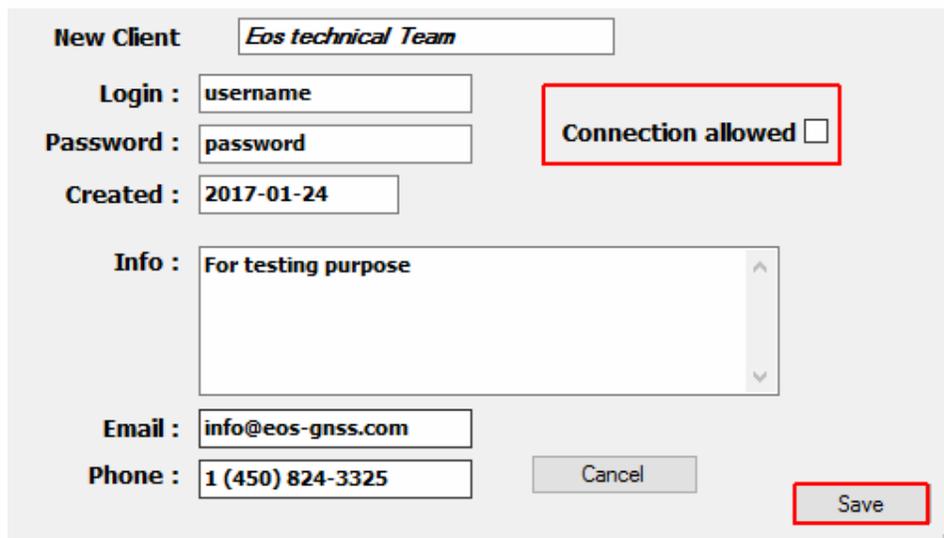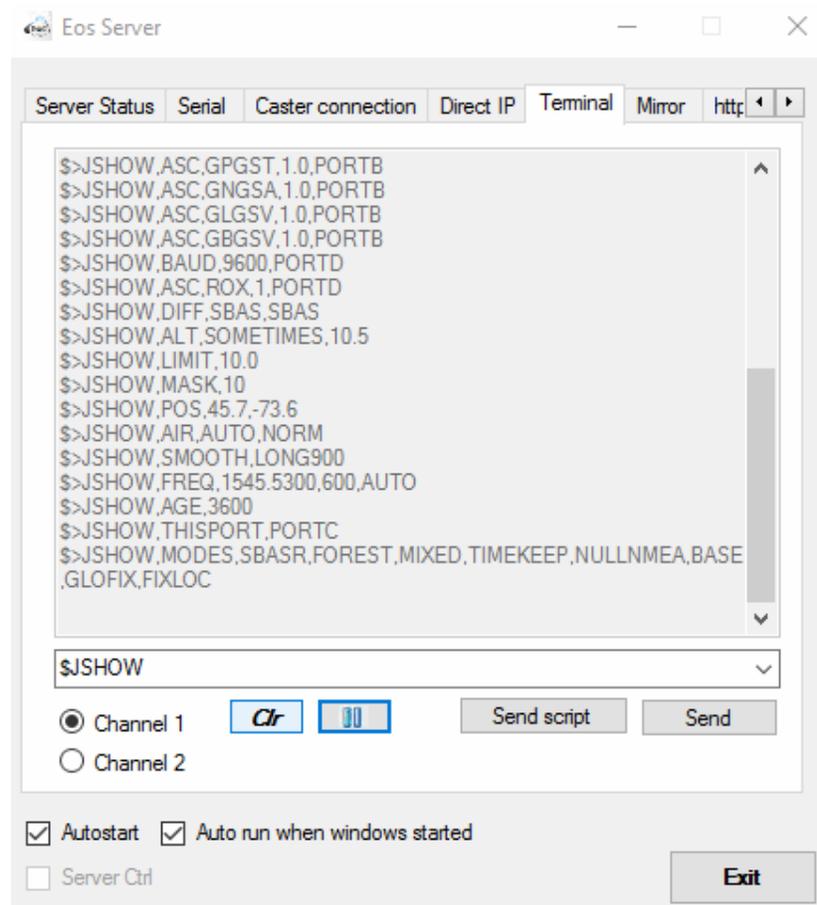

The new user should now be added on the Client list.

4.5 Terminal

The Terminal tab allows you to communicate with the receiver on the selected channel (or port). You may send individual commands to query or configure the Arrow by typing in the box and clicking on "Send".

Script files can also be written (see the scripts subfolder in the installation folder for samples) to be prompted for information and configuration options.

4.6 Mirror
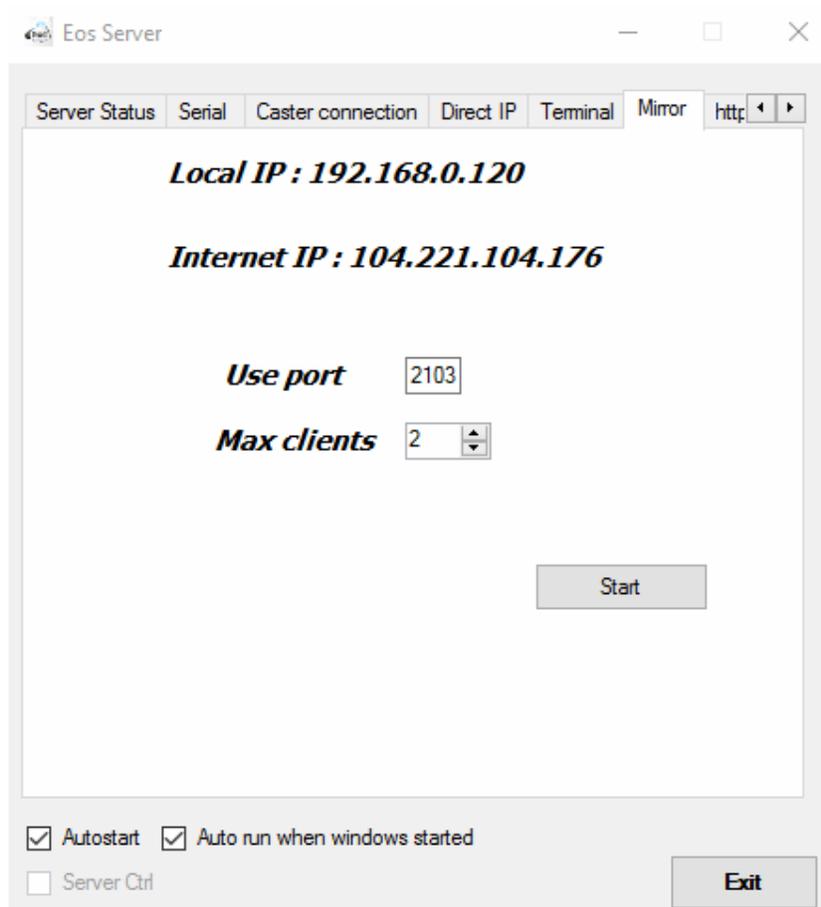
When you are too far from the office (more than 50 km baseline length) for proper RTK operation/accuracy, have Internet connection available in the field and want to overcome the line-of-sight limitations and bulkiness of UHF radios, then the mirror feature of Eos Server may come in handy.

In Mirror mode, the Arrow base station is installed in the field with the antenna on a known location. (It is assumed that the coordinates are entered in the Arrow and Arrow is properly configured for base operations). The corrections are sent over TCP/IP to Eos Server (in the above screenshot, using port 2103). The corrections are then available to the specified number of users (Max clients) over a direct IP (DIP or TCP/IP) connection.

4.7 Http Server
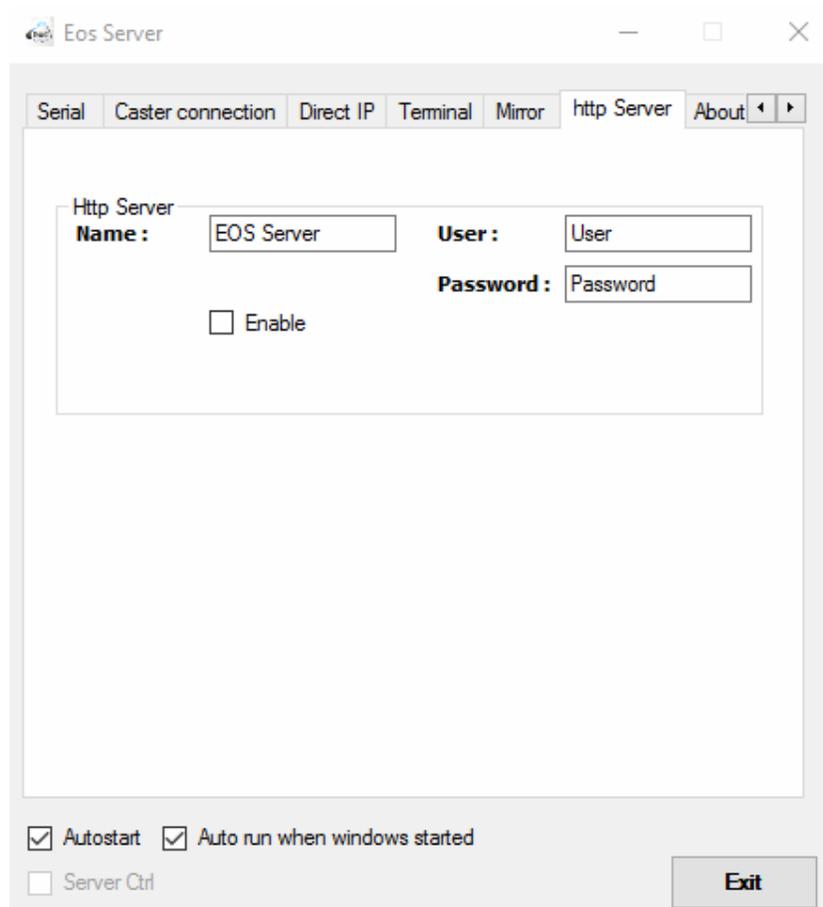
The box "**http Server**" helps to configure and start up the embedded server by clicking on the enable check box. You need to define a name for your server, a username and password to protect your server for unwanted resets.

Please note that you need to open a port (e.g.: port 80 on your router) to have access to your http server information from anywhere and to reinitialize it if needed. This can be done from any type of web browser.

4.8 About
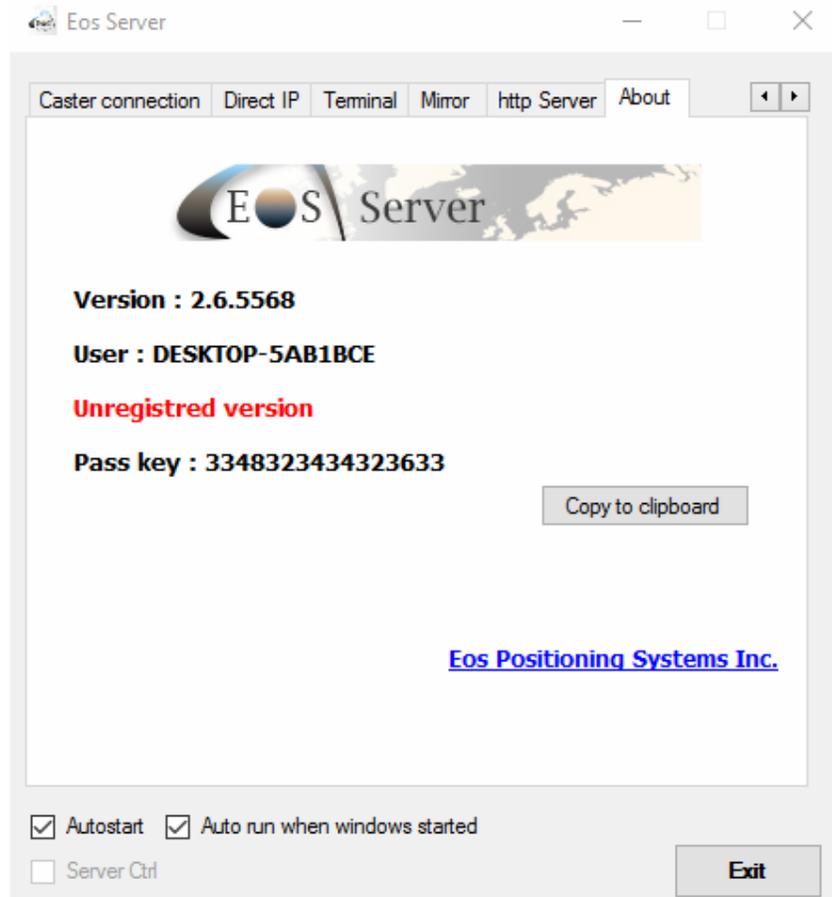
The About tab shows the version of the application, the computer name, the registration status of the license and the pass key needed to activate your Eos Server license.

As stated previously, you can install and use Eos Server for a limited period of one hour. To purchase a full license of Eos Server, contact your local Eos reseller or send us an email at info@eos-gnss.com.