



# Wialon Pro

User Guide

*as of 05.05.2012*



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This manual contains detailed description of the GPS tracking software

📍 Wialon Pro.

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## Wialon Administration

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## Minimum Requirements

Wialon Pro has a number of requirements for software and hardware.

### Supported Browsers

Supported browsers are:

- Mozilla Firefox 3+
- Opera 10.0+
- Internet Explorer 8+
- Google Chrome 2.0+

For Internet Explorer, it is recommended to install [Chrome Frame](#) plugin that is compatible with Windows 7, Vista, and XP SP2.

If you use a browser not mentioned above, Wialon may function incorrectly.

### Software Requirements

Wialon Pro can be installed on 64-bit (x86\_64, amd64) Linux [OS](#) with 2.6 kernel. Almost all versions of Linux are suitable, [Debian](#) and the like are recommended.

### Hardware Requirements

Hardware platform requirements directly depend on the number of units and users you are going to have in your tracking service, as well as on tasks posed. Below you see the set of requirements (GIS system is not taken into account).

Remember that using maps of embedded GIS servers causes additional requirements to RAM. The approximate calculation scheme is as follows: 512 [MB](#) plus all maps in AVD format taken with 1.5 coefficient. It means to use maps of cities and local regions 3 [GB](#) of RAM is needed, and to use maps for all USA, Russia, and the like - over 10 [GB](#).

To define the amount of disk space needed note that a typical message from a unit occupies about 300 bytes.

Minimum requirements to server:

1. CPU: Core 2 Duo(Quad), issued not later than 2009
2. RAM: or 4 [GB](#)
3. HD: MD (software-based) [RAID-1](#) array, 2x500GB SATA

More specifically, it depends on number of units you are going to track:

Units	Requirements
100-500	CPU: Quad Core Xeon L5420 and higher RAM: 16 <a href="#">GB</a> HD: MD (software-based) <a href="#">RAID-10</a> array, 4x500GB SATA
500-1000	CPU: Quad Core Xeon E5520 and higher RAM: 24 <a href="#">GB</a> HD: hardware-based <a href="#">RAID-10</a> array, 8x500 <a href="#">GB</a> SATA, or 4x1000GB SATA
1000-5000	CPU: 2x Quad Core Xeon E5520 and higher RAM: 48 <a href="#">GB</a> HD: hardware-based <a href="#">RAID-10</a> array, 8x300 <a href="#">GB</a> SAS 15K
	CPU: 2x Quad Core Xeon E5620 and higher

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5000-10000	RAM: 48 GB HD: hardware-based RAID-10 array, 8×600 GB SAS 15K
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For efficient server operation we recommend to use the following Internet channel width (from server):

- up to 5 users - 2 MB
- up to 20 users - 10 MB
- up to 1000 users - 100 MB
- over 1000 users - 1 GB

Wialon server requires static IP address to receive data from units.

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## Administrator's Duties

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Wialon service administrator is in charge of the following:

- To see that there are enough free space on the disk.
- To care of hard drives state (to avoid the formation of damaged areas).
- To monitor the volume of Wialon log files.
- To monitor errors ('... error ...') in Wialon log files, in case of errors promptly remove cause of trouble.
- To monitor memory consumption and CPU load.
- To maintain actual time on the server.
- To control the logins to Wialon and do not allow restarts or attempts of restarts from users who do not have enough rights for this.

Several processes allowing to automate administrator's work are described in [Cron Jobs](#).

## Directory Structure

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The general structure of Wialon directories:

- custom - the directory containing your custom configuration;
  - skins - the directory with your [custom design](#) of the monitoring system (if you are using not a default skin);
  - hw - the directory with scripts needed to work with devices different from the standard package and unique for the given service);
  - custom.txt - the file of your custom [Wialon Configuration](#);
- dep – the directory containing system libraries needed for Wialon operation;
- lib – the directory of main libraries;
- logs – the directory containing log files:
  - service.log - main log;
  - trace.log - trace log;
  - http\_error.log - error log of processing [HTTP](#) queries;
  - error.log - all errors from trace log which contain the text 'error';
  - and an individual log for each device type and for modems;
- plugins – the directory with plugins (here the encrypted folder mps with additional plugins is also located);
- scripts – the directory with the main scripts;
- sites – the directory for sites;
- storage – the directory containing database;
  - pd - database for units and their properties;
  - pl - database transactions log for units and their properties;
  - ps - database statistics on units and their properties;
  - md - messages database;
  - ml - transactions log for messages database;
  - ms - statistics on messages database;
- tmp - the directory with temporary files.

User is allowed to make changes in custom directory only. By default, when the software is updated, only this directory is not replaced with original files from the distribution.

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## License

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The license is license.cfg file. It must be given to you as a soft copy or sent by e-mail.

Periodically (usually each 20-30 days), Wialon license connects to the license server lic.gurtam.com (port 31176) and confirms the product usage on one server at a time. If this license check is blocked because of firewall or lack of Internet connection, it will cause a ban to use the program. In this case you will not be able to create new devices. Working service with all its configuration will not be damaged.

You place the license file to the root directory before the first start of the server.

If you have any problems with license, you cannot create any monitoring objects, and in log files there can be found phrases like: Error fetching license: 'avl.unit'.

After purchasing a new license for local Wialon, it is necessary to update license file from lic.gurtam.com. After that, service must be restarted. It is important to monitor log files while restarting process is running.

⚠ If you have problems with license and you service is active, you cannot create any monitoring objects.

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## Installation and First Steps

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### Wialon Installation Procedure

Before installing Wialon, it is recommended to read recommendations on configuring [your file system](#) and [minimum requirements](#).

First of all, unzip the distribution using the `tar` command. In the example below, this command is applied to 1106r1 distribution:

```
tar xzf wialon-pro_1106r1_164.tgz
```

After this action, the directory `wialonb3_install` will appear. Here run installation script `install.sh`:

```
cd wialonb3_install
./install.sh
```

Root rights are not required for installation, but the default directory `/var/lib/wialonb3` assumes that an ordinary user has no edit rights. However, for correct installation of [automatic administrator's scripts](#), [log files rotation system](#), and [unattended startup of the service](#) it is desirable to run installation as root user.

Root rights are neither required for normal service operation. In case you need port numbers under 1024, you can use [reverse proxy server](#): nginx, lighttpd or Apache.

Installation wizard will ask you some questions. If you install Wialon for the first time, it is recommended to leave default settings. At the end, the installation wizard will show you the adjusted configuration and will do installation.

```
Welcome to Wialon B3 installation script.
Please answer few questions before starting actual installation. Provide empty
answers to use defaults.

Where would you like to install Wialon B3? [/var/lib/wialonb3]
Wialon B3 dependencies need to be downloaded and unpacked. This operation is
performed only once for each service installation and can take some time, so please
wait patiently.
Enter HTTP or local directory path that contain archived Wialon B3 dependencies file
adf-dep-3.1.1-164.tgz [http://distro.gurtam.com/adf]
Install custom configuration (folder)? [yes]
Where would you like to install Wialon B3? [/var/lib/wialonb3]
Install custom configuration (folder)? [no] yes
Install periodic administrative jobs (in current user crontab)? [no] yes
Install Wialon B3 log rotation script (into /etc/logrotate.d/wialonb3) [no] yes

OK, now is time to perform Wialon B3 installation. Check all parameters below are
correct:

Wialon B3 will be installed in:                /var/lib/wialonb3

Install user custom configuration folder:      yes
Install Wialon B3 as system service:          no
Install Wialon B3 cron jobs:                  yes
Install Wialon B3 log rotation script:        yes
Use ADF dependencies from:
```

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```

http://distro.gurtam.com/adf/adf-dep-3.1.1-164.tgz

Are all parameters correct? [yes]
Creating directories...
Downloading/Copying packed ADF dependencies file adf-dep-3.1.1-164.tgz
--08:53:36-- http://distro.gurtam.com/adf/adf-dep-3.1.1-164.tgz
      => `/var/lib/wialonb3/adf-dep-3.1.1-164.tgz'
Resolving distro.gurtam.com... 85.17.154.142
Connecting to distro.gurtam.com|85.17.154.142|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 7,019,076 (6.7M) [application/x-gtar]

100%[=====]
7,019,076      9.25M/s

08:53:37 (9.23 MB/s) - `/var/lib/wialonb3/adf-dep-3.1.1-164.tgz' saved
[7019076/7019076]

Copying files and directories...
Installing Wialon B3 as system service...
Installing Wialon B3 cron jobs...
Installing Wialon B3 log rotation script...

Wialon B3 installation finished successfully. Read documentation for further
instructions.

Server can be used as default init.d script. After loading environment (if using
/etc/init.d/ script preloading environment is not required) as described above you
may:

To start server in debug (not forked) mode with logging to stdout (press Enter to
stop): /etc/init.d/wialonb3 debug
To start server in normal mode with logging to /var/lib/wialonb3/logs:
/etc/init.d/wialonb3 start
To stop server in normal mode: /etc/init.d/wialonb3 stop

Log files located in /var/lib/wialonb3/logs directory always contain maximum
information regarding service errors or status.

```

If this is the first installation, select to *Install custom configuration* for the *.custom* folder to be created. It will have then standard contents. If installing updated, do not select this option in order to save your configuration settings.

⚠ Important! If the service will be started by a user with limited access rights, add the user/group to a trust group to avoid possible conflicts. To do this, in the file *.custom/system\_env.sh* comment in the variables *ADF\_USER* or *ADF\_GROUP* and enter user/group that will obtain full rights to the directory where Wialon is installed.

```

#ADF_USER="--user some-user"
#ADF_GROUP="--group some-user-group"

```

## Starting Wialon

Before starting Wialon, it is required to set up some variables in the [configuration file](#) *.custom/config.txt* (*ADF\_DISKSPACE\_CHECKER*, *WIALON\_DISKSPACE\_EMAIL\_FROM* and *WIALON\_DISKSPACE\_EMAIL\_TO*). They are needed to monitor free disk space. [More...](#)

To start Wialon, see instructions in the installation script. Usually, it is */etc/init.d/wialonb3 start*.

After the installation special configuration of Linux may be needed. For more details, see [System Configuration](#).

## Default Ports

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After the first installation, you can get the access to your service through a web browser via the following ports (numbers by default):

Port	Site	Description
8021	Administration site	Access for users in the group of administrators.
8022	Monitoring site	Working application. Contains the map. Use the default login <i>wialon</i> and password <i>wialon</i> to enter the site.
8023	Management site	Access for users from the group of managers. Here the accounts are created.
8024	Mobile site	A light version of the monitoring site to access the service form a PPC or mobile phone.
8025	Wialon ActiveX	Port to connect to Wialon ActiveX.

In other words, if you are on the server, your administration site is accessible through the link <http://localhost:8021> or <http://server>IP:8021>.

## Users/Logins

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During the first start, a password will be reset for the user *admin* to enter the administration site. Besides, the user *wialon* with the password *wialon* and the account *wialon* for this user will be automatically created. This user can be used to enter the monitoring site. It is recommended to change the password for this user. All this will be registered in the log:

```
2008/12/29 17:06:25:916: Performing initial setup for Wialon site
...
2008/12/29 17:06:25:916: Updating initial password for admin user to: GbykVFGtFG
...
2008/12/29 17:06:25:917: Created user 'wialon'
...
2008/12/29 17:06:25:917: adf_avl_create_resource('wialon')
2008/12/29 17:06:25:917: Created resource 'wialon'
```

## Diagnostics

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For any diagnostics of system operation, see the log file *WialonB3\_trace.log* that is located in the *logs* directory.

## Resources

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Wialon may require more resources when it comes to the constantly increasing number of messages from units. In this case, the following can be done:

- to increase the allowed number of open files descriptors, write `ulimit -n 20000` in `./custom/system_env.sh` file;
- to increase the allowed number of protocols, set the variable `ADF_MAX_THREADS_COUNT = 100` in `./custom/config.txt` file.

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## System Configuration

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Here are instructions of how to set your operation system to work with Wialon Pro.

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## File System

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### File System Type

The strength of Linux OS is the opportunity to use file systems of different types. However, the question is how to choose the file system which fits better to *your* objectives.

Over a month, we had administered tests in [Wialon Data Center](#). Three file systems - *ReiserFS*, *XFS* and *ext3* with different settings were tested on various hardware units to find out which file system provides maximum high-performance in work with Wialon monitoring service.

The result was as follows:

1. The most effective and simple way is to add *noatime* parameters when installing the file system in the file */etc/fstab*.
2. If data level is not low (under 5-10GB), the difference in fast-acting is not considerable - up to 5-10%.
3. The most effective operation was shown by *XFS* file system. It was a lot faster than *ext3* when operating with ten millions of files (WebGIS-3 cache). It was also a bit better in work with large files (up to 1GB) and much faster in work with files of several tens of gigabytes. Embedded tools such as online defragmentation and backup system add advantages in system administration.

⚠ The productiveness of *ext4* file system, in theory, is no worse than *XFS*, but for the moment of testing, the support for distribution *Debian 5.0 Lenny* was not irreproachable.

### File System Configuration

When configuring file system categories, RAID must be used, software- or hardware-based.

- */boot* - *ext3* - 300MB
- */* - *xfs* - 5-10GB + *noatime* option
- */var/lib/wialonb3* - *xfs* - the rest of disk space + *noatime* option



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## /etc/sysctl.conf

For the configuration file `/etc/sysctl.conf` the following settings are recommended:

```
# for atop utility better view
vm.overcommit_memory = 2
vm.overcommit_ratio = 95
# swappiness level
vm.swappiness = 10
# reserve memory always
vm.min_free_kbytes = 65535
# security fix
vm.mmap_min_addr = 65536
# enable reboot upon kernel oops
kernel.panic_on_oops = 1
kernel.panic = 30
```

The most important parameter that influences file system effective operation is `vm.swappiness`. The rest can be ignored.

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## Firewall

Security is above all. That is why firewall is needed. We recommend using *firehol*:

```
wialon-pro:~# apt-get install firehol
```

After that in the file `/etc/default/firehol` substitute *NO* for *YES* and configure `/etc/firehol/firehol` in the way it is shown below. Do not forget indicate your IP address, otherwise the access to server will be denied. *eth0* is your network adapter.

```
version 5
tcpmss auto
FIREHOL_LOG_MODE="ULOG"

##### trusted IP's #####
trust_ips="IP (enter IP addresses you trust to separating them by space)"

ext_wialon="IP1"

##### custom rules #####
server_wialon_ports="tcp/4998 tcp/20100:20300 udp/20100:20300"
client_wialon_ports="any"

#####

interface eth0 inet1
    policy                reject
    server                ssh                accept src
"${trust_ips}"
    server                icmp                accept
    server                https                accept dst
"${ext_wialon}"
    server                http                accept dst
"${ext_wialon}"
    server                wialon                accept dst
"${ext_wialon}"
    client                all                accept
```

Then run firewall:

```
wialon-pro:~# /etc/init.d/firehol start
```

In the table below the default input ports used for the monitoring server software are listed. Which of them should be protected by firewall is decided by the administrator of your server according to your company security policy.

Port	Type	Description
31188	TCP	Remote clients connection (such as <a href="#">Wialon Pro Client</a> ). This port is available after purchasing the license for remote connection from your clients.
20100:20300	TCP/UDP	Connect devices by GPRS channel.
8021	TCP	Administration site.
8022	TCP	Monitoring site.
8023	TCP	Management site.

8024	TCP	Mobile site.
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## Network Time Synchronization

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For correct processing of data received from devices, it is necessary to set the exact time on Wialon telematic server. Use the following command to set automatic time synchronization with Internet:

```
wialon-pro:~# apt-get install ntp
```

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## Proxy Server

Wialon server contains embedded [HTTP/1.1](#) web server. That is why it is possible to connect to them through through web browser directly.

However, if:

- other services are located on the same server with Wialon and IP address is shard,
- you would like to use [SSL](#) protected access to server,
- you would like to reach the maximum high performance and safety,

then it is recommended to render services to your client through reverse proxy server.

One of the best proxy servers is [nginx](#). It is easy to install (for Debian before Lenny version it is better to install it from source code):

```
wialon-pro:~# apt-get install nginx
```

Let us assume, your server [DNS](#) name is [monitor.gps.ru](#) ([mobile.gps.ru](#) for mobile site and [manager.gps.ru](#) for management site) and Wialon uses [default ports](#). Then the configuration of files is approximately the following:

`/etc/nginx/sites-enabled/wialon:`

```
server {
    listen 80;
    server_name www.monitor.gps.ru;

    rewrite ^(.*) http://monitor.gps.ru$1 permanent;
}
server {
    listen 80;
    server_name monitor.gps.ru;

    proxy_set_header    Host                $host;
    proxy_set_header    X-Forwarded-For    $remote_addr;
    client_max_body_size 8m;
    access_log           /var/log/nginx/wialon.access.log;

    location / {
        proxy_pass        http://localhost:8022;
    }
}
server {
    listen 80;
    server_name mobile.gps.ru;

    proxy_set_header    Host                $host;
    proxy_set_header    X-Forwarded-For    $remote_addr;
    access_log           /var/log/nginx/wialon.access.log;

    location / {
        proxy_pass        http://localhost:8024;
    }
}
```

```
server {
    listen 80;
    server_name manager.gps.ru;

    proxy_set_header    Host                $host;
    proxy_set_header    X-Forwarded-For    $remote_addr;
    access_log           /var/log/nginx/wialon.access.log;

    location / {
        proxy_pass       http://localhost:8023;
    }
}
```

/var/lib/wialonb3/custom/config.txt (add a line):

```
ADF_HTTP_PROXY_MODE = 1
```

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## Mail Server

For correct operation of the system, SMTP server is needed. We recommend *postfix*:

```
wialon-pro:~# apt-get install postfix
```

Default settings are acceptable and sufficient to provide a basic operability (sending e-mails from the server).

For system administrator to get messages from the server (see [automatic scripts](#)), it is advisable to use aliases to indicate where to redirect mails. For example, if the scripts are set for the user named *root*, in the `/etc/aliases` can be written:

```
root: your-admin-email@domain.com
```

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [System Configuration](#) » [Log Files Management](#)

## Log Files Management

While installing Wialon, the installer requests automatic activation of this option:

```
...
Install Wialon B3 log rotation script (into /etc/logrotate.d/wialonb3) [no] yes
...
OK, now is time to perform Wialon B3 installation. Check all parameters below are
correct:

    Wialon B3 will be installed in:                /var/lib/wialonb3
...
    Install Wialon B3 log rotation script:        yes
...

```

This option is set automatically as default with the first installation if you install Wialon as *root* user. In this case, you do not need to configure this option manually.

You can control log size manually (periodically cleaning it) or automatically. To apply the automatic cleaning, use `logrotate` utility. The utility functions in the following way. Log rotation is used to control disk space occupied by logs. As the result, one active log file is left (this is a log file where data is recorded by the server at the moment) and several archival quality files compressed by a special archiver.

To start rotation, place a file like `wialonb3` (or any other like "wialonb3.txt") to the directory `/etc/logrotate.d`. The contents of the file may be as follows:

```
/var/lib/wialonb3/logs/*.log {
    weekly
    missingok
    rotate 5
    compress
    delaycompress
    notifempty
    create 0664 root root
}
```



You are here: [Wialon Pro](#) » [Wialon Administration](#) » [System Configuration](#) » [Operation under Ordinary User](#)

## Operation under Ordinary User

For security reasons Wialon monitoring service can be configured in such a way that it would work under an ordinary user (for example, *wialon* or *wialon* group), and not under *root*. It is needed to create for this user:

```
wialon-pro:~# adduser wialon
```

Then correct system settings to give this user possibility to work with a greater number of file than it is provided by defaults. To do this, add to the file `/etc/security/limits.conf` the following:

```
wialon          hard    nofile          32768
wialon          soft    nofile          16384
```

Let us assume, we installed the distribution to the directory `/home/wialon/wialon-pro`. To provide our user the full access to the service, make it the owner of the following directory:

```
chown -R wialon:wialon /home/wialon/wialon-pro
```

Regardless under which user the service is started, it is required that the service worked under *wialon* user or group. To do so, write the following in the file `/home/wialon/wialon-pro/custom/system_env.sh`:

```
# Optional environment configuration for launching Wialon as system service

# Uncomment following and insert correct user and group name if you like to launch
Wialon not as root user. Be sure that specified user has full control over
installation directory:
ADF_USER="--user wialon"
ADF_GROUP="--group wialon"
```

After that, the service can be started by the command `/home/wialon/wialon-pro/adf_script start`.

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [System Configuration](#) » [Unattended Startup](#)

## Unattended Startup

Unattended startup of the monitoring service software in Debian-like systems is easy to set. To do this, choose the option Install Wialon B3 as system service while installing the distribution or create symbolic link to service startup script `adf_script` manually in `/etc/init.d/`:

```
wialon-pro:/var/lib/wialonb3# ln -s $PWD/adf_script /etc/init.d/wialonb3
```

To activate automatic startup of the service execute the command:

```
wialon-pro:/var/lib/wialonb3# update-rc.d wialonb3 defaults
```

To disable automatic startup execute another command:

```
wialon-pro:/var/lib/wialonb3# update-rc.d -f wialonb3 remove
```

If you have installed Wialon and are planning to start it not as `root` user, please, [read the instructions](#), otherwise when starting the server, it will be run as `root` user.

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [System Configuration](#) » [Cron Jobs](#)

## Cron Jobs

Cron jobs are automatic administrator's scripts. When installing Wialon, the installer requests automatic activation of these administrator's scripts:

```
...
Install periodic administrative jobs (in current user crontab)? [no] yes
...
OK, now is time to perform Wialon B3 installation. Check all parameters below are
correct:

    Wialon B3 will be installed in:                /var/lib/wialonb3
...
    Install Wialon B3 cron jobs:                  yes
...

```

These scripts are located in the directory where Wialon is installed. At the first installation, you should edit the file *wialon-include-check.sh* – indicate e-mail to send notifications to and adjust notification topic:

```
EMAIL="support@gurtam.com"
TOPIC="Wialon Pro"
```

For correct operation of the warning system it is required to set [mailing system on the server](#).

To enable/disable a script, edit the file:

- for *root* user - */etc/crontab*
- for ordinary user, the command *crontab -e* in the console

Here is an example of lines which fit to both cases to launch these scripts automatically. Add the lines to the end of the file and indicate the path to each script if needed.

```
0 * * * * /var/lib/wialonb3/wialon-errors-check.sh
*/2 * * * * /var/lib/wialonb3/wialon-service-check.sh
*/1 * * * * /var/lib/wialonb3/wialon-db-check.sh
```

The list of scripts:

- *wialon-db-check.sh* is a once-a-minute control over DB driver and automatic restarting of the service in case of troubles.
- *wialon-service-check.sh* is a script to check service operability every two minutes and restart it in case of unforeseen cessation.
- *wialon-errors-check.sh* is an every hour check inspection of the service log file to detect such text as *error* (various errors) and notify the administrator about these cases.
- *wialon-include-check.sh* contains an e-mail address and topic for notifications as well as checks scripts for their location correctness.

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Wialon Configuration](#)

## Wialon Configuration

Configuration parameters are mostly adjusted in the file `./custom/config.txt`. The file is in UTF-8 format (without BOM), that is why be attentive while editing it in Windows OS. As an editor for this file in Windows, we recommend [Notepad ++](#).

Variable values are adjusted in the following way:

- `<variable> = <value>`
- `<variable> = <$variable + additional value>`

An example of the file:

```
# Email notifications from address
AVL_NOTIFICATIONS_EMAIL_FROM = noreply@noreply.com
# Email jobs from address
AVL_JOBS_EMAIL_FROM = noreply@noreply.com
# Optional service-wide reports visual configuration file
AVL_REPORTS_STYLES_FILE=$ADF_ROOT_PATH/custom/reports_config.xml
# CMS Manager site specification
CMS_MANAGER_WEBSERVER = cms_manager:8023:*
# Wialon Web site specification
WIALON_WEB_WEBSERVER = wialon_web:8022:*
WIALON_WEB_EMAIL_FROM = noreply@noreply.com
WIALON_WEB_ENABLE_LOG = 0
# Net server allowing network clients access
ADF_STORAGE_NET_SERVER = 31188:*
# SMTP server configuration
ADF_SMTP_SERVER = localhost
# GIS network server configuration
ADF_GIS_NET_REMOTE_SERVER = mapsviewer.com
# Wialon Admin site specification
AVL_ADMIN_WEBSERVER = avl_admin:8021:*
# Communications server configuration
ADF_AVL_COMM_SERVER = local:0:0:1
```

**Note:**

When reinstalling the system or installing updates, the installer does not replaces this file by original distribution files so that not losing your changes.

In the following sections Wialon configuration is described in details:

- [General Variables](#)
- [General Variables](#)
- [Maps](#)
- [Sites](#)
- [Modems](#)
- [Storage System](#)
- [All Variables](#)

## General Variables

Here are the parameters to configure devices connection and storage system. How parameters are set, read in [Wialon Configuration](#).

Variable	Description
ADF_AVL_HW_BIND_ADDR	Network interface to listen to devices connections. Default value is '*', which means 'any interface'.
ADF_AVL_COMM_SERVER	Communication server configuration. The format to set the parameter: <comm-server-name>:<avl-server-host>:<avl-server-port>:<scan-hw_dir>. Default value is '31189'. The parameter <i>scan-hw-dir</i> is optional (by default, its value is '0'). It means enabling autoscanning of new devices types when the system is being initialized.
WIALON_AUTO_CREATE_UNITS	If the value is '1', unit which does not exist in the system but sends messages, will be automatically created.
ADF_STORAGE_PATH	The path to storage files. Default directory is <i>./storage</i> (in root directory).
ADF_AVL_UNIT_HISTORY_PERIOD	The period to store unit history (in days). Used for database servers only. If not set or the value is '0', unit history is not deleted automatically.
WIALON_DISKSPACE_CHECKER	A variable to control free space on the disk with <i>storage</i> . For example, if the variable value is <code>\$(ADF_ROOT_PATH)/storage/pd,30G,alert;\$(ADF_ROOT_PATH)/storage/pd,20G,stop</code> , then when 30GB is left, you will receive an e-mail notification about it, and when 20GB is left, the server will be stopped. By default, the variable is enabled. To disable it, remove it from the configuration file.
WIALON_DISKSPACE_EMAIL_FROM	E-mail from which to send a warning about insufficient disk space.
WIALON_DISKSPACE_EMAIL_TO	Destination e-mail to send a warning about insufficient disk space.
ADF_SMTP_SERVER	SMTP server address is set in the form <host>:<port>. This server is used to send messages from software. By default, the local computer and the port 25 are used. ⚠ SMTP server must maintain the operation without authentication from monitoring server IP address.
ADF_STORAGE_NET_SERVER	<i>For Wialon Pro Client only.</i> Set the port and network interface address to listen connections by the form <port>:<IP address>. IP address can be skipped to listen on all local network interfaces. Default port is 31188. ⚠ To initialize server part in the trusted mode to any connected user (that is the authorization is not needed, and the connected user has the maximum access to all local objects), the third parameter set as '1' is needed, for example, '31188:*:1'.
ADF_STORAGE_NET_REMOTE_SERVER	<i>For Wialon Pro Client only.</i> Set the port and network interface address where Wialon Pro is located (main database). The format is: <port>:<IP address>. Default port is 31188.

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## Maps

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- [Maps](#)
- [Variables](#)
- [Google and Yandex Maps](#)

All Wialon Pro products include an embedded WebGIS-3 server. All address information for online tracking and reports is taken only from this WebGIS. Wialon system deals with vector maps in the proper closed format AVD. Maps in AVD format are located in the *maps* directory. After adding or deleting maps, the service automatically detects changes within several seconds. Precompiled maps in AVD format are available [here](#).

The size of RAM needed for normal operation of GIS is in direct proportion to the size of maps used. On average, GIS subsystem requires 512MB + 1.5\* $\langle$ total size of all maps files $\rangle$ .

## Variables

This is a set of variables which can be added to your [configuration file](#) *custom/config.txt*.

Variable	Description
WIALON_WEB_DEFAULT_POS	Set the default map position and zoom when the monitoring site is opened. Enter latitude, longitude, and zoom level, separating them by colon (for example, WIALON_WEB_DEFAULT_POS = 55.739162:49.199269:9).
WIALON_WEB_WEBGIS_COPYRIGHT	If you use your own WebGIS maps, enter copyright text for them here. See <a href="#">Creating Maps</a> to learn how to create maps.
WIALON_WEB_GOOGLE_KEYS	Keys to activate Google Maps <a href="#">API</a> for different URLs. To use these maps, <a href="https://code.google.com/apis/console">https://code.google.com/apis/console</a> (get Google Maps <a href="#">API</a> v2). How to set the value for this variable is described below.
WIALON_WEB_GOOGLE_DEFAULT	If the value is <i>on</i> and Google Maps <a href="#">API</a> keys are available, these maps will be enabled by default.
WIALON_WEB_YANDEX_KEYS	Keys to activate Yandex Maps for different URLs. To use these maps, <a href="#">get the key</a> . How to set the value for this variable is described below.
WIALON_WEB_YANDEX_DEFAULT	If the value is <i>on</i> and Yandex Maps keys are available, these maps will be enabled by default.
WIALON_WEB_NAVTEQ_KEYS	The variable to activate Navteq Maps. To use this map, <a href="#">get the key</a> .
WIALON_WEB_REGIO_KEYS	The variable to activate Regio Maps (the Baltic region). To use this map, <a href="#">get the key</a> .
WIALON_WEB_VISICOM_KEYS	The variable to activate Visicom Maps (Ukraine). To use this map, <a href="#">get the key</a> .
WIALON_WEB_VISICOM_DEFAULT	If the value is <i>on</i> and Visicom key is available, this map will be enabled by default.

## Google and Yandex Maps

The variables `WIALON_WEB_GOOGLE_KEYS` and `WIALON_WEB_YANDEX_KEYS` contain keys for proprietary cartographic systems linked to a certain [URL](#).

For example, clients connect to Wialon Web server from two different URLs: `http://local.dns.ru:8022` and `http://remote.dns.ru`. To activate Google and Yandex Maps, get activation keys for both URLs and enter them in the configuration file using the following scheme:

```
WIALON_WEB_GOOGLE_KEYS = <dns1<:port>> <KEY for dns1> <dns2> <KEY for dns2> ...
```

The result will be like this:

```
WIALON_WEB_GOOGLE_KEYS = local.dns.ru:8022 KEY_VALUE1 remote.dns.ru KEY_VALUE2
```

Note that:

- DNS addresses are set without *http:* prefix;
- If you use the standard port (80), it is not required to indicate it.

If the keys are entered correctly, the option to enable Google/Yandex Maps will appear in the User Settings dialog (in the monitoring site).

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## Sites

There are some parameters to configure monitoring and administration sites, [CMS Manager](#), and [Wialon Mobile](#).

Network parameters for any site are entered in the form `<DNS-name>:<port-number>:<network-interface-IP-address>`. [DNS](#) name can simply indicate a unique server name or the real [DNS](#) name if the same port number is used by other servers. Network interface IP address can be skipped or set as `*.*` to allow operating on all network interfaces.

Administration Site	
AVL_ADMIN_WEBSERVER	Network parameters for administration site are set in the form: <code>&lt;DNS-name&gt;:&lt;port-number&gt;:&lt;network-interface-IP-address&gt;</code> . Default value is <code>avl_admin:8021:*</code> .
CMS_ALLOW_ADMIN_LOGIN	If the value is 1, the administrator can login to all sites.
WIALON_RESET_ADMIN_PASSWORD	This variable is necessary in case if service administrator have forgotten the password to login to the administration site. The default value is 0 (no password reset is needed). If the value is 1, a new password will be reset to the log during the nearest restart of the service. After applying the new password, do not forget to delete the variable or set its value as 0.
Monitoring Site (Wialon Web)	
WIALON_WEB_WEBSERVER	Network parameters for Wialon Web in the form <code>&lt;DNS-name&gt;:&lt;port-number&gt;:&lt;network-interface-IP-address&gt;</code> . Default value is <code>wialon_web:8022:*</code> .
WIALON_WEB_LANGUAGES	The list of additional languages for monitoring site interface. Separate the languages by semicolon. By default, English and Russian are available. For example, if <code>fi:suomi</code> is set, the Finnish will be added.
WIALON_WEB_DEFAULT_LANGUAGE	Set the default language for the monitoring site in the form of <code>&lt;domain&gt;</code> .
WIALON_WEB_HIDE_ACCOUNT	Set this variable to hide account information in user settings (the list of services, their limit and costs). To set the variable, enter <code>WIALON_WEB_HIDE_ACCOUNT = on</code> .
AVL_NOTIFICATIONS_EMAIL_FROM	Form this e-mail address the notifications are sent by default.
AVL_JOBS_EMAIL_FROM	The default e-mail address used to fulfill jobs.
AVL_UNIT_ICON_MAX_SIZE	The size of icon (in pixels) to display devices on the map and in the lists. Default value is 64, maximum value is 256.
AVL_UNIT_DEFAULT_ICON	The path to the default icon used to display devices. If this parameter is not set, the plugin initializes it to proper file.
AVL_GROUP_DEFAULT_ICON	The path to icons used to display devices groups. If this parameter is not set, the plugin initializes it to proper file.
ADF_AVL_MAP_MARKERS_PATH	The location of image files used to display markers.
WIALON_WEB_EXT_JS	Custom <code>JS</code> can be used for the monitoring site. It is loaded from the <code>URL</code> address provided by this variable.
WIALON_WEB_HELP_URL	This is <code>URL</code> address of online documentation provided. The link to the documentation web site/page will be placed at the top right-hand corner. If this variable is not set, no links to help materials are displayed.
Managements Site ( <a href="#">CMS Manager</a> )	
CMS_MANAGER_WEBSERVER	Default value is <code>wialon_cms:8023:*</code> . Management site (or <a href="#">CMS Manager</a> ) is designed to manage users and other system objects, assign access rights and perform some administration functions.
Wialon Mobile	
	The default value is <code>wialon_mobile:8024:*</code> . Mobile site has simplified interface



WIALON\_MOBILE\_WEBSERVER

(in comparison with monitoring site) and allows to track devices via pocket PCs or mobile phones.

⚠ Note that CMS Manager and Wialon Mobile are licensed separately and can be not included in your package. Administration site is available only for users from the group of administrators.

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## Modems

Variable to configure modems.

Variable	Description
ADF_SERIAL_SMPP_REMOVE_PLUS	<i>For SMPP modems only.</i> If the value is 1, destination phone numbers are not supplied with the '+' sign at the beginning for sending SMS messages. Default value is 0.
ADF_SERIAL_SMPP_SKIP_GSM_ENCODING	<i>For SMPP modems only.</i> The variable allows sending SMS messages in their initial state, that is not encoding special symbols of SMS text according to GSM specification. Default value is 0 (messages are encoded). If the value is 1, messages are <i>not</i> encoded.
ADF_SERIAL_CONN_IDLE_TIMEOUT	<i>For GSM modems only.</i> The variable is used in CSD queries. If data does not come during the indicated period of time, connection breaks automatically. Default value is 30 seconds.
ADF_SERIAL_SMPP_SRC_ADDR_TON	<i>For SMPP modems only.</i> The type of source address number in SMS being sent. Default value is 0.
ADF_SERIAL_MAX_SMS_LENGTH	<i>For SMPP and GSM modems only.</i> The maximum number of parts to divide a large SMS message. Default value is 3.

Configuring modems can be also fulfilled on the [Modems](#) tab of administration site.

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Wialon Configuration](#) » [Storage System](#)

## Storage System

Storage system configuration (except online backup) is managed in a special configuration file. This file is *not* created automatically while installing or starting Wialon, so default parameters are taken. If any corrections of storage system parameters are required, it is recommended to redefine only those variables which should be altered.

The path to the file: storage/storage.cfg

Here is an example of a configuration file with default parameters and their description:

```
##### storage service

##### one-time initialization variables

# number of initialization threads
service.inittthreads = 4

##### life-time updateable variables

# number of days to keep objects in trash
service.trash.period = 30

##### props/objects db

##### one-time initialization variables

# cache size in MB, must be power of two
props.cache.size = 16
# number of cache chunks
props.cache.chunks = 1
# max number of locks and locks objects allowed
props.cache.maxlocks = 10000
# log buffer size, in MB
props.cache.logbsize = 2

##### life-time updateable variables

# maximum number of logs to force checkpoint/backup
props.checkpoint.maxlogs = 20
# checkpoint interval in minutes
props.checkpoint.interval = 60

# minimum number of total pages to start properties environment trickle
props.trickle.mintotalpages = 100
# minimum number of dirty pages to start properties environment trickle
props.trickle.mindirtpages = 12500
# minimum rate of clean pages (percentage) to start properties environment trickle
props.trickle.mincleanrate = 70
# default interval in minutes between properties environment trickle
props.trickle.interval = 10
# percentage of pages to trickle during properties environment trickle, should be
between mincleanrate and 100
props.trickle.rate = 100
```

```

##### messages db

##### one-time initialization variables

# cache size in MB, must be power of two
msgs.cache.size = 64
# number of cache chunks
msgs.cache.chunks = 1
# max number of locks and locks objects allowed, min 15000
msgs.cache.maxlocks = 20000
# max number of lockers
msgs.cache.maxlockers = 2000
# log buffer size, in MB
msgs.cache.logbsize = 2

##### life-time updateable variables

# defragmentation interval, in days
msgs.defrag.interval = 1
# defragmentation hour, -1 if not important
msgs.defrag.hour = -1
# force messages defragmentation immediately
msgs.defrag.force = 0

# maximum number of messages in one part (v1), in millions
msgs.part.maxmsgs = 20
# minimum number of messages in one part (v1), in millions
msgs.part.minmsgs = 1
# max fragmentation level of part to skip its defragmentation
msgs.part.maxfragrate = 20
# maximum number of messages in one part (v2), in millions
msgs.part.maxmsgs2 = 20

# maximum number of logs to force checkpoint/backup
msgs.checkpoint.maxlogs = 30
# checkpoint interval in minutes
msgs.checkpoint.interval = 10
# do we need to sync environment after checkpoint: 0 - none, 1 - trickle, 2 - full-
sync
msgs.checkpoint.sync = 0
# if msgs.checkpoint.sync = 1, then this defines trickle percentage
msgs.checkpoint.tricklerate = 100

# do we need to sync environment during application termination: 0 - none, 1 -
trickle, 2 - full-sync
msgs.terminate.sync = 1

# minimum number of total pages to start messages environment trickle
msgs.trickle.mintotalpages = 100
# minimum number of dirty pages to start messages environment trickle
msgs.trickle.mindirtpages = 1500
# minimum rate of clean pages (percentage) to start messages environment trickle
msgs.trickle.mincleanrate = 70
# default interval in minutes between messages environment trickle
msgs.trickle.interval = 10
# percentage of pages to trickle during messages environment trickle, should be
between mincleanrate and 100
msgs.trickle.rate = 100

```

```
# sync server URI, in format: IP:PORT
msgs.sync.uri =
```

It is strongly recommended to keep default values of these parameters.

Values in sections “life-time updateable variables” can be changed while Wialon is working. The configuration file will be reloaded automatically and new values will be applied.

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## All Variables

GENERAL VARIABLES	
ADF_AVL_HW_BIND_ADDR	Network interface to listen to devices connections. Default value is '*', which means 'any interface'.
ADF_AVL_COMM_SERVER	Communication server configuration. The format to set the parameter: <comm-server-name>:<avl-server-host>:<avl-server-port>:<scan-hw_dir>. Default value is '31189'. The parameter <i>scan-hw-dir</i> is optional (by default, its value is '0'). It means enabling autoscanning of new devices types when the system is being initialized.
WIALON_AUTO_CREATE_UNITS	If the value is '1', unit which does not exist in the system but sends messages, will be automatically created.
ADF_STORAGE_PATH	The path to storage files. Default directory is <i>.storage</i> (in root directory).
ADF_AVL_UNIT_HISTORY_PERIOD	The period to store unit history (in days). Used for database servers only. If not set or the value is '0', unit history is not deleted automatically.
WIALON_DISKSPACE_CHECKER	A variable to control free space on the disk with <i>storage</i> . For example, if the variable value is <code>\$(ADF_ROOT_PATH)/storage/pd,30G,alert;\$(ADF_ROOT_PATH)/storage/pd,20G,stop</code> , then when 30GB is left, you will receive an e-mail notification about it, and when 20GB is left, the server will be stopped. By default, the variable is enabled. To disable it, remove it from the configuration file.
WIALON_DISKSPACE_EMAIL_FROM	E-mail from which to send a warning about insufficient disk space.
WIALON_DISKSPACE_EMAIL_TO	Destination e-mail to send a warning about insufficient disk space.
ADF_SMTP_SERVER	SMTP server address is set in the form <host>:<port>. This server is used to send messages from software. By default, the local computer and the port 25 are used. ⚠ SMTP server must maintain the operation without authentication from monitoring server IP address.
WIALON PRO CLIENT	
ADF_STORAGE_NET_SERVER	Set the port and network interface address to listen connections by the form <port>:<IP address>. IP address can be skipped to listen on all local network interfaces. Default port is 31188. ⚠ To initialize server part in the trusted mode to any connected user (that is the authorization is not needed, and the connected user has the maximum access to all local objects), the third parameter set as '1' is needed, for example, '31188:*:1'.
ADF_STORAGE_NET_REMOTE_SERVER	<i>For Wialon Pro Client only.</i> Set the port and network interface address where Wialon Pro is located (main database). The format is: <port>:<IP address>. Default port is 31188.
MAPS	
WIALON_WEB_DEFAULT_POS	Set the default map position and zoom when the monitoring site is opened. Enter latitude, longitude, and zoom level, separating them by colon (for example, <code>WIALON_WEB_DEFAULT_POS = 55.739162:49.199269:9</code> ).
WIALON_WEB_WEBGIS_COPYRIGHT	If you use your own WebGIS maps, enter copyright text for them here. See <a href="#">Creating Maps</a> to learn how to create maps.
WIALON_WEB_GOOGLE_KEYS	Keys to activate Google Maps API for different URLs. To use these maps, <a href="https://code.google.com/apis/console">https://code.google.com/apis/console</a> (get Google Maps API v2). How to set the value for this variable is described below.
WIALON_WEB_GOOGLE_DEFAULT	If the value is on and Google Maps API keys are available, this type will be active by default.
WIALON_WEB_YANDEX_KEYS	Keys to activate Yandex Maps for different URLs. To use these maps, <a href="#">get the key</a> . How to set the value for this variable is described below.

WIALON_WEB_YANDEX_DEFAULT	If the value is on and Yandex Maps keys are available, this type will be active by default.
WIALON_WEB_NAVTEQ_KEYS	The variable to activate Navteq Maps. To use these maps, <a href="#">get the key</a> .
WIALON_WEB_REGIO_KEYS	The variable to activate Regio Maps. To use these maps, <a href="#">get the key</a> .
SITES	
WIALON_WEB_WEBSERVER	Network parameters for Wialon Web in the form <DNS-name>:<port-number>:<network-interface-IP-address>. Default value is <i>wialon_web:8022:*</i> . <a href="#">DNS</a> name can simply indicate a unique server name or the real DNS name if the same port number is used by other servers Network interface IP address can be skipped or set as <i>*</i> to allow operating on all network interfaces.
WIALON_WEB_HIDE_ACCOUNT	Set this variable to hide account information in user settings (the list of services, their limit and costs). To set the variable, enter WIALON_WEB_HIDE_ACCOUNT = on.
WIALON_MOBILE_WEBSERVER	Set network parameters of mobile site in the form: <DNS-name>:<port-number>:<network-interface-IP-address>. The default value is <i>wialon_mobile:8024:*</i> . <a href="#">DNS</a> name can simply indicate a unique server name or the real DNS name if the same port number is used by other servers Network interface IP address can be skipped or set as <i>*</i> to allow operating on all network interfaces.
CMS_MANAGER_WEBSERVER	Network parameters for CMS Manager operation are set in the form: <DNS-name>:<port-number>:<network-interface-IP-address>. Default value is <i>wialon_cms:8023:*</i> . <a href="#">DNS</a> name can simply indicate a unique server name or the real DNS name if the same port number is used by other servers Network interface IP address can be skipped or set as <i>*</i> to allow operating on all network interfaces.
AVL_ADMIN_WEBSERVER	Network parameters for administration site are set in the form: <DNS-name>:<port-number>:<network-interface-IP-address>. Default value is <i>avl_admin:8021:*</i> . <a href="#">DNS</a> name can simply indicate a unique server name or the real DNS name if the same port number is used by other servers Network interface IP address can be skipped or set as <i>*</i> to allow operating on all network interfaces.
CMS_ALLOW_ADMIN_LOGIN	If the value is 1, the administrator can login to all sites.
WIALON_RESET_ADMIN_PASSWORD	This variable is necessary in case if service administrator have forgotten the password to login to the administration site. The default value is 0 (no password reset is needed). If the value is 1, a new password will be reset to the log during the nearest restart of the service. After applying the new password, do not forget to delete the variable or set its value as 0.
WIALON_WEB_HELP_URL	This is URL address of online documentation provided. The link to the documentation web site/page will be placed at the top right-hand corner. If this variable is not set, no links to help materials are displayed.
MODEMS	
ADF_SERIAL_SMPP_REMOVE_PLUS	<i>For SMPP modems only.</i> If the value is 1, destination phone numbers are not supplied with the '+' sign at the beginning for sending SMS messages. Default value is 0.
ADF_SERIAL_SMPP_SKIP_GSM_ENCODING	<i>For SMPP modems only.</i> The variable allows sending SMS messages in their initial state, that is not encoding special symbols of SMS text according to GSM specification. Default value is 0 (messages are encoded). If the value is 1, messages are <i>not</i> encoded.
ADF_SERIAL_CONN_IDLE_TIMEOUT	<i>For GSM modems only.</i> The variable is used in CSD queries. If data does not come during the indicated period of time, connection breaks automatically. Default value is 30 seconds.
ADF_SERIAL_SMPP_SRC_ADDR_TON	<i>For SMPP modems only.</i> The type of source address number in SMS being sent. Default value is 0.
ADF_SERIAL_MAX_SMS_LENGTH	<i>For SMPP and GSM modems only.</i> The maximum number of parts to divide a large SMS message. Default value is 3.
LANGUAGE	
WIALON_WEB_LANGUAGES	The list of additional languages for monitoring site interface. Separate the languages by semicolon. By default, English and Russian are available. For example, if <i>fi:suomi</i> is set, the Finnish will be added.
WIALON_WEB_DEFAULT_LANGUAGE	Set the default language for the monitoring site in the form of <domain>.

MAILING SYSTEM	
AVL_NOTIFICATIONS_EMAIL_FROM	Form this e-mail address the notifications are sent by default.
AVL_JOBS_EMAIL_FROM	The default e-mail address used to fulfil jobs.
IMAGES AND ICONS	
AVL_UNIT_ICON_MAX_SIZE	The size of icon (in pixels) to display units on the map and in the lists. Default value is 64, maximum value is 256.
AVL_UNIT_DEFAULT_ICON	The path to the default icon used to display units. If this parameter is not set, the plugin initializes it to proper file.
AVL_GROUP_DEFAULT_ICON	The path to icons used to display unit groups. If this parameter is not set, the plugin initializes it to proper file.
ADF_AVL_MAP_MARKERS_PATH	The location of image files used to display markers.
MONITORING SITE DESIGN	
WIALON_WEB_TITLE	The custom title of the page in browser.
WIALON_WEB_COPYRIGHT_TEXT	The text at the bottom center of the page, like you company name.
WIALON_WEB_COPYRIGHT_URL	The hyperlink for this text opening in a new window, like your company web site address.
WIALON_WEB_SKIN	The name of the file containing color scheme, fonts, etc. for the site. The file has to be located in <i>custom/skins</i> .
WIALON_WEB_EXT_JS	Custom JS can be used for the monitoring site. It is loaded from the URL address provided by this variable.
CUSTOM_SITES	The variable is used to create custom design of the monitoring site. Depending on its value, in the configuration file more variables appear. They are intended to define various parameters for site design. For example, if <i>CUSTOM_SITES = new_site</i> , additional variables such as <i>NEW_SITE_WEBSERVER</i> , <i>NEW_SITE_SKIN</i> , <i>NEW_SITE_TITLE</i> , <i>NEW_SITE_COPYRIGHT_TEXT</i> , <i>NEW_SITE_COPYRIGHT_URL</i> , <i>NEW_SITE_DEFAULT_POS</i> , <i>NEW_SITE_HIDE_ACCOUNT</i> can appear.
OTHER	
AVL_REPORTS_STYLES_FILE	The path to XML file containing the configuration for reports styles.
ADF_SERIAL_SMPP_SRC_ADDR_TON	The type of source address number in SMS being sent. Default value is 0.

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## Administration Site

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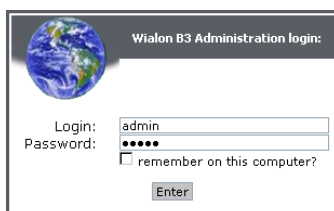
Administration site is accessible only for users who are administrators of the server. The site helps to manage the service: create, delete, restore system objects, inquire and receive information about the service, read system logs.

- [Administration Site](#)
- [Login and Logout](#)
- [Site Structure](#)

Service administrator is a user who configures the service and manages it. This is the only user who can create billing plans. An administrator, like a manager, can create users, accounts, and units, but the main administrator's job is to create a source account with its billing plan and create users-managers.

## Login and Logout

To login to the administration site, use your login name and password. Put a check mark near Remember on this computer if needed, and press OK.



If you have forgotten the password, you can get a new one. To do this, add the variable `WIALON_RESET_ADMIN_PASSWORD = 1` to the configuration file. After that, when you restart the service, a new password will be reset to the log. After applying the new password, do not forget to delete the variable or set its value as 0.

To logout from the site, press logout item (the last item in the main menu). This action will guide you back to the login page.

## Site Structure

The structure of the site is simple and intuitively clear. On the top of the page there is the main menu which is a set of links (17 items).

[Users] [User Groups] [Units] [Resources] [Devices] [Modems] [Unit Groups] [Billing Plans] [Send SMS] [Modules] [Logs]  
 [Configuration] [HTTP Servers] [Sites] [Import Messages] [Connectors] [Retranslators] [Trash] [Connections] [Logout]

Click on these links to manage the corresponding elements of the service. Find details in the topics listed below:

- [Users](#)
- [User Groups](#)
- [Units](#)
- [Resources \(Accounts\)](#)
- [Devices \(Hardware\)](#)
- [Modems](#)
- [Unit Groups](#)
- [Billing Plans](#)
- [Send SMS](#)
- [Modules](#)
- [Logs](#)
- [Configuration](#)
- [Sites](#)
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## Users

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- [Users](#)
- [User Properties Dialog](#)
- [Actions](#)
- [Access Management](#)

When you login to the site, the Users page opens. Here you can manage all users of the system.

The first two users are created automatically. One is admin with password reset to you by e-mail. The other one is wialon with password wialon needed to enter the monitoring site. It is recommended to change this password later on.

Name  Search  20

Nº	User	ID	Creator	Local Storage	Can Create Objects	Enabled	Can Change Password	Creation Date	Last Login	Actions
1	Beleberda	23	billing	✓	✓	✗	✓	2010-02-20 12:13:06	1970-01-01 02:00:00	delete delete_all accessors reset_password show_msgs
2	Duremar	55		✓	✗	✓	✗	2010-04-22 14:09:24	2010-09-28 14:11:31	delete delete_all accessors reset_password show_msgs
3	Monstr	53	user	✓	✓	✓	✗	2010-04-22 14:01:31	2010-04-30 14:32:59	delete delete_all accessors reset_password show_msgs
4	Tartilla	348		✓	✓	✓	✓	2010-09-28 10:07:02	2011-04-07 09:22:12	delete delete_all accessors reset_password show_msgs

The table displays a list of users and their main properties such as name, creator, activity, last login, date created, id (assigned automatically by the system), etc. To quickly find a needed user, apply a filter. Use the asterisk sign (\*) which replaces any number of unknown characters and can be placed at the beginning, at the end, at the middle of your inquiry or in several places simultaneously. You can filter users not only by name, but also by creator, creation date, last login, account, and billing plan.

Users created on this page can enter monitoring and management sites (if you not deny the access). To be able to create monitoring objects like geofences, notification, etc., a user must have an account. To attach an account to a user, go to the [Resources](#) page and create a resource as this user or give this user access to some other resource.

## User Properties Dialog

To create a new user, press the Create User button.

**User Properties**

General | SMS Replies

\* Name:   
from 4 to 50 characters

Create as:

Password:

Confirm password:

E-mail:

Host mask:

Can create objects:

Enabled:

Can change password:

Skip ACL propagation:

Can change settings:

Can send SMS:

**Name**

Enter login name for a new user. This is the only obligatory field, the rest is optional.

**Create as**

Indicate the creator for the user. The creator will have full access rights to this user. The user inherits creator's account and billing plan.

Password

Enter password for the user and confirm it.

E-mail

Enter user's e-mail.

Host mask

Host mask can be applied to user to restrict IP addresses from which to enter service sites. For example, to allow user to login to sites from office only. To set a mask, use the wildcard symbol \*, for example, host mask can be set like this: '212.0.13.\*'.

Can create objects

Mark this check box to allow the user to create objects on the monitoring site like units, geofences, reports templates, etc.

Enabled

Mark this check box to activate the user right after creation. If a user is enabled, it means, it can login to the system. Otherwise, you can you can do it later.

Can change password

If activated, the user will have possibility to change the password to enter the system.

Skip ACL propagation

If this option is not activated, superior system users will automatically receive access to the objects created by this user. To avoid this situation, mark this check box.

Can change settings

Allow/disallow user to change their user settings like time zone, phone number, e-mail, etc.

Can send SMS

Allow/disallow user to send SMS messages from Wialon interface.

SMS Replies

In the SMS Replies tab enter user's phone number which will be authorized by the system.

At the end press OK. In the popup window read the result of your action. Press Close to cancel.

Click on a user name in the table to view and edit properties described above. While editing a user, you can also indicate the basic account for the user.

## Actions

The following actions can be performed over a user as system object:

- delete - delete user. User cannot be deleted until any objects created as this user exist in the system.
- delete\_all - delete user and all objects created by this user.
- accessors - manage access to the user (described below).
- reset\_password - reset password. New password will be displayed in a modal window. After this action, it is impossible restore the old password.
- show\_msgs - show messages of this user (logins to the system & logouts). Choose time interval and press Show.

Message type:  Items per page:

Date from:  Time from:

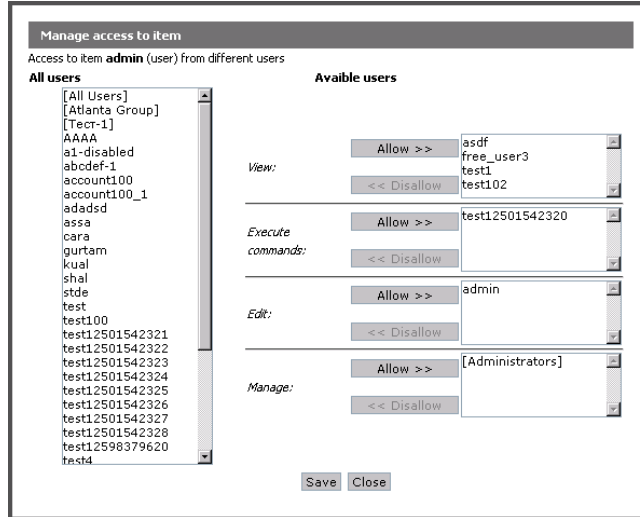
Date to:  Time to:

date	time	host	service	sid	type
2010-05-19	09:46:18	127.0.0.1	wialon-web	7e28c9a6be0bddb227bb99c199e765ef	login
2010-05-19	09:46:36	127.0.0.1	wialon-web	7e28c9a6be0bddb227bb99c199e765ef	logout
2010-05-19	09:59:22	127.0.0.1	wialon-web	7e28c9a6be0bddb227bb99c199e765ef	login
2010-05-19	09:59:43	127.0.0.1	wialon-web	7e28c9a6be0bddb227bb99c199e765ef	logout
2010-05-19	15:38:44	127.0.0.1	wialon-web	f50622e2f4bf2a87e40aca5b79cd27f1	login
2010-05-19	15:39:32	127.0.0.1	wialon-web	f50622e2f4bf2a87e40aca5b79cd27f1	logout
2010-05-19	15:53:25	127.0.0.1	wialon-web	f50622e2f4bf2a87e40aca5b79cd27f1	login
2010-05-19	15:55:10	127.0.0.1	wialon-web	f50622e2f4bf2a87e40aca5b79cd27f1	logout

## Access Management

When press accessors button, you can control access to a user from other users. Four access levels are available:

- View: selected users can see the objects created by this user;
- Execute commands: the same as *view* level (this access level is applied mainly to units);
- Edit: selected users can change the user's properties;
- Manage: selected users will have all above mentioned rights and even can delete the user from the system.



At the left there is a list of all users available. To assign rights to a user, select it from the list and press the Allow button against the needed access level. To deny the access, select the needed user (in one of lists on the right) and press Disallow.

In square brackets there are **user groups**. If a right is assigned to user group, it is applied to all users in this group.

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Administration Site](#) » [User Groups](#)

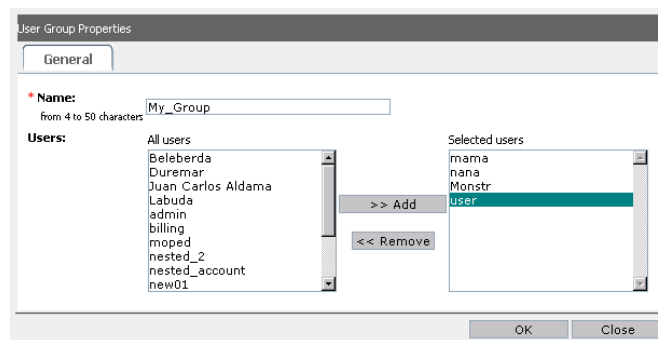
## User Groups

Two groups are created by default while installing the service - Administrators and All Users. They cannot be deleted. All newly created users are added to *All Users* group automatically.

№	Group	Users	Actions
1	Administrators	1	delete accessors
2	All Users	40	delete accessors
3	Atlanta Group	9	delete accessors

1  
Create Group

To create a new group, press Create User Group button.



Enter a name for the group and select users to form it (add users from the left column to the right). Then press OK button.

To edit a group, click on its name. In the group properties dialog you can change the name of the group or add/remove users to/from it.

To delete a group, press the delete button against its name. Deleting a group does not mean deleting users which belongs to this group.

Access right to user group are assigned in the same way as for separate users. See [Access Management](#) for details. If a right is assigned to a group, it means that it is applied to all objects which belong to this group. However, if higher access was given earlier to a certain user, this high level will be preserved.

### ⚠ ATTENTION!

When editing groups never delete yourself from the group of administrators because you will lose the right to enter admin site.

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Administration Site](#) » [Units](#)

## Units

On this page you can manage units and their properties. To add a new unit to the system, push Create Unit button. To edit an existing unit, click on its name. Unit properties dialog has several tabs described below.

However, note that creating and managing units is more handy on the management site. On the administration site, the functionality for units is limited (no trip detector, no fuel consumption, custom fields, advanced options, etc.) and in some cases read only.

### Table of Contents ▲

- Units
- General
- Commands
- Sensors
- Unit Groups
- Image
- Routes
- Actions

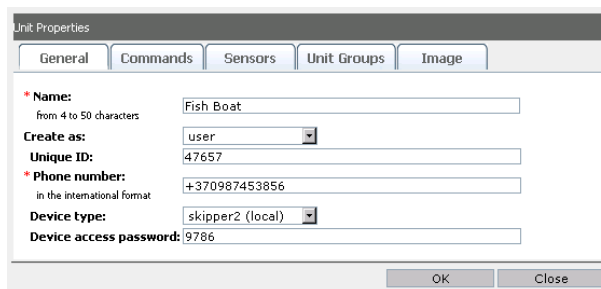
Nº	Unit	ID	Creator	Local Storage	Device Type	Unique ID	Phone	Mileage	Last Message	Last Position	Actions
1	Fish Boat	41	user	✓	skipper2	236458		7.00	2010-10-13 11:00:18	2010-10-13 11:00:18	delete accessors show_msgs invalidate_cache
2	Fura 1475683 AC	42	octobrian	✓	0 My New Device			465.00	2011-06-14 11:56:23		delete accessors show_msgs invalidate_cache
3	Fura 1476495 AC	43	user	✓	skipper2			0.00	2010-06-25 13:59:16		delete accessors show_msgs invalidate_cache
4	Mazda 326 OA 1107	601	user	✓	Voyager 2	568fig418	+375296225440	13101.00			delete accessors show_msgs invalidate_cache
5	Riviera	44	user	✓	Xexun TK-103	1357924680	+24563570448	1230.00	2011-06-13 11:58:18	2011-06-13 11:58:18	delete accessors show_msgs invalidate_cache
6	SMS Sim003	336	Tartilla	✓	Skipper 2	375299000003	+375299000003	0.00	2011-06-30 14:17:55	2011-06-30 14:17:55	delete accessors show_msgs invalidate_cache
7	SMS Sim004	337	Tartilla	✓	Skipper 2	375299000004	+375299000004	1.00	2011-07-05 16:59:51	2011-07-05 16:59:51	delete accessors show_msgs invalidate_cache

To quickly find a needed unit in the list, use the filter. First choose the criteria of search (by name, creator, phone, ID, hardware, account, billing plan). Enter a name of a part of a name (creator, phone, etc.) using asterisk sign (\*) to replace any number of characters at any place of the inquiry. Push the Search button. Units which fit your request will be displayed on the list. To return all units back to the list enter '\*' in the search field and apply.

As you can see in the image, lines in the table can be of different colors. They indicate unit activity. Orange background means that the unit sent last message more than one day ago. Yellow background means that the last message was more than an hour ago. Green - last message within an hour. White - messages were never received from this unit.

## General

Here you indicate name, creator, device type, unique ID, phone number (SIM card number embedded to the unit), and access password (if needed) for the unit being created.



Unit Properties

General Commands Sensors Unit Groups Image

\* Name:  (from 4 to 50 characters)

Create as:  (dropdown)

Unique ID:

\* Phone number:  (in the international format)

Device type:  (dropdown)

Device access password:

OK Close

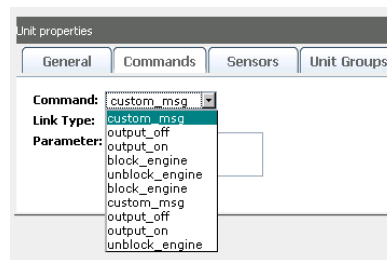
- Name: enter unit name from 4 to 50 characters.
- Create as: choose creator from the dropdown list.

- Account: available when editing a unit, not when creating it. It shows which account the unit belongs to.
- Unique ID: enter a unique ID for the unit to be identified by the system. Usually it is IMEI or serial number.
- Phone number: here type phone number of the unit if it has embedded SIM card. Phone number should be written in international format, that means they start from "+", then follow country code, communication statement code and the phone number itself. Examples: +7903726154,+15557654321).
- Device type: select unit type from the list of supported hardware. You can see the complete list of available hardware on the [Devices \(Hardware\)](#) page.
- Device access password: type password to manage unit remotely if needed.

## Commands

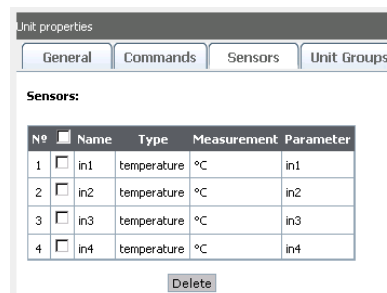
On this tab you can execute commands over units. Note that if a command is executed via GPRS, the unit has to be connected to server at the moment. To execute GSM command, an active modem on the server has to be accessible for the unit.

Choose a command in the dropdown list. Indicate link type (TCP/IP, UDP/IP, GSM, CSD, VRT) if you know which channel should be used for this command. Otherwise, leave *Auto*. If the command supports custom parameters (or if it is custom text), enter them in the parameters field. At the end, push Execute. [More about commands...](#)



## Sensors

On this tab you can see which sensors are attached to the unit. If needed, you can tick a sensor and delete it with the help of the appropriate button. [More about sensors...](#)



## Unit Groups

If the unit is included into any units group(s), they are listed on this tab. Unit groups can be created and managed on the [Unit Groups](#) page.

## Image

On the Icon tab you see the image that is currently used for the unit. You can also load another image (press Browse, select an image file, and then press Upload). You may reset the image to defaults by using empty file

field and pressing Upload. The changes are applied after pressing OK.

## Routes

On this tab you will see the list of [routes](#) if any is assigned to the unit. You can delete them if necessary.

Unit Properties

General Commands Sensors Unit Groups Image Routes

**Routes:**

Nº		Name	Activation Time	Flags	Geofence	Status	Control Point
1	<input type="checkbox"/>	Arriva 16 Route 1467	23:00:00 02/02/2011	0x21	Courier 007	0x24	6

## Actions

The following actions can be performed over a unit as system object:

- delete - delete unit.
- accessors - manage access to the unit. Access to units is assigned in the same way as for users - see [Access Management](#) for details.
- show\_msgs - show messages received from the selected unit. To view messages, select time interval and press Show. Types of messages are: SMS messages, positions (coordinated, speed, and other parameters), and commands sent to unit.
- invalidate\_cache - delete unit's cache.

Message type:  Items per page:

Date from:  Time from:

Date to:  Time to:

date	time	x pos	y pos	z pos	speed	course	satellites	inputs	outputs	adc1
2010-05-24	10:21:32	37.65644	55.76416	0.0	43	345	255	1	0	0.64453125
2010-05-24	10:21:41	37.64983	55.76875	0.0	34	315	255	1	0	0.515625
2010-05-24	10:21:44	37.63728	55.77235	0.0	32	290	255	1	0	0.38671875
2010-05-24	10:21:49	37.62713	55.77359	0.0	20	285	255	1	0	0.2578125
2010-05-24	10:21:56	37.62713	55.77359	0.0	0	285	255	1	0	0.2578125
2010-05-24	10:22:08	37.62713	55.77359	0.0	0	285	255	1	0	2.3203125
2010-05-24	10:22:17	37.62713	55.77359	0.0	0	285	255	1	0	6.4453125
2010-05-24	10:22:28	37.62713	55.77359	0.0	0	285	255	1	0	10.5703125
2010-05-24	10:22:37	37.62713	55.77359	0.0	0	285	255	1	0	14.6953125
2010-05-24	10:22:47	37.62713	55.77359	0.0	0	285	255	1	0	18.8203125
2010-05-24	10:24:04	37.60886	55.77339	0.0	50	255	255	1	0	18.5625
2010-05-24	10:24:08	37.60565	55.77301	0.0	50	248	255	1	0	17.53125
2010-05-24	10:24:20	37.60378	55.77228	0.0	50	245	255	1	0	17.2734375
2010-05-24	10:24:27	37.5998	55.77114	0.0	50	240	255	1	0	17.015625



You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Administration Site](#) » [Resources \(Accounts\)](#)

## Resources (Accounts)

On this page you define possibilities available to each user. If a user is not attached to a resource, this user will be not allowed to create objects like geofences, POI, drivers, etc.

Name  Search  20

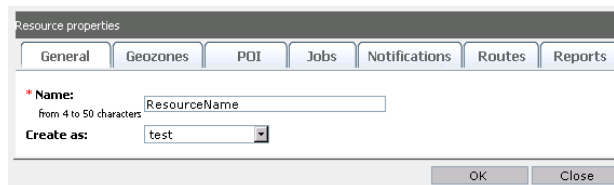
Nº	Resource	Creator	Local Storage	Actions
1	Duremar	Duremar	✓	delete accessors show_msgs
2	Tartilla	Tartilla	✓	delete accessors show_msgs
3	account2	account2	✓	delete accessors show_msgs
4	account3	account3	✓	delete accessors show_msgs
5	lambada	lambada	✓	delete accessors show_msgs

### Table of Contents ▲

- Resources (Accounts)
- Creating a Resource
- Account and Billing Plan
- Actions

## Creating a Resource

To create a resource, push Create Resource button.



Resource properties dialog box with tabs: General, Geozones, POI, Jobs, Notifications, Routes, Reports. Fields: \* Name: ResourceName (from 4 to 50 characters), Create as: test.

In the dialog enter a name and select a creator. A creator is required for resource to activate a billing plan.

## Account and Billing Plan

When a resource is created, to view or edit its properties, click on its name in the table. On several tabs the information about geofences, POI, jobs, notifications, reports, and other objects is presented. You can view lists of objects created by users attached to this resource and delete these objects as needed.

When viewing a resource after its creation, a new tab *Account* may appear in properties dialog (the resource must have a creator). Here you assign billing plan and manage resource activity and balance (make payments, block, etc.).

Resource Properties

General Jobs Notifications Geofences PDI Routes Account **Billing Plans**

**Billing plan:** client\_billing

**Parent account:** (none)

**Block balance:**  0.0

**Deny balance:**  1.0

**Minimum days counter:**  5

**Balance:** \$100.00

**Days counter:** 10

**Support nested:**

**Is blocked:**

**Payment:** Amount: 0  
Days: 0  
Description:

Perform

**Services:**

No	Name	Type	Interval	Cost Table	Description
1	poi	periodic	none	100:1;-1	100 places for 1 c.u.
2	zones_library	periodic	none	10;5;20;3;30;1;-1	
3	drivers	periodic	none		unlimited

Delete

**Create service:**

**Name:**

**Service type:** periodic

**Interval:** none

**Cost table:**

**Description:**

Create

OK Close

To apply a billing plan to the resource, select a plan in the dropdown list and press Activate account button.

On the account tab you define Billing plan applied to the resource and Parent plan if needed. Parent plan is a plan of higher level of hierarchy. If some service is blocked in parent plan, it automatically becomes unavailable in dependant plans.

Define balance and/or days to automatically limit user's activity in case of nonpayment. Block balance is a balance to deny access to services and stop account operation. Deny balance is a balance block paid operations to user.

Minimum days counter works automatically and independently of balance controller. If it is activated, the account can be blocked automatically not only when the balance is 0, but also if there are no days left. It can be useful for demo access, for example, or to control monthly fee. In the field Minimum days counter indicate the number of days to block the account (if nothing is indicated, zero is assumed). However, you can enter another number, usually negative (like -3). In this case, the account will be still available several days even when the term is expired. Days are counted down automatically when a new day comes. When 5 days are left, a special warning starts to come each time when the user logs in to the site: Your account will be disabled in .. days. When days are negative, this notification is not shown.

When you make a payment, you can add not only money but days. When this period is over, account is blocked even if the balance is enough. You can block the account manually marking Is blocked check box.

Below you see the current Balance and Days counter showing how much days left to zero.

On the same tab you can add a payment or/and days. Enter amount, days, description, and press Perform. Changes in the balance will be seen when you open this dialog next time.

Support nested concerns accounts. If nested accounts are allowed, dependent accounts can be created, and they can have different billing plan. If nested accounts are not supported, all account created on this resource will be like a part of the current account and will use its billing plan.

The services and their costs are inherited from the billing plan, but you can precise them in the Services table below as needed.

If nested accounts are supported, the tab Billing Plan becomes available (reload the dialog if not). Here you define which billing plans are available to resource creator. The creator then could assign these billing plans to accounts when creating them.

## Actions

---

The following actions can be performed over a user as system object:

- delete - delete resource.
- accessors - manage access to the resource. Access rights are assigned in the same way as for users (see [Access Management](#) for details).
- show\_msgs - show messages concerning the resource: notifications, balance or payments. Choose messages type, indicate time interval and press Show.

Message type:  Items per page:

Date from:  Time from:

Date to:  Time to:

date	time	days	info	payment
2010-03-22	11:19:55	120	Fdfd	100.0
2010-05-25	10:30:14	60	payment	80.0
2010-05-25	10:30:43	1	mobile activation	13.0

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## Devices (Hardware)

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- [Devices \(Hardware\)](#)
- [Device Properties](#)
- [Actions](#)

On this page you see the full list of supported device, and you can also add new hardware.

Nº	Device	TCP Port	UDP Port	Timeout	GSM Commands	VRT Commands	TCP Commands	UDP Commands	Connection	Actions
1	Skipper 2	21253	0	300	7	0	0	0	✓	delete begin_comm end_comm
2	Skipper GPRS	20104	0	600	0	0	0	0	✗	delete begin_comm end_comm
3	SkyWave	20253	0	300	0	0	0	0	✗	delete begin_comm end_comm
4	skipper2	34789	0	300	7	0	0	0	✓	delete begin_comm end_comm

If the list is rather long, use the filter to quickly find a necessary device - search by name, GUID, port, command, directory name (plus text mask).

## Device Properties

Push the Create Device button to add a new hardware. It assumes that you have hardware protocol and a script written specially for this kind of device.

Device Properties

General

GUID:

\*Name:   
from 4 to 50 characters

Directory:

TCP port:

UDP port:

Timeout:

- Enter device's name.
- Enter a name for the directory where to locate the script. By default, this directory is located in Wialon installation directory `.../plugins/avl_comm_server/hwl/`.
- Define TCP port to transfer data. If you use firewall, do not forget to open this port.
- Indicate UDP port to transfer data. If you use firewall, do not forget to open this port.
- Define timeout (default value is 300 sec). This is time to maintain TCP connection before break it if there is no incoming data. Here you can use negative values which means that this hardware is used as a retranslator. Even in this case timeout value is taken into account. It is not recommended to change timeout default value.

To edit these properties, click on device name in the table.

## Actions

The following actions can be performed over a user as system object:

- delete - delete device. A device cannot be deleted if there are units with this type of equipment. You should delete or edit them first. To find these units, go to the [Units](#) page and set up the filtration by device type.
- begin\_comm - begin commutation that is activate the script when data through this port comes.
- end\_comm - end commutation that is stop executing the script. In this case all data coming through this port will be lost.

If there are any devices containing additional adjustable parameters, sometimes it is required to press the Reinitialize devices button to apply these parameters. These parameters are adjusted for each unit individually on the **General** of its properties dialog (there will be a special edit button near the chosen device type).

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## Modems

The Modems page contains a list of connected modems. Here you can manage existing modems (edit their properties, activate/deactivate commutation, manage access rights, delete modems, etc.) and create new modems.

Any GSM modem connected to the server can be used in the system. It is recommended to use a modem connected via COM port. If this is USB modem, you will likely have to install a driver for it.

Search

Nº	Device	Phone	Restart interval	Status	Priority	Units	Actions
1	Leschinskogo GSM	+375293902240	60	✘	30	1	delete begin_comm end_comm accessors
2	local_modem	+375333140170	0	✘	50	0	delete begin_comm end_comm accessors

1

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- Modems
- Modem Properties
  - General
  - Notifications
  - SMS Replies
  - Billing Plans
- Modem Types
  - GSM modem
  - Simulator
  - Network modem
  - SMPP gateway
- Actions

Some additional variables for modems are set in the [configuration file](#).

To add a new modem, push Create Modem button. Modem properties dialog has several tabs: General, Notifications, SMS Replies, and Billing Plans.

## Modem Properties

### General

Modem Properties
General | Notifications | SMS Replies | Billing Plans

**GUID:**

**\* Name:**   
from 4 to 50 characters

**\* Phone number:**

**Link priority:**

**Restart interval:**

**Type:**

**Serial port:**

**Port speed:**

**SMS service center:**

**Log file:**

**Additional initialization AT commands:**

**Use 8-bit encoding only:**

**Enable public mode:**

- Name: enter a name for the modem.
- Phone number: enter phone number of SIM card installed on the modem.
- Link priority: define communications channel priority.
- Restart interval: indicate restart interval as needed (zero is not recommended). If the connection with modem is broken by any reason, after the time it will be automatically restarted. Besides, if the restart interval is zero, the modem is not started when restarting the service.
- Type: select modem type. Depending on your choice, adjust additional properties dedicated for the selected type (see instructions below): [GSM modem](#), [Simulator](#), [Network modem](#), [SMPP gateway](#).
- Enable public mode. The modem in public mode is available to all objects regardless the list of supported devices. If such modems are several and they have the same link priority, the modem that is free at the moment will work. In case modems have different priorities, the modem with a greater priority will work.
- Units. If public mode is disabled, you have to form the list of devices which will be assigned to this modem to execute any operations. Units become available after creating the modem. To complete

creating the modem, press OK button. If the modem is created successfully, units become available to assign.

## Notifications

- Use for notifications. Indicate if this modem will be used for sending notifications.

## SMS Replies

- Use to deliver SMS replies. Indicate if this modem will be used to send replies to drivers.

## Billing Plans

- Limit modem activity by selected billing plans. Tick this checkbox to make this modem available only for selected billing plans. Move necessary billing plans from the left to the right. If the flag is not set, the modem will be available to all billing plans without exceptions. Access to modems can be also controlled through [billing plan properties](#).

## Modem Types

---

### GSM modem

Indicate Serial port where the modem is located. Indicate Port speed. If any errors appear while operating, descend this value. Usually, SMS service center is strictly indicated on the SIM card, and you do not have to enter it here.

Enter the name for log file (without extension), for example *modemus*. In the *logs* directory a file with the indicated name and the extension *.log* will be created (like *modemus.log*), and it will collect all information about modem work.

Indicate Additional initialization AT commands as needed (consult instructions manual for the modem). Check Use 8-bit encoding only if needed.

### Simulator

In this case indicate the absolute path to the Source file from which the simulator will take data. You can use the variable `$(ADF_ROOT_PATH)` that means the path of Wialon installation.

### Network modem

Indicate Server host (you can enter IP address or DNS name), Server port to connect through, and the Server password to connect to the server.

### SMPP gateway

Enter the name for Log file (without extension), for example *modemus*. In the *logs* directory a file with the indicated name and the extension *.log* will be created (like *modemus.log*), and it will collect all information about modem work.

Indicate Server host (you can enter IP address or DNS name), Server port to connect through, the Server password to connect to the server. If needed, indicate Server type, for example, *VMS* (voice mail system), *OTA* (over-the-air activation system), etc.

Enter Account name (login) and the Source address to recognize the sender (like phone number, company name or both). SMPP synchro mode is needed to make hardware diagnostics (while there is no notification that the first SMS was delivered, the second one will not be sent).

By default, SMS messages are transmitted with UDH method (User Data Header) where system information is placed at the beginning. SAR method (segmentation and reassembly) allows to place this information at the end in

TLV format which is essential for several languages that se characters which cannot be transmitted in 8-bit encoding. In these cases the option Split long SMS using SAR method can be used to solve the problem.

Check Use 8-bit encoding only if needed.

In addition, you can set the variable `ADF_SERIAL_SMPP_SRC_ADDR_TON` in the configuration file. This variable defines the type of source address number in SMS being sent. Default value is 0.

## Actions

---

The following actions can be performed over a modem:

- `delete` - delete a modem.
- `begin_comm` - begin communication that is start getting data from the modem.
- `end_comm` - end communication that is stop getting data from the modem.
- `accessors` - manage the access of different users to this modem. Access to modems is assigned in the same way as for users - see [Access Management](#) for details.

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## Unit Groups

Unit group is a unity including several units which have something in common. In many cases it is convenient to operate a group of units instead of performing an action over each unit individually. For example, you can assign access rights to a whole group at once.

Name  Search 20

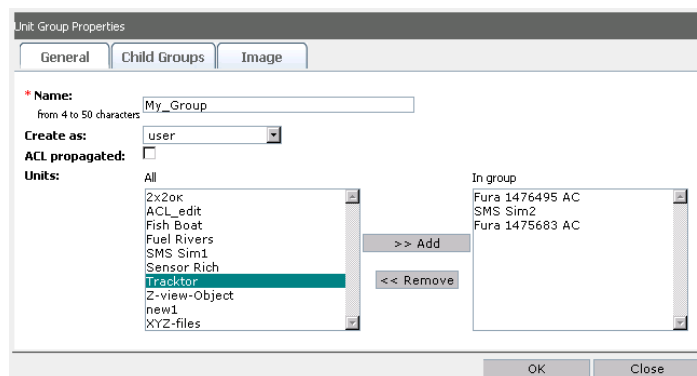
Nº	Group	Creator	Local Storage	Units	Child Groups	ACL Propagated	Actions
1	CTO-Ies10	user	✓	5	0	✓	delete accessors
2	Cheburatorea	user	✓	13	0	✓	delete accessors
3	Heavy Haulers	user	✓	6	0	✓	delete accessors
4	International	user	✓	1	0	✓	delete accessors
5	Managers	user	✓	2	0	✓	delete accessors
6	Tart_Green_Group	Tartilla	✓	17	0	✓	delete accessors
7	Tart_Halloween_Group	Tartilla	✓	40	0	✓	delete accessors

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- Unit Groups
- Unit Group Properties
  - General
  - Child Groups
  - Image
  - Actions

## Unit Group Properties

To edit a group, just click on its name in the table. To create a group, press Create Unit Group button.



### General

Enter a name for the group and assign a creator. Choose units from the list to be included to the group. Select unit in the list on the left and move it to the right by pressing the Add button. To exclude an object from a group, select the object in the list on the right and press the Remove button.

If ACL propagated property is activated, units in the group will inherit access rights assigned here. If the flag is set and an object is included to the group, in unit properties this group will be mentioned. If the flag is not set, the group will be not indicated in unit properties, however the unit will be a part of the group.

**Attention!** After a group is created, it is impossible to change ACL propagation.

### Child Groups

Here you can indicate that some other groups belong to this one.

### Image

On the Icon tab you see the image that is currently used for the group. You can also load another image (press

Browse, select an image file, and then press Upload). You may reset the image to defaults by using empty file field and pressing Upload. The changes are applied after pressing OK.

## Actions

---

- delete - delete group.
- accessors - manage access to the group. Access rights are assigned in the same way as for users (see [Access Management](#) for details).

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## Billing Plans

Billing plan is a dedicated storage system object. It can be managed *only through the administration site*.

Before managing the service, it is strongly recommended to acquaint with basic notions because you need to built a model of system objects with complicated dependences between them. Correctly built objects system is needed for your service to operate successfully.

### Billing System

Wialon uses embedded billing subsystem which basic purpose is to control and limit user's activity. A billing plan is assigned to a resource (account) and defines allowed activity of users who use this resource. Billing plan is a system object defined by its name and the set of possibilities included in it.

With billing system enabled, storage system kernel performs a check for different operations (like creating objects) to be allowed. In case there is no billing plan assigned or the limit of objects is reached or the balance is not enough, the kernel will prohibit operation.

Billing plan defines the set of available services and some basic properties such as minimum balance to block an account, minimum balance to deny services, balance output format (unit of money), etc.

A billing plan also allows:

- to limit modems available to users and units;
- to limit hardware types available to users;
- to set an e-mail address from which various background operations (like notifications delivery and reports mailing, etc.) are performed;
- to adjust an individual design for reports (color, fonts, logos, signature, etc.)
- to limit any provided services.

A billing plan can operate in two basic modes:

- allow unknown services (that is services which are not prescribed in it) with zero cost and put limitations on defined services;
- allow only those services which are prescribed in it and prohibit all other services.

The second way is more reliable.

Recursive (propagated) billing plans are accessible and in many cases handfull. In case of recursion, if the information about a service is not found in the current billing plan, it will be inquired recursively. The level of recursion is not limited. It is convenient to describe all used services in a basic billing plan, and make other billing plans derivative of it.

### Creating a Billing Plan

Go to Billing Plan page to create and manage billing plans. Here you see the list of all plans created:

Nº	Plan	Parent Plan	Services	History	Flags	Deny Balance	Block Balance	Min Days	Currency Format	Actions
1	Test2	--	1	0	37	0.0	-20.0	10	\$.02f	<a href="#">delete</a>
2	billing	--	7	0	37	0.0	0.0	0	\$.02f	<a href="#">delete</a>
3	test	--	6	60	4	0.0	0.0	0	\$.02f	<a href="#">delete</a>

1

[Create Billing Plan](#)

To create a new billing plan, press [Create Billing Plan](#) button. Billing plan properties are presented on several tabs.

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- [Billing System](#)
- [Creating a Billing Plan](#)
- [E-mail](#)
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- [Modems](#)
- [Cost Table](#)
- [Services Table](#)

## E-mail

Here you can enter e-mail address from which various system messages (notifications, reports, etc.) will be sent.

## Report Config

To apply your custom style to report files read [Custom Configuration for Reports](#).

## General

The screenshot shows the 'Billing Plan Properties' dialog box with the 'General' tab selected. The fields are as follows:

GUID:	34decb3fd19548207a2276677a9a89f2
* Name:	bp01
Parent plan:	client_billing
Block balance:	<input checked="" type="checkbox"/> 0.0
Deny balance:	<input checked="" type="checkbox"/> 1.0
Minimum days counter:	<input checked="" type="checkbox"/> 6
Allow unknown services:	<input checked="" type="checkbox"/>
Currency format:	\$.02f
Unit history period, in days:	365
Retranslator mask:	
Sender's phone (for notifications):	Wialon Notify
Sender's phone (for commands):	Wialon CMD
Description:	
HW renaming:	

### Name

Enter a name for a billing plan.

### Parent plan

Choose a parent plan if needed. If a parent plan is selected, the billing plan being created at the moment will recursively inherit its settings.

### Block balance

Enter balance reaching which the account will be blocked.

### Deny balance

Enter balance reaching which services will be denied.

### Minimum days counter

Days left before the account is blocked.

### Allow unknown services

If this option is activated, all services will be available on this resource if they are not blocked in service table. If this option is disabled, only services listed in service table will be available.

### Currency format

Enter currency sign before or after '%.02f'.

### Unit history period, in days

The time period to store unit history. Of the value is '0', the history is never deleted. If, for example, '100', messages older than 100 days are automatically deleted.

### Retranslator mask

Retranslator server is set in the form 'host:port'. Here you enter comma separated list of allowed retranslators. Wildcard symbols like '\*' and '?' can be used.

### Sender's number (for notifications)

Sender's name or number from which behalf SMS notifications will be sent. Works with SMPP modems only.

### Sender's number (for commands)

Sender's name or number from which behalf commands to units will be sent. Works with SMPP modems only.

Description is optional.

## Services

On this tab you activate services and define costs for them. To add a service, fill in a small form:

**Available services:**

No	<input type="checkbox"/>	Name	Type	Interval	Cost Table	Description
1	<input type="checkbox"/>	avl_unit	periodic	none	100;2;-1	
2	<input type="checkbox"/>	cms_manager	on demand	monthly	2	
3	<input type="checkbox"/>	create_unit	on demand	none	10	
4	<input type="checkbox"/>	drivers	periodic	monthly	10;3;20;2;30;1;-1	
5	<input type="checkbox"/>	jobs	periodic	monthly	30;1;-1	

**Add services:**

Name:

Service type:

Interval:

Cost table:

Description:

Enter a valid service Name (see services table below to check how the names are correctly given).

Select Service type: *periodical* or *on demand*.

- Periodic services have a counter that changes automatically (by the kernel, when objects are created or deleted) or with a software-based method. If an interval is preset (like hourly, daily, weekly, monthly), then when the time comes, account's balance is reduced by counter value multiplied by fee for this service. In price table you can enter maximum allowed value for a counter, for example, to limit geofences allowed to create.
- Services on demand are transactions which can be performed by a user as the need arises, like sending an SMS or a command to a unit. Time interval for such a service (hourly, daily, weekly, monthly) defines how often the counter of a service should be reset. In this way you can limit the number of allowed SMS messages for the indicated period, for example, no more than three SMSes per day.

Select Interval to reset counter (none, hourly, daily, weekly, monthly). If time interval is not set, services used are not calculated, and you just define the charge for a unit of service. Enter Cost table that is the charge for a service (or a unit of service) and limitation on amount of units. Description is optional. At the end push Create button.

To quickly create billing plans, use import/export option. You can import/export separate services and whole service tables from one billing plan to another.

To import services, press Import services button. The table of all billing plans already created and their services will be displayed. Tick needed services or whole billing plans to be imported and press the Import button. If a service with the same name already exists, it is not replaced. To clear all existing services and replace them with selected services, mark Delete all existing services check box. To return to the previous window, press Back.

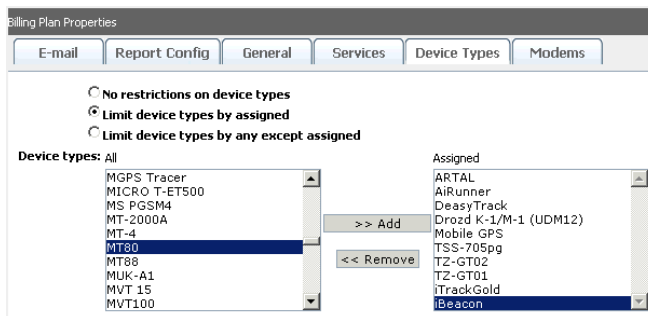
To export services from the current billing plan to another one, mark necessary services and press Export services. In the next window choose billing plans to export to and press the Export button. You can indicate additionally to replace services with the same names by new services or synchronize services (replace all with new).

Services are imported and exported with their type, cost table, description, etc.

## Device Types

By default, no restrictions are applied to device types. But you may need to limit access to some equipment. Then

choose *Limit device types by assigned* or *Limit device types by any except assigned* and select needed hardware.



## Modems

Here access to [modems](#) is set. On the left there is a list of modem which have limitations. On the right there is a list of modems available for the given billing plan.

A modem is displayed on this tab only if it has the flag *Limit modem activity by selected billing plans*. If not, such modem is available to all billing plans without exception.

Access to modems can be also controlled through [modem properties](#).

## Cost Table

Follow the rules to built a cost table:

- The format for a table: COUNTER1:VALUE1;COUNTER2:VALUE2;VALUE3.
- A counter is always positive and integer, a value can be fractional (like 2.5).
- Each next counter must be greater than the previous one.
- If a counter is not set, the system will consider it equal to the previous counter + 1.
- To block the service, set a negative value (like -1). Negative value is convenient at the end of the line to indicate a limitation. If their is no negative value at the end, the last cost will be applied to all newly created objects exceeding the last counter.
- To make the service free and unlimited, leave a cost table empty.

Cost table example:

Service	Value	Description
sms	3:0;-1	First three SMS are free, the forth SMS is not allowed.
sms	1:0;10:1.5;-1	The first SMS is free, from second to tenth the cost for one SMS is 1.5 charge units. The eleventh SMS is denied.
periodic	0:10;-1	10 charge unit are withdrawn from an account periodically (the interval is set separately).
avl_unit	1:0;5:10;10:3;50:1	The first unit is free, from second to 5th will cost 10, from 6th to 10th - 3, from 11th to infinity - each for 1.
zones_library	5:0;-1	5 geofences can be create (for free). The creation of a sixth geofence is prohibited.
alarm	1:0	Alarms are not limited.
messages	-1	Deny access to this facility, in particular, to the messages mode.

## Services Table

The full list of services which can form a billing plan. Note that when setting a billing plan, services names must be entered as in the table below.

Service	Type	Description
alarms	periodic	Alarms counter.
avl_unit	periodic	Activate ability to create monitoring units.

avl_unit_group	periodic	Unit groups.
avl_resource	periodic	Accounts (minimum one account must be allowed to create)
avl_retranslator	on demand	Ability to activate/deactivate retranslator.
cms_manager	on demand	Access to <u>CMS</u> Manager site.
create_units	on demand	For monitoring site to activate <i>Create Unit</i> button.
create_users	on demand	For monitoring site to activate <i>Create User</i> button.
create_unit_groups	on demand	For monitoring site to activate <i>Create Group</i> button.
custom_fields	periodic	Custom fields allowed for an object (unit, user, unit group).
custom_reports	on demand	Advanced reports on the monitoring site (used for units and users).
email_notification	on demand	Sending notifications by e-mail.
email_report	on demand	Sending a report by e-mail (job module).
drivers	periodic	Ability to create and manage drivers, use them in monitoring and reports.
jobs	periodic	Jobs counter.
messages	on demand	Messages mode.
net_access	on demand	Authorization through a service connector (Wialon Pro Client).
notifications	periodic	Notifications allowed to create.
periodic	periodic	The parameter to set a periodic charge for service as a whole, like monthly charge for the service.
pois	periodic	POI (places) counter.
reports	on demand	Access to the Reports mode.
reportsmngt	on demand	Access to GPRS traffic accounting (in unit properties, in jobs and notifications, in reports).
reporttemplates	periodic	Report mode, possibility to create report templates and generate reports by them. This service is also responsible for trip detection and fuel consumption tabs in unit properties.
routes	periodic	Routes allowed for one unit
service_intervals	periodic	Possibility to set service intervals, control them, register services and generate reports on them.
sms	on demand	Sending SMS messages.
storage_user	periodic	Users to be created (minimum one user must be allowed to create).
unit_alias	periodic	Command aliases allowed for one unit.
unit_sensors	periodic	Sensors allowed for one unit.
wialon_mobile	on demand	Access to Wialon Mobile.
wialon_web	on demand	Access to the main interface of Wialon tracking system.
zones_library	periodic	Geofences count.

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## Send SMS

Here you can send custom messages to units. To do it, fill in the form.

<b>Phone number:</b>	<input type="text" value="+375000000001"/>
<b>Modem:</b>	<input type="text" value="sim_modem (+375000000000)"/>
<b>Sender:</b>	<input type="text" value="NanoService"/>
<b>Counter:</b>	<input type="text" value="Total length: 8   SMS count: 1"/>
<b>SMS text:</b>	<input type="text" value="Test SMS"/>

To send SMS, enter recipient's phone number (in the international format) where the message should be sent. Choose a [modem](#) from the list of available. If it is SMPP modem, you can enter sender's name/number how it will be displayed in the message.

Type message text. SMS counter shows the length (in characters) of the current SMS and the number of messages it will be divided into.

After filling in all fields, press Send SMS.



You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Administration Site](#) » [Modules](#)

## Modules

On this page you can control which system modules are loaded and check the version of each module.

Loaded libraries			
Nº	Library	Path	Version
1	adf_core	/home/krsl/projects/apps/wialon/lib/libadf_core.so	3.23.0186
2	adf_image	/home/krsl/projects/apps/wialon/build/debug/libadf_image.so	1.6.0027
3	adf_chart	/home/krsl/projects/apps/wialon/build/debug/libadf_chart.so	1.1.0025
4	adf_gis	/home/krsl/projects/apps/wialon/build/debug/libadf_gis.so	3.9.0050
5	adf_http	/home/krsl/projects/apps/wialon/build/debug/libadf_http.so	3.23.0119
6	adf_zip	/home/krsl/projects/apps/wialon/build/debug/libadf_zip.so	3.3.0014
7	gis_net_driver	/home/krsl/projects/apps/wialon/build/debug/libgis_net_driver.so	1.4.0010
8	adf_net	/home/krsl/projects/apps/wialon/build/debug/libadf_net.so	7.2.0087
9	adf_avl	/home/krsl/projects/apps/wialon/lib/libadf_avl.so	5.19.0134
10	adf_serial	/home/krsl/projects/apps/wialon/build/debug/libadf_serial.so	3.12.0084

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## Logs

All events that are happening in the system are registered, and the log can be viewed.

**Logs**

Log Type:  Filter:  Lines count:  From end:

```

2010/11/22 10:14:58:195 avl_job::execute_action(8, 'пэжымыны')
2010/11/22 10:14:58:195 avl_job_pool_item::execute(13, 'SMS SIM's): '2 60'
2010/11/22 10:14:58:195 avl_job::execute_action(1, 'SMS SIM's)
2010/11/22 10:14:58:195 avl_accounting_unit_bytes_counter::do_action('user', 1)
2010/11/22 10:14:58:195 avl_exec_unit_cmd_job::do_action('user', 'query_pos', 1)
2010/11/22 10:14:58:195 avl_unit::exec_cmd('SMS Sim1', 'd187a8422566a01b41225b511b5c231a' =>
'query_pos', '', '')
2010/11/22 10:14:58:195 avl_hw_type::exec_unit_cmd('e10643153d4e45006e3b237ca40d1961',
'skipper2' => 'query_pos', '', '')
2010/11/22 10:14:59:306 avl_gsm_device::on_sms_sent('1bec3f4c551523f1cb11e21c20387e7c',
'sim_modem' => '+375299000001', 'PC,000', 1)
2010/11/22 10:14:59:406 sms_sender::send_sms('5', '5', '+375299000001): 1
2010/11/22 10:15:02:001 avl_gsm_device::on_sms_recv: '+375299000001': 'PC,0001,22/11
/10,08 14 59 5546,4154 N,03737.6278,E,0.0km,285.6,A,010032'
2010/11/22 10:15:38:097
storage_messages_cache::msgs_thread('5c4316f469b3d151b3a8e477c73fb358'): previous minute
intensity was 5 messages
2010/11/22 10:15:58:177 avl_job_pool_item::execute(13, 'SMS SIM's): '2 60'
2010/11/22 10:15:58:177 avl_job_pool_item::execute(20, 'пэжымыны'): '2 60'
2010/11/22 10:15:58:177 avl_job::execute_action(1, 'SMS SIM's)
2010/11/22 10:15:58:177 avl_job::execute_action(8, 'пэжымыны')
2010/11/22 10:15:58:178 avl_exec_unit_cmd_job::do_action('user', 'query_pos', 1)
2010/11/22 10:15:58:178 avl_accounting_unit_bytes_counter::do_action('user', 1)
    
```

Log type to be viewed can be:

- *service* - mail log;
- *trace* - the full log containing all messages and errors;
- *http\_error* - a log containing http errors;
- *error* - all records from trace log which contain the text 'error';
- and a separate log for each device.

To make you request even more precise, use filter field where you can input any word/phrase which is contained in messages you are looking for. Use wildcard symbols ? and \*. Press Show to apply the filter.

Indicate number of records to be displayed: from 1 to 1000 (default is 100).

By default, records are displayed from newest (at the top) to oldest (at the bottom). However, this order can be reverted - remove the flag From end.

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Administration Site](#) » [Configuration](#)

## Configuration

On this tab you can see and edit Wialon configuration file (*./custom/config.txt*). All variables, their meaning and possible values were described above, in [Wialon Configuration](#).

```
Configuration
# Plugins and Sites root path
ADF_SITES_ROOT=${ADF_ROOT_PATH}/../../../../resources/sites
ADF_PLUGINS_ROOT=${ADF_ROOT_PATH}/../../../../resources/plugins

# Fonts
ADF_FONT_PATH = ${ADF_ROOT_PATH}/../../../../resources/plugins
# AVD configuration
ADF_AVD_RENDER_CONFIG_PATH = ${ADF_ROOT_PATH}/../../../../resources/plugins/gis_avd_driver
/render_config
# AVD maps
ADF_AVD_MAPS_PATH = ${ADF_ROOT_PATH}/../../../../maps

# SMTP server configuration
ADF_SMTP_SERVER = mail.lcs
# avl_unit_zone_control configuration
AVL_UNIT_ZONE_CONTROL_MODE = control

# avl_unit_zone_control configuration
AVL_ROUTE_CONTROL_MODE = control

# avl_user_notifications configuration
AVL_USER_NOTIFICATIONS_MODE = control
AVL_USER_NOTIFICATIONS_EMAIL_FROM = notify@gurtam.com

# avl_notifications configuration
AVL_NOTIFICATIONS_MODE = control
```

Save

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Administration Site](#) » [Sites](#)

## Sites

This page gives information about sites open at the moment: site name, when started, host name, user, last access time. You can forcibly Disconnect a user from a site if needed or Stop a site at all. When disconnecting a user, its name disappear from the list.

Site name are bold. Under each site name you see the list of users and connections to this site. Sites with green flag are accessible at the moment, sites with red mark are not active (use the Start button to launch the site).

Site List

Nº	Site	Started	Host	User	Last Access Time	Action
<b>1</b>	<b>avl_admin</b>	✓	<b>wialon-admin</b>			<b>stop</b>
1.1	avl_admin	13:50:08	10.1.1.4	admin	13:52:18	Disconnect
<b>2</b>	<b>wialon_web</b>	✓	<b>wialon_web</b>			<b>stop</b>
2.1	wialon_web	12:33:05	10.1.3.2	user_test	13:52:18	Disconnect
2.2	wialon_web	12:34:08	10.1.4.2	user_test	13:52:17	Disconnect
2.3	wialon_web	13:50:02	10.1.1.4	user01	13:51:18	Disconnect
<b>3</b>	<b>wialon_mobile</b>	✓	<b>wialon_mobile</b>			<b>stop</b>
<b>4</b>	<b>cms_manager</b>	✓	<b>cms_manager</b>			<b>stop</b>
4.1	cms_manager	13:51:19	10.1.1.4	user01	13:52:18	Disconnect
<b>5</b>	<b>trace_orange</b>	✗	-			<b>start</b>
<b>6</b>	<b>agrogps</b>	✗	-			<b>start</b>
<b>7</b>	<b>wialon</b>	✓	<b>wialon</b>			<b>stop</b>

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Administration Site](#) » [Import Messages](#)

## Import Messages

This page is to import messages from files to a unit. The instructions of how to do it are given right on the page.

Supported formats are:

- Raw GPRMC navigator logs in formats defined by NMEA 0183 specification - searched in files with extension *.txt* or *.log*
- Rainbow Skipper messages from MMC card - searched in files with extension *.gps*.
- Wialon messages - searched in files with extension *.wln*.
- Wialon binary messages - searched in files with extension *.wlb*.

To improve upload performance, you may first compress files with ZIP or GZIP utility for your operating system. After upload is complete, files will be unpacked on the server and processed.

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Supported formats:

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- Wialon binary messages - searched in files with extension *.wlb*

Unit:

Message files:

Choose a destination unit in the dropdown list. Then indicate the path to its messages file. If the messages are located in several files, you can Add File. At the end press the Upload button to start the process. The result will be reported on the top.

## Connectors

If any computers or programs are directly connected to the server at the moment, they are listed on this page. Logistics server, unit connection server or another database server can be considered as computers. A client application which requires connection to the server can be considered as a program.

Active connectors

Ns	GUID	Host	Started	Trusted local	Trusted remote	Users	Actions
1	7837bef7d1b0085582660fe35b872453	10.2.2.6	14/11/08 21:47:09	✘	✘	trace_front	<a href="#">Disconnect</a>
2	91ef0ade5a12212487141230524b3bb1	10.2.1.8	20/11/08 07:19:20	✔	✘		<a href="#">Disconnect</a>
3	5f4251551c647b89777d49aa349368cf	10.2.1.7	20/11/08 07:19:32	✔	✔		<a href="#">Disconnect</a>
4	270ce61c0671251232ba1b31c304329e	10.2.1.5	21/11/08 06:13:43	✔	✔		<a href="#">Disconnect</a>
5	f8e87db80f47bc333ec0563a81ddd8fc	10.2.1.6	21/11/08 11:42:46	✔	✘		<a href="#">Disconnect</a>

In the table you see connector's GUID (globally unique identifier), host, activation time, trusted mode, user. Trusted local means that connected client has full access to all local objects and does not require authorisation. Trusted remote shows that the server can get access to manage other computer or application without authorization and has full access to all local objects of the client. You can disconnect a computer or a program if needed.

These parameters are set in the [configuration file](#), variable ADF\_STORAGE\_NET\_SERVER.

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Administration Site](#) » [Retranslators](#)

## Retranslators

### ⚠ Attention!

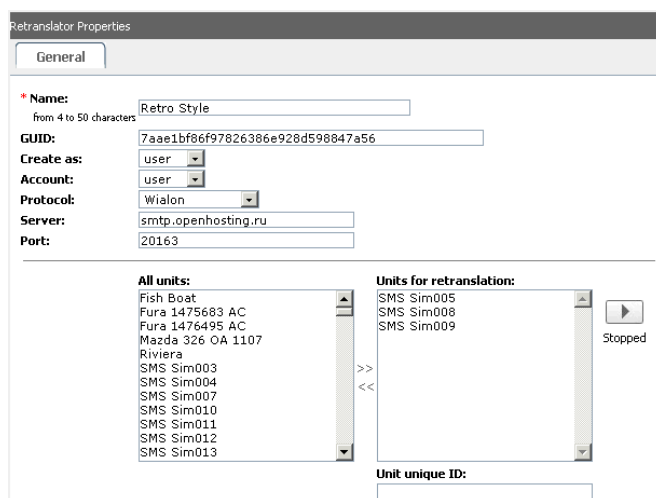
This functionality is available if *Retranslator* module is activated.

Messages from units can be retranslated in real-time from your server to other servers or systems. It is possible to retransmit data to several servers simultaneously and at different protocols. The ID of a retranslated unit can be different from its ID in Wialon. You can create any number of retranslators that will transmit messages of selected units to other systems. At any moment, any retranslator can be stopped or started again.

Nº	Name	Creator	Protocol	Server	State	Units	Actions
1	Mayon Ka	user	skaut	195.216.243.23	✓	3	delete start stop accessors
2	New Retranslatorr	user	granit3	10.123.12.30	✗	3	delete start stop accessors
3	Retranslator 01	user	wialon	alek.les	✓	8	delete start stop accessors
4	Retranslator 02	user	nis	mos.kaw	✓	2	delete start stop accessors
5	Retro Style	user	wialon	smtp.openhosting.ru	✗	3	delete start stop accessors

To create a retranslator, press the **Create Retranslator** button. In the dialog input a name for the retranslator (at least 4 characters) and choose a retranslation protocol. At the moment, the following retranslation protocols are available: Wialon, Nis (M2M), Granit Navigator, Skaut. Then indicate retranslation server, port, and in some cases authorization (*auth*). If the port is not indicated, it is set to defaults. Authorization for Nis protocol is login and password separated by colon (login:password).

Bellow select units for retranslation. To do this, move units from the left list (available units) to the right list (units for retranslation) by double-clicking on a unit or using the arrow-shaped buttons. Besides, you can input a new ID for units to be retranslated.



**Retranslator Properties**

**General**

\* **Name:** Retro Style  
from 4 to 50 characters

**GUID:** 7aae1bf86f97826386e928d598847a56

**Create as:** user

**Account:** user

**Protocol:** Wialon

**Server:** smtp.openhosting.ru

**Port:** 20163

---

**All units:**

- Fish Boat
- Fura 1475683 AC
- Fura 1476495 AC
- Mazda 326 OA 1107
- Riviera
- SMS Sim003
- SMS Sim004
- SMS Sim007
- SMS Sim010
- SMS Sim011
- SMS Sim012
- SMS Sim013

**Units for retranslation:**

- SMS Sim005
- SMS Sim008
- SMS Sim009

Stopped

**Unit unique ID:**

When creating or editing a retranslator, you can enable debug mode (Debug trace option). Debugging information on retranslated messages is logged in the following form: *retranslated unit: <unit name>, <our UID>, <their UID>, MSG: <time>*.

When a new retranslator is created, it is stopped. It can be started from the list of retranslators or in the dialog of its properties.

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Administration Site](#) » [Trash](#)

## Trash

If any object of the system was deleted, it is placed into the trash folder, and can be restored during an defined period of time. The default period is 30 days.

To see all deleted objects located in the trash folder, just press Find. However, it is more convenient to search object using special instruments. First of all you can filter them by type: unit, user, device, modem, resource, unit group (select the type in the dropdown list). If you know object's name or part of its name, enter it in the search field, replacing unknown symbols by asterisk signs.

Name:  Type:

N	Name	Type	Date	GUID	Action
1	80001234567	avl_unit	14:22:12 24/12/2009	1d8dfda5c9a166	restore delete
2	10100801027	avl_unit	09:31:30 13/01/2010	466ee9d6eadef62eac416d336118811d	restore delete
3	80001234567	avl_unit	14:28:48 24/12/2009	5d30207003d1e21d3719bb71f71f0a60	restore delete
4	Roadkey NM-311	avl_hw	16:28:20 24/12/2009	5ee470be4fc9a768bcea99d3d4ae8ea9	restore delete
5	NM311	avl_unit	09:28:48 13/01/2010	717a7ba945fe5e7127bed87de568aba	restore delete
6	80001234567	avl_unit	14:25:42 24/12/2009	f8d3a9f9b135a60e937f6ce93a2b1a08	restore delete
7	NM311	avl_unit	09:31:27 13/01/2010	fe9b1cac8ff940862dcdcb52ee7290979	restore delete

In the table you see object name and type, date deleted, and object's GUID (globally unique identifier of the object). Found object can be restored (restore button) or deleted from the system completely (delete button).



You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Administration Site](#) » [Connections](#)

## Connections

Active connections are displayed on this page (equipment connected to the server at the moment). In the table you see hardware type, connection type, host and port, unit name, time when connected. As needed, an item can be disconnected.

Choose Device Type from the dropdown list. All connections which involve this kind of device will be displayed. Indicate also Connection Type as needed (TCP, UDP or any).

To make your query more precise, use unit name/ID mask in the Unit text field. After entering or changing the mask, press <ENTER>.

According to the formulated request the corresponding connections will be displayed. In the table you see device type, link type, host, port, unit name (and unit ID in brackets), last run time, the button to disconnect device from the server.

Active Connections

No	Device Type	Connection Type	Host	Port	Unit	Started	Actions
	Any	Any			*s*		Total: 6
1	SkyWave	TCP	10.1.4.5	20253	test16 (500000)	17:28:25	<a href="#">disconnect</a>
2	SkyWave	TCP	10.1.4.5	20253	sky10 (500001)	17:28:25	<a href="#">disconnect</a>
3	SkyWave	TCP	10.1.4.5	20253	sky11 (500002)	17:28:25	<a href="#">disconnect</a>
4	SkyWave	TCP	10.1.4.5	20253	sky12 (500003)	17:28:25	<a href="#">disconnect</a>
5	SkyWave	TCP	10.1.4.5	20253	sky14 (500004)	17:28:25	<a href="#">disconnect</a>
6	SkyWave	TCP	10.1.4.5	20253	sky15 (500005)	17:28:25	<a href="#">disconnect</a>

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Additional Settings](#)

## Additional Settings

---

Additional facilities for the monitoring system allow to to translate the interface into a different language, create a custom design for the monitoring system (color scheme, headings, captions, links, logo), develop a custom style for report files, adjust unattended registration of new users, set an automate login to the system when a link is clicked.

- [Interface Languages](#)
- [Monitoring System Design](#)
- [Custom Configuration for Reports](#)
- [Personal Design for a Client](#)
- [Automatic Login to Wialon](#)
- [User Registration through Web](#)

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## Interface Languages

Interface languages for Wialon Pro are located in the *i18n* folder, in a number of subfolders named after domains of corresponding countries. Domain is a two-lettered sign to indicate the country, for example, lv - Latvia, ru - Russia, nl - Netherlands, etc.

To add a new language, create a subfolder with corresponding name and place empty *wialon.lng* file there. 'Empty' means that this file should contain only original phrases in English and no translations. Such a file can be found in *en* subfolder.

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- [Interface Languages](#)
- [Making Translation](#)
- [Enabling New Languages](#)

## Making Translation

Wialon.lng contains the original phrases in English and their equivalent in the destination language. If there is no translation available, you can write one. The file is in UTF-8 format. We recommend [NotePad++](#) to edit it.

Here is a small abstract from translation into Spanish:

```
msgid "Command"
msgstr "Comando"

msgid "Command '%s' for unit '%s' was successfully executed."
msgstr "El comando '%s' para '%s' fue ejecutado"

msgid "Command '%s' for unit '%s' was successfully scheduled."
msgstr "El comando '%s' para '%s' fue programado"

msgid "Command parameter"
msgstr "Parametro de comando"

msgid "Commands"
msgstr "Comandos"

msgid "Comment"
msgstr "Comentario"

msgid "Completely"
msgstr "Completamente"

msgid "Compress report files"
msgstr "Comprimir los archivos del reporte"
```

When translating, it is important to preserve the order and format of all special symbols (most of them begin from %). If the translation is not needed for a phrase or is not clear, such phrases can be skipped - in the resulting file they will remain in the initial state.

Pay attention to sharp-shaped symbols (#) that can be found at endings of the phrases. The sharp is always followed by a number. These symbols show that the phrase can have various translations depending on the context. This is convenient for languages which use cases (grammatical forms of nouns and adjectives). When translating such phrases, omit the sharp and the number. For example (German):

```
msgid "Months#1"
msgstr "Monate"
```

```
msgid "Months#2"  
msgstr "Monaten"
```

ⓘ Never make any changes in original English phrases. It will cause the problem to find your translation, and this won't cause any changes in original phrases in Wialon. If you think original phrases are incorrect, you can create your own translation into English in the *en* subfolder. Then enable your translation as anew language.

## Enabling New Languages

---

To make this translation available in Wialon interface, add to the [configuration file](#) (/custom/config.txt) the line like this:

```
WIALON_WEB_LANGUAGES = <domain>:<country>
```

and for set the language to be selected automatically:

```
WIALON_WEB_DEFAULT_LANGUAGE = <domain>
```

Here is an example for Finnish

```
WIALON_WEB_LANGUAGES = fi:suomi  
WIALON_WEB_DEFAULT_LANGUAGE = fi
```

After this operation you can continue editing this file online. If you have any changes to apply, it is not needed to restart the service each time. After saving translation file, it is just required only to resave the configuration file */custom/config.txt* (for example, add and delete a space, and press Ctrl+S).

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You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Additional Settings](#) » [Monitoring System Design](#)

## Monitoring System Design

Your monitoring site can have a unique design (colors, logo, copyright, title, etc.).

### Page Title in Browser

To substitute the standard title for your custom, in the configuration file `config.txt` set the value `WIALON_WEB_TITLE`, for example:

```
WIALON_WEB_TITLE>Welcome to our service
```

### Copyright

The standard copyright is *Gurtam*. To substitute it for your own, use two variables:

- `WIALON_WEB_COPYRIGHT_TEXT` - the text at the bottom center of the page.
- `WIALON_WEB_COPYRIGHT_URL` - the hyperlink for this text, opens in a new window.
- `WIALON_WEB_WEBGIS_COPYRIGHT` - the copyright text for WebGIS (displayed in the left bottom corner of the map).

Example:

```
WIALON_WEB_COPYRIGHT_TEXT=Your company
WIALON_WEB_COPYRIGHT_URL=http://your_company_url
WIALON_WEB_WEBGIS_COPYRIGHT=Your company maps
```

### Logo

To set your logo on the monitoring site, replace the file `label.png` in `custom/skins/your_skin/images/label` with your logo.

**ⓘ** *Tips.* Note that logo image default size is 300×25 pixels. If you logo is higher, then in the file `color.js` set the value `top_panel_height` corresponding to your logo. For instance, for a logo 300×25 `top_panel_height=42`, for a logo 300×40 `top_panel_height=57`.

### Color Theme

The location of the default theme is `sites/wialon_web/default_skin`. All custom themes are located in the directory `custom/skins`.

The theme is formed by the files of following types:

- **CSS** - cascading style sheets.
- **JS** - JavaScript files.
- Images (PNG, GIF, JPEG).

Modifying files that form the theme helps to alter color scheme and main images.

**ⓘ** Attention! It is not allowed to change site functional elements layout.

## Preparing a New Theme

To create a new theme:

- Make a full copy of folder `default_skin` from `sites/wialon_web` to `custom/skins`, rename it, for

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example, `your_skin`.

- In the configuration file set the variable `WIALON_WEB_SKIN`:

```
WIALON_WEB_SKIN=your_skin
```

- Restart the server.

## Adjusting Colors and Sizes

Color format is like in [CSS](#), for example, `#FF0000`, *red*, `#F00`. The format for sizes (width, height) is set in pixels.

`colors.js` (*custom/skins/your\_skin/js*) file contains colors and dimensions of the main panels.

- Monitoring mode:
  - `top_panel_bg_clr` - background color of the top panel;
  - `top_panel_fg_clr` - foreground color of the top panel;
  - `bottom_panel_bg_clr` - background color of the bottom panel;
  - `bottom_panel_fg_clr` - foreground color of the bottom panel;
  - `left_panel_bg_clr` - background color of the left panel;
  - `left_panel_fg_clr` - foreground color of the left panel;
  - `center_panel_bg_clr` - background color of the central panel;
  - `center_panel_fg_clr` - foreground color of the central panel;
  - `top_panel_height` - top panel height in pixels (42 by default);
  - `bottom_panel_height` - bottom panel height in pixels (35 by default);
  - `left_panel_width` - left panel width in pixels (350 by default);
- Messages Mode:
  - `msg_filter_panel_bg_clr` - background color of the left panel (messages filter);
  - `msg_filter_panel_fg_clr` - foreground color of the left panel;
  - `msg_map_panel_bg_clr` - background color of the central panel (map);
  - `msg_map_panel_fg_clr` - foreground color of the central panel;
  - `msg_table_panel_bg_clr` - background color of the bottom panel (messages table);
  - `msg_table_panel_fg_clr` - foreground color of the bottom panel;
  - `msg_filter_panel_width` - left panel width in pixels (messages filter, 350 by default);
  - `msg_map_panel_height` - central panel height in pixels (map, 400 by default);
- Reports Mode:
  - `report_filter_panel_bg_clr` - background color of the left panel (reports filter);
  - `report_filter_panel_fg_clr` - foreground color of the left panel;
  - `report_map_panel_bg_clr` - background color of the central panel (map);
  - `report_map_panel_fg_clr` - foreground color of the central panel;
  - `report_table_panel_bg_clr` - background color of the bottom panel (resulting report table);
  - `report_table_panel_fg_clr` - foreground color of the bottom panel;
  - `report_filter_panel_width` - left panel width in pixels (reports filter, 350 by default);
  - `report_map_panel_height` - central panel height in pixels (map, 400 by default);
- Dialogs:
  - `dlg_title_top_clr` - starting color for gradient of dialog title (set without symbol '#');
  - `dlg_title_bottom_clr` - ending color for gradient of dialog title (set without symbol '#');
- Log:
  - `log_panel_fade` - log panel transparency rate (valued from 0.0 to 1.0, 0.0 - totally transparent, 1.0 - opaque);

Color gamut and visual properties of embedded panels are altered through [CSS](#) files that are located in: *custom/skins/your\_skin/css*.

## Replacing Sounds

---

Sounds can be played on the monitoring site when new notifications or messages from driver come.


To change a melody for notifications, a wave file named *notify.wav* should be placed to the folder *custom/skins/your\_skin/sounds/notify\_online*.

To change a melody for messages, a wave file named *response.wav* should be placed to the folder *custom/skins/your\_skin/sounds/unit\_cmds\_response*.

Supported formats for sounds are *wav*, *ogg*, *mp3*. Different browsers can interpret such or such format. That is why convert your sound file into all three formats to get sound notifications in any browser you use.

## Product Author's Information

---

ⓘ In the system login page as well as at the right top corner of the main window Wialon logo is placed . It cannot be removed or replaced. If hover the logo, the tooltip *Powered by Wialon* is displayed. This logo is not the link to the site of the product developer.

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## Custom Configuration for Reports

A personal style can be applied to report files like color, fonts, alignment, etc. To do this:

1. Create an XML file in UTF-8 coding (like *custom/reports\_config.xml*) which stores report style.
2. In the configuration file *custom/config.txt* set the variable `AVL_REPORTS_STYLES_FILE` with the value `$ADF_ROOT_PATH/custom/reports_config.xml` (the path to XML file containing the configuration for reports styles).

Individual report configuration can be applied to each billing plan. To do this, copy report configuration code to [Report config](#) tab in the Billing Plan page.

An example of report configuration file:

```
<report bg_color="e5e8e9" indent="20,20,20,20">
  <images>
    <img1 align="l"
src="plugins/trace_front/images/trace_b2b.png?nolink"></img1>
  </images>
  <fonts chart="DejaVuSans.ttf"
default="DejaVuSans.ttf"></font>
  <head align="cc" bg_color="57a4c1" border="3"
border_color="ffffff" font_color="ffffff" font_size="15" img="img1"
space_after="50"></head>
  <content bg_color="e5e8e9" font_size="15"></content>
  <unit_name align="cc" bg_color="57a4c1" border="3"
border_color="ffffff" font_color="ffffff" font_size="12"
min_height="50" space_after="40"></unit_name>
  <table_defs>
    <trips_table>
      <table_name align="cc" bg_color="aaaaa1"
border="1" border_color="57a4c1" font_color="000000" font_size="12"
min_height="0" space_after="50"></table_name>
      <table_header align="cc" bg_color="cfd1d1"
border="1" border_color="57a4c1" column_no_wrap="0,2"
font_size="10" repeat_header="1"></table_header>
      <table_body align="lc"
bg_color="e5e8e9,f4f4f4" border="1" border_color="57a4c1"
colors_to_rows="1" font_size="10" space_after="30"></table_body>
    </trips_table>
    <total_table>
      <table_name align="cc" bg_color="aaaaa1"
border="1" border_color="57a4c1" font_color="000000" font_size="12"
min_height="0" space_after="50"></table_name>
      <table_header align="cc" bg_color="cfd1d1"
border="1" border_color="57a4c1" font_size="10"
repeat_header="1"></table_header>
      <table_body align="cc"
bg_color="e5e8e9,f4f4f4" border="1" border_color="57a4c1"
colors_to_rows="1" font_size="10" space_after="30"></table_body>
    </total_table>
</report>
```

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  - Data table body options: <table\_body>
  - Table styles: <tables>
  - Chart options: <chart>



```

        <default>
            <table_name align="cc" bg_color="aaaaa1"
border="1" border_color="57a4c1" font_color="000000" font_size="12"
min_height="0" space_after="50"></table_name>
            <table_header align="cc" bg_color="cfd1d1"
border="1" border_color="57a4c1" font_size="10"
repeat_header="1"></table_header>
            <table_body align="lc"
bg_color="e5e8e9,f4f4f4" border="1" border_color="57a4c1"
colors_to_rows="1" font_size="10" space_after="30"></table_body>
        </default>
    </table_defs>
    <tables>
        <style def_id="trips_table" table="Trips"></style>
        <style def_id="total_table" table="Total"></style>
    </tables>
    <chart caption_top="1" dset_color="ff0000,ff00,ff"
font="chart" font_axis_size="16" font_name_size="40"
grid_color="0000cc" height="350" scale="2"></chart>
</report>

```

## Common report options: <report>

```

orientation_landscape: "0" page format A4, orientation portrait
                    "1" page format A4, orientation landscape

password:           "any string" set password for reading document[only pdf]
                    "" no password

indent:             "n,n,n,n" set page indents[only pdf]
                    [left,right,top,bottom]

content:           "0" do not make content table
                    "1" make content table

unit_new_page:     "0" unit placement without page transfer
                    "1" each unit on new page

bg_color           "rrggbb" set report background color

```

## Font aliases, used in report: <font>

```

alias="font_file.ttf", like default="DejaVuSans.ttf{B}"
possible flags after font name: {B} - bold : {I} - italic : or its combination
[html only]

```

## Images, used in report: <images>

On the first place set unique name of image (img1 src="..." align="r")

```

src                "path_to_image" (only PNG picture)

align              "s" set image align (right or left)

```

## Report header options: <head>

```

bg_color:          "rrggbb" set report header background color

font_color:       "rrggbb" set report header font color

font_size:        "n" set report header font size

font:             alias from <font>

border:           "n" set report header border width [0 - no border]

align:            "ss" set report header text align: first char - horizontal
align, possible values 'l' - left; 'c' - center; 'r' - right second char - vertical
align, possible values 't' - top; 'c' - center; 'b' - bottom example : "rt" - text
in the right and top corner

min_height:       "n" set report header rect minimal height

space_after:      "n" set free space after header

border_color:     "rrggbb" set report header border color

img               "unique_name_of_image"

```

## Content table options: <content>

```

bg_color:          "rrggbb" set content table background color

font_color:       "rrggbb" set content table font color

font_size:        "n" set content table font size

font:             alias from <font>

border:           "n" set content table border width [0 - no border]

```

## Unit name options: <unit\_name>

```

bg_color:          "rrggbb" set table name background color

font_color:       "rrggbb" set table name font color

font_size:        "n" set table name font size

font:             alias from <font>

border:           "n" set table name border width [0 - no border]

align:            "ss" set table name text align

min_height:       "n" set table name rect minimal height

space_after:      "n" set table name after header

border_color:     "rrggbb" set unit name border color

```

## Data table definition: <table\_defs>

Use in this tag unique table name for definition table style:

```
<table_defs>
  <table1>
    <!-- Here use tags for describing table -->
    <table_name> ... </table_name>
    <table_header> ... </table_header>
    <table_data> ... </table_data>
  </table1>
</table_defs>
```

## Data table name options: <table\_name>

```
bg_color:           "rrggbb" set table name background color

font_color:         "rrggbb" set table name font color

font_size:          "n" set table name font size

font:               alias from <font>

border:             "n" set table name border width [0 - no border]

align:              "ss" set table name text align

min_height:         "n" set table name rect minimal height

space_after:        "n" set table name after header

border_color:       "rrggbb" set table name border color
```

## Data table header options: <table\_header>

```
bg_color:           "rrggbb[,rrggbb,rrggbb,...]" set array of header background
colors

font_color:         "rrggbb[,rrggbb,rrggbb,...]" set array of header text colors

font_size:          "n" set table header font size

font:               alias from <font>

border:             "n" set table header border width [0 - no border]

align:              "ss,[ss,ss,...]" set array of cells aligns: see <head
align>

column_no_wrap:     "n,[n,n,...]" set array of unwrapped cells

border_color:       "rrggbb" set table header border color
```

## Data table body options: <table\_body>

```

bg_color:          "rrggbb[,rrggbb,rrggbb,...]" set array of data text colors

font_color:       "rrggbb[,rrggbb,rrggbb,...]" set array of data text colors

font_size:        "n" set table data font size

font, font_normal, font_bold, font_italic:      alias from <font>, uses in report
row with flags: AVL_REPORT_ROW_FLAG_BOLD, AVL_REPORT_ROW_FLAG_ITALIC

border:           "n" set table header border width [0 - no border]

align:            "ss,[ss,ss,...]" set array of cells aligns: see <head
align>

colors_to_rows:   "0" - background and text colors applies to table columns
                  "1" - background and text colors applies to table rows

space_after:      "n" set free space after table

border_color:     "rrggbb" set table body border color

```

## Table styles: <tables>

```

table            Real table name, like "total", "unit_cmds"

def_id           Style from <table_defs>

```

Available tables: total (Statistics), unit\_trips (Trips), unit\_stays (Parkings), unit\_events (Events and Violations), unit\_smses (SMS messages), unit\_stops (Stops), unit\_conn\_quality (Connection problems), unit\_engine\_hours (Engine hours), unit\_speedings (Speedings), unit\_rides (Rides and Unfinished rides), unit\_fuel\_events (Fuel fillings and Fuel thefts), unit\_zones\_visit (Geofences), unit\_digital\_sensors (Digital sensors), unit\_chat (Chat history), unit\_cmds (Executed commands), unit\_location (Unit latest data), unit\_chronology (Chronology), unit\_visited\_streets (Visited streets), logins (User logins), unit\_maintenance (Maintenance), unit\_utilization\_cost (Utilization cost), unit\_counter\_sensors (Counter sensors), unit\_zones\_pass (Non -visited geofences), unit\_routes (Routes), unit\_route\_points (Route points), driver\_bindings (Driver bindings), unit\_sensors\_tracing (Sensor tracing), unit\_traffic\_gprs (GPRS traffic), unit\_insurance\_cases (Insurance cases), unit\_insurance\_summary (Insurance summary), custom\_fields (Custom fields).

## Chart options: <chart>

```

font_colors:     "rrggbb,rrggbb,rrggbb[,rrggbb,..]" first three colors
applies to chart name, legend and axis text colors, next triple of colors applies
to next chart etc...

bg_color:        "rrggbb[,rrggbb,rrggbb,...]" set array of charts background
colors

grid_color:      "rrggbb[,rrggbb,rrggbb,...]" set array of charts grid colors

caption_top:     "0" chart caption draws in the bottom
                  "1" chart caption draws in the top

legend_align:    "s[,s,...]" set charts legend position
possible values: "l"(left),"r"(right),"t"(top),"b"(bottom)

x_axis_vertical: "0"      x axis has horizontal lables
                  "1"      x axis has vertical lables from up to down

```

```

"2"      x axis has vertical lables from down to up

dset_color:      "rrggbb[,rrggbb,rrggbb,...]" set array of datasets colors
(same in the every chart)

dset_interpolate:      "n[,n,n,...]" set array of datasets to interpolate (same in
the every chart)
example "1,0,1" means that 1,3 datasets in the chart draws
with interpolation, 2 - without

font:      alias from <font>

font_name_size:      "n" set chart name font max initial size

font_legend_size:      "n" set chart legend font size

font_axis_size:      "n" set chart axis font size

scale:      "n" set chart image scale aspect

height:      "n" set resulting image height

space_after:      "n" set free space after chart

```



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## Personal Design for a Client

Any user can have his/her unique design of the monitoring site with custom logo and copyright. The scheme to do this:

1. Create copy of existing monitoring site;
2. Develop an individual design for the site;
3. Set remote access to the site.

### 1. Creating a Copy of the Monitoring Site

Make a copy of the site giving it a corresponding name (in our case it is *new\_site*). Make also a copy of the theme. Create the directory *./custom/skins* if needed.

```
krs1@s3:~$ cd /var/lib/wialonb3
krs1@s3:~/var/lib/wialonb3$ cd sites
krs1@s3:~/var/lib/wialonb3/sites$ ln -s wialon_web/ new_site
krs1@s3:~/var/lib/wialonb3/sites$ cd ../custom/skins
krs1@s3:~/var/lib/wialonb3/custom/skins$ cp -r ../../sites/wialon_web/default_skin/
./new_site
```

Then add this new site to Wialon configuration (*custom/config.txt*):

```
CUSTOM_SITES = new_site
```

Define the port for the new site:

```
NEW_SITE_WEBSERVER = new_site:8025:$LOCALIP
```

Copy existing settings and substitute *WIALON\_WEB* for *NEW\_SITE* everywhere. *Note:* In the example the list of settings is incomplete.

```
# new_site additional site configuration
NEW_SITE_SKIN = new_site
NEW_SITE_TITLE = Навигация - новый сайт
NEW_SITE_COPYRIGHT_TEXT = NEW_SITE.RU
NEW_SITE_COPYRIGHT_URL = http://new_site.ru
NEW_SITE_DEFAULT_POS = 57.62431:39.85551:9
NEW_SITE_HIDE_ACCOUNT = on
```

After that, restart Wialon. If there is no errors, the new site will become available on 8025 port: <http://server-IP:8025>

### 2. Monitoring Site Design

This step was described in detailed above. See [Monitoring System Design](#).

### 3. Set Access to Site

1. Create a DNS record at your hoster. Indicate there that the packages for the link *monitor.new\_site.com*, for example, are directed to your server external IP.
2. Set to process queries from *monitor.new\_site.com* on the port 8025 (see [Proxy Server](#)).

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## Automatic Login to Wialon

To create an automatic login to the monitoring site, use a link like of the following form:

```
http://DNS/login_action.html?  
user=USER_NAME&passw=USER_PASSW&action=login&skip_auto=1&lang=LANG
```

where:

- DNS is the monitoring site address;
- USER\_NAME is user name of a user to login to the site;
- USER\_PASSW is this user's password;
- LANG is interface language For example, *en* for English).

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## User Registration through Web

---

It is possible to register new user in the system without administrator, through web interface. It can be useful to quickly give users test access to monitoring site.

Select (or create) a user which will be creator for other users. Remember its ID (you can check it on the [users page](#) on the administration site).

Then from the registration page send a request in the form:

```
http://DNS-name[:port]/webavl_sdk/wialon_service.html?  
svc=create_user&creator_id=USER_ID&name=NEW_USER_NAME&password=NEW_USER_PASSWORD
```

where:

- DNS is the monitoring site address (port number is optional);
- USER\_ID is creator's identification number;
- NEW\_USER\_NAME is the name for a user you are creating;
- NEW\_USER\_PASSWORD is a password for this user.



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## Creating Maps

All Wialon Pro products include an embedded WebGIS-3 server. All address information for online tracking and reports is taken only from this WebGIS.

### AVD Maps Concept

AVD format refers to vector graphics files, which contain a map of a particular place or region. This format means to be used in applications developed on the basis of ADF software platform such as WebGIS.

The main concepts for the format are:

### Layer

A set of objects that form together a collection. The number of layers is defined by the number of separable detail layers. For example, roads, plants, and buildings can form a separate layer, or each of them can have its own layer. Layers are considered when rendering (drawing) a map, but in the source file data for all layers is stored together.

### Level

A parameter used to limit the amount of information displayed on the map. It is used when scaling (zooming) the map. 17 levels exist, and each has its minimum and maximum scale. The lowest and most detailed level is 0. Usually, it presents maximum amount of information (maximum elements). In the table below explore which levels are commonly used to draw different elements:

Levels	Element Type
0-4	Cities, towns, villages
5-10	Regions
9-15	Countries, states
15-16	Map of the world

The placement of particular element on a particular level is defined by system administrator while compiling the map, and by system designer while adjusting layers rendering configuration.

### Tag

A special mark on the map, for example, city, country, etc. It can be used for search or for render. Examples: *tag: minsk,country\_by tag: moscow,country\_ru* Tags go in a comma-separated line each after another without spaces. The name the map file (without .avd extension) is automatically added as a tag.

Further information:


- [AVD Mapper](#)
- [Render Configuration](#)
- [Format Specification](#)

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## AVD Mapper

Using the application *AVD Mapper* you can create vector maps in AVD format using vector maps in different formats like MP, MapInfo, ESRI Shape,  OSM (OpenStreetMap). Note that a source map must be in WGS-84 coordinate projection in grades.

The application *AVD Mapper* is launched from the console and is managed through the command line. Both Linux and Windows operating systems are supported. The application *avd\_mapper\_win* is a shell for the console utility which allows Windows OS users to adjust input parameters through graphical user interface.

### Program Start

```
avd_mapper -o <file_name> [-n <map-name>] [-t <map-tag>] [-p
<number>] [--max-level=<number>]
[--min-level=<number>] [-i] [--clear-bg-flag] [--skip-render-flag]
[--skip-search-flag]
[--mp-check-caps] [--pfm-config=<xml-file-path>]... <input-map-
file> [<input-map-file>]
```

- o , -- output =< file\_name >

Map file name to generate. The format is *path/filename.avd*. The path can be either absolute or relative. If creating the file in the current folder, you can do not even indicate it at all.

- n , -- name =< map-name >

Map name, for example, the name of the city.

- t , -- tag =< map-tag >

Map tag, optional grouping attribute for maps (city, country, etc.).

- p , -- priority =< number >

Map priority, default - 100. Greater priority means earlier map render. Maps with minor priority are rendered later and are situated above those with greater priority.

-- max-level =< number >

Max level to draw the map. Default - detect automatically.

-- min-level =< number >

Min level to draw the map. Default - detect automatically.

-- i

Create search index file that is add information for search (cities, streets, houses). This parameter is highly recommended.

-- clear-bg-flag

Clear background on render map flag, used for combining multiple maps. Do not display maps with higher priority which are situated in lower layers. If maps overlay, the top, more detailed, map is displayed. Background will be white. The flag is highly recommended to be used.

-- skip-render-flag

Skip map rendering at all. Do not include drawing information in the map (if the map will be used for search only).

-- skip-search-flag

Skip map search. Do not enable possibility for reverse geocoding (address search by coordinates) if the map will be used for rendering only.

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- Program Start
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- Creating a Map from MP Format
  - Configuration file
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-- mp-check-caps

Check CAPs in MP file address info (Cities, Regions, Countries).

-- pfm-config=<xml-file-path>

Path to PFM→AVD feature types conversion configuration (XML file with configuration for MP maps).

-- osm-config=<xml-file-path>

Flat text file with cities information for  OSM maps city detection.

< input-map-file >

Path to input map files.

-h, - -help

Show program usage (help in console).

In order to avoid errors when starting the program, be attentive with special signs: a single hyphen ( - ) precedes single-letter keys, double hyphen ( - - ) precedes expressions. Pay attention also on spaces and equal sign ( = ).

When generating maps from the Polish (MP) format, only data from the zero level is used.

## AVD Mapper for Windows

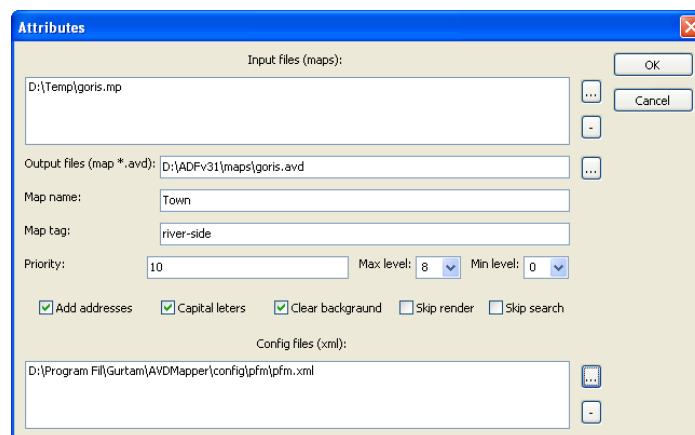
This utility is designed to make easier working with the panel program avd\_mapper. It is not a version of avd\_mapper, and all changes made in avd\_mapper automatically affect avd\_mapper\_win. The utility operates on the bases of Windows OS.

To launch the application, double-click on tis icon. Starting window has the following appearance:



Buttons	
New	Start creating a new map. If any map is already being creating, all its parameters will be lost.
Edit	Editing entered data. If you have already created a map, you can still edit its parameters.
Create	Start the process of creation.
Help	Read help information.
STOP	Abort the process of creation. Used in case if the program has hung. It is not recommended to press the <i>Stop</i> button until 3 minutes have passed after pressing <i>Create</i> .
Exit	Exit the program.

*New* and *Edit* buttons invoke the dialog box to enter various parameters for future map:



Input files (maps)

Complete path to an input (source) file (supported formats are \*.mp, \*.osm, \*.xml). Enter manually or push the Browse

button on the right to choose a file on your computer.

Output files (map \*.avd)

Output file name in the format *path/filename.avd*. The path can be either absolute or relative. If creating the file in the current folder, you can do not even indicate it at all.

Map name

Map name, for example, the name of the city.

Map tag

Map tag like city, country, etc.

Priority

Map priority, default - 100. Greater priority means earlier map render. Maps with minor priority are rendered later and are situated above those with greater priority.

Max level

Max level to draw the map. Default - detect automatically.

Min level

Min level to draw the map. Default - detect automatically.

Clear background

Clear background on render map flag, used for combining multiple maps. Do not display maps with higher priority which are situated in lower layers. If maps overlay, the top, more detailed, map is displayed. Background will be white. The flag is highly recommended to be used.

Skip-render

Skip map rendering, that is do not include drawing information in the map (then the map will be used for search only).

Skip search

Skip map search, that is do not enable possibility for reverse geocoding (address search by coordinates) if the map will be used for rendering only.

Add addresses

Add information for address search.

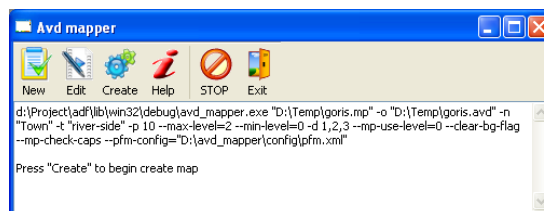
Capital letters

Check CAPs in MP file address info (Cities, Regions, Countries).

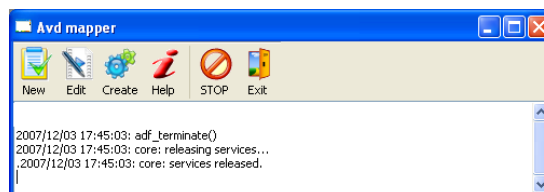
Config files (xml)

Path to XML file which contains configuration for MP maps.

After entering all parameters, press OK. The program will display a command line with your parameters.



Press the *Create* button to start compilation. If a lot of strings have appeared, it may mean that the program has hung up or the map being generated is very large.



In case of any wrong parameters, there will be error messages.

### Configuration file

To create a map from the Polish MP format, you have to use a special configuration file (XML) - parameter `-pfm-config`. If several configuration files are set, each next file will redefine some map types.

An example of such configuration file is included into AVD Mapper distribution. It is located `config/pfm.xml`. However, you can create and use your own file according to your requirements. See an example:

```
<pfm>
<feature type="0x0001" shape="PL" avd_type="1" max_level="2" name="A restricted
access major divided highway, normally with 2 or more running lanes plus emergency
hard shoulder. Equivalent to the Freeway, Autobahn, etc." use_addr="1"
is_street="1"/>

<feature type="0x0002" shape="PL" avd_type="3" max_level="2" name="          Important
roads that aren't motorways. Typically maintained by central, not local government.
Need not necessarily be a divided highway." use_addr="1" is_street="1"/>

<feature type="0x0003" shape="PL" avd_type="5" max_level="2" name="Roads generally
linking larger towns." use_addr="1" is_street="1"/>

<feature type="0x0004" shape="PL" avd_type="7" max_level="2" name="Roads generally
linking smaller towns and villages." use_addr="1" is_street="1"/>

<feature type="0x0000" shape="PL" avd_type="9" max_level="2" name="Minor roads."
use_addr="1" is_street="1"/>
<feature type="0x000a" shape="PL" avd_type="11" max_level="1" name="Unclassified
roads typically form the lowest form of the interconnecting grid network."
use_addr="1" is_street="1"/>
<feature type="0x0042" shape="PL" avd_type="12" max_level="1" name="Unpaved roads."
use_addr="1"/>

<feature type="0x3008" shape="POI" avd_type="59" max_level="0" name="A fire
station." use_addr="1" is_house="1"/>
<feature type="0xf001" shape="POI" avd_type="60" max_level="0" name="Bus station."
use_addr="1" is_house="1"/>
<feature type="0x2f06" shape="POI" avd_type="61" max_level="0" name="A bank."
use_addr="1" is_house="1"/>
<feature type="0x2b00" shape="POI" avd_type="62" max_level="0" name="A hotel."
use_addr="1" is_house="1"/>
</pfm>
```

`use_addr`

Use this element when searching address by coordinates.

`is_city`

Use this element when searching a place by name (city).

`is_street`

Use this element when searching a street by name (street). Locking (snap) to roads function can also use this element.

`is_house`

Use this element when searching a house by name or number (house).

`is_road`

A road. This element can also be used to lock unit movements to existing roads.

type

Source type from MP format.

shape:

*PG* – polygon, *PL* – polyline, *POI* – point.

avd\_type

Resulting map type in AVD file (0-255).

max\_level

Maximum level to store map data in AVD format. Levels depend on metrage: 0 level - from 10 to 250 meters, 1 level - from 250 m to 20 km, 3 level - form 20 to 200 km.

name

The name of an object, area, point, that is custom mark.

## Compilation example

```
avd_mapper goris/goris.mp -o maps/goris.avd --pfm-config avd_mapper/config/pfm.xml -  
-pfm-config goris/pfm.xml\\ --priority 10 --clear-bg-flag --min-level 0 --max-  
level 6 -i --tag armenia
```

To store captions used for the map correctly, you have to meet one of the following conditions:

- source MP file must be encoded in Win 1251, and the caption (IMG ID) must contain the string *CodePage=1251*;
- source MP file must be encoded in Win UTF -8, and the caption (IMG ID) must contain the string *CodePage=1252* or othe value different from 1251.

## Parameters explanation

goris/goris.mp

Where to take a source map in MP format.

-o maps/goris.avd

Where to put the resulting map.

-pfm-config avd\_mapper/config/pfm.xml

Where the configuration file is located.

-priority 10

Defines the map priority as 10.

-clear-bg-flag

Indicates that lower areas will be not rendered if if several areas overlay.

-min-level 0 -max-level 6

Maximum and minimum levels to display the resulting map. In this case, from 0 to 6.

-i

Add address search information.

-tag armenia

The tag used for this map.

Map name parameter (-name) can be skipped if there is map name in source MP file.

## Maps from Other Vector Formats

---

To create maps from other vector formats such as MapInfo, ESRI shapefile, etc., it is necessary to use a configuration XML file as a source file. Usually, it is located in the same directory with other map files (layers). It must be encoded in UTF-8 without BOM:

```

<conv name="Kharkiv_City" encoding="cp1251">
  <!--Optional coordinates transformation coefficients. Any amount of points possible!-->
  <conversion>
    <point lon="127.568846" lat="50.319412" x="7.451271" y="8.562714"/>
    <point lon="127.568832" lat="50.319425" x="7.451275" y="8.562724"/>
    <point lon="127.568839" lat="50.319419" x="7.451279" y="8.562734"/>
  </conversion>
  <!--Layer definition!-->
  <layer file="Kharkiv10_Address.TAB">
    <features type="67" max_level="0" name="$Address_ru" region="Kharkiv" house=
"$Address_ru" is_house="1" street="#Str_Code.Kharkiv10_Streets.Name_ru.Str_Code='&' "
street_type="#Str_Code.Kharkiv10_Streets.Type_ru.Str_Code='&' ">
  </features>
</layer>
  <layer file="Kharkiv10_Social.tab">
    <features type="67" max_level="0" name="$Type_ru">
  </features>
</layer>
  <layer file="Kharkiv10_Railways.tab">
    <features type="25" max_level="1" name="$Name_ru" data_type="pl">
  </features>
    <features type="171" max_level="1" name="$Name_ru" data_type="pg">
  </features>
</layer>
  <layer file="Kharkiv10_Hydro.tab">
    <features type="131" max_level="1" name="$Name_ru" data_type="pg">
  </features>
</layer>
</conv>

```

The file starts and ends with the `conv` tag. The following keys can be used inside this tag: `name` - map name, `encoding` - file encoding information.

In the `point` tag of the `conversion` section, you can set additional parameters to change map scale. It is done to convert local coordinate system commonly set in meters (like WGS84 Geocentric Projection or Gauss-Kruger UTM Projection) to an international coordinate system set in grades (WGS84 Geodetic Projection). There you adjust how points of one coordinate system correspond to those in the other one. Two or three (better three) points are required for coordinates conversion (if more, the rest are not considered). If any of the point is not correctly defined, the final map will be disproportional and inaccurate. It is better to use points closer to map borders (for example, crossroads).

Parameters `lat` (latitude - north, south), `lon` (longitude - east, west) set numbers in grade coordinate system. If you take these parameters in the program *GPSMapEdit*, for example, from a recorded track, make sure you take them not from grades-minutes-seconds which are displayed in the status line, but from object properties in the Source tab. Or you can convert the values from grades-minutes-seconds to fractional numbers of grades yourself.

Parameters `x` and `y` are derived from the local coordinate system at the corresponding point. These can be fractional numbers. Depending on file format, these values can vary.

The main part for map conversion is the description of layers required for data acquisition. The `layer` tag allows to describe each layer separately as well as transfer the map according to various attributes.

The `file` key is used to define the layer file (usually, `.tab`, `.shp`, and others). If `XML` file meant for conversion is located in the directory different from the layer files, it is required to indicate the path to the layer file.

Next, you indicate the `features` layer properties. In the `type` key set the value of AVD map elements (see it in *pfm.xml* or *osm.xml*). The `name` parameter is used to display captions for different objects on the map. Only Latin letters and `$` sign are accepted. If other symbols are used, the file may be converted with errors or not converted at all. Besides, there you indicate the level to display the data in (the `max_level` parameter). Depending on your preferences, you can vary these parameters from 0 to 2 or leave them as in *pfm.xml* or *osm.xml*.

The following parameters are optional:

- `data_type` - object type: polygon (pg), polyline (pl), point (poi). Example: `data_type="pg"`.
- `address` - define address by the indicated value.
- `region` - define region name by the indicated value. Example: `region="$Region"`.
- `street` - define street name by the indicated value. Example: `street="$St"`.
- `street_type` - define street type by the indicated value. Example: `street_type="$Sts_type"`.
- `house` - define house number by the indicated value. Example: `house="$number"`.
- `is_city` - define if this object is a city. If it is not, do not use this parameter. Example: `is_city="1"`.
- `is_street` - define if this object is a street. If it is not, do not use this parameter. Example: `is_street="1"`.
- `is_house` - define if this object is a house. If it is not, do not use this parameter. Example: `is_house="1"`.
- `dump_attr` is responsible for displaying particular object properties (in *stdout*). It works in the same way as the `name` parameter, but it displays information for a user who is converting the map.

Dollar sign in quotes (“\$”) means that letters which follow will be used as a variable and substituted with this variable value. To use a usual text together with a variable, it is necessary to mark it with | sign from both sides. To retrieve data from some other layer, use the hash sign (#). After #, set three parameters. In the first parameter indicate the field from which the value should be taken, and then put a dot (.). The second parameter indicates the layer (filename without extension) to be used to get data, put a dot again. The third parameter indicates which field from the indicated layer should be used. The fourth parameter can be used if the value is hidden in a string field or among a number of values - enter field, equal sign (=), and % sign in single quotes ('%'). Do not forget to separate all parameters with dots.

Here is an example.

Let us assume, we have two layers:

- the *cities* layer with the fields *ID, Name, Region*;
- the *streets* layer with fields *ID, City, CityID, Name*.

Then,

- to get street name and the city, use  
***\$Name|,|#CityID.Cities.Name;***
- to get the city and region while searching by another field, use  
***\$Name|,|#City.Cities.Region.Name='%'***.

If you have noticed that the layer file contains objects of different types (you can check it with the `dump_attr` parameter), and you want to display them as different types, use the `mod` tag. There you set filtration conditions and object type expected as the result of conversion process. In the `filter` parameter enter the condition as `SQL` query. The `type` parameter is set in the same manner as it was described above. If you have used this method, then the `dump_attr` parameter will display only the fields which have been used during the conversion.

In one *layer* there can be any number of *features*. In one *features* there can be any number of *mod*.

If there is an error when reading the file, try to open it in another program, for example, Internet Explorer: if there are any errors in file body, `IE` displays only the correct part of the file, however note that the check is performed only for opening/closing tags.

Use comments to make easier further editing and usage of the file.



## Render Configuration

Rendering of different elements of AVD maps is defined by a configuration file in XML format encoded as UTF-8. All configuration files are located in `plugins\gis_avd_driver\render_config\layers` and have the name like `layer_<layer-name>.xml`.

An example of a layer file:

```
<layer levels="0-7" bg_color="f6f6f6" priority="1" name="base">

<style name="Urban area" features="1" levels="0-4" color="E8E3D8" type="polygon"/>
<style name="Industrial zone" features="2" levels="0-2" color="D1D0CD"
type="polygon"/>
<style name="Car park" features="55" levels="2" color="D1D0CD" type="polygon"/>

<style name="A black area" features="3" levels="0-7" color="000000" type="polygon"/>
<style name="A dark red area" features="4" levels="0-7" color="952F0C"
type="polygon"/>
<style name="A dark green area" features="5" levels="0-7" color="397E43"
type="polygon"/>
...

<!-- Labels -->
<style name="Urban area" features="1" levels="0-2" color="000000" type="label"
halo_color="ffffff" face="DejaVu Sans Book" align="center" size="8" halo_size="1"/>
<style name="Industrial zone" features="2" levels="0-1" color="000000" type="label"
halo_color="ffffff" face="DejaVu Sans Book" align="center" size="8" halo_size="1"/>

<style name="A black area" features="3" levels="0-7" color="000000" type="label"
halo_color="ffffff" face="DejaVu Sans Book" align="center" size="8" halo_size="2"/>
<style name="A dark red area" features="4" levels="0-7" color="000000" type="label"
halo_color="ffffff" face="DejaVu Sans Book" align="center" size="8" halo_size="2"/>
<style name="A dark green area" features="5" levels="0-7" color="000000" type="label"
halo_color="ffffff" face="DejaVu Sans Book" align="center" size="8" halo_size="2"/>
...

</layer>
```

The attribute `layer levels` sets rendering levels for the given layer:

- `bg_color` – map background color in RGB or Alpha-RGB format.
- `name` – layer name (to chose layer while rendering the map).
- `style name` - a mark.
- `features` – a property of a particular element.
- `levels` – levels used to scale the map.
- `color` – color for the element in RGB or Alpha-RGB format.
- `type` – render type: *image*, *polygon*, *line*, *dash*, *label*, *line-image*.
- `flags` – 0 and 1 flags are possible. 0 – use all elements. 1 – use only elements with directions such as one-way roads or flow of rivers.

If there is the attribute `type="label"`, the following elements may appear:

- `face` – the font for captions of different objects drawn on the map.
- `align` – caption alignment - *center*, *along* or *along\_box* (in a rectangle, often used for international road

numbers).

- `size` – font size for captions. If several numbers follow comma-separated without spaces, the first one will be used on the first visible layer, the second correspondingly on the second layer, and so on. If the quantity of numbers and the quantity of levels do not coincide, the last indicated font size will be taken for posterior levels.
- `halo_color` – color to outline the caption (useful to separate captions from other graphical elements). Set in RGB or Alpha-RGB format.
- `halo_size` – The size of this outline (usually 1-2 px).
- `label_spacing` – if caption align is *along* the object, this parameter will define the distance between repeated captions.

If there is the attribute `type="line"`, the following elements may appear:

- `width` – line thickness. If several numbers follow comma-separated without spaces, the first one will be used on the first visible layer, the second correspondingly on the second layer, and so on. If the quantity of numbers and the quantity of levels do not coincide, the last indicated line width will be taken for posterior levels.
- `border_color` – line border color (for example, the road can be black and its borders can be white).

If there is the attribute `type="image"`, the following elements may appear:

- `file` – image filename without extension (PNG format).

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## Format Specification












Vector maps in the closed AVD format allow ADF-based programs to render map images in various projections, fulfil the search of named element, use geocoding including reverse geocoding.

- [Conversion Table: Polyline \(PL\)](#)
- [Conversion Table: POI](#)
- [Conversion Table: Polygon \(PG\)](#)
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## Conversion Table: Polyline

.MP		.OSM			.AVD					
Code	Key	Value	Keys	Key_values	Type	AVD Type (0-255)	Data Level (0-2)	Comment	Image	Icon
0x0001	highway	motorway			PL	1	2	A restricted access major divided highway, normally with 2 or more running lanes plus emergency hard shoulder. Equivalent to the Freeway, Autobahn, etc.		
	highway	motorway_link			PL	2	2	The link roads (sliproads/ramps) leading to/from a motorway from/to a motorway or lower class highway. Normally with the same motorway restrictions.		
0x0002	highway	trunk			PL	3	2	Important roads that aren't motorways. Typically maintained by central, not local government. Need not necessarily be a divided highway.		
	highway	trunk_link			PL	4	2	The link roads (sliproads/ramps) leading to/from a trunk road from/to a trunk road or lower class highway.		
0x0003	highway	primary			PL	5	2	Roads generally linking larger towns.		
	highway	primary_link			PL	6	2	The link roads (sliproads/ramps) leading to/from a primary road from/to a primary road or lower class highway.		
0x0004	highway	secondary			PL	7	2	Roads generally linking smaller towns and villages.		

	highway	secondary_link			PL	8	2	The link roads (sliproads/ramps) leading to/from a secondary road from/to a secondary road or lower class highway.		<a href="#">?</a>
0x0000	highway	tertiary			PL	9	2	Minor roads.	<a href="#">?</a>	0-6 <a href="#">?</a> 7-8 <a href="#">?</a>
	highway	tertiary_link			PL	10	2	The link roads (sliproads/ramps) leading to/from a tertiary road from/to other minor roads.		<a href="#">?</a>
0x000a	highway	unclassified			PL	11	1	Unclassified roads typically form the lowest form of the interconnecting grid network.		0-6 <a href="#">?</a> 7-8 <a href="#">?</a>
0x0042	highway	unsurfaced			PL	12	1	Unpaved roads.		<a href="#">?</a>
	highway	track			PL	13	1	Roads for agricultural use, gravel roads in the forest etc., usually unpaved/unsealed but may occasionally apply to paved tracks as well.	<a href="#">?</a>	<a href="#">?</a>
0x0005	highway	residential			PL	14	1	Roads accessing or around residential areas but which are not a classified or unclassified highway. Streets.	<a href="#">?</a>	0-6 <a href="#">?</a> (7-9) <a href="#">?</a>
0x0006 0x000b 0x0008 0x0009 0x0049	highway	living_street			PL	15	1	A street where pedestrians have priority over cars, children can play on the street, maximum speed is low. Sometimes called 'Home Zone'.	<a href="#">?</a>	<a href="#">?</a>
0x0007	highway	service			PL	16	1	Generally for access to a building, motorway service station, beach, campsite, industrial estate, business park, etc. This is also commonly used for access to parking and trash collection.		(0-5) <a href="#">?</a> (6) <a href="#">?</a>
	highway	bridleway			PL	17	1	Roads for horses, cartage.		<a href="#">?</a>
	highway	cycleway			PL	18	1	Cycleways for bicycles.		<a href="#">?</a>
	cycleway	lane			PL	18	1	A lane is a route for bicycles that lies within the roadway.		<a href="#">?</a>
	cycleway	track			PL	18	1	A route for bicycles that is separate from the road.	<a href="#">?</a>	<a href="#">?</a>
	highway	footway			PL	19	1	Footpaths for pedestrians, e.g. walking tracks and gravel paths.	<a href="#">?</a>	<a href="#">?</a>
0x0048 0x0016	highway	pedestrian			PL	19	1	For roads used mainly/exclusively for pedestrians/shopping areas. Also for tagging	<a href="#">?</a>	<a href="#">?</a>

								squares and plazas.		
	highway	bus_guideway			PL	20	1	A busway where the vehicle guided by the way (though not a railway) and is not suitable for other traffic.		0-6 [?] (7-9) [?]
	junction	roundabout			PL	21	1	Circle movement.		[?]
0x0014	railway	rail			PL	25	1	Full sized passenger or freight trains in the standard gauge for the country or state.		[?]
	railway	tram			PL	25	1	One or two carriage rail vehicles, usually sharing motor road for trams.	[?]	[?]
0x003f	railway	subway			PL	26	1	A city passenger rail service running mostly grade separated. Metro/underground/subway lines.		[?]
	railway	disused			PL	25	1	A section of railway which is no longer used but where the track and infrastructure remains in place.	[?]	[?]
	railway	monorail			PL	27	1	A railway with only a single rail.		
0x001f	waterway	river			PL	30	2	For narrow rivers which will be rendered as a line.		[?]
0x0018	waterway	canal			PL	30	1	An artificial open waterway used for transportation, waterpower, or irrigation.		[?]
0x0026	waterway	stream			PL	30	1	A naturally-formed waterway that is too thin to be classed as a river. An active, able-bodied person should be able to jump over it if trees along it aren't too thick.	[?]	[?]
0x0044	waterway	drain			PL	30	1	An artificial waterway for carrying storm water or industrial discharge.	[?]	[?]
	waterway	weir			PL	30	1	A barrier built across a river, sometimes to divert water for industrial purposes. Water can still flow over the top.	[?]	[?]
	waterway	dam			PL	31	1	A wall built across a river or stream to impound the water. A dam normally does not have water flowing over the top of it.		[?]
	aeroway	runway			PL	35	1	A strip of land kept clear and set aside for aeroplanes to take off from and land on.	[?]	[?]
0x0045								State, county, local		

0x001d	boundary	administrative	admin_level	8	PL	191	1	council.		
0x001c					PL	192	1	Region boundary.		
0x001e	boundary	administrative	admin_level border_type	2 nation	PL	193	2	National boundary.		

## Conversion Table: POI

.MP	.OSM		.AVD					
Code	Key	Value	Type	AVD Type (0-255)	Data Level (0-2)	Comment	Image	Icon
0xf201	highway	traffic_signals	POI	50	0	Lights that control the traffic.		
0xf002 0x2f08 0x2f17 0xf001 0xf003 0xf004	highway	bus_stop	POI	51	0	A small bus stop.		
0x2f03	highway	services	POI	52	0	A service station to get food and eat something, often found at motorways.		
0xf007	railway	station	POI	53	0	A railway station.		
0xf006	railway	halt	POI	53	0	A small railway station, may not have a platform, trains may only stop on request.		
0x4600	amenity	pub	POI	55	0	A place selling beer and other alcoholic drinks; may also provide food or accommodation.		
0x2d02 0x2d00	amenity	nightclub	POI	55	0	A nightclub.		
0x2a0e	amenity	cafe	POI	55	0	A cafe.		
0x4500	amenity	restaurant	POI	55	0	A restaurant.		
0x2a0d	amenity	fast_food	POI	55	0	An area with several different restaurant food counters and a shared eating area. Commonly found in malls, airports, etc.		
0x2f0b	amenity	parking	POI	56	0	Car park or a parking.		
0x2f02	amenity	car_rental	POI	56	0	A place to rent a car.		
	amenity	taxi	POI	56	0	A place where taxis wait for passengers.		
0x2f01 0x4400	amenity	fuel	POI	57	0	Petrol station, gas station, marine fuel, etc.		
0x2e05	amenity	pharmacy	POI	58	0	A pharmacy.		
	amenity	hospital	POI	58	0	A hospital.		
0x3001	amenity	police	POI	59	0	A police station.		
0x3008	amenity	fire_station	POI	59	0	A fire station.		
0xf001	amenity	bus_station	POI	60	0	Bus station.		
0x2f06	amenity	bank	POI	61	0	A bank.		
	amenity	bureau_de_change	POI	61	0	Currency exchange, a place to change foreign bank notes and travellers cheques.		
	amenity	atm	POI	61	0	An ATM or cash point.		
0x2b00	tourism	hotel	POI	62	0	A hotel.		

0x2b01	tourism	motel	POI	62	0	A motel.		
0x2b02	tourism	guest_house	POI	62	0	Guest house.		
	tourism	hostel	POI	62	0	A hostel.		
0x0100 0x0200			POI	63	2	A megalopolis over 5 million people.		
0x0300 0x0400	place	city	POI	64	2	A city of 1 -5 million people (MP). A city over 100 thousand people ( <a href="#">OSM</a> ).		
0x0500 0x0600 0x0700 0x0800 0x0900 0x0a00 0x0006 0x0004	place	town	POI	65	1-2	A town form 10 to 100 thousand people.		
0x0b00 0x0c00 0x0d00 0x0e00 0x0f00 0x1000 0x1100 0x0010	place	village_green hamlet	POI	66	1	A village below 10 thousand people.		
0x640a			POI	67	0	Captions.		
0x3002 0x6408			POI	149	0	A hospital.		
	place	continent	POI	195	2	A continent.		
0x6602	place	state	POI	196	2	A state.		
0x1e00	place	region	POI	197	1	A region.		
0x1f00	place	country	POI	198	1	A country, area.		

## Conversion Table: Polygon

.MP Code	.OSM		.AVD					
	Key	Value	Type	AVD Type (0-255)	Data Level (0-2)	Comment	Image	Icon
0x0047 0x003b 0x0045 0x0049 0x0040 0x0041	waterway	riverbank	PG	130	2	Used for large rivers, to define an area between the opposite riverbanks.		
divided by size	natural	water	PG	131	2	Lakes, water bodies, etc.		
divided by size	landuse	reservoir	PG	131	2	An artificial reservoir.		
0x0028			PG	132	2	Sea, ocean.		
	waterway	riverbank	PG	133	2	A large river.		
	leisure	park	PG	140	1	A park, open green area for recreation.		
	leisure	common	PG	140	1	An area where the public can walk anywhere.		
0x004e 0x004f 0x008e 0x0086 0x0087 0x0088	leisure	garden	PG	141	1	A garden.		
0x006d	amenity	townhall	PG	146	1	A town hall building (mayor's office).		
0x001a	amenity	grave_ward	PG	147	1	A graveyard.		
	landuse	cemetery	PG	147	1	A cemetery.		
0x000a	amenity	school	PG	148	1	A school.		(0-5)  (6) 
	amenity	university	PG	148	1	A university.		(0-5) 

								(6) 
	amenity	college	PG	148	1	A college.		(0-5)  (6) 
0x3002	amenity	hospital	PG	149	1	A hospital.		(0-5)  (6) 
	amenity	pharmacy	PG	149	1	A pharmacy.		(0-5)  (6) 
0x6408	building	clinic	PG	149	1	A clinic.		(0-5)  (6) 
0x000b	building	hospital	PG	149	1	A hospital.		(0-5)  (6) 
	shop building	supermarket	PG	151	1	A supermarket.		
	building	shopping	PG	151	1	A shop.		
	tourism	camp_site	PG	153	0	Camping, a place where you can pitch a tent.		
	tourism	caravan_site	PG	153	0	A place where you can park a caravan overnight or for longer periods.		
	tourism	picnic_site	PG	154	0	A place where you can have an outdoor picnic. May have facilities such as tables and benches.		
	tourism	theme_park	PG	155	1	Theme park, amusement park.		
	tourism	attraction	PG	156	0	A general tourism attraction.		
	tourism	zoo	PG	157	1	A zoo.		
	tourism	artwork	PG	158	1	A tag for public pieces of art.		
	historic	archaeological_site	PG	159	0	Archaeological museum.		
0x0050 0x0081 0x0082 0x0083 0x0084 0x0085 0x0052 0x008f 0x0090 0x0091	landuse	forest	PG	165	2	Managed forest or woodland plantation.		
0x0001 0x0002 0x0003	landuse	residential	PG	166	1	Predominantly houses or apartment buildings.		
	landuse	retail	PG	167	1	Predominantly shops.		
	landuse	commercial	PG	168	1	Predominantly office buildings, business parks, etc.		
0x000c	landuse	industrial	PG	169	1	Predominantly workshops, factories, warehouses.		
0x0006			PG	169	0	Garages, vehicle		



						sheds.		
	landuse	blownfield	PG	170	1	A district to be developed, an empty area.		<a href="#">?</a>
	landuse	greenfield	PG	170	1	Describes land scheduled for new development where there have been no buildings before .		<a href="#">?</a>
	landuse	railway	PG	171	1	Area for railway use, generally off -limits to the general public.		<a href="#">?</a>
	landuse	construction	PG	172	1	Something under construction.		<a href="#">?</a>
0x0004	landuse	military	PG	173	1	For land areas owned/used by the military for whatever purpose.		<a href="#">?</a>
0x0014 0x000d 0x0015 0x0016 0x0017 0x001e 0x001f 0x0020 0x0098	natural	wood	PG	184	2	Natural woodland (trees). Only for completely unmanaged/wild ares.		<a href="#">?</a>
0x0051 0x0096 0x008b	natural	marsh	PG	185	1	Low poorly drained land that is sometimes flooded and often lies at the edge of lakes, streams, etc.		<a href="#">?</a>
0x0018	sport	golf	PG	194	1	Golf course.		<a href="#">?</a>
	sport	horse_racing	PG	194	1	Hippodrome, racecourse.		<a href="#">?</a>
	sport	multi	PG	194	1	Sports ground, playing field.		<a href="#">?</a>
	sport	football	PG	194	1	Футбол.		<a href="#">?</a>
	sport	soccer	PG	194	1	Football or soccer.		<a href="#">?</a>
	building	stadium	PG	194	1	A stadium, a major sports arena with substantial tiered seating.		<a href="#">?</a>
	leisure	golf_course	PG	194	1	Golf course.		<a href="#">?</a>
	leisure	stadium	PG	194	1	A stadium.		<a href="#">?</a>
	leisure	track	PG	194	1	A track, e.g. running, cycle-racing, greyhound, horses.		<a href="#">?</a>
	leisure	pitch	PG	194	1	A field for playing football/soccer, cricket, baseball sports, etc.		<a href="#">?</a>
	building	palace	PG	207	1	A palace.		(0-5) <a href="#">?</a> (6) <a href="#">?</a>
	building	postoffice	PG	208	1	A post office.		(0-5) <a href="#">?</a> (6) <a href="#">?</a>
	building	restaurant	PG	209	1	A restaurant.		(0-5) <a href="#">?</a> (6) <a href="#">?</a>

0x006f 0x006f	amenity	public_building	PG	210	1	Public building.	(0-5) ? (6) ?
0x0013 0x006c	building	yes	PG	210	1	General tag for buildings.	(0-5) ? (6) ?
0x006e	building	terminal	PG	210	1	A building.	(0-5) ? (6) ?
	denomination	baptist catholic christian evangelical lutheran Roman Catholic roman_catholic	PG	211	0	A church.	(0-5) ? (6) ?
0x9999	surface		PG	212	2	Ground surface.	(0-5) ? (6) ?

## Scale (AVD)

Scale (km)	Scale (m)	Data Level	Zoom Level	Value
0,01	10	0	-1	1000
0,02	20	0	0	2000
0,05	50	0	1	5000
0,1	100	0	2	10000
0,15	150	0	3	15000
0,2	200	0	4	25000
0,5	500	1	5	50000
1	1000	1	6	1000000
2	2000	1	7	2000000
5	5000	1	8	5000000
10	10000	1	9	10000000
20	20000	1	10	20000000
50	50000	2	11	50000000
100	100000	2	12	100000000
150	150000	2	13	150000000
200	200000	2	14	250000000
500	500000	2	15	500000000
1000	1000000	2	16	1000000000

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## Backup System

---

For stable operation of your monitoring system, you need to think about backup. We recommend to use [Backup Server](#) module that will work simultaneously with the main server and at any moment can be started instead of it. However, you can organize a kind of [backup by yourself](#).

- [Backup Server](#)
- [Backup with LVM](#)

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## Backup Server

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ⓘ **Attention!** This module is licensed separately and can be not included in your package.

Backup Server is installed to organize the online system of data backup. It is recommended to install and start Backup Server on a server different from that where your working Wialon Pro is installed.

The reserve server has a full hot copy of data from Wialon Pro (the *storage* directory).

· [Backup Server](#)  
· [Installation](#)  
· [Recovery after Fail](#)

## Installation

Installation procedure is completely the same as [Wialon installation](#).

To organize backup from Wialon Pro server with IP address 1.1.1.1 to the backup server with IP 2.2.2.2, execute the following steps:

1. Install and start the reserve server. In its configuration file *custom/config.txt* indicate IP address and ports:

```
ADF_STORAGE_SYNC_SERVER = 2.2.2.2:32001:33001:1.1.1.1:32000
```

2. Start Wialon Pro server with the following variable in *custom/config.txt*:

```
ADF_STORAGE_SYNC_MASTER = 1.1.1.1:32000:2.2.2.2:32001
```

3. Activate backup message database (backup to v2 format that means database of Wialon Pro 1101 and older are not copied) with the following variable in *custom/storage.cfg*:

```
msgs.sync.uri = 2.2.2.2:32001
```

The backup server can be stopped and started at any moment, only changed data is copied. It is not recommended to enable backup system on Wialon Pro server if there is no backup server or it has been not available for several days.

ⓘ **Attention!** You should create and store a backup copy of the *custom* directory (Wialon Pro local settings) yourself.

## Recovery after Fail

In case of Wialon Pro server failure, start to use database copy of the reserve server. For this:

- Release Wialon Pro.
- Release the backup server.
- Move the *storage* directory of the reserve server to Wialon server (previous directory is removed).
- Start Wialon Pro.
- Start the backup server.

In case of server hardware failure, a new Wialon Pro is started with the following conditions:

- the *custom* directory is taken form the original Wialon Pro;
- the *storage* directory is taken form the backup server.

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## Backup with LVM

Backup system in Wialon Pro 1106 can be organized on the basis of [LVM](#) (Logical Volume Manager).

Perform the following actions to set up the backup system by yourself:

1. Install and set up LVM.
2. Move your database to LVM.
3. Set up [FSTAB](#).
4. Do the checkup.

### 1. LVM Setup

Follow the appropriate instructions depending on whether you use already LVM in your system or not.

- [If LVM is not used in the system yet](#)
- [If LVM is already used in the system](#)

### If LVM is not used in the system yet

LVM can be used either on the working HDD or on a separate one (preferable way).

Maintain disk partition using the program *fdisk* in the console.

```
# fdisk /dev/sdb
```

To create LVM partition, type *n* (creating a new partition), and then *p* (first partition). Then type *1* to create the primary partition (e.g. */dev/sdb1*). Press <enter> to the question about the first cylinder. Press <enter> again to the question about the last cylinder in order to make this partition occupy the rest of free disk space. To change partition type, key in *t*, then *1* (choose */dev/sdb1*) and *8e* (Linux LVM). At the end press *w* to save partition table.

```
n      <-- create a partition
p      <-- primary partition
1      <-- create the first partition
default      <-- indicate the first cylinder
default      <-- indicate the last cylinder
t      <-- change partition type
1      <-- choose the first partition
8e     <-- Linux LVM
w      <-- save and exit
```

Then we need to adjust LVM.

Load the appropriate module:

```
# modprobe dm-mod
```

If the console displayed nothing but an invitation, it is OK. Otherwise, you will need to setup and compile Linux kernel.

Scan the disks for available LVM volume groups:

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- [Backup with LVM](#)
- [1. LVM Setup](#)
- [If LVM is not used in the system yet](#)
- [If LVM is already used in the system](#)
- [2. Transfer Database to LVM](#)
- [3. FSTAB Setup](#)
- [4. Checkup](#)

```
# vgscan
```

Make previously created volume groups available:

```
# vgchange -a y
```

Prepare partitions:

```
pvcreate /dev/sdb1
```

Create a volume group with the name of the logical group (in the example — *berkleydb*):

```
# vgcreate berkleydb /dev/sdb1
```

Create a logical volume:

```
lvcreate -L10G -nstorage berkleydb
```

Grow logical volume id necessary (in the example the logical volume becomes 5 GB larger):

```
# lvextend -L+5G /dev/berkleydb/storage
```

## If LVM is already used in the system

If LVM is already used in the system, you just need to adjust it properly. First, find out the name of the logical volume:

```
# vgdisplay
```

The command will display the following:

```
VG Name                berkleydb
System ID
Format                 lvm2
Metadata Areas        1
Metadata Sequence No  14
VG Access              read/write
VG Status              resizable
MAX LV                 0
Cur LV                6
Open LV                6
Max PV                 0
Cur PV                1
Act PV                 1
VG Size                232,64 GiB
PE Size                4,00 MiB
Total PE               59557
Alloc PE / Size        59557 / 232,64 GiB
Free PE / Size         0 / 0
VG UUID                ed5U2o-Cnfa-dweY-d99r-dQtz-fgxi-mn7pDo
```

The name of the logical volume in the example is *berkleydb*.

Then create a logical partition.

```
lvcreate -L10G -nstorage berkleydb
```

## 2. Transfer Database to LVM

---

Format the logical partition *storage* (in the example below *xfs* file system is used):

```
# mkfs.xfs /dev/berkleydb/storage
```

Mount *storage* partition:

```
# mkdir /mnt/storage
# mount /dev/berkleydb/storage /mnt/storage
```

Copy your database there:

```
cp -f /var/lib/wialonb3/storage /mnt
```

Unmount *storage* partition:

```
# umount /mnt/storage
```

Rename the old database (or delete — *rm -rf /var/lib/wialonb3/storage*) :

```
# mv /var/lib/wialonb3/storage /var/lib/wialonb3/storage0
```

Create an empty directory:

```
# mkdir /var/lib/wialonb3/storage
```

## 3. FSTAB Setup

---

Edit FSTAB:

```
# nano /etc/fstab
```

Add a string:

```
/dev/berkleydb/storage /var/lib/wialonb3/storage xfs defaults 1 2
```

Close the file (*Ctrl + x*) and say yes (*y*) to the question about saving it.

At the end reboot the system:

```
# reboot
```

## 4. Checkup

---

After you have performed all steps described above, check the operability of both Wialon and backup system.

Start Wialon and check it for errors. If no errors found, you can proceed with LVM checkup.

Create LVM snapshot LVM. ⚠ IMPORTANT! Snapshot partition must be no less than database partition.

```
# lvcreate -l1G -s -n storage_snap /dev/berkleydb/storage
```

From this moment you have a backup copy of your database.

It is recommended to save the snapshot on a disk or to a file using the command *dd* (to make sure, store it on three mediums). Then in case of fall, you could mount this snapshot or restore the original.

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## Upgrading Distribution

---

Installation of distribution of Wialon Pro 1106 is similar to [Installation and First Steps](#). When installing on top of another version of Wialon Pro, installation script by default does not overwrite *custom* directory that contains all your local settings.

It is strongly recommended to make a backup copy of two directories - *custom* (your settings) and *storage* (database). Backup is made while Wialon Pro is stopped.

Two ways to upgrade Wialon Pro are possible:

- [Installing Wialon Pro 1106 with new modules and functionality](#);
- [Installing Wialon Pro 1106 on top of Wialon Pro 1101 or Wialon Pro 1006](#).

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## Installing New Configuration

If you have already Wialon Pro 1106 installed and want to enrich it with new configuration or install updates (bug fixes, new devices supported, etc.), do the following:

1. Load necessary version of Wialon Pro 1106 from [Gurtam Distro Area](#) and unpack it.
2. Stop the working Wialon Pro 1106 and make a backup copy of *custom* and *storage* directories.
3. Install the new distribution on top of the existing one. If you have purchased new functional modules, you may need to configure them in the file *custom/config.txt* according to [variables described above](#). As a way to identify these variables, you can answer *yes* to the question *Install custom configuration (folder)* and then view in your new *custom/config.txt* all new variables. In this case, be careful and do not forget to recover *custom* directory before the first start.
4. Start new Wialon Pro. Check the file *logs/error.log* for errors. If there are any, stop Wialon immediately and contact Gurtam technical support service.

The most common error occurring after updating is a problem with license (in this case Wialon does not start). Make sure your Wialon Pro is able to connect to the [license](#) server.

We recommend to purchase [technical support](#) of *Unlimited* level to let our specialists fulfill update procedures correctly and in the shortest possible time. Beforehand, agree on the schedule of update with our technical specialist.

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## Upgrade from Previous Versions

Upgrade from previous versions is possible only for [Wialon Pro 1101](#) and [Wialon Pro 1006](#). Upgrade from earlier versions is not supported.

The procedure is rather complicated. That is why we recommend to purchase [technical support](#) of *Unlimited* level to let our specialists fulfill the task correctly and in the shortest possible time. Beforehand, agree on the schedule of upgrade with our technical specialist.

### Significant Changes

Wialon Pro 1106 incorporates several considerable changes in functionality in comparison with previous versions. Study them attentively before purchasing and installing 1106:

- External WebGIS server is not supported anymore. Wialon Pro 1106 works only with [embedded WebGIS server](#).
- Wialon Pro 1106 can be installed only on Linux-based operation systems, the 2.6 kernel, and 64-bit architecture (x86\_64).
- Backup system is available only in the form of [separate backup server](#) that is a paid module. We strongly recommend to purchase this module to protect your tracking system from any hardware and software failures.
- Message database has to be upgraded from the format v1 to the format v2. Depending on database size, it can take from a couple of minutes to several days. The upgrade can be performed in the 'hot mode', that is while Wialon is working. Database upgrade is strongly recommended because an old database in the format v1 cannot be synchronized to the backup server and cannot participate in various optimization processes.

### Installing Upgrades

1. Download the newest distribution of Wialon Pro 1106 from [Gurtam Distro Area](#) and unzip it.
2. Stop the current Wialon Pro 1101 or 1006 process, clean *tmp* directory, and make backups of all other directories.
3. Install the new distribution on top of the existing one. If you have purchased new functional modules, you may need to configure them in the file *custom/config.txt* according to [variables described above](#). As a way to identify these variables, you can answer *yes* to the question *Install custom configuration (folder)* and then view in your new *custom/config.txt* all new variables. In this case, be careful and do not forget to recover *custom* directory before the first start.
4. Delete *storage/pcache.bin* file (if it exists).

Then go through these steps to upgrade your database:

1. Set the variable `WIALON_1106_UPGRADE = 1` in *custom/config.txt*.
2. Start Wialon in the debug mode (`./adf_script debug` command). In the console you will see how data representation of different modules is upgrading.
3. When the process of step 2 is completed, stop Wialon Pro 1106 by pressing `<enter>`.
4. Remove the variable `WIALON_1106_UPGRADE = 1` from *custom/config.txt*.

Then start your upgraded Wialon Pro in the normal mode. Check the file *logs/error.log* for errors. If there are any, stop Wialon immediately and contact Gurtam technical support service.

The most common error occurring after updating is a problem with license (in this case Wialon does not start). Make sure your Wialon Pro is able to connect to the [license](#) server.

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## Message Database Conversion to v2

---

Message database transfer from v1 to v2 is made in the 'hot mode', that is while Wialon is working. While the migration is being performed, users can operate their units, generate reports, build tracks, receive notifications, etc. However, storage system speed may go down because of active operations with the hard drive.

Before the conversion, it is advisable to set additional variable in the file `/custom/storage.cfg` before starting Wialon:

```
# cache size in MB, must be power of two
msgs.cache.size = 512
# max number of locks allowed
msgs.cache.maxlocks = 100000
# disable defragmentation
msgs.defrag.interval = 0
```

After database conversion is complete, it is better to delete these variables and restart Wialon.

The conversion is made through a web interface. Copy the file `plugins/avl_server/migratev2.html` to the directory `sites/avl_admin/www/`.

The conversion script will be available at `<admin_site_URL>/migratev2.html`. Follow the link to observe the migration current state and get possibility to stop/start it at any moment.



The migration can be stopped only when all data from the active object has been transferred. Depending on the number of messages, conversion of one unit can take several minutes. With SAS 15K drive and RAID-10 array, the speed of conversion is approximately a million messages in a minute. It is prohibited to stop Wialon when the conversion is running.

After the process is complete, you can delete the file `sites/avl_admin/www/migratev2.html`, remove unnecessary configuration settings of storage system described above, and restart Wialon.

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## Wialon Pro 1106 Releases

The newest Wialon Pro version for the moment is version 1106R1 issued on August 11, 2011.

### Wialon Pro 1106 R2

*September 7, 2011*

1. The Iranian calendar was developed.
2. The possibility of creating a notification with empty action was ruled out.
3. A check for unprintable characters in addresses was added. They could cause server failure.
4. Report on fuel thefts was improved – an error with double thefts and zero thefts was fixed.
5. A rarely happening problem with shortcuts was resolved (sometimes two key strokes were needed).
6. An error to save report interval beginning in notifications was corrected.
7. An error occurring when creating a route without having available geofences was fixed.
8. An error of choosing a geofence for a route when creating it in Geofences panel was corrected.
9. A trouble to detect first point of a track was solved.
10. An error of non-saving user time zone was corrected.
11. A bug of delivering not full notification text was fixed.
12. Syntax of some interface languages was corrected because some symbols could cause problems to create a report template.

Some new controllers were supported: [Juk-2M](#), [Mobile Devices C4D](#), [SOBR Chip](#), [U-drive](#), [GLONASS-NP-1K](#). In addition, Teltonika script was improved - now it can work with Garmin.

### Wialon Pro 1106 R3

*October 18, 2011*

1. Automatic detection of DST (Daylight saving time: Auto) was canceled. Now each user is supposed to adjust this parameter in [User Settings](#) manually and those the appropriate DST type.
2. Captions for geofences on the map were added.
3. New map layers were supported – Google Map Maker and Google Map Maker Hybrid. [More...](#)
4. A possibility to cash requests for geocoding was developed.
5. A special variable to control free disk space was proposed. In case the specified limit is reached, you may receive a notification by e-mail or the server can be stopped. [More...](#)
6. Export of POI, geofences, and reports templates was optimized (when exporting a large number of items).
7. An advanced report on drivers was improved.
8. The track player performance was corrected.
9. Unnecessary fields were removed from the properties of some notifications (maintenance, connection loss).
10. A problem of incomplete removal of an account was fixed.
11. Calculation of fuel consumed was improved in report statistics (now by all sensors of the type).
12. A problem to enter fractional values for the filtration of intervals in report templates was solved.
13. An error of term calculation in the notification about maintenance was fixed.
14. An error of calculating the average speed by one messages was fixed in the Messages Mode.
15. An error in the Routing tool was fixed.
16. An error of detecting the initial fuel level in the report on fuel fillings was fixed.

New controllers were supported – [Gelix-3](#), [GTMS 7220](#), [IntelliTrac P1](#), [Locarus 702R](#), [Locarus 702S](#),

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📍NaviTech UTP-1, 📍Queclink GV100, 📍Queclink GV200, 📍Teltonika FM1100, 📍NaviFleet ET100, as well as two new programs – 📍GPSGate for PocketPC v2.6 and 📍LT-Electra 906-108.

## Wialon Pro 1106 R4

---

October 20, 2011

1. Colors when rendering tracks were corrected.
2. The script to check free disk space was improved.

## Wialon Pro 1106 R5

---

October 31, 2011

1. An error of creating routes when not having enough access to units were fixed in notifications and jobs.
2. Free disk space checker was optimized (terabytes added).
3. Time correction was performed for countries that changed their time zones and canceled daylight saving time (Russia and some others).

New trackers were supported – 📍Jointech JT600, 📍Meitrack MT80i, 📍Wonde Proud SPT -100, 📍Navixy SPT -10, 📍Queclink GL100M, as well as new controllers – 📍Wonde Proud VT200, 📍GVT-500, 📍Jointech GP6000, 📍Jointech GP4000, 📍RoadKey HM-31x, 📍FAS Standart, and an application for mobile devices 📍GSMTrack.

## Wialon Pro 1106 R6

---

December 2, 2011

1. Debug information is now available for retranslators.
2. Track hittest was improved.
3. The script to check free disk space was improved.
4. Wialon network subsystem was improved.
5. A problem of importing the flag *Ignore filtration when calculating filling/theft volume* was fixed.
6. A problem of importing messages with dates later than 2100 was fixed.
7. A trouble with geofence captions on the map was fixed.
8. In the Messages Mode there was a bug when the *Execute* button could become disabled after a series of requests.
9. A problem of saving your city in user settings was solved.
10. Now in the Units panel all export/import buttons are displayed correctly.
11. Now it is possible again to enter fractional values as parameters for intervals filtration in report templates.
12. When registering fuel fillings, now the *Description* field is formed automatically.

New trackers were supported – 📍GlobusGPS GL-TR1 mini, 📍Wonde Proud VT-10, 📍Beagle, as well as new controllers – 📍NaxerTech NTT -101, 📍Shenzhen CW-GPS 801, 📍Teksus Mayak, 📍Gosafe G616, 📍Teltonika FM5300, 📍ST 260, 📍Report Systems RS-1102, 📍MasterKit BM8009, 📍Syrus, 📍CKAYT RX Extended v2, 📍Gosafe G777, and an application for mobile devices – 📍Nis.

## Wialon Pro 1106 R7

---

December 27, 2011

1. Now when using Nis protocol for retranslation, sensors are also transmitted.
2. Now when retranslating units by Wialon IPS protocol, a separate connection is created for each unit.
3. An error in geofences edit was corrected.
4. An error in Fuel Fillings table was fixed – corresponding detected and registered fillings are now shown in one row.
5. A notification about vehicle idling now can work with idle intervals up to 24 hours (no more).
6. An error in database defragmentation was fixed. It could happen if the server was stopped before defragmentation was complete.
7. A problem with edit fields in Chrome was fixed.
8. An algorithm of fuel thefts detection was improved.

New automatic vehicle locators were supported [GenLoc 31e](#) , [ST 210](#) , [Xexun TK103 -2](#), [Bofan PT600](#) , [AutoBARRIER Auto-5](#), [Gator M508](#) , [Avtoinformator](#), [LELL-510](#), [LELL-520](#), [LELL-530](#), as well as new trackers [V680](#), [LELL S-10](#), [LELL S-20](#), [LELL S-40](#).

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## ActiveX

 **Attention!** This module is licensed separately and can be not included in your package.

ActiveX allows to connect to the satellite tracking server Wialon™ through TCP/IP session (Internet or LAN) from different OLE applications such as 1C, Excel, Visual Basic, Word, or any [HTML](#) page.

ActiveX can be used also to create client connections which work with Wialon™ from different IDE such as Visual C++, Visual Basic, Visual Basic for Application, Visual .NET, Delphi, etc.

It is possible to maintain simultaneously an unlimited number of clients connected to different Wialon™ servers through it.

WialoActiveX is designed as ActiveX COM server in the form of system DLL. The program is ready to use right after the installation. It does not need any additional configuration.

This component is available in two versions: for 32-bit applications - *WialonActiveX* and for 64-bit applications - *WialonActiveX64*. Both of them can be installed simultaneously on Windows x64 OS in order to be used in different kinds of applications.

- ▼ [Connecting ActiveX to Wialon](#)
- ▼ [ActiveX API](#)
  - [IWialonConnection](#)
  - [IWialonCollection](#)
  - [IWialonUnit](#)
  - [IWialonUnitMsg](#)
  - [IWialonParam](#)
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## Connecting ActiveX to Wialon

To connect to ActiveX COM server, you have to construct the object *WialonActiveX.WialonConnection* that implements *IWialonConnection* interface.

Here is an example of a code in Visual Basic. It contains comments but does not contain error check.

```
' The main component of the system that provides connection to Wialon
Dim Wialon As Object
' The collection of available units
Dim Units As Object
' A certain unit
Dim Unit As Object
' Wialon error string
Dim ErrStr As String
' The collection of messages from a unit
Dim Msgs As Object
' Counter
Dim i As Long
' The number of units in the collection
Dim CountOfUnits As Long

' Creating an object to connect to Wialon (for 64-bit applications -
WialonActiveX64)
Wialon = CreateObject("WialonActiveX.WialonConnection")
' Connection check
If Wialon Is Nothing Then
    ' In case of error, the alert is generated
    MsgBox("No Object")
    Return
End If

' Adjusting connection settings through
Wialon.SetProxyMode "ProxyHost", 8080, "Login:Passw"
' Getting all units available to the "user" with the "passw" from the server
' "https://activex.gurtam.com" (prefix is required for secure connection)
' at 443 port without proxy server
Units = Wialon.Login("https://activex.gurtam.com", 443, "user", "passw")
' Check for available units
If Units Is Nothing Then
    ' If units are not available, ActiveX error is reported as well as Wialon
error
    MsgBox("Error = " + Err.Number.ToString() + ": " + Err.Source.ToString()
+ " (" + Err.Description.ToString() + ")")
    ' Getting error from Wialon server
    ErrStr = Wialon.GetLastError()
    MsgBox("Wialon error: " + ErrStr)
    Return
End If

' Getting the number of available units
CountOfUnits = Units.Count
' Displaying a message box with the number of available units
```



```

MsgBox("Units = " + CountOfUnits.ToString())

' Starting the cycle for units search
For i = 1 To CountOfUnits
    ' Getting a unit from the collection
    Unit = Units.Item(i)
    ' Check if the unit is available
    If Unit Is Nothing Then
        ' If the unit is not available, report the error
        MsgBox("Not unit")
        Return
    End If
    ' Adjusting the flag to get addresses by coordinayed. False - without
addresses (fast). True - with addresses (slow).
    Unit.ResolveLocations (False)
    ' Getting messages from a unit for the indicated period (time in UNIX
format)
    Msgs = Unit.GetMessages(1255112326, 1256312326)
    ' Check for messages availability
    If Msgs Is Nothing Then
        ' If there are no messages, display the alert
        MsgBox("No messages for unit: " + Unit.Name)
    Else
        ' Display the number of messages found
        MsgBox("Messages = " + Msgs.Count.ToString())
        ' Decrement the reference count for the given invoked environment
frame CLR
        ' (if explicit memory release is needed after using an object)
        System.Runtime.InteropServices.Marshal.ReleaseComObject(Msgs)
        ' Releasing unit with messages
        Msgs = Nothing
    End If
    ' Decrement the reference count for the given invoked environment frame
CLR
    ' (if explicit memory release is needed after using an object)
    System.Runtime.InteropServices.Marshal.ReleaseComObject(Unit)
    ' Releasing unit with unit :)
    Unit = Nothing
Next i
' Decrement the reference count for the given invoked environment frame CLR
' (if explicit memory release is needed after using an object)
System.Runtime.InteropServices.Marshal.ReleaseComObject(Units)
' This is the end of the program, we're not going to work with these objects
anymore, releasing
Units = Nothing
Wialon = Nothing
' End
MsgBox("End")

```

More detailed example is available in Excel file delivered with ActiveX.

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## ActiveX API

---

To see the description of all available interfaces and their features, use available DLL sources viewer.

 *Note.*

Do not forget to free the storage space each time after using an object (example code for `VBA`: `Set Unit = Nothing`).

Available interfaces:

- [IWialonConnection](#) - connection to ActiveX COM server.
- [IWialonCollection](#) - ActiveX collection of objects: [IWialonUnit](#), [IWialonUnitMsg](#), [IWialonParam](#), [IWialonReport](#), [IWialonUnitGroup](#).
- [IWialonUnit](#) - units to be tracked.
- [IWialonUnitMsg](#) - messages from units.
- [IWialonParam](#) - message parameters.
- [IWialonReport](#) - reports.
- [IWialonUnitGroup](#) - unit groups.

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## IWialonConnection

IWialonConnection is the main interface which allows to connect to Wialon server and retrieve needed objects from there.

Method	Parameter	Return Value	Description
Login	BSTR Host, unsigned short Port, BSTR UserName, BSTR Password	<a href="#">IWialonCollection</a> **UnitsCol	To get all objects available to the current user. It is required to check each return value to be in existence (Not Nothing) or check return result (Error). To get newer data, disconnect from the server using the function <i>Disconnect</i> .
GetLastError	-	BSTR* Error	To get the latest error from Wialon.
Disconnect	-	-	Disconnect from Wialon server in order to inquire fresh data later on (refresh).
GetReportsList	-	<a href="#">IWialonCollection</a> **ReportsCol	To get all available report templates. It is required to check each return value to be in existence (Not Nothing) or check return result (Error).
GetReportByID	unsigned From, unsigned To, long long UnitID, int TimeZoneOffset, BSTR Lang, long long ResourceID, long long ReportID	BSTR* ReportData	To get a report by report or resource ID. This is an analogue of the function <i>Generate</i> from the IWialonReport interface. Starting and end time ( <i>From</i> - <i>To</i> ) is indicated in UNIX format, that is in seconds from the 1 <sup>st</sup> of January 1970. Unit ID can be received from the collection of available units. Time zone ( <i>TimeZoneOffset</i> ) is indicated in seconds, for example, the value for Moscow is 10800, the shift from the prime meridian. The language <i>Lang</i> is indicated like domains (ru, en, etc). Report or resource ID can be received from the collection of available reports.
GetReportByIDU	int From, int To, int UnitID, int TimeZoneOffset, BSTR Lang, int ResourceID, int ReportID	BSTR* ReportData	This is an analogue of the function <i>GetReportByID</i> compatible with applications which do not support 64-bit integer numbers. Not available in 64-bit version.
GetUnitGroups	-	<a href="#">IWialonCollection</a> **UnitGroups	To get all available unit groups <a href="#">IWialonUnitGroup</a> .
GetUnitGroupByID	long long UnitGroupID	<a href="#">IWialonUnitGroup</a> **UnitGroup	To get a unit group <a href="#">IWialonUnitGroup</a> by its ID.
GetUnitGroupByIDU	int UnitGroupID	<a href="#">IWialonUnitGroup</a> **UnitGroup	The analogue of the function <i>GetUnitGroupByID</i> compatible with applications which do not support 64-bit integer numbers. Not available in 64-bit version.
SetProxyMode	BSTR Proxy, unsigned short ProxyPort, BSTR ProxyUserPwd	-	Set parameters to connect to proxy server (host, port, login:password).
			Get addresses by coordinates. Coordinates must be

GetLocationsText	BSTR Lats, BSTR Lons, int Count	BSTR* Text	in text format separated with comma. Use dot as decimal delimiter. The number of coordinates is set in the third parameter, so the number of addresses, so the number of addresses returned will be as set. Addresses are returned in text format, separated with comma.
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## IWialonCollection

This interface describes the collection of ActiveX objects. It can contain the following interfaces: IWialonUnit, IWialonUnitMsg, IWialonParam.

Property	Parameter	Return Value	Description
Item	long Index	IDispatch** pVal	To get an object from the collection by the given index. The indexes begin from one (1). It is required to check each return value to be in existence (Not Nothing) or check return result (Error).
Count	-	long *pVal	To get the number of units contained in the collection.

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## IWialonUnit

This interface contains the description of units.

Method/Property	Parameter	Return Value	Description
Name (property)	-	BSTR* Name	To get unit name.
GUID (property)	-	BSTR* GUID	To get unit GUID (global unique identifier).
ID (property)	-	long long* ID	To get unit local ID.
IDU (property)	-	int* ID	The analogue of the function <i>ID</i> compatible with applications which do not support 64-bit integer numbers. Not available in 64-bit version.
Phone (property)	-	BSTR* Phone	To get the phone number of the SIM card installed on a unit.
LastPosition (property)	-	<a href="#">IWialonUnitMsg</a> **LastPos	To get the latest message from the unit with its location.
GetMessages (method)	unsigned From, unsigned To	<a href="#">IWialonCollection</a> **MsgCol	To get the collection of messages for the given period. The time is indicated in UNIX format, that is in seconds beginning from the 1 <sup>st</sup> of January 1970. It is required to check each return value to be in existence (Not Nothing) or check return result (Error). To speed up server work, it is recommended to inquire messages for up to 30 days.
GetMessagesU (method)	int From, int To	<a href="#">IWialonCollection</a> **MsgCol	The analogue of the function <i>GetMessages</i> compatible with applications which do not support 64-bit integer numbers. Not available in 64-bit version.
GetLastError (method)	-	BSTR* Error	To get the latest error from Wialon.
ResolveLocations (method)	BOOL ResolveLocationsFlag	-	Set the option to define location by coordinates when getting message. If the option is on, it considerably enlarges time to get messages.

## IWialonUnitMsg

The interface containing the description of one message from a unit.

Property	Parameter	Return Value	Description
Time	-	unsigned* Time	To get message time. The time is indicated in UNIX format, that is in seconds beginning from the 1 <sup>st</sup> of January 1970.
TimeU	-	int* Time	The analogue of the property <i>Time</i> compatible with applications which do not support 64-bit integer numbers. Not available in 64-bit version.
Speed	-	int* Speed	To retrieve speed from a message. It is required to check the result of function operation because there can be no speed in a message.
Course	-	int* Course	To get movement direction from a message. It is required to check the result of function operation because there can be no course in a message.
X	-	double* X	To get longitude. It is required to check the result of function operation because there can be no location information in a message.
Y	-	double* Y	To get latitude. It is required to check the result of function operation because there can be no location information in a message.
Z	-	double* Z	To get altitude. It is required to check the result of function operation because there can be no location information in a message.
Type	-	BSTR* Type	To get message type: SMS, Data, CMD, etc. <ul style="list-style-type: none"> <li>- <i>udp</i> - message contains location and data such as speed, course, number of satellites, I/O, driver ID.</li> <li>- <i>ud</i> - message contains only data from a device such as I/O and driver ID.</li> <li>- <i>ucr</i> - message contains information about an executed command (command name, parameters, user, link type, connector name, execution time).</li> <li>- <i>us</i> - message contains information about a received SMS message (SMS text, phone number).</li> <li>- <i>evt</i> - message contains location of an event happened.</li> </ul>
CountSats	-	int* CountSats	To get the number of satellites which is important to estimate coordinates accuracy. If the number is 255, it means satellites are locked successfully but their number is unknown. It can happen if the device used does not send such information in general. It is required to check the result of function operation because there can be no location information in a message.
Param	int Number	<a href="#">IWialonParam</a> **Param	To get messages parameter by its number. It is required to check each return value to be in existence (Not Nothing) or check return result (Error).
Location	-	BSTR* Location	To get unit location in the from of address.
ParamCount	-	long* ParamCount	To get the number of parameters in a message.
			To get a parameter by its name. It is required to check each return

ParamByName	BSTR ParamName	<a href="#">IWialonParam</a> **Param	value to be in existence (Not Nothing) or check return result (Error).
SMSText	-	BSTR* SMS	To get SMS text (only for SMS messages).
Driver	-	BSTR* Driver	To get driver's name if known.
CMDName	-	BSTR* CMDName	To get command name if known.
CMDParam	-	BSTR* CMDParam	To get command parameters if known.
UserGUID	-	BSTR* UserGUID	To get the name the user who executed the command (if known).
LinkName	-	BSTR* LinkName	To get the name of hardware which were used to connect to the unit for command execution (if known).
LinkType	-	BSTR* LinkType	To get link type (UDP, TCP, GSM) used to execute a command (if known).
ModemPhone	-	BSTR* ModemPhone	To get the number of the modem used to execute a command (if known).
EventText	-	BSTR* EventText	To get event text if there is such.



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## IWialonParam

The interface contains the description of parameters in a message.

Property	Param	Return Value	Description
Type	-	BSTR* Type	To get message type (int, double, string).
Name	-	BSTR* Name	To get parameter name.
Value	-	VARIANT* Value	To get parameter value. Previously, you should get to know data type in VARIANT - to do this use the function <i>Value.Type</i> or <i>VarType(Value)</i> .
ValueStr	-	BSTR* Value	The analogue of the property <i>Value</i> compatible with applications which do not support VARIANT data type.

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## IWialonReport

This interface allows to retrieve reports from the monitoring site. Only ready report templates can be used. Creating new report templates is impossible here. To generate a report, the function *GetReportByID* from [IWialonConnection](#) interface can be used instead.

Method/Property	Parameter	Return Value	Description
Generate (method)	unsigned From, unsigned To, long long UnitID, int TimeZoneOffset, BSTR Lang	BSTR* XMLData	To generate a report on the server and get it in the form of <u>XML</u> string. Starting and end time ( <i>From - To</i> ) is indicated in UNIX format, that is in seconds from the 1 <sup>st</sup> of January 1970. Unit ID can be received from the collection of available units. Time zone ( <i>TimeZoneOffset</i> ) is indicated in seconds, for example, the value for Moscow is 10800, the shift from the prime meridian. The language <i>Lang</i> is indicated like domains (ru, en, etc).
GenerateU (method)	int From, int To, int UnitID, int TimeZoneOffset, BSTR Lang	BSTR* XMLData	The analogue of the function <i>Generate</i> compatible with applications which do not support 64-bit integer numbers. Not available in 64-bit version.
Name (property)	-	BSTR* ReportName	To get report name. Not available in 64-bit version.
ReportID (property)	-	long long* ReportID	To get report unique ID.
ReportIDU (property)	-	int* ReportID	The analogue of the property <i>ReportID</i> compatible with applications which do not support 64-bit integer numbers. Not available in 64-bit version.
ResourceID (property)	-	long long* ResourceID	To get the unique ID of the resource where a report template belongs to.
ResourceIDU (property)	-	int* ResourceID	The analogue of the property <i>ResourceID</i> compatible with applications which do not support 64-bit integer numbers. Not available in 64-bit version.

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## IWialonUnitGroup

The interface contains the description of unit groups. To get unit groups collection see [IWialonConnection](#).

Method/Property	Parameter	Return Value	Description
Name (property)	-	BSTR* UnitGroupName	To get the name of current unit group.
ID (property)	-	long           long* UnitGroupID	To get unit group unique ID.
IDU (property)	-	int* UnitGroupID	The analogue of the property <i>ID</i> compatible with applications which do not support 64-bit integer numbers. Not available in 64-bit version.
GetUnits (method)	-	<a href="#">IWialonCollection</a> **UnitsCol	To get collection of the units in the group.
CheckUnitInGroup (method)	long   long UnitID	BOOL* UnitInGroup	To check whether a unit with the given ID belongs to the given group.
CheckUnitInGroupU (method)	int UnitID	BOOL* UnitInGroup	The analogue of the function <i>CheckUnitInGroup</i> compatible with applications which do not support 64-bit integer numbers. Not available in 64-bit version.

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## Compatibility

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The functions with the ending U are intended to create compatibility with 64-bit integer numbers (1C 7th version). This ending indicates that the function will get or return all values as usual 32-bit integer numbers (signed integer).

All duplicated functions and properties are interchangeable. If your application can support 64-bit integer numbers, it is recommended to use the functions which support this digital capacity, that is without U ending.

Always use homogeneous functions. It means, if you are working with 64-bit integer numbers, use them throughout the application. The same is for 32-bit systems.

For 64-bit operating systems there is a special component - *WialonActiveX64*. It works only with 64-bit applications. For 32-bit applications installed on 64-bit OS, use 32-bit component *WialonActiveX*.

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## Garbage Collector

System garbage collector is a service that automatically reclaims unused memory. See [GC Class](#) for details.

If using ActiveX you notice that the garbage collector rarely cleans the main memory, in your program code you can decrement the count of references to object before the garbage collector is activated. To do this, use the following code (VB):

```
System.Runtime.InteropServices.Marshal.ReleaseComObject(object)
object = Nothing
```

It will allow you to free the memory being used by an object if its references count is zero. See [Marshal.ReleaseComObject Method](#) for more details.

An alternative way to clean the memory is a method of forced garbage collection (VB):

```
GC.Collect()
```

See [GC.Collect Method](#) for the full description of the method.

## Errors

Each function or method activated in the program returns an error code. Below see the list of more frequent errors which can help you to detect the problem:

Error Code	Description
0	Succeeded.
1	Unknown error.
-1	Non-supported protocol.
-2	Error initializing connection. It can happen when trying to create an object IWialonConnection repeatedly.
-3	Invalid <u>URL</u> address.
-5	Error to resolve proxy server name.
-6	Error to resolve server name.
-7	Error connecting to the given address. It can happen when firewall or antivirus program are set incorrectly.
-9	Access to server denied.
-18	Insufficient data. It is possible if connection to server is broken or in case of server abnormal termination.
-22	Http error.
-27	Internal error while executing query.
-28	Execution timeout is exceeded.
-34	POST query error.
-35	Error connecting through a protected connection ( <u>SSL</u> ).
-36	It is impossible to continue loading. Connection may be broken.
-47	Too many redirections.
-51	Certificate error.
-55	Data communication error.
-56	Data acquisition error.
-80	Incorrect <u>SSL</u> connection termination.
-81	The socket is not ready to data sending or acquisition. Maybe, all sockets are busy - try to upload unusable applications.
-95	Wialon server error. Use the function <i>GetLastError</i> to retrieve the error text.
-96	Error when operating file input/output. It can happen if the user who is executing the program does not have enough access to read and record data in the temporary folder.
-97	Error processing data. Maybe, the server returned invalid data or was abnormally terminated while executing the inquiry.
-98	Error processing data. Maybe, the server returned nothing or was abnormally terminated while executing the inquiry.
-99	Inquiry to the server is impossible because of incorrect product settings. Please, reinstall ActiveX.
-300	Error when parsing data received from the server.
-301	Error when parsing data received from the server.
-302	Error when parsing data received from the server.
-303	Error when parsing data received from the server.
-304	Error while creating objects. It may be caused by memory lack or if you inquire too many messages. Close other applications and retry.
-305	Not enough memory to unpack data. Close other applications and retry.

You are here: [Wialon Pro](#) » [Wialon Administration](#) » [Pro Client](#)

## Pro Client

---

 *Attention!* This module is licensed separately and can be not included in your package.

Software distribution Wialon Pro Client includes only Wialon Web server. It is connected to the remote database Wialon Pro via TCP/IP connection (Internet or LAN).

The installation process for Windows OS or Linux OS is fully the same as [installing server software](#) with the difference that the licence file is not needed. As the distribution includes embedded GIS server, all maps in AVD format must be located to the maps directory (locally).

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## Upgrades

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- [Upgrades](#)

Wialon upgrades are released in the way similar to Open Source products that is the way of releasing branches of the source code.

Once in 6-12 months we copy all Wialon source code to a separate branch and name it Wialon YYXX where YY is the year, and XX is the month of the release. Such a copy is made two months before the release. For example, in November 2011 we prepare a branch for Wialon 1101 release (January 2011).

After a branch is released, we do not develop it anymore but only correct detected bugs. As the corrections accumulate, we make a new release candidate (for example, 1101C1, 1101C2), and then the releases themselves (for example, 1101R1, 1101R2).

Thus, the releases are stable and reliable, but by their functionality they lag behind the actual implementation for the period of several months. The latest stable version for July 2011 is Wialon Pro 1106.

In [Wialon Data Center](#) we always use the most recent, so-called bleeding-edge version. That is why at [demo login](#) you can see differences from existing stable release installed on your server.

## List of Versions

- [Wialon Pro 1106](#) (June 2011)
- [Wialon Pro 1101](#) (January 2011)
- [Wialon Pro 1006](#) (June 2010)
- [Wialon Pro 1001](#) (January 2010)
- [Wialon Pro 0909](#) (September 2009)

## Installing Upgrades

### ⚠ ATTENTION!

It is impossible to return to the previous version after installing a new one. That is why before installation copy your current WialonB3 folder to a secure place.

The process of installing a new version is the same as installing your first version. However, remember that all files which are not in the *custom* directory will be replaced with original files, so the features which are not a part of standard package may be lost.

When installing a new version, answer *No* for *Install user custom configuration folder*. In this case the *custom* directory will not be replaced with standard content and all your settings will be saved. By default, if installing a new version over an existing version, this item is already set in *No* position.

If any questions or troubles with installing and upgrading the software, please, do not hesitate to contact us through [Gurtam Help System](#).



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## CMS Manager

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- Management Procedure
- Basic Definitions
- Access Rights
- Interface
- Settings
- Accounts
- Users
- Units
- Unit Groups
- Retranslators

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## Management Procedure

This topic depicts the process of creating a small trace-hosting service. All features are described briefly without details. For further information read other sections of this guide.

We recommend to follow this plan to create a service (the scheme is not the only possible but reliable):

1. Enter [CMS Manager](#) site.
2. Create and adjust accounts for clients.
3. Create units and set access rights to them.
4. Create accounts containing standard notifications, jobs and reports, and give clients view access to these accounts.
5. Create other users as a client and give them access to the accounts and units of this client.
6. Create other managers for managing the service together with you.

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- Management Procedure
- 1. Login to CMS Manager
- 2. Creating Accounts
- 3. Creating Units
- 4. Creating Template Accounts
- 5. Creating More Users
- 6. Creating Managers

### 1. Login to CMS Manager

Use your user name and password to login to the system.

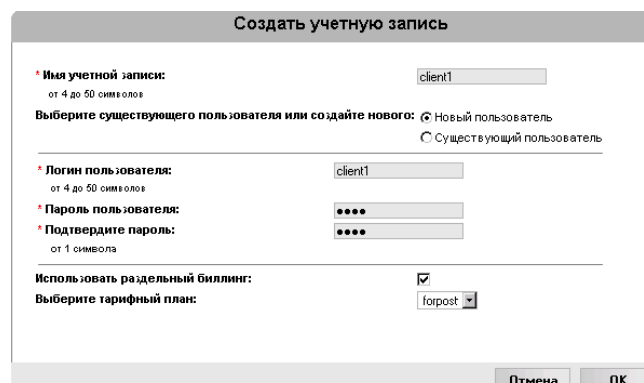


### 2. Creating Accounts

To create an account for your client, go to *Accounts* tab (it is open by default) and press the button *Create Account*.

In the account creation dialog enter account's name. It will be automatically duplicated as user name, because the user is created together with the account. Enter also password and its confirmation. These login and password will be used by your client to enter the monitoring site.

The flag *Activate separate billing* (default setting) must be checked. If except your own billing plan you have any other billing plans, choose one from the dropdown list.



For every account you can adjust individual set of services (their number and cost), and define payment scheme. These settings are depicted in detail in [Accounts](#) section.

### 3. Creating Units

To create units, go to *Units* tab and press the button *Create Unit*. In the creation unit dialog enter a name for the unit, indicate device type used, enter unique ID, phone number and other parameters that are located on several tabs (all parameters are described in detail in [Units](#) section).

We recommend to choose the client as creator. In this case you can control the number of available units through client's account possibilities.

It is better to give clients *view* or *execute commands* access to units. However, the creator of an objects automatically gets *manage* access to this object. That is why after creating a unit as a client, it is necessary to redefine rights.

To do this, in unit properties dialog open the *Accessors* tab. On the left choose a user and on the right assign access level. At that, the rose background that indicates *manage* rights will change to yellow (*view* access) or green (*execute commands*). [More about access rights...](#)

**Hint.**

If there are many units, it is useful to unite them into groups. Unit groups provide additional facilities when assigning rights as well as when tracking units. See details in [Unit Groups](#) section.

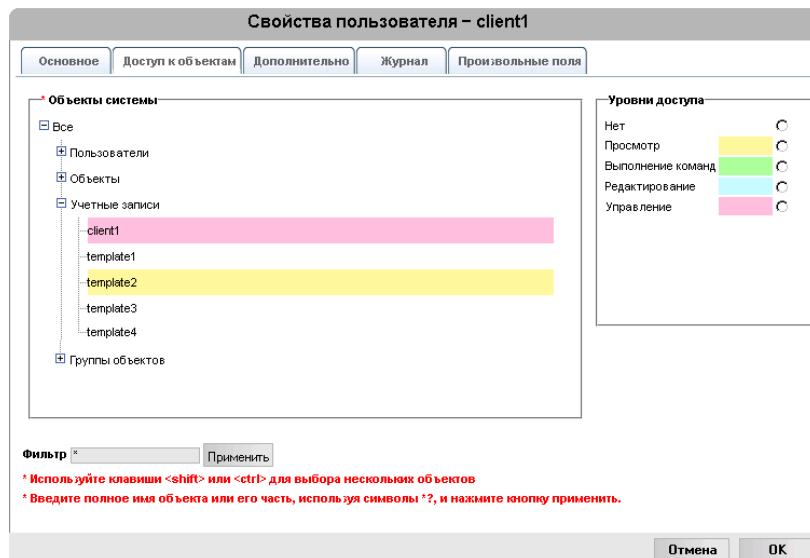
### 4. Creating Template Accounts

This is not required but recommended. Template account can contain standard notifications, jobs and reports. Such accounts are needed to give the user possibility to have already configured things event at the very beginning of service usage. Then the user can add more custom things as needed.

For instance, you may have two template accounts: (1) for cargo transportation (2) for passenger traffic control. Each of them may contain its set of things actual for one of another service industry.

Creating a template account is not enough. To complete the task, you must login as the corresponding user to the monitoring site and configure all necessary notifications, jobs, and reports.

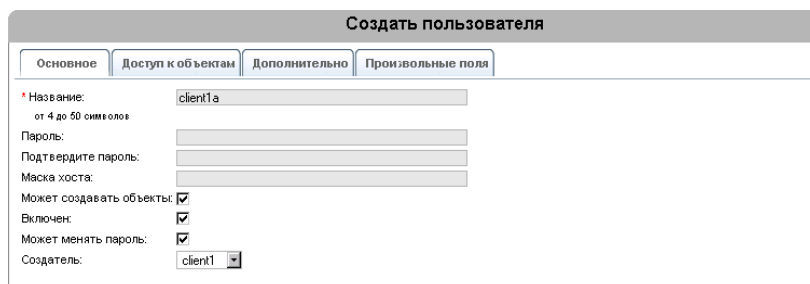
Then you give client *view* access to this account (through user properties dialog, the *Access to Objects* tab). Then the user will be able to make use of notifications, jobs, and reports created by you, but not to edit or delete them. For creating customized objects, the user will use his/her own account with *manage* access.



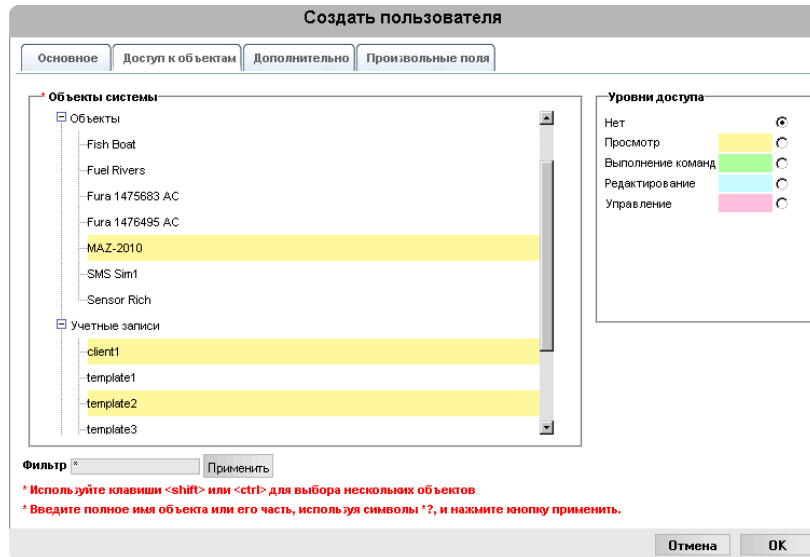
## 5. Creating More Users

At the client's opinion, several users can be created to connect to the monitoring site and track the units. For example, it can be operators or special personnel.

To create additional users, go to the *Users* tab and press the *Create User* button. Enter user name and other properties as needed (they are described in [Users](#) section). Choose a client as creator.



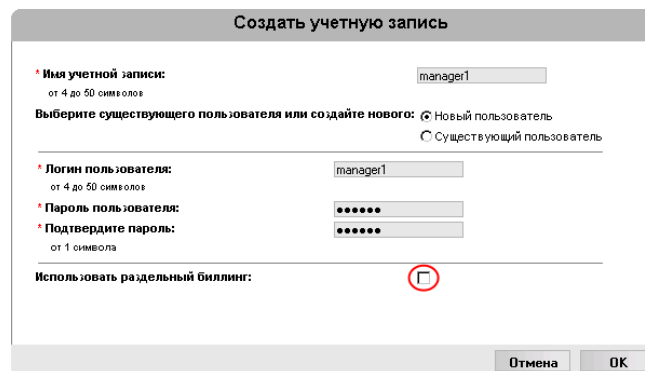
Then give the newly created user *view* access to the client's account (and template accounts as well) and to client's units. To adjust the access, go to user properties dialog to the *Access* tab.



## 6. Creating Managers

Creating other managers is convenient to divide the whole work between different people. However, you can skip this step if you are going to manage all service yourself. Manager is a user who can enter AMS manager site, and this user id characterized by the same billing plan as yours.

Open the *Accounts* panel on the left part of the window and push the *Create Account* button.



Enter a name for a new account (and the same will be user name) and assign password. Disable the *Separate billing* option to create an account with the same billing plan as yours.

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## Basic Definitions

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- [Basic Definitions](#)
- [Management System](#)
- [System Objects](#)
- [Creator](#)
- [Access Rights](#)

### Management System

Management system (or CMS Manager) is a system designed to manage the contents of your service. CMS refers to Content Management System.

The main contents of the service includes system objects which can belong to one of four types: accounts, users, units or unit groups. The site is designed to work with these objects (create, configure, update, copy, delete them).

Partly these functions can be performed also in the monitoring and administration sites. The main difference here is that the management site has an handy easy -to-use interface that allows working with a great number of objects, filters them by different criteria, displays them in the form of a table, creates tabs with search results, and many more.

The management site is designed as a web page. By default, the access to the management site is done through 8023 port.

System administrator is a user who configures the service and manages it. This is the only user who can create billing plans. An administrator can like a manager, can create users, accounts, and units, but the main administrator's job is to create a source account with its billing plan and create users-managers. Administrators have their separated site to perform these functions.

System manager is a user who also manages the service but in a different way. Manager's main task is to create accounts, end users, units, unit groups and assign access right on all these objects. These functions are performed on the management site - CMS Manager.

### System Objects

Account is a contract with a client. An account includes users (one of which is its creator), report templates, notifications, etc. When deleting an account, all its contents is deleted, too. Accounts can be created and deleted only by service manager (or its administrator).

User is a system object which has its specific name (login) and password. User has access rights for interacting with other system objects (unis, users, etc.). These rights are assigned by service manager. A user exercises its rights on the monitoring site. However, there can be a user-manager who has different functions and executed its rights on site CMS Manager.

Unit is a system object which is distinguished for its device type and unique identification number (UID).

Unit group is a unity including several units which have something in common. In many cases it is convenient to operate a group of units instead of performing an action over each unit individually, in particular, when you assign access rights.

There are also other system objects: places, geofences, jobs, notifications, report templates, drivers, routes. They are created and operated by end users on the monitoring site and are always a part of some account. In contrast to these objects, such objects as units, users, and unit groups are independent and can exist without an account.

### Creator

Creator is a user that initially has full access rights to an object being created and can define access rights for other users. The creator of a user also automatically gets manage rights to units created by this user. Afterwards creator's rights can be dimensioned if needed.

Building hierarchy with the help of creator allows to divide the whole work among several users, assign different rights

to objects, as well as reduce information content processed on the screen.

In the system there can be no objects without creator. The creator is assigned when creating an object and cannot be changed later. Usually (when a user, a unit or a unit group is created) the creator is selected from the list of existent users. But when a new account is created, its creator can be created with it simultaneously.

It is impossible to delete a user that is the creator of some object. You first should delete this object. For usual users it is done manually. What concerns an account creator, it can be deleted only deleting this account.

## Access Rights

---

Access right is a possibility to view some system objects and perform allowed actions over them. There are five access levels: from *none* to *manage*. [More about access rights...](#)

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## Access Rights

Access right is a possibility to view some system objects and perform allowed actions over them. There are five access levels: from simple viewing to management.

### Who Defines Access Rights

Access rights are defined primarily by service manager. However, the administrator can also control access, and in some case it can be done by end users on the monitoring site.

### Who Owns Access Rights

Rightholders can be any system users (end users, managers, etc). The rights for each of them are defined individually in user properties dialog on the tab *Access to objects*. The rights can be reassigned at any moment.

### What Can Be Accessed

A user can obtain access to any system objects:

#### Units

A user can get possibility to see unit location on the map, observe its parameters (such as speed, altitude, sensors values), execute commands over this unit, send messages, receive notifications on unit activity, generate reports, etc.

#### Users

One user can have access to others. Then this user can edit them, define their rights, etc, for example, as it is done by service manager.

#### Accounts

Access to an account assumes access to all its contents that is geofences, POI, report templates, notifications, jobs, routes, drivers. Access to an account assumes also that the user can create such objects.

#### Unit groups

When assigning rights to unit group, they are applied to any unit belonging to the group. This rule works in the direction of increasing rights. It means you can assign a higher access level to units in group but not cut down access rights if a higher level was assigned earlier.

### Access Levels

Five access levels exist in the system.

None

Any access is denied, and is a user cannot either see the object or do something with it.

View

A user that has such rights can only see the object and view its properties but not edit them. If the object is an account, it means that the user will get the right to view all objects belonging to this account. If the object is a unit group, the user gets the right to view all units included in this group. However, if before that the user has had more rights to some unit from this group, these rights will remain.

Execute commands

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- [Access Rights](#)
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- [Access Levels](#)
- [Assigning Rights](#)



A user having this access level can execute commands over units, for example, request location or send a message to driver. This right has sense for units and unit groups. If it is applied to accounts or users, then it is equal to the previous level - *view*.

 Edit


This access level allows user to perform all above-mentioned actions and in addition change objects' properties. If this level is applied to an account, the user can edit objects belonging to this account: create, update and delete geofences, places, report templates within this account.

 Manage

A user obtains a complete control over an object, even can delete it.

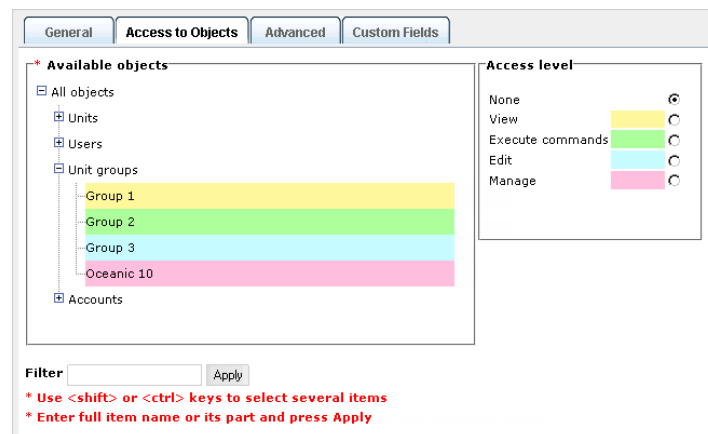
## Assigning Rights

The rights are assigned to each user individually when creating, copying or updating the user, on the *Access to objects* tab. Other ways to define rights is when configuring a unit (or unit group) on the *Accessors* tab.

 To assign access rights you need to have *manage* access both to objects to which you set rights, and to users to which you give rights.

Through User Properties

Open user configuration dialog and go to the *Access to objects* tab. On the left there is the objects tree (units, unit groups, users, accounts), on the right there are several radio buttons which represent different access levels. In the objects tree select needed objects and assign the access to them using radio buttons on the right. In accordance with rights assigned, items acquire a background of the corresponding color. To save changes, push OK.



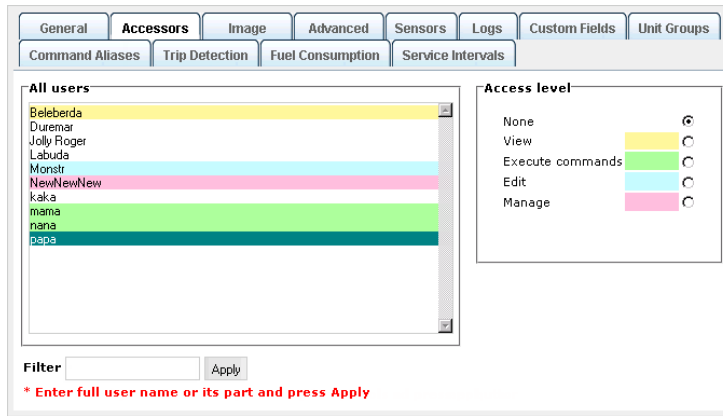
 *Hint.*

If you have less than 100 objects, the full list of available objects is displayed when you open the tab. If you have more than 100 objects, the list is empty, and you need to apply the filter to search and display objects. On the bottom of the dialog enter request text using wildcard symbols \* (replaces any number of characters) and ? (replaces one character). After entering a text, press Apply. Search results will be displayed on the list.

To select several objects at once, use <ctrl> and <shift> keys. Hold any of these keys and click on a tree node, this node will be selected entirely with all its items. Holding <ctrl> key it is possible to select several objects clicking on them in a random order. Holding <shift> key it is possible to select several objects going in succession. To do this, click on the first item and then on the last item in the succession.

Through Unit Properties

Open unit properties dialog and move to the *Access for users* tab. On the left there is a list of all users available. On the right you assign for them access level to the unit. Here <ctrl> and <shift> keys are used in the same way.



Through Unit Group Properties

In a similar way access rights on unit groups are assigned. When creating, updating or copying a group, move to the Accessors tab. Remember that rights assigned here are applied to each and every unit in the group. Here you can increase rights only and not vice versa.

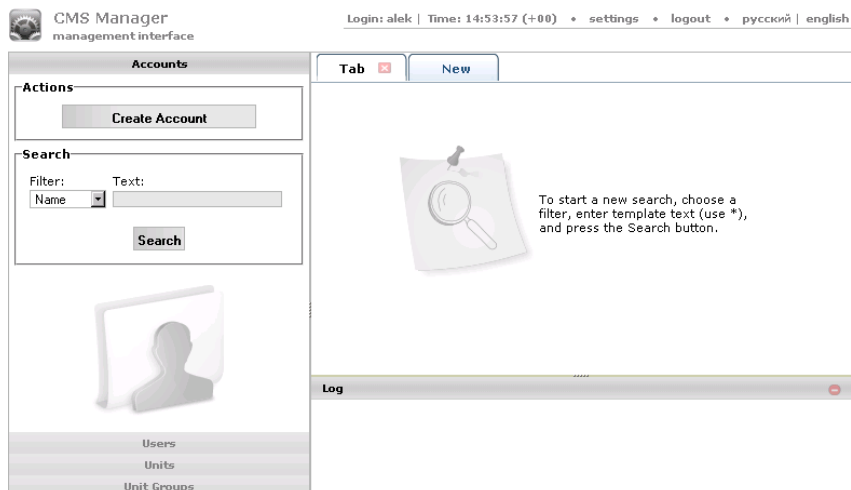
You are here: [Wialon Pro](#) » [CMS Manager](#) » [Interface](#)

## Interface

User interface of the service is simple and in many cases intuitive intelligible. There is plenty of screen tips associated with various buttons, icons, dialog boxes and other interface elements.

The work area can be divided into several parts:

- **Top panel** is situated at the top of the window. It shows where you are (service name), how you have entered (your login), and contains also a menu through which several options are available.
- **Navigation and search panel** is a panel with four tabs at the left of the window. Here you can switch tabs: accounts, users, units, unit groups.
- **Results panel** is the central part. Here you can manage created objects.
- **Log** is situated at the bottom of the window. Here you can view messages about action undertaken or errors occurred.



Panels sizes are customizable. To adjust the size of the results panel and the log in relation to each other, drag the horizontal slider between them up or down. To adjust the width of the navigation panel, find a vertical slider and drag it right or left.

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## Login

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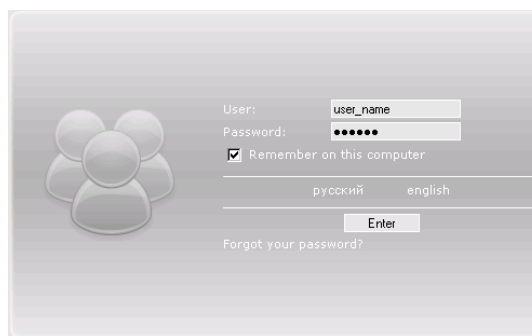
- [Login](#)
- [If You Forgot the Password](#)

Enter service URL into the address line of your browser.

On the login page key in your username (login) and password that were given to you while registering. If you are using a private computer, you can put a check mark near *Remember on this computer*. In this case, the next time you enter the system you will not be asked to input your login and password again.

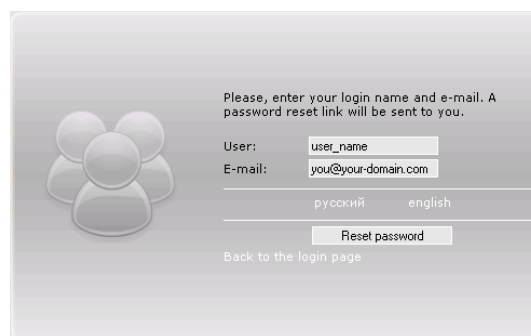
When user name and password are entered, press <enter>.

You can also choose interface language (English or Russian), however it can be changed later when in the system.



## If You Forgot the Password

If you have already registered in the system but forgot the password, please, follow the link *Forgot your password?* There you will be asked to key in your user name and e-mail address that were indicated while registering. Then push the *Reset password* button. A password reset link will be sent to you. Follow this link to get your new password.



If you press *Forgot your password?* by accident, just ignore the e-mail with password reset link and use your former login and pass. If you still follow this link, you will have to accept a new password.

 *Note.*

The current password can be changed in the [Settings](#) dialog.

You are here: [Wialon Pro](#) » [CMS Manager](#) » [Interface](#) » [Top Panel](#)

## Top Panel

At the top of the window there are the following elements:

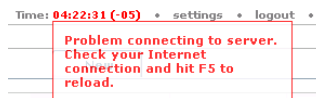
- the name of the service where you are (CMS Manager);
- login of the user-manager under which you have entered the service;
- current time (in the brackets - time zone);
- the Settings button to configure service settings;
- the Logout button;
- language bar to select Russian or English as interface language.



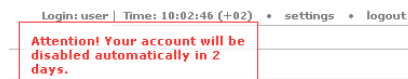
In the top panel several warning messages pop up. They concern the service availability. If the current time is displayed in red color, it means that the server is not available at the moment. This can happen by a number of reasons. For example, the Internet connection is broken or some trouble has happened to the server.

The time may be displayed red. It means there has been no connection to the server during the last two minutes (because of Internet loss or some interior service problems). When connection is restored, the warning will disappear and the site will continue its work.

If there has been no connection for more than 5 minutes, the session is terminated. However, after restoring the connection, the [login page](#) will be loaded automatically. At this, if the flag *Remember on this computer* is enabled, the auto login to the monitoring site will be performed, too.



Besides, the warning about days left is displayed at the top panel as well. It may look like this:



## Navigation and Search

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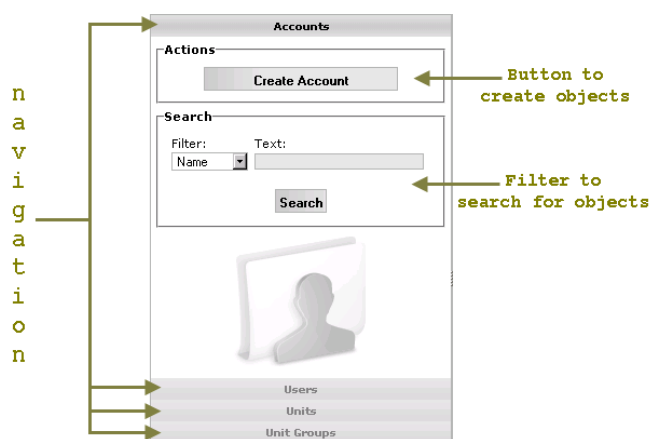
Navigation and search panel is situated on the left of the window.

### Navigation

In the navigation panel there are four tabs. Each of them represents some system object: Accounts, Users, Units, Unit Groups. To move to a tab, just click on its name.

Each tab consists of two sections: Actions and Search. The Actions section contains a button to create a new object. The detailed instructions for creating and configuring objects are given in the further topics of this guide.

The Search section is used to find already created objects and display them in the results panel where you can manage objects, view and edit their properties.



### Search

To search objects:

1. Select a filter;
2. Form a request in the Text field;
3. Push the Search button or <enter>;
4. Observe the found objects in the [results panel](#).

### Filter

In the *Filter* combo box select the criteria of search. It can be:

- *Name*: the name given to the object when it was created;
- *Creator*: the creator of the object.
- *Account*: account to which required object is attached (that is the object is created by account's creator or by a user which is created by account's creator).

If you are searching for units, except these filters some additional filters are available:

- *Unique ID*: unique identification number given to a unit when creating it;
- *Phone number*: the phone number of a SIM card if one is embedded to equipment;
- *Device type*: equipment type/name;
- *Unit group*: a group where a unit is included;
- *Custom fields*: custom fields assigned when configuring the unit.

## Text

Formulate your request in the *Text* field. Use any characters allowed and the asterisk sign (\*). The asterisk is a wildcard sign which represents any combination of characters. The asterisk can be placed at the beginning, at the middle or at the end of the request text. It can be used even several times.

Another wildcard character which can be used is the question sign (?). It replaces any single character. As well as the asterisk sign, it can be put at any place of the query.

For example, to find all MANs, select search by name, type man in the Text field, and push the Find button (or <enter>). All units which names contain this combination of characters (both at the beginning and at the end of the name) will be found and displayed.

The request is not case sensitive.

 *Note.*

To simply find all objects of some kind (for example, all users), leave the Text field empty (or with just a single asterisk) and press <enter>.

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You are here: [Wialon Pro](#) » [CMS Manager](#) » [Interface](#) » [Results Panel](#)

## Results Panel

The results panel is located at the right top part of the window. Here the results of [objects search](#) are displayed.

### Tabs

It is possible to create up to five tabs in the results panel. To create a new tab, press on an inactive New tab that is situated on the right of all created tabs. To navigate between tabs, just click on a needed one. To close a tab, press on a red cross near its name.

The name of the tab represents the request, that is contains the type of searched object (users, units, accounts or unit groups) and search text. It allows when switching between tabs restore initial parameters for each of them. Besides, when switching tabs, if they represent different object types, the navigation panel changes, too.

Your actions (such as search) are applied always to an active tab. If this tab contains already any records, they will be replaced.

Accounts: *		Users: *		Units: *		Unit Groups: *		New	
Delete	Exp/Imp	Image	Unit	Creator	Device Type	UID	Phone	Custom Fields	
1	<input type="checkbox"/>		Akuna Matata 1	fam2	<input checked="" type="checkbox"/>	45h734678	+19172634578		
2	<input type="checkbox"/>		Alex Chimovada	alek	<input checked="" type="checkbox"/>	57hwe	+37523658900	Capacity: 3 t	
3	<input type="checkbox"/>		begemot	alek	<input checked="" type="checkbox"/>		+37523658901		
4	<input type="checkbox"/>		Boss	alek	<input checked="" type="checkbox"/>		+37523658902		
5	<input type="checkbox"/>		Combine Zubr-3	alek	<input checked="" type="checkbox"/>	3	+37523658903	made year: 1998	
6	<input type="checkbox"/>		Fus 34-09	fam2	<input checked="" type="checkbox"/>	0911647835	+32091164783		
7	<input type="checkbox"/>		KoTiK	fam2	<input checked="" type="checkbox"/>		+37523658904		
8	<input type="checkbox"/>		Prosto Maria	alek	<input checked="" type="checkbox"/>		+37523658905	Hull No: 14-47	
9	<input type="checkbox"/>		SipSak	alek	Skipper 2		+37523658906		
10	<input type="checkbox"/>		Tractor 7	alek	Skipper 2	345	+37523658907		

## Managing Tables

The data is given in the form of a table. Records are sorted by name in the direct order that is from A to Z.

For different type of objects, table contents are also different. The most columns are provided for units.

The set of columns is adjustable. To customize it, click on the table header and check needed items (or vice versa unselect some items to hide them).

At the bottom of the table there is tools panel that is useful to perform several tasks such as delete objects, move to another page, etc.



Columns width can be adjusted manually. To do this, click on a column edge and holding the left mouse button drag it to the needed direction. To restore auto width, push Columns auto width button.

Adjust the number of rows to be displayed on one page (10, 50, 100, 500, 1000 are available).

To navigate between pages, use the corresponding arrow-shaped buttons. It is also possible to enter page number manually and press <enter> to move to an indicated page.

To view or change object properties, click on the corresponding row in the table.


## Deleting Objects



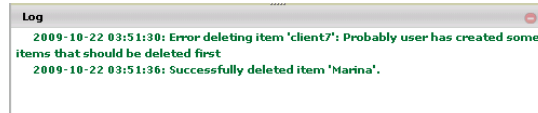
This section describes how to delete users, units, and unit groups.

To delete system objects, you should have manage rights or be creator of the object.

In the Delete column check the objects you want to delete. The objects which are not allowed to be deleted cannot be checked.

Then push the button Delete checked objects  at the bottom of the table. When getting a warning message, confirm your intentions or cancel the action.

The result of the action is displayed in the [log](#).



 **Attention!**

An account can be deleted only with all its contents (users, geofences, reports, etc.), that is why the deleting accounts is different from deleting other system objects. [More about deleting accounts...](#)

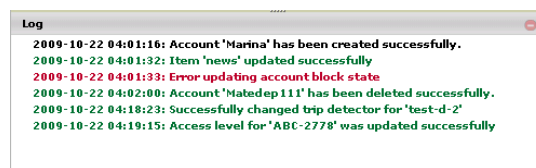
You are here: [Wialon Pro](#) » [CMS Manager](#) » [Interface](#) » [Log](#)

## Log

The log is situated at the bottom of the window. It contains records of current events and operations running in the system.

The structure of a record is simple: date, time, text (description of the event).

The log uses fonts of different colors in order to separate different type of entries from each other. Black color is for information messages, for example, about the number of tabs allowed to create. Green color is used for preventive messages, for example, when a new object is created or successfully deleted, or its configuration is changed. Red records mean error messages.



You can clean up the log using the appropriate button  which is in the right top corner of the log panel.

You are here: [Wialon Pro](#) » [CMS Manager](#) » [Settings](#)

## Settings

To view user settings, click on Settings on the top panel. Here you can customize some parameters of service functionality.

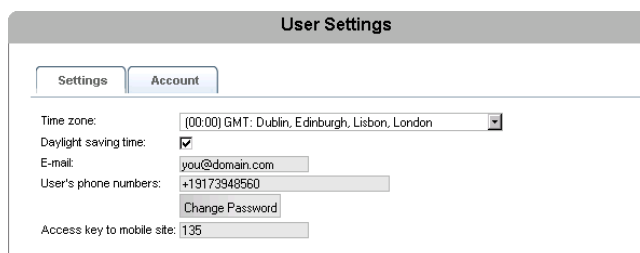
The User Settings dialog can contain up to three tabs according to the service configuration: Settings, Account, and Retranslation.

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- [Settings](#)
- [General Settings](#)
- [Account](#)

## General Settings

The first tab contains general settings. Here you indicate your time zone, input your e-mail address, change the password to enter the system, and set many other parameters.



### Time zone

Indicate your time zone accurately because all time values in messages got from units are displayed in accordance with time zone selected.

### Daylight saving time

Check this option if in your region you use summer and winter time.

### E-mail

This e-mail address will be used to send you a reset password link in case you forget your password.

### User's phone numbers

Key in one or more phone numbers which you are going to use to manage units via SMS. If a command comes from some other phone, it is not processed. Phone numbers should be written in international format (for instance, +7903726154,+15551234567) and separated by comma (with no spaces). They should start from "+", then follow country code, communication statement code and the phone number itself.

### Change password

If you push this button, some additional fields will appear. You will be asked to input your current password, and then your new password (two times).

### Access key to mobile site

If you are going to use mobile phone or PPC to manage the server, enter the access key. If you leave this field empty, the access will be denied.

## Account

⚠ *Attention!* This tab is available when billing system is used.

The Account tab has two sections: General and Statistics. In the General section information on billing plan and current balance is presented. You see also how many objects (like places, geofences, units, users, etc.) you can create and how many of them already exist.

**User Settings**

Settings | **Account**

**General** | **Statistics**

Billing Plan:

Balance:

Service	Active	Limit	Reset
Devices	9	50	N/A
Users	11	N/A	N/A
Notifications	0	N/A	N/A
Geozones	4	N/A	N/A
SMS messages	0	N/A	monthly

In the Statistics section you can make an inquiry about charges for different operations produced over a given period. Specify the period of time and push the Show button to see statistics.

Settings | **Account**

**General** | **Statistics**

View statistics for last  days.

Date	Service	Cost	Count	Information
2010-06-02 13:20:27	Payment	\$3.50	-	penalty fee
2010-06-02 13:19:49	Payment	\$150.00	-	50 units package
2010-06-02 13:19:30	Payment	\$13.00	-	sensors
2010-06-02 13:19:15	Payment	\$100.00	-	start

You are here: [Wialon Pro](#) » [CMS Manager](#) » [Accounts](#)

## Accounts

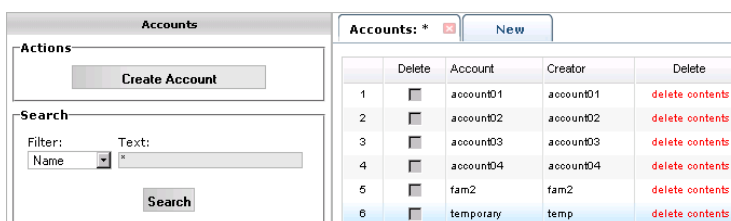
[Table of Contents](#) ▲

Account is a contract with a client; this is a unity of resource and users (one of them is account's creator). Most of objects which are created by end users on the monitoring site (like report templates, notifications, geofences, etc.) belong to account. Availability of an account gives user opportunity to create such objects. Besides, billing plan is applied just to account and not to user.

To work with accounts, choose Accounts in the navigation panel on the left of the window.

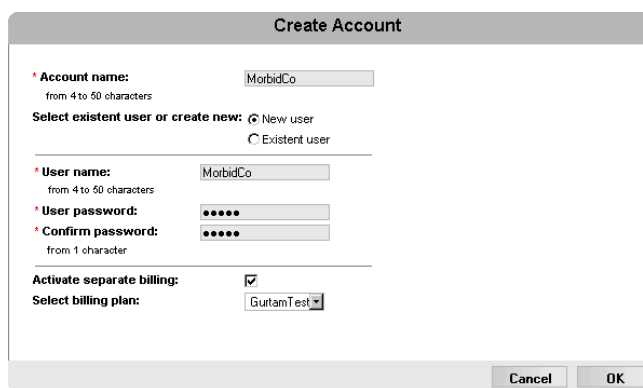
Here you can:

- Create a new account.
- Find and display existent accounts.
- Control client's balance, add payments, define possibilities, etc.
- Delete accounts.



## Creating an Account

Accounts can be created and deleted only by service manager (or its administrator). To create a new account, press the **Create Account** button. Fill in the given fields. If this button is not active, it means you have no rights to create system objects.



### Account name

Give the account its unique name from 4 to 50 characters. In the system there can be no accounts with the same names.

### Creator

As a creator of the account an existent user can be selected or a new user can be created together with the account.

- **New user:** a new user will be created and assigned as account's creator. You have to give it login and password. By default, it is offered to give it the same login as the name of the account, but you can enter different name.
- **Existent user:** in the dropdown list choose a user from available.

Activate separate billing

If activated, a separate billing plan can be assigned to this account (select billing plan from the dropdown list). If not activated, an account with the same billing plan as yours will be created, so a user with the same possibilities as yours will be created.

 *Note.*

If you have no other billing plan except your own, separate billing cannot be used. Billing plans are developed by service administrator, and you can be given access to these plans.

If all fields are filled in correctly, the OK button becomes active. Push the button to save the account. See the result in the [log](#).

As the result, a new account (resource) is created or both account and user are created. By default, the user indicated while creating the account is assigned to be its creator. However, *manage* access to the account are given both to this user and the manager who created the account. If a user was created together with account, this user receives *manage* access to account and *edit* access to user itself. The creator of such a user becomes the manager who created it.

## Account Management

---

To view created accounts in the results panel and proceed the work with them, specify the corresponding search parameters. [How to fulfill a search...](#)

In the table of results you see accounts' names and creators. Learn more about [managing tables...](#)

Click on any account in the table to see its properties. The dialog contains several tabs described above. Their number depends on account configuration and modules you have in your service.

By default, only the *General* tab is available. There you can change only account's name. To activate other tabs (*Payment*, *Statistics*, *Features*, *Account*), it is needed that a billing plan were assigned to the account.

Further information:

- [Payment](#)
- [Features](#)

## Deleting Accounts

---

To delete an account, you need to have management access rights for it.

 *Attention!*

When deleting an account, all its contents (geofences, users, etc.) is deleted, too. Besides, all users, units, unit groups are deleted, too, if they were created as account's creator or other users which were created as account's creator.

To delete an account, press delete contents and then confirm your intentions.

You are here: [Wialon Pro](#) » [CMS Manager](#) » [Accounts](#) » [Payment](#)

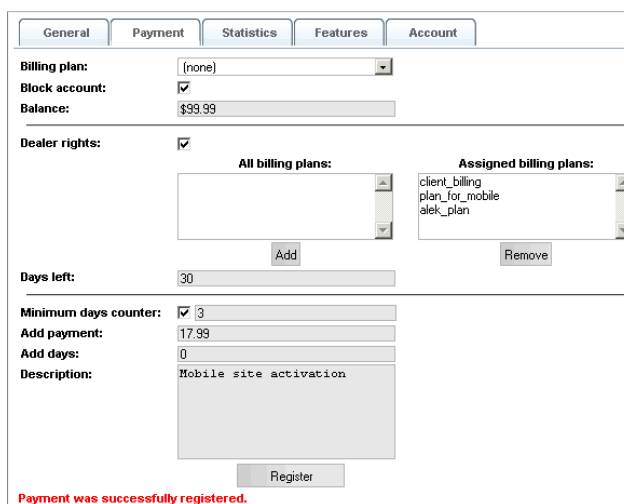
## Payment

Table of Contents ▲

- [Payment](#)
- [Payment](#)
- [Statistics](#)

In account properties dialog on the *Payment* and *Statistics* tabs, you can view account balance, add payment and days, etc.

### Payment



To change *billing plan*, select one from the dropdown list of available plans. If billing plan is *none*, it means this account will use your own billing plan.

Here you can also block the access to the account (in case of nonpayment, expiration of the contract, etc.). For this just put the check mark near *Block account*.

In the next field you see the current *balance* of the account.

Activate *Dealer rights* flag to create a subdealer. It means this account will possess the same rights as you (access to modules, services, billing plans). Then choose billing plans which will be available to this account.

In the next field you can see the *days left* (if this option is activated).

Below you can register a *payment*. To register a payment, enter sum and *description* (description required). The sum will be added to the current balance, and the payment will be saved in payment history (see *Statistics* tab).

Optionally you can activate *minimum days counter*. In this case the account can be blocked automatically not only when the balance is 0, but also if there are no days left. It can be useful for demo access, for example, or to control monthly fee. To operate days, first activate the option *Minimum days counter* and apply changes by pressing *OK*.

Then open the dialog again, and you will find new fields there. *Days left* will appear above in the same section with the current balance. There you see how much days has left until zero days. Days are counted down automatically when a new day comes. When 5 days are left, a special warning starts to come each time when the user logs in to the site: *Your account will be disabled in .. days*. When days are negative, this notification is not shown.

In the field *Minimum days counter* indicate the number of days to block the account (if nothing is indicated, zero is assumed). However, you can enter another number, usually negative (like -3). In this case, the account will be still available several days even when the term is expired.

Days are added in the same way as payment. Indicate the needed number of days in *Add days* field, enter description, and press *Register*. Days and money can be added simultaneously in the same payment or separately from each other.

**Note.**

If you have not enough rights to view the Payment tab, then the current balance, days left, and billing plan can be viewed (but not altered) on the [Account](#) tab.

## Statistics

On the *Statistics* you can estimate services expenses for indicated period of time (payment history). Define time interval and press *Show*. All registered payments will appear in the table regardless whether money or days were added.

General Payment **Statistics** Features Account

**Select time interval:**  
From: 1 Apr 2010 00:00 To: 1 Jun 2010 23:59

**Result:**

N	Date	Service Type	Cost	Counter	Description
1	2010-06-02 10:40:15	Payment	\$3.00		- three POI
2	2010-06-02 10:40:00	Payment	\$99.99		- for Wiaton Mobile
3	2010-06-02 10:39:19	Payment	\$33.00		- sensors module added
4	2010-06-02 10:39:04	Payment	\$15.00		- charge for May 2010
5	2010-06-02 10:38:34	Payment	\$15.00		- April 2010
6	2010-06-02 10:37:21	Payment	\$45.00		- 10 users

25 Page 1 of 1 Displaying 1 to 6 of 6 items





You are here: [Wialon Pro](#) » [CMS Manager](#) » [Accounts](#) » [Features](#)

## Features

The *Features* tab allows to manage the number of available units, SMS, geofences and other system objects, as well as enable or disable access to different services such as retranslator, mobile site, jobs etc. The complete list of features is given below.

On this tab you see the list of services available according to chosen billing plan.

### Table of Contents ▲

- [Features](#)
- [List of Services](#)
- [Limitations and Cost](#)
- [Account](#)

Feature	State/Limit	Description
Custom fields	<input type="checkbox"/>	Disabled
Drivers	<input type="checkbox"/>	Disabled
E-mail notifications	<input checked="" type="checkbox"/> Daily   10	Enabled
E-mail reports	<input checked="" type="checkbox"/> Daily   1	Enabled
Geofences	<input checked="" type="checkbox"/> 30	Enabled
Jobs	<input checked="" type="checkbox"/> 5	Enabled
Management site	<input type="checkbox"/>	Disabled
Mobile Wialon	<input checked="" type="checkbox"/>	Enabled
Notifications	<input checked="" type="checkbox"/> 5	Enabled
POI (My Places)	<input checked="" type="checkbox"/>	Default (Unlimited)
Reports	<input checked="" type="checkbox"/> 8	Enabled

On the left you see [service](#) name, in the middle you indicate limitations and cost, on the right you see current state of the service.

## List of Services

Here is the full list of services available in Wialon system. Your Features tab may contain not all of them.

Service	Description
Accounts	Accounts count (at least one account must be allowed to create)
Advanced reports	The possibility to create reports on unit groups and users
Alarms	Active alarms count
Connector	Authorization through a service connector (Wialon Pro Client)
Custom fields	Custom fields allowed for one unit, user or group
Drivers	Drivers count
E-mail reports	The possibility to send a report by e-mail (within the Jobs module). Recommended limitation - 10 reports in an hour (to not to overload the server).
E-mail notifications	The possibility to send notifications by e-mail. Recommended limitation - 10 reports in an hour (to not to overload the server).
Geofences	Geofences count
Jobs	Jobs count
Management site	Access to the management site ( <a href="#">CMS Manager</a> )
Notifications	Notifications count
POI (My Places)	POIs count
Report templates	Report templates count
Retranslator	Transmitting messages from a unit to other servers and systems

Routes	Control routes of movement
Service intervals	Service intervals allowed for one unit
SMS messages	Sending SMS messages
Unit groups	Unit groups count
Unit sensors	Sensors count (calculated for all units in overall)
Units	Units count
Wialon Mobile	The possibility to track unit from a mobile phone or PPC (Wialon Mobile)
Wialon Web	Access to the monitoring site

## Limitations and Cost

In the central column you define service state and enter limitations. Check services to make the available to this account or unselect services to deny access to them. This flag has three states: *on*, *off* and *default*. If the state is *on*, you can enter quantitative restriction manually, for example, allow only 10 geofences to be created for this account.

Besides, you can specify more sophisticated limitations different cost for different number of items. Cost line is set in the format: COUNTER1:VALUE1;COUNTER2:VALUE2;VALUE3. A counter must be positive and integer (however, values can be fractional). Each next counter must be greater than the previous one.

Here are some examples of cost lines:

Service	Cost line	Interpretation
SMS messages	1:0;10:1.5;-1	The first SMS is free, from second to tenth the cost for one SMS is 1.5 charge units. The eleventh SMS is denied.
Units	1:0;5:10;10:3;50:1	The first unit is free, from second to 5th will cost 10, from 6th to 10th - 3, from 11th to infinity - each for 1.
Geofences	5:0;-1	5 geofences can be create (for free). The creation of a sixth geofence is prohibited.

In the right column you see the current state of the service (enables/disabled) and, if the state is *default*, the description of default conditions is given in the brackets.

**Note.**

If you have not enough rights to view the Features tab, then available services can be viewed (but not altered) on the [Account](#) tab.

## Account

On the *Account* tab the chosen billing plan and account balance are indicated, and the list of available features is presented. If a service is periodic (limited number of items in an interval), the interval is indicated. For example, 10 SMS messages in one day (*daily*).

Service	Active	Limit	Reset
Units	3	4	N/A
Users	0	2	N/A
Accounts	0	N/A	N/A
Notifications	0	N/A	N/A
Geofences	0	4	N/A
SMS messages	0	10	daily
POI (My Places)	0	3	N/A

**Note.**

The information presented on this tab is available to the end user through the *Settings* dialog.

You are here: [Wialon Pro](#) » [CMS Manager](#) » [Users](#)

## Users

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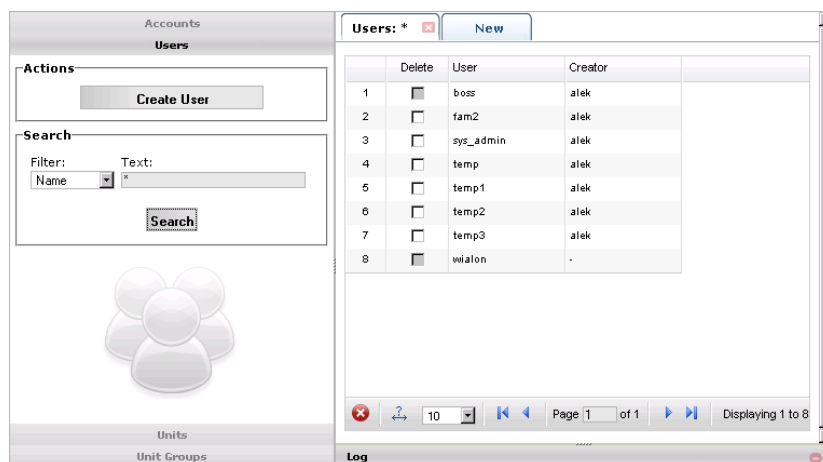
- [Users](#)
- [User Properties](#)
- [Managing Users](#)

User is system object which has its specific name (login) and password. User has access rights for interacting with other system objects (units, users, accounts, etc.). These rights are assigned by service manager. End user exercises these rights on the monitoring site. However, other types of users can be managers or administrators.

To work with users, choose **Users** in the navigation panel on the left of the window.

Here you can:

- Create a new user.
- Find and display existent users.
- View and/or edit their properties.
- Give users access rights to different objects.
- Delete users.

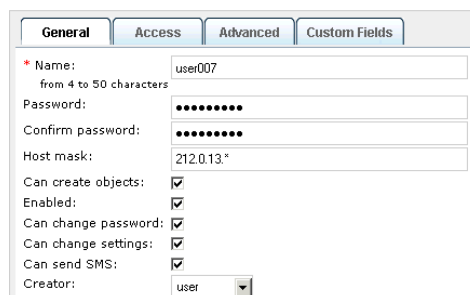


## User Properties

To create a new user, push the **Create user** button. In the dialog that appears, fill in the field on the given tabs.

### General

Enter a name and a password (and its confirmation) for the user. This name and password will be used by this user to login to the monitoring site. Mark the check boxes **Can create objects** and **Can change password** to give the user the corresponding rights if needed. Tick **Activated** to let the user login to the service. Select **creator** from the dropdown list.



Host mask can be applied to user to restrict IP addresses from which to enter service sites. For example, to allow user to login to sites from office only. To set a mask, use the wildcard symbol \*, for example, host mask can be

set like this: '212.0.13.\*'.

## Accessors

Here you give the user access rights to objects existing in the system: devices, accounts, devices groups, and users. On the left choose objects and assign access type to them on the right. To select several objects at once, use <ctrl> and <shift> keys. After the access level has been assigned to an object, it acquires the corresponding background. If this tab is left empty, it is assumed by default that this user has no access rights to existing objects (except cases when the user is a creator of an object). [Access levels description...](#)

General | **Access to Objects** | Advanced | Custom Fields

\* Available objects

- All objects
- Units
- Users
- Unit groups
  - Group 1
  - Group 2
  - Group 3
  - Oceanic 10
- Accounts

Filter  Apply

\* Use <shift> or <ctrl> keys to select several items  
\* Enter full item name or its part and press Apply

Access level

- None
- View
- Execute commands
- Edit
- Manage

## Advanced

Activate access to mobile site for the user if needed and enter access key which is necessary to login to the system from a cell phone. Type user's phone number(s) in the international format to let the user manage devices via SMS. Enter e-mail address that will be used to get notifications from the service administration. These settings can be changed by the user in User Settings when hi/she logs in.

General | Access to Objects | **Advanced** | Custom Fields

Activate access to mobile site:

Access key:

User's phone numbers:

E-mail:

## Custom fields

Any kind of information can be added to users account using custom fields. This can be private phone, home address, post, experience, and so on.

Name	Value	
shift	11	+
stage	2 years	+
units under control	17	+
time base	yes	+
computer number	07	+
category	A	+
		+

The next time you open the dialog custom fields will be automatically alphabetized.

### Notes:

- Another way to create a new user is to make a copy of an existing user and edit it. This feature is aimed to speed up the process of creating objects. Click a user holding down <ctrl> key. In the Create Copy User dialog edit user properties and save the user by clicking OK.
- One more way to create a user is to create it together with [account](#).

## Managing Users

## Search & Display

To view created users in the results panel and proceed the work with them, specify the corresponding search parameters. [How to fulfil a search...](#)

In the table of results you see users' names and creators. Learn more about [managing tables...](#)


## View & Edit

When clicking on a user, the dialog with user properties is displayed. Here you can change user's properties described above.

The tabs of the dialog are similar to those when creating a user, but there is an additional tab titled Log. Here all user's logins to the system and logouts from the system can be displayed. Specify the period of time and press the Show button.

General		Access to Objects		Advanced		Logs		Custom Fields	
Message type		Time from		Time to					
User logs	▼	27 May 2010 00:00		27 May 2010 11:59		Show			
Date	Time	type	host	service					
2010-05-27	09:39:20	login	127.0.0.1	wialon-web					
2010-05-27	10:22:25	login	10.1.3.2	wialon-web					
2010-05-27	10:28:05	logout	10.1.3.2	wialon-web					
2010-05-27	10:52:48	login	127.0.0.1	cms-manager					
2010-05-27	11:06:49	logout	127.0.0.1	wialon-web					
2010-05-27	11:06:49	logout	127.0.0.1	cms-manager					
2010-05-27	11:07:40	login	127.0.0.1	wialon-web					
2010-05-27	11:07:46	login	127.0.0.1	cms-manager					
2010-05-27	11:23:31	logout	127.0.0.1	wialon-web					
2010-05-27	11:23:31	logout	127.0.0.1	cms-manager					
2010-05-27	11:24:39	login	127.0.0.1	cms-manager					
2010-05-27	11:35:36	login	127.0.0.1	wialon-web					

## Delete

To delete a user (*menege* access needed), simply check it and press the delete button . Learn more about [deleting objects...](#)

You are here: [Wialon Pro](#) » [CMS Manager](#) » [Units](#)

## Units

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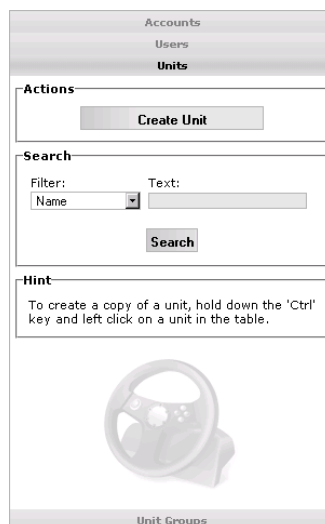
- [Units](#)
- [Unit Properties](#)
- [Managing Units](#)

Unit is system object which is specific for its equipment type and unique identification number (UID).

To work with units, choose Units in the navigation panel on the left of the window.

Here you can:

- Add a new unit to the system.
- Find existent units.
- View or edit their properties.
- Define access rights to units.
- Perform settings import and export.
- Remove units from the system.



## Unit Properties

To add a new unit to the system, press the button *Create Unit*. Configure units in the dialog filling needed tabs. Use the following links to get to know the details about each parameter:



- [General Unit Properties](#)
- [Supported Devices](#)
- [Counters](#)
- [Accessors](#)
- [Image](#)
- [Advanced Properties](#)
- [Sensors](#)
- [Sensor Types](#)
- [Sensor Parameter](#)
- [Validation of Sensors](#)
- [Calculation Table](#)
- [Logs](#)

- [Custom Fields](#)
- [Unit Groups](#)
- [Command Aliases](#)
- [Trip Detection](#)
- [Fuel Consumption](#)
- [Service Intervals](#)
- [Unit Properties Export/Import](#)

The alternative way to create a unit is to clone a unit. This way is convenient to quickly create units with similar properties. Click on an existing unit holding the <ctrl> key. The *Create Unit* dialog will be displayed, and there you can enter a new name for a unit, correct any properties, and then save the new unit.

⚠ **ATTENTION!**

Units with the same IDs or phone numbers cannot exist in the system. If you are trying to create a unit with ID or phone number which already belongs to a unit in the system, an alert will be displayed and you will be offered to edit the unit. If you will not edit these fields, the unit will be created anyway but with *no* ID or phone number.

## Managing Units

### Search & Display

To view created units in the results panel and proceed the work with them, specify the corresponding search parameters. [How to fulfil a search...](#)

In the table you see the unit's image, its name, creator, device type, unique ID, phone number, custom fields, and the buttons to [import/export properties](#) and to delete units. Learn more about [managing tables...](#)

	Delete	Exp/Imp	Image	Unit	Creator	Device Type	UID	Phone	Custom Fields
1	<input type="checkbox"/>			Akuna Matata	fam2	Skipper 2	we45h734878	+191728345789	
2	<input type="checkbox"/>			fam2208989	mama	Skipper 2	876878e87	+666565555555	
3	<input type="checkbox"/>			Fus 34-09	fam2	Skipper 2	320911647835	+320911647835	
4	<input type="checkbox"/>			KoTIK	fam2	Skipper 2			
5	<input type="checkbox"/>			MorbidCo	mama22	Skipper 2	389476	+375297263748	
6	<input type="checkbox"/>			Tractor 7	alek	Skipper 2	345		
7	<input type="checkbox"/>			Combine Zubr-3	alek	Skipper 2	123		

### View & Edit

To view unit properties on details or change them, just click on a unit in the table. In the *Unit Properties* dialog you can view and/or edit any parameters.

### Delete

To delete a unit, check it and press delete button . Do not forget, you need to have *manage* rights to delete any objects from the system. Learn more about [deleting objects...](#)

You are here: [Wialon Pro](#) » [CMS Manager](#) » [Units](#) » [General Unit Properties](#)

## General Unit Properties

In the General tab set the following parameters:

- Name  
Enter a name for the unit from 4 to 50 characters.
- Device type  
Select device type from the list of supported hardware. There can be an additional button near the selected device which can be used to configure some device parameters for the given unit (if this facility is provided by device configuration).
- Unique ID  
Enter a unique ID for the unit to be identified by the system. Usually it is IMEI or serial number.
- Phone number  
Here type phone number of the unit if it has embedded SIM card. Phone number should be written in international format, that means they start from "+", then follow country code, communication statement code and the phone number itself. Examples: +7903726154,+15557654321).
- Device access password  
Type password to manage the unit remotely if needed.
- Creator  
This combo box is available if you have several users under your control.

General	Accessors	Image	Advanced	Sensors	Logs	Custom Fields	Unit Groups
Command Aliases	Trip Detection	Fuel Consumption	Service Intervals				
<p>* Name: SMS Sim1 from 4 to 50 characters</p> <p>Device type: skipper2</p> <p>Unique ID: 37529900001</p> <p>Phone number: +37029900001</p> <p>Device access password:</p> <p>Creator: ...</p> <p>Mileage counter: GPS Current value 28162 km <input checked="" type="checkbox"/> Auto</p> <p>Engine hours counter: Engine ignition se Current value 0 h <input checked="" type="checkbox"/> Auto</p> <p>GPRS traffic counter: Reset counter Current value 0 KB <input checked="" type="checkbox"/> Auto</p>							

**Note!**

If you access rights to the unit is *View*, some of the fields will be hidden.



You are here: [Wialon Pro](#) » [CMS Manager](#) » [Units](#) » [Supported Devices](#)

## Supported Devices

At the moment, Wialon supports more than 200 devices, including personal GPS trackers, GPS Automatic Vehicle Locators, and Pocket PC/cell phone software. The table below shows a list of personal trackers and automobile controllers supported in Wialon Pro 1106:

ALT-P12	GC-101	Navitech UTP V5	Teltonika GH1201
Antares 5	Gelix-2	Navtelecom S-21xx	Teltonika GH3000
ARTAL-GSM-AE	Geneko FOX Lite	Neotech TR1000	Teltonika MH2000
ARUSNAVI	GL-200	Netvisor 11	TGL30
ASC-5	GlobalSat TR-600	Novacom GNS-GLONASS	TLT-2H
ASC-6	Globalstar SmartOne	Novacom GNS-miniTRACK	TM32
Astron GT-3	GlobalTrack G200X	Novacom GNS-TRACK	TM4-2
AT-300	GlobusGPS GL-TR1	Novacom GNS-TRACK Extended	TOBE Etrack
Atomika-300	GlobusGPS GL-TR2	Obdtrac	Topplan GPS Box
ATrack	GLOSPACE SGK-T	OKO-E	TR-102
Auto Leaders 800C	GoPass 9xx	OMEGA-L-1	TR-151
AutoLink	GS503	OMEGA-SN-2	TR-203
Autofon	GSM VENDING	Piccolo ST	Tracer X2
Autoscan GPS	GSS Micro MV	Pilot-D	Trivi-08L
AVT2000	GT03	Planar-GG101	TRIVI-V5
AvtoPeleng	GT30	Portman GT2000	TSS-705pg
AvtoScan GPS	GT60	PowerTrace EB 501	TZ-AVL02
AVTS-1500	GuardMagic VB	Progress 01	TZ AVL-03
Azimuth GSM	iBeacon	PT-20	TZ-AVL05
Azimuth Retranslator	IntelliTrac A1	PT-33	TZ GT-01
CANby	IntelliTrac X8	PT-35	TZ-GT02
CAP Angler-1000	iTrack Gold	PT-9	VCSTS-8
CAP WP AVL	Jointech GP5000	PTMU-01	VIC-ZONE T30
CARSAT - KB1024	Krot	Ranavi	VIC-ZONE T300
CAT-6	Laipac S-911	Report Systems RS-906	Voyager 2
CH-4713	Locarus 702	ReportSystems RS-909	Voyager RTS
Choco	LT1010	RMU-900	VT30
СКАЙТ ретранслятор	M2M-UA GPS	RoadKey HM-311	VT310
CMT-02	MAC PRO	Rover 8	Wialon IPS
CT 270	MB-04 (GPS/ГЛОНАСС)	Rover 9	WiaTrack
CTATT-2	MCS 1	Ruptela FM Eco3	WMCS AM120
DB-8S	Megastek GPT-68	Skipper 01-E/EM	Хехун ТК-102
DeasyTrack	MS PGSM4	SmartBox	Хехун ТК-103
Dialog M2	MT-2000A	SmartGPS	АвтоГРАФ GSM
Dialog M3	MT-4	Speedtrac	Автосторож GSM AS3.X
Dozor X2	MT80	STAR TRACKER	АПЭЛ Т-104
Easytrac	MT88	StarFinder AVL 110	ГАЛС-Т1
ED Pointer	MUK-A1	STaRLink AVL	ГАЛС-Т1-М
ED Watch	MVT 15	STaRLink eBike	Гранит Навигатор
eLoc GL-100	MVT 17	STARTRACKER GOLD	Дрозд К-1
Emcraft MTDS-300	MVT100	T-06H	Дрозд-К1
Enfora Mini-MT	MVT340	Teletrack TT-221	Дрозд-М1
ET700C	MVT380	Telic Picotrack	Скаут МТ-500
Falcom STEPP II	MVT400	Teltonika AT1000	СКРТ 25
Fleetfinder FM	MVT600	Teltonika FM2200	СКРТ 45
FORT-300	Navifleet Telematic	Teltonika FM3101	Шкипер
FuelAlarm	Naviset GT100	Teltonika FM4100	

GALILEO

Navitech UTP V4

Teltonika FM4200

Шкипер GPRS

[More information about each device...](#)

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You are here: [Wialon Pro](#) » [CMS Manager](#) » [Units](#) » [Counters](#)

## Counters

Parameters for counters are adjusted on the [General](#) tab. Counters are widely used in the system - in online monitoring as well as in reports. Three types of standard counters are supported: mileage counter, engine hours counter, and GPRS traffic counter.

### Mileage Counter

Mileage counter is used to unify distance calculation in different modules like Tracks panel, Messages Mode, and reports. Four methods are suggested for calculating mileage:

- GPS: mileage is calculated by GPS coordinates. It means if the change of coordinates was detected, the distance between them is added to mileage.
- Mileage sensor: mileage is calculated by mileage sensor.
- Relative odometer: mileage is calculated by relative odometer sensor.
- GPS + engine ignition sensor: mileage is calculated by GPS coordinates considering ignition state.

Be careful when selecting a method. If you choose to calculate mileage by a sensor, and your unit does not have this sensor, then mileage values will be zero.

### Engine Hours Counter

Engine hours counter calculates engine hours by one of two sensors:

- engine ignition sensor,
- engine hours sensor.

### GPRS Traffic Counter

GPRS traffic counter is used to calculate Internet traffic consumed by the unit to transmit and receive data. The traffic is measured in kilobytes (KB). At any moment you can reset this counter manually if pressing the Reset counter button. At this you will be offered to save the event of reset and the current value in unit events history to be exported to a report later.

🔔 GPRS traffic counter may be not included to your package.

### Counter Properties

You can set the Current value for each counter, and the further calculations will start from the indicated point. In order the new data were added to the current value automatically, activate the Auto option at the right of the counter. You can manually zero counters if entering '0' to the current value field. To enter a fractional number, use dot as delimiter and enter no more than two decimal places.

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- Counters
  - Mileage Counter
  - Engine Hours Counter
  - GPRS Traffic Counter
  - Counter Properties

You are here: [Wialon Pro](#) » [CMS Manager](#) » [Units](#) » [Accessors](#)

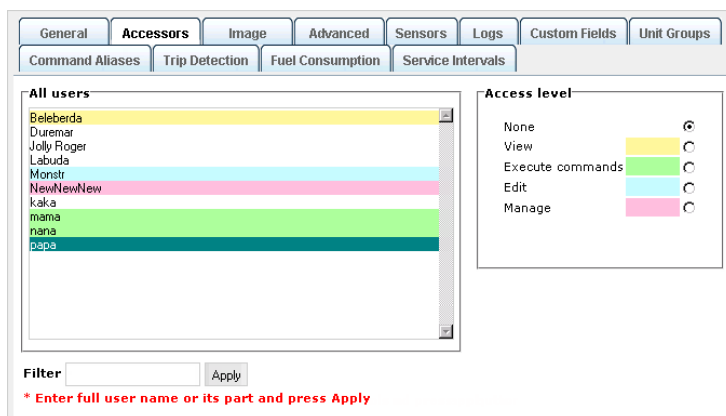
## Accessors

On this tab you indicate [access level](#) to the unit for different users.

Select user at the left, and assign access type at the right. You can determine rights for several users at once. To do this, select the needed items holding <ctrl> or <shift> key. After the access level has been assigned to a user, this user's name on the left acquires the corresponding background.

If you have less than 100 users, the full list of available users is displayed when you open the tab. If you have more than 100 users, the list is empty, and you need to apply the filter to search and display users. On the bottom of the dialog enter search terms. Then press Apply to see the results.

To assign access for users to a unit, you need to have *manage* rights to these users. Otherwise, you will not see the users on the list at all.



**Note.**

This tab is not available if:

- you have no users;
- you have no *manage* right to your users;
- your access rights to this unit are lower than *manage*.

You are here: [Wialon Pro](#) » [CMS Manager](#) » [Units](#) » [Image](#)

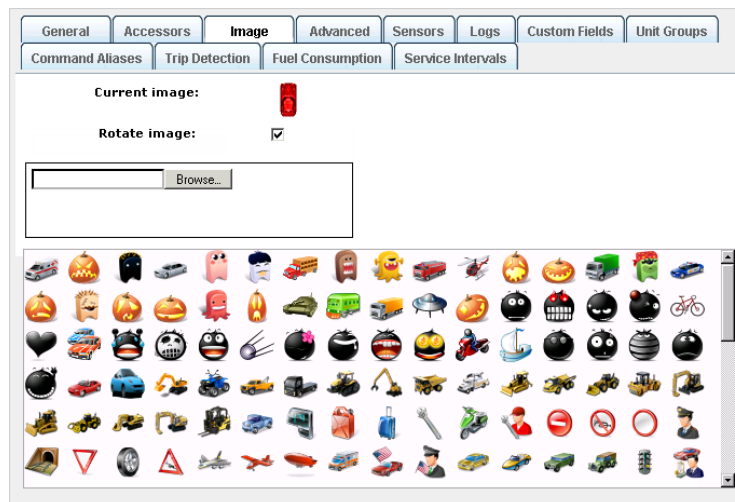
## Image

You can select and load any image to display the unit on the map.

There is a number of standard images: push the Image Library button and select one.

You can load your own image. Push Browse and select a file on the disk.

Otherwise you can leave the unit without image. In this case the unit is represented on the map by its name or by motion/stop signs (depending on user settings).



You are here: [Wialon Pro](#) » [CMS Manager](#) » [Units](#) » [Advanced Properties](#)

## Advanced Properties

On this tab messages validity parameters are defined, colors for tracks are adjusted, and speed limitations are set.

### Parameters Used in Reports

#### Speed limit

Enter the maximum speed allowed. All messages with higher speed will be detected as cases of violation and exported to the report on speedings.

#### Urban speed limit

This setting is used in report on trips. If the unit goes with the speed under indicated here, it is considered as urban mileage. If the speed is higher, this mileage is regarded as suburban mileage.

#### Maximum interval between messages

Maximum interval between messages (in seconds) is needed to exclude invalid messages. When the indicated value is exceeded it is regarded as connection loss (GSM). These cases can be viewed in the report on connection quality.

In addition, this setting is used in the engine hours report to cut off false intervals of engine hours operation.

General	Accessors	Image	<b>Advanced</b>	Sensors	Logs	Custom Fields	Unit Groups
Command Aliases	Trip Detection	Fuel Consumption	Service Intervals				
<b>Parameters used in reports:</b>							
Speed limit, km/h:				100			
Urban speed limit, km/h:				60			
Maximum interval between messages, seconds:				300			
Daily engine hours rate, hours:				6			
Mileage coefficient:				1			
<input type="checkbox"/> Speed based track colors							
<input type="checkbox"/> Sensor based track colors							
<input type="checkbox"/> Unconditional track color							
<input type="checkbox"/> Sensor color in the Monitoring panel							
<b>Enable filtration of unit position information in messages:</b> <input checked="" type="checkbox"/>							
Skip invalid messages:				<input checked="" type="checkbox"/>			
Minimum satellites:				15			
Maximum HDOP value:				2			
Maximum speed value:				160			

#### Daily engine hours rate

If the unit has an engine hours sensor, here you can indicate the daily rate of engine hours to use this value in the corresponding report.

#### Mileage Coefficient

Mileage coefficient is useful to compare detected mileage with mileage by speedometer. The corresponding column can be included in any report containing information about mileage.

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- Advanced Properties
- Parameters Used in Reports
  - Speed limit
  - Urban speed limit
  - Maximum interval between messages
  - Daily engine hours rate
  - Mileage Coefficient
- Track Color
  - Speed based track colors
  - Sensor based track colors
  - Unconditional track color
  - Sensor color in the Monitoring panel
- Message Validity
  - Enable filtration of unit position information in messages

## Speed based track colors

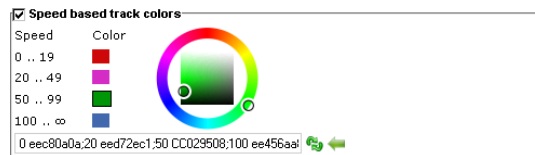
This feature is used to draw unit tracks in the Tracks panel, in the Messages Mode, and in the reports. If this option is activated, track colors will depend on unit speed. If not activated, one color is applied to the track regardless the speed.

Enter pairs Speed/Color separating them by ';'. For example, if '0 ff0000; 60 cc0000ff' is entered the track consisting of messages with speeds form 0 to 59 km/h will be displayed in red color, over 60 km/h - in blue.

To set a color you can use also a color panel on the right of the table of speed and colors. To activate the panel, click on any colored rectangle.

To apply settings push Refresh .

To restore default colors push Reset to default .



## Sensor based track colors

The track can be drawn in different colors according to a sensors values. Choose a sensor to be taken into account. Then define sensor values and colors corresponding to them in the same way as for speed based track colors.



The color for some range can be transparent. For this, its first bite should be 0x01. For example, the string '0 1ff0000;0.9 00ff00' means that the values from 0 to 0.9 will be transparent, from 0.9 and upper - green.

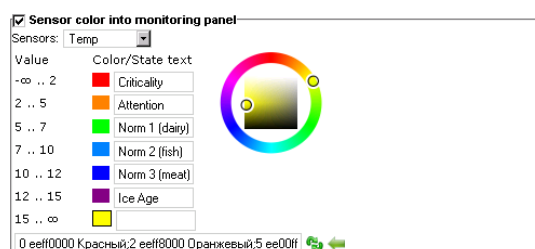
## Unconditional track color

Track color set here is applied to all tracks of the unit regardless speed or sensor values. This option allows to assign an individual track color for each unit which is very useful for rendering unit group tracks on the map. Individual colors help to differentiate tracks from one another.

## Sensor color in the Monitoring panel

It is possible to visualize sensor state on the monitoring panel in the appropriate column that is activated in user settings.

Value intervals and colors are set in the manner as for track colors. Besides, you can enter description for each interval. These descriptions will be used in popup windows for the Sensor Value column in the monitoring panel. If no description is assigned here, the exact value will be displayed in the popup window.



The same colors can be used for unit visualization on the map. Activate the option *Replace unit icons with motion state signs* in user settings. In this case the unit will be displayed on the map not with its image but with special signs as arrow (moving), square (stationary) or yellow (stationary but engine on). These signs will have the color defined on this tab.

## Message Validity

---

### Enable filtration of unit position information in messages

All messages without any exception are stored in the system. However, if having outlying data, it can affect reports and other processes based on database analysis. That is why, it is recommended to enable filtration of data. For example, if there are outlying data, messages without coordinates, etc, these messages can be marked as invalid and ignored when generating reports, calculating mileage, and so on. To adjust filtration settings, fill in the fields:

#### Skip invalid messages

Some controllers may send a flag about coordinates validity/invalidity in messages. A messages with invalid coordinates is marked by the flag of invalidity, and when sending such a message to the server, the current time and the last valid coordinates are given. Wialon will consider this message as a message without position data, and it will be not used when constructing movement tracks, detecting location in reports, etc. However, if this messages contains other parameters (such as sensors values), they will be used.

#### Minimum satellites

If the number of satellites locked is lower, the message considered to be invalid. Recommended value is three and more, but some equipment can give correct coordinates beginning form two satellites.

#### Maximum HDOP value

HDOP refers to Horizontal Dilution of Precision. Here you set the minimum HDOP value for messages to be regarded as valid. The lower this parameter, more accurate the coordinates.

#### Maximum speed

The messages which contain the speed higher than set here, are marked as invalid. The values must be in km/h.



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## Sensors

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- [Sensors](#)
- [Sensor Properties](#)

On the Sensors tab of Unit Properties dialog, sensors connected to equipment are added and configured as well as edited and removed.

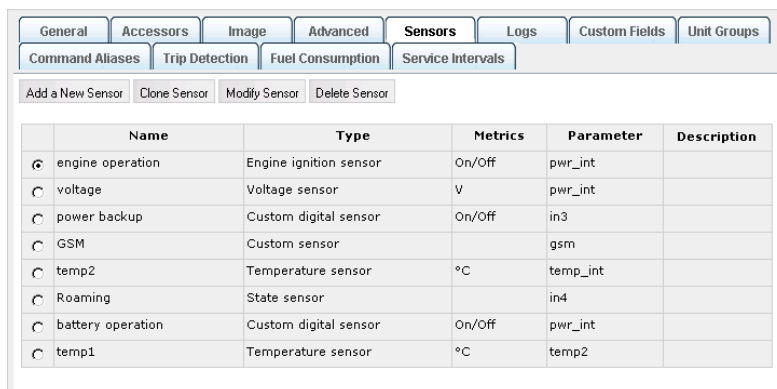
On the list you see each sensor name, its type, parameter, custom description, etc.

To create a new sensor push *Add a New Sensor* button, fill in the fields and press OK.

To edit an existing sensor or just view its settings, select this sensor and press *Modify Sensor*.

To quickly create a sensor with similar settings, select this sensor and press *Clone Sensor*.

To delete a sensor, select this sensor and press *Delete Sensor*.



	Name	Type	Metrics	Parameter	Description
<input type="checkbox"/>	engine operation	Engine ignition sensor	On/Off	pwr_int	
<input type="checkbox"/>	voltage	Voltage sensor	V	pwr_int	
<input type="checkbox"/>	power backup	Custom digital sensor	On/Off	in3	
<input type="checkbox"/>	GSM	Custom sensor		gsm	
<input type="checkbox"/>	temp2	Temperature sensor	°C	temp_int	
<input type="checkbox"/>	Roaming	State sensor		in4	
<input type="checkbox"/>	battery operation	Custom digital sensor	On/Off	pwr_int	
<input type="checkbox"/>	temp1	Temperature sensor	°C	temp2	

If you use similar devices for different units, it is convenient to configure sensors once, and then [import](#) them to other units.

## Sensor Properties

### Name

Give a name to the sensor. It must consist of 1 or more symbols. The name will be visible in unit info tip, in reports and messages.

### Sensor type

Choose the [sensor](#) type form the dropdown list of available types.

### Unit of measure

As a rule, possible unit of measure is given. However you can key in your own. This is especially applicable for digital sensors such as engine operation sensor or custom digital sensors. Instead of default On/Off values you can key in *Activated/Deactivated*, *Laden/Unladen*, and the like.

### Parameter

[Parameters](#) come in messages. If the unit already has messages, parameter name can be picked up from the list of available in the last message.

### Description

This field is optional. Add any description and options if needed.

### Validator and Validation type

This is optional. [Validation](#) defines dependency of sensors from each other.

Then you have to set calculation table for the sensor. It is especially needed for analogue sensors. Not all sensors send ready values that can be put into a report and be intelligible to any user.

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## Sensor Types

There are many types of sensors. When configuring a sensor, the choice of sensor type depends on used device and its principle of operation.

Sensor type	Metrics	Description
Impulse fuel consumption sensor	-	The sensor shows fuel consumption over a period of time and presents this data number of impulses. Such sensors usually have a limit after which they are zeroed. The calculation table must be compiled to make it possible to convert impulses to liters. The sensor is needed to make reports on fuel consumption when the calculation method is 'Impulse fuel consumption sensor'.
Absolute fuel consumption sensor	liters (lt)	The sensor detects fuel consumption over all period of vehicle operation. The sensor is needed to make reports on fuel consumption when the calculation method is 'Absolute fuel consumption sensor'.
Instant fuel consumption sensor	-	The sensor shows fuel consumed from the previous measure (message). The sensor is needed to make reports on fuel consumption when the calculation method is 'Instant fuel consumption sensor'.
Fuel level sensor	liters (lt)	This sensor is placed in the tank. The sensor is needed to make reports on fuel consumption when the calculation method is 'Fuel level sensor'.
Fuel level impulse sensor	liters (lt)	The sensor detects the number of impulses in a period of time. Fuel level in the tank is calculated from receives values.
Temperature sensor	Celsius degrees (°C)	The sensor showing some parameter value (not necessary temperature). It can be used to analyze input data.
Temperature coefficient	-	Temperature coefficient which affects fuel level calculations at different temperature in the tank.
Engine revs sensor	rounds per minute (rpm)	The sensor displays engine speed.
Engine ignition sensor	On/Off	This is ignition sensor that is used in the report on engine hours as well as in trips/stays detection.
Voltage sensor	volts (V)	The sensor showing some parameter value (not necessary voltage). It can be used to analyze input data.
Custom digital sensor	On/Off	This sensor can register two states. Its values can be displayed in unit info tip or sent to report.
Custom sensor	any	This is a custom sensor for which you can set any unit of measure. Its values can be displayed in unit info tip or sent to report.
Mileage sensor	kilometers (km) or miles (mi)	The sensor showing the distance travelled. It can be used to detect trips and stays.
Relative odometer	kilometers (km) or miles (mi)	The sensor shows the distance travelled since the previous message. It can be used to detect trips and stays.
Engine efficiency sensor	on/off	Defines whether attached implements is operating. Shows the time of work between switchings of states (from 1 to 1 or 0).

Absolute engine hours	hours	The sensor registers the total amount of engine hours.
Relative engine hours	hours	The sensor registers the amount of engine hours subject to intensity of work.
Counter sensor	number	The sensor can show passenger traffic or count the number of some actions like opening/closing the door, etc. Several types of counters are known: - instant (counts the number from the previous to the current message), - differential (shows total number), differential with overflow (2 bytes), - switcher from OFF to ON (counts the number of activations), - switcher from ON to OFF (counts the number of deactivations). Besides, you can enter any metrics for this sensor (used in reports).
Accelerometer	G	This types of sensor is used to measure acceleration at X, Y, Z axes and immediately detect a collision of cars.

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## Sensor Parameter

Parameter is a required [sensor property](#). Each sensor is based on a parameter coming in messages. If the configured unit already has messages, it is recommended to explore them and find available parameters.

Parameters can be of any names. These names are normally predefined in device configuration, for example, *param199*, *param240*, *TEMP*, *pwr\_int*, *gsm*, *can6*, and the like. Read device specification to find out which parameters are available and what they measure.

One parameter can be used to create as many different sensors as you want.

### Standard Parameters

Some of supported parameters are reserved in the system as default:

speed	speed of motion
altitude	altitude above sea level (may be not supported by some devices)
sats	satellites count
course	course (direction of motion)
lat	geographical latitude
lon	geographical longitude
time	time in message

### Inputs and Outputs

The system supports up to 32 digital inputs and outputs. They are adjusted in the following format:

inN	digital input parameter, N - input number
outN	digital output parameter, N - output number
adcN	analog input parameter, N - input number

For example, *adc8* is referred to as parameter which registers the values coming from the eighth analog input.

Normally, data from digital inputs and outputs are presented in messages in the following format: I/O = 0/0, where I refers to inputs, O - outputs. If I/O = 0/0, it means all bits (inputs and outputs) are inactive. If something of them is not zero, it means that an input/output or several of them are active. To define, which of them exactly, hexadecimal number (which you see in message) must be converted into bit number.

For example, when ignition was activated, the message with parameter I/O = 10/0 was received. We need to retrieve bit (input in our case) number from the received value - 10. To achieve this, open the calculator in the HEX mode and key in 10. Then switch to the BIN mode and get the binary number - 10000 in our case. Now count in which position 1 appeared (count from right to left). In our example, this is the 5th position, so, the ignition is connected to digital input 5. This means that the required parameter is *in5*.

### Bitwise Parameter Control

There is a possibility of bitwise parameter control. That means that not the whole parameter value can be analyzed but a certain bit. For this, indicate bit number after parameter name separating it with colon. For example, *param199:3* should be written to control the 3rd bit of the parameter named param199.

This feature is applicable when a device sends various data in one parameter: for example, the first bit shows alarm condition (on/off), the second bit indicates driver's door state (open/closed), the third - headlights, etc. Thus, using

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bitwise control it is possible to create several sensors on basis of one parameter.

Note that doubles are converted to integers, and only then the bit is retrieved.

## Constant Parameter

---

Besides, `constN` parameter can be used to create a sensor which always returns the same value. N is any number, e.g. `const10`, `const-8.5`. Such a sensor can be helpful in charts or as a validator.

Such a sensor can be used both independently (for example, in charts to mark some critical line) or as a part of [validation](#) chain or in [expressions](#).

## Expressions

---

Parameter for a sensor can be set in the form of expression. In those expression you can use:

- parameters in the current message (*adc1*, *in1* etc.),
- parameters in the previous message (they begin from the hash sign #, for example, *#adc1*),
- bitwise parameters (like *param199:3*),
- sensors (sensor name must be in square brackets, for example, *[Fuel level]*),
- constant numbers (*const10*, *const-4.54* etc.),
- mathematical operation signs:

+	addition
-	subtraction
*	multiplication
/	division
^	exponentiation & rooting
( )	brackets of priority

For example,  $\wedge\text{const}2$  - square,  $\wedge\text{const}0.5$  - take the square root .

### ⚠ Note:

Parameters from the previous message are not available in notifications.

Expressions allow creating a great variety of sensors which can satisfy any needs and assigned tasks.

## Example 1: detecting speed by GPS coordinates

It is possible to create a sensor to detect speed by coordinates. It will have the following parameter:

```
((lat-#lat)^const2+(lon-#lon)^const2)^const0.5/(time-#time)*const200000
```

### Explanation:

The traditional formula to calculate the speed of movement is 'distance divided by time'. To calculate the distance, we apply Pythagorean theorem: squared difference of latitudes in neighboring messages plus squared difference of longitudes in neighboring messages, and then the square root is taken from this sum. So, we get the distance (in degrees). This value is divided by the difference of time in two neighboring messages. As the result, we have the distance in degrees per second. To convert this to more habitual kilometers per hour (or other metrics), we apply a special coefficient. It varies depending on geographical position. In the example above it is equal to 200000 and applicable to Moscow.

If you have the ignition sensor, the parameter can be set like this:

```
((lat-#lat)^const2+(lon-#lon)^const2)^const0.5/(time-#time)*const200000*[Ignition sensor name]
```

## Example 2: relative engine hours sensor

To get real [engine hours](#) in report, create two sensors:

1. relative engine hours sensor,
2. coefficient sensor which depends on engine revolutions.

First, create a sensor of *Relative engine hours* type. The parameter for the sensor will be:

```
(time-#time)*[Name of coefficient sensor]/const3600
```

The meaning: time difference in neighboring messages multiplied by the coefficient of intensity of work and divided by 3600. The division by 3600 is applied to convert seconds into hours.

Then, create the coefficient sensor which will define the intensity of work depending on engine revolutions. Dependency scheme can be like this:

- 500 rpm correspond to 90 seconds of engine work coefficient 1,5
- 1000 rpm correspond to 60 seconds of engine work coefficient 1
- 1500 rpm correspond to 40 seconds of engine work coefficient 0.67
- 2000 rpm correspond to 1 minutes of engine work coefficient 0.33

Let's assume that *param1* sends engine revolutions. Then the coefficient parameter will be like this:

```
(param1+#param1)/const2
```

The meaning: arithmetic average of engine revolutions between neighboring messages.

To convert revolutions into coefficient, adjust the calculation table for this sensor:

- x=500 y=1,5
- x=1000 y=1
- x=1500 y=0.67
- x=2000 y=0.33

Do not forget to set the relative engine hours sensor as the counter of engine hours ([General](#) tab).

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## Validation of Sensors

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Validation defines dependency of sensors from each other. It is adjusted in [sensor properties](#).

Validator is a sensor that affects the current sensor. Validator is another sensor which must be created in advance. It is chosen from the list of available sensors.

Validation type defines in which way the validator will affect the current sensor. The following validation methods are available:

- *Logical AND*: values of both sensors are analyzed, and the logical function AND is applied. That means, the output is true (1) if both values are not null. As a result, current sensor value can be either 0 or 1.
- *Logical OR*: both values are analyzed, and the logical function OR is applied. That means, the output is true if at least one value is not null. As a result, current sensor value can be either 0 or 1.
- *Not-null check*: if validator is not null, current sensor value is considered true and displayed without transformations. In the other case, it is blank.
- *Mathematical AND*: the mathematical function AND is applied.
- *Mathematical OR*: the mathematical function OR is applied.
- *Sum up*: values are summed up.
- *Subtract validator from sensor*: validator value is subtracted from sensor value.
- *Subtract sensor from validator*: sensor value is subtracted from validator value.
- *Multiply*: values are multiplied.
- *Divide sensor by validator*: sensor value is divided by validator value.
- *Divide validator by sensor*: validator value is divided by sensor value.

*Note:*

Validation chain can consist of any number of sensors. So, one sensor can be a validator for another sensor and at the same time depend on the third sensor.

### Example

Let us suppose, three different kinds of equipment is installed on a unit (brush, plough, and thrower). Each of them is connected to a digital input which shows whether it is active at the moment or not. Using the validation system, we can control all three pieces of equipment not separately from each other but at once, in one sensor.

For each piece of equipment we create a sensor, so, as a result we have three sensors - A, B and C. Let them all be custom digital sensors (see [Sensor Types](#)). With this, each sensor must have a calculation table adjusted in such a way that each sensor has a unique value. For example, one sensor (brush) if activated, will send 1, as usual; the second sensor (plough) will send 10; and the third sensor (thrower) will send 100. Thus, if you sum up the received values, you can easily estimate which sensor(s) are activated. Possible values:

- 0 - all equipment is off;
- 1 - the brush is on;
- 10 - the plough is on;
- 11 - the brush and plough are on;
- 100 - the thrower is on;
- 101 - the brush and thrower are on;

- 110 - the thrower and plough are on;
- 111 - all equipment is on.

To make this scheme work, adjust dependency between the sensors. Let's make Sensor A basic. Then the validator for Sensor A will be Sensor B, with validation type 'Sum up'. Sensor C will be validator for Sensor B (with the same validation type).

It is also useful to assign a color to each possible value (see [Advanced Properties](#)) so that these colors could be used to visualize sensor in the Monitoring panel, on the map or in tacks.

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## Calculation Table

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For analog sensors it is usually needed to compile a calculation table from the equations of straight line. When a value comes, it is substituted for  $X$ , and  $a$  and  $b$  are taken from the calculation table. As a result  $Y$  value becomes known. Each row of the table operates only within its segment that is till  $X$  value on the next row.  $X$  values cannot repeat.

$a$  coefficient is the tangent of angle (relation of the opposite cathetus to the adjoining one),  $b$  coefficient is  $Y$ -axial displacement. If you use  $a$  coefficient and want to take into account the previous segment for  $Y$ -axial displacement, put the Continue last segment flag.

It is possible to get the tangent of angle (that is needed to be substituted for  $a$  coefficient) using mathematics. To do this, find on  $X$  and  $Y$  axes segments of values operation (deltas). Then divide the values  $\Delta y / \Delta x$ . The result value is the tangent of angle.


Sensor parameters		Calculation table	Calculation table wizard	Calculation chart
	<b>X</b>	<b>a</b>	<b>b</b>	
	0	0.176327	0	0 X lower bound
	3	0.57735	-1.203069000	80 X upper bound
	6	1.732051	-8.131274999	
	9	5.671282	-43.58435399	
	20	1.732051	35.200266	
	23	0.57735	61.75838900	
	26	0.176327	72.184987	
	29	0.000001	77.29844100	

Calculation formula:  $Y = a * X + b$   Continue last segment  
 X: 29    a: 0.000001    b:     Add










Here you have some examples of how the table can be compiled:

1. Fill in  $X$  and  $b$  values, and  $a$  set as zero. This method is convenient if converting a analogue signal to a digital.
2. Select *Continue last segment* if needed to count  $Y$ -axial displacement. Fill in  $X$  and  $a$  values. This method is convenient if needed to get a curve knowing the angles.
3. Fill in  $X$ ,  $b$  and  $a$  values. Use this method to get the calculation table under your complete control.

## Calculation Table Wizard

This way of creating the calculation table is more atomized. Here it is enough to enter input  $X$  values and output  $Y$  values. After entering each pair of values, push the Add button. Incorrect pairs can be deleted using  button.

When all values are entered, press Generate calculation table. The calculation table in the previous tab will be replaced with new values.

Sensor parameters		Calculation table	Calculation table wizard	Calculation chart
	<b>X</b>	<b>Y</b>		
	0	0		Enter input X values and their corresponding output Y values
	86	10		
	173	20		
	252	30		
	330	40		
	405	50		
	477	60		
	546	70		
	618	80		

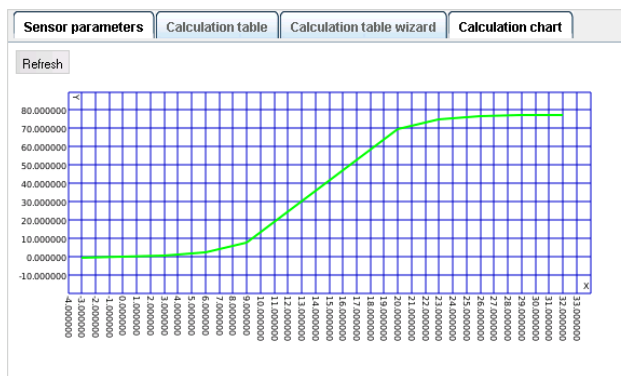
X: 618    Y: 80    Add    Generate calculation table

When reopening the dialog, all data entered on this tab is preserved. However, note that if any changes were made in the Calculation Table tab, they will not affect the Calculation Table Wizard tab. In other words, the Calculation Table Wizard displays only values you entered but not always reflects real situation.

## Calculation Chart

The graphic implementation of the created calculation table can be viewed in the Calculation Chart tab. Push the Refresh button to build the chart on the basis of your calculation table.

The function continue operating to infinity if there is no limitations. The chart extends also to the left to minus infinity. If there are limitations, the chart expands quarter-size to both sides right and left.



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## Logs










Here you can enter any custom notes about your unit. These notes will remain in unit properties even in case of its messages database is deleted.

To add a note, type it in the *New log* field and press *Add*. It will immediately appear on the list. To make changes or simply view the log, you should have *edit* or *manage* access to the unit.

Besides, all changes concerning a certain unit can be saved to the log. For this, flag the Enable logging checkbox (it is available for users with *manage* rights only). If this option is activated, the following information is logged: General, Accessors, Sensors, Trip Detector, Fuel Consumption, Service Intervals, as well as messages and settings import, driver shifts, and deleting messages.

The table includes the following columns:

- Date: date and time when changes were made.
- User: the name of the user who changed unit properties.
- IP: IP address of the computer from which changes were made.
- Text: the text of the record.
- Delete: the button to delete a record. To delete all records, user *Clear all* button. Deleting records is available only to users with *manage* rights.

General		Accessors		Image		Advanced		Sensors		Logs		Custom Fields		Unit Groups	
Command Aliases				Trip Detection				Fuel Consumption				Service Intervals			
Date	User	IP	Text									Delete			
12:00:29	user	10.1.1.6	Changed fuel consumption settings												
12:00:29	user	10.1.1.6	Changed trip detector settings												
12:00:29	user	10.1.1.6	Changed access password from '' to '123'												
12:00:29	user	10.1.1.6	Allowed view user 'template3'. Previous access: None												
11:42:31	user	10.1.1.6	Created sensor 'sens2'												
2010-05-18 14:37:47	user		Custom fields added.												
2010-05-18 14:36:13	user		Today fuel sensors were added. Now we can control fuel consumption and detect thefts.												
2010-05-18 14:32:57	user		Good luck to the unit!												
2010-05-18 14:30:43	user		This is my first note about the unit. It was configured 2009.12.13.												

New log:   Log filter:     Enable logging

Almost all data appear in the log after saving changes and reopening unit properties dialog. To quickly find a record in the log, use filter: enter text mask and press *Apply*.

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## Custom Fields

Custom fields can be added to register additional information of any type. This can be some notes or precisions about the equipment, vehicle or any other information needed.

Key in a field name and its value and press the Add button. To delete a field press Remove.

General		Accessors	Image	Advanced	Sensors	Logs	<b>Custom Fields</b>	Unit Groups
Command Aliases		Trip Detection	Fuel Consumption	Service Intervals				
Name	Value							
Carrying capacity	3 tonnes	+						
Fuel	Gas	+						
Year mark	1999	+						
Made in	Italia	+						
<input type="text"/>	<input type="text"/>	+						

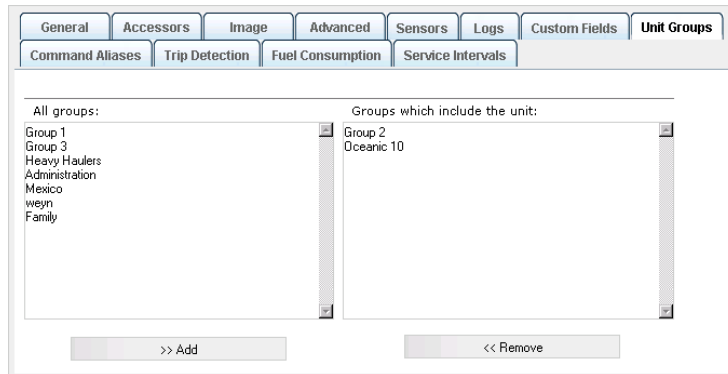
When the next time you will open unit properties dialog, the entered fields will be alphabetized. The same will happen when displaying custom fields in unit info tip.

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## Unit Groups

On this tab you can view whether the unit is included in some group or not. You can also see the list of all existent groups and include the unit to one or several groups if needed.

To include/exclude the unit in/from groups, use the appropriate buttons Add and Remove or double-click on a group in the appropriate list.



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## Command Aliases

This tab gives possibility to rename standard commands and specify their parameters. This tab is not shown if you have only *view* access to this unit.

General		Accessors	Image	Advanced	Sensors	Logs	Custom Fields	Unit Groups
Command Aliases		Trip Detection	Fuel Consumption	Service Intervals				
New Command Alias		Clone Command Alias	Modify Command Alias	Delete Command Alias	<input checked="" type="checkbox"/> Hide standard commands			
Command alias name	Command name	Link type	Parameters					
<input checked="" type="radio"/> Full stop	Block engine (block_engine)	UDP						
<input type="radio"/> Message	Send custom message (custom_msg)	TCP	go home					
<input type="radio"/> You are free	Unblock engine (unblock_engine)	Virtual						
<input type="radio"/> Where	Locate device (query_pos)	UDP						
<input type="radio"/> Day interval 2	Set online report period (set_report_interval)	SMS	2					
<input type="radio"/> Night interval 60	Set online report period (set_report_interval)	SMS	60					
<input type="radio"/> Off top	Deactivate output (output_off)	TCP	out3					
<input type="radio"/> On moon	Activate output (output_on)	TCP	out7					

To create a new alias, press the button *New Command Alias*. Sometimes it is convenient to create a new alias using another alias as the bases - select template alias and press *Clone Command Alias*. To view or change properties of an existing alias, select it and press *Modify Command Alias*. To delete an alias, select it and press *Delete Command Alias*.

Command alias has the following properties:

- **Command alias name**  
Input a new name for a command. Names cannot be repeated within one unit.
- **Command name**  
Choose a command from the list of original commands. Note that the list contains 13 standard commands, and not all of them may be supported by device used.
- **Link type**  
Select the link type to be used each time when sending the command (Auto, TCP, UDP, Virtual, SMS). If *Auto* link type is set, the program will automatically select a channel which is available at the moment (if several are available, the priority is given like in the list of link types).
- **Parameters**  
Set additional parameters (like input/output number, report interval, etc.) if necessary.

It will be impossible to change link type or parameters when executing this command. However, using one original command, you can create several aliases with different parameters and link types.

Command alias name:	<input type="text" value="Day interval 2"/>
Command name:	<input type="text" value="Set online report period [set_report_interval]"/>
Link type:	<input type="text" value="SMS"/>
Parameters:	<input type="text" value="2"/>
<input type="button" value="Cancel"/> <input type="button" value="OK"/>	

Renamed commands can exist together with standard commands or instead of them. It depends on the state of the flag Hide standard commands.

Command aliases will appear on the list of available commands in the Monitoring panel. They will be added to the standard list (if the checkbox 'Hide standard commands' is disabled) or fully replace the list (if the checkbox 'Hide standard commands' is enabled). In any case, only standard commands will be available in jobs and notifications.

Command aliases are available when executing a command from the Monitoring panel and in jobs. As for notifications, reports and messages mode, they work only with standard command names.

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## Trip Detection

Here you define parameters to detect trips and stays. Trip is a period of time when a unit was moving. Stay is a period of time when a unit was motionless.

Depending on the equipment installed and the parameters set on this tab the reports on movement intervals (trips) and idles (stops, parkings) can be rather different.

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## Movement Detection

There are five main methods of how movement intervals are detected:

1. GPS speed
 

This method is universal and can be applied to any device type and configuration. The parameters of this method are described below.
2. GPS coordinates
 

This method is universal as well. The movement is detected if the coordinates in two successive messages are different. The fact is that some equipment types do not provide speed parameter in messages. In this case, movement can be detected by coordinated without installing additional equipment.
3. Engine ignition sensor
 

This method is available for units having ignition sensor. If so, the trip begins when the sensor is switched on and ends when the sensor is switched off. Besides, GPS correction can be added.
4. Mileage sensor
 

This method can be used for units which have a mileage sensor. The sensor transmits the absolute mileage. The beginning of a trip is detected when the mileage value increases, and the end is detected when mileage value stops to grow. Here GPS additional correction is also available.
5. Relative odometer
 

shows what distance was rolled from the previous message. Note that 'Minimal movement speed' parameter must be '0'.

General	Accessors	Image	Advanced	Sensors	Logs	Custom Fields	Unit Groups
Command Aliases	<b>Trip Detection</b>	Fuel Consumption	Service Intervals				
Movement detection: <div style="float: right; border: 1px solid black; padding: 2px;">                         Engine ignition sensor ▼                          GPS speed                          GPS coordinates                          Engine ignition sensor                          Mileage sensor                          Relative odometer                     </div>							
Allow GPS correction:	<input checked="" type="checkbox"/>						
Min satellites count:	2						
Min moving speed, km/h:	2						
Min parking time, seconds:	600						
Max distance between messages, meters:	10000						
Min trip time, seconds:	60						
Min trip distance, meters:	100						

In all cases you can additionally use GPS correction to receive more precise data in reports.

## GPS Correction

To activate GPS correction of data put a check mark near Allow GPS correction.

- Minimum satellites count
 

It means how many satellites are needed to consider data to be valid. Recommended number is three

and more, but two are enough for some types of equipment.

- **Minimum moving speed**  
Specify which speed should be considered as the beginning of the motion. This is needed to exclude adjustment of data. The equipment can locate coordinates with an accuracy of  $\pm 10$ , so a speed of 1-2 km/h can be assigned to the unit which is not moving in fact. To exclude such cases from the trips, set this parameter.
- **Minimum perking time**  
Set time in seconds how long the unit should be immovable to register this as a parking. This option allows excluding stops in traffic jams, at a lights or at an intersections.
- **Maximum distance between messages**  
Indicate the distance in meters to exclude adjustment of data. It means if according to the message received the unit moved relatively to the previous message greater distance, then the previous trip is over and a new trip begins.
- **Minimum trip time**  
This is also to exclude cases of adjustment of data. For example, the unit on the parking moved from one place to another, and movement during 40 seconds was detected. To exclude such cases from trips, set minimum trip time (in seconds).
- **Minimum trip distance**  
This is a similar parameter. But here you indicate the minimum trip distance (in meters). For example, the car is parked, and the device sends coordinated according to which the car has moved a couple of meters. It can happen because of permissible equipment error. In order to not count such situation as movement, indicate how far the unit have to move to consider it as the start of a trip.



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## Fuel Consumption

Wialon has instruments to calculate fuel level and fuel consumption. Parameters to calculate fuel and calculation method itself are set on this tab.

Fuel fillings and thefts can be detected only if unit has fuel level sensors. Fuel consumption calculation will be more accurate if unit has fuel consumption sensors, however it can be calculated with mathematical method.

General	Accessors	Image	Advanced	Sensors	Logs
Command Aliases	Trip Detection	<b>Fuel Consumption</b>	Service Intervals		
<b>Fuel fillings/thefts detection</b>					
Minimum fuel filling volume, litres:		<input type="text" value="20"/>			
Minimum fuel theft volume, litres:		<input type="text" value="10"/>			
Ignore the messages after the start of motion, sec:		<input type="text" value="10"/>			
Minimum stay timeout to detect fuel theft, sec:		<input type="text" value="60"/>			
Detect fuel filling only while stopped:		<input checked="" type="checkbox"/>			
<b>General sensors parameters</b>					
Merge same name sensors(fuel level):		<input type="checkbox"/>			
Merge same name sensors(fuel consumption):		<input type="checkbox"/>			
Time-based fuel level sensors consumption:		<input type="checkbox"/>			
Filter fuel level sensors values:		<input checked="" type="checkbox"/>			
Filter quality (0..255):		<input type="text" value="8"/>			
<input type="checkbox"/> <b>Consumption math</b>					
Idling, litres per hour:		<input type="text" value="2"/>			
Urban cycle, litres per 100 km:		<input type="text" value="10"/>			
Suburban cycle, litres per 100 km:		<input type="text" value="7"/>			
Coefficient when moving under load:		<input type="text" value="1.3"/>			
<input type="checkbox"/> <b>Consumption by rates</b>					
Summer consumption, litres per 100 km:		<input type="text" value="10"/>			
Winter consumption, litres per 100 km:		<input type="text" value="12"/>			
Winter from:		<input type="text" value="1"/> <input type="text" value="December"/>			
Winter to:		<input type="text" value="30"/> <input type="text" value="February"/>			
<input checked="" type="checkbox"/> <b>Fuel level sensors (Used in reports)</b>					
Replace invalid values with math consumption:		<input type="checkbox"/>			
<input type="checkbox"/> <b>Impulse fuel consumption sensors</b>					
Max impulses:		<input type="text" value="0"/>			
Skip first zero value:		<input type="checkbox"/>			
<input type="checkbox"/> <b>Absolute fuel consumption sensors</b>					
<input type="checkbox"/> <b>Instant fuel consumption sensors</b>					

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  - Instant fuel consumption sensors

## Fuel fillings/thefts detection

Minimum fuel filling volume: how considerable should be increasing of fuel level to be regarded as a filling.

Minimum fuel theft volume: how considerable should be fuel level fall to be regarded as a discharge. This is activated only when the unit is stationary.

Ignore the messages after the start of motion, sec. At the very beginning of movement the data on fuel level can not accurate, so you can ignore these messages.

Minimum stay timeout to detect fuel theft, sec: how long should continue a stay accompanied with fuel level decreasing to be regarded as fuel theft.

Detect fuel filling only while stopped. If activated, the volume of filling registered can be fewer. In this case, fuel level before filling is taken from the messages with zero speed only.

Ignore filtration when calculating filling/theft volume. Filtration is set in the parameter *Filter fuel level sensors values* (below on the same page). Sometimes it may cause the underestimation of filled/stolen fuel volume. So, it can be useful to ignore filtration to calculate fuel volume. Anyway, filtration will be applied to detect filling/theft time.

## General sensors parameters

Merge same name sensors (fuel level). If there are several fuel level sensors with the same names, their values can be summed. If this feature is not activated, the search of fillings/thefts is done for each sensor separately.

📌 **Attention!** If a message contains no value of a sensor, this message is ignored in calculations.

Merge same name sensors (fuel consumption). If a unit has several engines and absolute fuel consumption sensors or impulse fuel consumption sensors are installed, this feature is useful. The values from different sensors will be summed (the sensors must have the same names). If the option is not activated, each sensor is controlled separately.

Time-based fuel level sensors consumption. This option is useful for non moving units. As a rule, fuel consumption is calculate by mileage, but it can be calculated by time as well (for hoisting cranes, for example).

Filter fuel level sensors values: apply smoothing algorithm for sensors. If marked, set also Filter quality (from 0 to 255). The greater this parameter, the smoother are the charts.

## Consumption Math

This is a purely mathematical method of calculate fuel consumption (no sensors are required). To use this method, the following parameters should be set:

- Idling, litres per hour: fuel consumption when staying with engine on;
- Urban cycle, litres per 100 km: fuel consumption when moving with a speed less than 36 km/h;
- Suburban cycle, litres per 100 km: fuel consumption when moving with a speed more than 80 km/h (fuel consumption at speed between 36 and 80 km/h is calculated in direct proportion of urban cycle to suburban cycle);
- Coefficient when moving under load: the impact of loading on fuel consumption calculations. This coefficient will be used when engine efficiency sensor value is above zero.

## Consumption by rates

This is also a mathematical method. If the previous method takes account of speed and load, this method considers the season (winter/summer time). Specify the following parameters:

- Summer consumption, litres per 100 km: the rate of fuel consumption in summer time.
- Winter consumption, litres per 100 km: the rate of fuel consumption in winter time.
- Winter from/to: winter time period.

## Fuel level sensors

Fuel consumption is defined from fuel level in the tank where fuel level sensors are installed. The difference between the average values at the beginning and at the end of the period is calculated.

## Impulse fuel consumption sensors

The readings are taken from impulse fuel consumption sensors. A sensor of this type needs a calculation table to convert impulses to liters. If there is a limit after which impulse counter is zeroed, this limit can be specified (*Maximum impulses* field). However, with such a limit, in case of abnormal reset, the further calculations become senseless. In such a case, the limit must be 0.

## Absolute fuel consumption sensors

The readings are taken from absolute fuel consumption sensors. The calculation table is applied to each sensor separately, and then the difference between transformed sensor values in two consecutive messages is calculated. You may need to add a coefficient to get more precise values. Then add to the calculation table the following entries:  $X:0$ ,  $a$ :coefficient value,  $b:0$ . For example, to increase fuel consumption level for 10%, a coefficient must be 1.1.

## Instant fuel consumption sensors

The readings are taken from instant fuel consumption sensors. It calculated how much fuel has been consumed since the previous message. Thus, unlike other fuel sensors, there is no connection between consecutive messages.

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## Service Intervals

In this tab you define maintenance intervals to perform all needed for your unit routine servicing in time. These can be oil change, yearly checkup or just a washing.

In the list you see the name of each interval, its description (if available) and the state - how much days, engine hours or kilometers has left or are already expired to do this service. Depending on the state (time left or expired), the lines are red or green.

General		Accessors	Image	Advanced	Sensors	Logs	Custom Fields	Unit Groups
Command Aliases		Trip Detection	Fuel Consumption	Service Intervals				
<input type="button" value="New Service Interval"/> <input type="button" value="Clone Service Interval"/> <input type="button" value="Modify Service Interval"/> <input type="button" value="Delete Service Interval"/>								
Service Name	Description	State						
<input checked="" type="checkbox"/>	Oil Change	452 km left, 77 engine hours left.						
<input checked="" type="checkbox"/>	Yearly Checkup	(obligatory)	134 days left.					
<input checked="" type="checkbox"/>	Washing	(optional)	5 days expired.					
<input checked="" type="checkbox"/>	Electronic Equipment Inspection	120 engine hours left.						

To add a new service interval, press **New Service Interval** button. Then enter necessary parameters: name, description, interval and last execution time.

Service Name:	Oil Change		
Description:	(obligatory)		
Mileage interval:	<input checked="" type="checkbox"/> 350	km	Last service: 567 km
Current mileage:	465	km	
Engine hours interval:	<input checked="" type="checkbox"/> 77	h	Last service: 1032 h
Current engine hours:	1032	h	
Days interval:	<input type="checkbox"/> 0	days	Last service: 1 Apr 2010 17:03
Done times:	3		
<input type="button" value="Cancel"/> <input type="button" value="OK"/>			

Three ways to indicate an interval are possible:

- Mileage interval means that the service must be done every  $n$  number of kilometers travelled.
- Engine hours interval means that the service must be done every  $n$  number of engine hours.
- Days interval means that the service must be done every  $n$  number of days.

You can simultaneously choose several interval types at once, and each of them will be calculated independently. That is the term by days cab by expired, but by mileage the term has not passed yet.

When choosing an interval, indicate which counter value (or day) was when this kind of service was made the previous time. Enter this value into the **Last Service** field. For your convenience, the current values of the counters are indicated below.

### Attention.

Check your counters properties on the **General** tab, do not forget to mark the **Auto** checkbox.

Done times: here you indicate how many time this kind of service was already done. This number can be entered into this field manually or changed automatically when registering a service of this kind. Besides, after registration the time of the **Last Service** changes, and the count of days/kilometers/engine hours will be zeroed and started again.

At the end press **OK**. The newly created service interval will appear on the list. To manage intervals, use the following buttons:

- **New Service Interval** opens a dialog to create a new service interval and set parameters for it.
- **Clone Service Interval** opens a dialog with all parameters of the selected interval. You can edit these parameters and save the interval under another name.

- Modify Service Interval opens a dialog to view and/or edit the interval.
- Delete Service Interval deletes the selected interval.

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## Unit Properties Export/Import

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- [Import Settings from File](#)
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- [Export Settings to Unit](#)

Export option is useful when you have several units with similar equipment. You adjust these settings just once and then export them to other units.

Export to unit allows to copy several properties of the current unit to other existing unit(s).

Export to file allows to store several properties of the current unit to a text file (XML) that can be used at any time when configuring new units.

Import from file is used to transmit needed properties from a previously saved XML file to a unit.

Import and export are executed in the Units panel where a special menu of import/export exists:

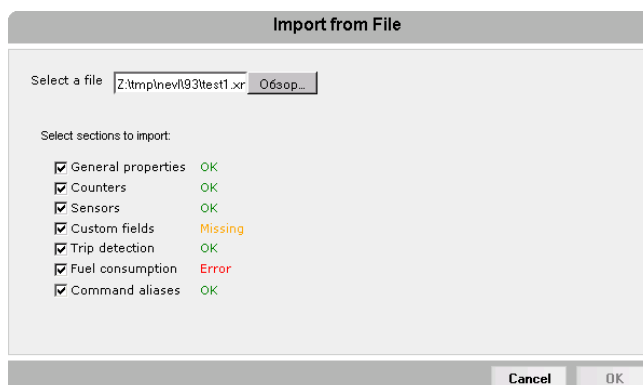
- 📁 import settings from a file to the current unit  
(this button is not displayed if you have no *view* or *manage* access to the unit),
- 📁 export the current unit settings to a file,
- 📁 export the current unit settings to other unit(s).

The settings which can be saved, exported and imported are: General tab (including counters), sensors, command aliases, custom fields, trip detector and fuel consumption.

### Import Settings from File

Settings previously saved to an XML file can be imported to a unit. To do this, in the import/export menu select the option Import from file, choose a file on the disk, check needed settings and press OK. The result will be shown right in the dialog:

- “OK” - the section has been imported successfully;
- “Missing” - the source file does not contain such section at all, so this section in the destination file will remain untouched;
- “Error” - this section cannot be imported because of some file error.



After that you can press Cancel to finish the import operation or select another file and import settings from it.

📌 *Note:*

To make import to a unit, you need to have *edit* or *manage* access rights to this unit.

Unit properties from file can be imported to several units at once - see [Unit Groups](#).

### Export Settings to XML File

Unit settings can be stored to a file. It gives possibility to create templates of unit configuration. Afterwards, the

settings stored can be wholly or partly imported to new units of a similar kind which considerably facilitates unit creation.

To export unit properties to file, choose the option Export to file. Depending on browser settings, you will be asked to open or save the file. File format is XML. Here is an example of such a file:

```
<devices>
  <device name="Sensor Rico" type="skipper2" unique_id="0021">
    <counters>
      <engine_hours auto="true" type="0x10" value="554.586666667"/>
      <mileage auto="true" type="0x0" value="25574.1737246"/>
      <bytes auto="false" value="3062784"/>
    </counters>
    <custom>
      <field name="VIN" value="245745679678"/>
      <field name="yyyy" value="2007"/>
    </custom>
    <fuelc>
      <absolute active="false"/>
      <impulse active="false" impulses="0"
skip_first_zero="false"/>
      <instant active="false"/>
      <level active="false" correct_invalid_values="false"/>
      <math active="true" coefficient_when_loaded="0.0" idle="4.0"
suburban="8.0" urban="12.0"/>
      <rates active="false" summer_consumption="10.0"
summer_idle="0.0" winter_begin_day="1" winter_begin_month="11"
winter_consumption="12.0" winter_end_day="30" winter_end_month="1" winter_idle="0.0"/>
      <general filter_level_values="false" filter_quality="0"
merge_consumption_sensors="true" merge_level_sensors="false"
time_based_calculation="false"/>
      <theft detect_fill_when_stopped_only="false"
fill_volume="0.0" ignore_filtration="false" ignore_stay_timeout="20.0"
theft_timeout="0.0" theft_volume="0.0"/>
    </fuelc>
    <sensors>
      <sensor flags="0x0" id="1" name="engine operation"
parameter="pwr_int" type="engine operation" unit="On/Off" validation_sensor_id="0"
validation_type="0">
        <ctable>
          <row a="0.0" b="-348201.3876" x="1.0"/>
          <row a="0.0" b="0.0" x="3.0"/>
          <row a="0.0" b="0.0" x="11.0"/>
          <row a="0.0" b="0.0" x="11.5"/>
          <row a="0.0" b="0.0" x="12.0"/>
          <row a="0.0" b="0.0" x="12.2"/>
          <row a="0.0" b="0.0" x="12.4"/>
          <row a="0.0" b="0.0" x="13.0"/>
          <row a="0.0" b="1.0" x="13.3"/>
          <row a="0.0" b="1.0" x="30.0"/>
        </ctable>
      </sensor>
      <sensor flags="0x0" id="2" name="Voltage sensor"
parameter="pwr_int" type="voltage" unit="V" validation_sensor_id="0"
validation_type="0">
        <ctable>
          <row a="1.0" b="0.0" x="0.0"/>
        </ctable>
      </sensor>
```

```

        <sensor flags="0x0" id="3" name="power backup"
parameter="in3" type="digital" unit="On/Off" validation_sensor_id="0"
validation_type="0"/>
        <sensor flags="0x0" id="4" name="GSM" parameter="gsm"
type="custom" validation_sensor_id="0" validation_type="0"/>
        <tripd gps_correction="true" lock_to_roads="false"
message_distance="10000" moving_speed="5" satellites="4" stay_time="510"
trip_distance="90" trip_time="60" type="3"/>
    </device>
</devices>

```

## Export Settings to Unit

The fastest way to export unit properties is to export them right from one unit to another (others). Select the option Export to unit, in the list select choose unit(s) to export settings to. In the next page indicate which settings must be exported: general settings, counters, custom fields, sensors, trip detector and/or fuel consumption. At the end press OK.

If there are sensors or custom fields among selected sections, you need to indicate export type choosing it from three options:

- Replace: custom fields, command aliases and sensors will be replaced completely.
- Merge: custom fields, command aliases or sensors having the same name will be replaced and the new ones will be added.
- Append: custom fields, command aliases or sensors having the same name will be left intact but the new ones will be added.

**Export into Units**

<input type="checkbox"/> General settings <input type="checkbox"/> Counters <input checked="" type="checkbox"/> Custom fields <input checked="" type="checkbox"/> Sensors <input checked="" type="checkbox"/> Trip detector <input checked="" type="checkbox"/> Fuel consumption <input checked="" type="checkbox"/> Command aliases	<p>Export type:</p> <div style="border: 1px solid gray; padding: 2px; width: fit-content;">Append</div> <p>Custom fields, command aliases or sensors having the same name will be left intact but the new ones will be added.</p>
--	---



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## Unit Groups

Unit group is a unity including several units which have something in common. It is convenient to use unit groups to assign access rights to users.

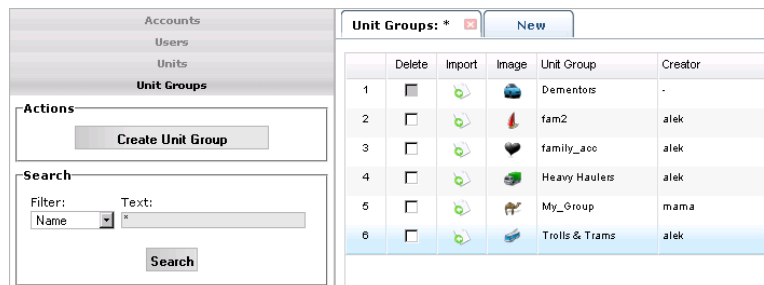
To work with groups of units, choose Unit Groups in the navigation panel on the left of the window.

Here you can:

- Create a new group.
- Find existent groups.
- View or edit their properties.
- Define access rights to groups of units.
- Import unit properties to a group of units.
- Remove unit groups from the system.

### Table of Contents ▲

- [Unit Groups](#)
- [Group Properties](#)
  - [Custom Fields](#)
- [Groups Management](#)



	Delete	Import	Image	Unit Group	Creator
1	<input type="checkbox"/>			Dementois	-
2	<input type="checkbox"/>			fam2	alek
3	<input type="checkbox"/>			family_acc	alek
4	<input type="checkbox"/>			Heavy Haulers	alek
5	<input type="checkbox"/>			My_Group	mama
6	<input type="checkbox"/>			Trolls & Trams	alek

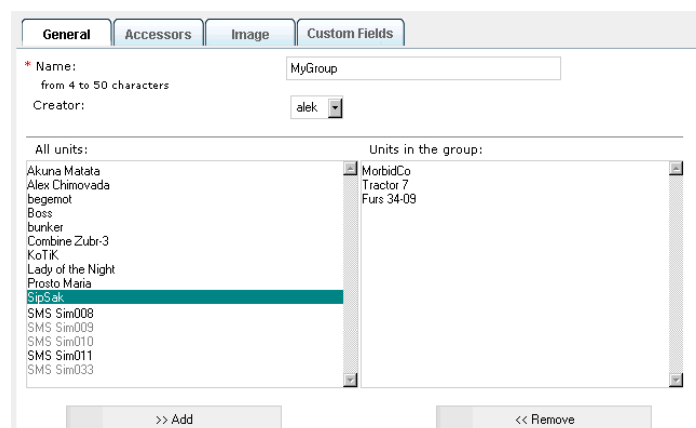
## Group Properties

To form a group of several units, press Create Unit Group button. Fill in the dialog and press OK.

### General

Give group a name no less than 4 characters. Select [creator](#) from the dropdown list. Then add units to the group. On the left there is a list of all units available. On the right there is a list of units in the group. To add a unit to the group, double-click on it or push the Add button. To remove a unit from the group, push Remove or double-click on the unit in the right column.

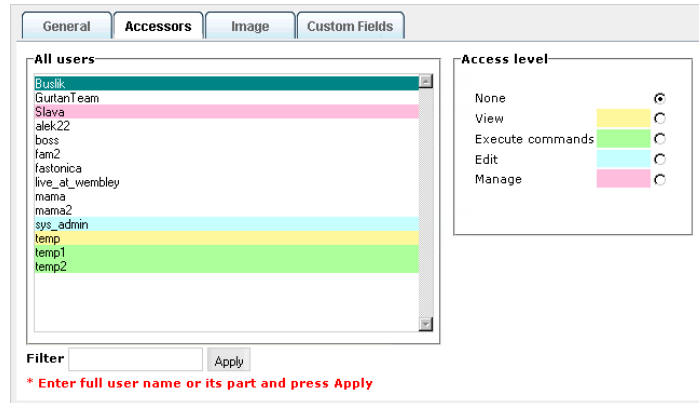
ⓘ You can add and remove only units to which you have *manage* access.



## Accessors

Access level to the group can be assigned to each user individually. On the left there is a list of users available. Click on a user name and select access level for this user on the right. Several items can be selected at once using <shift> and <ctrl> keys. The rights assigned are marked by the corresponding background color. [Access levels description...](#)

ⓘ Access rights set here are applied to all units in group. However, if a higher access level is set for a unit in the individual way, it will remain. In other words, groups are applied to enlarge rights but not to reduce rights.



## Image

Attach an image to the group. It can be selected from the set of standard images (Image Library button) or load your own image (Browse button).



ⓘ Note.

The other way to create a new group is to make a copy of an existing group and edit it. This feature is aimed to speed up the process of creating objects. Click on a group holding down the <ctrl> key. In the *Create Unit Group* dialog edit group information (name, units included, image, and other properties). Save the group by clicking OK.

## Custom Fields

Here you can enter any additional information about this unit group. Information is entered in the form of fields: <field\_name> - <field\_value>. Key in a field name and its value and press the Add button. To delete a field press Remove.



After filling in all pages and fields, press OK.

## Groups Management

### Search & Display


To view created groups in the results panel and proceed the work with them, specify the corresponding search parameters. [How to fulfil a search...](#)


In the table you see the group's image, its name and creator, and import button. Learn more about [managing tables...](#)

#### View & Edit


When clicking on a group, you can see group properties and change them if necessary (image, units included, access, and other).

#### Delete

To delete a group (*manage* access needed), check it and press the delete button below . See [Deleting Objects](#) for details.

 Deleting a group does not mean deleting units which were included to this group.

#### Import Settings from File

Unit properties previously saved to an XML file can be imported to several units at once if these units form a group. To import properties, press the Import button  against the needed group. In the dialog check the units to import settings to and press Next. Then select a file, check needed sections and press OK. The result will be displayed in the same dialog. [Details...](#)

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## Retranslators

**Attention!**

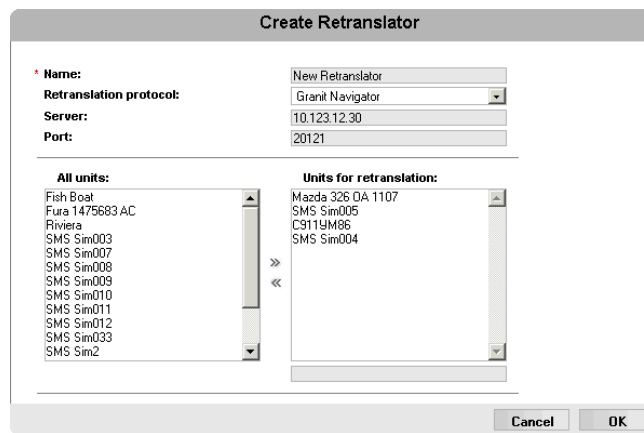
This functionality is available if *Retranslator* module is activated.

Messages from units can be retranslated in real-time from your server to other servers or systems. It is possible to retransmit data to several servers simultaneously and at different protocols. The ID of a retranslated unit can be different from its ID in Wialon.

Retranslation is possible only in CMS Manager and it is done in the **Retranslators** panel. There you can create any number of retranslators that will transmit messages of selected units to other systems. At any moment, any retranslator can be stopped or started again.

To create a retranslator, press the **Create Retranslator** button. In the dialog input a name for the retranslator (at least 4 characters) and choose a retranslation protocol. At the moment, the following retranslation protocols are available: Wialon, Nis (M2M), Granit Navigator, Skaut. Then indicate retranslation server and port. The port is not indicated, it is set as default.

Bellow select units for retranslation. To do this, move units from the left list (available units) to the right list (units for retranslation) by double-clicking on a unit or using the arrow-shaped buttons. Besides, you can input a new ID for units to be retranslated.



When a new retranslator is created, it is stopped. It can be started from the list of retranslators or in the dialog of its properties.

To view the list of available retranslators in the **results panel** and continue working with them (start, stop, add or remove units, delete, change parameters, etc.), enter corresponding **search** terms. Search results are displayed in the form of a table where you see retranslator's name, creator, retranslation protocol, server address, state, and buttons to start/stop retranslator and delete it. Click on a retranslator to view/change its properties.

Retranslators: <span style="float:right">New</span>							
	Delete	Retranslator	Creator	Retranslation protocol	Server	State	Start/stop
1	<input type="checkbox"/>	Mayon Ka	user	skaut	195.216.243.23	Stopped	▶
2	<input type="checkbox"/>	New Retranslator	user	granit3	10.123.12.30	Started	
3	<input type="checkbox"/>	Retranslator 01	user	wialon	alek.les	Started	
4	<input type="checkbox"/>	Retranslator 02	user	nis	mos.kaw	Stopped	▶
5	<input type="checkbox"/>	Retro Style	user	wialon	smp.openhosting.ru	Started	
6	<input type="checkbox"/>	To Granit	user	granit3	10.123.12.30	Stopped	▶

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## Monitoring System

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    - [Counter Sensors](#)
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    - [Digital Sensors](#)
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- Routes
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- SMS Messages
- Speeding
- Stops
- Trips
- Unfinished Rides
- Utilization Cost
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- Visited Streets
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- ▼ Charts
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## WIALON QUICK GUIDE

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### 1. LOGIN

Key in your user name and password on the login page, and press *Enter*.

ⓘ Make sure you use one of supported browsers, which are: Mozilla Firefox 3+, Opera 10.0+, Internet Explorer 8+, Google Chrome 2.0+.

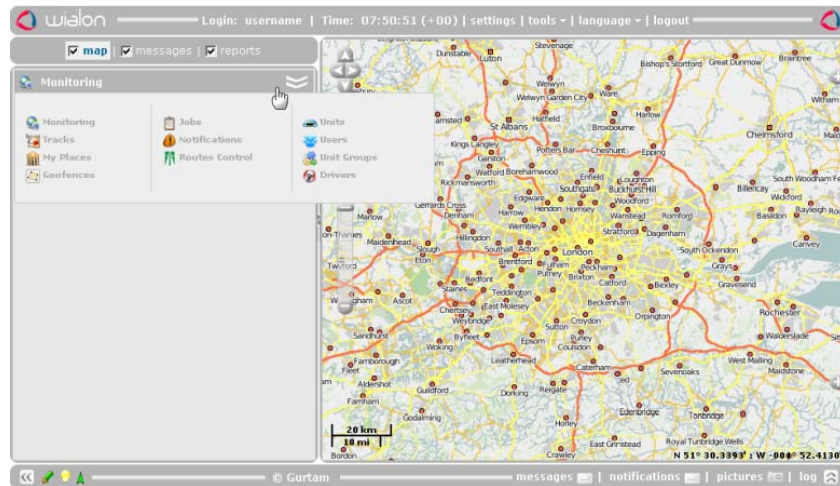


- WIALON QUICK GUIDE
- 1. LOGIN
- 2. INTERFACE
- 3. USER SETTINGS
- 4. CREATING UNIT
- 5. UNIT CHECK
- 6. CREATING GEOFENCES
- 7. NOTIFICATIONS
- 8. REPORTS

### 2. INTERFACE

You have entered the monitoring site. On the left there is the [work area](#). Here you switch between panels like *Monitoring, Tracks, My Places, Geofences, Notifications, Jobs* and so on.

On the right there is usually the map. There can also be reports, messages, log, etc. - it depends on the [mode](#) chosen. The modes (*Map, Messages, Reports*) are changed in the mode-switch panel over the work area.



Dragging the [map](#) with the mouse and zooming it with the mouse scroll, move to the location (city or town) which will be the basic for you in the tracking process.

### 3. USER SETTINGS

Now open the [User Settings](#) dialog (click the link *settings* at the top). First and foremost, indicate your time zone. ⓘ This setting is extremely important as it affects time data in reports, messages, tooltips, jobs, routes, and everywhere throughout the service.

In the same dialog move to the *Maps* tab and tick the box *Store coordinates and zoom*. With this, the current map position will be stored and used for further logins to the monitoring site.

At the end press OK to apply new settings.

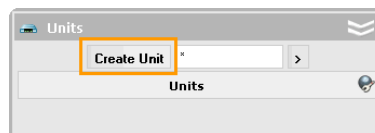
The first screenshot shows the 'User Settings' dialog box with the 'Settings' tab selected. It contains the following fields: 'Time zone' (dropdown menu showing '(00:00) GMT: Dublin, Edinburgh, Lisbon, London'), 'Daylight saving time' (checkbox checked), 'E-mail' (text input 'username@domain.com'), 'Enable public access to locator page' (checkbox unchecked), and 'City' (text input). The second screenshot shows the 'User Settings' dialog box with the 'Maps' tab selected. It contains the following fields: 'Store coordinates and zoom' (checkbox checked), 'WebGIS server URL' (text input), 'Enable Google Maps' (checkbox unchecked), 'Enable Microsoft Virtual Earth' (checkbox unchecked), and 'Enable Yandex Maps' (checkbox unchecked).

Preparatory work is finished. Now let's create a tracking unit.

## 4. CREATING UNIT

ⓘ Before configuring a unit, make sure the device is directed to Wialon. For more information on server IP, port, phone number and the like, find your type of device in the [list of supported devices](#) and set the required parameters.

Open the [Units](#) panel in the work area and press the *Create Unit* button.



The dialog with multiple unit settings will be displayed. Give a name to the unit, select device type from the list of available devices, enter unique ID (IMEI or serial number) and the phone number of the SIM-card inserted in the device.

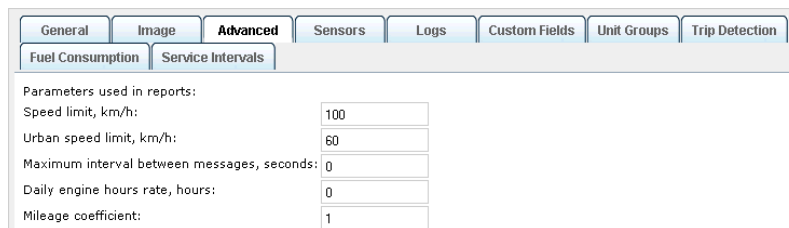
The screenshot shows the 'Create Unit' dialog box with the 'General' tab selected. It contains the following fields: 'Name' (text input 'Test\_Unit', with a note 'from 4 to 50 characters'), 'Device type' (dropdown menu showing 'Xexun TK-103'), 'Unique ID' (text input '1357924680'), 'Phone number' (text input '+2070287382'), and 'Device access password' (text input).

The *Image* tab of the dialog provides an opportunity to choose the most appropriate image to display the unit on the map. Press the *Image Library* button and choose one.

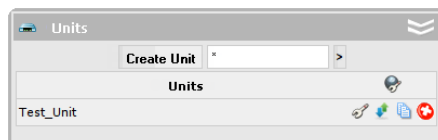
The screenshot shows the 'Create Unit' dialog box with the 'Image' tab selected. It contains the following elements: 'Current image' (text input with a small truck icon), 'Browse...' (button), and a large grid of various vehicle and object icons for selection.



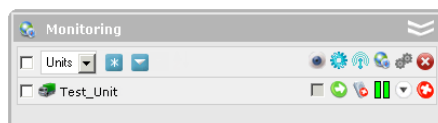
On the *Advanced* tab specify *Speed limit, km/h*. This setting is used to generate reports on speedings.



At the end press OK button. The newly created unit will appear on the list.



It will also appear in the monitoring panel.



## 5. UNIT CHECK

### a) Log

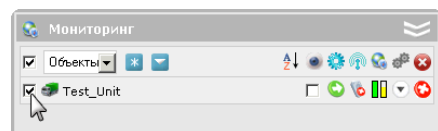
After creating a unit, data from it starts coming in the system as long as the unit is configured correctly. Each incoming message appears in the *log*. To see the log, open it pressing the button in the bottom right-hand corner of the program.



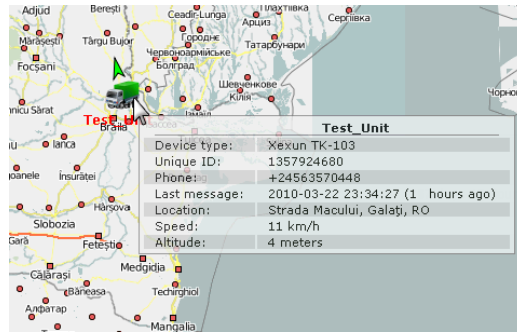
Except messages coming from tracking units, the log also shows current actions and operations such as creation and modification of geofences, notifications, unit properties, etc.

### b) Unit info tip

Tick the unit on the tracking list in the Monitoring panel to see its position on the map.

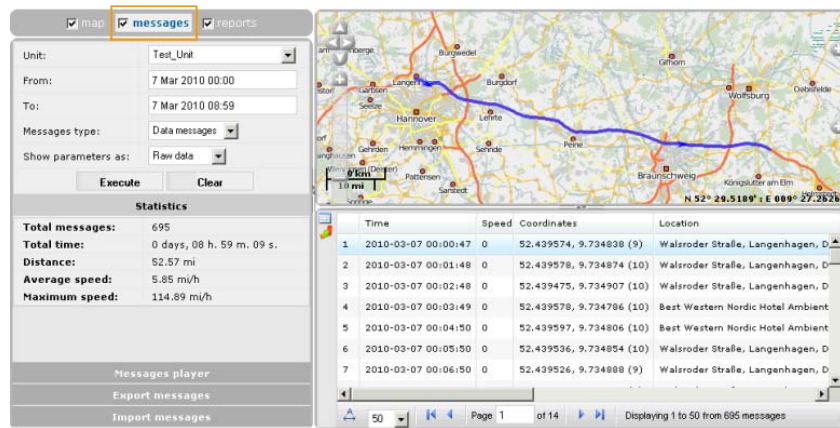


Hover the mouse pointer over the unit to see the latest data in a *tooltip*: last message time, location (address or coordinates), speed, etc.



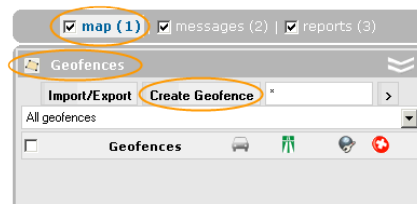
### c) Messages Mode

The most reliable way to check unit operability is to view its [messages](#). To switch to the Messages Mode, click on the *messages* link over the work area. Then select an interval to get messages for, and press *Execute*. Results appear on the right. There you can estimate how many messages were received during the indicated period and what kind of data they present. Besides, the track of unit movements is shown on the map.

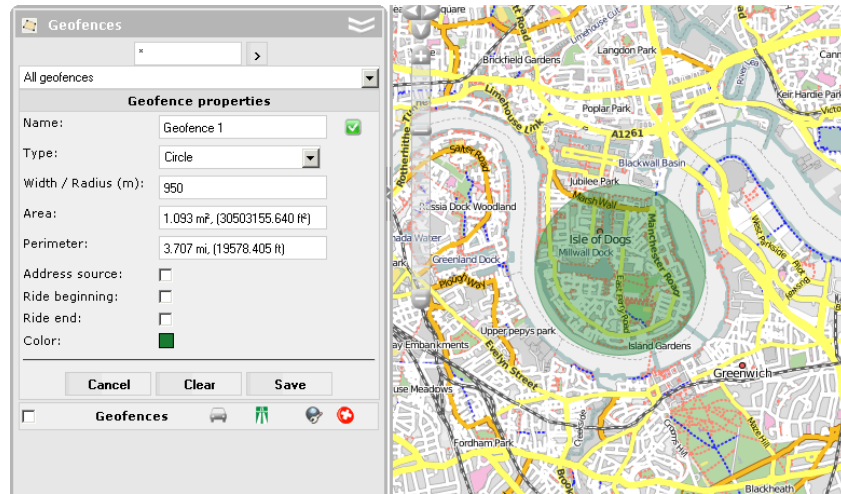


## 6. CREATING GEOFENCES

[Geofences](#) are to be created in places of interest, which should get under control. For this, go to the *Geofences* panel in the Map Mode and press the *Create Geofence* button.



The simplest and quickest geofence type to create is *circle* with specified radius. Enter name for the geofence and select the type *Circle*. Then double-click on the map in the place of supposed geofence. Alter the radius if necessary and press *Save*.

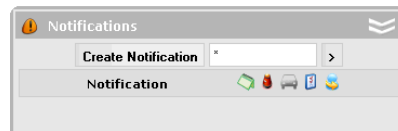


In a similar way, create as many geofences as necessary.

⚠ If you need a geofence of a more sophisticated form, choose type *Polygon* or *Line*. However, in this case a greater number of points is required to specify geofence's borders.

## 7. NOTIFICATIONS

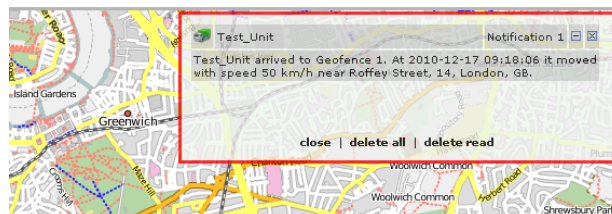
Now we can create a [notification](#) about a unit entering a geofence. Go to the *Notifications* panel and press the *Create Notification* button.



Moving through the dialog with the help of the *Next* button, set the following parameters for the notification:

1. Select your unit (tick it).
2. Choose a control type, particularly, *Geofence control*.
3. Specify a check type - *Control entries to a geofence*, and select geofence(s) to be controlled on the list below. To select several geofences, press the CTRL key on the keyboard and tick necessary geofences.
4. Leave default notification text without changes.
5. Choose a method of delivery, for example, *Display online notification in a popup window*.
6. Key in a name for the notification.
7. Press OK.

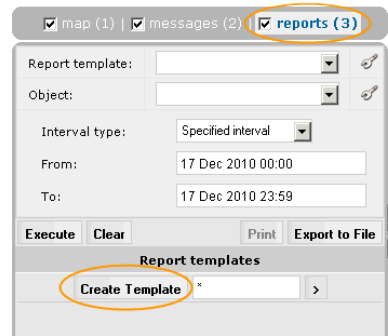
When the notification triggers, it will appear in the top right corner of the program.



## 8. REPORTS

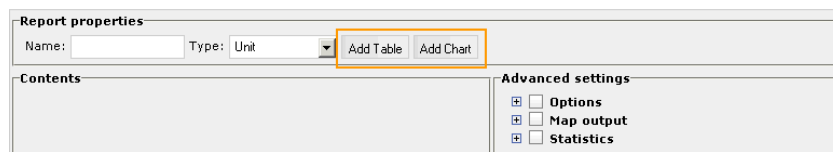
To go to the [Reports Mode](#), use the mode-switch panel above the work area. Click the *Reports* link to move to the Reports Mode.

First of all, you need to have at least one [report template](#) to generate a report according to parameters set there.

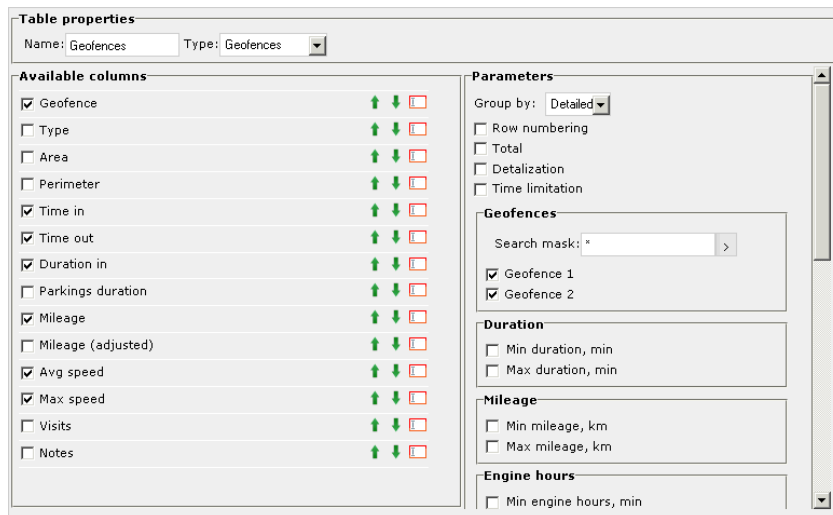


We are going to create a report template containing two **tables** (visits to geofences and speedings) and a chart.

To create a report template, press the *Create Template* button. At the top of the template properties dialog you see two important buttons - *Add Table* and *Add Chart*.



Press the *Add Table* button and set table type to *Geofences*. On the left, tick the columns to be displayed in the resulting report. On the right choose geofence(s). When finished, press OK.



Then add a table of *Speedings* type. For this table we have set the parameter *Speed limit* in unit properties (*Advanced* tab). In additional parameters indicate that a speeding should last at least one minute. Press OK.

**Table properties**

Name: Speedings Type: Speedings

**Available columns**

- Beginning
- Location
- Duration
- Max speed
- Mileage
- Mileage (adjusted)
- Avg speed
- Driver
- Count
- Notes

**Parameters**

Group by: Detailed

- Row numbering
- Total
- Detailization
- Time limitation

**Duration**

- Min duration, min 1
- Max duration, min

**Mileage**

- Min mileage, km
- Max mileage, km

**Geofences**

Search mask: \*

- None In Out Geofence
- Geofence 1
- Geofence 2

Press the *Add Chart* button and select the necessary **chart** type. (Note that for many charts to be generated the appropriate sensors are required.) Press OK.

**Chart properties**

Name: Chart Type: Regular  Split sensors  Count from zero

**Data set**

- Temperature (smoothed)
- Engine revs
- Engine revs (smoothed)
- Counter sensors
- Custom sensors
- Custom sensors (smoothed)
- Custom digital sensors
- Custom digital sensors (smoothed)
- Absolute mileage
- Mileage in trips
- Instant mileage
- Instant mileage (smoothed)
- Fuel level
- Processed fuel level
- Fuel consumption by ImpFCS
- Fuel consumption by ImpFCS (smoothed)

**Chart params**

Trips

**Select sensors**

- All sensors
- Sensor 1
- Sensor 2
- Sensor 3
- Sensor 4

That is how our report template looks. Now name it and save.

**Report properties**

Name: Basic Report Type: Unit Add Table Add Chart

**Contents**

- Geofences
- Speedings
- Chart

**Advanced settings**

- Options
- Map output
- Statistics

To obtain a report, set parameters in the work area: select report template, unit, reported interval, and press *Execute*.

Report template: Basic Report

Object: Test\_Unit

Interval type: Specified interval

From: 17 Dec 2010 00:00

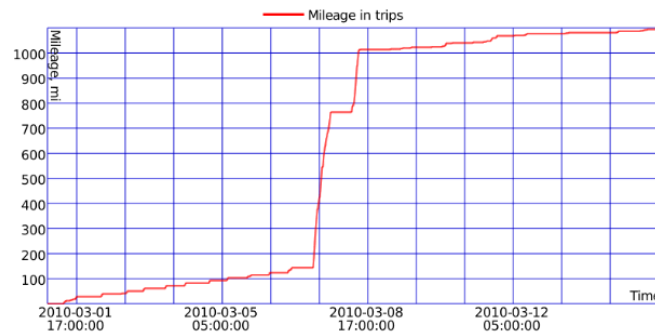
To: 17 Dec 2010 23:59

Execute Clear Print Export to File

Generated report will appear on the right. On the left you see tabs to navigate between report sections (tables and charts). Besides, the report can be exported to various formats or printed (for this, use the proper buttons - *Export to File* and *Print*).

Geofence	Time in	Time out	Duration in	Mileage	Avg speed	Max speed
Geofence 1	2010-03-01 09:49:35	2010-03-01 16:24:35	6:35:00	16.38 mi	2 mph	76 mph
Geofence 2	2010-03-01 16:25:52	2010-03-02 07:27:35	15:01:43	13.70 mi	1 mph	58 mph
Geofence 1	2010-03-02 07:32:00	2010-03-02 21:46:59	14:14:59	11.06 mi	1 mph	76 mph
Geofence 2	2010-03-02 21:49:25	2010-03-03 07:37:14	9:47:49	12.80 mi	1 mph	42 mph
Geofence 1	2010-03-03 07:41:21	2010-03-03 20:17:02	12:35:41	10.91 mi	1 mph	71 mph
Geofence 2	2010-03-03 20:18:15	2010-03-04 07:35:20	11:17:05	13.73 mi	1 mph	51 mph
Geofence 1	2010-03-04 07:40:59	2010-03-04 21:28:48	13:47:49	9.96 mi	1 mph	81 mph
Geofence 2	2010-03-04 21:29:26	2010-03-05 08:00:28	10:31:02	13.49 mi	1 mph	51 mph
Geofence 1	2010-03-05 08:04:47	2010-03-05 19:45:45	11:40:58	9.97 mi	1 mph	57 mph
Geofence 2	2010-03-05 19:48:18	2010-03-06 08:15:17	12:26:59	13.61 mi	1 mph	47 mph

Beginning	Location	Duration	Max speed	Mileage
2010-03-01 16:22:22	Messeschnellweg, Laatzen, DE	0:01:51	76 mph	2.01 mi
2010-03-02 07:32:34	B 3, Hannover, DE	0:02:36	76 mph	2.85 mi
2010-03-03 20:13:58	Messeschnellweg, Laatzen, DE	0:03:17	71 mph	3.55 mi
2010-03-04 07:41:30	B 3, Hannover, DE	0:02:44	60 mph	2.50 mi
2010-03-04 21:26:06	Messeschnellweg, Laatzen, DE	0:02:42	81 mph	3.32 mi
2010-03-05 08:07:00	Messeschnellweg, Hannover, DE	0:01:18	57 mph	1.18 mi
2010-03-06 19:01:12	Messeschnellweg, Laatzen, DE	0:01:51	66 mph	1.79 mi
2010-03-06 19:13:31	Messe-Schnellweg, Hannover, DE	0:02:19	65 mph	2.31 mi
2010-03-07 09:31:06	A 2, Hannover, DE	2:09:42	116 mph	215 mi



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## Optimizing System Operation

Here are some tips which will help you to improve Wialon performance in cases when more than a hundred units are connected:

### 1. Web Browser

If you use a browser not mentioned above, Wialon may function incorrectly. Supported browsers are:

- Mozilla Firefox 3+
- Opera 10.0+
- Internet Explorer 8+
- Google Chrome 2.0+

Web browser is very important. The most efficient is Google Chrome. It is followed by Mozilla Firefox and Opera. The slowest, according to our tests, is Internet Explorer. To make its performance better, it is recommended to install [Chrome Frame](#) plugin that is compatible with Windows 7 / Vista / XP SP2.

Monitoring site efficiency strongly depends on browser event system. Each browser has its individual event model. As monitoring system is rather dynamic and tracks changes with up to 2-second delay, some browsers (like Internet Explorer) cannot process such a large quantity of events. The solution here is to use more powerful computer.

### 2. Graphics & Tooltips

Graphic elements displayed on the map and in lists are resource-consuming. If you notice that your browser is getting slower, try to disable the mapping of the following elements: units, geofences, places, tracks, as well as names, direction arrows and 'tails' for units (these are disabled with the three corresponding buttons in the bottom panel. Limit the number of units displayed in the Monitoring panel. Limit the number of other objects displayed on other panels that are frequently used (apply the filter for doing that). Enable only those elements which are necessary for your work at the moment. Several settings to adjust the way units are displayed are set in user settings in the section 'Unit visualization on map'.

Unit tooltip content is also important. In user settings in the section 'Show in unit info tip', you select which information should be presented in unit tooltip. To avoid browser overload, disable unusable items or even all items. If there a lot of geofences or geofences composed of lots of points and the option 'Presence in geofences' is enabled, it may overload browser very severely. So, make sure this option is disabled.

### 3. Queries to Server

When the site starts, not all data is loaded at once. It is made to speed up the loading and operation. That is why some action that done for the first time may take more time than for future work. Resource-consuming reports (such as reports on groups or reports with grouping and detalization) should be avoided. Enclosed rows of detalization stay hidden until you expand them, and if there are a hundred or more enclosed rows the browser may hang.

### 4. Computer Capability

Computer capability also affects browser operation. The key points of high performance are the central processor and RAM capacity. Multi-core processors do not affect browser operation in most cases. The exception is Google Chrome that can use more than one core in its operation.

Considering all above mentioned, the *minimum requirements* are:

- CPU at 1,6 Hz clock rate
- 512 MB of RAM

and *recommended requirements*:

- CPU at 2,4 Hz clock rate

- 2 GB of RAM.

Monitor size and screen resolution should be also considered. The bigger is the monitor, the more data is queried from server and processed by CPU. It is especially true about maps and when the Internet connection is low. The solution for big monitors is to do not use browser in full-screen mode.

#### 5. Internet Connection Speed

Wialon requires 1 MB Internet connection channel for one computer. If more than one operator will work simultaneously, do some tests and choose the most appropriate speed. If you use your own map server in your local network, then the Internet channel speed can be decreased twice.

If Wialon is installed in the local network, and operators work in it too, Internet speed is not important. It is enough to have a stable connection of 64 Kbs to receive data from units.

#### 6. Antivirus Software

Antivirus applications can slow down computer performance as well as gathering actual data from units. If the monitoring site is getting slower, you can add it to the list of exceptions or simply disable antivirus monitoring during Wialon session. You can also create a rule which allows Wialon site to develop any activity.

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You are here: [Wialon Pro](#) » [Monitoring System](#) » [Interface](#)

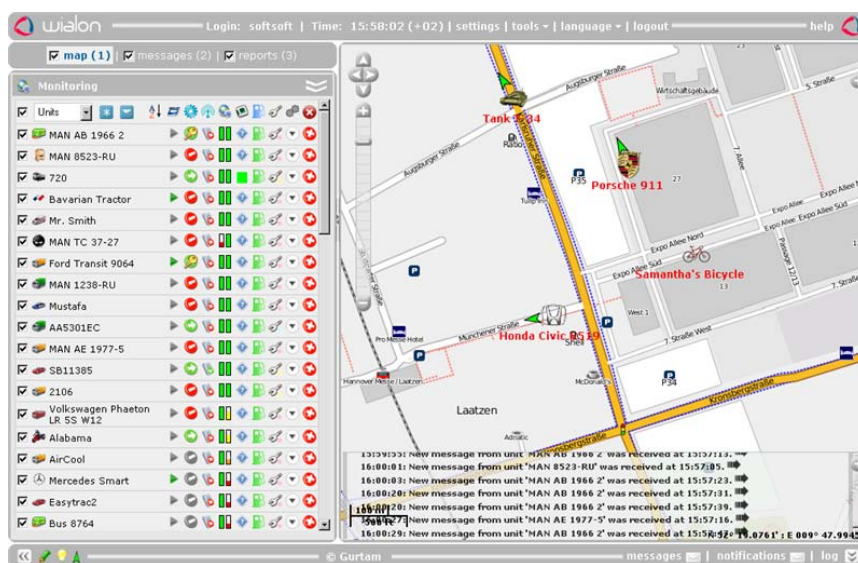
## Interface

User interface of the service is simple and in many cases intuitive intelligible. There is plenty of screen tips associated with various buttons, icons, dialog boxes and other interface elements.

In the picture below, you see the service general view. To observe the site in a greater scale, enter the full-screen mode by pressing the <F11> button on the keyboard. This hotkey is supported by most of [browsers](#).

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- [Interface](#)
- [Top Panel](#)
- [Modes Panel](#)
- [Work Area](#)
- [Ground Panel](#)



## Top Panel

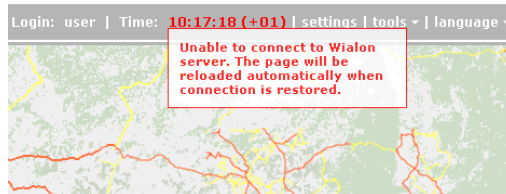
At the top of the window there are the following elements:

- login (username) which has been used to enter the service,
- the current time (in brackets there is a time zone),
- the [Settings](#) button,
- the [Tools](#) menu,
- the Language menu,
- the Logout button,
- Help.

If the time is displayed in red color, it means that the server is not available at the moment. This can happen by a number of reasons. For example, the Internet connection is broken or some trouble has happened to the server.

The time may be displayed in red. It means there has been no connection to the server during the last two minutes (because of Internet loss or some interior service problems). When connection is restored, the warning will disappear and the site will continue its work.

If there has been no connection for more than 5 minutes, the session is terminated. However, after restoring the connection, the [login page](#) will be loaded automatically. At this, if the flag *Remember on this computer* is enabled, the auto login to the monitoring site will be performed, too.



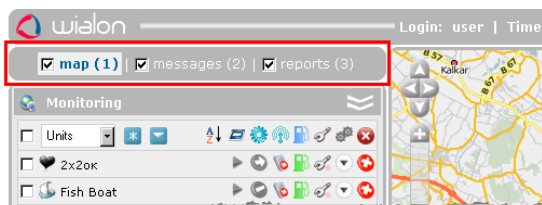
Besides, in the top panel the notification about days left will appear (if it is provided in your billing plan).

## Modes Panel

Three basic modes are available in Wialon:

- Map Mode where you track you units and manage attendant system objects like geofences, drivers, job, notifications, etc.
- [Messages Mode](#) where you can view database of messages received from your units.
- [Reports Mode](#) where you generate reports based on data received in messages.

To switch between the modes, click on the item you need in the modes panel.

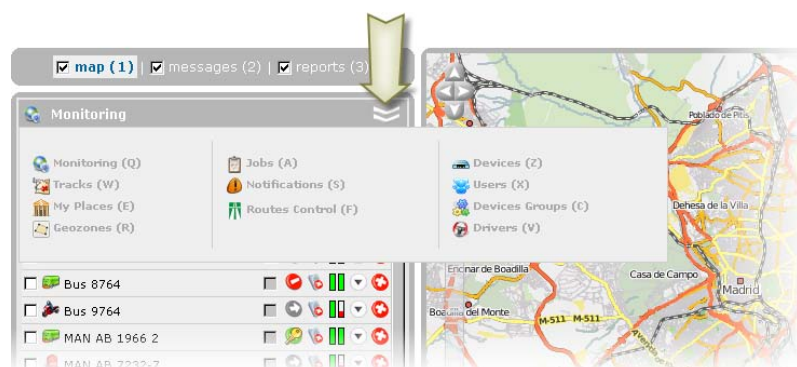


## Work Area

The left side of the screen is the work area. There several panels can be selected. They contain the basic instruments to manage the service:

- [Monitoring](#) (tracking units position, state and movements);
- [Tracks](#) (viewing movement history);
- [My Places \(POI\)](#) (creating, editing, removing points of interest on the map);
- [Geofences](#) (creating, editing, removing geofences);
- [Notifications](#) (creating, editing, removing notifications about events);
- [Jobs](#) (creating, editing, removing jobs);
- [Route Control](#) (controlling units on routes);
- [Units](#) (managing available units);
- [Users](#) (managing other users);
- [Unit Groups](#) (grouping units in your own way);
- [Drivers](#) (creating drivers and assigning them to units).

The panels are available only in the Map Mode, which can be selected in the modes panel. To navigate through the panels, place the cursor over the name of the panel on top of the work area. Then in the list that appears select the necessary panel.



It is more convenient to navigate between panels using [Shortcuts](#).

⚠ *Attention!* Your package may contain not all of modules mentioned above. So, the list of panels may have fewer items.

The work area size is changeable. Click on its right border and drag right or left to widen or narrow it.

## Ground Panel

---



At the left bottom corner there is a button to hide or show the work area. Depending on the work area state, the arrow on the button changes its direction:

- ◀ - hide work area,
- ▶ - show work area.

On the right you see three buttons to manage unit display mode and SMS button:

- ✎ - hide/show unit traces.
- 💡 - hide/show unit names.
- ▲ - hide/show unit movement direction.
- 💬 — hide/show the dialog to [send SMS](#) messages to drivers, users, and units.

In the center of the ground panel there is your copyright with a hyper link.

At the right end of the ground panel there are three buttons which are used to show or hide additional windows:

- [Messages](#) window which displays messages received from drivers.
- [Notifications](#) window which pops up when an online notification triggers.
- [Pictures](#) window which allows to view pictures from messages.
- [Log](#) window which contains current events and operations.

Most of the screen space is occupied by the [Map](#).

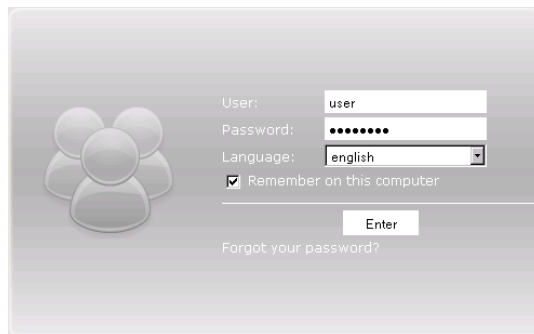
You are here: [Wialon Pro](#) » [Monitoring System](#) » [Interface](#) » [Login](#)

## Login

Enter service [URL](#) into the address line of your [browser](#).

On the login page key in your username and password that were given to you while registering. If you are using a private computer, you can put a check mark near Remember on this computer. In this case, the next time you enter the system you will not be asked to input your login and password again. [More...](#)

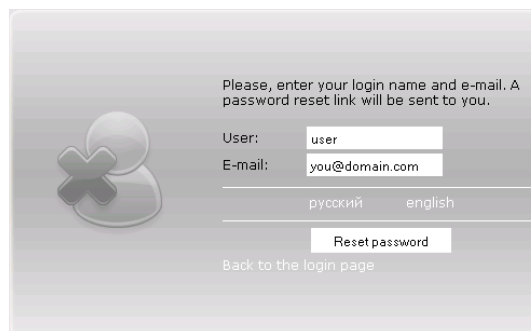
When user name and password are entered, press Enter.



The first thing you see when entered the system is the [Monitoring](#) window.

## If You Forgot Your Password

If you have already registered in the system but forgot the password, please, follow the link [Forgot your password?](#) There you will be asked to key in your user name and e-mail address that were indicated while registering. Then push the [Reset password](#) button. A password reset link will be sent to you. Follow this link to get your new password.



If you press [Forgot your password?](#) by accident, just ignore the e-mail with password reset link and use your former login and pass. If you still follow this link, you will have to accept a new password.

## How to Change Your Password

The current password can be changed in the [User Settings](#) dialog. However, not all users are allowed to do this. Contact your service administrator for more information.



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- [How to Change Your Password](#)

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## Map

The Map exists in all modes. Usually, the map occupies the greatest part of the screen. Units and their traces, marked [POI](#), [geofences](#) and other elements are displayed on the map.

To expand the map, hide the work area and the log. The appropriate buttons are situated on the ground panel at its ends:  and . In addition, you can switch to the fullscreen mode by pressing **<F11>** that is supported by most of [browsers](#).



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- [Map](#)
- [Using the Map in Different Modes](#)
- [Map Sources](#)
- [Navigation](#)
- [Zooming the Map](#)

## Using the Map in Different Modes


The map is common for all of three modes: map mode, [messages](#) mode, and [reports](#) mode. It means that while switching between modes the zoom and coordinates of the map center remain the same. Graphic elements such as track lines, markers, places, geofences, units icons stay in their places as well.

However, graphic elements mapped in any mode can be easily on or off. To display or hide these elements, put marks in the corresponding check boxes in the modes panel.



This option can be switched off. To do this, disable the flag *Use common map for all modes* in [user settings](#). Then when switching between modes, graphic elements of inactive modes are disabled automatically. At that, map zoom and center remain the same.

## Map Sources

On the right edge of the map there is a button  to expand the map menu – an additional window to choose the map source. Select the map source you like, and currently displayed map area will be reloaded from different source.

To activate more maps, go to [User Settings](#).



## Navigation

There are three basic ways to navigate over the map.


1. Using corresponding buttons

At the left top corner of the map there are four arrow-like buttons that allow you to move map over the screen up, down, right, and left correspondingly.

## 2. Using the mouse

This is similar to drag and drop method. Left click on any place of the map and drag to necessary direction. Then release the mouse button.

## 3. Using minimap panel

This way is more convenient when working with large scaled maps. To open this panel, press the button  at the right edge of the map. Click on any place in the minimap window to move through the main map. Except navigation, the minimap can be used in [tracking mode](#).



## Zooming the Map

Here several methods are also assigned:

### 1. Scale on the map

At the top right corner of the map under navigation buttons there is a scale that allows to zoom in (+) or zoom out (-). At the same time, the center of the map is staying stable.

### 2. Mouse scroll wheel

It is more convenient to adjust zoom level using mouse scroll wheel. Scroll up corresponds to zoom in, scroll down corresponds to zoom out. During the scrolling actions point the mouse cursor at needed place so that it would not get out of sight.

### 3. Mouse and <Shift> button

If you push and hold <Shift> button and select some area of the map with the left mouse button, the map will be zoomed in to this area.

### 4. Double-click

Double-click on any place of the map to zoom it in.

At the bottom of the map the current scale (in kilometers/meters and miles/feet) and geographical coordinates of the cursor are indicated.



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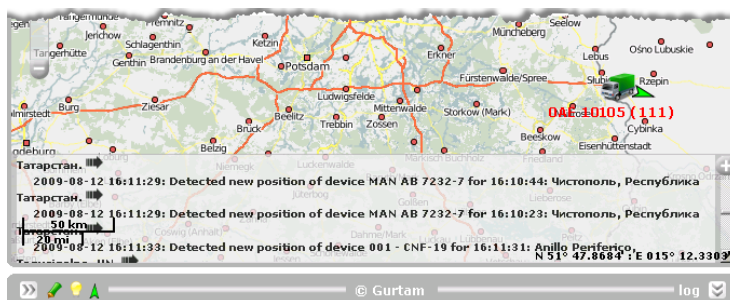
You are here: [Wialon Pro](#) » [Monitoring System](#) » [Interface](#) » [Log](#)

## Log

In the right bottom corner there is a button to show or hide the log:

- ⌵ - show log window,
- ⌵ - hide log window.

The log is semitransparent so that the [map](#) under it could be visible.



The log contains records of current events and operations running in the system: new message from a [unit](#) appears, new SMS is received, unit configuration is changed, new [geofence](#) is created, etc. The log contains messages from units in the work list.

If an event registered in the log has happened in a certain place (for example, a new location of a unit was detected), you can move to this place on the map clicking on the black arrow at the end of the entry ➡.

The log uses fonts of different colors in order to separate different type of entries from each other. The black color is used for most regular messages concerning units motions and actions. The green indicates user's activity: creation and editing of places, units, geofences, user settings changes, etc. Red color is used to display error messages. The bordeaux entries mean alarm messages received from units.

Depending on the units quantity and equipment configuration, the messages in the log can appear even every second.

The log size is adjustable. To enlarge or decrease the log, drag the horizontal slider at its top up or down.

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Interface](#) » [Shortcuts](#)

## Shortcuts

Keyboard shortcuts give more convenient and quick to navigate through the site. This feature is activated in [User Settings](#).

Switch mode shortcuts:

- 1 - the Map Mode;
- 2 - the Messages Mode;
- 3 - the Reports Mode.

Tools shortcuts:

- 4 - the track player;
- 5 - the distance tool;
- 6 - the area tool;
- 7 - the address tool;
- 8 - the routing tool;
- 9 - the hottest tool;
- 0 - the nearest units tool.

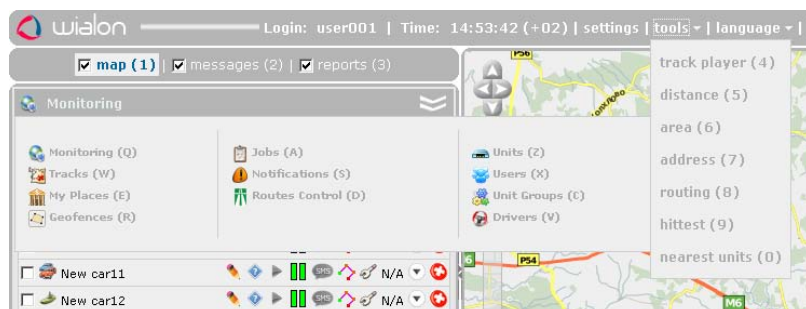
Interface shortcuts:

- ~ - hide/show the work area;
- L - show/hide the log window.

Panels shortcuts

- Q - Monitoring;
- W - Tracks;
- E - My Places;
- R - Geofences;
- A - Jobs;
- S - Notifications;
- D - Routes Control;
- Z - Units;
- X - Users;
- C - Unit Groups;
- V - Drivers.

The hints for the shortcuts are given in brackets as it is shown in the picture below.



As you see, the names of the panels are divided into three columns. The content of columns can be different



and depends on the modules installed. For example, the first column consist minimum of two items: Monitoring and Tracks.

You can see with half an eye that to reach the items from the first column keys on the top row of the keyboard are used: Q, W, E, R.

For the second columns of items are used hot keys A, S, D that correspond to the middle row of the keyboard.

Similar situation is with the third column items which hotkeys are letters of the bottom row on the keyboard: Z, X, C, V.

If not all of listed services are included in you package, hotkeys will shift. If for example you do not have jobs, then A will be used for notifications, and S for routes.

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## Filters and Masks

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- [Filters and Masks](#)
- [List Formation](#)
- [Dynamic Filter](#)
- [Name Mask](#)

### List Formation

When you create various objects on the monitoring site (geofences, places, drivers, custom fields, etc.) they are organized into lists. Items on the list are displayed in the alphabetical order: numbers first, then Latin alphabet, and Cyrillic at the end. When a new item is created, it is added primarily to the end of the list, but when you open this list again, all items are arranged in the alphabetical order. After renaming an item, it remains at its former place until you reopen the list.

### Dynamic Filter

If a list contains a great number of items, it can be not so easy to quickly find necessary item. For your convenience, you can fulfill dynamic search. It is available in all panels except Tracks. Simply start typing the name of an item (geofence, unit, route, etc. depending on the panel opened). You can start typing a name from any point. While typing, items which correspond to your query will be immediately displayed.



If you leave the search field empty, *all* items will be displayed.

The dynamic filter can be found also in properties dialog of units, units groups and users when adjusting access right. However, the difference is that search results are displayed not while typing but after you press the *Apply* button.

The particularities of the dynamic filter usage in the Monitoring panel are described in [Unit List Management](#) section.

While typing your query, you can use wildcard symbols such as *\** and *?* which use is described [below](#).

### Name Mask

Besides the dynamic search, there is the other type of filter. It is used to specify an item (sensor, geofence, etc.) when configuring reports, notifications, etc. This assumes that you can define item's name using the wildcard symbols asterisk *\** and/or question *?*

The asterisk sign is a wildcard symbol which represents any combination of allowed characters in the name of an item. It can be placed in any place of the query (at the beginning, in the middle, at the end) or in several places at once, depending on which part of the name is known or is the same for a number of items. For example, if you type *\*h\*nda\**, all *Hondas* and *Hyundais* will be found.

Another wildcard symbol which can be used is the question sign (*?*). It replaces any single character (only one character). As well as the asterisk sign, it can be put at any place of the query.

The request is not case sensitive.

For example, a unit has two fuel sensors which names are *Sensor fuel level* and *Fuel in tank*. We are going to create a notification which would be based on both of them. To achieve it, in notification properties we must set sensor name mask in such a way that it would correspond to the names of both sensors. In our case the best choice is *\*fuel\**:

**Sensor value control**

Select sensor:

Select sensor on type:

Select sensor on the mask name:

Sensor mask:

Value from:

Value to:

You can do a search without using the asterisk but then you have to indicate the name (geofence, driver, sensor, etc.) exactly as it exist in the system.

To find *all* items of some kind (users, sensors, geofences, etc.), simply type one asterisk in the input box of search terms.

Masks are employed:

- in notifications to specify sensor, route or driver under control as well as set SMS text mask or parameter in messages;
- in user properties to set host mask for users;
- in unit log to quickly find the necessary row;
- in reports to specify driver, sensor, event/violation, route and its geofence, and when selecting geofences;

In all panels masks can be used instead of the [Dynamic Filter](#).

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## Input Rules

All editable fields are checked to approve that entered data is valid. If there is incorrect data, the field is highlighted red.

### Incorrect entries are:

- Not enough characters in a name or a phone number. Names of monitoring units, units groups and users must consist of at least 4 characters. Other objects like places, geofences, drivers, report templates, etc. can have names from one character.
- Excessive number of characters (more than 50) in names of monitoring units, units groups and users.
- Letters in numeric fields (phone numbers, sensor values, radius, fuel consumption and trip detector settings, etc.)
- Forbidden characters:
  - double quotation marks " « »
  - curly brackets { }
  - the backslash \
- Partly forbidden characters:
  - spaces are not allowed at the beginning and at the end of editable fields, however, they are allowed at the middle);
  - comma cannot be used
    - *in report templates* - in column names, table titles and statistics fields,
    - *in numeric fields* as the delimiter (for entering fractional numbers the dot is used).

If any entry in a dialog is not valid, it is impossible to save changes or create an object, because OK button becomes not available. There can be also an alert when trying to save incorrect data - *Incorrect entry*.

### Phone numbers and e-mail addresses

Phone numbers must be in [international format](#). They must contain all necessary codes (country code, communication statement or city code, and then the phone number itself). Brackets, spaces and hyphens are not allowed. Except numbers, a phone can contain only one character - plus (+) at the beginning. When you need to enter several phone numbers into one field, separate them from each other with commas (don't use any spaces), for instance, +19176726154,+15551234567.

E-mail addresses must be in the format *user name - the "at" sign (@) - domain name*. E-mails can contain letters of Latin alphabet as well as dots (.), hyphens (-) and underscores (\_).

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  - [Incorrect entries are:](#)
  - [Phone numbers and e-mail addresses](#)

You are here: [Wialon Pro](#) » [Monitoring System](#) » [User Settings](#)

## User Settings

To view user settings, click on **Settings** on the top panel. Here you can customize some parameters of service functionality.



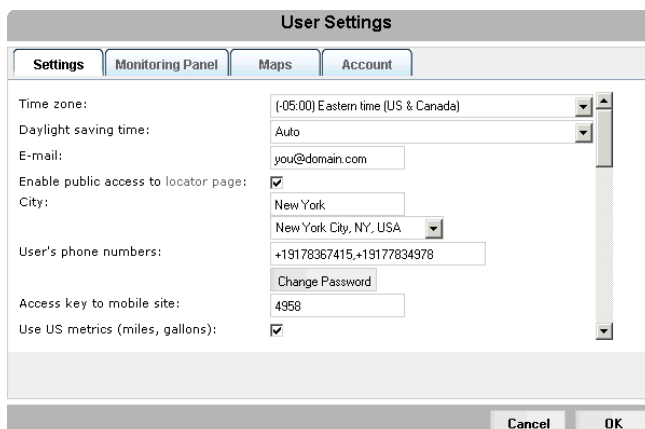
The User Settings dialog can contain up to four tabs that depends on system configuration:

- [General Settings](#)
- [Monitoring Panel](#)
- [Maps](#)
- [Account](#)

You are here: [Wialon Pro](#) » [Monitoring System](#) » [User Settings](#) » [General Settings](#)

## General Settings

The first tab contains general settings. Here you indicate your time zone, input your e-mail address, change the password to enter the system, and set many other parameters.



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- General Settings
  - Show in unit info tip
  - Unit visualization on map
  - Geofence visualization on map

### Time zone

Indicate your time zone accurately because all time values in messages got from devices are displayed in accordance with time zone selected.

### Daylight saving time

Specify DST options if you use summer and winter time in your region. *None* - summer time is not used. *Auto* - time on web is calculated according to client's settings; server time depends on server settings. Otherwise, choose the most appropriate DST schedule on the dropdown list.

### Iranian calendar

This option allows to activate the Iranian calendar also known as Persian solar calendar. It is used in Iran and Afghanistan. If the option is on, the Iranian calendar will replace usual (Gregorian) calendar in the places where a user should indicate some time interval (to build a track, to query messages or a report, to setup a job or assign a route, etc.) At that, if Arabic is selected as interface language, the calendar will be in Farsi (language spoken in Iran) and shown from right to left. Otherwise, it will be in English (in Latin characters and Arabic numbers) and shown from left to right. Click the question sign on the top to invoke the help window with detailed information. Enabling/disabling the Iranian calendar requires reloading the page.

Mordad, 1390						
Today						
wk	Sun	Mon	Tue	Wed	Thu	Fri
17						1
18	2	3	4	5	6	7
19	9	10	11	12	13	14
20	16	17	18	19	20	21
21	23	24	25	26	27	28
22	30	31				
Time: 00 : 00						
Select date						

مرداد، ۱۳۹۰						
امروز						
هفته	شنبه	یک	دو	سه	چهار	پنج
۱۸	۱	۲	۳	۴	۵	۶
۱۹	۸	۹	۱۰	۱۱	۱۲	۱۳
۲۰	۱۵	۱۶	۱۷	۱۸	۱۹	۲۰
۲۱	۲۲	۲۳	۲۴	۲۵	۲۶	۲۷
۲۲	۲۸	۲۹	۳۰	۳۱		
زمان: ۰۰ : ۰۰						
انتخاب تاریخ						

### E-mail

This e-mail address will be used to send you a reset password link in case you forget your password.

### Enable public access to locator page

If you enable public access to your account, your units location will become available to other people and at any moment accessible to other people through the locator page. Enable the option and save user settings. Then display the dialog again and follow the *locator page* link to see how it will look. The feature works only with Google Map service. [More...](#)

### City

In this field you can indicate your city. It will be used in the [Nearest Units](#) and [Address](#) tools as the default city. Enter

the full city name or its beginning, and in the dropdown menu below confirm your choice selecting a needed city from the list (there can be several towns with the same names in different countries).

User's phone numbers

Key in one or more phone numbers which you are going to use to [manage units via SMS](#). If a command comes from some other phone, it is not processed. Phone numbers should be written in [international format](#) and separated by comma (with no spaces).

Change password

If you push this button, some additional fields will appear. You will be asked to input your current password, and then your new password (two times). New password can be applied on the [login](#) page. *Note:* However, not all users are allowed to change their passwords.

Access key to mobile site

If you are going to use [mobile phone or PPC](#) to manage the server, enter the access key. If you leave this field empty, the access will be denied.

Use US metrics (miles, gallons)

By default distance is measured in meters (kilometers), and fuel level is given in liters. Mark this check box to switch to the US units of measurement - miles and gallons.

Use common map for all modes

The option is activated by default. It means that all graphics mapped in [different modes](#) (map, messages, reports) remain on the map when switching between the modes. If the option is disabled, graphic elements of inactive modes are disabled automatically when switching between modes.

Play sound for events

The sound can be played for [online notifications](#) and [drivers' messages](#). When a notification or a message pops up, the browser will play sound. In Windows OC [QuickTime Alternative](#) can be used as media player.

Automatically display popup events

If ticked, [online notifications](#) and [messages from drivers](#) pop up automatically. However, if you remove the flag, only the blinking envelope in the bottom panel will indicate that there are new events.

Use shortcuts

Check this box to activate [Shortcuts](#).

## Show in unit info tip

Here you choose which information should be listed in [unit tooltip](#) (on the map and in the work list).

Unit info

Device type, unique ID, and phone number which are specified in [unit properties](#). This information is available to users with *manage* or *edit* rights only.

Location

The last detected address.

Speed

Speed in the latest message.

Altitude

Altitude in the latest message (if device is able to give such data).

Satellites

The number of satellites locked.

Counters

Values of mileage counter and engine hours counter. See [Counters](#).

Presence in geofences

If unit is situated in a [geofence](#), geofence's name will be displayed, and it will have the same color as assigned in geofence properties).

#### Parameters

Message [parameters](#) are CAN bus, power voltages, and many others. Their names (as they come in messages) and their raw values can be shown in unit info tip.

#### Sensors values

[Sensors](#) configured for the unit and their known values will be listed. Custom sensor name is displayed and the value processed according to calculation table of this sensor.

#### Custom fields

[Custom fields](#) from unit properties.

#### Route control

Assigned [routes](#) and their current states.

#### Driver

The name, photo, and phone number of [driver](#) bound to the unit.

#### Maintenance state

Service intervals together with their states (days/engine hours/kilometers left or expired) are shown.

If nothing is selected, only last message time will be displayed in unit info tip.

Note that counters in unit tooltip are refreshed once a minute, as well as information about driver.

## Unit visualization on map

#### Snap to road

If activated, units location will be forcibly locked to a nearest road if there is one in the radius of 50 meters (164 feet).


#### Replace unit names with drivers' names

If ticked, unit names displayed on the map are replaced with drivers' names if any are assigned. If none of drivers is assigned, the unit is displayed with its usual name. This option concerns only unit visualization on the map and does not affect unit lists in different dialogs, panels and popup menus.

#### Replace unit icons with motion state signs

If marked, unit [icons](#) are hidden, and all units are displayed with motion direction arrows (if they are in motion) or with blue rhomb shaped marker (if they are stationary). See also [Unit presentation on map](#).

#### Display overlapping units in one icon

If one or more units overlay on the map, their icons can be grouped into one. It lightens visual reception of the map. The exception is in two biggest zooms where all icons are displayed regardless their overlapping. 

#### Show unit icons at map borders

If a unit gets out of view, its icon will be displayed at map border in the direction where the unit is located. Click on this icon to move to this unit on the map.

#### Trace

It is possible to indicate the length of the trace which is added to a moving unit on the map (the 'Points in traces' parameter), and choose the color and width for it.

#### Display POI names on the map

Depending on this flag, [POI](#) can be displayed on the map with its name or without it (only with image or/and a circle). This setting affects only the map mode but not reports.

## Geofence visualization on map


#### Display names of geofences on the map

If activated, [geofences](#) are displayed on the map with captions. It concerns also [control points](#) of line-shaped geofences. The option affects the Map Mode as well as in reports. Captions color is blue for control points and magenta for names of geofences themselves.

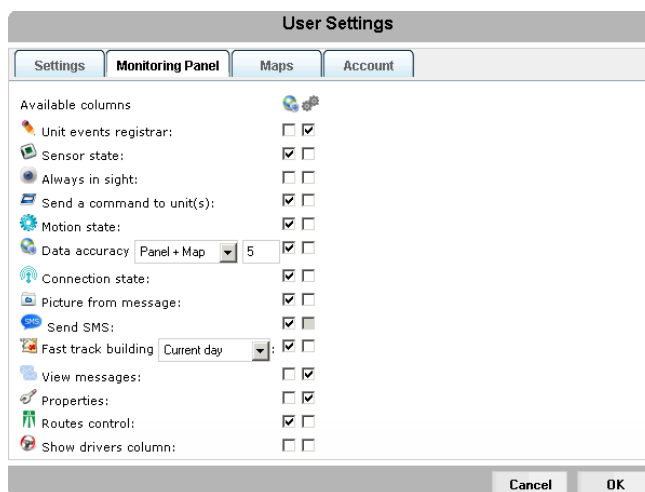


You are here: [Wialon Pro](#) » [Monitoring System](#) » [User Settings](#) » [Monitoring Panel](#)

## Monitoring Panel

In this tab you can customize the view of your [monitoring panel](#). Choose the elements to be displayed in the working list. If you mark an element in the left check box, this item will have its own column in the monitoring list. If you mark an element in the right check box, this item will get into unit actions menu under  button. If not marked at all, the item is not displayed.

The number of items in the dialog can vary depending on system configuration and your access rights.



### Unit events registrar

This column contains buttons to display [event registrar](#) dialog. It is used to register fuel fillings, maintenance service and other events to unit history.

### Always in sight

If selected in this column, unit will be always in sight on the map.

### Send a command to unit(s)

[Command](#) can be locate unit, block engine, send a message to driver, and many others depending on device type used.

### Motion state

This column shows whether unit is moving or stationary, as well as whether ignition is on or off (if there is the appropriate sensor).

### Data accuracy

Shows how many satellites were locked and when the latest message was received. According to their last message time, units can be automatically displayed or hidden. To make use of this option, change *Without filtration* to *Monitoring panel* or *Panel + Map* and specify filtration interval in minutes. The filtration can affect only the work list in the monitoring panel or both the work list and the map. [More...](#)

### Connection state

Shows whether there is connection with unit at the moment. Unit is considered to be online if it has TCP or UDP commands available or it has sent messages within last 10 minutes.

### Picture from message

The button to display [images](#) received from the unit (useful if such functionality is provided for type of device used).

### Send SMS

The button to send SMS to a unit or a driver bound to this unit.

### Fast track building

The column of buttons to build [tracks](#) straight from the Monitoring panel. You should also select an interval to be applied to 'fast' tracks: current day, last 24 hours, last complete day, or manual mode. Manual mode means that the interval is taken from the Tracks panel.

#### Sensor state

Shows [sensor](#) state (on/off, value, etc.) with different colours.

#### View messages

View [messages](#) for the selected unit.

#### Properties

View [unit/group](#) properties dialog.

#### Routes control

Shows how unit is fulfilling assigned [routes](#).

#### Show drivers column

The column with information on drivers: name and photo of [driver](#) assigned to unit.

Further information about the Monitoring panel is available in the section [Icons Explanation](#).

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You are here: [Wialon Pro](#) » [Monitoring System](#) » [User Settings](#) » [Maps](#)

## Maps

### Map position at startup

There are two positions of the button - *Store current* and *Reset to defaults*. The first one is used to store current map position and zoom and use it for further logins. To make use of this option, exit the dialog and [move/rescale the map](#) to the desired position. Then open the settings dialog again and push the button *Store current*. ☺ If there are any monitoring units displayed on the map, the map loaded at startup is resized to make them all visible, and it does not matter what default or current positions are.

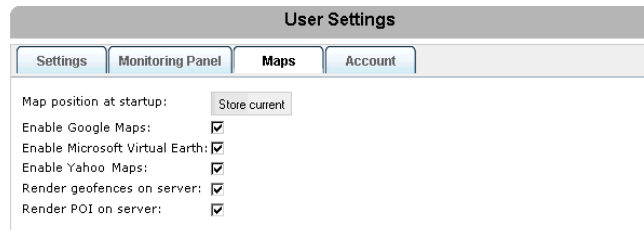
When a custom position is stored, the button changes to *Reset to default* state. It is then used to restore the default map position. After pushing the button you can leave this default position or set a new custom position because the button changes to *Store current* state again.

### Enable...

Tick the appropriate check boxes to activate Google Maps, Microsoft Virtual Earth, Yahoo Maps, Yandex Maps and others. The changes will take effect after clicking OK and refreshing the page (use <F5> button). To choose another map as a base layer, open [Map types panel](#) clicking on the upper plus button.

### Render geofences/POI on server

By default, all geofences and POI are rendered in browser. It can considerably slow down browser work especially if your computer is not very powerful. However, if you have good Internet connection and enough traffic, it is reasonable to choose geofences/POI rendering on server.



User Settings			
Settings	Monitoring Panel	Maps	Account
Map position at startup:	Store current		
Enable Google Maps:	<input checked="" type="checkbox"/>		
Enable Microsoft Virtual Earth:	<input checked="" type="checkbox"/>		
Enable Yahoo Maps:	<input checked="" type="checkbox"/>		
Render geofences on server:	<input checked="" type="checkbox"/>		
Render POI on server:	<input checked="" type="checkbox"/>		

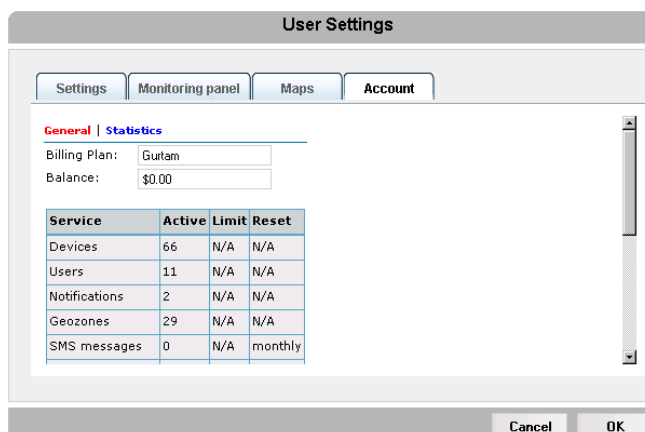
If some additional map you need is not available, address your request to your service provider.

You are here: [Wialon Pro](#) » [Monitoring System](#) » [User Settings](#) » [Account](#)

## Account

**Attention!** This tab can be hidden for end user.

The Account tab has two sections: General and Statistics. In the General section information on billing plan and current balance is presented. You see also how many objects (like places, geofences, devices, users, etc.) you can create and how many of them already exist.



**User Settings**

Settings | Monitoring panel | Maps | **Account**

**General** | Statistics

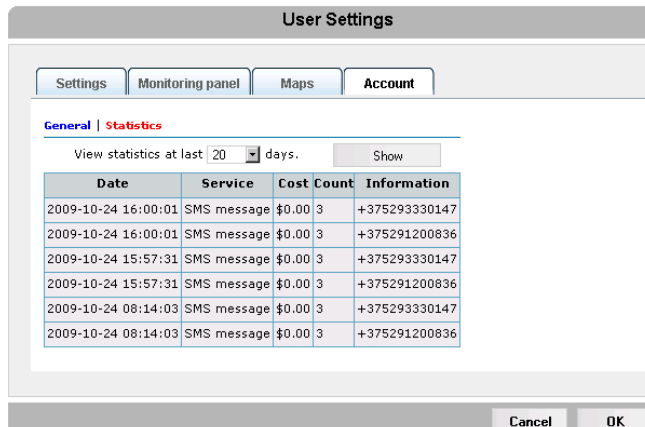
Billing Plan:

Balance:

Service	Active	Limit	Reset
Devices	66	N/A	N/A
Users	11	N/A	N/A
Notifications	2	N/A	N/A
Geozones	29	N/A	N/A
SMS messages	0	N/A	monthly

Cancel OK

In the Statistics section you can make an inquiry about charges for different operations produced over a given period. Specify the period of time and push the Show button to see statistics.



**User Settings**

Settings | Monitoring panel | Maps | **Account**

**General** | **Statistics**

View statistics at last  days.

Date	Service	Cost	Count	Information
2009-10-24 16:00:01	SMS message	\$0.00	3	+375293330147
2009-10-24 16:00:01	SMS message	\$0.00	3	+375291200836
2009-10-24 15:57:31	SMS message	\$0.00	3	+375293330147
2009-10-24 15:57:31	SMS message	\$0.00	3	+375291200836
2009-10-24 08:14:03	SMS message	\$0.00	3	+375293330147
2009-10-24 08:14:03	SMS message	\$0.00	3	+375291200836

Cancel OK

**Hint.**

Settings from one user can be imported to other users available on the [Users](#) panel.

## Monitoring

Unit tracking includes:

- detecting unit position and watching its motion;
- unit management (sending messages, assigning jobs and drivers, adjusting notifications, etc.);
- supervising unit parameters such as speed, fuel level, temperature, voltage, etc.;
- interpreting information derived from the unit.

The results of monitoring can be presented on the computer screen as well as exported to structured reports in different formats.

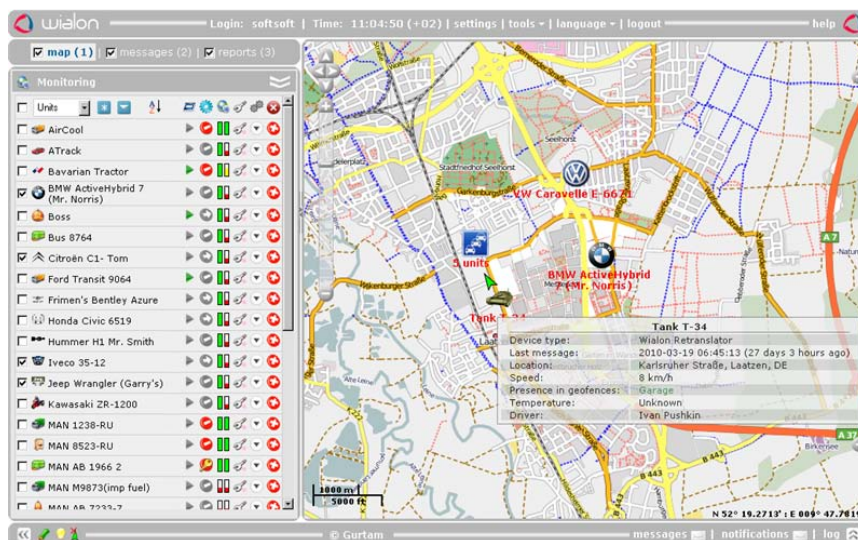
## Monitoring Panel

Tracking is performed in the main window. In the work area open the Monitoring panel. There the [work list](#) of the units being controlled at the moment is displayed. These can be either all units available to the current user or just some of them. Units can be easily added and removed from the work list which does not lead to their removal from the system. See [Work list management](#).

Near the name of each unit there are a number of buttons and signs which allow to estimate unit state or perform an action over it. The choice of signs and buttons to be displayed is customizable and made in [User Settings](#) => [Monitoring Panel](#). The same columns can be also used to [sort units](#) in the work list. See also [Icons Explanation](#).

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- [Alternatives for Names](#)
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## Unit Info Tip

Hover the mouse pointer over the unit to see detailed information about unit current state in a popup info tip. Information to be displayed in the tip is selected in [user settings](#).

For example, a unit info tip can look like this:

Fish Boat	
Device type:	skipper2
Unique ID:	236458
Phone:	+19174675389
Last message:	2010-10-13 01:00:18 (1 hours 14 minutes ago)
Location:	ул. Лещинского, Минск
Speed:	8 km/h
Altitude:	254 meters
Satellites locked:	10
Mileage counter:	2634.0 km
Engine hours counter:	666 h
Presence in geofences:	Garage
pwr_int:	9.58
pwr_ext:	11.953
I/O:	0/0
Cargo capacity:	3 tones
Fuel:	gas
Year of issue:	1999
Driver:	 Ury A. Gagarin
Complete checkup:	456 km left
Oil change:	89 engine hours left
Electrical equipment check:	134 days expired

## Tracking Units

To see a unit on the map, click on its name in the work list. The map will be centered by this unit, and current map zoom will remain the same. Move and zoom the map according to your needs. The ways to manipulate the map are described [above](#).

Only units checked in the first column of the table are displayed on the map. To display all units from the work list, mark a check box in the left top corner of the table. Unmark this check box to remove unit icons from the map.

However, if the option [Show unit icons at map borders](#) is selected in user settings, in case a unit gets out of view, its icon is displayed by map border. Click on such an icon to move to the unit on the map.

The units marked in the first column are seen on the map if only the map is positioned and zoomed in such a way that these units get in sight. However, you can watch a unit constantly if checking the box [Track unit](#). Units marked in this column are always seen on the map. If such a unit gets out of view, the map automatically centers at this unit each time when a new message comes.

## Tracking on Minimap

You can use minimap for tracking. This is an additional window of medium size which opens in the right bottom corner of the map. Only one unit can be displayed on this map. Position and scale of the minimap can be different from the main map. So, you can simultaneously track a unit on the minimap and manipulate the main map in different ways - track other units, create geofences, generate reports, etc. At that, the selected unit is always in sight on the minimap, and its position is refreshed automatically with each new message.

To open the minimap, press the special button at the right edge of the window. The minimap has two modes and two functions correspondingly: navigation through the main map and tracking a unit. The navigational function was described [below](#). To track a unit on the minimap, click on it on the main map. The minimap itself can be open before or after clicking on a unit.



In the tracking mode, the minimap cannot be moved – it is centered automatically by unit last location. However, you can adjust the zoom level using +/- in the top left hand corner of the minimap. Above there is a button to switch between the modes (navigation and tracking).


The tracked unit must be checked in the first column of the monitoring list. Otherwise, if you disable this flag, the unit

will disappear both from the main map and from the minimap, and the minimap will automatically switch to the navigational mode.

On the minimap a unit is represented by its icon and its name (or driver's name). Motion state signs, trace from last messages, and sensor-based colours are not available. If you hover the mouse cursor over the unit, you can see [unit info tip](#) with the newest information about the unit.

Regardless [map source](#) chosen for the main map, the minimap displays WebGIS only.

## Unit Presentation on Map

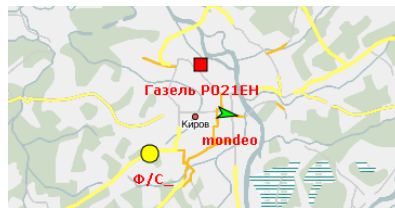
By default, units on the map are displayed with [icons assigned to them](#) and their names. Icons for units can be selected from a standard set, for example , or you can load your own image. See the dialog [Unit Properties => Image](#). Unit icon can be rotated on the map according to course (movement direction). This feature is also defined in unit properties.



## Alternatives for Icons

Unit icons can be replaced with motion state signs:

- yellow circle - the unit is not moving but the engine is on;
- red square - the unit is not moving, and the engine is off (if the unit has ignition sensor);
- green arrow - the unit is moving, and arrow's direction shows movement direction.




This option is called [Replace unit icons with motion state signs](#) and set in [User Settings](#).

Besides, the colors of these icons (arrow, square, circle) can be different and dependent on a sensor value. This functionality is adjusted in [Unit Properties => Advanced \(Sensor color in the Monitoring panel\)](#). In other words, the shape of the icon is defined by state (if standing - square, if moving - arrow), and the color depends on sensor value (intervals and colors are adjusted in unit properties).

## Alternatives for Names


Unit names can be:


- disabled - the  button in the [ground panel](#);
- replaced with drivers' names - the option [Replace unit names with drivers' names](#) in [User Settings](#).

## Other Markings

If a unit is currently in motion, a green arrow shows movement direction, and the unit can be followed by a blue 'tail' (trace) which shows unit track for several latest messages. If the unit is stationary (according to the last message), this arrow is not shown. If there was no motion within several latest messages, the trace is not shown (or the page has been just loaded). Trace default length is 5 messages, however, it can be changed together with trace width and color in [User Settings](#).

Both direction arrows and traces can be disabled. To do this, use the appropriate buttons in the [ground panel](#):

 - hide/show unit traces;

 - hide/show unit movement directions.

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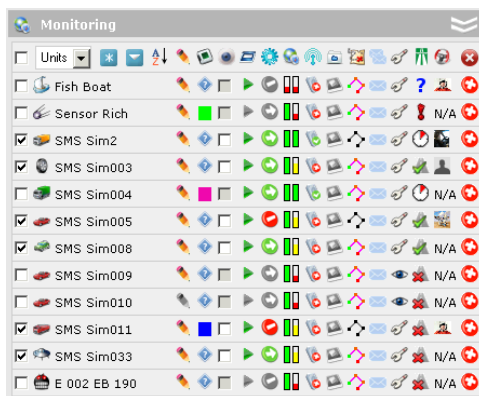




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## Icons Explanation

The list of all icons which can be found in the Monitoring panel is presented below. Depending on your individual needs you can hide or show certain columns in the dialog [User Settings => Monitoring Panel](#).




















All icons can be divided into two groups:

1. *Operational*: icons -buttons, if pressed they allow to perform an action over a unit (such as event registration, command execution, messages query, track building, properties editing, removal from the work list, etc.). Further instructions can be found in appropriate dialogs and panels which are invoked by these buttons.
2. *Informational*: icons which give information about unit current conditions (moving or stationary, sensor value, connection state, data accuracy, driver, route control, etc.). Further information in such cases can be found in tooltips. To read a tooltip, put a mouse pointer over a chosen icon.

Icons at the head of the table are also applicable. In many cases they allow to [sort items](#) on the list according to a condition: for instance, moving units at the top, stationary units at the bottom.

<input checked="" type="checkbox"/>	The first column in the table is filled by check boxes. Put flags near units you want to be displayed on the map. Put a flag at the top of the table to mark all units at once.
	The button to add units/groups to the list using a <a href="#">filter</a> .
	The button to add all available units/groups to the <a href="#">work list</a> .
	The button to sort units by name in direct order.
	The button to sort units by name in reverse order.
	Unit state: - unit is moving, - unit is moving, engine is on, - unit is stationary, - unit is stationary, engine is on; - the last message from unit was received over an hour ago: unit was stationary; - the last message from unit was received over an hour ago: unit was moving. Unit state is detected according to its speed value in the last message received.
	This column indicates data accuracy. First bar shows satellites availability: green - satellites are available (see the precise number of satellites locked in the tooltip), red - satellites are not available. Second bar shows the last data was get from unit: green - unit sent data less then 5 minutes ago, yellow - unit sent information within the last hour , orange - unit sent data within the last day,



	red - there was no messages for a long period of time. To know the precise time of the latest information update, place a cursor over the icon and read a tooltip.
 	Unit connection to server: - unit is connected, - unit is not connected. Unit is considered to be online if it has TCP or UDP commands available or it has sent messages within last 10 minutes.
	In this column sensor state can be shown (if the appropriate parameters are set in <a href="#">Unit Properties =&gt; Advanced =&gt; Sensor color in the Monitoring panel</a> ): - the value is unknown (or the option is not activated for this unit); - (or a small square of any other color) - visualizes sensor's value. When putting a cursor over the square, in the popup window you can see the value or description.
	The button to <a href="#">send a command or a message</a> to unit: - there are available commands, - there are available commands, including GPRS commands, - there are available commands, including GPRS commands, however, the current user has not enough access to execute them, - there are no commands available.
	Mark a unit to fulfill its active tracking. That means it will be always in sight when a new message comes from it. If pressing the button in the head of the table, all units selected to be shown on the map (ticked in the first column) will get into active tracking.
	View messages received from unit (see <a href="#">Messages Mode</a> )
	Register an event like fuel filling, maintenance work, etc. See <a href="#">Events Registrar</a> .
	<a href="#">Send SMS</a> to unit or driver (the addressee is selected in the dropdown menu if both options are available). To explore the full functionality of this option, the current user must have rights to send SMS messages, access to unit at least at <i>execute commands</i> level, a driver must be bound to the unit, and both (units and driver) must have phone numbers in their properties.
	<a href="#">Fast track</a> building. The button can have two states: - show track on the map, - remove track from the map.
 	Display <a href="#">unit</a> or <a href="#">group</a> properties dialog]]. Depending on your access level, this button may have different looks: - you can edit unit/group properties (your access is <i>manage</i> or <i>edit</i> ), - you can view almost all unit/group properties but not change them (your access is <i>view</i> or <i>execute commands</i> ).
	Unit behavior on <a href="#">routes</a> . - no routes are assigned to unit. - unit is moving according to schedule. - unit is ahead of schedule . - unit is behind of schedule. - a route is assigned to unit but not yet activated. - the route is completed. - several routes are assigned to unit. - unit left the zone of route.
	View <a href="#">pictures</a> sent by unit: - the button to load pictures, - no pictures available.
	In this column <a href="#">driver's</a> small photo is displayed. Put a cursor over it to see enlarged photo, driver's name and phone number.
	Remove all units from the working list (the button is at the top of the table).
	Remove a unit from the working list (the button is situated against the selected unit).

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## Unit List Management


Unit work list affects the tracking process in many ways. It is not only about what you can see on the list and display on the map but also how you manipulate units on other panels when creating jobs, notifications, routes, querying messages, reports, and tracks, assigning drivers, looking for nearest units, etc.

### Sorting Items

For your convenience, the items on the list are sorted by name. They can be sorted in direct alphabetical order or in reverse order. To change the order, use the switch button  or .

Besides, it is possible to sort the items on the list by other attributes like motion state, connection quality, etc. To do this, push the appropriate button in the head of the table. Possible filters:


-  motion state,
-  last message time,
-  commands availability,
-  online connection state,
-  sensor state availability,
-  fast track availability,
-  pictures from messages availability,
-  possibility to edit unit properties,
-  driver information availability.

For instance, to sort units by state, press the button . Then at the top of the list there will be moving units, and at the bottom - staying, or vice versa if you press this button twice.

Available columns are defined in [User Settings => Monitoring Panel](#).

### Units Search

It is not obligatory to display all available units on the working list. Units can be easily added to and removed from the list. Sometimes it is more convenient to work with a certain group of units and have it on the screen.

To add a unit or several units to the list, push the asterisk button at the head of the table  and set search parameters.

Select the criterion of search (Search by dropdown list): by name, creator, phone number, unique ID, device type, access for user, geofences, unit groups, sensor, custom field, driver.

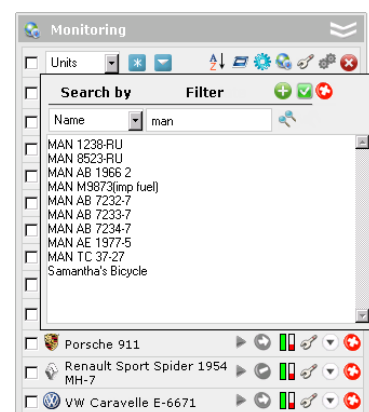
Then formulate your inquiry in the Filter field. For example, to find all MANs, select search by name, and in the template field type `*man*`. All units which names contain the combination of characters `man` (both at the beginning and at the end of the name) will be found and displayed immediately. If you leave the search field empty, all units possessing the selected property (sensors, ID, etc.) will be displayed.

If doing a search by sensor, not only sensor name can be entered in the template field, but also a part of its description, parameter type or parameter name.


The most of search parameters (except geofences and drivers) are taken and can be viewed and changed in [Unit Properties](#).

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- [Sorting Items](#)
- [Units Search](#)
- [Add Units to the List](#)
- [Deleting Units from the List](#)
- [Dynamic Work List](#)






If you need to add all units from a [unit group](#), select a search by unit group, and in the template field enter the group name (or a part of the name).

After the first search is complete, another search can be done on the second level: a search among the first search results. To do this, push Add to the search list . The principals of inquiry formulation remain the same.



## Add Units to the List

---

-  To display all available units on the work list, use *Add all available* button. Note that the option is disabled if [dynamic work list](#) is used.
-  To add search result to the working list, press the green plus-shaped button. The found units will be added to the list.
-  To replace existing working list with search results, press the tick-shaped button.
- To add a single unit form search results to the monitoring list, double-click on the needed unit.

## Deleting Units from the List

---

-  A button against each unit to delete this single unit from the list.
-  A button at the head of the list to clear the work list (remove all units).

Note that units are deleted from the list and not from the system. They can be added back at any time using the ways described [above](#). To delete a unit from the system, go to the [Units](#) panel.

## Dynamic Work List

---

The work list in the Monitoring panel can be formed dynamically according to the time when the last message from a unit was received. Units are removed and added to the list and map automatically. The work list updated each 10 seconds.

The function can be enabled in [user settings](#) on the Monitoring Panel tab. Change *Without filtration* option to *Monitoring panel* or *Panel + Map* and specify filtration interval in minutes. The filtration can affect only the work list in the monitoring panel or both the work list and the map.

### ATTENTION!

With this mode enabled, some other functionality becomes not available or operates in different way:

1. Manipulations with the work list (such as search, addition and removal of units) are impossible.
2. Unit lists displayed when creating jobs, notifications and routes, querying messages, reports and tracks will contain not units from the work list as usual but *all* available units.
3. However, [Nearest Units tool](#) operates with the work list dynamically updated in the Monitoring panel.
4. The filtration by last message time does not affect the work list if the mode of [unit group monitoring](#) is selected.

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## Executing Commands

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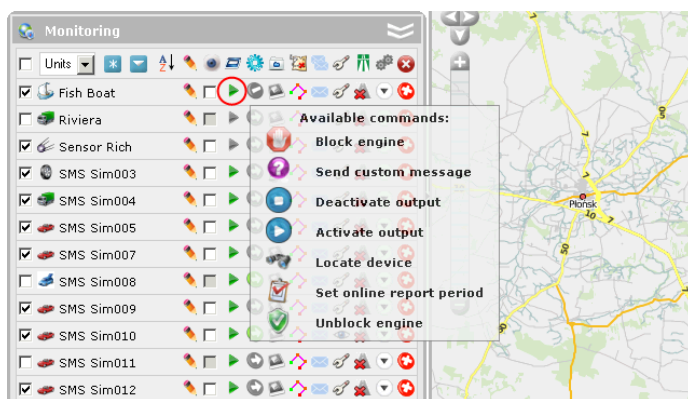
- [Executing Commands](#)
- [Sending Commands to Unit](#)
- [Chat with Driver](#)

While tracking units it is possible to perform actions over them like executing commands and sending messages.

In the Monitoring panel there can be a button to send commands. If not, it can be activated through [User Settings](#) dialog. The button can obtain different looks:

- ▶ there are available commands for the selected unit;
- ▶ there are GPRS commands among available;
- ▶ or there are no commands supported by the selected unit or the current user has not enough access to the unit.

Put the cursor over the active button against the needed unit to see the list of available commands.










Not all of commands supported by a unit can get to this list. However, if command text is known, this command can be sent as a custom message.

It is possible to give commands custom names. To do this, visit [Unit Properties => Commands Aliases](#).

## Sending Commands to Unit

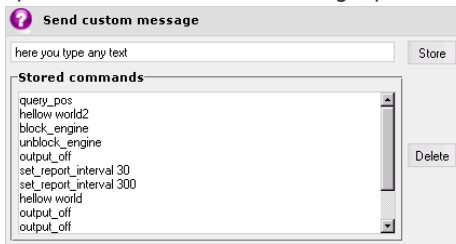
1. Push the command button ▶.
2. Select a command from the list of commands available at the moment. On the right you can choose the link type (if it is not an [alias](#)). Possible link types are TCP, UDP, Virtual, SMS, however, not all of them may be supported by the selected unit. That is why only supported link types are indicated. *Auto* means automatic choice of link type (the preferable one will be specified in brackets). The green icon against a command means that this command is supported by the selected unit.

Execute a Command - SMS Sim033		
Available commands	Link type	Supported
<input type="radio"/>  Block engine	Auto (SMS)	<input checked="" type="checkbox"/>
<input type="radio"/>  Send custom message	Auto (SMS)	<input checked="" type="checkbox"/>
<input type="radio"/>  Deactivate output	Auto (SMS)	<input checked="" type="checkbox"/>
<input type="radio"/>  Activate output	Auto (SMS)	<input checked="" type="checkbox"/>
<input type="radio"/>  Locate device	Auto (SMS)	<input checked="" type="checkbox"/>
<input type="radio"/>  Set online report period	Auto (SMS)	<input checked="" type="checkbox"/>
<input type="radio"/>  Unblock engine	Auto (SMS)	<input checked="" type="checkbox"/>

Cancel OK

3. Set additional parameters if needed, for example, input/output index, report interval, path to load configuration or firmware file, etc. (depending on command type).

If you select *Send custom message*, enter the text to be sent or select one from previously saved. To save your message in the list below, press Store. To delete a message, press Delete.



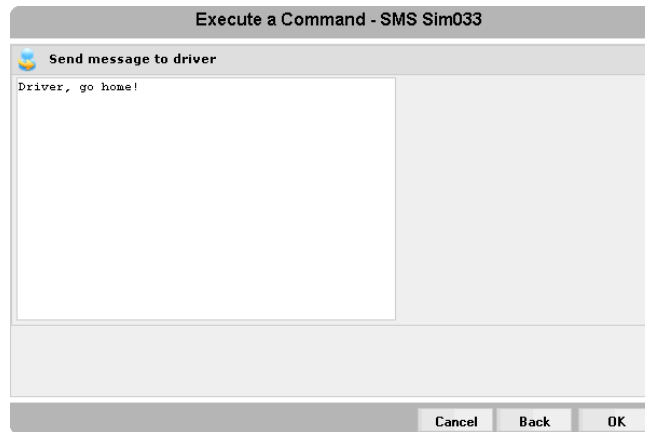
4. Press OK. The command will be executed immediately, and its result will be reported in the [log](#). To show or hide the log window click on the double-arrow in the right bottom corner of the window.

**Hints:**

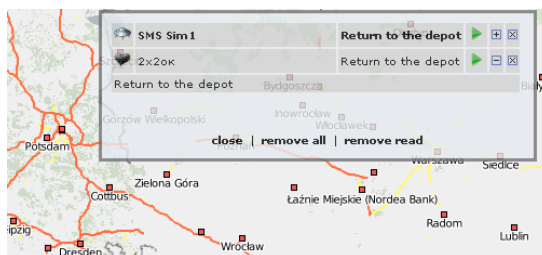
1. A command can be sent to a [group of units](#) at once.
2. A command can be executed automatically - by schedule or when specific conditions are met. For this, adjust the appropriate [job](#) or [notification](#).

## Chat with Driver

Operator (dispatcher) can exchange messages with drivers. To do this, select the command Send message to driver and type a text.



In case the driver answers, driver's message will popup in a special window at the top of the map. New message can be accompanied with a signal (see [User Settings](#)). If you have unread messages, the icon at the bottom of the window near the messages button blinks, and in its tooltip you can see the number of unread messages.



In the list newly coming messages are added to the top. The headers of unread messages are bold. To expand/hide the full text of a message, use the switch button *plus-minus*.

When clicking on a message, the map is focused on the place where this message was received. When clicking on a unit name, the map is focused on its last location.

To delete a message, click on the cross at its right. You can also delete read messages or all messages at all if you use the appropriate buttons at the bottom of the messages window. To simply hide the messages window, click on the *messages* button at the top of the browser. To display the messages window again, click on the same button.

The operator can quickly send a reply to the driver. When clicking on the green triangle-shaped button *Send messages to driver*, command executing dialog appears, and the operator can type the messages and send it.

Besides, you can generate a report called [Chat](#), which will contain all chat history including operator's messages and driver's answers.

Commands sent to a unit (including messages to driver) can be seen in the [Messages Mode](#), commands successfully executed can be observed in the report [Executed Commands](#).

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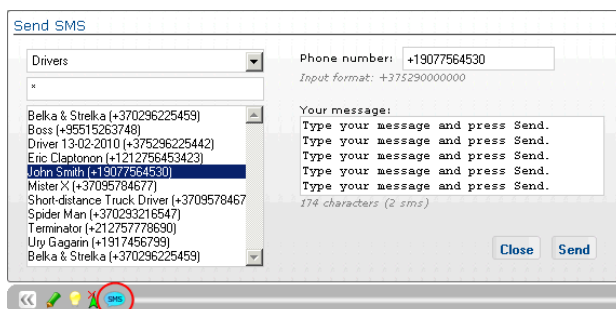
| Copyright © 2002-2011 Gurtam



You are here: [Wialon Pro](#) » [Monitoring System](#) » [Monitoring](#) » [Sending SMS messages](#)

## Sending SMS messages

SMS messages can be sent to drivers, users, units, and to any phone number. SMS dialog is accessible in [Monitoring](#), [Units](#), [Users](#) and [Drivers](#) panels as well as in the bottom panel of the program. The buttons are not shown if the current user does not have enough rights to send SMS messages.



In the dropdown list *Drivers/Units/Users* select addressee. Below there will be displayed the list of objects of the selected type which have phone number in their properties. Phone number is displayed in brackets after object's name. To quickly find a needed object on the list, use the [dynamic filter](#).

On the right of the dialog the phone number of the selected element is displayed. It is taken from the object's properties. However, you can input any other number in [international format](#).

As you type your message, below you can see the number of symbols used and the number of SMS messages which are needed to send your message. Remember that letters of the Latin alphabet are optimal.

After you have typed the text, press *Send*. After that, in the dialog as well as in the [log](#) there will be a record about how successful the operation has been.


To cancel, press *Close*.



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## Events Registrar

Different events can be registered in unit history and then shown in the corresponding reports. Some events such as speeding, idling, visits to [geofences](#), [sensor](#) values, etc. can be detected automatically by the system with the help of [notifications](#). Other events such as fuel filling, maintenance or any custom event are registered in unit history manually with the help of a special tool - Events Registrar.

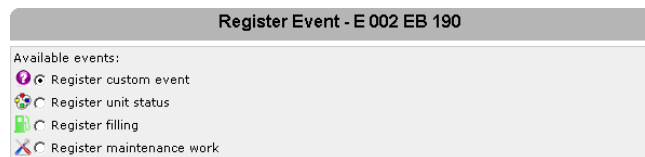
To display the registrar, press the button on the monitoring panel . If you do not see such a button, it can be added in [User Settings => Monitoring Panel](#).

### ⚠ Attention!

To register events for a unit, you need to have the access to this unit *execute commands*, *edit*, or *manage*. If you have just *view* access, the registrar button is dimmed.

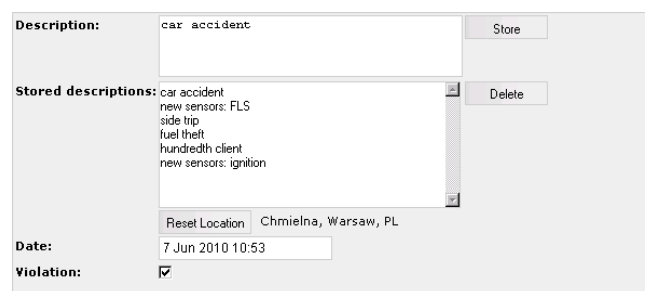
Push the registrar button and choose one of four types of events to be registered:

- [register custom event](#),
- [register unit status](#),
- [register filling](#),
- [register maintenance work](#).



## Register Custom Event

Select Register custom event in the registrar and press Next. Give the event a name, enter description and choose the place.



There is a possibility to save events descriptions to speed up the process. To do this, enter your description and press Store. The description will appear below in Stored descriptions. To select a previously saved description for a new event, just click on one of them. To delete a saved description, select it and press Delete.

If you check Violation, the event will be registered in unit history as violation, otherwise it is registered as simple event. It means this event will appear in different kinds of reports: [Events](#) or [Violations](#).

## Register Unit Status

Using this functionality, you can register the beginning of a state, which can be afterwards displayed in some reports. For instance, the status can be like *business/private* if a vehicle is used both for personal and business needs.

The process of registration is the same as for custom event. You choose date and time and enter any text. The text

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- [Events Registrar](#)
- [Register Custom Event](#)
- [Register Unit Status](#)
- [Register Filling](#)
- [Register Maintenance Work](#)
- [Registered Events in Reports](#)

can be saved and used in other registrations. The date and time chosen means the beginning of the status. The state comes to end when a new state is registered.

Statuses can be set automatically (for example, when the unit enters a geofence) - see [Notifications](#). Columns with the corresponding contents are available in several reports which are [Trips](#), [Engine hours](#), [Rides](#), and [Parkings](#).

## Register Filling

In the Monitoring panel you can register fuel fillings for units manually. Manual registration helps to estimate the difference between registered and detected fuel, compare consumed fuel with consumption rates, calculate running costs, etc.

In the registrar select Register filling and press Next.

<b>Filled volume:</b>	<input type="text" value="30"/>	lt
<b>Cost:</b>	<input type="text" value="12"/>	
<b>Description:</b>	Fuel filling of 30 lt to the amount of 12 was made.	
<b>Date:</b>	<input type="text" value="11 May 2010 11:54"/>	
<b>Time deviation (±):</b>	<input type="text" value="20"/>	min
<b>Location:</b>	<input type="text" value="L 3195, Birstein, DE"/>	<input type="button" value="Reset Location"/>

Enter the volume of filled fuel in liters and the cost. Fractional numbers (up to hundredth) can be also used for fuel volume and cost. To enter fractional numbers, use *point* as delimiter. For example, to register fuel filling for 77 dollars and 88 cents you enter '77.88'.

Entered values will be automatically added into the Description field below. If necessary, you can edit the text manually. Then enter date and time when the filling happened and possible deviation from this time in minutes.

Besides, it is possible to indicate the place where the filling happened. To do this, press the Select Location button. The focus will switch to the map, and you can indicate the place by double-click. The address of the place will be detected by Web-GIS and written in the Location field. Press the Reset Location button to clean this address and indicate another one. Besides, you can manually edit this field (for example, you can add gas station name). When the focus is on the map, the dialog moves to the top left-hand corner, and the Restore Dialog button appears. If you press it, the dialog becomes active again even if you do not indicate any place on the map.

## Register Maintenance Work

In the registrar choose *Register maintenance work* and press Next.

<b>Kind of work:</b>	<input type="text" value="Oil Change"/>	<b>Maintenance</b>
<b>Description:</b>	<input type="text"/>	<input checked="" type="checkbox"/> Oil Change
<b>Cost:</b>	<input type="text" value="12"/>	<input type="checkbox"/> Yearly Checkup
<b>Duration:</b>	<input type="text" value="30"/>	<input type="checkbox"/> Washing
<b>Location:</b>	<input type="text" value="Sulgener Straße, Aichhald"/>	
	<input type="button" value="Reset Location"/>	
<b>Date:</b>	<input type="text" value="11 May 2010 11:01"/>	
<b>Mileage:</b>	<input type="text" value="465"/>	km
<b>Engine hours:</b>	<input type="text" value="1032"/>	h

Enter the following data:

- kind of work (type from the keyboard or select from available service intervals on the right),
- custom description,
- cost,
- service duration in minutes,
- location (press the Select Location button and double click on the map or edit this field manually),
- date and time when the work was done (be default, the current date and time are offered),
- values of mileage and engine hours counters at the moment of the event (the current values are displayed but you can edit them).

In the right part of the dialog you see the list of service intervals contained in [Unit Properties](#) => [Service Intervals](#).

Check the services which were done that time. This this action the interval selected will be zeroed and will start the count again. Note that if you select anything here, the contents of 'Kind of work' field changes.

**⚠ Attention!**

Registered events are not editable, however, they can be deleted from the database in the [Messages Mode](#) (manage access to unit is required).

## Registered Events in Reports

Registered fillings and maintenance can appear in the [report on events](#) together with other things. Registered custom event depending on your choice can get into report on events or [report on violations](#). Both report have the similar structure.

When transporting registration data to a report on events (violations), the information is distributed among columns which contents are taken from certain fields of registration dialog. The table below gives the correspondence between the column in report and the field in registrar.

Column Header	Column Content
Event time	Date and time when event happened.
Time received	Date and time when event was registered.
Event text	Text is taken from the Description field. For maintenance, if there is no description, the text can be taken from the field 'Kind of work'.
Location	Unit location at the moment of event. It is taken from the coordinated indicated while registering th event (the Select Location button and double-click on the map). If Web-GIS has address information for these coordinated, this information is given in this cell of report.

If any of above mentioned fields are not filled correctly, then the corresponding columns will be empty.



Other reports which use registered events are [report on maintenance](#) and [utilization costs](#).

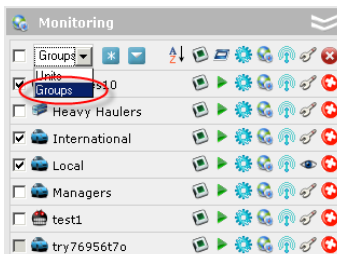


You are here: [Wialon Pro](#) » [Monitoring System](#) » [Monitoring](#) » [Unit Groups Monitoring](#)

## Unit Groups Monitoring

Sometimes it is more convenient to track units by groups. To switch to the mode of unit groups monitoring, select this option in the Monitoring panel.








Groups are added to the work list using the filter . The rules of using the filter are the same as for units (see [Unit List Management](#)). One can search groups by name, unit or creator. To add all available groups to the work list, press the button .



The [icons](#) described above are used on the work list. When hovering the mouse cursor over an icon such as *Motion state*, *GPRS connection*, *Information accuracy* or *Sensor state*, in a popup tooltip you see information about all units in group. To adjust columns to be displayed on the work list, go to [User Settings => Monitoring Panel](#) and select/unselect items in your own way.

Here is the list of all columns available in the group mode:




Here is the list of all columns available in the group mode:

-  motion state (moving/standing, engine on/off),
-  information accuracy (the number of satellites locked and last message time),
-  connection state (connected/not connected),
-  sensor state,
-  display group properties dialog,
-  execute a command over a group of units,
-  remove a group from the list (but not from the system); if pressed at the head of the table, all groups are removed.

The check box before each group on the list is to show or hide units icons on the map.

## Sending Commands/Messages to Unit Group

To send a command or a messages to a group of units:

1. Click on the button  against the needed group.
2. In the dialog there will be a list of units where those which support at least one command will be ticked. Select necessary units and press Next.
3. Select a command from the list of available commands. On the right you can choose the link type from the following: TCP, UDP, Virtual, SMS. Note that not all of these link types may be supported by your units. *Auto* means automatic choice of link type.
  -  A green sign against each command indicates that *all* of the selected units support the given command.
  -  A yellow sign with the exclamation mark means that *not all* units support the command, and in the tooltip you can see the list of units which *do not support* it.
4. Set additional parameters if needed. For example, input/output index, report interval, etc. (depending on command type).
5. Press OK. The command will be executed immediately, and its result will be reported in the [log](#).

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- [Unit Groups Monitoring](#)
- [Sending Commands/Messages to Unit Group](#)

**Execute a command**

Available commands			Supported
		Send custom message	
		Locate device	
		Set online report period	

Not supported by :

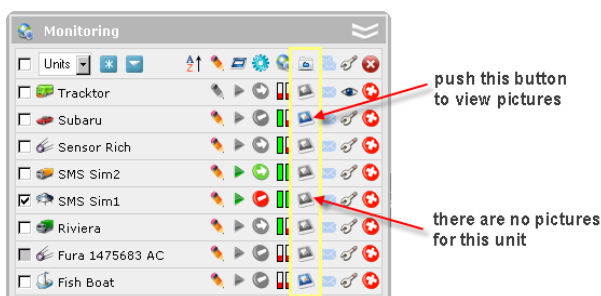
- Boss
- Polo\_2

[More about commands...](#)

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Monitoring](#) » [Pictures from Messages](#)

## Pictures from Messages

If the equipment supports such a possibility, units can send pictures together with messages. Pictures can be viewed in the Messages mode as well as in the Monitoring panel. To display a special column in the Monitoring panel, activate the option *Picture from message* in [User Settings => Monitoring Panel](#).



After pressing the button, picture viewer will be displayed. You can view all the pictures received during the current session as well as the latest picture received before you logged in to the site.

The above mentioned way is to view pictures of a certain unit. To view last pictures of *all* units, press the pictures button at the bottom of the screen.



To move between images, use arrows. Between them you can see the number of the pictures viewed and the number of available images. Pictures are sorted according to the time they come to the server.

Above each picture, there is its date and time. Under each picture you can see a unit name and address information from the message.

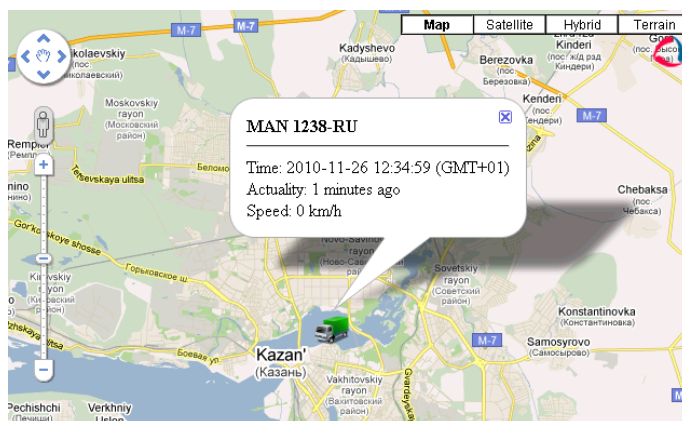
Some pictures can be enlarged with a special button in the right top corner. To close a picture viewer, use the button in the right bottom corner.

⚠ You can get a picture from a unit at any time using the *Query snapshot command*.

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## Locator

Using the locator, you can make information about your units available on outside sources (i.e. other Internet sites). Units are displayed on the map with their **images**. Clicking on a unit, you get more information about it (last message time, actuality, speed). The feature works only with Google Maps.



This option is enabled in [user settings](#) and called Enable public access to locator page. Tick the box and save changes. Then open the dialog again and follow the locator page link to see how it will look and pick up its address.

**User Settings**

Settings   Monitoring Panel   Maps   Account

---

Time zone: (+01:00) Amsterdam, Berlin, Rome, Vienna, Prague, Brusse

Daylight saving time:

E-mail: info@gurtam.com

Enable public access to [locator page](#):

City: Murcia, ES

User's phone numbers: +78081383714

Access key to mobile site: 1212

Use US metrics (miles, gallons):

Use common map for all modes:

Play sound for events:

Cancel   OK

Note that units do not move in the locator. To get the latest information about them, you need to refresh the Internet page each time (press F5 to do this).

### ⚠ Attention!

When the public access is enabled, it means any who knows your login can track your units.

If you are going to use the link to the locator on an external site, you may need to adjust a custom zoom for the map. Below, it is shown there the zoom level is written in the locator address.

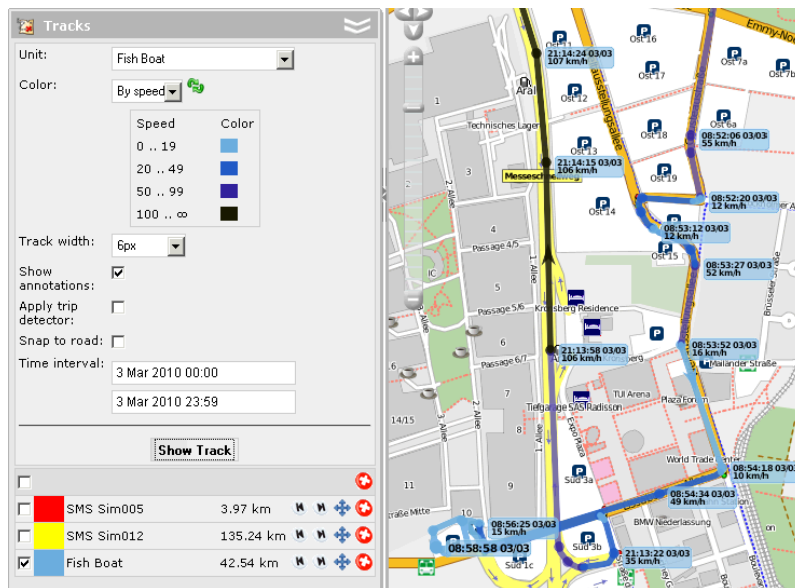
`../locator/index.html?u=locator1&zoom=13&map_type=1`

Possible zoom grades are from 1 (small scale) to 18 (vast scale). If the map zoom does not match to cover all the units being watched, then the map will be rescaled automatically. That is why in most cases it is effectual to choose the largest scale (18).

## Tracks

Track is a line drawn on the map that shows how a unit moved during the indicated period of time. A track is mapped according to the points from where [messages](#) came. Each point stores also date and time when the message was received and speed at that moment.

To view trip history in the map, switch to the Tracks panel.



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- [Tracks](#)
- [How to Map a Track](#)
- [Fast Track Building](#)
- [Speed or Sensor Based Tracks](#)
- [Snap to Road](#)
- [Tracks Management](#)
- [Invalid Tracks](#)

## How to Map a Track

1. First, select a unit in the drop-down list.
2. Select color for the track. It can be one-colored or multicolored ([according speed or sensor values](#)).
3. Indicate track width in pixels (track line thickness). Track can be represented as a number of not connected points (from where messages were received) - choose the option *Points only*.
4. Indicate weather you want annotations to be displayed. Annotations are hints which are attached to each point of the track to show when (date and time) the message was received. On big zooms information about speed becomes also available. Annotations are rather informative but they make visual reception of track more complicated. That is why it is reasonable sometimes to switch them off.
5. Trip detector affects mileage and track visualization. For example, in places of stops and parkings there will be just one point instead of conglomeration of points, and the mileage will include just intervals detected as trips.
6. [Snap to road](#) option is used to lock units location to existing roads when drawing a track.
7. Define the interval within which you want to get the data.
8. After filling in all fields, press Show Track. A point-to-point track built according to preset parameters will appear on the map.

If within the indicated period there was no message from unit, the button Show Track is not active.

If within the indicated period the unit was not moving there will be no track on the map, however it will be in the list of tracks below, and the distance traveled will be 0 km.

If it is too long to wait the track to appear on the map, it may mean you have indicated too large interval or your Internet access rate is low.

You can add tracks on any unit for any time interval. The list of tracks created will be displayed in the work area at the left. To prevent tracks merging, select different colors for them.

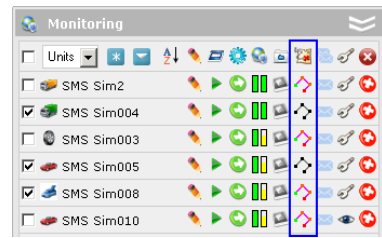


After you have drawn the track it is impossible to change its parameters (time, unit, color, annotations). In case of error, delete incorrect track and create a new one.

## Fast Track Building

A track can be built with one click of a mouse, straight from the Monitoring panel. There is a special column named *Fast track building* which can be enabled in [user settings](#). There you also specify the interval for fast track building: current day, last 24 hours, last complete day or other (manual mode).

When pressing the *Show track* button opposite a unit, a track of this unit appears on the map, and the button becomes dimmed. To remove the track from the map, press the same button again.



Many parameters for fast track building are borrowed from the Tracks panel: line width, annotations, trip detector, and snap to road option. In case of *manual mode*, the time interval should be also specified there. Track colors are set in unit properties (Advanced tab) or in the Tracks panel as well.

All fast-built tracks are displayed in the Tracks panel where you can manipulate them in the same way as usual tracks: enable/disable, delete, focus, apply hittest, etc.

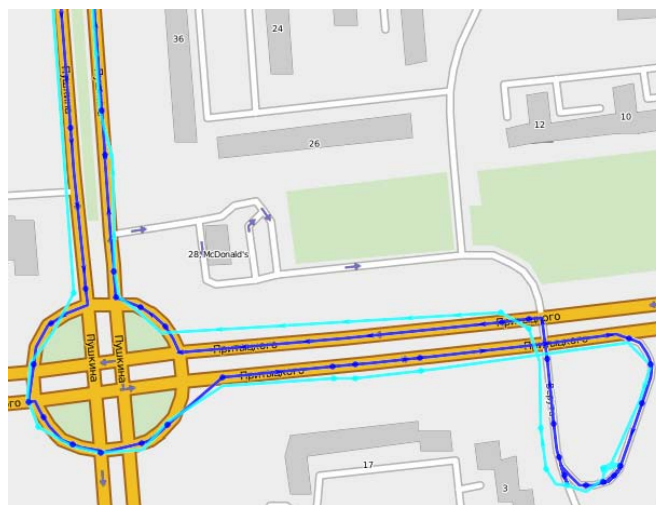
## Speed or Sensor Based Tracks

A track can be displayed in different colors depending on detected speed or sensor values registered on a segment of the track.

This option is activated and adjusted in [Unit Properties => Advanced](#). If in unit configuration one of the options (*Speed based track colors* or *Sensor based track colors*) is selected and intervals and colors are set, then in the Tracks panel the palette becomes available. The palette can be changed only through unit properties dialog. If you have recently modified the color palette, new colors are applied after pressing the *Refresh* button.

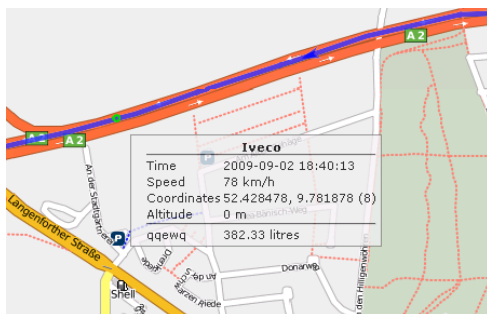
## Snap to Road

If a unit is located near some road according to its coordinates in message, it is assumed that the unit is moving along the road in reality (there may be some inaccuracy in data sent). So, such points (messages) can be forcibly locked to road. It affects how the track looks and total distance traveled. Note that the functionality is implemented only for WebGIS maps, and roads are considered in the radius of 50 meters (164 feet).



## Tracks Management

Hover the cursor over track to get accurate information about track point (points where messages were received). Messages are searched in the radius of 50 pixels to the cursor. Points found are highlighted by small green circle, and a tooltip appears with the following information: time, speed, coordinated, altitude, and sensor values.



**Note.**

If track is snapped to roads, some points may be located not exactly on the track.

You can manage tracks in the left part of the window under the *Show Track* button. It is possible to view all created tracks on the map simultaneously or select just certain track(s). The tracks marked with flags are displayed. Unmark a track to hide it. Using the checkbox at the top of the list you can select/unselect all tracks at once.

In the tracks list there is also unit name and distance travelled during the preset period.

Use buttons:

- to locate the initial position of the track;
- to locate the final position of the track;
- to adjust map zoom to track;
- to remove track from the map (using the delete button at the top of the list you can delete all tracks at once).

**Hints:** [Hittest](#) and [Track Player](#) tools can be applied to a track.

## Invalid Tracks

When mapping a track you can get a dashed line that means that some track coordinates are doubtful. It may occur because of connection loss or other malfunction.



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## My Places (POI)

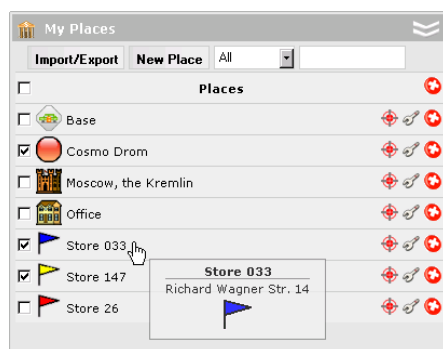
**Attention!** This module is licensed separately and can be not included in your package.

This feature allows marking points of interest on the map. Each place can have its image on the map (an icon). In addition you can add any comments. How many POI you can create can be known from your account parameters (see [User Settings => Account](#)).

In the work area in the left section of the window open My Places panel. Here the list of all created POI is displayed.

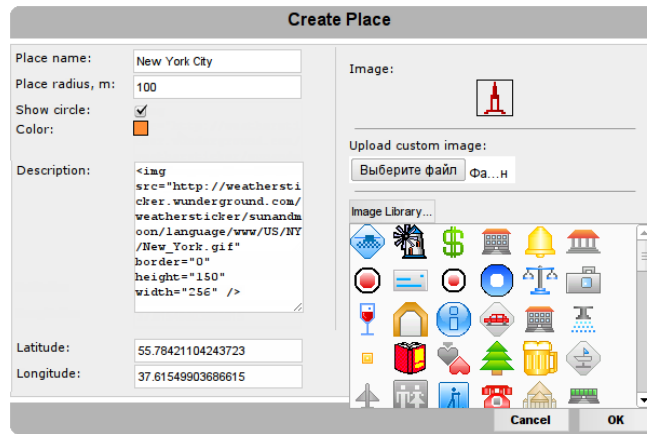
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- [My Places \(POI\)](#)
- [How to Create a New Place](#)
- [Places Management](#)
- [Import/Export POI and Geofences](#)



## How to Create a New Place

1. Press the New Place button.
2. Double-click on a point on the map to mark the place.
3. In the Creating Place dialog enter a *name* for the place.
4. Default *radius* for a place is 100 meters. It can be used for address detection in reports and to display the place on the map.
5. Tick the *Show circle* checkbox if you want the place to be displayed on the map as a circle with the specified radius. Below indicate the color for the circle.
6. Give custom *description* (optional). Its length is not limited. You can use *html* tags in descriptions in order to format text or load images from other sites.
7. Below you see place's coordinates - *latitude* and *longitude*. The place coordinates are indicated automatically depending on the point on the map you have clicked. However, they can be corrected manually if necessary.
8. Attach an *image* to the place (optional) on the right. To upload an image from your computer, push Browse and select a needed file (PNG, JPG, GIF are allowed). All attached images are automatically resized by 256x256 pixels. To use an image from the standard set, press Library.
9. To save changes, press OK.

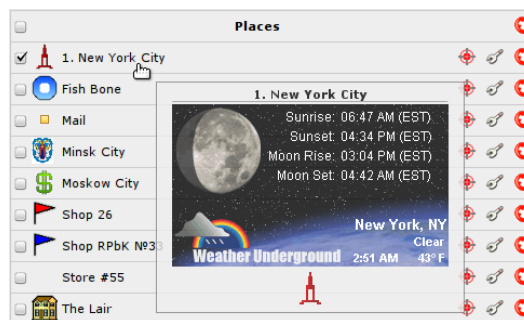



## Places Management


In the first column of the table tick the places that should be seen on the map. To move to a created place, click on its name in the list. On the map, places can be displayed by their images and/or circles (depending on what is set in place properties) as well as their names. However, if the names are too long, you may want not to show them on the map. Disabling POI names is done in [user settings](#) (remove the flag Display POI names on the map).




Place a mouse cursor over a place name on the list or on the map to see related information in a tooltip: enlarged image, name, description, radius, and account name where the place belongs to (if there are several accounts). If the description contained any links to other images, they will be loaded and displayed, too. Example tooltip:






To change place location, push the button . In this case, the place will be highlighted with a red marker. Then double-click on a place where a new location should be and press Save. Press Cancel if you do not want to apply changes.

Another way to change place location is to indicate its new coordinates in Place Properties dialog that is activated by the button . In this dialog one can change also other place settings like name and description or attach a new image.

To remove place, press the *Delete* button  against it and confirm your intension. You can even delete several places at once if you check them and press the *Delete* button at the heading of the table.

If you have just view access to the account where a place is located, you cannot move, edit or delete this place. That is why the corresponding buttons look different:

-  impossible to relocate the place,
-  view place properties (edition is disabled),
-  impossible to delete the place.

To quickly find a certain place, use the [dynamic filter](#) above the list. Begin to input the name of a place and see the results.

The other way to filter geofences can be used if you have access to more than one account. Then in the dropdown list choose account name to display only places belonging to this account. Note that if you have just view rights to an account, you cannot move, edit or delete its POI.

POI can be used in reports as addresses (in the 'Location' column), if POI as address source is checked in report

template. See [Data in Reports](#) for details.

## Import/Export POI and Geofences

---

Your [POI](#) and [geofences](#) can be exported and imported with the help of *kml* (if compressed - *kmz*) files. It allows to quickly copy elements from one account to another as well as export them from exterior sources. Besides, in some cases it is possible to make geofences from places and vice versa.

To perform the operation, press the *Import/Export* button at the top of Geofences or Places (POI) panel and choose an option - either import or export.

Import places/geofences from file to an account

If you choose import, then you select a destination account. Remember that you must have *manage* or *edit* access to this account. If you have only one (your own) account, it is selected automatically. Then indicate the path to the file (the *Browse* button) and press *Import*.

If the import action is performed in My Places panel, after you press the Import button, all appropriate elements will be transmitted from file to the indicated account. However, if the executed file contains any developed geofences (lines, polygons), they will be omitted. Only circle-shaped geofences can be transformed to POI. However, any place can become a circle-shaped geofence, but with this it will lose its image and description, and other geofence properties (address source, ride beginning/end) will be set to defaults. Places with zero radius will acquire default radius - 100m. Geofences with control points are imported together with control points.

If the import action is performed in Geofences panel, after you press the Import button, the file will be processed on the server, and the list of found elements will be displayed. Check needed geofences and press OK. New geofences will be copied to the selected destination account.

The caption *The file has been imported* means that the operation was completed successfully. You can check the result by choosing the appropriate account in the filter. If the import failed, you get the warning message *The file has been imported with errors*.

After that you can select more files to import places or close the window. New objects will appear on the panel where the import operation was performed.

Export places/geofences to file

To export POI, press the *Import/Export* button and choose the export option. Then the list of all places or geofences (depending on panel where you perform export) available to the current user will be displayed regardless their native account or applied filter. Check elements you want to export. By default, elements which are selected to be displayed on the map are already selected.

Optionally you can enter file name and compress file as *kmz*. After that, press OK and save the file.

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## Geofences

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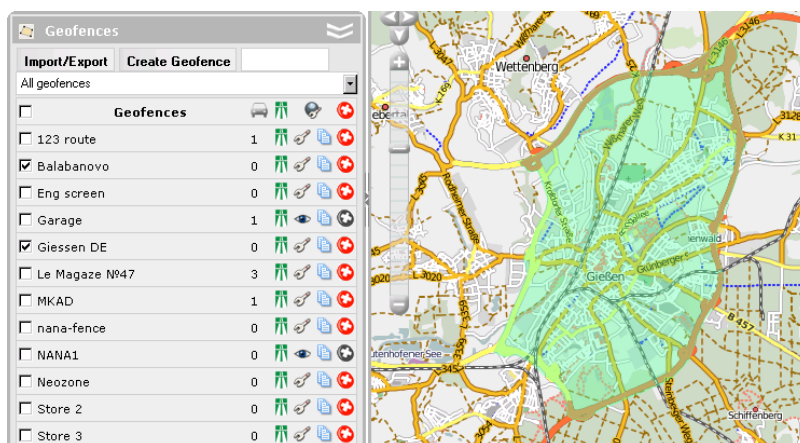
- [Geofences](#)
- [How to Create a Geofence](#)
- [Geofences Management](#)
- [Usage](#)

⚠ *Attention!* This module is licensed separately and can be not included to your package.

Geofence, or geographical zone, is some area on the map. It can be used to control unit activity in this area. By its shape geofence can be a polyline (for example, a street or a highway), a polygon (for example, some factory or a whole city) or a circle.

A number of geofences allowed can be seen in your account parameters (see [User Settings](#) => [Account](#)).

In the work area open Geofences panel. Here you can create, edit, delete geofences, and create controlled routes on their basis.



## How to Create a Geofence

### 1. Map Geofence

After you have pressed the **Create Geofence** button, a help window appears to provide you with the instructions about drawing geofences. Choose a geofence type on the left: line, polygone or circle. Then map a geofence.

Here are the basic rules for mapping a geofence:

- Double-click on any place of the map to put the first point. Then add more points using the same method. Put the points as close or as far from each other as you want.
- To insert a point between two other points, double-click on a segment between them.
- To move a point to another place, click on it and holding the left mouse button drag to another place on the map. Then release the mouse button.
- To delete a point, just double-click on it. Note that points can not be deleted if there are only two points - for lines, or three - for polygons.

⚠ *Hint.*

A quick way to map a geofence is by using the [Routing tool](#) (create lines) or [Address tool](#) (create circles).

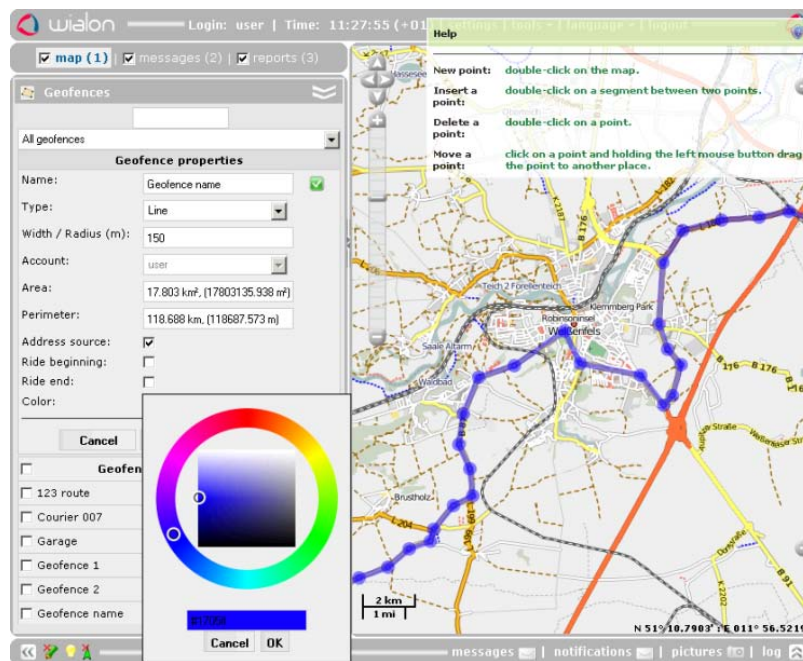
### 2. Set Parameters

- **Name:** a geofence name that is used while tracking units as well as in reports and notifications.
- **Type:** line, polygon or circle. For line you also have to indicate its width, for circle - radius (in meters).
- **Account:** this dropdown list is shown if the current user has the access to more than one account.

- Area & Perimeter: these fields are not editable, they are calculated automatically when mapping a geofence.
- Address source: check this box if you want to use a geofence instead of a usual addresses. In this case, a geofence name can be used in reports in the location columns. It happens if Geofences as address source option is activated in the report template.
- Ride beginning/end: these parameters are important for [reports on rides](#). The same geofence can be simultaneously the end of one ride and the beginning of another, but cannot be the beginning and the end of one ride.
- Color: choose a color using the palette or enter a color RGB code. This color will be used to display a geofence on the map and show its name in a unit info tip (if a unit is located in this geofence). If a color is not set, the default (green) color will be used for the geofence.

### 3. Save Geofence


When finished, press Save. In case of a mistake, press Clear and try again. To close the create mode without saving results, press Cancel.



### Geofences Management

In the work area there is a list of all created geofences. Geofences are given in the alphabetical order. Placing a cursor over a geofence name, in the popup tooltip you will get all the information about a geofence type, its parameters (ride beginning/end, address source), and the account where a geofence belongs to (if you have access to more than one account).

<input checked="" type="checkbox"/>	Put check marks in the left column to choose geofences to be displayed on the map. Unselect this box to remove geofences from the map. Depending on <a href="#">User Settings</a> geofences can be displayed on the map together with their names or without them.
	A button to create a <a href="#">route</a> on the basis of a selected geofence. Available only if you have Routes Control module in your package. Created routes will appear in the Routes Control panel.
	Shows how many units are there within a geofence at the moment. To see these units, place the cursor over the number. If there are question signs (?) in this cell, it means the option is disabled. To activate it, go to <a href="#">user settings</a> and check the item <i>Presence in geofences</i> .
	The button to edit geofences. The size, shape, name, color, position, and other parameters can be changed.
	The button to view a geofence properties (editing is disabled).
	The button to copy a geofence. You can edit a geofence and save it under another name.
	Press this button to delete a geofence. To delete several geofences at once, check them in the first column of the table and press the delete button at the top of the list.

 You cannot delete a geofence (not enough access rights to the account).

For your convenience, there is a filter with several predefined criteria to sort geofences:

By some property:

- All geofences;
- Geofences with control points;
- Geofences without control points;
- Geofences used as address;
- Ride beginning;
- Ride end;
- Ride beginning and end;
- Polygons;
- Lines;
- Circles;
- Geofences used in unfinished routes;
- Geofences used in finished routes.

By account:

- Here is a list of all accounts available for the current user (if there are more than one). Click on any of them to display geofences belonging only to this account.

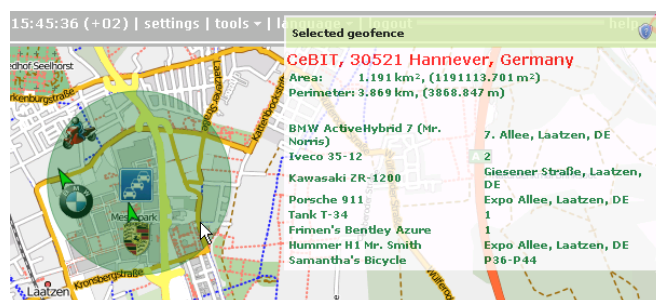
To quickly find a needed geofence, you can use the [dynamic filter](#) above the list. Enter a geofence name or a part of the name and observe the search results.

Created geofences can be exported to *kml/kmz* file as well as imported from such files to different accounts. Besides, [places \(POI\)](#) can be imported to geofences and vice versa. [Details...](#)

## Usage

### While Tracking Online

Geofences can be displayed on the map and mark some area of interest and simplify visual reception of the map. If a geofence is displayed on the map and the mouse cursor is placed over it, you can press <Ctrl> to see its name, area, perimeter, and the list of units located in this geofence at the moment with addresses where they are. Perimeter for a line is its length (line thickness is not taken into account).



If a unit is situated in a geofence, this fact can be shown in unit info tip. For this, check the option Presence in geofences in [User Settings](#).

### To Routes Control

Line-shaped geofences with control points can be used to control routes: following the predefined route and visiting indicated points in indicated time. See [Route Control](#).

### In Notifications

You can be notified by e-mail, SMS, online or by other means when your unit leaves a geofence or enters in a geofence. It is possible also to set speed limitations and sensor range for unit during its presence in a geofence.



Besides, on an entrance to a geofence or an exit from it, an action can be performed automatically: send a message to driver, block the engine, change users access to this unit, and many others. See [Notifications](#).

## In Reports

Geofences can be used in reports as addresses (in the Location column), if Geofences as address source is checked. -----

Geofences can be used to generate reports on [rides](#) and [unfinished rides](#). This is used, for example, to control how a cargo is transported in several trips.

A specialized [report on geofences](#) can be generated. In it all entires and exits to/from selected geofence(s) are given together with visit duration, distance travelled within the geofence, average and maximum speed, etc. Besides, you can generate a report about [ignored geofences](#) that is geofences which were nor visited.

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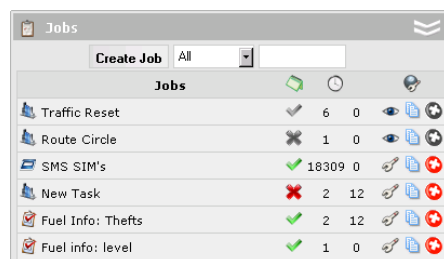
## Jobs

**Attention!** This module is licensed separately and can be not included in your package.

A job is a set of actions which are performed by schedule. A job can be instruction execution, sending reports by e-mail or something else.

To create, edit and delete jobs, open the **Jobs** panel in the work area. Here you see the list of all jobs created before, information on their state, and the button to create a new job.

The number of jobs that can be created verify in your account parameters (see [User Settings](#) => [Account](#)).



Jobs			
Traffic Reset	✓	6	0
Route Circle	✗	1	0
SMS SIM's	✓	18309	0
New Task	✗	2	12
Fuel Info: Thefts	✓	2	12
Fuel info: level	✓	1	0

## Creating a Job

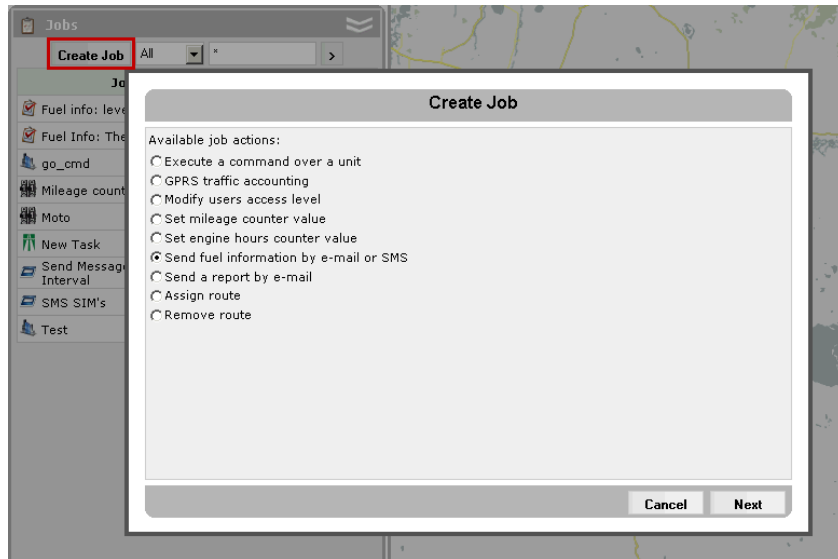
To create a new job, press **Create Job** button. In the dialog choose job type:

- [Execute a command over a unit,](#)
- [GPRS traffic accounting,](#)
- [Modify users access level,](#)
- [Set mileage counter value,](#)
- [Set engine hours counter value,](#)
- [Send fuel information by e-mail or SMS,](#)
- [Send a report by e-mail,](#)
- [Assign route,](#)
- [Remove route.](#)

Then follow instructions in the dialog. For any type you have to select units to apply this job to and set the basic parameters like activation time and schedule. For each type of job adjust also individual parameters described below.

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## Selecting Units

By default, only units which are on the [work list](#) at the moment are displayed in the dialog (the list is taken from monitoring in the units mode even if the groups mode is activated). To switch between units and groups use the selector on the left. To show all available units or unit groups, check the box Display all available units/groups on the top.

Mark units/groups to apply the notification to. If you select a group, it means the job will be applied to all units in this group.

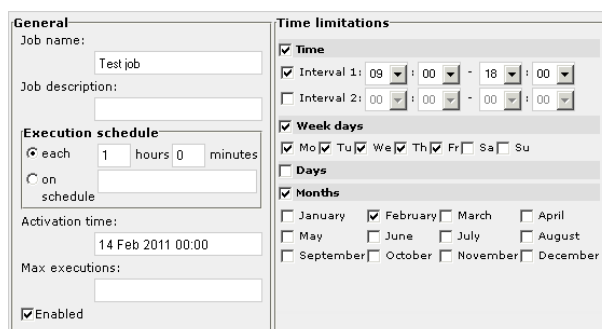


While editing a job, this page contains units selected for the job (they are checked) and units displayed on the work list at the moment. You can attach more units to the job or remove some.

Depending on job type and your access to different units, some units can be skipped on the list. For example, when creating a job to execute a command or reset traffic, units to which you have *view* access cannot be shown because these actions require *execute commands* rights and higher. A job about changing users access can be created only for units to which you have *manage* access.

## Basic Parameters for Jobs

These parameters are adjusted in the last page of the dialog:



### Job name

The name can contain four and more symbols. It will be used on jobs list or as mail topic if the job is to send some information by e-mail.

### Job description

Job description is optional. It can appear in job tooltip.

### Execution schedule

Two ways to set schedule exist:

(1) Periodic execution: *each ... hours and minutes.*

(2) On schedule. Key in time in the format of *hours:minutes* or just *hours*. If you need to indicate several points in time, separate them by spaces.

### Activation time

Date and time when the job will be activated.

### Maximum executions

Enter the number of job executions after which it will automatically be deleted. If you leave this field empty, the job will be executed endlessly until you delete it or disable manually.

### Enable

This check box indicates whether the job is on or off. When creating a job, enable this check box to activate the job just after creation. If this check box is not marked, the job will appear on the list anyway, and you can activate it later.

### Time limitations


In the right part of the dialog one can define time limitations by days, months, time, etc. For instance, the job can be assigned to a unit just on weekdays and within working hours from 9 AM to 6 PM. Or you may want to reset traffic counter once a month on the first day of the month. To do this, select the day 1.


Job name and schedule are required fields, other parameters are optional.

## Execute a Command over a Unit















While creating a job of this type, you have to choose a command to be executed from the given list of commands supported by selected units. The contents of the list depends on your equipment and its configuration.

Not all of selected units may support a chosen command, and it is seen from the indicator:

 a green sign means that all selected units support this command;

 a yellow triangle means that not all of selected units can perform this job. In a popup window you can see the list of units which *do not support* it.

If the selected command is not an [alias](#), you can choose also link type: Auto, TCP, UDP, Virtual, SMS. Supported link types can vary in different units. That is why if you assign the job to several units, it is useful to set *Auto* link type. Then the program will automatically define it for each unit.

	Available commands	Link type	Supported
<input type="radio"/>	 Block engine	Auto	
<input type="radio"/>	 Send custom message	Auto	
<input type="radio"/>	 Deactivate output	Auto	
<input type="radio"/>	 Activate output	Auto	
<input checked="" type="radio"/>	 Locate device	Auto	
<input type="radio"/>	 Set online report period	Auto	
<input type="radio"/>	 Unblock engine	Auto	

For some commands you should set additional parameters like input/output number, online report interval, etc.

[More about executing commands...](#)

## GPRS Traffic Accounting

This job is aimed to (1) automate [traffic counter](#) reset and/or (2) store GPRS traffic counter value in unit's history. For example, you can assign to reset the traffic counter once a month and register each reset with the current value in unit history.

Сохранить значение счетчика в истории объекта   
Сбросить счетчик GPRS трафика

Indicate the status of the option Store counter value in unit history. If the option is activated, each reset is registered in the system, and then you can generate a [report on events](#) or [report on traffic](#) to see traffic consumption. If the option is not activated, resets are not registered anywhere.

The option Reset GPRS traffic counter is to set the counter to 0 each time when the job is performed.

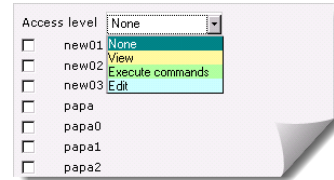
## Modify Users Access Level

---

This job is aimed to change user right when needed, for example, if you want to give someone demo access for several days.

To configure this job, select users and assign them a new level of access. On the list there are only users to which you have *manage* rights.

Check necessary users and select access level from the list of available levels: none (deny access), view, execute commands, edit.



## Mileage Accounting

---

This kind of job can help you to fulfill control over mileage counter automatically, according to schedule. With this job you can store mileage counter value in unit history, reset mileage counter, set a new value for it, save its value as parameter in data message.

To set a new value or to reset the counter, choose the option Set new value for mileage counter and input the desired value below (in kilometers). The counter will obtain this value each time when the job is executed.

Set the flag Store counter value as parameter of unit data message to save the counter value as parameter in data message. Later on it can be used to get initial and final mileage for trips. It is recommended to store the counter while the unit is parked, for example, once a day at night time.

The option Store counter value in unit history can be used to store current mileage counter value. It is especially recommended if according to the job properties, the counter has to be reset or altered.

## Engine Hours Accounting

---

This is analogue of the previous type of job but it is applied to engine hours sensors.

If you store engine hours sensor as parameter in data message, you can use this parameter to create engine hours sensor on its basis.

⚠ Counters' values (traffic, mileage, engine hours) are stored in unit history as [registered events](#), which is needed for creating reports - [Events](#) or [Chronology](#).

## Send Information about Fuel

---

You can get information about fuel (fillings, thefts, fuel level) by e-mail or SMS according to predefined schedule. This information is given in *liters* only.

To detect fuel fillings and thefts, the appropriate unit settings are used (see [Unit Properties => Fuel Consumption](#)).

General	Recipients:
Event type: <input type="checkbox"/> Filling <input checked="" type="checkbox"/> Theft <input type="checkbox"/> Fuel level Method of delivery: <input checked="" type="checkbox"/> E-mail <input checked="" type="checkbox"/> SMS Messages type: <input type="radio"/> Separate message for each unit <input checked="" type="radio"/> All units in one message Time offset: <input type="text" value="0"/> minutes	E-mails: <input checked="" type="checkbox"/> user01@domain.com ✓ <input checked="" type="checkbox"/> user02@domain.com ✓ <input type="checkbox"/> <input type="checkbox"/> Phones: <input checked="" type="checkbox"/> +19173546579 ✓ <input checked="" type="checkbox"/> +19173546583 ✓ <input checked="" type="checkbox"/> <input type="checkbox"/>

Additional parameters to configure this report are:

Event type: filling, theft, fuel level (all three can be chosen). Fuel level means fuel level at the beginning and at the end of the interval (the interval is set later).

Method of delivery: by e-mail and/or SMS. On the right enter your e-mail(s) and phone number(s). When all slots to enter e-mails and phones are filled, additional slots appear automatically.

Message type: one unit in one message or all units in one message.

Time offset (in minutes). This parameter allows you to analyze messages from the black box. In this case, time offset value is subtracted from interval beginning and end.

**Note.**

Information about fuel filling and thefts is sent only in case if any has been detected. Information about fuel level is given in any case.

SMS format:

```
Unit Name
x a/b/c
```

where

- *Unit Name* is unit name as set in unit properties (to save traffic it is recommended to use no other letters but Latin);
- x - sensor number;
- a - fuel level (in liters);
- b - fuel filling (in liters);
- c - fuel theft (in liters).

For example, SMS message

```
Iveco_1501
1 66/-/-
2 100/-/10
```

means that according to the first sensor the unit Iveco\_1501 has 66 lt of fuel, and no fillings and thefts were detected; according to the second sensor (fuel in the second tank, for example) fuel level is 100 lt, no fillings were found, and 10 lt theft was detected.

Dashes may mean one of the following:

1. The corresponding flag is not ticked in job parameters. For example, it is not chosen to send fuel level.
2. There are no valid data (it may happen with fuel level).
3. Required events were not detected (it may happen with fillings and thefts).

## Send a Report by E-mail

This job can be used to automatically generate and send reports about units activity to your e-mail(s).

Set additional parameters:

- On the dropdown list select a [report template](#) from available items.
- File format: [HTML](#), [PDF](#), Excel, [XML](#), CSV.
- Compress report files or not.
- Attach the map image to the report or not. Note that the image will make a report larger. Only WebGIS map can be attached to the report.
- Report interval: a specified interval or previous ... days/weeks/months/years.
- Recipients: enter e-mail address(es) where to send reports.

After you have received a letter with a report, extract the file to some folder and open it with the appropriate application depending on the file format.

**Note.**

If in your company the workday sometimes finished after midnight (because some vehicles may arrive late at night), then you can adjust the parameters for the daily report in the following way. Select report interval 'for previous 24 hours' and set job activation time at 4 AM. Then the report will be automatically generated every day at 4 AM. It will contain data for the last day, and the trips which finished after midnight will not be broken into two parts.

## Assign Route

This kind of job is available only if you have the Routes Control module.

Using this job, you can set automatic route assignment according to the given schedule. Set parameters to create a new route: name, description, geofence and others. See [Route Control](#) for details.

When the time comes to do the jobs, the new route will be created. It will appear in the Routes Control panel and can be tracked online or in reports.

## Remove Route

Routes removal can be used to automatically clean the Routes Control panel. For instance, once a day in a certain time all routes assigned to the unit can be deleted.

This is especially actual for finished routes. To remove only finished routes, set the option *Remove finished routes only*.




## Jobs Management

The list of jobs contains the following information: job type, job name (in a popup window there is a full information); job state (enabled/disabled); how many times the job has been already executed and the number of maximum executions allowed.




Different job types are marked with special icons:

- command execution;
- sending report or information about fuel;
- access management;
- GPRS traffic counter reset;
- manipulate mileage or engine hours counter;
- assign/remove route.





Hover a mouse pointer over a job to view its properties in a tooltip. On the list you see job state (on/off), the number of executions already made, and the number of maximum executions provided for this job.

Clicking on job state sign  at the header of the table, you can enable/disable all jobs at once (if you have access rights on them). Enable  or disable  a certain job.

One can also handle jobs in the following way:

-  Change job properties.
-  Create a new job on the basis of this one.
-  Delete a job.

If a job belongs to some account to which your access is *view*, it will be still executed, but you will not be allowed to change it in any way. In his situation, the buttons look different:

-  job is enabled, but you cannot disable it,
-  job is disabled, but you cannot enable it,
-  view job properties (edition not available),
-  impossible to delete the job.

The **dynamic filter** will save your time when managing jobs. Input job name or its part into the search box and see the results.

The other way to filter jobs can be used if you have access to more than one account. Then on the dropdown list choose account name to display only jobs belonging to this account. Note that if you have just view rights to an account, you cannot edit or delete these jobs.

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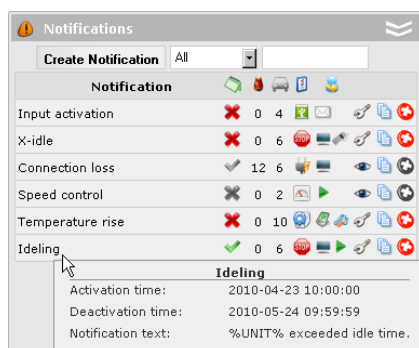
## Notifications

**Attention!** This module is licensed separately and can be not included in your package.

You can be notified about any activity of an object that you consider to be significant. It can be speeding, location, sensors values, etc. A notification can be delivered by e-mail or SMS, shown online in a popup window or just registered in the system to be included later in the report.

The number of notifications allowed can be known from your account parameters (see [User Settings => Account](#)).

To create, edit and view notifications, open the Notifications panel in the work area at the left.



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## How to Create a Notification

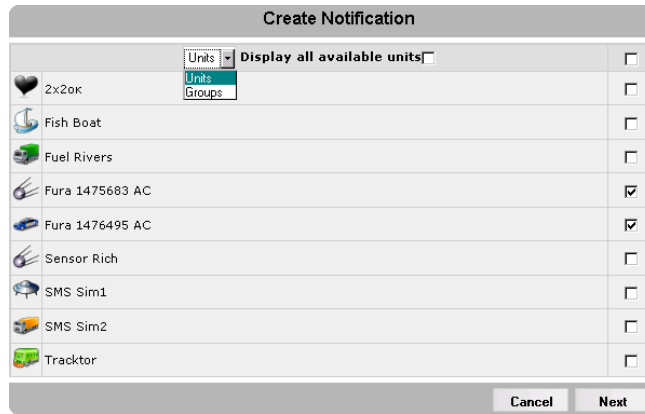
1. Push the Create Notification button.
2. Choose object(s) to create a notification for, and push Next. If you have only one unit available, it is selected automatically, and this page is not displayed.
3. Select what you would like to control: geofence, speed, alarms, sensor values, message parameter, etc. Push Next.
4. Adjust control parameters needed for the notification type selected in the previous window: select geofences, indicate speed limits, etc. Push Next.
5. Input your text for the notification using special tags listed in the table below. They will be substituted with real values when notification triggers.
6. Indicate how the notification should be delivered: sent by e-mail or SMS, popup online, registered in unit history, etc.
7. Key in a name for the notification and adjust the schedule for its performance.
8. Push OK. The created notification will appear on the list in the left part of the window.

All of the steps of creating notification are described in detail below.

## Selecting Units

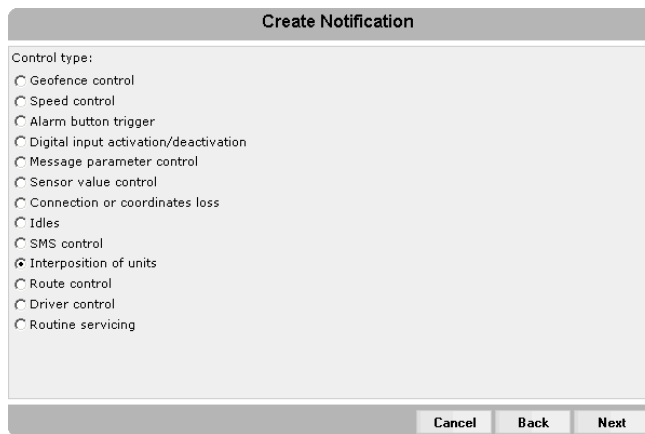
By default, only units which are on the [work list](#) at the moment are displayed in the dialog (the list is taken from monitoring in the units mode even if the groups mode is activated). To switch between units and groups use the selector on the left. To show all available units or unit groups, check the box Display all available units/groups on the top.

Mark units/groups to apply the notification to. If you select a group, it means the notification will be applied to all units in this group.



While editing a notification (Notification Properties dialog), this page contains units selected for the notification (they are checked) and units displayed on the work list at the moment. You can attach more units to the notification or remove some.

## Notification Type



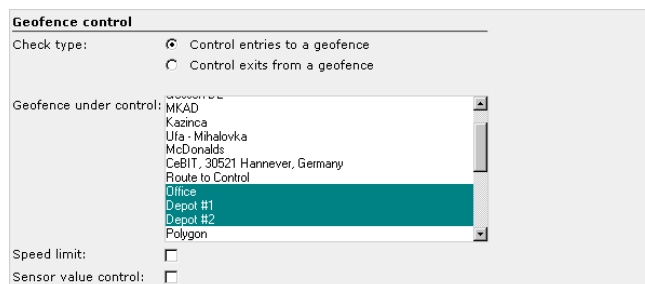
### Geofence control

In case of this choice, in the following window you have to select geofence(s) to control and control type: control entries to or exits from geofence(s). To choose several geofences at once, hold <ctrl> key and click on needed geofences in sequence.

In addition you can narrow trigger case adjusting speed limitations or sensor value range inside (outside) the geofence. Then the notification will trigger when a unit being inside (outside) a controlled geofence breaks these limitations.

For additional speed control, indicate lower and higher speed limit, and the notification will trigger if beyond the limits.

For sensor control you can set trigger inside the indicated values as well as outside them. Choose sensor types on the dropdown list or set the mask using a wildcard symbol (\*). If there will be two or more sensors of the same type or mask found, their values can be summed or calculated separately (select the corresponding option).



### Speed control

Define the minimum and/or maximum speed values. If a unit goes out of this range, the notification will trigger. In

addition, you can activate *sensor value control* - in this case the notification will trigger only if both conditions are met.

Speed control	
No less than, km/h:	<input type="text" value="0"/>
No more than, km/h:	<input type="text" value="100"/>
Sensor value control	<input type="checkbox"/>

#### Alarm button trigger


For this type of notification no specific settings are needed.

#### Digital input activation/deactivation

Specify the number of digital input and select control type: trigger on input activation or deactivation.

Digital input activation/deactivation	
Digital input, (1-32):	<input type="text" value="16"/>
Check for activation:	<input checked="" type="radio"/>
Check for deactivation:	<input type="radio"/>

#### Message parameter control

Four control types are provided: value range, text mask, parameter availability, and parameter lack. To control *Value range*, specify parameter name, define minimum and maximum values for it, and select whether to trigger in the specified range or out of it. To control parameter text, enter parameter name and *Text mask* using wildcard symbols (? and \*). For *Parameter availability* and *Parameter lack* it is enough to indicate parameter name. These two last mentioned options can be interpreted as parameter appearance and disappearance if on the last page of the dialog you set the option 'Generate notification only when state changed'.  For *in* and *out* parameters it is possible only to control parameter availability/lack.

Message parameter control	
Control type:	<input type="text" value="Value range"/>
Parameter name:	<input type="text" value="adc1"/>
Value from:	<input type="text" value="-1"/>
Value to:	<input type="text" value="1"/>
Trigger in specified range:	<input type="radio"/>
Trigger out of specified range:	<input checked="" type="radio"/>

#### Sensor value control

Choose sensor type on the dropdown list or set the mask using a wildcard symbol (\*). Preset minimum and maximum values, indicate if you want similar sensors to be summed or calculated separately, and select control type: trigger in the specified range or out of it. If there will be two or more sensors of the same type or mask found, their values can be summed or calculated separately (select the corresponding option).

Sensor value control	
Select sensor:	
Select sensor on type:	<input checked="" type="radio"/>
Select sensor on the mask name:	<input type="radio"/>
Sensor type:	<input type="text" value="Temperature sensor"/>
Value from:	<input type="text" value="-10"/>
Value to:	<input type="text" value="-3"/>
Similar sensors:	
Sum up values	<input type="radio"/>
Calculate separately	<input checked="" type="radio"/>
Trigger in specified range:	<input type="radio"/>
Trigger out of specified range:	<input checked="" type="radio"/>

#### Connection loss

Choose control type. It can be a simple connection loss which registers cases when no satellites lock the unit during a period of time. There are also cases when all sensors are active and their values are known but it is impossible to locate the unit. To register such cases, choose the option "Connection or coordinates loss". Set also loss time: how long (in minutes) the loss of connection should continue before a notification triggers.

Connection loss	
Control type:	<input type="text" value="Connection or coordinates loss"/>
Time interval, min:	<input type="text" value="60"/>

#### Idles

For this type of control, indicate speed and time. Speed should be more than 0 km/h in order to exclude possible

equipment errors. Indicate also time allowed for staying. If this time exceeded, this will be considered as an idle, and the notification will trigger. In addition, you can activate *sensor value control* - in this case the notification will trigger only if both conditions are met. It is convenient to control idles with engine on, for example.

### SMS control

You can receive a notification when a certain SMS message comes. To define, which SMS messages you are interested in, enter a mask for message text. This feature can be useful, for example, when a device sends SMS of a certain content in case of malfunction.

### Interposition of units

This type of notification allows you to control approaching of units to each other and moving away from each other. Select control type (approaching or moving away) and specify radius in meters - if this distance between units is insufficient or exceeded, then the notification will trigger. Choose units which position will be estimated regarding the units which were chosen for the notification itself.

In addition you can narrow trigger case adjusting speed limitations or sensor value range (like in geofence control).

### Route control

For this type of notification, select **route statuses** to control: route start, route finish, route interrupt, arrival to control point, control point skip, departure from control point, entrance to geofence, exit from geofence.

### Driver control

Choose control type: **driver** assignment or driver reset. To control both activities, two notifications of different types will be required. Using this notification you can control all drivers (\*) or just some of them – input driver's name (or code) mask.

### Routine servicing

First, you choose trigger type: notify when service term approaches or notify when service term is expired. Then indicate the interval before or after the term for the notification to trigger. This interval can be in days, kilometers or engine hours or all together. You can control all intervals existing in the **Service Intervals** tab in unit properties or just several intervals. To indicate certain intervals, disable 'Control all service intervals' option and enter a mask

using wildcard symbols like \* and ?.

**Routine servicing**

Notify when service term approaches:

Notify when service term is expired:

Mileage interval:  100 km

Engine hours interval:  50 h

Days interval:  5 days

Control all service intervals:

## Notification Text

The text of notification can be written in any language, contain any characters, words and phrases, and be of any size. Large messages are acceptable for e-mail notifications. Of course, for SMS notifications it is better to form more compact messages.

**Create Notification**

Enter your notification text using special parameters listed below that will be substituted with real values when notification comes:

%UNIT% arrived to %ZONE%. At %POS\_TIME% it moved with a speed of %SPEED% near %LOCATION%.

Parameter	Description
%UNIT%	Device name
%CURR_TIME%	Current date and time
%LOCATION%	Device location at the moment of notification
%SPEED%	Device speed at the moment of notification
%POS_TIME%	Date and time at the moment of notification
%ALL_SENSORS%	All device sensors and values
%ZONE%	Triggered geozone name

Cancel Back Next

To be more informative, a notification should contain special parameters (tags) which are substituted with real values in an incoming notification.

Below is the list of such parameters:

%UNIT%	Unit name
%CURR_TIME%	Current date and time
%LOCATION%	Unit location at the moment when notification triggered
%SPEED%	Speed registered at the moment when notification triggered
%POS_TIME%	Date and time of the latest message with position
%MSG_TIME%	Date and time of the message triggered
%ALL_SENSORS%	All sensors and their values
%ENGINE_HOURS%	Engine hours at the moment of notification
%MILEAGE%	Mileage at the moment of notification
%SENSOR_NAME%	Triggered sensor name
%SENSOR_VALUE%	Triggered sensor value
%ZONE%	Triggered geofence name
%LAT%	Latitude at the moment of notification (e.g., N 55° 45.7530')
%LON%	Longitude at the moment of notification (e.g., E 37° 35.2068')
%GOOGLE_LINK%	Link to Google Maps with the position at the moment of notification (e.g., <a href="http://maps.google.com/?q=55.762550N,37.586780E">http://maps.google.com/?q=55.762550N,37.586780E</a> )
%SERVICE_NAME%	Service interval name
%SERVICE_TERM%	Service interval state (left/expired value)
%PARAM_NAME%	Parameter name
%PARAM_VALUE%	Parameter value
%DRIVER_ID%	Driver's code
%DRIVER_NAME%	Driver's name

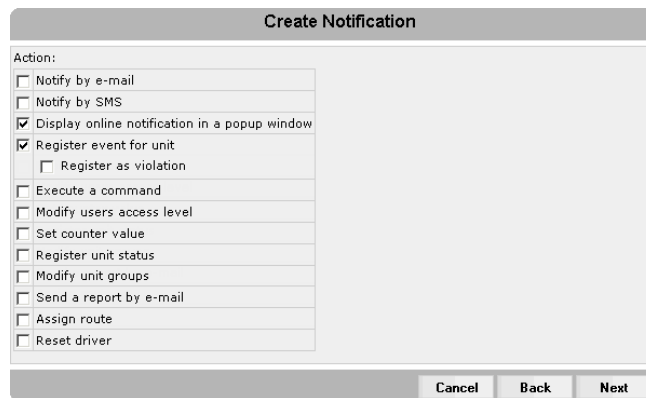
`%OTHER_UNIT%` | Name of another unit (used in notifications about interposition of units)

Note that a parameter must be marked by percent sign from both sides. Otherwise, it will be considered as simple text as is and will not be converted to real values.

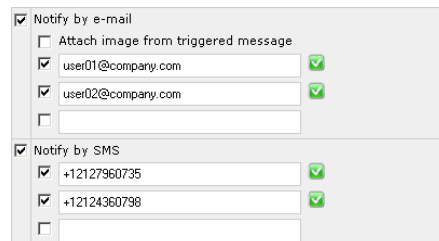
Example.

The text «`%UNIT%` violated speed limitations. At `%POS_TIME%` it moved `%SPEED%` near `%LOCATION%`» can be transformed to «'Rover-119' violated speed limitations. At '2000-01-01 12:01:37' it moved 136 km/h near 'KU 8, Thurnau, DE'».

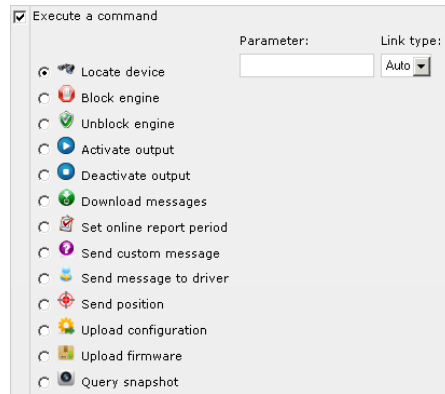
## Action



- Notify by e-mail  
You can indicate one or more e-mail addresses to send a notification to. When all slots to enter addresses are filled, additional slots appear automatically. Besides, you can check the option *Attach image from triggered message* if your the device used takes pictures.
- Notify by SMS  
Key in one or more telephone numbers in the international format, for example, +375293293294. When all slots to enter phones are filled, additional slots appear automatically.

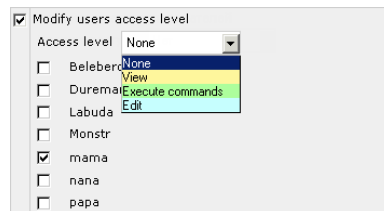


- Display online notification in popup window  
In this case a notification will be displayed in a popup window when the monitoring site is loaded.
- Register event for unit  
In this case a notification is stored in unit history. Then a report on these events can be generated. If this option is selected, Register as violation is additionally proposed. If you check it too, the notification will be registered not only as event but as violation, and one more report type will be available to you. For further information see reports on [Events](#) and [Violations](#).
- Execute a command  
If you choose this option, when the notification triggers, a command is executed over the unit. Select a command from the list of available items and set necessary parameters if needed. [More about commands...](#)



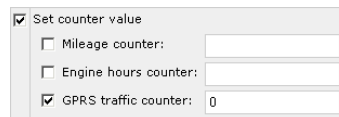
- Modify users access level

Choose users which access rights to be modified when trigger conditions occur. Select access level to be set to this user after notification triggers: no access, view, execute commands, edit. This feature can be used, for instance, in the following situation. Let us assume, we have created a user to give him opportunity to track his cargo transportation - we have given him *view* access to a unit which is carrying this cargo. When this unit enters a destination place (a geofence under control), the notification triggers, and the unit becomes unavailable to the user (*view* access is modified to *no access*).



- Set counter value

Counter values can be changed (or zeroed) when notification triggers. Select one or more counters (mileage counter, engine hours counter, traffic counter) and set new values for them.

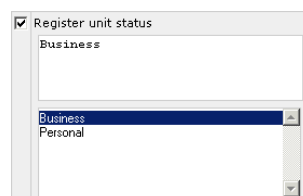


- Store counter value as parameter

Current values of mileage or engine hours counters can be stored as parameters in unit data messages (*odometer* or *engine\_hours* correspondingly). These parameters can be used to create sensors on their basis (for example, engine hours sensor) and to get initial/final mileage in reports. For more precise calculations, it is recommended to store counters while the unit is parked, for example, once a day at night time.

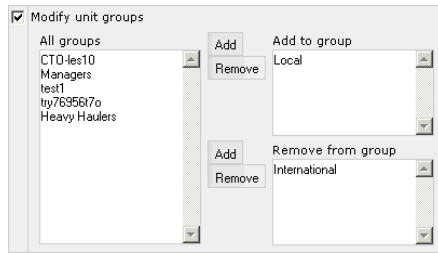
- Register unit status

A new status can be set for unit when a notification triggers. For instance, when unit enters a geofence, *private* state can automatically switch to *business*.



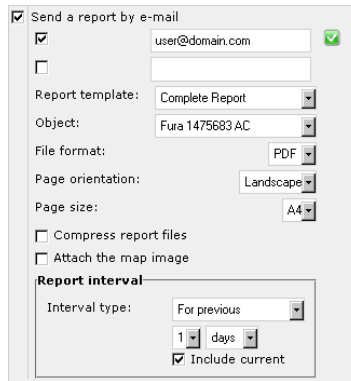
- Modify unit groups

You can change the contents of unit groups when a notification triggers - add triggered unit to a group or remove it from a group. On the left there is a list of all available unit groups. Move necessary groups to the right to *Add to group* or *Remove from group* sections.



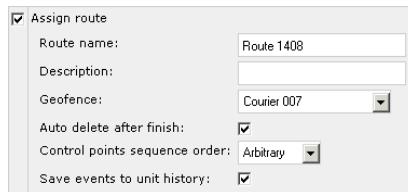
- Send a report by e-mail

Enter e-mail address(es) to send a report to if the notification triggers. Select report template, object, format, and other parameters to get a needed report. If the selected report template concerns a unit, there is no need to select a certain unit for the report to be generated. It is better to choose *Triggered unit* option (then the report will be generated for the same unit that the notification has triggered for).



- Assign route

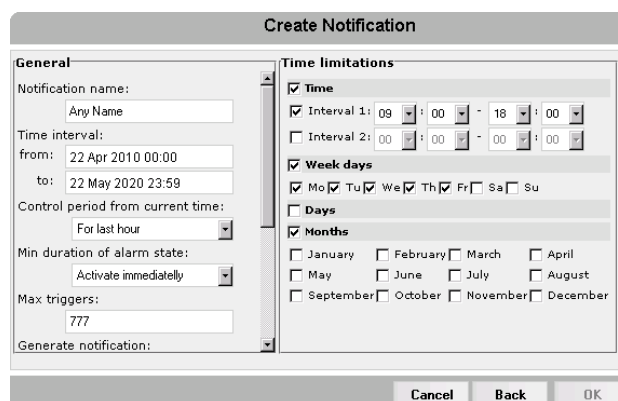
Assigning a new route to unit can be chosen as an action undertaken after the notification triggers. For example, when a route becomes finished, a new route can be assigned, or when unit leaves its garage (as a geofence), a route is automatically created for it. See [Route Control](#) for details.



- Reset driver

This feature can be used, for example, to reset driver automatically when the unit returns to the depot.

## Notification Parameters



In the given window you can set general parameters for a notification as well as define the specific character of its operation. The set of parameters can vary depending on notification type.

- Notification name



Key in any mane. It will be displayed on the list of notifications and in the notification itself.

- Time interval  
The period after which the notification will be deleted.
- Control period from current time  
This is a period of between the time when the notification triggered and the current server time. If this interval is exceeded, the message is not taken into account.
- Min duration of alarm state  
This parameter is aimed to exclude cases of accidental trigger that can be caused by equipment errors and inaccuracy. For example, a tracker can show that a unit left a geofence but returned 10 seconds later. In this field you can define how much time the alarm state have to continue in order to be registered. Choose an interval from 10 seconds up to 1 day.
- Max triggers  
How many notifications can be delivered until it will be automatically deleted.
- Generate notification: (1) Only when state changed, (2) For all messages  
In the first case the notification will trigger when unit state changes, that is if at the moment when the notification was activated a unit is already in a alarm state, the notification will not trigger. In the second case the notification will trigger as soon as an alarm state is detected. If the second option is selected, the following parameters are not needed.
- Min duration of the previous state  
This parameter is needed to exclude excessive triggers. For example, the unit can return to the normal state for a very short time and then returns back to the alarm state. In order that the notification in such a case would not trigger twice, this parameter is used. Choose an interval from 10 seconds up to 1 day.
- Max time difference between messages  
Maximum time between the latest message and the previous one to form a notification. If the interval between the current message and the previous one exceeds this value, the notification does not trigger.
- Timeout  
Delay from the moment when message was received and before it it will be checked. This delay is especially recommended if a unit has a black box that usually requires time to unload all messages stored in the period of communication loss (for instance, while it was abroad).
- Enabled  
If activated, the notification after creation/editing will be active. If not, it will be disabled.
- Time limitations  
It is possible to set limitations depending on time, day or month. For example, the control can be performed only on weekdays and within working hours.

## Notifications Management

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On the list of notifications you can get the following information:

Notification state:  - enabled,  - disabled.	
How many times a notification has already triggered.	
How many units are under control of this notification (see the list of these units in the tooltip).	
Control type:	Actions:
speeding, geofences, alarm button trigger, digital input activation/deactivation, sensor value control, message parameter control, connection loss,	e-mail, SMS, online popup window, event registration, violation registration, command execution, send a report by e-mail,





 idle,	 modify users access level,
 SMS control,	 manipulate counters,
 interposition of units,	 register unit status,
 route control,	 modify unit groups,
 driver control,	 assign new route,
 routine servicing.	 reset driver.

Hover the mouse cursor over a notification to see more detailed information in the tooltip: validity period, notification text, and account to which the notification belongs (shown if you have access to more than one account).

The following actions can be executed over notifications:

-   enable/disable notification,
-  enable/disable all notifications at once,
-  edit a notification settings,
-  create a new notification using this one as the basis,
-  delete a notification.

If you have just view access to the account where a notification is located, you cannot edit or delete it, and some buttons look different:

-   you cannot change notification state,
-  view notification properties (editing not available),
-  impossible to delete the notification.

Using the [dynamic filter](#), you can save your time when looking for a certain notification on the list. Enter notification name or its part into the search box above the list and estimate the results.

The other way to filter notifications can be used if you have access to more than one account. Then on the dropdown list choose account name to display only the notifications which belong to this account. Note that if you have just view rights to an account, you cannot edit or delete these notifications.

## Online Notification

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Online notifications will popup on the map. It can be accompanied by a special sound (see [User Settings](#)). As more notifications come, they are stored in the same window.

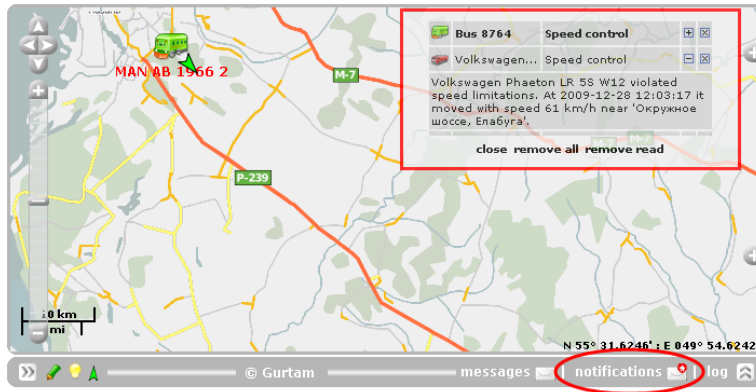
Newly come notifications are added to the list on the top. The captions of unread notifications are bold. The caption for notification is taken from the name that was given while creating notification. To expand or minimize a notification, use the switch button +/-.

If clicking on a notification, the map is centered on the place where the event happened. If clicking on a unit name, map is centered on the latest unit position.

To delete a notification, click on a cross against it. Is it possible also to delete all messages (*remove all* button) or delete all read messages (*remove read* button).

You can hide or show the notification window. To hide it, press close button or click on notifications icon on the bottom. Click it again when need to show the notification window again. If the icon blinks, it means there are unread notifications. If you place the mouse pointer over the icon, in the tooltip you can see the number of unread notifications.

By default, the notification window appears automatically when a new online notification triggers. However, if you remove the flag *Automatically display popup events* in [User Settings](#), only the blinking envelope in the bottom panel will indicate that there are new notifications.



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## Route Control

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ⓘ *Attention!* This module is licensed separately and can be not included in your package.

Wialon gives you an opportunity to track units which go along the route with control points and predefined schedule.

Open the Routes Control panel in the work area on the left. Here you see the list of existing routes and can create a new one. The number of routes allowed can be known from your account parameters (see [User Settings](#) => [Account](#)).

Let us assume that a vehicle have to transport goods to five points. To control its activity you need to:

1. Prepare the route that is create a line-shaped geofence presenting a consequent movement along the route.
2. Mark five control points in the appropriate places and assign a schedule for them.
3. Create a route based on this geofence (give it a name, assign to needed unit(s)).
4. Activate the route when needed.
5. Monitor how the route is accomplished.



## Preparing a Route

A route is based on a [geofence](#). If this is a polygon, the system traces unit presence in the geofence. Much richer possibilities of control exist for line-shaped geofences. They can contain control points and the schedule of visiting them.


ⓘ *Note.*

A line-shaped geofence intended for controlling a route should be mapped from its start point toward its end and not vice versa, because the sequence of control points is automatically defined according to line direction and cannot be changed manually.

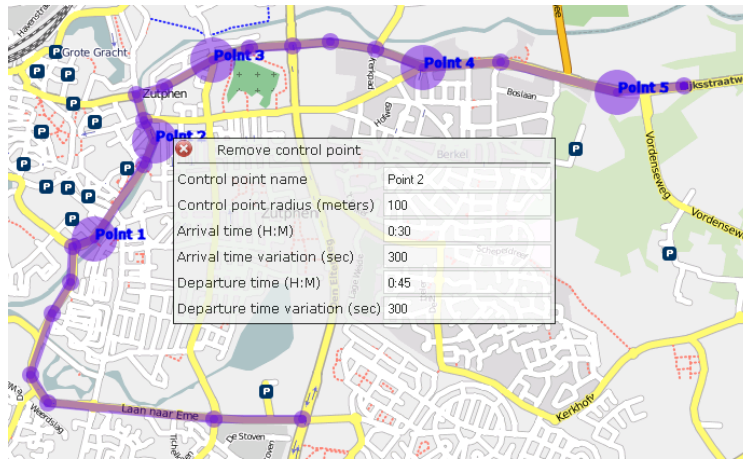
## How to add control points

Control points are added when creating or editing a line-shaped geofence in the [Geofences](#) panel. Enter the edit mode , hover the mouse cursor over any point and press New control point button . Fill in the form:

- Control point name that will be used in notifications and reports.
- Control point radius. By default the radius of control point is the same as line thickness, but you can indicate your own value. This is useful if a point to be visited as located not right on the road but at some distance.
- Arrival time is time to arrive to this control point counting from the activation time.
- Arrival time variation (in seconds) is needed to give a unit some degree of freedom to visit the point. For example, if a five minute delay or advance is allowed, enter '300'.
- Departure time is time to leave the control point. It is also calculated from the activation time.
- Departure time variation.

Entries are saved automatically. To delete a control point, press Remove control point button  at the top of the form.

Similarly add as many control points as you need.



When the geofence with control points is done, a controllable route can be created on its basis.

## Creating a Route

Routes are mainly created in the Routes Control panel. Push Create Route button and [select unit\(s\)](#) to assign the route to. Then set basic parameters for the route:

- Route name to be displayed on the routes list, when tracking the route, and in reports.
- Description (optional).
- Geofence: select a geofence to control from the dropdown list.
- Auto delete after finish: check this box if you prefer the route to be deleted when finished. Available if the selected geofence has control points.
- Allow unit to skip control points: check this box to allow skipping points. Available if the selected geofence has control points.
- Activation time: date and time to start the control. The route schedule will be counted from this time. Activation time can be omitted - in this case we consider that the route started when unit has entered the first control point (if points order is *default*) or any control point (in other modes).
- Enabled. If this flag is off, the route will not be tracked in any circumstances (event when the activation time has come) until it is on. If the route is enabled and points omission is allowed, the route fall under control immediately after its creation. If the route is enabled and points omission is denied, the route control starts when the unit enters the first control point. In both cases no control is possible until the activation time has come.
- Save events to unit history: if activated, any route status change will be stored in unit history, and then you can generate reports about this route. To register events to unit history, you need to have *execute commands* access to the unit.

Create Route	
Route name:	Route N456
Description:	
Geofence:	456route
Auto delete after finish:	<input type="checkbox"/>
Allow unit to skip control points:	<input type="checkbox"/>
Activation time:	<input checked="" type="checkbox"/> 17 Jun 2010 09:00
Enabled:	<input checked="" type="checkbox"/>
Save events to unit history:	<input checked="" type="checkbox"/>

After you press OK, the route appears on the list. If you selected several units for route control, several routes will be added. They will have the same names, but if placing the mouse cursor over each of them one can know the details.

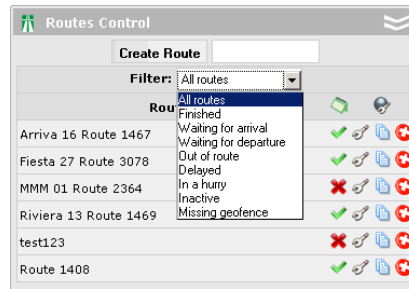
There are some alternative ways to create a route - using [jobs](#) or [notifications](#). For example, a route can be assigned to unit by preset schedule (job). Or you can create a notification with trigger action to assign a new route after the previous one is finished. One more way to create a route is to do it through the Geofences panel using a special button which is against each geofence on the list.

## Routes Management

If there are many routes, they can be sorted by various criterion in the Routes Control panel, for example, finished

routes, or waiting for arrival/departure, delayed, etc. The list of filters available see on the dropdown list. Besides, if you have more than one account, you can filter routes by their location on other different accounts.






To quickly find a definite route, use the [dynamic filter](#). Enter route name or its part and observe the results.







When hover the mouse cursor over a route name on the list, in the tooltip you can see its description (if there is such), unit name, geofence used, activation time, and the status: 'inactive' or the progress (like 'waiting fro arrival to ... at ...', 'geofence left at ...', etc.).

In the table there is information about the route: route details (in a popup window), route status , etc.

You can also perform the following actions over routes:

-  enable a route;
-  disable a route;
-  change route parameters (⚠ note that it is impossible to change route's unit or geofence, and if the route has been already started, activation time as well);
-  create a new route on the basis of another route (this is also a way to reassign a route to a different unit);
-  delete a route.

If you have just *view* access to the account where a route is located, some actions become not allowed, and the buttons look different:


-  route is enables, but you cannot make it off,
-  route is disables, but you cannot make it on,
-  view route properties (edition not available),
-  impossible to delete route.









## Using Routes

---

There are several ways to monitor how a unit is accomplishing a route.

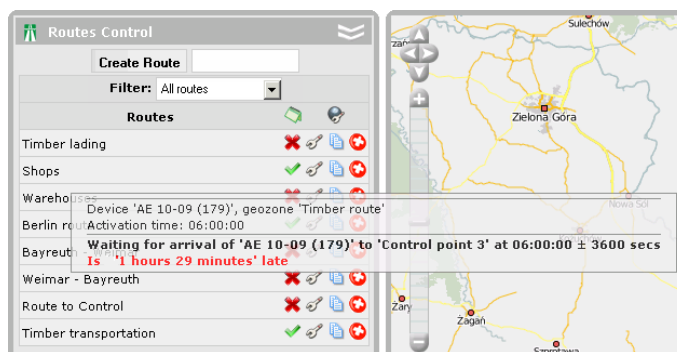
### While tracking units online

In the Monitoring panel on the working list there is a column  presenting information on routes for each unit separately. To activate it, go to [User Settings => Monitoring Panel](#) and select *Routes control*. The following icons are used to visualize unit activities on routes:

-  - no routes are assigned to the unit;
-  - the unit is moving according to the schedule;
-  - the unit is in hurry;
-  - the unit is delayed,
-  - the route assigned to this unit is not activated yet;
-  - the route is finished;
-  - the unit is doing several routes at once;
-  - the unit left the geofence of control.

Put the cursor over any of these icons to see details in a popup window. For example, it can be specified exactly what time the unit is late.

In the Routes Control panel place the cursor over a route name to see details in a popup window (unit, geofence, status, etc.). Under the horizontal line it is indicated on which stage of the route the unit is at the moment.



The appropriate information can be also shown in unit info tip. To enable it, go to user settings and select *Routes control* in the section [Show in unit info tip](#).

## In notifications and jobs

While a unit is performing a route, you can receive notifications about how it is going. To do this, create notification of the *Route control* type and adjust it properly depending on your needs. You can be notified when a route has started or finished, if a control point has been skipped, unit has left route geofence, and in other cases. These notifications can be sent by e-mail or SMS, shown online in a popup window, stored in unit history as events or violations. An action can be undertaken when such a notification triggers like execute a command, assign another route, generate a report, and others. See [Notifications](#) for details.

Using [jobs](#) of the *Route control* type you can adjust automatic assignment/removal of routes according to preset schedule.

## In reports

If the option *Save events to unit history* is activated for the route, then all changes in routes statuses are stored in unit history, and later can be used to form a report: [Routes](#) or [Route Points](#).

## Route Statuses

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Route statuses are used in popup tooltips, in reports and in notifications. It is important to understand what they mean and how they are generated.

### Inactive

A route has status *Inactive* if the activation time has not come yet.

### Route started

If the activation time is indicated, route falls under control when this time comes. At the same time the route achieves the status *Started*. Any visits to control points before this time will be ignored, and route status will be *Inactive*.

If the activation time is not indicated and points omission is denied, route becomes *Started* when unit enters the *first* control point.

If the activation time is not indicated and points omission is allowed, route becomes *Started* immediately, and unit position is analyzed from its last messages received before the route was created.

### Route finished

A route acquires the status *Finished* when arriving to the *last* control point.

### Waiting for arrival

The status *Waiting for arrival to ... <control point name>* is assigned when the route starts. Then unit is expected

to arrive to the *first* control point regardless whether points omission is allowed or not.

The status *Waiting for arrival* is also assigned when unit leaves some control point. Then the unit is expected to arrive to the next control point.

## Arrival (entrance)

Arrival to control point means that a messages with coordinates which fall inside the point radius was received from the unit. The speed is not taken into account, so it does not matter whether the unit stopped there or just passed through. One message inside a control point is enough to register the entrance.

If point omission is not allowed, arrival point must coincide with that which were expected. It means if there was expected the arrival to the second control point and the unit came to the third, this visit will be not registered and the system will continue to wait for arrival to the second point.

## Waiting for departure

The status *Waiting for departure from ... <control point name>* is assigned immediately as an arrival is registered. Then the system starts to wait departure from the same point. In other words, one message from unit can give background to generate two events at once: arrival to a control point and waiting for departure from it.

## Departure (exit)

Departure from a control point is detected when we get a messages from unit according to which the unit is already not inside the point. At that, the previous message must fall inside the point. In unit history this is registered as exit time.

## Control point visited

If both entrance and exit were registered fro a control point, this point is considered as *Visited*.

## Control point skipped

The event of control point omission can be registered only for routes which allow skipping points. If after visiting the second control point the unit comes to the fifth, then the third and forth points will be considered as *Skipped*. Even if these points are visited later, these visits will not be taken into account.



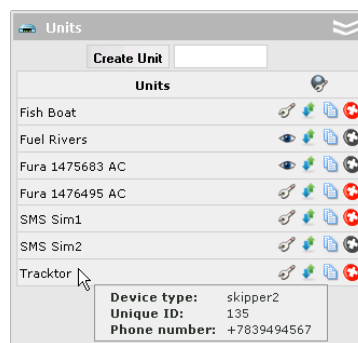
You are here: [Wialon Pro](#) » [Monitoring System](#) » [Units](#)

## Units

Open the Units panel in the work area. Units are created and configured here, and after that they become available for tracking on the [Monitoring](#) panel.

In Units panel you see the list of units available to the current user (they are displayed in the alphabetical order), add a new unit (*Create Unit* button), edit unit properties or delete a unit, search a necessary unit using the filter, copy units and import/export unit properties. The number of units allowed can be known from your account parameters (see [User Settings => Account](#)).

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· <a href="#">Units</a>
· <a href="#">Unit Properties Dialog</a>
· <a href="#">Units Management</a>



## Unit Properties Dialog

Unit Properties dialog is displayed when you create a unit (the Create Unit button) or copy it from another unit, as well as when you change or just view any unit properties.

Unit properties dialog has several tabs which detailed description can be found in the following topics:



- [General Unit Properties](#)
- [Supported Devices](#)
- [Counters](#)
- [Accessors](#)
- [Image](#)
- [Advanced Properties](#)
- [Sensors](#)
- [Sensor Types](#)
- [Sensor Parameter](#)
- [Validation of Sensors](#)
- [Calculation Table](#)
- [Logs](#)
- [Custom Fields](#)
- [Unit Groups](#)
- [Command Aliases](#)
- [Trip Detection](#)
- [Fuel Consumption](#)
- [Service Intervals](#)
- [Unit Properties Export/Import](#)

 *Note.*

The number of available tabs vary depending on your access rights and modules purchased.

## Units Management

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### List



Units on the list are displayed in the alphabetical order. Besides, the [dynamic filter](#) can be used to easily find a necessary unit.

Place a mouse cursor over unit to display its details in a popup window (type, ID, phone number). Unique ID and unit phone number are shown only to users who have *edit* or *manage* access level to the unit.

Units can be edited, copied, deleted, or their properties can be exported or imported.

### Edit




You can view and/or edit unit properties. To edit a unit you should have *manage* or *edit* access to it. If your access level is *view* or *execute commands* you can only view unit properties. Depending on your rights, the corresponding button will look different:

-  view and edit unit properties,
-  view only.

If your access rights are less than *manage*, some information in the unit properties dialog may be hidden (unique ID, phone number, device type, accessors, logs, command aliases), and OK button may be inactive.

### Export/Import

Under this button there is a menu to import/export unit properties to/from a file or a unit. The settings of the current unit can be exported to a file or to another unit. Besides, the settings of a unit previously saved to a file can be imported to the current unit.

-  import settings from a file to the current unit,
-  export the current unit settings to a file,
-  export the current unit settings to other unit(s).

For further information see [Unit Properties Export/Import](#).


### Copy

Copying units is convenient to quickly create new units with similar properties. After you press the copy button, unit properties dialog opens. All fields it contains are the same as in the source unit. If not all fields and tabs are available to you according to your access rights, they remain hidden and cannot be copied.

Edit the unit if needed (for example, give it another name, change ID and the phone number, etc.) and save the unit pressing OK button. New unit will appear at the bottom of the list.

While copying a unit, the current user (which is performing the copy operation) is assigned its creator automatically.

### Delete

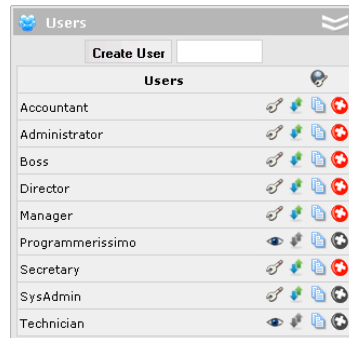
Using the delete button it is possible to delete a unit from the system completely. To do this, you need *manage* rights. If you do not have such right, the delete button is dimmed .

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Users](#)

## Users

Open Users panel in the work area on the left of the window. Here the list of all users available to you is displayed. Here you can create other users, edit and delete them.

The number of users allowed can be known from your account parameters (see [User Settings](#) => [Account](#)).



### Table of Contents ▲

- [Users](#)
- [Managing Users List](#)
- [Import/Export User Settings](#)









User properties dialog can contain up to four tabs which were described above:

- [General](#)
- [Accessors](#)
- [Advanced](#)
- [Custom fields](#)

## Managing Users List

For your convenience, the users are arranged by name. If there are many users, use the [dynamic filter](#) above the list to easily find them.

The following actions are possible:


1.  — [send SMS](#) to user (the button is not displayed if the current user does not have enough rights; if the button is dimmed, it means there is no phone number in user properties);
2.  edit or  view user's properties;
3.  import settings from the current user (  - not enough access);
4.  create a copy of this user;
5.  delete user from the system (  - not enough access).

The dialog to change user configuration is similar to the Create User dialog, but it has one more tab - Log. Here you can view all users' logins to the system and logouts during an indicated period of time. Specify the period and push Show.

General		Access to Objects		Advanced		Logs		Custom Fields	
Message type		Time from		Time to					
User logs	▼	27 May 2010 00:00		27 May 2010 11:59		Show			
Date	Time	type	host	service					
2010-05-27	09:39:20	login	127.0.0.1	wialon-web					
2010-05-27	10:22:25	login	10.1.3.2	wialon-web					
2010-05-27	10:28:05	logout	10.1.3.2	wialon-web					
2010-05-27	10:52:48	login	127.0.0.1	cms-manager					
2010-05-27	11:06:49	logout	127.0.0.1	wialon-web					
2010-05-27	11:06:49	logout	127.0.0.1	cms-manager					
2010-05-27	11:07:40	login	127.0.0.1	wialon-web					
2010-05-27	11:07:46	login	127.0.0.1	cms-manager					
2010-05-27	11:23:31	logout	127.0.0.1	wialon-web					
2010-05-27	11:23:31	logout	127.0.0.1	cms-manager					
2010-05-27	11:24:39	login	127.0.0.1	cms-manager					
2010-05-27	11:35:36	login	127.0.0.1	wialon-web					

## Import/Export User Settings

Settings can be exported from one user to others. These settings are taken from the [User Settings](#) dialog, the tabs Settings, Map, and Monitoring Panel.

Settings are exported on the Users panel where there is a special button against each user . If the button is dimmed, it means you have no rights to change any settings of this user.

**Import/Export User Settings**

Select user to export from:  ▼

---

- Time zone
- US metrics flag
- Unit info tip contents
- Monitoring panel configuration
- Unit visualization on map
- Address provider and city
- User interface (log state, hotkeys, common map and play sound flags)
- Map position at startup
- Maps and layers
- Locator flag
- Access key to mobile site

Choose a source user from the dropdown list. This list contains all available user and the current user (highlighted and selected by default).

Then tick necessary settings and press OK. On your choice, the following settings can be imported:

- Time zone: time zone choice and daylight saving time option.
- US metrics flag: on/off.
- Unit info tip contents: options from the section 'Show in unit info tip'.
- Monitoring panel configuration: everything from the 'Monitoring Panel' tab.
- Unit visualization on map: options from the section 'Unit visualization on map'.
- Address provider and city: the 'City' field on the 'Settings' tab.
- User interface: state of the log (open/hidden), shortcuts (on/off), common map flag, option to play sound for notifications and messages.
- Map position at startup: initial map coordinates and zoom.
- Maps and layers: choice of activated maps, option of rendering geofences/POI on server (settings from the 'Maps' tab).
- Locator flag: on/off.
- Access key to mobile site.

Then press Next and choose destination users whose settings will be rewritten. This list contains only users to which you have *edit* or *manage* access. By default, the user is selected against which the import button was pressed.

User's e-mail and phone numbers cannot be imported as well as any data from the Account tab.

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Unit Groups](#)

## Unit Groups

Unit groups are created and managed on the Unit Groups panel.



### Table of Contents ▲


- [Unit Groups](#)
- [Managing Groups](#)
- [Import Unit Properties from File](#)

Unit group is a unity including several units which have something in common. In many cases it is convenient to operate a group of units instead of performing an action over each unit individually. For example, you can easily open needed units group in the working list and then track them, create reports and notification, and units not included into the group will not catch your sight and confuse you. Assigning access rights using unit groups is also much easier.

Unit group properties dialog can contain up to four tabs which were described above:






- [General](#)
- [Accessors](#)
- [Image](#)
- [Custom fields](#)

## Managing Groups

 One unit can be included in any number of groups. Put the mouse cursor over a group name, and in the popup window you will see the names of all units in this group and their current location.


By default, the items in the list are arranged by name. For easy search and arrangement you can use the [dynamic filter](#) above the list.

There is a number of actions possible:

-  or  edit or view group properties (add/remove units, change image, reassign access rights);
-  import properties from a file;
-  create a new group using this one as a basis;
-  delete the group from the system. Deleting a group does not mean deleting the units included. If the button is dimmed, it means you have not enough access.

Unit groups can be useful in the monitoring process. See details in [Unit Groups Monitoring](#).

## Import Unit Properties from File

Unit properties previously saved to an XML file can be imported to several units at once if these units form a group. To import properties, press the Import button  against the needed group. In the dialog check the units to import settings to and press Next. Then select a file, check needed sections and press OK. The result will be displayed in the same dialog. [Details...](#)

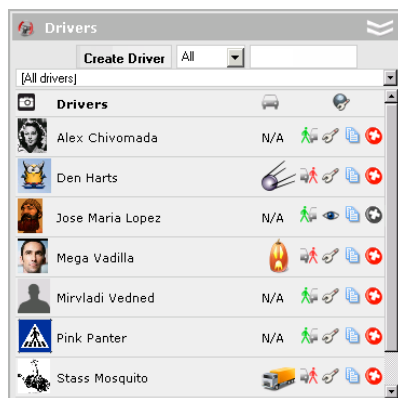
You are here: [Wialon Pro](#) » [Monitoring System](#) » [Drivers](#)

## Drivers

**Attention!** This module is licensed separately and can be not included in your package.

In this panel you can the list of drivers who form your personnel. With one click of a mouse a driver can be assigned to a unit that is attached to a vehicle. Then in the reports on this unit the driver can be indicated. It is especially convenient when different persons drive a unit. There is also possibility to detect drivers automatically with the help of iButton system.

To create and manage drivers, open the Drivers panel.



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- Drivers
- How to Create a Driver
- Driver's Assignment
- Managing Drivers List
- How Drivers Can Be Used
  - For Tracking
  - In Notifications
  - In Reports

## How to Create a Driver

Push the Create driver button and set required parameters.

### Driver name

Give driver a name that will be visible in reports.

### Driver code

Enter unique driver code needed to identify the driver. The codes of different drivers must be different.

### Description

Type any comments (optional).

### Phone number

Enter driver's phone number if needed.

### Photo

To quickly identify a driver, you can attach an image. To do this, press the Browse button and find and load the necessary image from the disk.


At the end press OK. The new driver will appear on the list.

## Driver's Assignment


### ⚠ Attention!

To assign drivers to units, you must have *execute commands* access to units.







There are two ways to bind a driver to a unit: manual and automatic.

To detect a driver automatically the corresponding equipment has to be installed. In authorized personnel control  system iButtons with i-wire bus inside are widely used. When getting into the vehicle, the driver applies the electronic key to be identified by the system.


The manual assignment is done in the Drivers panel. For it Bind/unbind switch button   can be used.

Press the button Bind to unit  and choose one of two options: Bind to unit or Register working shift. The first option is used if the assignment must be registered right in the moment. The second option is used to fix driver's work post factum. Select an option and press Next.

Choose a unit to bind a driver to. This list contains only units from the [work list](#) of the monitoring panel.

Units		
	2x2ок	<input type="radio"/>
	Fish Boat	<input type="radio"/>
	Fura 1476495 AC	<input type="radio"/>
	SMS Sim1	<input type="radio"/>
	SMS Sim2	<input type="radio"/>
	Traktor	<input checked="" type="radio"/>

If you register a working shift, there will be one more page where you indicate shift beginning and shift end (or one of them). For example, you can indicate just the beginning of the shift, and the end can be detected automatically when the unit arrives to garage (as a geofence) - to do this, create a [notification](#) of *Geofence control* type with method of delivery *Reset driver*.

The button Unbind from unit  is used to remove driver from unit manually (the first option) or register a working shift in the same way as it was described above.

If you are trying to bind a driver to a unit already having a driver, that driver will be automatically unbound and a new driver will be assigned.


When a driver is bound to the unit, the system registers this fact in [data messages](#). In the column with parameters the following data can be find: for bind action - time and driver's code, for unbind action - only time. Here you can delete wrong messages about driver's assignment (you must have *manage* access to unit).

	Time	Speed	Coordinates	Location	Parameters
50	10:02:27	---	---	---	ID=
51	15:02:43	---	---	---	ID=123

ID= means that the driver was unbound from the unit (manually only).

ID=123 means that the driver with the code '123' was bound to the unit (manually or automatically).

## Managing Drivers List

In the tooltip of each driver you can see a description (if available), the name of a unit he/she is driving, enlarged driver's photo, phone number, and account name where the driver belongs to (if several account are available). If you have  on your computer, the phone number is highlighted, and you can make a call if clicking on it.


If a driver is bound to a unit, unit icon is displayed in the next column. If place the cursor over this icon, the unit popup window is displayed (the same as in the Monitoring panel). 'N/A' in unit icon place means that the driver is not bound to any unit.

The next column contains Bind/unbind switch button:

 - bind driver to a unit;


 - unbind driver from the unit.

Several actions are also allowed:

 — send [SMS](#) to driver (the button is not displayed if the current user does not have enough rights; if the button is dimmed, it means there is no phone number in driver's properties);

 - edit driver's properties;

 - view driver's properties (editing not available);

 - create a new driver using this one as a basis;

 - delete driver;

 - driver cannot be deleted.

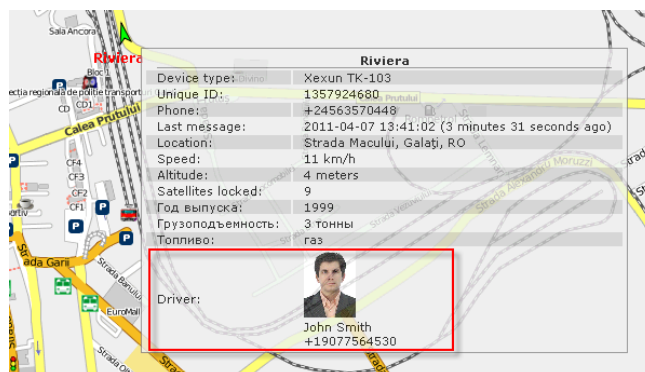
Using the the [dynamic filter](#) above the list, you will save your time when seeking for a driver on the list. Begin to enter driver's name into the search field and see the results.

The other way to filter drivers can be used if you have access to more than one account. Then on the dropdown list choose account name to display only the drivers which belong to this account. Note that if you have just view rights to an account, you cannot edit or delete these drivers or assign them to units.

## How Drivers Can Be Used

### For Tracking

The name of the driver is displayed (if available) in unit info tip. To activate this option, check Driver in [unit info tip settings](#). The photo and phone number is also displayed if available.



Besides, it is possible to have a special column in the monitoring panel to display drivers. For this, it is required to activate Show drivers column in [the monitoring panel settings](#).





You are here: [Wialon Pro](#) » [Monitoring System](#) » [Messages Mode](#)

## Messages Mode

The Messages Mode presents data received from a unit in the form of a table where each message with all parameters available is listed. Messages received from a unit for any period of time can be viewed. Besides, they can be exported to the most widespread formats.

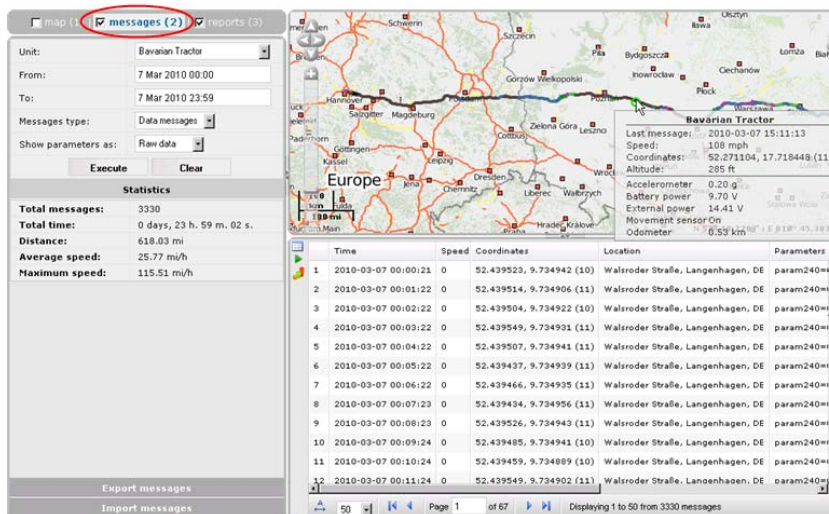
You can view not only basic messages from units (with coordinated, parameters, speed), but also SMS messages received from unit, commands sent to unit, and registered events.

### Messages Window Layout

Choose messages on the main menu to open the Messages Mode. In this mode the workspace can be divided into four sections:

- in the left top corner you can set parameters of your request;
- in the bottom left part there are some tabs that help to manage the messages: statistics, export/import messages, message parameters description;
- in the top right section there is the map;
- at the right bottom there are messages themselves.

Vertical sizes of the messages panel and the map are adjustable. To control them, click on the splitter between them and holding the mouse button, drag to a required direction.



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- Messages Mode
- Messages Window Layout
- Request Messages from Server
- Data Messages
  - Statistics
  - Using the Map
- Messages Player
- Charts
- SMS Messages
- Sent Commands
- Registered Events
- Deleting Messages
- Table Management
- Export/Import Messages

### Request Messages from Server

The request is formulated in the top left corner of the window. You specify the following parameters:

1. Select a unit for execution. The dropdown list contains not all units available to you, but only the units from the [work list](#).
2. Specify the period of time to show messages for.
3. Select message type from the dropdown list (each type is described in detail below):

- [Data messages](#);
- [SMS messages](#);

Unit:	Bavarian Tractor
From:	7 Mar 2010 00:00
To:	7 Mar 2010 23:59
Messages type:	Data messages
Show parameters as:	Raw data
<input type="button" value="Execute"/> <input type="button" value="Clear"/>	

- Sent commands;
- Registered events.

4. At the end press the Execute button. A table will be generated in the right part of the window. To clear table (and map), press Clear.

## Data Messages

If you request data messages, the table of messages will contain information about time, speed, coordinates, location, as well as parameters. You will also get messages about assigning/removing drivers (they contain the text 'ID=...'). Besides, resultant information will be given in statistics. You can observe messages in different ways. They can be presented in the form of a table or as a chart, play the track or just examine the statistics.

The way to display parameters can be one of the following:

- raw data - all parameters are displayed in one column, in one line in their initial form;
- sensor values - each parameters has its individual column in the table, and the values are given according to the [calculation table](#).

The table of messages has the following columns:

- Time when the message was received.
- Speed registered at that point. It is calculated as the distance traveled between the previous message and the current one divided on time between these two messages.
- Coordinates: latitude and longitude, in the brackets the number of satellited locked is displayed.
- Location: country, city, street (if available). If address information is not available, the coordinates are displayed
- Parameters (if available) can be given in one row (if *raw data* is selected) or separate column for each parameter (if *sensors values* is selected).
- Image (if available): the button to display a picture made by unit and sent with the message.

Red rows in the table mean alarm messages registered by the system.


## Statistics

In the Statistics panel the general information about the request is given:

- Total messages: the number of messages for the whole period;
- Total time: the interval between the first and the last message in the selected period;
- Distance: the distance traveled by the unit within the indicated time interval (calculated by coordinates);
- Average speed: the average of all speed values registered during the period;
- Maximum speed: the maximum speed registered.

Export messages	
<input checked="" type="radio"/>	OziExplorer track (.plt)
<input type="radio"/>	NMEA messages (.txt):
<input type="radio"/>	Google Earth (.kml):
<input type="radio"/>	Wialon messages (.wln):
<input type="radio"/>	Wialon binary messages (.wlb):
<input checked="" type="checkbox"/>	Compress file
<input type="button" value="Export"/>	

## Using the Map

The track for the chosen period is displayed on the map. It is generated together with the table. Click on any message in the table to move to this point on the map. The map is centered by this point and a red marker is set there. 

By default, track color is blue, but you can adjust settings to paint the track depending on speed or sensor value. This is set in unit properties dialog on the [Advanced](#) tab.

Besides, to get information about track points, hover mouse cursor over and see information in a tooltip (time, speed, coordinates, altitude, sensor values). Note that messages are searched in the radius of 50 pixels from the cursor.

 **Note:**


If after using the Messages Mode you switch to the Map Mode or Reports Mode, map layout and all track lines are preserved. To remove unnecessary graphics, go back to the Messages Mode and press the Clear button. [More...](#)

## Messages Player

It is possible to view how unit was moving and how its various parameters were changing with time. Load any data messages and open the Messages player tab in the left panel.

Track playback can be invoked from any message. Navigate throughout the track using one of three possible ways:

1. Clicking on any place of the timescale. If just hovering timescale, message time is indicated above.
2. Clicking on any point of the track displayed on the map.
3. Clicking on any message in the table.



 In a small table above the timeline, message number, time, speed, and location are indicated. In a small table below, parameters or sensors value are shown (if there are any). As messages are played, a red marker moves on the map, messages and pages shift simultaneously on the right, and all data from small tables changes according to message being played at the moment. If device sends pictures, they are played as well.

Playback speed can be chosen in the dropdown list.


If after a pause the playback is started again, it continues from the point it stopped the previous time.

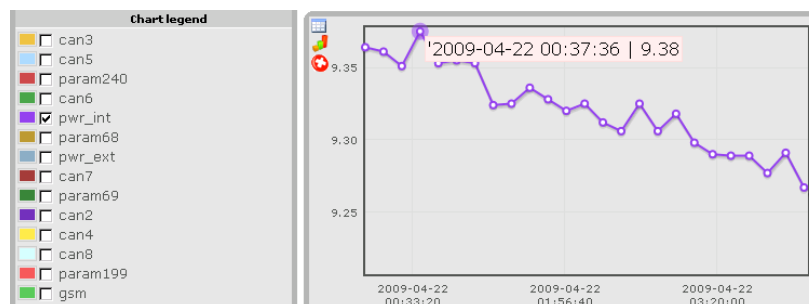
By default, messages with zero speed are skipped. It means, only intervals of movement are played. However, some devices do not send speed, and to play their track, it is needed to disable the check box *Ignore the messages with zero speed*.

## Charts

Except the text mode that is the table, some data can be presented in the graphical form. To switch between the modes, use  and  buttons correspondingly.

In the graphical mode, parameters charts are available. When you switch to the graphical mode, the Chart legend panel opens on the left. There you tick parameters to be displayed in the chart. Several parameters can be selected simultaneously. Then the chart will contain several curves. For your convenience they will be drawn with different colors.

The chart can be zoomed with the help of a mouse. Select the necessary section holding the left mouse button. Place the mouse pointer over a point to get the precise value at the point in a tooltip. To reset chart, press .



## SMS Messages

SMS messages can be sent by unit while executing a command, generating an alarm or in other cases which depend on device type. A table generated for this request will consist of three columns: time when message was received, message text, and SIM card number embedded into unit.

	Time	Text	Phone	Delete
1	09:31:05	PC,0001,20/08/10,06:31:02,5545.8496,N,03739.3864,E,43.0km,345.6,A,010005	+3750000000	
2	09:32:05	PC,0001,20/08/10,06:32:02,5546.1250,N,03738.9898,E,34.0km,315.6,A,010004	+3750000000	
3	09:33:05	SIGNAL,0001,20/08/10,06:33:02,5546.3410,N,03738.2368,E,32.0km,290.6,A,010003	+3750000000	
4	09:34:05	PC,0001,20/08/10,06:34:02,5546.4154,N,03737.6278,E,20.0km,285.6,A,010002	+3750000000	
5	09:35:05	PC,0001,20/08/10,06:35:02,5546.4154,N,03737.6278,E,0.0km,285.6,A,010002	+3750000000	
6	09:36:05	SIGNAL,0001,20/08/10,06:36:02,5546.4154,N,03737.6278,E,0.0km,285.6,A,010012	+3750000000	
7	09:37:05	PC,0001,20/08/10,06:37:02,5546.4154,N,03737.6278,E,0.0km,285.6,A,010032	+3750000000	

## Sent Commands

Commands sent to the unit by user(s) are displayed for this request. There is a special button in the monitoring panel to [send commands](#) to units. The resulting table includes:

- time when command was sent;
- user name from which the command was sent (if there is a dash in this cell, it means you have no access to this user, and its login is hidden);
- command name;
- parameters - for those commands which require additional parameters (like message to driver, input activation/deactivation, report period, custom message, etc.);
- time when the command was executed (if execution failed, this cell is empty);
- channel (gsm, csd, tcp, udp).

	Time	User	Command	Parameters	Execution time	Channel	Delete
1	09:31:01	user	Locate device		09:31:02	gsm	
2	09:32:01	user	Locate device		09:32:02	gsm	
3	09:33:01	user	Locate device		09:33:02	gsm	
4	09:35:01	user	Locate device		09:35:02	gsm	
5	09:37:01	user	Locate device		09:37:02	gsm	
6	09:38:01	user	Locate device		09:38:02	gsm	
7	09:39:01	user	Locate device		09:39:02	gsm	
8	09:40:01	user	Locate device		09:40:02	gsm	

## Registered Events

Different types of events can be registered in unit history automatically or manually.

Automatic registration is adjusted with the help of [notifications](#) (delivery method must be *Register event for unit*, *Register as violation* or *Register unit status*). In such a manner you can control geofence visits, connection loss, idling, service intervals, etc.

Manually an event can be registered in the special [registrar](#) in the monitoring panel. In such a manner you can register fuel fillings, maintenance, unit statuses, and any custom event.

[Traffic counter reset](#) and [routes statuses](#) can be also saved as events.

In the table you see:


- time when the event was detected (automatic registration) or registered (manually by user);
- type: event (traffic counter reset, events from notifications, some custom events, route control statuses), violation (violations from notifications, some custom events), maintenance (registered manually).
- event text which is taken from notification text or from description entered while registering manually.

	Time	Type	Event text
1	2010-04-26 09:47:00	Event	Königstor, Kassel, DE
2	2010-04-26 09:51:00	Event	Werner-von-Siemens-Straße, Baunatal, DE
3	2010-04-26 09:52:00	Event	Wilhelmsplatz
4	2010-04-26 09:54:00	Event	Fuel filling of 50 gal to the amount of 22 dinars was made near Gut Kragenhof, Kassel, DE.
5	2010-04-26 09:59:00	Violation	Service term is 1 mile expired.
6	2010-04-26 10:03:00	Event	Maintenance term is 1 km expired.
7	2010-04-26 10:06:00	Event	Speeding detected. The unit is moving 100 mph.
8	2010-04-26 10:07:00	Filling	Fuel filling of 40 lt to the amount of 13 was made near Gallierstraße, Bonn, DE.
9	2010-04-26 10:09:00	Event	Connection loss detected from 2010.04.26 10:10.

## Deleting Messages


Deleting a message can be applied when you think the message is invalid and can badly affect reports, tracks, etc.

Deleting messages is available only if you have *manage* access to the unit.

In the last column of the table tick messages to be deleted (one or more). Then press the Delete button  and confirm your intentions. If the checkbox at the head of the table is ticked, all messages on the current page will be selected.

	Time	Speed	Coordinates	Location	<input type="checkbox"/>
3254	2010-03-02 19:20:30	17	52.327686, 9.779306 (8)	1 - 2, Laatzen, DE	<input type="checkbox"/>
3255	2010-03-02 19:20:31	29	52.327722, 9.779082 (9)	1 - 2, Laatzen, DE	<input type="checkbox"/>
3256	2010-03-02 19:20:44	25	52.328003, 9.777816 (9)	Hildesheimer Straße, Hannover, Germany	<input type="checkbox"/>
3257	2010-03-02 19:20:47	31	52.328147, 9.777549 (8)	1 - 2, Laatzen, DE	<input checked="" type="checkbox"/>
3258	2010-03-02 19:21:18	34	52.328483, 9.777018 (8)	1 - 2, Laatzen, DE	<input checked="" type="checkbox"/>
3259	2010-03-02 19:21:55	12	52.32944, 9.776036 (8)	Hildesheimer Straße, Hannover, Germany	<input type="checkbox"/>
3260	2010-03-02 19:22:55	0	52.3296, 9.776062 (9)	Matthäikirchstraße, Hannover, Germany	<input type="checkbox"/>
3261	2010-03-02 19:23:55	0	52.329626, 9.776086 (9)	Hildesheimer Straße, Hannover, DE	<input type="checkbox"/>

50 Page 66 of 529 Displaying 3251 to 3300 from 26402 messages

After the operation, the newly deleted messages still remain on the table, however, the delete checkbox for such messages is replaced with a gray sign  which indicates that the messages are deleted. Next time when you load messages, the deleted messages will be completely removed from the table.



**Note:**

Deleting last incoming message or last message with position (valid coordinates) is impossible. That is why the delete checkbox for these messages is always dimmed.

## Table Management

Table's content is adjustable. It is possible to hide and show back any column. To choose columns to be displayed, place the cursor over table's header. Near each column name there is a button to show the dropdown list where you can choose what to display. Note that all columns cannot be hidden simultaneously.

The width of the columns is also customisable. To change it, drag column edge with the mouse to the required direction.

To reset columns width, push Set column auto width button in such a way that A letter appeared there . To save columns width when moving to other page of messages, make the button inactive .

If there are many messages, they are presented in several pages. Use navigation panel (blue arrows) to move through the pages, or enter page number manually and press <enter> to display the page.

Set the number of messages to be displayed on one page: 25, 50, 100, 500, 1000.

	Time	Speed, mph	Coordinates	Location	Parameters
2632	2010-03-07 11:22:55	<input checked="" type="checkbox"/>	2.22656, 11.748968 (9)	A 2, Magdeburg, DE	param240=1
2633	2010-03-07 11:22:55	<input checked="" type="checkbox"/>	2.227875, 11.756177 (11)	A 2, Magdeburg, DE	param240=1
2634	2010-03-07 11:22:55	<input checked="" type="checkbox"/>	2.229005, 11.763439 (9)	A 2, Magdeburg, DE	param240=1
2635	2010-03-07 11:23:00	<input checked="" type="checkbox"/>	2.229184, 11.768667 (11)	A 2, Magdeburg, DE	param240=1
2636	2010-03-07 11:23:01	<input checked="" type="checkbox"/>	2.22873, 11.776138 (10)	A 2, Magdeburg, DE	param240=1
2637	2010-03-07 11:23:01	<input checked="" type="checkbox"/>	2.228256, 11.783629 (11)	A 2, Magdeburg, DE	param240=1
2638	2010-03-07 11:23:35	114	52.227773, 11.791078 (9)	A 2, Magdeburg, DE	param240=1
2639	2010-03-07 11:23:45	111	52.227264, 11.79854 (10)	August-Bebel-Straße, Möser, DE	param240=1
2640	2010-03-07 11:23:57	85	52.226771, 11.805971 (11)	Chausseestraße, Schermen, DE	param240=1
2641	2010-03-07 11:24:10	98	52.226294, 11.813594 (11)	Pietzpuhler Weg, Schermen, DE	param240=1
2642	2010-03-07 11:24:22	108	52.225818, 11.821048 (11)	B 1, Schermen, DE	param240=1
2643	2010-03-07 11:24:33	113	52.225395, 11.829102 (11)	Hohlweg, Schermen, DE	param240=1
2644	2010-03-07 11:24:38	114	52.225597, 11.833596 (11)	1214, Pietzpuhl, DE	param240=1

50 Page 53 of 1423 Displaying 2601 to 2650 from 71127 messages

## Export/Import Messages

Open the Export messages tab in the left section of the window. Select destination format and push Export. Depending on your browser configuration settings, you will be offered to open or save the file. The resulting file can be compressed. For this, leave the flag Compress file.

The supported formats are:

**Export messages**

- OziExplorer track (.plt)
- NMEA messages (.txt):
- Google Earth (.kml):
- Wialon messages (.wln):
- Wialon binary messages (.wlb):
- Compress file

- OziExplorer track(.plt): Ozi Explorer format that stores track as a list of coordinates of track's points;
- NMEA messages (.txt): National Marine Electronics Association text file, communications protocol used in sea navigation equipment;
- Google Earth (.kml): an XML-based format used in Google Earth to transmit three-dimensional geospatial data;
- Wialon messages (.wln): a format to be used with Wialon software.
- Wialon binary messages (.wlb): a binary format to be used with Wialon software.

Select the Import messages tab in the left section of the window.

The supported formats are:

- Raw GPRMC navigator logs in format defined by NMEA 0183 specification - searched in files with extension .txt or .log.
- Rainbow Skipper messages from MMC card - searched in files with extension .gps.
- Wialon messages - searched in files with extension .wln.
- Wialon binary messages - searched in files with extension .wlb.

**Import messages**

To improve upload performance you may first compress files with ZIP or GZIP utility for your operating system. After upload complete, files will be unpacked on server and processed.

**Supported formats:**

- Raw GPRMC navigator logs in format defined by NMEA 0183 specification - searched in files with extension .txt or .log
- Rainbow Skipper messages from MMC card - searched in files with extension .gps
- Wialon messages - searched in files with extension .wln
- Wialon binary messages - searched in files with extension .wlb

**Select file or archive:**

Z:\projects\wialon\trmp

Push Browse to define a file (or an archive) to import messages from and push the Import button.

 *Hint.*

To simplify and accelerate the process you may first compress files with ZIP or GZIP. After upload process is completed, files will be unpacked and processed on server.

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Reports Mode](#)

## Reports Mode

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- [Reports Mode](#)
- [Report Generation](#)
- [Online Report](#)
- [Print Report](#)

ⓘ **Attention!** This module is licensed separately and can be not included in your package.

To switch to the Reports Mode, select the appropriate item in the modes panel. As a result reports window will open. Here you can generate reports in real time and view them right in the browser or export them to files of various formats like [PDF](#), [XML](#), [XLS](#) (Excel), [HTML](#), [CSV](#).



The Reports Mode window can be separated into four sections:


- In the top left-hand corner the basic parameters to generate a report are adjusted.
- In the bottom left-hand corner you create and store your report templates. After an online report is generated, this section changes for the navigation bar.
- In the top right-hand section there is the map.
- In the bottom right-hand section you see the report itself if it has been generated online. A report appears in the form of tables and charts.

The sizes of the sections are changeable. Click on the horizontal or vertical slider and holding the left mouse button drag it up/down or left/right.

## Report Generation

To generate a report, set the following parameters:


### Report template

Choose a template from the dropdown list. On the right of the selected template there is a button  to display template settings for viewing and editing. ⓘ If you have no templates, it is impossible to generate a report. Templates are created and stored below (see [Report Templates](#) for details).

### Object

Each report can be dedicated to unit or unit group. This choice is defined when creating the template. So, depending on the selected template, you will be offered to choose an object from the dropdown list of units or unit groups. If the report is dedicated to unit group, *all* groups appear in the dropdown list (unit groups must be created beforehand - in the [Unit Groups](#) panel). If the report is dedicated to unit, *not all* units are displayed in this dropdown list but only those which are in the [work list](#) of the Monitoring panel at the moment. If the [group monitoring mode](#) is selected, the units included in the groups chosen in the Monitoring panel are displayed in the dropdown list.



As in case of templates, on the right of the selected object there is a button  to check object properties.

## Interval type

Select a type of the interval and fill in the required fields to indicate the reporting period. Three ways to specify the interval are possible here:

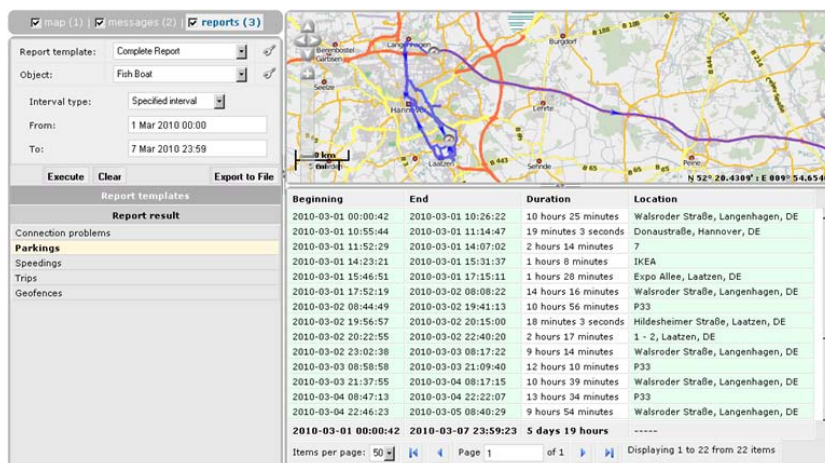
- Specified interval: specify date and time (to seconds) of the interval beginning and end.
- Starts 'From' until today: specify the beginning only, and the end will be set automatically as the current date and time.
- For previous [select the number] days/weeks/months/years. The current day (week, etc.) can be included to the interval or not depending on the state of *Include current* checkbox.

## Online Report

To generate a report online, adjust the parameters described above and push the **Execute** button. If no tables or charts appear on the right, it means there is no data about the selected object for the selected period or poor report content is selected in the template.

After executing a report, the Report Templates panel changes to Report Results which displays report contents and provides navigation through the report. Usually, a report contains several pages. To switch between them, use navigation links in the Report Results panel. The name of the active page is bold and highlighted by a yellow background.

The information in reports can be presented in the form of tables or charts. Some information can be visualized on the map, for example, tracks and markers.







The screenshot shows the 'reports (3)' panel in a software interface. It includes a form for generating a report with fields for 'Report template' (set to 'Complete Report'), 'Object' (set to 'Fish Boat'), and 'Interval type' (set to 'Specified interval'). The 'From' date is '1 Mar 2010 00:00' and the 'To' date is '7 Mar 2010 23:59'. Below the form are buttons for 'Execute', 'Clear', and 'Export to File'. To the right is a map showing a track. Below the map is a table with the following data:

Beginning	End	Duration	Location
2010-03-01 00:00:42	2010-03-01 10:26:22	10 hours 25 minutes	Walsroder Straße, Langenhagen, DE
2010-03-01 10:55:44	2010-03-01 11:14:47	19 minutes 3 seconds	Donastraße, Hannover, DE
2010-03-01 11:52:29	2010-03-01 14:07:02	2 hours 14 minutes	7
2010-03-01 14:23:21	2010-03-01 15:31:37	1 hours 8 minutes	IKEA
2010-03-01 15:46:51	2010-03-01 17:15:11	1 hours 28 minutes	Expo Allee, Laatzen, DE
2010-03-01 17:52:19	2010-03-02 08:08:22	14 hours 16 minutes	Walsroder Straße, Langenhagen, DE
2010-03-02 08:44:49	2010-03-02 19:41:13	10 hours 56 minutes	P33
2010-03-02 19:56:57	2010-03-02 20:15:00	18 minutes 3 seconds	Hildesheimer Straße, Laatzen, DE
2010-03-02 20:22:55	2010-03-02 22:40:20	2 hours 17 minutes	1 - 2, Laatzen, DE
2010-03-02 23:02:38	2010-03-03 08:17:22	9 hours 14 minutes	Walsroder Straße, Langenhagen, DE
2010-03-03 08:58:58	2010-03-03 21:09:40	12 hours 10 minutes	P33
2010-03-03 21:37:55	2010-03-04 08:17:15	10 hours 39 minutes	Walsroder Straße, Langenhagen, DE
2010-03-04 08:47:13	2010-03-04 22:22:07	13 hours 34 minutes	P33
2010-03-04 22:46:23	2010-03-05 08:40:29	9 hours 54 minutes	Walsroder Straße, Langenhagen, DE
<b>2010-03-01 00:00:42</b>	<b>2010-03-07 23:59:23</b>	<b>5 days 19 hours</b>	-----

At the bottom of the table, there is a pagination control: 'Items per page: 50', navigation arrows, 'Page 1 of 1', and 'Displaying 1 to 22 from 22 items'.

To adjust the number of rows to be displayed on one page, choose the number in the dropdown menu: 25, 50, 75 or 100. To navigate between the pages, use the blue buttons:

-  go to the next page,
-  go to the previous page,
-  go to the first page,
-  go to the last page.

The page number can be entered manually. After entering a number, push <enter> on the keyboard to go to the required page.

To delete an online report, push **Clear**. The map and the report itself will be cleaned, and the Report Result panel will be replaced by Report Templates again. However, you can switch between these two panels manually. To do this, just click on the header of the corresponding panel.

## Print Report

After generating an online report, it can be printed without saving it to the disk. To do this, press the **Print** button which becomes accessible only when there is a report in browser window.

In the left part of the *Print Report* dialog you see the list of sections which are included in the report. Check those of them which you are going to print. At the right you can preview all these tables, charts, map, etc. To start printing, press *Print*. To exit, press *Close*.

Statistics		
Report	gvvgf	
Unit	SMS Siml (London)	
Interval beginning	2010-06-01 00:00:00	
Interval end	2010-06-07 23:59:59	
Timezone	GMT +2:00	
Messages	510	
Mileage in all messages	702 mi	

SMS messages		
Time received	SMS text	Count
2010-06-01 16:59:47	PC,0001,01.06/10,13:59:44,5350.7246,N,02726.8247,E,25.0km,285.4,A,000000	1
2010-06-01 16:59:54	PC,0001,01.06/10,13:59:51,5351.2871,N,02725.8407,E,53.0km,316.7,A,010001	1
2010-06-01 16:59:57	PC,0001,01.06/10,13:59:54,5352.8061,N,02725.0579,E,6.0km,345.6,A,030003	1
2010-06-01 16:59:59	PC,0001,01.06/10,13:59:56,5353.7450,N,02724.5881,E,38.0km,346.0,A,010001	1
2010-06-01 17:00:01	PC,0001,01.06/10,13:59:58,5355.4047,N,02724.9717,E,56.0km,10.2,A,000001	1
2010-06-01 17:00:04	PC,0001,01.06/10,14:00:01,5356.8226,N,02726.4094,E,21.0km,33.3,A,010001	1
2010-06-01 17:00:06	SIGNAL,0001,01.06/10,14:00:03,5357.6777,N,02727.5611,E,54.0km,40.9,A,000001	1
2010-06-01 17:00:08	PC,0001,01.06/10,14:00:05,5358.0060,N,02728.5458,E,16.0km,63.0,A,010001	1
2010-06-01 17:00:11	PC,0001,01.06/10,14:00:08,5358.1365,N,02731.6272,E,24.0km,88.4,A,000000	1
2010-06-01 17:00:13	PC,0001,01.06/10,14:00:10,5358.2846,N,02734.0595,E,45.0km,88.2,A,010000	1

**Hints:**

- Reports can be generated and sent by e-mail automatically according to a preset schedule - see [Jobs](#) for details.
- Reports can be sent to you in case of event - see [Notifications](#) for details.

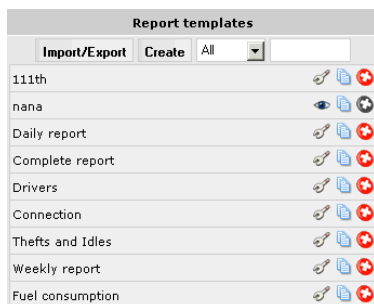
Further information:

- ▶ [Report Templates](#)
- ▶ [Tables](#)
- ▶ [Charts](#)
- ▶ [Statistics](#)
- ▶ [Map Output](#)
- ▶ [Advanced Reports](#)
- ▶ [Export Report to File](#)
- ▶ [Data in Reports](#)

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Reports Mode](#) » [Report Templates](#)

## Report Templates

The list of all templates available is located in the bottom left-hand corner of the window under the header Report templates. Here you can create, edit and delete templates for reports. Check the number of templates possible to create in your account parameters (see [User Settings => Account](#)).



### Table of Contents ▲

- [Report Templates](#)
- [How to Create a Report Template](#)
- [Options](#)
- [Managing Report Templates](#)
- [Templates](#)
- [Import/Export](#)

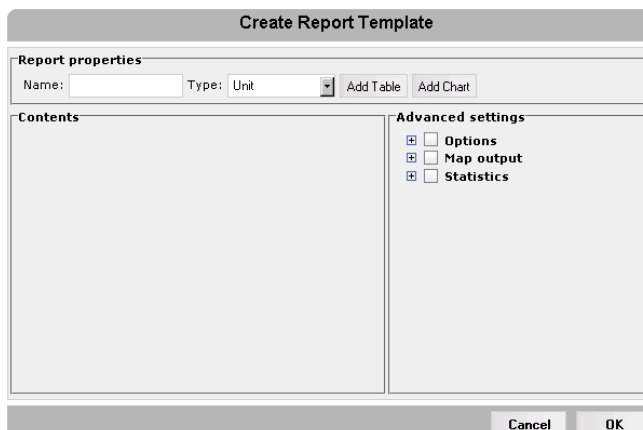
## How to Create a Report Template

To create a new report template, press the Create template button. In the dialog enter a name for the template and choose one of two types:

- Unit: this template will be applicable to separate units.
- Unit group: this template will be used to gather information about several units at once. These units must be presented as a unit group. **Note:** to create reports for unit groups, the Advanced Reports extension package is required.

### ⚠ Attention!

It is not recommended to change template type when editing a previously created template because all template contents will be lost with this action.

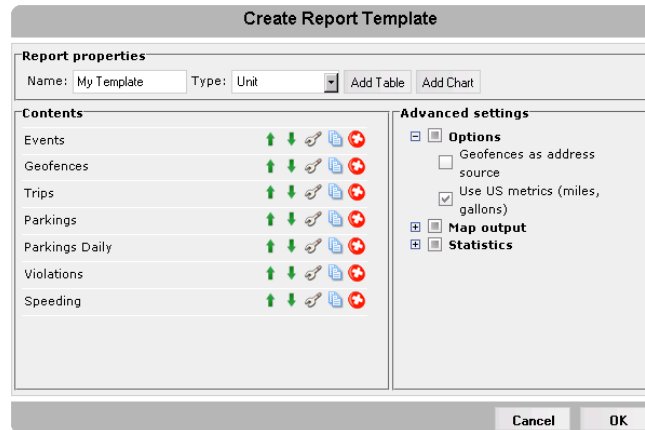


After entering name and selecting type, add tables and charts to your template, set statistics parameters and advanced settings as described below:

- [Tables](#)
- [Charts](#)
- [Options](#)
- [Map Output](#)
- [Statistics](#)

All added contents will be displayed at the left of the dialog. Here you can set the sequence order of the pages and

give them custom names if needed.



To change page name, click on it and enter any text. To manage template contents, use the following buttons:

- move up,
- move down,
- edit a table/chart,
- make a copy of a table/chart,
- delete page.

**Note.**

No matter where you place a chart, in the resulting report all charts follow after all tables, and the Statistics section goes first.

## Options

---

Use US metrics (miles, gallons) option defines how mileage, speed, and fuel are given in the report. If this box is checked, miles and gallons are used instead of kilometers and liters.

Mileage and fuel with accuracy to two decimal places. By default, mileage less than 20 and fuel less than 50 is displayed with accuracy to hundredths, and larger values are given as integers. However, if you consider it is necessary, mileage and fuel can be always shown with accuracy to two decimals (other decimal places are simply cut). [Details about fuel and mileage in reports...](#)

POI as address source option allows to use POI names instead of usual addresses received from the Web-GIS.

Geofences as address source option allows to use geofences names instead of usual addresses received from the Web-GIS. Addresses can be used in several tables to indicate unit location.

Use all accounts option is useful if you choose POI and/or geofences as addresses. By default, only geofences and places belonging to the same resource as reports template are used for the report. However, if the given option is activated and user has access to several accounts, all geofences and places which are located in these account will be enabled for the report. [Details about addresses in reports...](#)

One more option is provided for [group reports](#) - Skip empty rows. It is used to withdraw uninformative rows from the resulting table. For example, you create a report about fuel thefts, but not each and every unit in the selected group has thefts, so there can be a lot of empty rows in the table.




## Managing Report Templates

---

All created templates appear in the list of report templates. In the tooltip you see the name of the account which holds this template (if you have access to more than one account). If clicking on a template, it becomes selected in the *Report template* field of report generation parameters.

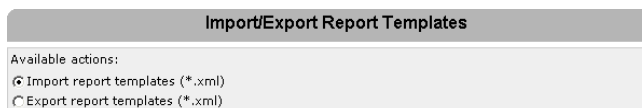
When searching for a template on the list, it is convenient to use the [filter](#). Enter template name or its part into the search text box and observe the results. Additional search parameters are set in the dropdown list where you can choose the account or leave *All*.

The following actions are available:

-  edit a report template;
-  create a new template using this one as a basis;
-  delete template.

## Templates Import/Export

Report templates can be exported and imported through XML files. Above the list of available report templates there is a special button - Import/Export. Click on it and choose needed option.



If you choose export, then you can indicate desirable file name and select templates to be exported to a file. After that, click OK and save the file.

File name (optional): Basic reports	
Report templates	
111th	<input type="checkbox"/>
Complete report	<input checked="" type="checkbox"/>
Connection	<input type="checkbox"/>
Daily report	<input checked="" type="checkbox"/>
Drivers	<input type="checkbox"/>
Fuel consumption	<input type="checkbox"/>
nana	<input type="checkbox"/>
Thefts and Idles	<input type="checkbox"/>
Weekly report	<input checked="" type="checkbox"/>

Templates are exported into XML files. All tables with selected columns in them, charts and their parameters, statistics and additional template options, all flags and masks are exported (everything except geofences choice).

Saved templates can be then imported to any account (manage or edit access to the account is required). If you have enough access to several accounts, you select one to be a destination account. Then you indicate the path to file (Browse button) and press Import.

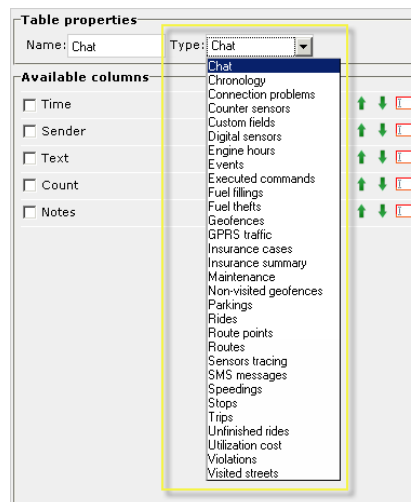


The results of import action can be estimated if you choose the corresponding account in the filter of report templates list.

## Tables

The following tables (for units and unit groups) can be added to a report:

- [Table Parameters](#)
- [Intervals Filtration](#)
- [Chat](#)
- [Chronology](#)
- [Connection Problems](#)
- [Counter Sensors](#)
- [Custom Fields](#)
- [Digital Sensors](#)
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- [Visited Streets](#)
- [Unit Latest Data](#)



A template can contain any number of tables and charts. You can even add the same table type several times with different configuration of columns, data grouping and other settings.

To add any of above mentioned tables to the template, click the Add Table button and choose a table from the list.

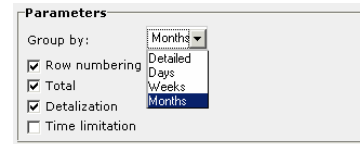
Each table type has its set of columns which can form this table. After you have chosen table type, the list of columns available is displayed below. Check the columns you would like to include in the resulting table. To select all columns at once, press <ctrl> on the keyboard and click on any checkbox. To make all columns unselected, repeat the same operation. This combination works also for reports where you choose geofences, events, etc.

You can rename columns, clicking on their names and editing the text. In the same way you can change the name of the table itself (the Name text box at the top of the dialog). To restore default column names, use the button Restore default.

Besides, you can apply to the columns any sequence order. Move them up and down using the green arrows  .

## Table Parameters

In the right part of the dialog you can set additional parameters for the table such as grouping, detalization, total raw, and time limitations. These parameters can be applied to any kind of table.



### Table of Contents ▲

- Table Parameters
  - Grouping
  - Detalization
  - Total
  - Row Numeration
  - Time Limitation

## Grouping

Data given in the table can be grouped by time intervals such as days, weeks and months. By default, the grouping is off. It means the data is given in the detailed view that is each row of the table represents a separate event (such as fuel filling, violation, parking, SMS, etc. depending on table type selected), and these rows are arranged in the chronological order.

If any grouping interval is set, then each row in the table will correspond to an interval (day, week or month). An additional column named Date, Week or Month will be added as the first column of the table.

Below there are two examples. The first one is a detailed report on parkings from 8th to 12th of March 2010. No grouping is applied.

Beginning	End	Duration	Location
2010-03-01 00:00:42	2010-03-01 10:26:22	10 hours 25 minutes	Walsroder Straße, Langenhagen, DE
2010-03-01 10:55:44	2010-03-01 11:14:47	19 minutes 3 seconds	Donaustraße, Hannover, DE
2010-03-01 11:52:29	2010-03-01 14:07:02	2 hours 14 minutes	7
2010-03-01 14:23:21	2010-03-01 15:31:37	1 hours 8 minutes	IKEA
2010-03-01 15:46:51	2010-03-01 17:15:11	1 hours 28 minutes	Expo Allee, Laatzen, DE
2010-03-01 17:52:19	2010-03-02 08:08:22	14 hours 16 minutes	Walsroder Straße, Langenhagen, DE
2010-03-02 08:44:49	2010-03-02 19:41:13	10 hours 56 minutes	P33
2010-03-02 19:56:57	2010-03-02 20:15:00	18 minutes 3 seconds	Hildesheimer Straße, Laatzen, DE
2010-03-02 20:22:55	2010-03-02 22:40:20	2 hours 17 minutes	1 - 2, Laatzen, DE
2010-03-02 23:02:38	2010-03-03 08:17:22	9 hours 14 minutes	Walsroder Straße, Langenhagen, DE
2010-03-03 08:58:58	2010-03-03 21:09:40	12 hours 10 minutes	P33
2010-03-03 21:37:55	2010-03-04 08:17:15	10 hours 39 minutes	Walsroder Straße, Langenhagen, DE
2010-03-04 08:47:13	2010-03-04 22:22:07	13 hours 34 minutes	P33
2010-03-04 22:46:23	2010-03-05 08:40:29	9 hours 54 minutes	Walsroder Straße, Langenhagen, DE
2010-03-05 09:12:15	2010-03-05 20:16:43	11 hours 4 minutes	P31
2010-03-05 20:54:26	2010-03-05 22:16:42	1 hours 22 minutes	Joachimstraße, Hannover, DE
2010-03-05 22:43:44	2010-03-05 23:59:00	1 hours 15 minutes	Walsroder Straße, Langenhagen, DE

The second table represents parkings for the same unit and interval, but here the data is grouped by days.

Date	Beginning	End	Duration	Count
2010-03-01	00:00:42	2010-03-02 08:08:22	1 days 5 hours	6
2010-03-02	08:44:49	2010-03-03 08:17:22	22 hours 46 minutes	4
2010-03-03	08:58:58	2010-03-04 08:17:15	22 hours 50 minutes	2
2010-03-04	08:47:13	2010-03-05 08:40:29	23 hours 29 minutes	2
2010-03-05	09:12:15	23:59:00	13 hours 42 minutes	3

When using a grouping, all events which *began* in the analyzed interval are included in this interval, and when calculating event's duration *all* its duration is considered. That is why in the example above the total duration of parkings for the 8th of March is "1 day 5 hours" that is larger than a day.

It is convenient to include the Count column in the table with a grouping. In this column you get the count of events which happened within the current interval (day/week/month). In a detailed report this column will contain only ones. At the same time, it is recommended to exclude such columns as Location when configuring a table with a grouping because events happen in different places. However, even if you have selected this column, note that the location for the first event in the interval will be displayed.

One more column can be useful for tables with grouping - Total time. The meaning of this column is similar to 'Duration' column but a bit different. 'Duration' shows the sum of intervals, for example, the sum of all trips detected.

'Total time' shows time from the beginning of the first interval to the end of the last, for example, time from the beginning of the first trip on a day to the end of the last trip on the same day (so, you can know real working shift).

## Detalization

A table with a grouping applied can be supplemented with detalization. Then a plus-shaped button will be added at the beginning of each row. Press this plus to expand the hidden row contents. For example, if there were four parkings detected at a day, in the grouped report the beginning of the first parking and the end of the last one will be indicated. But if you expand the hidden contents, you can get a detailed information for each of parkings in between. In the examples below you see the same report on parkings with grouping and detalization.

	Date	Beginning	End	Duration	Count
+	2010-03-01	00:00:42	2010-03-02 08:08:22	1 days 5 hours	6
+	2010-03-02	08:44:49	2010-03-03 08:17:22	22 hours 46 minutes	4
	-----	08:44:49	19:41:13	10 hours 56 minutes	1
	-----	19:56:57	20:15:00	18 minutes 3 seconds	1
	-----	20:22:55	22:40:20	2 hours 17 minutes	1
	-----	23:02:38	2010-03-03 08:17:22	9 hours 14 minutes	1
+	2010-03-03	08:58:58	2010-03-04 08:17:15	22 hours 50 minutes	2
+	2010-03-04	08:47:13	2010-03-05 08:40:29	23 hours 29 minutes	2
+	2010-03-05	09:12:15	23:59:00	13 hours 42 minutes	3

Detalization can be applied only to grouped tables; it does not affect detailed tables.

## Total

The Total row can be added to any table regardless its type, grouping or detalization applied. The total row is added as the last row in the table and contains the resulting information such as total duration of a state, total number of events registered, etc.

	Date	Beginning	End	Duration	Count
+	2010-03-01	00:00:42	2010-03-02 08:08:22	1 days 5 hours	6
+	2010-03-02	08:44:49	2010-03-03 08:17:22	22 hours 46 minutes	4
+	2010-03-03	08:58:58	2010-03-04 08:17:15	22 hours 50 minutes	2
+	2010-03-04	08:47:13	2010-03-05 08:40:29	23 hours 29 minutes	2
+	2010-03-05	09:12:15	23:59:00	13 hours 42 minutes	3
	-----	<b>2010-03-01 00:00:42</b>	<b>2010-03-05 23:59:00</b>	<b>4 days 16 hours</b>	<b>17</b>

In online reports the total row is located at the bottom of the window regardless the number of pages in the table or scrolling bar location.

Location information is not given in the total row (replaced by dashes).

## Row Numeration

Row numeration can be added to any table type. To switch the numeration on, check Row numeration box in table advanced parameters. The numeration is added to the table as its first column.

Nº	Beginning	End	Duration	Location
1	2010-03-01 00:00:42	2010-03-01 10:26:22	10:25:40	Walsroder Straße, Langenhagen, DE
2	2010-03-01 10:55:44	2010-03-01 11:14:47	0:19:03	Hildesheimer Straße, Hannover, Germany
3	2010-03-01 11:21:47	2010-03-01 11:32:51	0:11:04	Am Eisenwerk, Laatzen, DE
4	2010-03-01 11:52:29	2010-03-01 14:07:02	2:14:33	2. Allee, Hannover, Germany
5	2010-03-01 14:23:21	2010-03-01 15:31:37	1:08:16	Ikea
6	2010-03-01 15:46:51	2010-03-01 17:15:11	1:28:20	Expo-Allee Nord, Hannover, Germany
7	2010-03-01 17:52:19	2010-03-01 23:59:34	6:07:15	Walsroder Straße, Langenhagen, Niedersachsen, Germany

When numeration and detalization meet together, you get two-level numeration. The first level is a usual numeration of main rows with integer numbers. The second level is the numeration of nested rows as "main row number - dot - nested row number".

Nº	Date	Beginning	End	Duration	Location	Count	
+	1	2010-03-01	00:00:42	2010-03-02 08:08:22	1 days 6:02:59	Walsroder Straße, Langenhagen, DE	7
+	2	2010-03-02	08:44:49	2010-03-03 08:17:22	22:46:36	Süd 1a	4
	2.1	-----	08:44:49	19:41:13	10:56:24	Süd 1a	1
	2.2	-----	19:56:57	20:15:00	0:18:03	Hildesheimer Straße, Laatzen, DE	1
	2.3	-----	20:22:55	22:40:20	2:17:25	Matthäikirchstraße, Hannover, Germany	1
	2.4	-----	23:02:38	2010-03-03 08:17:22	9:14:44	Walsroder Straße, Langenhagen, DE	1
+	3	2010-03-03	08:58:58	2010-03-04 08:17:15	22:50:02	Süd 1a	2
+	4	2010-03-04	08:47:13	2010-03-05 08:40:29	23:29:00	Süd 1a	2
+	5	2010-03-05	09:12:15	2010-03-06 09:00:50	22:43:50	Süd 1c	3
+	6	2010-03-06	20:22:30	2010-03-07 10:23:34	13:28:55	Kaufland/Ratio	2
+	7	2010-03-07	12:57:27	23:59:23	3:56:46	Boczów,Lubuskie, Poland	3



## Time Limitation

Time limitations can be applied to tables to limit data analysis by some time intervals, days of the week, days of the month or months. For example, you can select working days and working time to be considered while generating the table. However, if a state (for example, a trip) began within the indicated interval and finished outside this interval, the state will not be cut off and its duration will be wholly included in the report.

Time limitation

Time

Interval 1: 09 : 00 - 13 : 00

Interval 2: 14 : 00 - 18 : 00

Week days

Mo  Tu  We  Th  Fr  Sa  Su

Days

Months

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## Intervals Filtration

Several tables are supplied with additional parameters to filter intervals. There you can set conditions to select information to be displayed in the resulting report. These conditions affect reports that concern selecting intervals from the collection of messages. These reports are: Counter sensors, Digital sensors, Geofences, Engine hours, Parkings and Stops, Rides and Unfinished rides, Speedings, Trips, and others.

The set of filtration parameters varies depending on table type. The following parameters are possible: duration, mileage, engine hours, speed range, stops, parkings, sensors, driver, fuel fillings and thefts, geofences. Adjusting these parameters will limit the scope of intervals getting to the report. For example, you can indicate the minimum duration and minimum mileage for the trips to be displayed. Or you can query visited geofences with a stop at least 10 minutes in them.

### Duration

Minimum and/or maximum duration of the interval (in minutes).

### Mileage

Minimum and/or maximum distance travelled in the interval (in kilometers).

### Engine hours

Minimum and/or maximum duration of engine hours (in minutes). In addition, engine hours sensor mask can be specified in the filter below - Engine hours sensor.

### Speed range

Indicate minimum and/or maximum speed to be considered. It means that only those intervals will be displayed in the report which contain at least one message with speed falling into the range. But more helpful might be retrieving intervals. If you check the *Retrieve intervals* box, the report will focus on intervals where *all* speeds fall into the range.

### Stops

Tick the checkbox and choose one of the two possibilities: *With stops* or *Without stops*. Then in the resulting table only intervals which meet the given condition will be shown. If the Stops option is not selected, then all intervals are displayed regardless if there were any stops or not.

### Parkings

The settings are similar to those for stops. In addition, you can indicate the minimum parking duration. For instance, you can query geofences where there is a parking of a specified time (the *Minimum duration* flag). Besides, the parking time can be summed up (the *Sum up intervals* flag). That means the geofences where the total parkings make up the specified time will be displayed.

### Sensors

The intervals where there are messages with sensor on or off can be selected. In addition, you can indicate minimum and/or maximum time of sensor's on/off state. Like in parkings, the duration can be summed up (the *Sum up intervals* flag). Besides, the intervals of on/off state can be retrieved, and each of them can be presented as a separate row of the table (the *Retrieve intervals* flag). To indicate a certain sensor to be controlled, type its mask below. If you select several, then the intervals which contain points with all these sensors on/off (simultaneously) will be selected. If no masks are specified, then all digital sensors are considered.

Sensors masks You can enter up to 4 [masks](#). Sensors masks can affect *Sensors* filter, *Counter* column, and

<b>Duration</b>		
<input checked="" type="checkbox"/> Min duration, min	<input type="text" value="33"/>	
<input checked="" type="checkbox"/> Max duration, min	<input type="text" value="333"/>	
<b>Mileage</b>		
<input type="checkbox"/> Min mileage, km		
<input type="checkbox"/> Max mileage, km		
<b>Engine hours</b>		
<input type="checkbox"/> Min engine hours, min		
<input type="checkbox"/> Max engine hours, min		
<b>Speed range</b>		
<input checked="" type="checkbox"/> Min speed, km/h	<input type="text" value="20"/>	
<input type="checkbox"/> Max speed, km/h		
<input type="checkbox"/> Retrieve intervals		
<input checked="" type="checkbox"/> <b>Stops</b>		
With stops <input type="text" value=""/>		
<input checked="" type="checkbox"/> <b>Parkings</b>		
With parkings <input type="text" value=""/>		
<input type="checkbox"/> Min duration, min		
<input type="checkbox"/> Sum up intervals		
<input checked="" type="checkbox"/> <b>Sensors</b>		
With sensor on <input type="text" value=""/>		
<input checked="" type="checkbox"/> Min duration, min	<input type="text" value="10"/>	
<input type="checkbox"/> Max duration, min		
<input type="checkbox"/> Retrieve on/off intervals		
<input checked="" type="checkbox"/> Sum up intervals		
<b>Sensors masks</b>		
<input checked="" type="checkbox"/> All sensors		
Sensor 1	<input type="text"/>	
Sensor 2	<input type="text"/>	
Sensor 3	<input type="text"/>	
Sensor 4	<input type="text"/>	
You can enter full sensor name or its part using wildcard symbols like asterisk * (replaces any number of characters) or question sign ? (replaces one character). Sensor name cannot contain comma.		
<input checked="" type="checkbox"/> <b>Fuel fillings</b>		
Without fillings <input type="text" value=""/>		
<input checked="" type="checkbox"/> <b>Fuel thefts</b>		
With thefts <input type="text" value=""/>		
<input type="checkbox"/> Min theft, lt		
<input type="checkbox"/> Max theft, lt		
<input type="checkbox"/> Sum up thefts		
<b>Geofences/Units</b>		
Search mask: <input type="text" value=""/> >		
None In Out	<b>Geofence</b>	
<input checked="" type="radio"/> <input type="radio"/>	123 route	
<input checked="" type="radio"/> <input type="radio"/>	Giessen DE	
<input checked="" type="radio"/> <input type="radio"/>	Kirovsk	
<input type="radio"/> <input checked="" type="radio"/>	New York, NY	
<input type="radio"/> <input checked="" type="radio"/>	Route 147	
<input type="radio"/> <input checked="" type="radio"/>	Slaughter	
<input type="radio"/> <input checked="" type="radio"/>	Stores	
None In Out	<b>Unit</b>	
<input checked="" type="radio"/> <input type="radio"/>	Fish Boat	<input type="text" value="100"/>
<input checked="" type="radio"/> <input type="radio"/>	Fura 1475683 AC	<input type="text" value="100"/>
<input checked="" type="radio"/> <input type="radio"/>	Mazda 326 OA 1107	<input type="text" value="100"/>
<input checked="" type="radio"/> <input type="radio"/>	Riviera	<input type="text" value="100"/>

information on fuel (if any of these options is selected in the report template).

#### Driver

This filter allows to select intervals with a certain driver or without any drivers. Choose the option *With driver* and specify driver's name mask. The resulting table will contain only intervals with a corresponding driver - it does not matter whether this driver is at the beginning, in the middle, at the end or in all course of the interval. In case there was several drivers, all of them are considered but only the last one is displayed in the table. In addition, you can enable the option *Retrieve intervals* to retrieve only segments with a specified driver from the scope of intervals.

If the option *Without driver* is selected, the resulting table will consist of intervals which contain segments without any drivers. These segments can be retrieved as well.

#### Fuel fillings

Intervals with fillings or without fillings can be displayed in the table. If the first case is chosen, then you can additionally indicate max and min filling volume (in liters). Fillings can be sum up. In this case the indicated filling volume will be applied to the total of fillings found.

#### Fuel thefts

Intervals with fuel thefts or without thefts can be displayed. If the first case is chosen, then you can additionally indicate max and min theft volume (in liters). Like fillings, fuel thefts can be sum up.

#### Geofences/Units

The filter is divided into two parts - geofences and units. In the upper part you can select geofences to be analyzed for the report. You can focus on unit activity in or out of a geofence. To put a geofence under control, move the marker from *None* to *In* or *Out* against a required geofence.

In the same way you can choose units (they are considered as 'moving geofences'). In this case, indicate radius for these units. So, you can get information about unit activity in or out of the area of selected units. To quickly find a necessary geofence or unit, use the search [mask](#).

You can enter both integer or fractional numbers. Use point as a delimiter for fractional numbers.

Each of described above limitations can be applied both independently or along with other limitations. If the option *Retrieve intervals* (in the *Sensors* or *Speed* sections) is combined with other conditions, then the filtration by other conditions is applied *after* retrieving the appropriate intervals.

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## Chat

This report unites commands of the kind *Send message to driver* and replied got from the driver. [How to carry a chat with driver...](#)

- Time: date and time when the message was received.
- Sender: driver or operator (operator's username in brackets).
- Text: message text.
- Count: the number of messages.
- Notes: an empty column to add your custom comments after printing or exporting the report.

Time	Sender	Text	Count
2010-04-26 04:47:57	Operator (user)	Return to the depot	1
2010-04-26 04:48:48	Driver	Finishing.	1
2010-04-26 04:53:31	Driver	Filled 50 gal.	1
2010-04-26 04:53:54	Operator (user)	Filling registered	1
2010-04-26 04:58:45	Operator (user)	New order near Gorky Park.	1
2010-04-26 04:59:14	Driver	10 min	1

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## Chronology

This kind of report gives information about all actions and changes in unit state during the indicated period of time. Unlike most of other tables which are dedicated to a certain thing (parkings, sensors, trips, etc.) this table can unite phenomena of various kinds which allows to estimate movement history in the whole.

The following things can be included to the chronology (in the template select necessary):

- Trips
- Parkings
- Stops
- Engine hours
- Fillings
- Thefts
- Events
- Drivers
- Speedings
- Connection loss
- Sensor trigger (enter one or two masks to indicate needed sensors)

The following columns can be selected to form the table:

- Type: trip, parking, stop, engine hours, filling (or reg. filling), theft, event (or violation), driver, connection loss, sensor.
- Beginning: when the detected activity began.
- Initial location: unit location at the moment of activity beginning.
- End: when the detected activity finished.
- Final location: unit location at the moment of activity end.
- Duration: how long this activity lasted.
- Description: for trips and speedings - mileage, for events and violations - the text of notification, for engine hours - duration, for drivers - registered driver name or 'driver unbound', for fuel fillings and thefts - the volume of fuel and sensor name, for sensors - sensor activation/deactivation.
- Notes: an empty column for your custom comments.

Type	Beginning	Initial location	Duration	Description
Stay	2010-03-04 00:00:28	P33	12:21:39	-----
Trip	2010-03-04 12:22:07	P33	0:24:16	Mileage: 16.91 km
Speeding	2010-03-04 12:26:52	Messeschnellweg, Laatzen, DE	0:01:40	Mileage: 3.42 km
Stay	2010-03-04 12:46:23	Walsroder Straße, Langenhagen, DE	9:54:06	-----
Trip	2010-03-04 22:40:29	Walsroder Straße, Langenhagen, DE	0:31:46	Mileage: 16.88 km
Stay	2010-03-04 23:12:15	P31	11:04:28	-----
Trip	2010-03-05 10:16:43	P31	0:37:43	Mileage: 10.04 km
Stay	2010-03-05 10:54:26	Joachimstraße, Hannover, DE	1:22:16	-----
Reg. filling	2010-03-05 11:00:00	-----	0:00:00	40.00 lt, sensor: Mathematical
Trip	2010-03-05 12:16:42	Joachimstraße, Hannover, DE	0:27:02	Mileage: 8.61 km
Stay	2010-03-05 12:43:44	Walsroder Straße, Langenhagen, DE	10:17:06	-----
Trip	2010-03-05 23:00:50	Walsroder Straße, Langenhagen, DE	0:59:08	Mileage: 14.93 km
Connection loss	2010-03-05 23:23:50	1	0:36:09	-----

## Connection Problems

This kind of report lists cases when connection with server or satellites was lost. The parameters for this report are adjusted in [Unit Properties => Advanced](#) where you set *Maximum interval between messages*.

The following information can be presented in this kind of report:

- Beginning: date and time when connection loss happened.
- End: date and time when connection was recovered.
- Duration: time interval of connection loss.
- Location: the address where the unit was right before the connection broke.
- Count: the number of connection gaps detected.
- Driver: driver's name or code if available.
- Notes: an empty column for your custom comments.

Nº	Beginning	End	Location	Duration
1	2010-02-01 00:00:00	2010-02-28 14:00:42	Walsroder Straße, Langenhagen, DE	27 days 14:00:42
2	2010-03-05 23:23:50	2010-03-06 09:59:21	1	10:35:31
3	2010-03-15 06:32:25	2010-03-31 23:59:59	Walsroder Straße, Langenhagen, DE	16 days 16:27:34

Additional [filtration](#) by driver and geofences/units can be applied to this report.

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## Counter Sensors

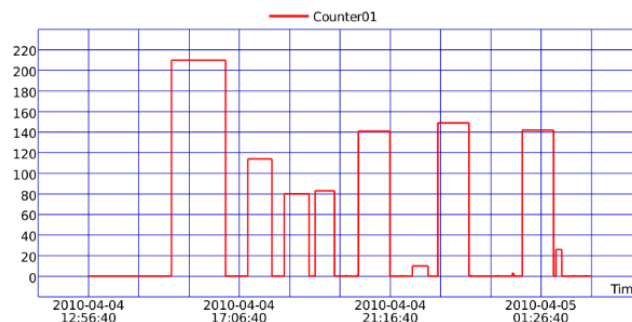
This table shows the operation of *counter* type sensors. In the template you set the mask (filter) for sensors or choose All sensors. Possible columns are:

- Sensor: sensor name.
- Activated: activation time.
- Deactivated: deactivation time.
- Duration: operation time.
- Total time: time from the first activation beginning to the last activation end (useful if grouping by days is enabled).
- Location: unit location when counter was activated.
- Mileage: distance travelled for the operation period.
- Mileage (adjusted): mileage subject to the coefficient set in unit properties (*Advanced* tab).
- Avg speed: average speed in this period.
- Max speed: maximum speed in this period.
- Counter: the value.
- Driver: driver's name or code if available.
- Notes: an empty column for your custom comments.

Sensor	Activated	Duration	Location	Mileage	Avg speed	Max speed	Counter
Counter01	2010-04-04 20:23:47	0:52:17	1ra Av. Comayaguela, Tegucigalpa	14.21 km	16 km/h	70 km/h	141
Counter01	2010-04-04 21:35:21	0:00:30	Calle Real, Tegucigalpa, HN	0.01 km	1 km/h	0 km/h	1
Counter01	2010-04-04 21:53:10	0:26:07	1ra Av. Comayaguela, Tegucigalpa	0.13 km	0 km/h	0 km/h	10
Counter01	2010-04-04 22:35:24	0:51:42	1ra Av. Comayaguela, Tegucigalpa	14.24 km	17 km/h	67 km/h	149
Counter01	2010-04-04 23:30:17	0:00:18	1ra Av. Comayaguela, Tegucigalpa	0.01 km	2 km/h	0 km/h	1
Counter01	2010-04-05 00:14:53	0:01:00	Calle Real, Tegucigalpa, HN	0.02 km	1 km/h	0 km/h	1
Counter01	2010-04-05 00:38:45	0:02:36	1ra Av. Comayaguela, Tegucigalpa	0.01 km	0 km/h	0 km/h	3
Counter01	2010-04-05 00:55:17	0:51:54	1ra Av. Comayaguela, Tegucigalpa	12.66 km	15 km/h	60 km/h	142
Counter01	2010-04-05 01:51:13	0:09:35	Blv Santa Fe, Tegucigalpa, HN	2.60 km	16 km/h	32 km/h	26

[Intervals filtration](#) can be applied to this table: by duration, mileage, engine hours, speed range, stops, parkings, sensors, drivers, fuel fillings, fuel thefts, and geofences/units.

Counter sensor's value can be visualized in the chart that shows counter's operation intervals and its value. [More about charts...](#)



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## Custom Fields

The table *Custom fields* represents the list of custom fields entered in the corresponding tab of unit properties dialog (see [Unit Properties => Custom Fields](#)). Possible columns:

- Name: custom field name.
- Value: custom field value.
- Notes: an empty column for your custom comments.

Name	Value
Carrying capacity	3 tonnes
Fuel	Gas
Year mark	1999

There is no point to apply additional parameters such as grouping, Total row, and numbering to this kind of report. It does not matter what interval you choose for the report, because only the current fields contained in unit properties can be displayed.

To get custom fields for unit group (see [Advanced Reports](#)), make sure the option *Detalization* is enabled. Pay attention that individual fields of each unit will be displayed, and not the fields of the selected unit group.



## Digital Sensors

Usually, digital sensors have two states: on/off, activated/deactivated, busy/free and so on. For example, it can be ignition sensor or cargo load sensor. All sensors are configured in [Unit Properties](#).

In the report template you can select up to four sensors using masks. Enter sensor's full name or a part of the name using wildcard symbols like asterisk \* (replaces several characters) or question sign ? (replaces one symbol). Sensor name cannot contain commas. Check the All sensors check box to automatically select all existing sensors. If no sensors are selected or sensors are indicated incorrectly, the table cannot be formed.

The table can contain the following columns:

- Sensor: the name of the sensor under control.
- On: time when the sensor was activated.
- Off: time when the sensor was deactivated.
- Duration: the interval when the sensor was on.
- Total time: time from the beginning of first activation to the end of last last (useful if grouping by days is enabled).
- Location: unit location at the moment of activation.
- Mileage: the distance travelled while the sensor was on.
- Mileage (adjusted): mileage subject to the coefficient set in unit properties (*Advanced tab*).
- Avg speed: average speed of movement when the sensor was on
- Max speed: maximum speed detected in the interval.
- Activations count: the number of activations.
- Driver: driver's name or code if available.
- Notes: an empty column for your custom comments.

Sensor	Activated	Deactivated	Duration	Mileage	Avg speed	Max speed
voltage	2010-01-01 13:57:52	2010-02-01 23:58:59	31 days 10:01:07	7753 km	10 km/h	118 km/h
battery operation	2010-01-01 13:57:52	2010-01-11 05:35:28	9 days 15:37:36	1994 km	9 km/h	116 km/h
temp1	2010-01-01 13:57:52	2010-01-03 11:07:19	1 days 21:09:27	10.05 km	0 km/h	44 km/h
temp2	2010-01-03 11:07:19	2010-01-03 11:09:19	0:02:00	0.00 km	0 km/h	0 km/h
temp1	2010-01-03 11:09:19	2010-01-16 12:39:49	13 days 1:30:30	3854 km	12 km/h	116 km/h
power backup	2010-01-11 05:35:28	2010-01-11 05:37:28	0:02:00	0.01 km	0 km/h	0 km/h
battery operation	2010-01-11 05:37:28	2010-01-13 13:38:23	2 days 8:00:55	705 km	13 km/h	112 km/h
power backup	2010-01-13 13:38:23	2010-01-13 13:50:23	0:12:00	0.02 km	0 km/h	0 km/h
battery operation	2010-01-13 13:50:23	2010-01-22 06:26:41	8 days 16:36:18	2266 km	11 km/h	116 km/h

[Intervals filtration](#) can be applied to this table: by duration, mileage, engine hours, speed range, stops, parkings, driver, fuel fillings, fuel thefts, and geofences/units.

## Engine Hours

Engine hours report shows working actively of a unit, its productivity and utilization as well as fuel consumption and some more things. The activity and efficiency of work of attached implements can be also analyzed.

To generate this report the unit must have the following **sensors**: engine ignition sensor, and advisably engine efficiency sensor and any fuel sensors.

The method of calculating engine hours is set in **Unit Properties => General**. In **Unit Properties => Advanced** you can also set two more properties: *Daily engine hours rate* (to calculate utilization and productivity) and *Maximum interval between messages* (to cut off false intervals of engine hours operation).

Additionally, you can specify engine hours sensor to be used in this report. For this, enter its name mask in a special filter in the reports template. It allows to create a separated table for each engine if there are several.

In the table you can see:

Beginning	Initial location	End	Final location	Engine hours	In movement	Idling	Mileage	Nov. prod.	Utilization
2010-01-26 08:02:12	0.41 km from TBILISI AVE., Baku	2010-01-26 08:02:52	0.41 km from TBILISI AVE., Baku	0:00:40	0:00:40	0:00:00	0.23 km	100.0 %	0.4 %
2010-01-26 08:03:02	0.36 km from TBILISI AVE., Baku	2010-01-26 10:09:27	0.36 km from TBILISI AVE., Baku	2:06:25	1:34:25	0:32:00	24 km	74.7 %	70.2 %
2010-01-26 10:13:27	0.42 km from TBILISI AVE., Baku	2010-01-26 10:15:27	0.42 km from TBILISI AVE., Baku	0:02:00	0:00:00	0:02:00	0.01 km	0.0 %	1.1 %
2010-01-26 10:15:52	0.41 km from TBILISI AVE., Baku	2010-01-26 15:23:17	0.41 km from TBILISI AVE., Baku	5:07:25	3:11:25	1:56:00	130 km	62.3 %	170.8 %
2010-01-26 15:31:17	0.36 km from TBILISI AVE., Baku	2010-01-26 18:24:13	0.36 km from TBILISI AVE., Baku	2:52:56	1:46:10	1:06:46	83 km	61.4 %	96.1 %
2010-01-27 07:56:37	0.42 km from TBILISI AVE., Baku	2010-01-27 09:15:32	0.42 km from TBILISI AVE., Baku	1:18:55	0:10:55	1:08:00	2.58 km	13.8 %	43.8 %
2010-01-27 09:17:32	-----	2010-01-27 10:25:52	0.42 km from TBILISI AVE., Baku	1:08:20	0:44:20	0:24:00	28 km	64.9 %	38.0 %
2010-01-27 10:42:37	0.41 km from TBILISI AVE., Baku	2010-01-27 10:52:27	0.37 km from TBILISI AVE., Baku	0:09:50	0:03:50	0:06:00	0.15 km	39.0 %	5.5 %
2010-01-27 11:20:27	0.36 km from TBILISI AVE., Baku	2010-01-27 11:29:57	0.42 km from TBILISI AVE., Baku	0:09:30	0:03:30	0:06:00	0.14 km	36.8 %	5.3 %
2010-01-27 11:31:57	0.42 km from TBILISI AVE., Baku	2010-01-27 13:09:47	-----	1:37:50	1:03:50	0:34:00	38 km	65.2 %	54.4 %

- Beginning: time when ignition was on.
- Initial location: location at the moment when the ignition was on.
- End: time when ignition was off.
- Final location: location at the moment when the ignition was off.
- Off-time: period of time passed from the end of the previous interval to the beginning of the current one.
- Engine hours: time interval of engine or attached implements operation.
- Total time: time from the beginning of the first engine hours interval to the end of last interval (useful if grouping by days is enabled).
- In movement: time when the unit had been moving within this interval.
- Idling: time when the unit was standing with the engine on.
- Mileage: distance traveled with engine on.
- Mileage (adjusted): mileage subject to the coefficient set in unit properties (*Advanced* tab).
- Counter: counter sensor value.
- Initial counter: counter value at the beginning.
- Finale counter: counter value at the end.
- Status: unit status registered during engine hours operation (if there are several, the first one is displayed).
- Driver: driver's name if such was identified.
- Movement productivity: percentage ratio of engine hours in movement to engine hours duration.
- Engine efficiency duration: the duration of attached implements operation (if having engine efficiency sensor).
- Engine efficiency idling: engine operation time after deduction of efficiency time (total engine hours subtract engine efficiency duration).
- Utilization: percentage ratio of engine hours duration to engine hours rate (engine hours divided by daily engine hours rate indicated in unit properties).
- Useful utilization: percentage ratio of engine efficiency duration to engine hours rate.
- Productivity: percentage ratio of engine efficiency duration to engine hours duration
- Consumed by ImpFCS/AbsFCS/InsFCS/FLS/math/rates: fuel volume used in engine hours. It can be detected by a fuel sensor (like impulse/absolute/instant fuel consumption sensor, fuel level sensor) or calculated by math or rates. [Details about fuel in reports...](#)
- Avg consumption by ...: average consumption in engine hours.

- Consumed by ... in trips: fuel volume used in engine hours while moving.
- Consumed in idle run by ...: fuel volume used in engine hours during idle running.
- Avg consumption in idle run by ...: average fuel consumption in idling.
- Initial fuel level: fuel level at the beginning of the interval.
- Final fuel level: fuel level at the end of the interval.
- Max fuel level: maximum fuel level.
- Min fuel level: minimum fuel level.
- Notes: an empty column for your custom comments.

**Intervals filtration** can be applied to this table: by duration, mileage, engine hours, speed range, stops, parkings, sensors, driver, fuel fillings, fuel thefts, and geofences/units.

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## Events

All events registered by the system can be shown in the report on events. Events are:

1. Triggered [notifications](#) which method of delivery is *Register event for unit*;
2. Fuel fillings, maintenance work and other things registered by the user in [events registrar](#);
3. GPRS traffic counter reset (if it was chosen to save the reset as event);
4. When unit performs a [route](#) (if it was chosen to save events on route).

To make a report dedicated just to events of a certain kind, in report template enter a mask to filter events text/description (like *\*speed\**, *\*traffic\**, *\*filling\**, etc.). Only those messages which text corresponds to the given mask will be added to the table.

The following columns can be included to this table:

- Event time: time when the event happened.
- Time received: time when the server received this data.
- Event text: notification text or event description.
- Location: unit location at that moment.
- Count: the count of events.
- Notes: an empty column for your custom comments.

Event time	Time received	Event text	Location
2010-02-27 13:22:09	2010-02-27 16:22:09	Gurtam@CeBIT: GPRS connection loss detected from 2010-02-27.	.....
2010-03-23 13:37:24	2010-03-23 13:39:18	Bavarian Tractor: убыл из аэропорта Minsk-2 Intl.	0.18 km from Уша
2010-03-24 09:09:54	2010-03-24 12:09:55	Bavarian Tractor: GPRS connection loss detected from 2010-03-24.	A3, Vilnius, LT

In addition, you can use special [markers](#) for this report: yellow flag means event, red flag means violation. In the tooltip you can find the detailed information.

See also [Violations](#).

## Executed Commands

This kind of report gives a list of commands sent to a unit and successfully executed. Possible columns are:

- Sending time: time when the command was sent to the unit.
- User: login name of the user who performed the command (hidden if you do not have access rights to some user).
- Command: command type or description.
- Parameter: additional parameter in the command (for messages it is text).
- Execution time: time when the command was executed.
- Channel: channel type used to transmit the command (phone number, TCP, UDP, GSM).
- Count: the number of sent commands.
- Notes: an empty column for your custom comments.

Nº	Sending time	User	Command	Parameters	Execution time	Channel	Count
1	2010-04-27 13:57:54	user	Locate device	-----	2010-04-27 13:57:55	+3750000000 (gsm)	1
2	2010-04-27 13:58:22	user	Set online report period	30	2010-04-27 13:58:23	+3750000000 (gsm)	1
3	2010-04-27 13:58:45	user	Custom message	art_rock	2010-04-27 13:58:46	+3750000000 (gsm)	1
4	2010-04-27 13:58:54	user	Locate device	-----	2010-04-27 13:58:55	+3750000000 (gsm)	1
5	2010-04-27 13:59:12	user	Message to driver	Go back!	2010-04-27 13:59:13	+3750000000 (gsm)	1
6	2010-04-27 13:59:54	user	Locate device	-----	2010-04-27 13:59:55	+3750000000 (gsm)	1
7	2010-04-27 14:00:54	user	Locate device	-----	2010-04-27 14:00:55	+3750000000 (gsm)	1
8	2010-04-27 14:01:54	user	Locate device	-----	2010-04-27 14:01:55	+3750000000 (gsm)	1
9	2010-04-27 14:02:54	user	Locate device	-----	2010-04-27 14:02:55	+3750000000 (gsm)	1
10	2010-04-27 14:03:43	monstr	Block engine	-----	2010-04-27 14:03:45	+3750000000 (gsm)	1
11	2010-04-27 14:03:54	user	Locate device	-----	2010-04-27 14:03:55	+3750000000 (gsm)	1
12	2010-04-27 14:04:02	monstr	Unblock engine	-----	2010-04-27 14:04:03	+3750000000 (gsm)	1

There are two ways to send a command to a unit:

- the [Send Command](#) button in the Monitoring panel;
- by [SMS](#).

This is a list of successfully executed commands. To see *all* commands sent to the unit regardless their execution, go to the [Messages Mode](#).

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## Fuel Fillings

These reports shows where and when a vehicle was filled up. The parameters for this report to be generated are set in [Unit Properties => Fuel Consumption](#).

- Time: date and time of filling.
- Location: unit location at that moment.
- Initial fuel level: fuel level before the filling.
- Filled: the volume of filled fuel (sensor name may be indicated in brackets).
- Registered: the volume of registered fuel.
- Difference: difference between detected and registered filling volume.
- Sensor: sensor which detected the filling.
- Driver: driver's name if one was identified.
- Count: the number of fillings.
- Notes: an empty column for your custom comments.

Beginning	Initial location	Duration	Initial fuel level	Filled	Sensor name
2010-02-20 12:28:06	-----	0:25:48	1788 lt	95 lt	FLS
2010-02-20 15:21:31	T 16 07	0:46:55	2050 lt	165 lt	FLS
2010-02-21 13:35:25	-----	5:24:05	3433 lt	94 lt	FLS
2010-02-22 10:57:12	Burdur-Antalya yolu, Antalya, TR	0:39:02	3087 lt	27 lt	FLS
2010-02-25 17:17:34	-----	6:57:12	2140 lt	30 lt	FLS
2010-02-26 06:33:57	29, Varna, BG	0:32:41	1808 lt	10 lt	FLS
2010-02-26 13:20:53	Drumul Viilor, Galați, RO	0:04:22	1850 lt	9,00 lt	FLS
2010-02-26 13:39:54	DN2B, Galați, RO	0:03:01	1899 lt	8 lt	FLS
2010-02-26 15:01:18	Dn2B/E584, Galați, RO	4:09:06	1967 lt	131 lt	FLS

[Intervals filtration](#) by geofences/units, driver and filling volume can be additionally applied to this table.

You can use special [markers](#) for this report to mark places of fillings on the map.

### ⚠ Attention!

If no fillings were detected, the table is not generated. And registered fillings are ignores then, too.

See also [Fuel Thefts](#).

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## Fuel Thefts

This report is aimed to show all thefts - when, where and how much fuel was stolen. The parameters for this report are set in [Unit Properties => Fuel Consumption](#).

In the table you can have:

- Time: date and time when the theft was detected.
- Location: unit location at that moment.
- Initial fuel level: fuel level before the theft.
- Stolen: stolen fuel volume.
- Sensor name: sensor which detected fuel theft.
- Driver: driver's name or code if any was identified.
- Count: the number of thefts.
- Notes: an empty column for your custom comments.

Beginning	Initial location	End	Duration	Stolen	Initial fuel level	Final fuel level
2010-01-11 13:44:20	Dachi, 34TC, UA	2010-01-11 13:44:21	0:00:01	8.33 lt	72 lt	64 lt
2010-01-11 13:44:32	Dachi, 34TC, UA	2010-01-11 13:44:34	0:00:02	8.33 lt	72 lt	64 lt
2010-01-11 13:46:19	Dachi, 34TC, UA	2010-01-11 13:46:20	0:00:01	17.22 lt	37.94 lt	20.72 lt
2010-01-11 13:48:56	Dachi, 34TC, UA	2010-01-11 13:48:57	0:00:01	5.67 lt	28.63 lt	22.96 lt
2010-01-11 13:48:58	Dachi, 34TC, UA	2010-01-11 13:49:00	0:00:02	5.67 lt	28.63 lt	22.96 lt
2010-01-11 13:51:22	Dachi, 34TC, UA	2010-01-11 13:51:23	0:00:01	5.67 lt	28.63 lt	22.96 lt

[Intervals filtration](#) by geofences/units, driver and theft volume can be additionally applied to this table.

Special [markers](#) can be shown on the map in the places of thefts.

See also [Fuel Fillings](#).

## Geofences

This report shows when and how often a unit visited different geofences. At the right part of the template dialog the list of all geofences is displayed. You can indicate one or more geofences to put them under control of this report. If no geofences are selected there, the table cannot be generated.

The list of geofences includes only those geofences which belong to the same account with the report template. Geofences on the list are sorted by name. If the list is large, it is convenient to use name mask to quickly find necessary geofences.

### Note!

To generate this report for a unit, this unit must have the [trip detector](#) configured correctly because the search of entries and exits to/from a geofence are made in movement intervals (in trips).

The following columns can be selected for this table:

- Geofence: geofence name.
- Type: polygon, line, circle, unit (if units and not geofences are selected in the report template).
- Area: total area of the geofence.
- Perimeter: perimeter of the geofence. Perimeter for a line is its length (line thickness is not taken into account).
- Time in: the time when the unit entered the geofence.
- Time out: time when the unit left the geofence.
- Duration in: duration of the visit.
- Total time: time from the first visit beginning to the last visit end (useful if grouping by days is enabled).
- Parkings duration: time spent in parkings.
- Off-time: time between the previous visit and the current one.
- Mileage: mileage in this visit.
- Mileage (adjusted): mileage subject to the coefficient set in unit properties (*Advanced* tab).
- Off-mileage: mileage outside the geofence (that is before the visit).
- Off-mileage (adjusted): mileage outside the geofence subject to the coefficient.
- Avg speed: average speed the unit was moving in the geofence.
- Max speed: maximum speed detected in that visit.
- Driver: driver's name or code if available.
- Visits: the number of visits.
- Notes: an empty column for your custom comments.

Geofence	Type	Area	Perimeter	Time in	Duration in	Mileage	Max speed
McDonalds	Line	0.61 km <sup>2</sup>	16.00 km	2010-03-12 10:09:21	0:28:00	12341 km	88 km/h
Storehouses	Polygon	19.62 km <sup>2</sup>	15.87 km	2010-03-12 10:09:21	0:10:00	5483 km	50 km/h
Store №457	Circle	0.03 km <sup>2</sup>	628.32 m	2010-03-12 10:09:21	0:01:00	0.66 km	43 km/h
Storehouses	Polygon	19.62 km <sup>2</sup>	15.87 km	2010-03-12 10:21:21	0:12:00	6856 km	50 km/h
Store №457	Circle	0.03 km <sup>2</sup>	628.32 m	2010-03-12 10:24:21	0:00:10	0.66 km	43 km/h
Storehouses	Polygon	19.62 km <sup>2</sup>	15.87 km	2010-03-12 10:35:21	0:32:00	15.28 km	132 km/h
McDonalds	Line	0.61 km <sup>2</sup>	16.00 km	2010-03-12 10:49:21	0:22:00	6.87 km	99 km/h
Store №47	Circle	0.03 km <sup>2</sup>	628.32 m	2010-03-12 10:49:21	0:02:00	0.29 km	52 km/h
Store №457	Circle	0.03 km <sup>2</sup>	628.32 m	2010-03-12 10:58:21	0:02:00	0.66 km	56 km/h
Storehouses	Polygon	19.62 km <sup>2</sup>	15.87 km	2010-03-12 11:09:21	0:37:00	15.28 km	80 km/h
McDonalds	Line	0.61 km <sup>2</sup>	16.00 km	2010-03-12 11:23:21	0:27:00	6.87 km	88 km/h
Store №47	Circle	0.03 km <sup>2</sup>	628.32 m	2010-03-12 11:23:21	0:02:00	0.29 km	52 km/h

Instead of geofences, you can choose units in the reports template. Additionally, you must indicate radius for these units (in meters). In this case, those units will be considered as 'moving geofences', and the activity of the unit selected to generate the report is analyzed in regard to these moving geofences.

[Intervals filtration](#) can be applied to this table: by duration, mileage, engine hours, speed range, stops, parkings, sensors, drivers, fuel fillings and thefts.

Geofences can be displayed on the map. For this choose [Render geofences](#) option in the report template.



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## GPRS Traffic

**Attention!**

This report can be not included to your package.

To apply this report to a unit, this unit must have registered events of [GPRS traffic counter](#) reset or traffic storage should be adjusted in [jobs](#).

№	Time	Current value	Absolute value	Reset
1	2010-11-23 12:07:08	83.22 MB	0 B	No
2	2010-11-23 12:08:46	83.22 MB	0 B	No
3	2010-11-23 12:09:14	83.22 MB	83.22 MB	Yes
4	2010-11-23 12:10:14	0 B	83.22 MB	Yes
5	2010-11-23 12:12:30	8.55 MB	83.22 MB	No
6	2010-11-23 15:29:12	8.55 MB	83.22 MB	No
7	2010-11-23 15:30:41	8.55 MB	91.76 MB	Yes
8	2010-11-23 15:32:18	0 B	91.76 MB	Yes
9	2010-11-23 15:33:02	0 B	91.76 MB	Yes
10	2010-11-23 15:34:00	72.41 MB	91.76 MB	No
11	2010-11-23 17:55:16	72.41 MB	91.76 MB	No
-----	<b>2010-11-23 17:55:16</b>	<b>72.41 MB</b>	<b>91.76 MB</b>	-----

- Time: time when the counter value was registered.
- Current value: value at the moment of registration.
- Absolute value: GPRS traffic total size by the moment of registration.
- Reset: Yes - reset was fulfilled, No - no reset was fulfilled.
- Notes: empty column for your custom notes.

## Maintenance

The table n maintenance contains the list of service works done during the indicated period and is registered by users who have at least *edit* access to this unit. The table can be composed of the following columns:

- Service time: date and time that were indicated during the registration.
- Registration time: date and time when the event was registered.
- Kind of work: the text from the field 'Kind of work'.
- Comment: the text from the field 'Description'.
- Location: location indicated while registering (together with comments entered manually).
- Duration: duration of work.
- Cost: service cost.
- Mileage: mileage counter value at the moment of registration.
- Engine hours: engine hours counter value at the moment of registration.
- Count: the number of services.
- Notes: an empty column for your custom comments.

Service time	Kind of work	Location	Duration	Cost	Mileage	Engine hours
2010-05-01 13:59:00	Yearly Checkup	Coerdestiege, Münster, DE	0:24:00	500.00	123 km	3 days 0:00:00
2010-05-03 14:01:00	Oil Change	Kleiweg, Gelsenkirchen-Alt, DE	0:30:00	17.00	234 km	37 days 7:00:00
2010-05-08 14:02:00	Washing	Brieger Straße, Langenhagen, CTO	1:00:00	12.00	465 km	43 days 0:00:00

⚠ **Attention:** if the rows in the table are white and not green, it means that during the registration the place was not shown on the map.

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## Non-visited Geofences

This report gives the list of geofences which were not visited during the indicated period of time. In report template choose geofences to be checked when generating the table. The list of geofences includes only those geofences which belong to the same account with the report template. Geofences on the list are sorted by name. If the list is large, it is convenient to use name mask to quickly find necessary geofences.

Let us assume, we have 10 stores (geofences) to be visited every day. We would like to find out whether there are geofences which were ignored within the work week from 11th to 15th of May. To do this, we enable grouping by days and detalization, select necessary geofences and columns for the table.

- Geofence: geofence name.
- Type: geofence type (line, polygon, circle).
- Area: total geofence area.
- Perimeter: geofence perimeter.
- Count: the number of geofences which were skipped.
- Notes: an empty column for your custom comments.

From this report we see that 11th of May 'Store 2' and 'Store 7' were ignored, 14th of May - 'Store 3', and 15th of May - 'Store 2' again. 12th and 13th are missed in the list, and it means that all predefined geofences were visited on those days. The cells with geofences' names are green, and if you click one the map will be moved to the first point of this geofence.

Date	Geofence	Type	Area	Perimeter	Count
2010-05-11	-----	-----	0.00 m <sup>2</sup>	-----	2
	Store 2	Circle	0.13 km <sup>2</sup>	1.26 km	1
	Store 7	Polygon	0.08 km <sup>2</sup>	1.11 km	1
2010-05-14	-----	-----	0.00 m <sup>2</sup>	-----	1
	Store 3	Circle	0.03 km <sup>2</sup>	628.32 m	1
2010-05-15	-----	-----	0.00 m <sup>2</sup>	-----	1
	Store 2	Circle	0.13 km <sup>2</sup>	1.26 km	1

When the table is applied to a [unit group](#), you can find one more parameter in the report template - Consider group as a whole. When the flag is off, a group report is structured in the same way as individual report, and the information is given for each separate unit from the group. When the flag 'Consider group as a whole' is on, report structure is different - you get the list of geofences which were visited by none of the units in the group.

## Parkings

Parkings are estimated according to parameters set in [Trip Detection](#) when configuring a unit. To get information as accurate as possible, it is advised that you configure each parameter individually for every piece of equipment.

A parking is an interval of time when the following conditions are satisfied:

1. Insignificant speed. The speed detected must fall in the range from 0 to the *Minimum moving speed*. When this speed is achieved, unit's behavior is regarded as movement (=trip), if by time and distance it corresponds to trip definition (*Minimum trip time* and *Minimum trip distance* parameters). Then the parking finishes. But if by time or distance the movement does not fall into trip definition, the parking is prolonged.
2. Sufficient time interval. Insignificant speed must continue not less than *Minimum parking time*. If this time is not achieved, unit's behaviour are not regarded as parking. It may be regarded as a stop, but only in case there was a zero speed registered.
3. Insignificant location change. As it has been already noted above, the parking is also an insignificant movement in space, that is a travel which in not longer than *Minimum trip distance* if by time it not shorter than *Minimum parking time*.

The following information is presented in this kind of report:

- Beginning: the time when the parking started.
- End: the time when the parking ended.
- Duration: time interval of the parking.
- Total time: time from the first parking beginning to the last parking end (useful if grouping by days is enabled).
- Off-time: time interval from the previous parking and to the current parking beginning.
- Location: the address where the unit was stationary. If there was an insignificant movement detected, the initial address is used.
- Driver: driver's name or code if available.
- Counter: counter sensor values.
- Status: unit status registered during the current parking interval (if there are several, the first one is displayed).
- Count: the number of parkings.
- Notes: an empty column for your custom comments.

Nº	Beginning	End	Duration	Location	Count
1	2010-02-28 14:00:42	2010-03-01 00:26:22	10:25:40	Walsroder Straße, Langenhagen, DE	1
2	2010-03-01 00:55:44	2010-03-01 01:14:47	0:19:03	Donaustraße, Hannover, DE	1
3	2010-03-01 01:21:47	2010-03-01 01:32:51	0:11:04	Am Eisenwerk, Laatzen, DE	1
4	2010-03-01 01:52:29	2010-03-01 04:07:02	2:14:33	7	1
5	2010-03-01 04:23:21	2010-03-01 05:31:37	1:08:16	IKEA	1
6	2010-03-01 05:46:51	2010-03-01 07:15:11	1:28:20	Expo Allee, Laatzen, DE	1
7	2010-03-01 07:52:19	2010-03-01 22:08:22	14:16:03	Walsroder Straße, Langenhagen, DE	1
8	2010-03-01 22:44:49	2010-03-01 23:59:06	1:14:17	P33	1

[Intervals filtration](#) (by parking duration, sensor state, driver, fuel fillings/thefts, and geofences/units) can be applied to this table.

The parkings can be displayed on the map. To make use of this feature, select [Parking markers](#) in the report template.

### ⚠ Attention!

You should distinguish parkings from [stops](#).

## Rides

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- [Report on Rides](#)

A ride is a travel from one point (called ride beginning) to another (called ride ending). A ride can be done many times in a specified period of time. Rides are useful, for example, when controlling cargo transportation from one point to another in several attempts.

For the report to be generated, two factors are significant:

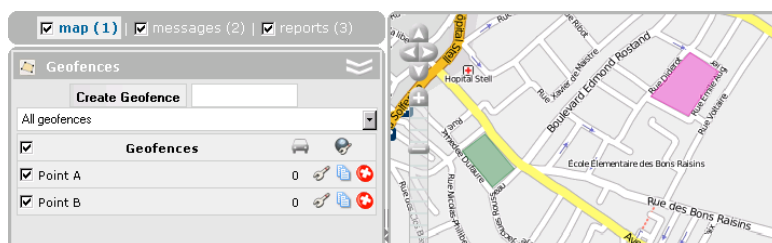
- 1) when a unit leaves the ride beginning zone;
- 2) when a unit enters the ride ending zone.

If both of these factors occur, then a ride is completed and can be included in the report.

## Preparing a Ride

To get a report on rides performed, you must create geofences which would be ride beginning and ride end. The beginning and the end can be the same geofence if the ride starts and ends in one point, for example, if needed to travel ride around the shops and come back to the base. These geofences should be polygons.

Let us assume, that it is needed to transport goods from one place to another, and more than one ride is needed to do this. To control this process, we create Point A geofence and make it the beginning of the ride. Then create Point B geofence and make it the end of the ride. How to create geofences, see [Geofences](#) topic.



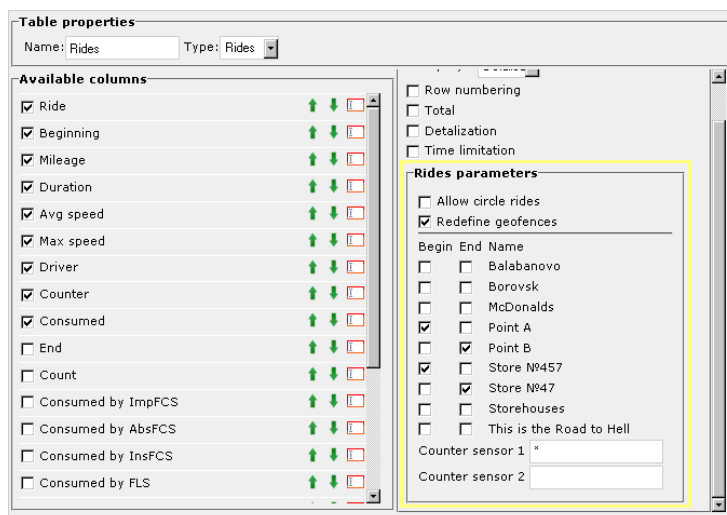
## Rides Parameters

When you create a template for rides, pay attention on additional parameters to be set.

Circle ride is a ride which starts and finishes in the same geofence, that is a unit must leave this geofence and return after a while. Such a geofence must have both flags - ride beginning and ride end.

The option Show rides started/finished with a stop only can be used as an additional filter. If activated, it means that ride beginning and end can be only a visit to a corresponding geofence with a stop in it. If a unit visited a geofence with ride beginning flag but did not make a stop there, this ride will be not considered by the system. In a similar way, if a unit visited a geofence with ride end flag but did not make a stop there, the ride will continue (if ride beginning was detected before).

In the Redefine ride beginning/end section you choose which geofences and units will be analyzed in this report. The list of geofences includes only those geofences which belong to the same account that the report template does. When you adjust the table for the first time, some of geofences can be already ticked. It happens if these geofences have corresponding flags in their properties. You can remove flags or set more flags if needed. Besides, you can choose units as so-called 'moving geofences'. For them, set radius to outline unit's area. Geofences and units on the lists are sorted by name. If the list is large, it is convenient to use name mask to quickly find necessary items. You can even set ride beginning at unit area and ride end at an ordinary geofence.



Besides, [intervals filtration](#) can be applied to this table: by duration, mileage, engine hours, speed range, stops, parkings, sensor state, driver, fuel thefts, fillings, and geofences/units.

## Report on Rides

The report on rides gives the list of all performed rides. The table can contain the following information:

- Ride: ride mane consists of starting geofence name and final geofence name hyphenated compound.
- Beginning: date and time when the ride began.
- End: date and time when the ride ended.
- Mileage: distance travelled in this ride.
- Mileage (adjusted): mileage subject to the coefficient set in unit properties (*Advanced* tab).
- Ride duration: how much time it took to perform the ride.
- Total time: time from the first ride beginning to the last ride end (useful if grouping by days is enabled).
- Parkings duration: time spent in parkings.
- Avg speed: average speed calculated for this ride.
- Max speed: maximum speed registered during this ride.
- Driver: driver's name if he was identified.
- Counter: counter sensor value (masks for these sensors are set at the right).
- Count: the number of rides.
- Status: unit status registered during the current ride (if there are several, the first one is displayed).
- Consumed by ImpFCS/AbsFCS/InsFCS/FLS/math/rates: the volume of consumed fuel detected by a fuel sensor (like impulse/absolute/instant fuel consumption sensor, fuel level sensor) or calculated by math or rates.
- Avg consumption by ImpFCS/AbsFCS/InsFCS/FLS/math/rates: average fuel consumption in the ride detected by one of the methods mentioned above.
- Initial fuel level: fuel level at the beginning of the ride.
- Final fuel level: fuel level at the end of the ride.
- Max fuel level: maximum fuel level.
- Min fuel level: minimum fuel level.
- Notes: an empty column for your custom comments.

Ride	Beginning	Mileage	Duration	Avg speed	Max speed	Driver	Consumed
Store №457 - Store №47	2010-02-19 10:15:08	13.01 km	0:26:00	30 km/h	132 km/h	Alex Sigmer	1.10 lt
Store №457 - Store №47	2010-02-19 11:27:40	13.01 km	0:26:00	30 km/h	132 km/h	Alex Sigmer	1.10 lt
Store №457 - Store №47	2010-02-19 12:03:40	13.01 km	0:24:00	33 km/h	99 km/h	Alex Sigmer	1.16 lt
Store №457 - Store №47	2010-02-19 12:43:40	13.01 km	0:26:00	30 km/h	132 km/h	Alex Sigmer	1.10 lt
Store №457 - Store №47	2010-02-19 13:19:40	13.01 km	0:24:00	33 km/h	99 km/h	Alex Sigmer	1.16 lt
Store №457 - Store №47	2010-02-19 14:18:40	13.01 km	0:26:00	30 km/h	132 km/h	John Smith	0.99 lt
Store №457 - Store №47	2010-02-19 14:54:40	13.01 km	0:24:00	33 km/h	99 km/h	John Smith	1.16 lt
Store №457 - Store №47	2010-02-19 15:34:40	13.01 km	0:26:00	30 km/h	132 km/h	John Smith	1.10 lt
Store №457 - Store №47	2010-02-19 16:10:40	13.01 km	0:24:00	33 km/h	99 km/h	John Smith	1.16 lt
Store №457 - Store №47	2010-02-19 16:50:40	13.01 km	0:26:00	30 km/h	132 km/h	John Smith	1.10 lt

See also [Unfinished Rides](#).

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Reports Mode](#) » [Tables](#) » [Route Points](#)

## Route Points

Route points refer to [control points](#) indicated when creating a geofence for a route. If a route was configured in such a way that route events were stored to unit history, later on this data can be used to generate a report on control points. The table can include:

- Point name: the name given to this control point while creating it.
- Arrival time: time when the unit entered this point.
- Initial location: location at that time.
- Departure time: time when the unit left this point.
- Final location: location at that time.
- Result: *Visited* (both entrance and exit were detected), *Entrance only*, *Exit only*, *Skipped*.
- Route: the name of the route to which this control point belongs.
- Geofence: the name of the geofence used to create this route.
- Arrival time deviation: positive value if delayed, negative value if in hurry in regard to arrival time set in point properties.
- Departure time deviation: the same for departure time.
- Presence duration: time spent in the control point.
- Presence mileage: mileage in the control point.
- Section duration: time spent to travel from the previous control point to this one.
- Section mileage: mileage from the previous control point.
- Count: points count.
- Driver: driver's name or code if available.
- Notes: an empty column for your custom comments.

See [Route Statuses](#) to know how different events about control point are detected.

Masks for geofence and/or route name can be applied additionally to this report. They are used in the same way as in [Routes](#) report.

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## Routes

If any [routes](#) were assigned to unit and events about routes were stored in unit history, a report based on these event can be generated:

- Beginning: route beginning time (activation time or entrance in the first control point).
- Initial location: unit location at the beginning of the route.
- End: route end time (entrance to the last point).
- Final location: unit location at the end of the route.
- Route name: route name.
- Geofence: the name of the geofence which was used for the route.
- Result: *Finished* (the route was activated successfully, and later on the entrance to the last point was detected) or *Not finished* (the last point was not visited).
- Skipped points: the number of control point skipped (on this bases more detailed report can be generated - see [Route points](#)).
- Duration: time taken to perform the route.
- Mileage: distance traveled while performing the route.
- Avg speed: average speed on the route.
- Max speed: maximum speed on the route.
- Count: the number of routes.
- Driver: driver's name or code if available.
- Notes: an empty column for your custom comments.

How different route statuses are defined (route beginning, route end, point skipped, point visit, etc.), find [here](#).

In addition in report template you can indicate masks for geofences and routes. It means, you can get in a report not all routes performed by a unit within the indicated period, but only the routes which use a certain geofence or which correspond to the given mask of route name. Both filters can be used simultaneously or separately from each other.

Besides, these filters affect the data layout in the table if the grouping by days/weeks/month is used. For instance, if the data is grouped by days and the filter by geofence is on, the table is built on the basis of geofences:

If the data is grouped by days and the filter by routes is on, the table is built on the basis of routes:

If both filters are activated, the sorting is made on the basis of both.

[Intervals filtration](#) can be applied to this table: by duration, mileage, engine hours, speed range, stops, parkings, sensors, driver, fuel thefts, fillings, and geofences/units.



## Sensor Tracing

This table shows sensor values in certain point in time. The table can be exported in MS Excel where you can build any custom charts based on the data provided.

The report can include *all messages* or take a value in a time interval (like take a value every 10 minutes). One or the other alternative is chosen when configuring report template. If tracing interval is indicated, the system will search and display sensor value from the message which is the closest to the necessary point in time.

**Tracing interval, min**

☞ 60

All messages

Skip out of range values

Available columns:

- Sensor: sensor name.
- Time: the time of the message from which the value was taken.
- Value: the value (numbers only).
- Formatted value: the value with units of measurement.
- Driver: driver's name or code if available.
- Notes: an empty column for custom notes.

Sensor	Time	Value	Formatted value
Voltage sensor	2009-12-24 16:00:46	9.80	9.80 V
Voltage sensor	2009-12-24 17:41:31	9.80	9.80 V
Voltage sensor	2009-12-24 19:21:31	9.80	9.80 V
Voltage sensor	2009-12-24 21:01:31	9.70	9.70 V
Voltage sensor	2009-12-24 22:41:31	9.70	9.70 V
Voltage sensor	2009-12-25 00:21:31	9.80	9.80 V
Voltage sensor	2009-12-25 02:01:56	12.20	12.20 V
Voltage sensor	2009-12-25 03:42:11	12.10	12.10 V
Voltage sensor	2009-12-25 05:23:36	12.00	12.00 V
Voltage sensor	2009-12-25 07:03:36	9.70	9.70 V
Voltage sensor	2009-12-25 08:44:06	9.70	9.70 V
Voltage sensor	2009-12-25 10:25:13	9.70	9.70 V
Voltage sensor	2009-12-25 12:05:13	9.60	9.60 V

### Out of range values

If a value received is out of range (the bounds are indicated in sensor properties), then the phrase *Out of range* is displayed as formatted value. To exclude such rows, flag the option *Skip out of range values* in the report template.

In addition, you can choose a driver and geofences/units to be controlled (see [intervals filtration](#) for details).

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Reports Mode](#) » [Tables](#) » [SMS Messages](#)

## SMS Messages

This report gives possibility to view all SMS messages receives from a unit in a specified period. Here you see date and time when the message was received and the text of the message.

- Time received: date and time when the data was received by the server.
- SMS text: message text.
- Count: the number of messages.
- Notes: an empty column for your custom comments.

Time received	SMS text
2010-03-26 17:36:02	GPS:1 Sat:7 Lat:53.914577 Long:27.451012 Alt:272 Speed:0 Dir:0 Date: 2010/3/26 Time: 15:35:48
2010-03-26 17:37:14	WARNING: Not supported Param ID detected: 245
2010-03-29 07:22:28	04B8B24213C00000401F7112609901D60263C09B000141F0769415F6
2010-03-29 10:01:20	Param ID:3245 New Text:212.98.191.50
2010-03-29 10:02:43	WARNING: Not supported Param ID or Value detected: 311
2010-03-29 10:04:38	Param ID:3231 New Val:1
2010-03-29 10:04:47	WARNING: Not supported Param ID or Value detected: 11

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## Speeding

This kind of report shows speed limitations violations. The parameters for this report are set in [Unit Properties => Advanced](#) where you set *Speed limit*. The messages (at least two in succession) containing a speed value greater than set in that parameter will become the basis for this report. If these messages are several in succession, they are united in one speeding event.

The following information can be presented in this kind of report:

- Beginning: date and time when the speed limit was exceeded.
- Location: device location at that moment.
- Duration: how long the violation continued.
- Total time: time from the first speeding beginning to the last speeding end (useful if grouping by days is enabled).
- Max speed: maximum speed within this period.
- Mileage: the distance travelled with exceeded speed.
- Mileage (adjusted): mileage subject to the coefficient set in unit properties (*Advanced* tab).
- Avg speed: average speed within the interval.
- Average excess: average speed excess within the interval.
- Driver: driver's name (if a driver was identified).
- Count: the number of speed violations.
- Notes: an empty column for your custom comments.

Beginning	Location	Duration	Max speed	Avg speed	Mileage
2010-03-07 00:52:49	A 2, Braunschweig, DE	0:03:21	185 km/h	184 km/h	10.26 km
2010-03-07 01:01:51	-----	0:01:50	184 km/h	186 km/h	5.69 km
2010-03-07 01:10:41	0.55 km from Auf dem Gutshof, Uhrsleben, DE	0:23:34	185 km/h	184 km/h	72 km
2010-03-07 01:35:34	-----	0:00:47	184 km/h	185 km/h	2.41 km
2010-03-07 01:51:11	Berliner Ring, Berlin, DE	0:00:46	185 km/h	185 km/h	2.37 km
2010-03-07 02:05:36	Berliner Ring, Berlin, DE	0:00:40	184 km/h	185 km/h	2.05 km
2010-03-07 02:09:14	Berliner Ring, Berlin, DE	0:00:46	184 km/h	185 km/h	2.36 km
2010-03-07 02:12:24	A 10, Berlin, DE	0:02:20	185 km/h	184 km/h	7.15 km
2010-03-07 02:28:50	A 12, Berlin, DE	0:00:34	184 km/h	190 km/h	1.79 km
2010-03-07 02:35:13	A 12, Berlin, DE	0:03:16	186 km/h	180 km/h	9.81 km

[Intervals filtration](#) (by speeding duration, mileage, driver, geofences/units) can be applied to this table.

You can use special [markers](#) for this report.

Other means to control speed are described in [Notifications](#).

## Stops

A stop is two or more consecutive messages with a zero speed. Stops can be registered at lights, intersections, in traffic jams, and they can partially coincide with stays.

If there are several messages in succession, they are united in one stop. If total time of such a stop reaches *Minimum parking time*, it is registered as a parking (not a stop).

The following information is presented in this kind of report:

- Beginning: the time when the stop started.
- End: the time when the stop ended.
- Duration: total time of the stop.
- Total time: time from the first stop beginning to the last stop end (useful if grouping by days is enabled).
- Location: the address where the unit stopped.
- Driver: driver's name or code if available.
- Count: the number of stops.
- Counter: counter sensor values.
- Notes: an empty column for your custom comments.

Nº	Beginning	End	Duration	Location	Count
1	2010-03-01 00:28:19	2010-03-01 00:29:19	0:01:00	Walsroder Straße, Langenhagen, DE	1
2	2010-03-01 01:43:02	2010-03-01 01:44:02	0:01:00	1	1
3	2010-03-01 05:44:29	2010-03-01 05:45:30	0:01:01	7	1
4	2010-03-01 07:41:22	2010-03-01 07:42:22	0:01:00	Vahrenwalder Straße, Hannover, DE	1
5	2010-03-01 07:48:37	2010-03-01 07:49:37	0:01:00	Walsroder Straße, Langenhagen, DE	1
6	2010-03-02 09:43:49	2010-03-02 09:44:50	0:01:01	P33	1
7	2010-03-02 09:50:43	2010-03-02 09:51:44	0:01:01	Kronsbergstraße, Laatzen, DE	1
8	2010-03-02 10:18:32	2010-03-02 10:19:33	0:01:01	Loccumer Straße, Hannover, DE	1
9	2010-03-02 22:19:28	2010-03-02 22:20:28	0:01:00	Walsroder Straße, Langenhagen, DE	1

**Intervals filtration** (by stop duration, sensor state, driver, fuel fillings and thefts) can be applied to this table.

### ⚠ Attention!

You should distinguish stops from [parkings](#).

## Trips

In this kind of report all intervals of movement (together with location, time and speed information) are shown. Trips are estimated according to parameters set in [Trip Detection](#). To get information as accurate as possible, it is advised that you configure each parameter individually for every unit.

The following columns can be included in this kind of report:

- Beginning: date and time when the trip began.
- Initial location: the address where the device was at the beginning of the trip.
- End: date and time when the trip ended.
- Final location: the address where the device was at the end of the trip.
- Driver: driver's name (if a driver was identified).
- Duration: time interval of the trip.
- Total time: time from the first trip beginning to the last trip end (useful if grouping by days is enabled).
- Off-time: period of time passed from the end of the previous trip to the beginning of the current one.
- Engine hours: time of engine hours operation during the trip (you can specify engine hours sensor entering name mask for it in the report template).
- Mileage: the distance traveled in the whole trip.
- Mileage (adjusted): mileage subject to the coefficient set in unit properties (*Advanced* tab).
- Urban mileage: the distance traveled in urban area.
- Suburban mileage: the distance traveled in suburban area. It is calculated in regard to speed. The urban/suburban speed line is indicated in [Unit Properties](#) => [Advanced](#) (*Urban speed limit* setting).
- Avg speed: average speed within the trip.
- Max speed: maximum speed registered within this interval.
- Trips count: the number of trips made.
- Counter: counter sensor value.
- Initial counter: counter value at the beginning of the trip.
- Finale counter: counter value at the end of the trip.
- Status: unit status registered during the current trip (if there are several, the first one is displayed).
- Messages count: the number of messages that formed the trip.

Depending on hardware and software configuration information about fuel can be also included:

- Consumed by ImpFCS/AbsFCS/InsFCS/FLS/math/rates: the volume of consumed fuel detected by a fuel sensor (like impulse/absolute/instant fuel consumption sensor, fuel level sensor) or calculated by math or rates.
- Rates deviation by ImpFCS/AbsFCS/InsFCS/FLS: difference between consumed fuel detected by a sensor and consumption rates. If a number in this cell is negative, it means detected consumption does not exceed the indicated rates.
- Avg consumption by ImpFCS/AbsFCS/InsFCS/FLS/math/rates: average fuel consumption in the trip detected by one of the methods mentioned above.
- Avg consumption in idle run by ...: average fuel consumption in the trip during idle run.
- Avg consumption by ... (mileage/1l): average fuel consumption in the trip detected by one of the methods mentioned above.
- Initial fuel level: fuel level at the beginning of the trip.
- Final fuel level: fuel level at the end of the trip.
- Max fuel level: maximum fuel level in the trip.
- Min fuel level: minimum fuel level in the trip.
- Notes: an empty column for your custom comments.

[Details about fuel in reports...](#)

Beginning	Initial location	Final location	Duration	Mileage	Avg speed	Max speed	Cons. by math
2010-03-01 00:26:22	Walsroder Straße, Langenhagen, DE	Donaustraße, Hannover, DE	0:29:22	12.84 km	26 km/h	83 km/h	1.19 lt
2010-03-01 01:14:47	Donaustraße, Hannover, DE	Am Eisenwerk, Laatzen, DE	0:07:00	1.89 km	16 km/h	41 km/h	0.20 lt
2010-03-01 01:32:51	0.12 km from Am Eisenwerk, Laatzen, DE	7	0:19:38	4.59 km	14 km/h	53 km/h	0.47 lt
2010-03-01 04:07:02	7	IKEA	0:16:19	4.66 km	17 km/h	61 km/h	0.46 lt
2010-03-01 05:31:37	IKEA	Expo Allee, Laatzen, DE	0:15:14	4.93 km	19 km/h	92 km/h	0.47 lt
2010-03-01 07:15:11	Platz der Nationen, Laatzen, DE	Walsroder Straße, Langenhagen, DE	0:37:08	16.35 km	26 km/h	122 km/h	1.46 lt
2010-03-01 22:08:22	Walsroder Straße, Langenhagen, DE	P33	0:36:27	17.62 km	29 km/h	122 km/h	1.53 lt
2010-03-02 09:41:13	P33	Hildesheimer Straße, Laatzen, DE	0:15:44	2.72 km	10 km/h	66 km/h	0.32 lt
2010-03-02 10:15:00	Hildesheimer Straße, Laatzen, DE	1 - 2, Laatzen, DE	0:07:55	1.08 km	8 km/h	46 km/h	0.14 lt
2010-03-02 12:40:20	Hildesheimer Straße, Hannover, DE	Walsroder Straße, Langenhagen, DE	0:22:18	13.76 km	37 km/h	65 km/h	1.29 lt
2010-03-02 22:17:22	Walsroder Straße, Langenhagen, DE	P33	0:41:36	18.11 km	26 km/h	71 km/h	1.71 lt

Intervals filtration can be applied to this table: by duration, mileage, engine hours, speed range, stops, sensors, driver, fuel fillings, fuel thefts, and geofences/units.

**Tip:**

The tracks of the trips can be displayed on the map. To make use of this feature, select [Trips routes on map](#) in report template.

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## Unfinished Rides

See the previous topic [Rides](#) to learn how to prepare rides for this report.

Unfinished is a ride when a unit left a beginning-ride geofence and after a while entered a beginning-ride geofence again. This can be the same geofence (if circle rides are not allowed) or another one.

The structure of the report is the same as for usual rides:

- Ride: starting and final geofences.
- Beginning: date and time when the ride began.
- End: date and time when the ride ended.
- Mileage: distance travelled in this ride.
- Mileage (adjusted): mileage subject to the coefficient set in unit properties (*Advanced* tab).
- Ride duration: how much time it took to perform the ride.
- Parkings duration: time spent in parkings.
- Avg speed: average speed calculated for this ride.
- Max speed: maximum speed registered during this ride.
- Driver: driver's name if he was identified.
- Counter: counter sensor value.
- Count: the number of rides.
- Status: unit status registered during the current ride (if there are several, the first one is displayed).
- Consumed by ImpFCS/AbsFCS/InsFCS/FLS/math/rates: the volume of consumed fuel detected by a fuel sensor (like impulse/absolute/instant fuel consumption sensor, fuel level sensor) or calculated by math or rates. [Details about fuel in reports...](#)
- Avg consumption by ImpFCS/AbsFCS/InsFCS/FLS/math/rates: average fuel consumption in the ride detected by one of the methods mentioned above.
- Initial fuel level: fuel level at the beginning of the ride.
- Final fuel level: fuel level at the end of the ride.
- Max fuel level: maximum fuel level.
- Min fuel level: minimum fuel level.
- Notes: an empty column for your custom comments.

Ride	Beginning	End	Mileage	Duration	Avg speed	Max speed	Driver
Store №47 - Storehouses	2010-05-04 11:41:40	2010-05-04 11:58:55	6.21 km	0:17:15	22 km/h	99 km/h	Alex Sigmer
McDonalds - Store №47	2010-05-04 11:59:40	2010-05-04 12:11:40	9.04 km	0:12:00	45 km/h	71 km/h	Alex Sigmer
Store №47 - Storehouses	2010-05-04 12:12:40	2010-05-04 12:27:07	6.19 km	0:14:27	26 km/h	52 km/h	Alex Sigmer
McDonalds - Store №47	2010-05-04 12:28:07	2010-05-04 12:41:07	9.04 km	0:13:00	42 km/h	132 km/h	Alex Sigmer
Store №47 - Storehouses	2010-05-04 12:42:07	2010-05-04 13:01:07	6.21 km	0:19:00	20 km/h	99 km/h	Alex Sigmer
McDonalds - Store №47	2010-05-04 13:02:07	2010-05-04 13:15:07	9.04 km	0:13:00	42 km/h	71 km/h	Alex Sigmer
Store №47 - Storehouses	2010-05-04 13:16:07	2010-05-04 13:43:07	6.21 km	0:27:00	14 km/h	65 km/h	Alex Sigmer
McDonalds - Store №47	2010-05-04 13:44:07	2010-05-04 13:57:07	9.04 km	0:13:00	42 km/h	132 km/h	Alex Sigmer

See [Rides](#) to find out more information about additional parameters for *Unfinished rides*.

## Utilization Cost

The table on utilization costs unites two kinds of expenses: maintenance and fillings. Both of these things have their own detailed tables ([Maintenance](#) and [Fuel Fillings](#)). This table is designed to show running costs. Note that only fillings registered manually in a special [Events Registrar](#) get here (*no fillings detected by a fuel sensor!*)

The table can be composed of the following columns:

- Time: date and time that were indicated during the registration.
- Registration time: date and time when the event was registered.
- Expense item: maintenance or filling.
- Description: custom description entered when registering.
- Location: location indicated while registering (together with comments entered manually).
- Cost: service or filling cost.
- Count: the number of services and/or fillings.
- Notes: an empty column for your custom comments.

Time	Registration time	Kind of service	Description	Location	Cost
2010-05-01 13:59:00	2010-05-11 14:01:11	Maintenance	Yearly Checkup	Coerdestiege, Münster, DE	500.00
2010-05-02 14:36:00	2010-05-11 14:37:51	Filling	80 lt for 44 rub was made.	B 327, Koblenz, DE	44.00
2010-05-03 14:01:00	2010-05-11 14:01:58	Maintenance	Oil Change	Kleiweg, Gelsenkirchen-Alt, DE	17.00
2010-05-04 14:38:00	2010-05-11 14:39:06	Filling	Fuel filling 120 lt 77 rub.	K 68, Waldweiler, DE	77.00
2010-05-08 14:02:00	2010-05-11 14:03:15	Maintenance	Washing	Brieger Straße, Langenhagen	12.00

ⓘ **Attention:** if the rows in the table are white and not green, it means that during the registration the place was not shown on the map.



## Violations

Violations are particular case of [events](#). The report on violations gives the list of violations detected by the system and registered manually and stored in unit events history.

Violations are:

1. Triggered [notifications](#) which method of delivery is *Register as violation*;
2. [Custom event](#) with the flag *Violation* registered manually.

To make a report dedicated just to violations of a certain kind, in report template enter a mask to filter violations text/description (like *\*speed\**, *\*accident\**, *\*temperature\**, etc.). Only those messages which text corresponds to the given mask will be added to the table.

The following information can be presented in this kind of report:

- Violation time: time when the violation happened.
- Time received: time when the server received this data.
- Violation text: notification text or event description.
- Location: unit location at that moment.
- Count: the number of violations.
- Notes: an empty column for your custom comments.

Violation time	Time received	Violation text	Location
2010-04-26 09:59:00	2010-04-26 10:01:13	Service term is 1 mile expired.	Lonystraße, Gießen, DE
2010-04-26 11:07:00	2010-04-26 11:15:27	Speeding detected: unit moved 100 mph near 'Lelystad'.	-----
2010-04-26 11:16:00	2010-04-26 11:16:38	Unit left permitted zone at B 466, Gnotzheim, DE.	0.60 km from B 466, Gnotzheim
2010-04-23 07:51:38	2010-04-23 07:51:41	SMS Sim1 left the zones at 2010-04-23 07:51:38.	Lonystraße, Gießen, DE
2010-04-23 07:51:38	2010-04-23 07:51:41	SMS Sim1 violated speed limitations 88 km/h.	-----
2010-04-23 07:51:55	2010-04-23 07:51:58	SMS Sim1 violated speed limitations 83 km/h.	0.60 km from B 466, Gnotzheim

In addition, you can use special [markers](#) for this report: yellow flag means event, red flag means violation. In a tooltip for a marker you can see time and description of the event/violation.

## Visited Streets

This report shows which streets were visited and when. Highways, roads, and other places with addresses are also detected as streets. The following information is presented in this kind of report:

The following columns can be presented in this kind of report:

- Street: street name. Except streets the report also detects roads, highways and other places with available addresses.
- Beginning: time when the unit started moving along this street.
- End: time when the unit left the street.
- Duration: total time the unit was there.
- Total time: time from the first entrance to the street to the last exit from it (useful if grouping by days is enabled).
- Mileage: distance that was traveled by the unit while moving through this street.
- Mileage (adjusted): mileage subject to the coefficient set in unit properties (*Advanced* tab).
- Avg speed: average speed while moving along this street.
- Max speed: maximum speed detected while moving along this street.
- Streets count: the number of performed visits.
- Notes: an empty column for your custom comments.

Nº	Street	Beginning	Duration	Mileage	Avg speed	Max speed
1	Walsroder Straße, Langenhagen, DE	2010-02-28 14:00:42	3:31:33	1.51 km	0 km/h	1 km/h
2	Rathenastraße, Langenhagen, DE	2010-02-28 17:32:15	0:02:01	0.03 km	1 km/h	0 km/h
3	Walsroder Straße, Langenhagen, DE	2010-02-28 17:34:16	6:55:27	3.09 km	0 km/h	46 km/h
4	Angerstraße, Langenhagen, DE	2010-03-01 00:30:40	0:01:03	0.97 km	55 km/h	73 km/h
5	1, Langenhagen, DE	2010-03-01 00:31:43	0:00:51	0.51 km	36 km/h	73 km/h
6	Vahrenwalder Straße, Hannover, DE	2010-03-01 00:32:34	0:05:58	3.17 km	32 km/h	63 km/h
7	Vahrenwalder Straße, Hannover, DE	2010-03-01 00:39:33	0:00:43	0.43 km	36 km/h	40 km/h
8	Hamburger Allee, Hannover, DE	2010-03-01 00:40:16	0:01:36	0.79 km	30 km/h	81 km/h
9	Raschplatzhochstraße, Hannover, DE	2010-03-01 00:41:52	0:00:07	0.16 km	83 km/h	83 km/h

When clicking on a row in the table, the map is moved in such a way to display a point where the unit entered or left the indicated street, and this place is highlighted by a special marker.

Sometimes there can be gaps in cells. It may happen when only one message from a place was received in succession. In such cases, just the name of the street and arrival time are given.

More about [address detection](#).

[Intervals filtration](#) can be applied to this table: by duration, mileage, engine hours, speed range, stops, parkings, sensors, fuel fillings and thefts. For example, you can get streets where the sensor was on or the streets where the sensor was off.

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Reports Mode](#) » [Tables](#) » [Unit Latest Data](#)

## Unit Latest Data

This kind of table available only for unit groups. As for separate units, this information is available in [statistics](#). The table presents last location and counters values known.

The following columns can be selected to form the table:

- Unit: unit name.
- Last message: time when the latest message form the unit was received.
- Last coordinates: time when the latest message with valid coordinates was received (not always coincides with the previous column).
- Location: address or coordinates of the last location.
- Mileage: mileage counter value.
- Engine hours: engine hours counter value.
- Traffic: GPRS traffic counter value.
- Notes: an empty column for your custom comments.

Unit	Last message	Last coordinates	Location	Mileage	Engine hours	Traffic
Riviera	2010-03-23 00:34:27	2010-03-23 00:34:27	Strada Macului, Galați, RO	1230 km	450:00:00	1.42 MB
Sensor Rich	2010-03-25 11:20:41	2010-03-25 11:20:41	N 41° 37.4935' : E 48° 41.0134'	25574 km	554:35:12	2.92 MB
E 002 EB 190	2010-09-15 22:54:48	2010-09-15 22:54:48	N 60° 44.7805' : E 28° 51.0789'	156 km	0:00:00	265 KB

By default, the latest information refers to report execution time. However, it can be bound to the end of reporting interval. To do this, enable the Consider report interval checkbox in the template.

Last location can be visualized on the map by units icons - activate the option [Unit last location](#) in the report template.

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Reports Mode](#) » [Charts](#)

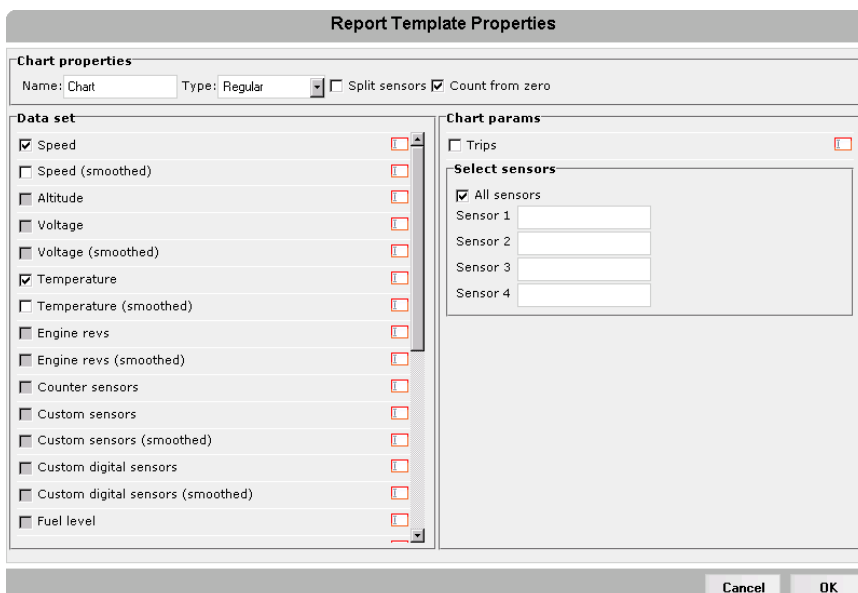
## Charts

Some reports give information in the form of a chart. For instance, it can be a chart showing how a unit speed varied with time or a chart showing dependence of fuel consumption on speed, and many other kinds of charts.

To receive charts in reports you need to have corresponding equipment (sensors) properly installed and configured (except speed and altitude charts which do not need any special sensors). How to create and configure sensors, read in [Sensors](#).

To add a chart to a report template, click the Add Chart button in the template properties dialog. ⚠ A chart cannot be included to a report if report type is *Unit group*.

Enter a name for a chart or live default *Chart* (the same for all charts).



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## Regular Charts

There are several types of charts. First of all, this is Regular type. Their X axis always presents time scale, and you choose data for Y axis:

- Speed
- Altitude
- Voltage
- Temperature
- Engine revs
- Counter sensor
- Custom sensors
- Custom digital sensors
- Absolute mileage
- Mileage in trips
- Instant mileage
- Fuel level (no filtration is applied)
- Processed fuel level (filtration is applied)
- Fuel consumption by ImpFCS
- Fuel consumption by AbsFCS

- Fuel consumption by InsFCS
- Fuel consumption by FLS
- Fuel consumption by math
- Fuel consumption by rates

The names of these items are editable. However, when building a curve for a sensor, it will borrow sensor name.

Select data set for the chart checking necessary items in the list. You can select two items, then the chart will contain two curves, for example, speed and engine revs. You can select even more items but note that only two variables can exist in one chart in addition to time. It means if Y axis presents speed scale at the left and temperature scale at the right, there is no place for engine revs. But if Y axis presents speed scale at the left and consumption by ImpFCS at the right, it is still possible to add consumption by AbsFLS and other methods because all they are measured in the same metrics and will use Y right scale.

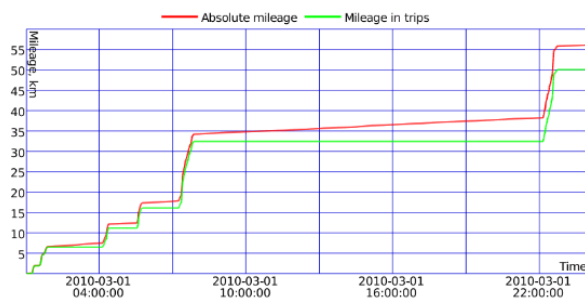
In the picture below there a speed chart united with fuel level chart. To receive such a chart, it is needed to set Regular chart type and select Speed and Fuel level for data set.



If there are more than one curve in the chart, they are displayed in different colors. At the top of the chart you can see the names of all lines as they are indicated in the report template or sensors names. In addition, the metrics are indicated for all axes.

### Mileage Charts

Four kinds of mileage chart can be created: absolute mileage, mileage in trips, instant mileage, and instant mileage smoothed. The two first show how mileage changed (increased) with time. Absolute mileage chart is built on the bases of *all* messages. That means any inaccuracy and outlying data affect the resulting chart. Mileage in trips chart considers trip detector that is shows mileage in trips only. Below you see the chart with curves: absolute mileage (red) and mileage in trips (green).



Instant mileage represents data in the form 'mileage from the previous message to the current one' that is the distance between two adjacent messages. This kind of chart can be useful to detect excessive mileage during connection loss, or to detect made-up additions to the mileage.

## Chart Parameters

---

### Select Sensors

In the right part of the dialog you can indicate sensors to form the chart. This selection does not affect such charts as Speed, Altitude, Fuel consumption by math and Fuel consumption by rates because they do not need any sensors to be built.

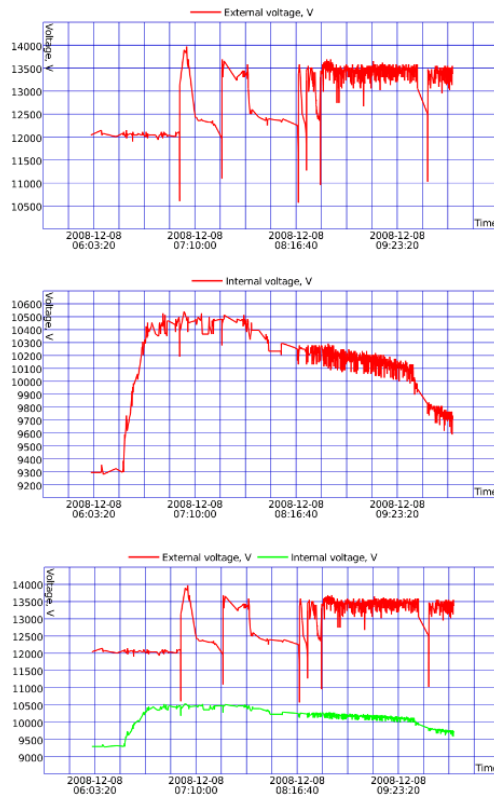
To indicate necessary sensors, enter a mask to search sensors - full sensor name or its part using wildcard symbols like asterisk \* (replaces any number of characters) or question sign ? (replaces one character). Sensor name cannot contain comma.

You can skip this possibility and select All sensors option. In this case the system will automatically define sensors of a required type when building a certain chart.

If any masks are assigned and *All sensors* option is selected, the chart will be built for all sensors and masks will be cleaned.

## Split Sensors

If there are several sensors of the same type and a chart of the same type is created, the curves for all sensors will appear in one chart. To split them, choose the appropriate option *Split sensors*. Then an individual chart will be built for each sensor. For example, there is a unit with two voltage sensors - external voltage and internal voltage. If creating a voltage chart for this unit we can get one chart with two curves on it or two charts with one curve on each (if *Split sensors* option is selected).

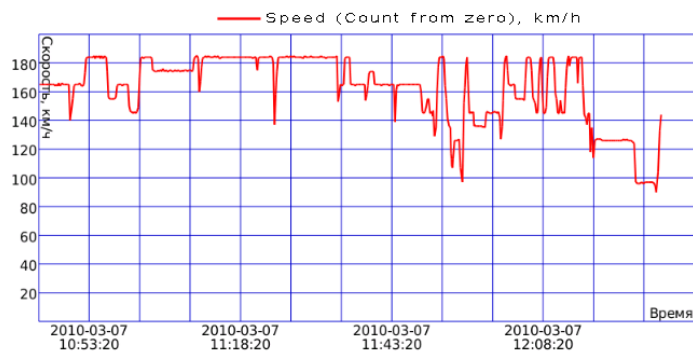
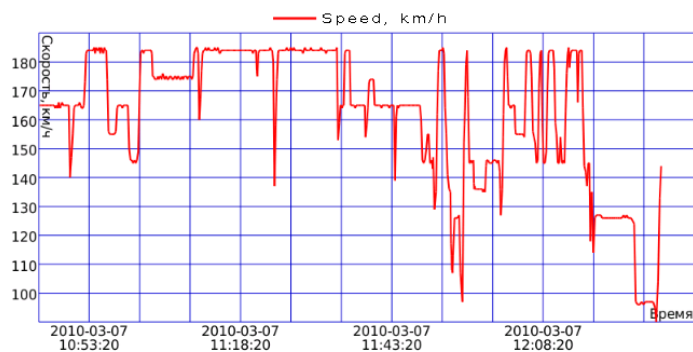


If several data is selected for the chart and for each several sensors exist, the *upper* one will be split. Let's assume that a unit has two voltage sensors and two temperature sensors, and you are building a voltage/temperature chart for it. If *Split sensors* option is off, you will get one chart with four curves in it. If *Split sensors* option is on, you will get two charts with three curves on each: one chart will contain the first voltage sensor and both temperature sensors, and another one will contain the second voltage sensor and again two temperature sensors.

## Count from Zero

This flag is responsible for chart zoom. By default, Y scale range depends on the range of values found within the interval. For instance, if the temperature varies from 3 to 5, Y axis begins from 3, and the curve occupies maximum space in the chart. If the option *Count from zero* is activated, Y axis is built from zero to the highest value (or from the lowest value to zero if the values are negative).

In the picture below you see two speed charts built for one unit for the same period of time. The first chart is regular, the second one has the flag *Count from zero*.



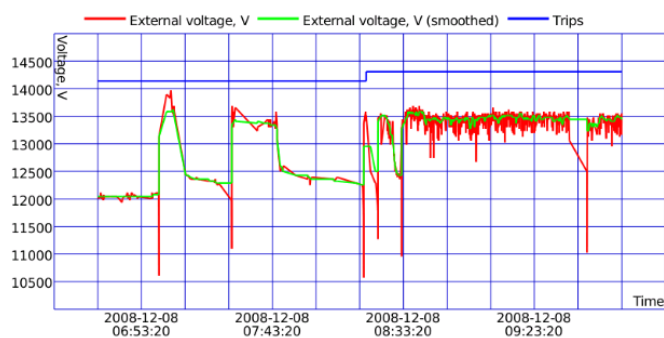
## Trips

The chart can contain a special line displaying unit state: upper position is for movement (trip), lower position is for stay. Movement/stay intervals are detected according to [trip detector](#) settings. If trip detector is not set, the line will not appear. To activate the line, choose Trips option in chart parameters.

## Smoothing

Almost all regular charts can be presented in two forms: raw and smoothed. Raw charts are drawn from one message to another in a linear way and have angular look. Smoothed charts look more streamlined. The smoothing algorithm is the same for all chart kinds.

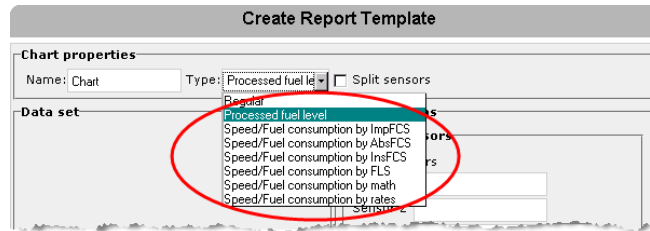
Below is an example where the red line displays a raw voltage chart, and the green line displays a smoothed voltage chart. The blue line is to indicate trip and stay intervals.



## Other Charts

Except regular charts you can generate the following charts:

- Processed fuel level
- Speed/Fuel Consumption by...



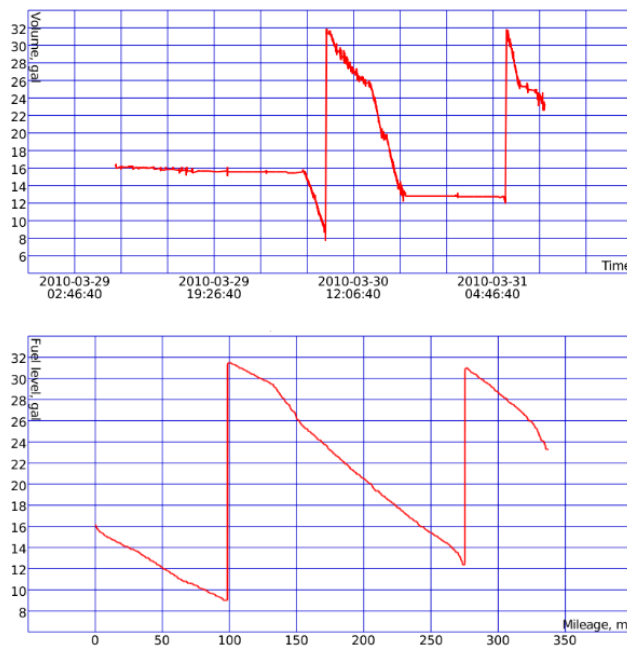
The axes of these charts cannot be changed, however, it is possible to change chart name and use *Select sensors* and *Split sensors* options.

## Processed Fuel Level

Processed fuel level chart shows the values which are used while calculating fuel level, fillings and thefts in tables.

The chart shows how fuel level changes in time or depending on mileage. The caption of the tab will be correspondingly Time/Fuel level or Mileage/Fuel level. The chart Time/Fuel level is built only if in unit configuration the option *Time-based fuel level sensors consumption* is on. In all other cases the chart Mileage/Fuel level is built. Besides, the data is processed according to filtration level set on the [Fuel Consumption](#) tab (the option *Filter fuel level sensors values*).

Below are two fuel level charts: the first one is processed (time-based FLS is on, filtration is off, filtration level is 25), and the second one is not processed.



A special chart *Processed fuel level* should be distinguished from two similar regular charts:

1. Regular chart *Fuel level* represents the raw data (no filtration is applied). The flag *Time-based fuel level sensors consumption* does not affect the chart.
2. Regular chart *Processed fuel level* is not available if the option *Time-based fuel level sensors consumption* is off. If the option is on, the filtration is applied.

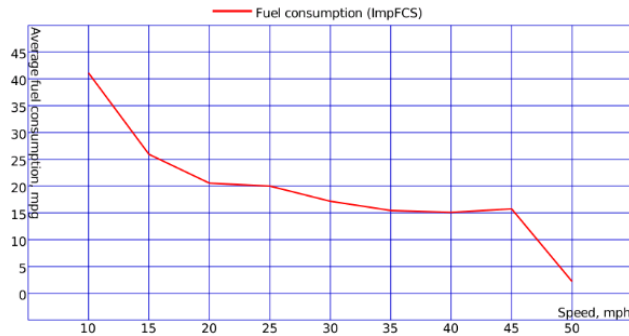
These regular charts can represent data only in the form Time/Fuel level. Besides, it is possible to overlay other charts, such as voltage chart, for example. Special charts cannot be combined with other charts.

## Speed/Fuel Consumption Chart

This chart shows dependence of average fuel consumption on speed. The data for these charts can be taken from fuel consumption sensors of different types (as impulse, absolute, instant) or fuel level sensor, or predefined consumption by math or rates. The appropriate calculation methods must be indicated in unit properties on the [Fuel Consumption](#) tab.





For example, to create this chart, a unit with instant fuel consumption sensor (InsFCS) was used.






## Chart Management


A handy interface provides enough tools to work with charts. You can adjust a needed zoom, move along the chart left and right, get a precise sensor value in the indicated point, etc.


To navigate a chart, use the corresponding arrow-shaped buttons:


-  move left;
-  move right.

The buttons to scale a chart (along the X axis):

-  zoom in a chart in half the size;
-  zoom out in half the size;
-  custom zoom.

When the custom zoom is activated, a mouse cursor is displayed as a blue vertical line. Holding the left mouse button you can select a needed area of a chart to increase it. Repeat the operation several times. To reset zoom level to the initial position, press the Reset to defaults button .

To get a sensor value in a given point, activate Trace chart values option . A mouse cursor is then displayed as a red vertical line. Click on any place on the chart and read the exact value in a text box below (for instance, time and fuel level or time and speed). If there are several curves, choose a needed one on the dropdown list at the end of the toolbar. If the X axis shows time, you move to the requested message on the map, and a marker is put at that place.

To scale the Y axis, use the button Y axis auto zoom . If the button is pressed, and you change chart zoom along the X axis, then the Y scale is recalculated automatically in such a way to use the maximum of chart space. If the button is released, the Y scale always stays unchanged.

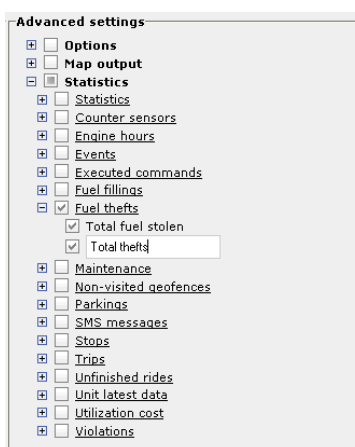
Pay attention that there is one more parameter which affects chart zoom. This option is set in report template and called *Count from zero*. If it is on, the Y axis will always have zero despite of the position of the *Y axis auto zoom* button.

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Reports Mode](#) » [Statistics](#)

## Statistics

Statistics is a special table giving general information and results. It can contain reports name, unit name, reported interval, number of messages analyzed for the report, and any statistical information you select. It is recommended to include Statistics to any report as it contains the basic information about the report itself.

Statistics is adjusted in report template in the section of *Advanced settings*. Check the boxes you would like to include in Statistics. For your convenience, items are divided into subgroups. To select all items in a subgroup, press <ctrl> and click on any item. To select all items in advances settings (including, options, map output and all statistics), press <shift> and click on any item. The same operation is used to reset selection. Besides, you can rename statistics fields. To do this, click on any item and enter your text.



When a report is generated online or exported to file, Statistics is always displayed at the beginning of the reports. Statistics is a table of two columns where the first one contains the parameters you have chosen, and the second one gives their values.

<b>Report</b>	Complete Report
<b>Unit</b>	Fish Boat
<b>Interval beginning</b>	2009-02-18 17:17:00
<b>Interval end</b>	2010-03-31 23:59:59
<b>Messages</b>	26334
<b>Mileage counter</b>	2634 km
<b>Engine hours counter</b>	666 hours 0 minutes
<b>Parking time</b>	22 days 2 hours
<b>Parkings count</b>	54
<b>Move time</b>	1 days 14 hours
<b>Mileage in trips</b>	1761 km
<b>Average speed in trips</b>	46 km/h
<b>Maximum speed in trips</b>	186 km/h
<b>Trips count</b>	53

If report type is *Unit group* or *User*, available statistics is different. See details at [Advanced Reports](#). The following information can be included in Statistics for reports of *Unit* type:

### Statistics

- Report: reports template name.
- Unit: unit name.
- Report execution time: time of report generation when a user executed the report online or it was generated automatically as a job or notification.
- Interval beginning: reporting interval beginning.
- Interval end: reporting interval end.
- Time zone: time zone as it is set in user settings.
- Messages: messages analyzed within the reporting period.
- Mileage in all messages: mileage in all messages according to the mileage counter selected

(without filtration by trip detector).

- Consumed by ImpFCS/AbsFCS/InsFCS/FLS/math/rates: the volume of consumed fuel detected by a fuel sensor (like impulse/absolute/instant fuel consumption sensor, fuel level sensor) or calculated by math or rates. [Details...](#)
- Avg consumption by ImpFCS/AbsFCS/InsFCS/FLS/math/rates: average fuel consumption in trips detected by one of the methods mentioned above.
- Initial fuel level: fuel level at the beginning of the interval.
- Final fuel level: fuel level at the end of the interval.
- Max fuel level: maximum fuel level.
- Min fuel level: minimum fuel level.

## Counter sensors

- Total counter: the sum of values of all sensors of *counter* type.

## Engine hours

- Engine hours: engine hours duration. It can be calculated by engine hours sensor or by ignition sensor depending on unit properties.
- Mileage in engine hours: distance travelled during engine hours operation.
- Engine efficiency idling: engine hours minus engine efficiency time.
- Utilization: percentage ratio of engine hours duration to engine hours rate.
- Useful utilization: percentage ratio of engine efficiency duration to engine hours rate.
- Productivity: percentage ratio of engine efficiency duration to engine hours duration.
- Consumption by ImpFCS/AbsFCS/InsFCS/FLS/math/rates in e/h: fuel volume used in engine hours. It can be detected by a fuel sensor (like impulse/absolute/instant fuel consumption sensor, fuel level sensor) or calculated by math or rates. [Details...](#)
- Avg consumption by ImpFCS/AbsFCS/InsFCS/FLS/math/rates in e/h: average fuel consumption in engine hours detected by one of the methods mentioned above.

## Events

- Events count: the number of events registered (see [Notification](#)).

## Fuel fillings

- Total filled: the volume of fuel filled during the reporting interval.
- Total registered: registered fuel volume regardless binding to sensors and calculation methods.
- Difference: the difference between registered and detected fillings.
- Total fillings: the number of fuel fillings detected within the reporting period.

## Fuel thefts

- Total fuel stolen: the total volume of stolen fuel.
- Total thefts: the number of thefts detected within the reporting period.

## Maintenance

- Total services duration: time spent for servicing.
- Total maintenance cost: total cost of all maintenance works.

## Non-visited geofences

- Non-visited geofences count: the number of geofences which were not visited.

## Parkings

Parking time: total duration of parkings for the reporting period. Parkings are detected by Trip Detector. IF it is not set properly, there may be no parkings found.

- Parkings count: the number of parkings for the reporting period.

## Rides

- Rides count: the number of accomplished rides.

## Sent commands

- Sent commands: the number of commands sent to the object (see [Commands and Chat with a Driver](#)).

## SMS messages

- SMS messages: the number of SMS messages received from unit.

## Stops

- Stops count: the number of stops for the reporting period.

## Trips

- Move time: total duration of all trips.
- Engine hours: engine hours worked.
- Mileage in trips: total distance travelled in all trips.
- Mileage (adjusted): the same distance multiplied by [mileage coefficient](#) (a setting in unit properties).
- Urban mileage in trips: distance travelled at speed which is considered as speed in populated areas.
- Suburban mileage in trips: distance travelled at speed which is considered as speed outside populated areas. [Urban speed limit](#) is a setting in unit properties which defines if unit is moving in urban area or outside it.
- Average speed in trips: average speed in trips (total mileage divided by move time).
- Maximum speed in trips: the maximum speed registered during the trips.
- Trips count: the number of trips.
- Consumption by ImpFCS/AbsFCS/InsFCS/FLS/math/rates in trips: fuel consumed in trips. It can be detected by a fuel sensor (like impulse/absolute/instant fuel consumption sensor, fuel level sensor) or calculated by math or rates. [Details...](#)
- Rates deviation by ImpFCS/AbsFCS/InsFCS/FLS in trips: the difference between fuel consumption detected by a sensors and fuel consumption rates.
- Avg consumption by ImpFCS/AbsFCS/InsFCS/FLS/math/rates in trips: average fuel consumption in trips detected by one of the methods mentioned above.
- Avg consumption by ImpFCS/AbsFCS/InsFCS/FLS/math/rates in trips (km/1l): average fuel consumption presented as 'kilometers per one litre' .

## Unfinished rides

- Unfinished rides count: the number of unfinished rides.

## Unit latest data

Note that all items in this section do not depend on report interval. The latest information is taken at the moment of report execution.

- Mileage counter: mileage counter value.
- Engine hours counter: engine hours counter value.
- GPRS traffic counter: consumed traffic.

- Unit last location: the latest unit location detected (address or coordinates).
- Last message time: the time when the latest messages from the unit was received.

How mileage and engine hours are calculated is adjusted in unit properties on the [General](#) tab.

## Utilization cost

- Total utilization cost:
- Count of services and fillings:

## Violations

- Violations count: the number of violations registered within the reporting period (see [Notifications](#)).

## Visited streets

- Streets count: the number of fount visits of streets.

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## Map Output

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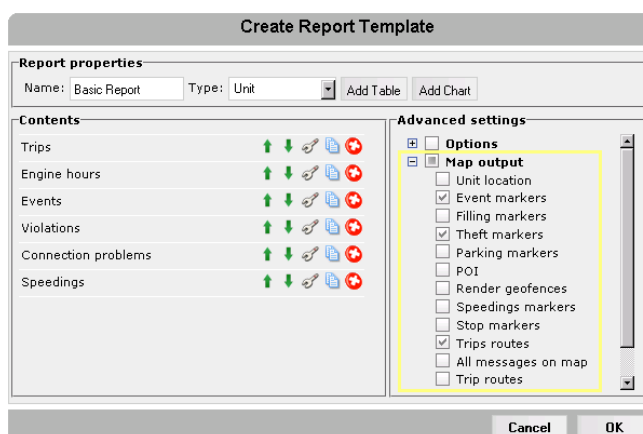
- [Map Output](#)
- [Tracks on Map](#)
- [POI and Geofences on Map](#)
- [Markers](#)
- [Unit Last Location](#)

In the Reports Mode the map can be scaled and moved in the same way as in the [Map Mode](#): zoom, move, apply tools, change the map source, etc. Even being in the Reports Mode you can still track your units. Besides, some specific map options can be applied exactly to reports.

The map with tracks can be also [exported](#) to [HTML](#) or [PDF](#) file together with report text. To include the map to the exported report, in the Export dialog check the box *Attach the map image*.

In such reports as 'Trips', 'Parkings', 'Fuel fillings' and many others which contain information about unit location,  this location can be easily shown on the map. To move to a place where something happened, click on a green row of the table. The map will be centered on the place and a marker will appear there. A similar feature is available in the regular charts (where the X axis displays time): when using the trace tool, you move to the requested message on the map.

Some elements can be drawn on the map as a part of the report. They can be selected in the *Map output* section of the report template dialog. These can be routes traveled by unit, created places and geofences, as well as special markers in the form of small icons which can be put in the places of events, fillings, thefts, speedings, etc.



All graphical elements are shown for the current report. If generating a new report, all tracks and markers from the previous report will be erased and replaced by new.

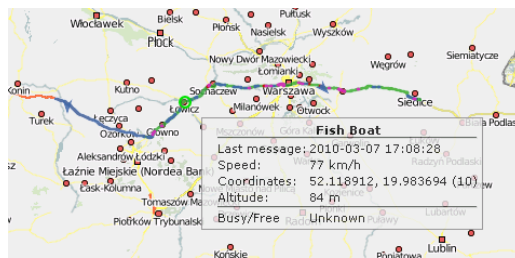
When switching to other mode, all graphical elements from the current online report as well as map position and zoom remain on the map. To remove them, return to the Reports Mode and push the Clear button. Alternatively, the graphics of any mode can be hidden or displayed again. To do this, check the corresponding boxes in the [modes panel](#).

## Tracks on Map

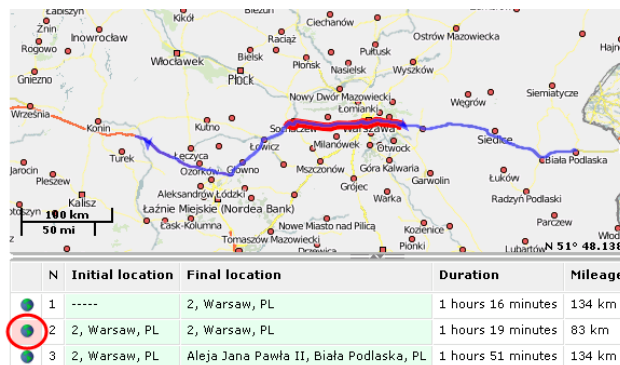
The routes traveled by a unit in a chosen period of time can be shown on the map. To do this, in advanced settings a report template dialog select the corresponding options - *Trips routes* or *All messages on map*. These options are similar but a bit different. In case of *Trip routes*, only the intervals considered as trips (according to [Trip Detector](#)) will be displayed as tracks. In case of *All messages on map*, all messages with valid coordinates will be converted into a track. If in unit history there are intervals where the connection has been lost (no messages for a long time) or coordinates miss in messages, such intervals are displayed with a dashed line.

By default the routes are drawn with blue color. However, you can choose another color or even have many-colored tracks according to speed or sensor state. The set of colors to be used in tracks is defined in [Unit Advanced Properties](#)).

Besides, to get information about track points, hover mouse cursor over and see information in a tooltip (time, speed, coordinates, altitude, sensor values). Note that messages are searched in the radius of 50 pixels to the cursor.



If tracks or all messages are on, then in such tables as Trips, Rides, Engine hours, Speedings will be supplied with an additional first column containing the icon of the globe. When clicking on the icon, the map is centered at a certain segment of the track, and this segment is highlighted by a thick red line on the map.



Tracks can be rendered for units groups, too (see [Advanced Reports](#)). It is reasonable to assign different colors for units in group to differentiate them on the map. However note that the number of simultaneously drawn messages can be limited by your service provider.

## POI and Geofences on Map

Created [places \(POI\)](#) and [geofences](#) can be a part of report. They will be displayed on the map if you check the corresponding boxes - *Render geofences* and *POI*. Circle-shaped geofences are displayed with their names. Places and geofences are taken from the same account that report template.



## Markers

Most kinds of reports can have additional visualized on the map with the help of special markers. To get these markers in a report, select necessary markers in a report template.

The table below presents all possible markers and their icons.

- Parking marker
- Stop marker
- Filling marker
- Theft marker
- Event marker
- Violation marker
- Speeding marker

Markers appear on the map after report is generated. If you see no markers, it means there is no events of the indicated type or the current map scale is not enough (try to zoom in).

When hover the mouse cursor over a marker, in a tooltip you see additional information: for stops and parkings - starting time and duration, for events and violations - time and notification text, for fillings and thefts - time and fuel volume, for speedings - starting time, speed limitation as it is defines in unit properties, how much the speed is exceeded, and duration of this speeding.

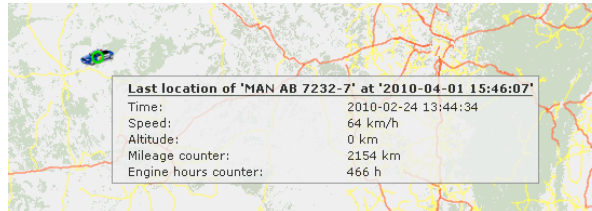


**Note.**

When enabling event markers, instead event markers you will get violation markers because violation is a special case of event.

## Unit Last Location

The last location of the unit can be displayed on the map. To enable this feature, select the *Unit last location* checkbox in map output settings of report template. Last location does not depend on the reported interval, it is taken from the latest message received from the unit. Units are displayed on the map by their icons or by motion state signs (depending on [User Settings](#)). In the popup tooltip you will find time when message received, speed at that point, altitude, and the values of mileage and engine hours counters.



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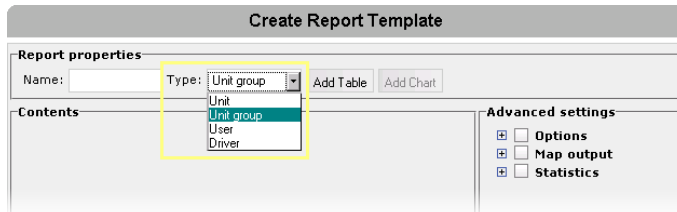


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## Advanced Reports

**Attention!** To create reports on unit groups, users or drivers, you must have *Advanced reports* module in your package.

Advanced reports are reports concerning such system objects as *Unit group*, *User* or *Driver*. These report types are defined when creating a template.



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- [Reports on Drivers](#)

**Attention!**

It is not recommended to change template type when editing a previously created template because all template contents will be lost with this action.

## Reports on Unit Group

Data from several units can be gathered in one report if these units from a [unit group](#). To get a report on several units, select the *Unit group* type for the report template.

The functionality of these reports is very similar to reports on separate units but has a number of peculiarities and restrictions.

In *Unit group* reports the following features are available:

- Any [tables](#);
- [Graphical elements on map](#): POI, geofences, any markers, unit last location icons, tracks and all messages on map;
- Some graphs in [Statistics](#): 'Report', 'Group', 'Interval beginning', 'Interval end', 'Report execution time';
- [Advanced options](#) (US metrics, geofences and POI as address source, etc.).

All tables available for units are available for unit groups, too. Besides, the table [Unit latest data](#) is available for unit groups *only*.

In *Unit group* reports the following features are not available:

- Charts;
- Most of statistics excluding report template name, unit group name, and reporting interval.

## Tables for Unit Groups

When configuring tables for unit groups, take into account some peculiarities. As the first column of the table you will see the list of all units included into the selected group (in the alphabetical order). Other columns are defined in the template in the same way as for usual tables. In the columns such as 'Count' there will be the number of events registered in the reporting period for the given unit.

Below is an example of a table on speedings for a group of five units, for an interval of five days (detailization off):

Nº	Unit	Beginning	Duration	Max speed	Mileage	Count
1	AirCool	2010-03-29 14:11:11	1 minutes 52 seconds	71 km/h	2.14 km	3
2	MAN 1238-RU	2010-03-29 06:45:12	47 minutes 21 seconds	110 km/h	54 km	34
3	MAN 8523-RU	2010-04-02 13:29:31	11 seconds	103 km/h	0.32 km	1
4	MAN AB 1966 2	2010-03-30 04:40:36	4 minutes 4 seconds	79 km/h	4.94 km	5
5	Mr. Smith	2010-03-31 15:07:09	32 seconds	78 km/h	0.66 km	4

If the option of detalization is on, then expanding the contents of a basic row you can see a detailed list of events for the given unit, and the number of hidden rows will coincide with the number in the 'Count' column.

Nº	Unit	Beginning	Duration	Max speed	Mileage	Count
1	AirCool	2010-03-29 14:11:11	1 minutes 52 seconds	71 km/h	2.14 km	3
1.1	AirCool	2010-03-29 14:11:11	59 seconds	69 km/h	1.12 km	1
1.2	AirCool	2010-03-29 14:14:37	16 seconds	71 km/h	0.31 km	1
1.3	AirCool	2010-03-31 14:15:25	37 seconds	69 km/h	0.71 km	1
2	MAN 1238-RU	2010-03-29 06:45:12	47 minutes 21 seconds	110 km/h	54 km	34
3	MAN 8523-RU	2010-04-02 13:29:31	11 seconds	103 km/h	0.32 km	1
4	MAN AB 1966 2	2010-03-30 04:40:36	4 minutes 4 seconds	79 km/h	4.94 km	5
5	Mr. Smith	2010-03-31 15:07:09	32 seconds	78 km/h	0.66 km	4

If there is no detalization it does not matter whether the grouping by days/weeks/months is on or off, because the priority grouping is by units. If detalization and grouping are applied together, then in the expanded list you will get one row per one interval (day/week/month). However, if an event was not indicated in all intervals, there can be fewer rows than intervals. It is seen from the example below: the unit witch was speeding just two days of five has two hidden rows correspondingly, and the unit witch was speeding each has five rows.

Nº	Unit	Beginning	Duration	Max speed	Mileage	Count
1	AirCool	2010-03-29 14:11:11	1 minutes 52 seconds	71 km/h	2.14 km	3
1.1	2010-03-29	14:11:11	1 minutes 15 seconds	71 km/h	1.43 km	2
1.2	2010-03-31	14:15:25	37 seconds	69 km/h	0.71 km	1
2	MAN 1238-RU	2010-03-29 06:45:12	47 minutes 21 seconds	110 km/h	54 km	34
2.1	2010-03-29	06:45:12	29 minutes 7 seconds	110 km/h	38 km	11
2.2	2010-03-30	06:48:30	3 minutes 7 seconds	68 km/h	2.88 km	4
2.3	2010-03-31	06:44:23	2 minutes 27 seconds	67 km/h	1.92 km	4
2.4	2010-04-01	06:51:40	2 minutes 1 seconds	70 km/h	2.10 km	2
2.5	2010-04-02	06:50:12	10 minutes 39 seconds	71 km/h	9.57 km	13
3	MAN 8523-RU	2010-04-02 13:29:31	11 seconds	103 km/h	0.32 km	1
4	MAN AB 1966 2	2010-03-30 04:40:36	4 minutes 4 seconds	79 km/h	4.94 km	5
5	Mr. Smith	2010-03-31 15:07:09	32 seconds	78 km/h	0.66 km	4

If there is no data for the given unit, in other cells there will be '—'. In some cases that can be not convenient, then you can disable such uninformative rows. To do this, enable the option *Skip empty rows* in the report template.

## Reports on Users

Two tables about users can be generated (*Logins* and *Custom fields*) and two charts (*Logins/Hours* and *Logins/Days of week*).

### Tables Applied to Users

This kind of table shows user activity: logins to different services. The table can contain the following columns (they are adjusted after you press the 'Add Table' button):

- Login time: time when user logged in a service.
- Logout time: time when user exited the service.
- Duration: time interval user was online on the service.
- Host: the address of the computer from which user logged in.
- Site: the name of service where user logged in.
- Count: the number of logins.

Login time	Logout time	Duration	Host	Site
2010-04-19 11:54:20	2010-04-19 11:54:20	0:00:00	127.0.0.1	wialon-web
2010-04-21 11:37:10	2010-04-21 11:49:42	0:12:32	127.0.0.1	wialon-web
2010-04-21 11:50:52	2010-04-21 18:07:03	6:16:11	127.0.0.1	wialon-web
2010-04-22 09:42:00	2010-04-22 14:00:44	4:18:44	127.0.0.1	wialon-web
2010-04-22 13:53:56	2010-04-22 14:28:52	0:34:56	127.0.0.1	cms-manager
2010-04-22 14:53:28	2010-04-22 14:55:44	0:02:16	127.0.0.1	wialon-web
2010-04-22 14:56:05	2010-04-22 14:58:47	0:02:42	127.0.0.1	cms-manager
2010-04-22 14:58:52	2010-04-22 14:59:02	0:00:10	127.0.0.1	cms-manager

The same [params](#) as for all tables can be applied to user logins table: grouping, detalization, row numbering, total row, and time limitations. In the example below you can see user logins table with grouping by days, detalization, numbering, and total row.

Nº	Date	Login time	Logout time	Duration	Host	Site	Count
1	2010-04-19	11:54:20	11:54:20	0:00:00	127.0.0.1	wialon-web	1
2	2010-04-21	11:37:10	18:07:03	6:28:43	-----	-----	2
3	2010-04-22	09:42:00	17:36:44	5:46:40	-----	-----	6
3.1	-----	09:42:00	14:00:44	4:18:44	127.0.0.1	wialon-web	1
3.2	-----	13:53:56	14:28:52	0:34:56	127.0.0.1	cms-manager	1
3.3	-----	14:53:28	14:55:44	0:02:16	127.0.0.1	wialon-web	1
3.4	-----	14:56:05	14:58:47	0:02:42	127.0.0.1	cms-manager	1
3.5	-----	14:58:52	14:59:02	0:00:10	127.0.0.1	cms-manager	1
3.6	-----	16:48:52	17:36:44	0:47:52	127.0.0.1	wialon-web	1
4	2010-04-23	10:27:26	18:08:15	0:28:59	-----	-----	2
5	2010-04-26	11:59:11	18:10:33	6:11:22	127.0.0.1	wialon-web	1
-----	-----	<b>2010-04-19 11:54:20</b>	<b>2010-04-26 18:10:33</b>	<b>18:55:44</b>	-----	-----	<b>12</b>

The table *Custom fields* represents the list of custom fields entered in the corresponding tab of [user properties dialog](#).

Name	Value
dispatcher	yes
region	Furmankan, East 7 Road
shift	2
units under control	17
working schedule	13:00-17:00, 18:00-22:00

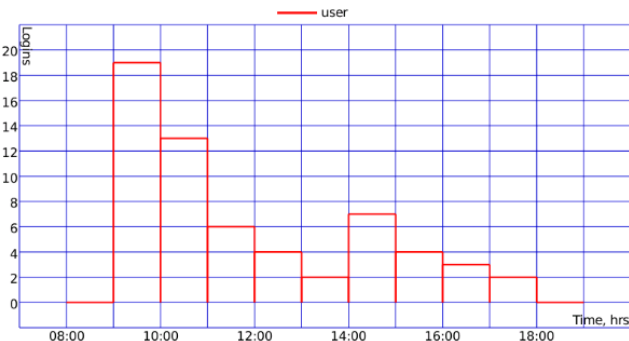
In the [Statistics](#) the following fields are available: report name, user name, reporting interval (beginning/end), total time spent on site, and logins count.

<b>Report</b>	Logins
<b>User</b>	user
<b>Interval beginning</b>	2010-04-19 00:00:00
<b>Interval end</b>	2010-04-26 23:59:59
<b>Time spent on site</b>	18:55:44
<b>Logins count</b>	12

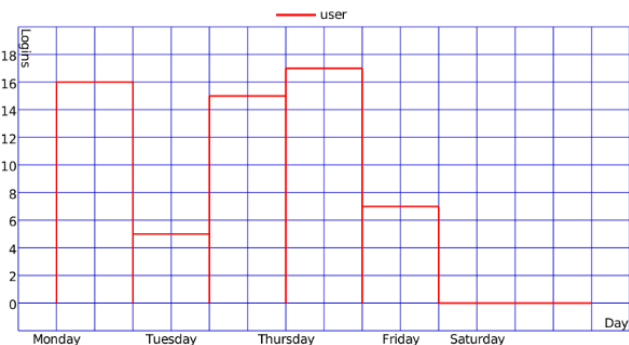
## Charts Applied to Users

Two kinds of charts can be attached to the report on user logins: Logins/Hours and Logins/Days of week. To get these charts, in report template push the button Add Chart and choose the type in the dropdown list.

*Logins/Hours* chart shows how user's activity in different hours of the day:



*Logins/Days of week* chart shows how often user logged to the system in different days of the week:



## Reports on Drivers

A table of *Bindings* can be built for each driver. This report shows which units the selected driver was working on, for how long, how much fuel was consumed, distance traveled etc.

The following columns can be included in this kind of report:

- Beginning: date and time when the driver was assigned.
- Initial location: the address (if available) at that moment.
- End: date and time when the driver was reset.
- Final location: the address (if available) at that moment.
- Duration: time interval of the trip.
- Total time: time from the first trip beginning to the last trip end (useful if grouping by days is enabled).
- Mileage: the distance traveled within the period.
- Mileage (adjusted): mileage subject to the coefficient set in unit properties (*Advanced* tab).
- Urban mileage: the distance traveled in urban area.
- Suburban mileage: the distance traveled in suburban area. It is calculated in regard to speed. The urban/suburban speed line is indicated in [Unit Properties => Advanced](#) (*Urban speed limit* setting).
- Avg speed: average speed within the interval.
- Max speed: maximum speed registered within this working shift.
- Counter: counter sensor value.
- Status: unit status registered during the interval (if there are several, the first one is displayed).
- Count: the number of bindings found.
- Consumed by ImpFCS/AbsFCS/InsFCS/FLS/math/rates: the volume of consumed fuel detected by a fuel sensor (like impulse/absolute/instant fuel consumption sensor, fuel level sensor) or calculated by math or rates.
- Avg consumption by ImpFCS/AbsFCS/InsFCS/FLS/math/rates: average fuel consumption in the trip detected by one of the methods mentioned above.
- Initial fuel level: fuel level at the beginning of the working shift.
- Final fuel level: fuel level at the end of the working shift.
- Notes: an empty column for your custom comments.

When creating/editing a report template, you can also choose units to be under control of this report. Their list is on the right of the columns list.

The report is designed in such a way that the first column is the list of units on which the driver was working. It is recommended to apply the [detailization](#) option to this table to get a possibility to expand any unit and see more detailed information about all working shifts on it.

Unit	Beginning	End	Duration	Mileage	Max speed
Fish Boat	2010-03-07 13:52:00	2010-04-01 11:59:31	3:00:04	308 km	184 km/h
Fish Boat	2010-03-07 13:52:00	2010-03-07 16:52:00	3:00:00	308 km	184 km/h
Fish Boat	2010-04-01 11:59:27	2010-04-01 11:59:31	0:00:04	0.00 km	0 km/h
Fura 1475683 AC	2010-03-24 12:43:00	2010-05-14 10:31:59	50 days 20:48:59	0.00 km	0 km/h
SMS Sim1	2010-02-16 20:00:00	2010-09-08 17:33:59	35 days 20:55:17	3112 km	132 km/h
SMS Sim2	2010-02-18 16:57:45	2010-05-17 11:52:07	4 days 1:12:52	204 km	60 km/h
SMS Sim2	2010-02-18 16:57:45	2010-02-19 14:30:34	21:32:49	55 km	60 km/h
SMS Sim2	2010-02-19 14:30:34	2010-02-22 17:48:14	3 days 3:17:40	148 km	60 km/h
SMS Sim2	2010-05-17 11:29:44	2010-05-17 11:52:07	0:22:23	0.00 km	0 km/h

In addition to the table, you can apply [statistics](#), where the following fields are possible: report template name, driver name, report interval (beginning and end).

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## Export Report to File

To get a report in the form of a file that is suitable to save on the disk, print or send by e-mail, push the Export to file button.

Choose file format for the report:

- [HTML](#)

Your report will be generated as Internet page and will open in any browser.

- [PDF](#)

[PDF](#) is a widespread format suitable for electronic usage as well as for printing. To view these files Adobe AcrobatReader is used (for Windows OC only). You can additionally set page orientation (landscape or portrait) and page size (A4 or A3).

- **Excel**

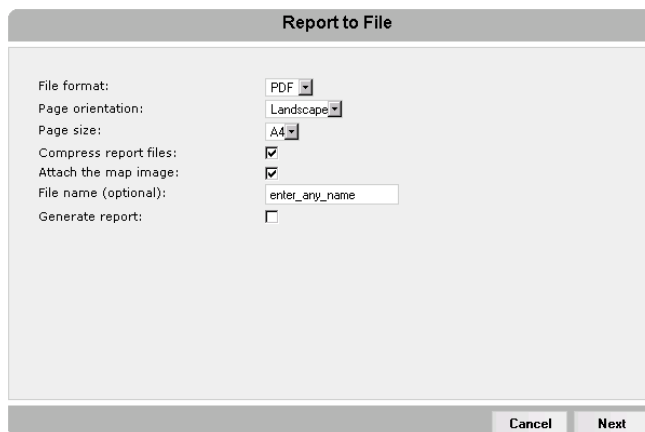
Your report will be presented as Microsoft Excel electronic table. You can additionally tick 'Excel 2007+' checkbox to get .xlsx file instead of standard .xls.

- [XML](#)

[XML](#) is a textual data format that is notable for structured data storage and useful for data exchange between programs.

- [CSV](#)

CSV is a textual data format used for the digital storage of data structured in a table of lists form, where each each row in the file corresponds to a row of a table, and the columns are separates from each other by a special delimiter. You can additionally set coding (utf8, cp1251) and delimiter (comma or semicolon).



You can compress report files if needed.

If a report concerns trips, stays and so forth, you can attach the map image (WebGIS map only). Note that the map will be attached to the file only if any graphical elements (as [tracks](#), [markers](#), [POI](#) or [geofences](#)) are chosen in the report template. The map cannot be attached to the files Excel, [XML](#) and CSV.

Type a file name for the file. It is optional and if left empty a file will be given a default name (like 'Online\_report').

Do not check Generate report to export the current online report to file. Choose this option to generate a new report. Depending on browser settings you will be offered to open the file or save it.

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## Data in Reports

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### Time in Reports

Time when an event happened/begun/finished is given in reports in the form of date and time: YYYY:MM:DD HH:MM:SS.

The duration of a state is given in the format HH:MM:SS. If a duration is bigger than a day, first the number of days is indicated, and then HH:MM:SS. It can look like that: '5 days 12:34:56' which means '5 days, 12 hours, 34 minutes, 56 seconds'.

In some rare cases the duration of a state is '0 seconds'. It can happen if the state is detected by only one message. For example, a speeding was detected in one message, and in previous and next messages there is no speeding. The duration of a speeding is considered a period of time from the first message with speeding to the last messages with speeding in sequence. So, if having only one message with speeding, the duration turns to be zero.

If grouping is used, the time appears as follows:

- If grouping by days is used, the column called 'Date' is added. It gives the date in the format YYYY:MM:DD. If the columns 'Beginning' and 'End' are selected, they will contain only time (HH:MM:SS). However, if a state began in one day and finished in another, in the 'End' column date and time will be given.
- If grouping by weeks is used, the column called 'Week' is added. The month and the number of week of year are indicated there. The first week of year is considered the first *full* week. If a week begins in one month and ends in another, it refers to the month where it begins.
- If grouping by months is used, the column called 'Month' is added.

#### ⚠ Attention!

To receive reliable data for time/duration, it is important to correctly indicate the *time zone*, the first option in [User Settings](#).

## Speed and Mileage

Mileage can appear in reports on trips, geofences, rides, speedings, digital sensors as well as in statistics and processed fuel level chart.

Mileage is calculated according to settings of mileage counter on the [General](#) tab in unit properties. Besides, mileage in trips, geofences and rides depends also on [Trip Detector](#) because the intervals of movement and stays are detected by it.

In Statistics you can find two possibilities for mileage:

- Mileage in all messages - the full mileage without any filtration by trip detector. It is always the longest mileage because it includes also all adjustment of data.
- Mileage in trips - total mileage of all movement intervals found according to trip detector.

Average and maximum speed values can be included in the same reports as mileage: trips, geofences, rides, speedings, digital sensors. Note that the average speed directly depends on mileage because it is calculated by dividing mileage by duration (for example, distance travelled with a sensor on divided by duration of on state. That is why a situation can happen when the average speed is zero and maximum speed is a positive number. It can happen (1) if state duration is zero (see explanation above); (2) if mileage is zero (unit was parked or the mileage counter is set incorrectly); (3) if the mileage is insignificant, for example, '0,01', and the result of division is smaller than one.

Maximum speed has nothing to do with mileage and any counters. To calculate maximum speed within an interval, all messages which get to this interval are analyzed and the largest speed value is selected and displayed in the

corresponding cell.

Speed is given only in integer numbers. Mileage if less than 20 (miles or kilometers) is displayed with accuracy to hundredths (other decimal places are simply cut). Measurement units for speed and mileage (kilometers and kilometers per hour or miles and miles per hour) are selected in [additional settings](#) of report template. There you can also set the option *Mileage and fuel with accuracy to two decimal places* to see mileage always with hundredths.

## Fuel in Reports

---

Many reports can provide information about fuel: fuel level (initial/final), the volume of filled/stolen/registered/consumed fuel, average consumption, etc.

To receive the most accurate information about fuel, you need to:

- install fuel [sensors](#) on your unit;
- properly configure the sensors in [unit properties](#);
- on the [Fuel Consumption](#) select calculation methods corresponding to these sensors.

However, even if you do not have special fuel sensors, you can control fuel in the following ways:

- [register fillings](#) manually in the Monitoring panel;
- use [mathematical method](#) to calculate fuel consumed (it takes into account urban and suburban cycle, idle running, and moving under load);
- use [consumption rates](#) to calculate fuel consumed (it takes into account consumption rates in winter and summer periods);
- use mathematical method and consumption rates to calculate average fuel consumption within a given interval of movement.

To calculate fuel consumption by rates or math, you do not need any sensors to be installed. To use these method, it is enough to enter necessary values in the *Fuel Consumption* tab of unit properties dialog.

In report template several methods of calculating fuel can be selected simultaneously. In this case a separate column will be generated for each method. Above all, if there are several sensors of the same type (or corresponding to the given mask) and they are not summed (the option 'Merge same name sensors' is off), then a separate column will be generated for each of these sensors. If you want a certain sensor to be used for fuel calculations, enter its name mask in the reports templates in the filter called "Sensor masks".

If in the report template you select columns which do not match with unit configuration, in the resulting report there will zeros in those cells.

Abbreviations used:

- FLS - fuel level sensor;
- ImpFCS - impulse fuel consumption sensor;
- AbsFCS - absolute fuel consumption sensor;
- InsFCS - instant fuel consumption sensor.

Fuel level is given in integer numbers. The volume of fuel consumed/registered/stolen as well as average consumption are given correct to the nearest hundredth (other decimal places are simply cut). However, if the value is over 50 (liters/gallons), it is shown as integer. However, if you consider it is necessary, you can see fuel always with accuracy to hundredths. For this, check the [option](#) *Mileage and fuel with accuracy to two decimal places* in report template.

If [US metrics](#) are selected, fuel is measured in gallons, and average consumption in mpg (miles per gallon) unlike the European system where average consumption is measured as lt/100km (liters per 100 kilometers).

All fuel data is processed before getting to reports. The data is processed according to filtration level set on the [Fuel Consumption](#) tab (the option *Filter fuel level sensors values*).

## Addresses

---

Address information can be displayed in many reports: initial/final location in trip, place of fuel filling or theft, location where the unit parked or had speeding, location where connection was lost, message received, event registered, etc.

Two things are crucial in defining an address:

- coordinates sent by device;
- Web-GIS server.

Address is searched in the radius of 1 km from the point where a message was received. If in this radius there is no available address information, then in this cell in report you will get dashed against a green background. However, if address information is not available, you can move to this point on the map if clicking on this cell.

Sometimes Web-GIS may be not very reach on addresses for some regions. In these cases you can use [geofences](#) and [places \(POI\)](#) created in the appropriate panels as addresses. Besides, you can make use of this feature to customize some addresses, make them more clear.

To use a geofence instead of usual Web-GIS address, this geofence must have the flag Address source, and the option Geofences as address source must be activated in [advanced options](#) of report template. If coordinates of unit location get into the geofence, its name will be used in address cell. If two different geofences overlay, the smallest is used.

To use places instead of usual addresses, it is enough to have the option POI as address source checked in report template. If coordinates of unit location get into the radius of 100 meters from this POI (or other radius indicated in unit properties), the address will be takes from its name. If unit location gets into the radius of two or more places, the nearest is used. If both options (geofences and POI as addresses) are activated, the priority is given to places.

By default, geofences and places used in reports as addresses are taken from the account to which report template belongs. However, if the option Use all accounts is activated in report template and user has access to several accounts, all geofences and places which are located in these account will be enabled for the report.

If no address information is available, the coordinates are displayed instead.

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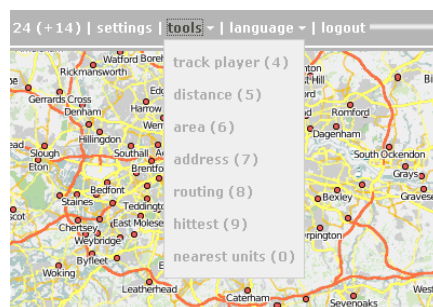


You are here: [Wialon Pro](#) » [Monitoring System](#) » [Tools](#)

## Tools

Tools are additional service features that do not require working with database. The list of available tools is accessible through the Tools menu in the top panel.

With a help of such features as Track Player, Distance, Area, Address, Routing, Hittest, and Nearest units you can measure the length of polyline or just a distance between two points, measure an area of any piece of the map, find out the address of some place, get to know the shortest way to a certain destination point, analyze movement tracks, etc.



To get more accurate measurements, observe the following rules:

- To add a point, double-click on any place;
- To insert a point, double-click on the segment between two points;
- To delete a point, double-click it;
- To reposition the point, click on it and holding the left mouse button drag to another place on the map;
- To stop measuring, push the Cancel button in the popup window.

Find detailed information here:

- [Track Player](#)
- [Distance](#)
- [Area](#)
- [Address](#)
- [Routing](#)
- [Hittest](#)
- [Nearest Units](#)

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Tools](#) » [Track Player](#)

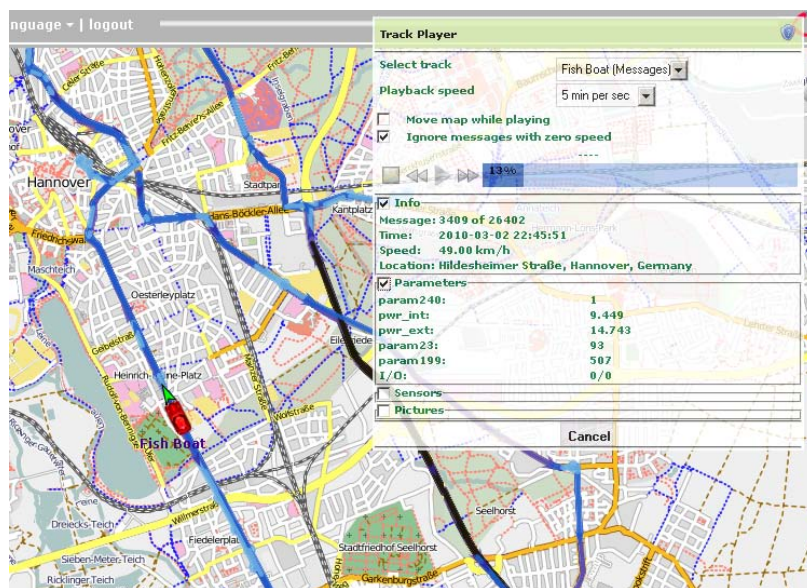
## Track Player

It is possible to view how unit was moving and how its various parameters were changing with time. This tool is applied to tracks only. There three ways to get a track on the map:

1. In the map mode, open the Tracks panel and request tracks of unit movement for the indicated period.
2. In the messages mode, while viewing messages for the indicated period, the track is mapped automatically.
3. In the reports mode, while generating a report the track is mapped if the corresponding option ('Trip routes' or 'All messages on map') is selected in report template.
4. Tracks can be built directly from the monitoring panel with the Fast Track Building button.

A track is chosen in the dropdown list. Track names coincides with unit name, in brackets it is specified in which mode the track was built (monitoring, reports, messages). When you choose one or another track, the map moves to it.

After selecting a track, choose the most appropriate speed for its playback: real time speed, 10 or 30 seconds per second, 1, 5, 10, 30 or 60 minutes per second.



By default, messages with zero speed are skipped. It means, only intervals of movement are played. However, some devices do not send speed, and to play their track, it is necessary to disable the check box *Ignore the messages with zero speed*.

To start playing the track, press the *Play* button. At this, it transforms to the *Pause* button, which can be used to stop the playback. If after a pause the playback is started again, it continues from the point it stopped the previous time.

As messages are being played, the selected unit is moving over the map. It can be represented by its icon or movement state signs. It is also convenient to use rotating icons - see [Unit Presentation on Map](#). When a unit is played, its real position disappears from the map. To distinguish these two modes to display a unit, its name in track player is violet (in contrast to usual red name).

If playback speed is not very high, the map is centered on each message. However, you can adjust a handy zoom and scale for the map and disable the flag *Move map while playing*. Then the map will not jump automatically while playing.

Track playback can be invoked from any message. Navigate throughout the track by clicking on any place of the

timeline. If just hovering the timeline, time is indicated above. To navigate through a track, you can also use arrow-shaped buttons - to move to the next/previous point of the track.



Additional information is available below, in 4 sections (mark the appropriate checkboxes to expand necessary sections):

1. Information: message number of the whole number of messages, message time, speed, and location.
2. Parameters: available parameters and their values.
3. Sensors: available sensors and their values.
4. Pictures: if the device used is able to send pictures, they are displayed.

As a track is played, all data in these sections is refreshed dynamically according to message being played at the moment.

 **Note:**

Sometimes Track Player can occupy much room of the screen, and not enough space will remain for the map. To help this, you can hide two things:

-  Track Player itself - use the button in the top right-hand corner of the tool dialog.
-  Work Area - use the button at the bottom panel.

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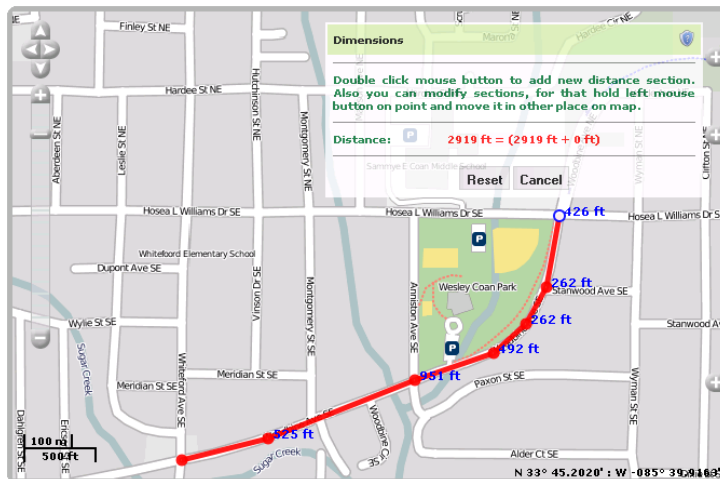
You are here: [Wialon Pro](#) » [Monitoring System](#) » [Tools](#) » [Distance](#)

## Distance

Choose Tools → Distance to measure the distance between two objects. To indicate the initial point, double-click on any place of the map. Then sequentially add new points. At any moment you can move the map or zoom it using any of ways described in [maps#navigation|Maps]] topic.

Near each point the distance from the previous point is indicated. The total sum of all segments is known from the popup window in the corner. To know the sum, the mouse pointer must be placed over the last point of the polyline. Unlike other points that are red, it is white with blue border. If the cursor points some other place, the total sum will also include the distance to the current cursor position. At the same time, in brackets two numbers are given: the sum of all segments drawn + the distance to the cursor (if the cursor is over the last drawn point, this distance is 0m).

When the line is on the map, move the cursor along the line to get the distance from the starting point to the current cursor position. Cursor position is marked by a white point (if put the cursor over, it becomes plus-shaped), and a black font is used to display distance value.



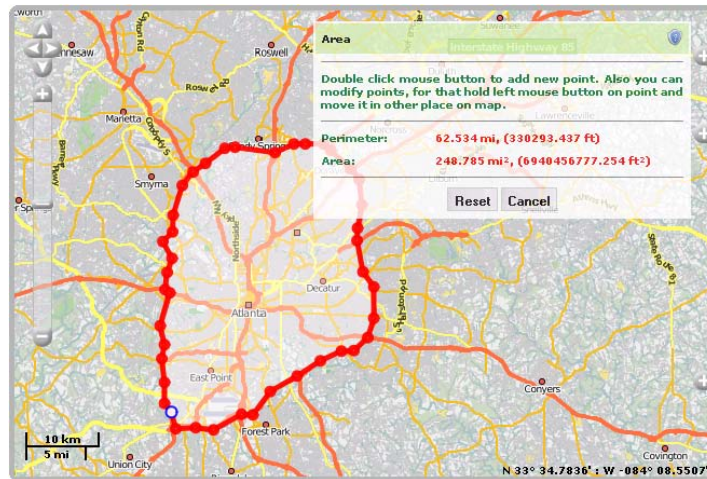
To clean the map and start new measurements, use the Reset button.

To close the distance tool, push the Cancel button.

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Tools](#) » [Area](#)

## Area

Choose Tools → Area on the menu. To draw a polygon follow the same directions as for polyline creation. The perimeter and total area can be known from the popup window in the corner.



It is also possible to calculate the area of intersecting polygons. When creating such an area, sections filled by semitransparent white color are included to the resulting area.

Use the Reset button to clean the map and draw a new area.

## Address

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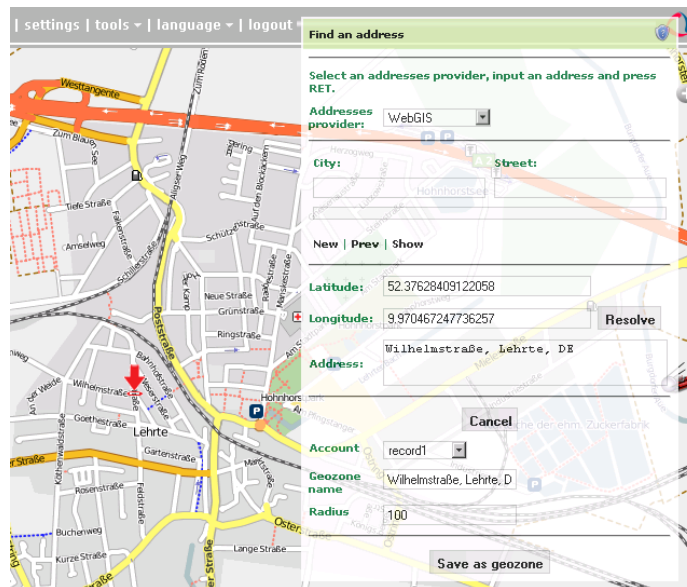
The address tool is designed to:

- find a place (city, house, etc.) on map ;
- detect the address of a place.

Choose Tools Address on the menu to make use of the tool.

The address information can be received form different provider (depending on maps activated and their support): WebGIS, Google, Yandex, etc. (see [type of map](#)).

- [Address](#)
- [Search](#)
- [Address Detection](#)
- [Save as](#)
- [Geofence](#)



## Search

To start searching, input the first letters of the name of the city/town into the City field. After typing three or more characters, in the Results field a list of places starting with these letters will appear. If the place you are looking for is the first on the list, push <Enter>. In other case, select the necessary item in the list and click on it. The similar actions can be performed in the Street field. After selecting the street, a list of houses located there becomes available. Choose one, and the map will be centered at this house.

The found place will be marked with a blinking red pointer. Information (coordinates and address if available) will be displayed below. If it gets into any geofences, their list will be given, too. Geofences are written in colors assigned to them. ▼

The search can be stopped on city or street if it is enough for you.

The Prev button is used to go back to the street search (if you are already selecting a house) or to the city search (if you are in the street field).

If you have moved the map or zoomed it, you can reset changes pushing the Show button.

To start a new search, press New.

## Address Detection

To know address of a point on the map, just double-click on it. See the address and the coordinates in the popup

window. If it gets into any geofences, they will be listed below.

It is possible also to detect address by coordinates. Input latitude and longitude in grades and fractions (they should be separated by a dot) and push the `Resolve` button. The map will be centered at this point.

## Save as Geofence

The place where the red marker blinks, can be saved as a geofence in the shape of a circle with 100 m radius. The detected address will be used as the name for this geofence.

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You are here: [Wialon Pro](#) » [Monitoring System](#) » [Tools](#) » [Routing](#)

## Routing

This tool helps to quickly make routes from one point to another visiting any number of interstitial points. You can define the sequence of points yourself or the program will optimize it for you. You can indicate key points double-clicking on the map or entering needed addresses. Resulting route can be saved as [geofence](#) with control points or without them and used for routes control or geofences control later on.

Choose Tools Routing to make use of this feature. Set points and press *Calculate*.

### Table of Contents ▲

- [Routing](#)
- [Selecting Provider](#)
- [Placing Points](#)
- [Route Calculation](#)
- [Saving Route](#)

## Selecting Provider

Depending on maps available at your service, different map providers can be used to make a route: WebGIS, Google, Yandex, Visicom. They are chosen in the dropdown list.

WebGIS does not lock routes to roads when making a route, however it can offer optimized sequence order of points (considering the straight distance between them). Other providers make routes along the roads but cannot change points order.

Depending on map provider, more features can become available. For example, if Google is selected, the route can be mapped regarding the way you travel: by car (default option) or walking or avoiding highways (tick the appropriate check box). Yandex adds possibility to take into account traffic jams.

## Placing Points

There are two basic ways to set key points for route: with mouse and with address tool.

In the first case it is enough to simply make several double-clicks on the map to mark key points.

In the second case you switch to the address mode with [Address mode](#) button. How to use the [Address tool](#) was minutely described in the previous section. Briefly, two ways to enter points can be applied here:

1. You double-click on the map, and the address information for the point appears in the window on the right. These points can be added to the future route automatically if the flag [Auto save of points](#) is enabled, or manually (with the [Add point](#) button) if this flag is disabled. If the address information is not available, the point is added anyway but without name.
2. You enter addresses to be visited (city, street, house). At the place found a red marker starts to blink. To add the found point to the future route, press [Add point](#).

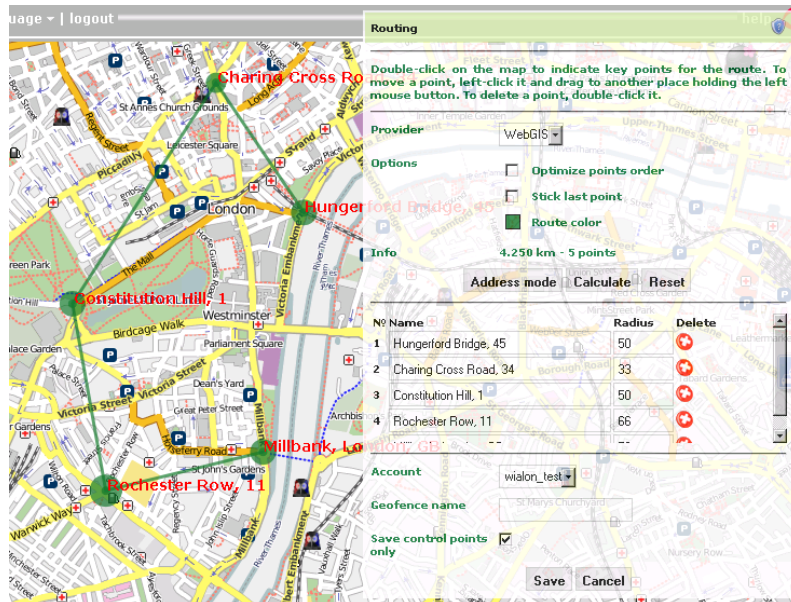
### ⓘ Note.

If you are going to use this route for [Route Control](#), it is recommended to enter departing point as the first point of the route.

When all point are set, it is possible already to draw the route (the [Calculate](#) button). However, before doing that, you can edit key points, especially if you are going to save this route as [geofence](#) with control points.

The list of points is displayed in the window of [Routing tool](#). If you entered point in the address mode, use the [Back](#) button to return to the [Routing tool](#) window. Here you can edit point name, its radius, and delete unnecessary point.





## Route Calculation

If building a route with WebGIS, sequence order of points can be interpreted in two ways:

- Default option is that the point follow in the order you put them.
- Point order can be optimized in order to make the route as much short as possible. For this you should enable the flag `Optimize points order`. The route will be drawn beginning from the first point (without snapping to roads). The last point can be fixed (for example, if a unit leaves the depot and after a while is expected to come back), that is regardless any sequence order offered by the program the last point will be that which was set the last. For this, enable the flag `Stick last point`.

At the end, press the `Calculate` button and estimate the result. If you need to change some parameters (for example, add more points), press `Back`. If you want to built a new route, press `Reset`. To close the Routing tool, press `Cancel`.

In addition, you can choose line color as well as view information about route - its length and number of points.

## Saving Route

After the route is mapped, it can be saved as a line-shaped geofence. To do this, enter geofence name, choose account, and push `Save`. If the key points were given manes, the geofence will have control points.

If the map provider was *not* WebGIS, there are two ways to save the route:

- the full line (can contain any number of points),
- only control points with preset sequence order.

The newly created geofence will appear on the [Geofences](#) panel where it can be edited and used for different purposes.

You are here: [Wialon Pro](#) » [Monitoring System](#) » [Tools](#) » [Hittest](#)

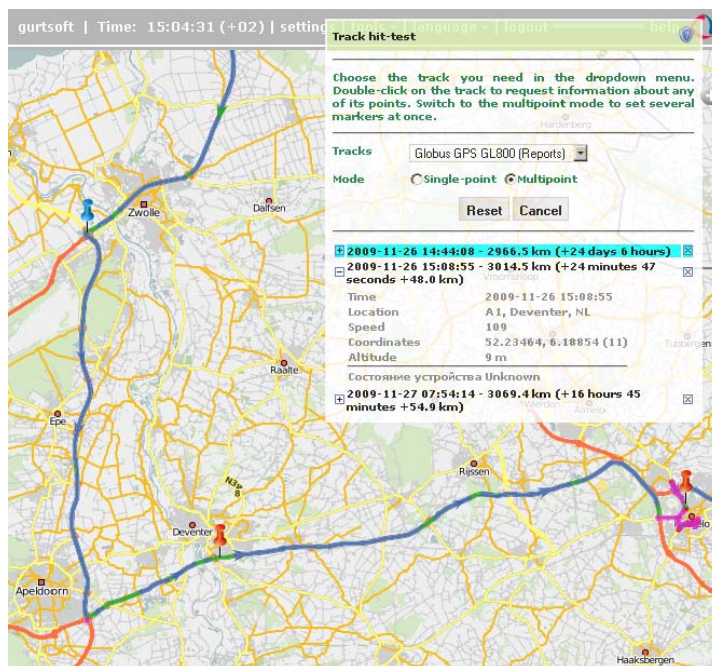
## Hittest

This tool is applied to tracks only. There three ways to get a track on the map:

1. In the map mode, open the [Tracks](#) panel and request tracks of unit movement for the indicated period.
2. In the messages mode, while viewing messages for the indicated period, the track is mapped automatically.
3. In the reports mode, while generating a report the track is mapped if the corresponding option ('Trip routes' or 'All messages on map') is selected in report template.
4. Tracks can be built directly from the monitoring panel with the Fast Track Building button.

Choose a track in the dropdown list. Hover the cursor over track to get accurate information about any point in a tooltip. Double-click at any place of the track (or even on the map), and the nearest to your click message will be found and highlighted by the marker. The map will be centered on this point.

Two modes are available here: single-point and multipoint. Depending on your choice, you can get information about one or more points at once. The information is displayed in the popup window when placing the cursor over a marker. The information is: date and time, location, coordinates, speed, sensors values. It is duplicated in the table at the top of the screen.



If the multipoint mode is selected, you can mark several point of the track. The active (selected) point is then blue and others are red. In the table the active point is also highlighted by blue color. To navigate from one point to another, click on a corresponding marker on the map or corresponding row in the table. Besides, if the multipoint mode is selected, the displacement from the starting point (in time and distance) is calculated, and in brackets you can find the displacement from the previously put point.

## Nearest Units

This instrument is designed to help you to find units which are the nearest to a certain place according to their last message.

Choose Instruments → Nearest units on the menu. In a special window set the parameters of your request and observe search results.

### Table of Contents ▲

- [Nearest Units](#)
- [Request](#)
- [Additional Parameters](#)
- [Search Results](#)

## Request

There are two ways to indicate a place:

1. Double-click on the map in this place.
2. Enter city and street in the appropriate fields. When you start to enter a street, the system starts looking for streets which names start from these letters. Soon a list of streets is generated and you can choose a street from it. Then buildings are displayed (if there are available) and you can choose from them, too.

In the selected place a red cursor starts to blink, and at the bottom the list of nearest units is displayed.

### Note.

If in [User Settings](#) the parameter City is set, then the city is already entered when you open the instrument and you need just enter a street.

## Additional Parameters

Several additional parameters can be applied to the search:

Number of units to be shown

5, 10 or 20 units can be shown (choose the number from the dropdown list).

Use routing

When choosing this option, the distance from the indicated place to a unit is calculated not directly but taking into account existing roads. The source for routing can be Google or Visicom maps.

District

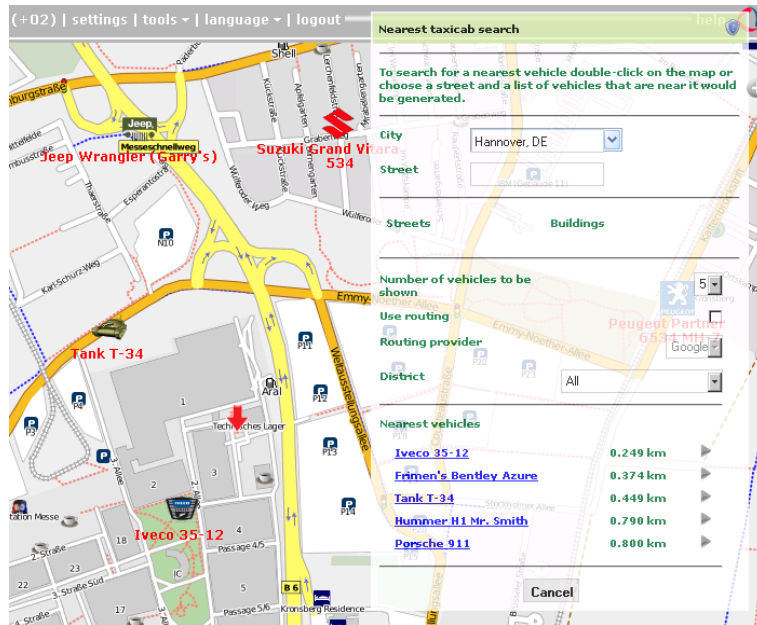
Any geofence can be selected as district limitation. If any geofence is selected, the search is performed only among the units which are in this geofence at the moment. This feature is designed to exclude from search results the units which are far away from the indicated place. Note that after applying search parameters, district is reset automatically.

Data for last

Units which have not been sending messages for a long time can make difficulties for locating nearest units. Then it is handy to narrow the search interval: for last 5 or 30 minutes, 1, 6, 12 or 24 hours, or set *Anytime* (no limitations). If unit last message doesn't get into the specified interval, this unit will not be considered.

## Search Results

Search results are presented at the bottom of the window as a list of units. There you can see unit name, driver's phone number (if any driver with indicated phone number is bound to unit), distance to the indicated place, and the button to [send commands](#) to unit (including sending a message to driver).



If you are not satisfied with search results, please, check your [work list](#) because the search of nearest units is made on the basis of units displayed on this list.

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## Managing Units via SMS

**Attention!** This module is licensed separately and can be not included in your package.

To manage units via SMS messages, it is required to enter your cell phone numbers to [User Settings](#).

### Forming SMS Message

1. Create a new text message.
2. Enter unit name or its unique ID (see [Unit Properties => General](#)). You can input just some first characters that are enough to identify a unit. If several unit names begin from these characters, the command will be sent to the first found.
3. Put a line feed <enter> ( ).
4. Enter a command name (see [the list of standard commands](#)). If additional parameters are required, add them after space.
5. Send the message to the phone number of the server modem. This number is given by your service provider.

If you want just to know where a unit is, you can omit command name and parameters or type any character or question mark (?). As a response, you will get a message with the latest data: unit name, day and time of the last message with valid coordinates, speed of movement, and address. If address information is not available, the coordinated will be given instead.

### Commands

Here you have a list of standard command names that can be sent by the server via SMS and GPRS channels in case the equipment installed supports them.

Command	Parameter	Description
query_pos	-	Get the current position of the unit.
block_engine	-	Block the engine.
unblock_engine	-	Unblock the engine.
output_on	inlet number	Activate the input.
output_off	outlet number	Activate the output.
set_report_interval	interval, in seconds	Set the interval of how often the unit sends messages to the server.
custom_msg	message	Custom message to the unit.

### SMS Examples

Let us suppose that you have the access to three units: Athos, Porthos, and Aramis.

To get general information about Portos, sent from a registered phone the following text message:

p

The coincidence will be detected by the first letter because there is no more units which names begin from this letter.

To get information on Athos, you should already send two letters

at

#### Table of Contents ▲

- [Managing Units via SMS](#)
- [Forming SMS Message](#)
- [Commands](#)
- [SMS Examples](#)

In case you hesitate, send the full name of the unit.

To block the engine of Aramis (in case the corresponding equipment is installed), send the text:

```
ar block_engine
```

To make Portos send messages to the server every 30 seconds, sent the command:

```
p set_report_interval 30
```

## Wialon Mobile

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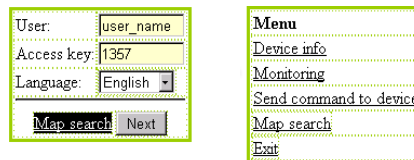
- Wialon Mobile
- Unit Information
- Monitoring
- Commands
- Search

⚠ *Attention!* This module is licensed separately and can be not included in your package.

Mobile Wialon can be used from mobile phone or Pocket PC. The following features are presented on the site:

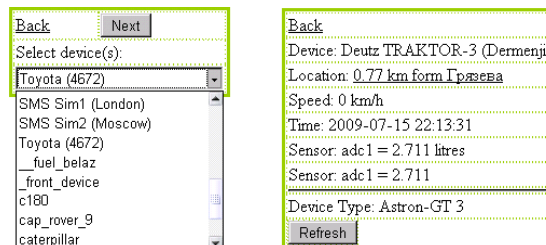
- display current location and movement history of a unit (or unit group) for a period of time on the map;
- information about unit state, its sensor values, its latest position and latest registered event;
- sending commands to a unit remotely;
- search cities, streets, addresses on the map.

To access the mobile site, enter address in the browser. On the first page, enter your user name and access key as it is set in [User Settings](#). You can also select the interface language. When logged in, observe the main menu and select the operation to perform.



## Unit Information

Select unit to get information about, push Next and get the data. The information includes unit name and device type, its location and speed, time when the latest message was received. It also provides all sensors values, the latest event, and phone number if available.

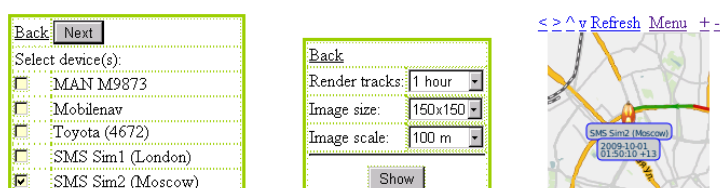


When a time passed, you can get fresher information about the unit. Simply push the Refresh button to get the latest data.

To get information about some other unit, push Back and select other unit from the dropdown list.

## Monitoring

Select one or more units to monitor them and click Next. Select time interval to map the track for, indicate map size and scale. Push Show to display the search result.



The map can be moved and zoomed using the appropriate buttons above (arrows - to move, plus and minus - to zoom). However, if more than one unit is selected, then the map is scaled in such a way to show all units, and it is

impossible to move and zoom it.

When a time passed, you can get fresher information about the unit. Simply push the Refresh button to get the latest data.

Click on Menu to go back to the main menu.

## Commands

---

Select one or more units to execute a command. In the next window choose the command, if this is a custom message or a message for the driver, enter message text. At the end click the Send button. You will be notified whether the action was successful.



SMS Sim1 (London): Succeeded

## Search

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To find a place on the map, enter some first characters of the city and/or street, add house number if you need more accurate search. Set also map size and scale. The received result you can scale and move.

