Maestro Central Traffic Control System

User Manual
[v2.1.9]

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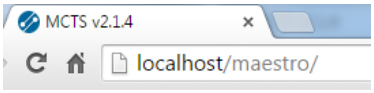
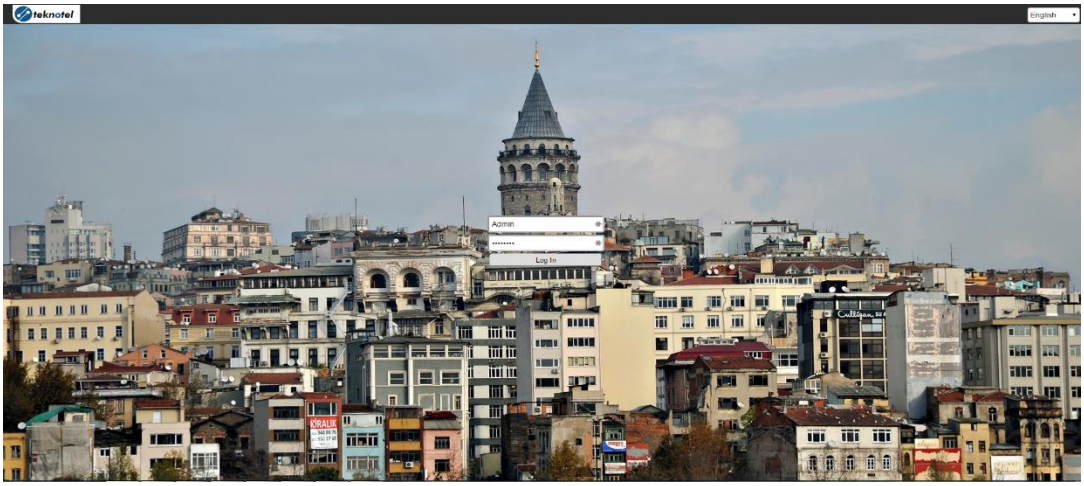
Access and Login

After MCTS installation is completed, the system is accessed by; opening a web browser (Google Chrome preferred), entering the address provided by Teknotel Elektronik in the address bar.



When interface is loaded, first entrance username and password provided by Teknotel Elektronik are entered and *Login* button is clicked.



If login is successful, *Main Page* will be opened according to the user type.

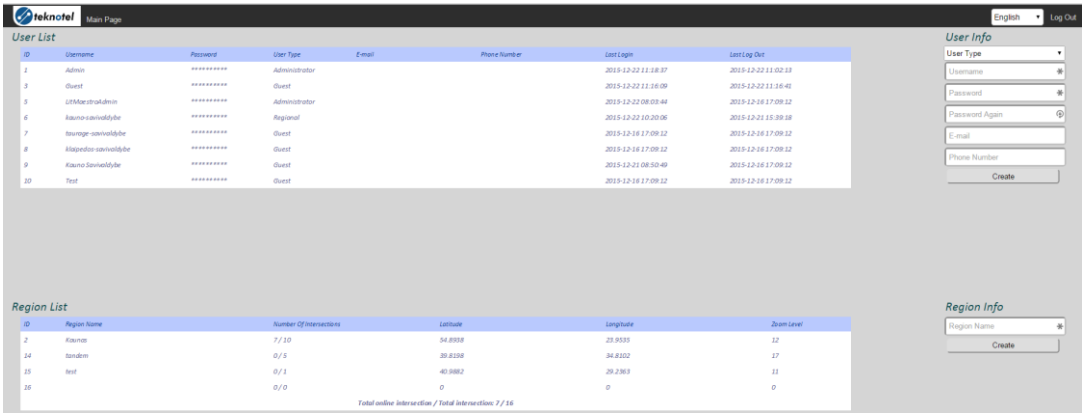


Figure 1: Main Page for administrator user type

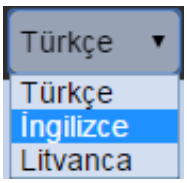
Logout

In order to logout from the system, *Log Out* button located at top right corner of the interface

is clicked.

Interface Language

MCTS web interface supports three language, Turkish, English and Lithuanian. MCTS interface language can be changed from the menu located at top right corner.



User Operations

There three user types in MCTS:

- *Administrator*; is granted with all rights, can create a new user/region, update or delete current users/regions. Administrator user, can watch and interfere all intersections.
- *Regional*; is granted with limited rights to only the regions belonging to it. Regional user can watch and interfere intersections belonging to its regions.

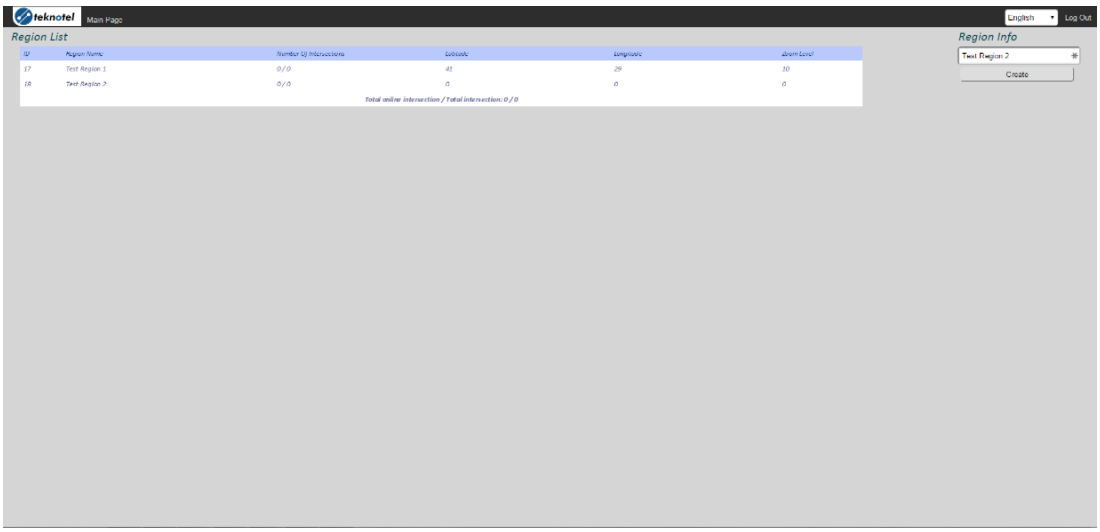


Figure 2: Main page for regional user type

- *Guest*; is a watcher user type, no right is granted to Guest user type. Guest user type can watch all regions and intersections, without being able to change anything.

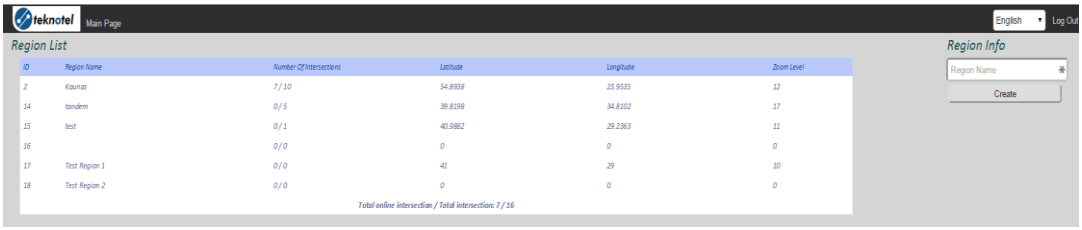
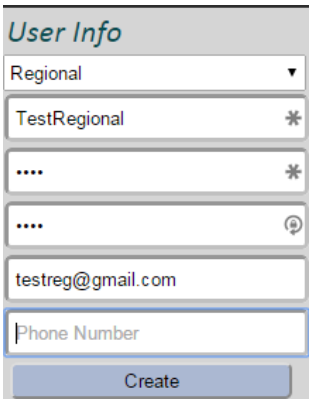


Figure 3: Main Page for user type Guest

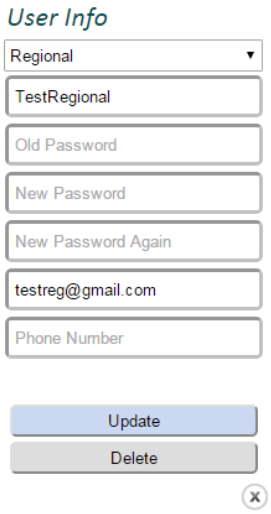
Creating User

A new user can be created using *User Info* form located at top right corner of Main Page. After selecting user type, entering username, password, mail and phone number button *Create* is clicked.



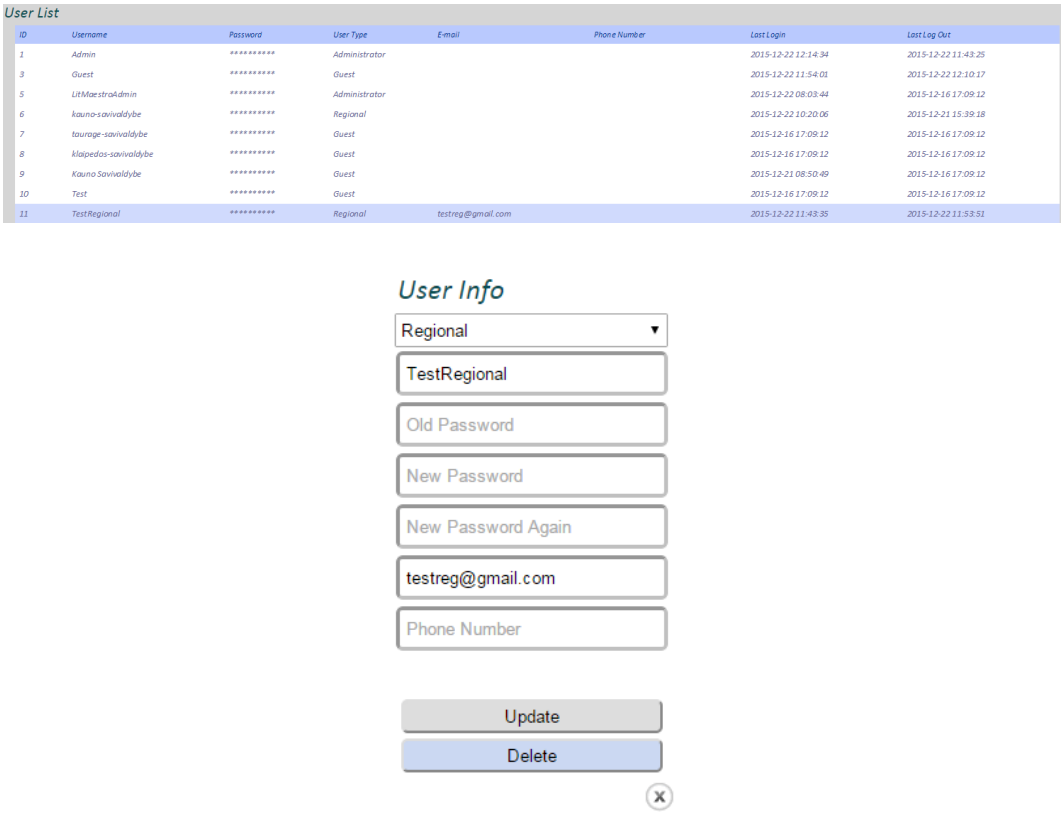
Updating User

From *User List* form located in Main Page, the related user is clicked, in the form opened; desired changes are done, current password is entered and *Update* button is clicked.



Deleting User

From *User List* form located in *Main Page*, the related user is clicked. In the form opened; current password is entered and *Delete* button is clicked.



Region Operations

Creating Region

In order to create a new region, region name is entered in *Region Info* form located in *Main Page.*

Updating Region

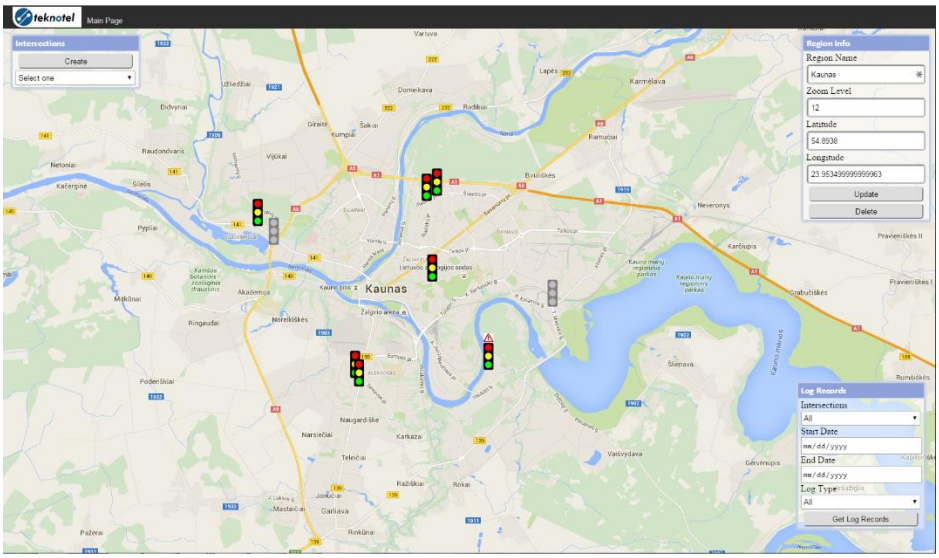
From *Region List* form located in *Main Page*, the related region is clicked.

Region List

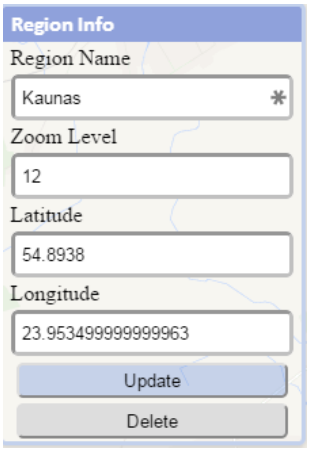
ID	Region Name	Number Of Intersections	Latitude	Longitude	Zoom Level
2	Kaunas	7 / 10	54.8938	23.9535	12
14	tandem	0 / 5	39.8198	34.8102	17
15	test	0 / 1	40.9882	29.2363	11
16		0 / 0	0	0	0
17	Test Region 1	0 / 0	41	29	10
18	Test Region 2	0 / 0	0	0	0

Total online intersection / Total intersection: 7 / 16

Region Page will be opened.



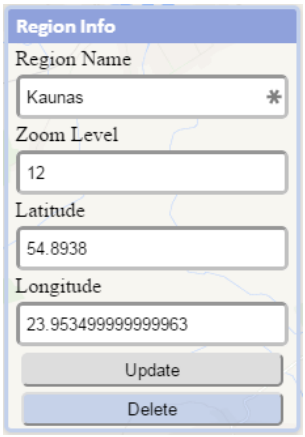
Zoom Level, *Latitude* and *Longitude* information are adjusted using the map. *Region Name* is adjusted using *Region Info form* located at top right corner of the map. For saving the latest changes, *Update* button in the *Region Info* form is clicked.



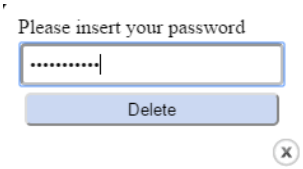
Deleting Region

For deleting a region, the related region is selected as in region update. After *Region Page* is

opened, *Delete* button in the *Region Info* form is clicked.



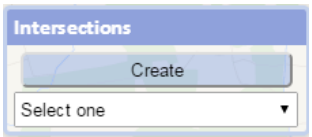
In the form opened for confirmation, *Delete* button is clicked after user password is entered.



Intersection Operations

Creating Intersection

In order to create a new intersection, *Create* button is clicked in the *Intersections* form located at top left corner of the map.

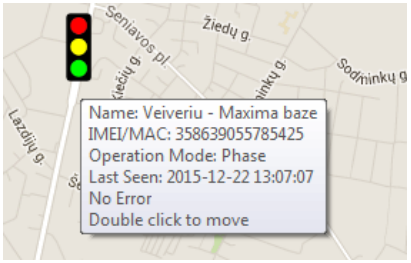


In the form opened, intersection name and intersection GPRS Module IMEI or Ethernet Module MAC address is entered, intersection configuration file is selected and *Create* button is clicked.

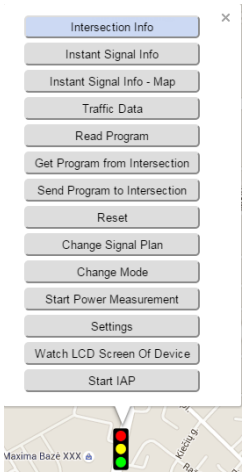
Updating Intersection

For updating an intersection, first *Intersection Info* form is opened by one of the following methods:

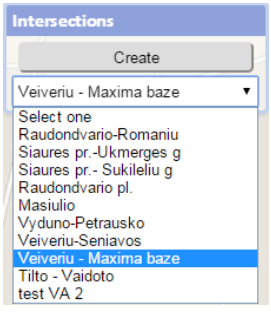
- Related intersection's icon is left clicked from the map.



- Related intersection's icon is right clicked, then *Intersection Info* option is clicked.



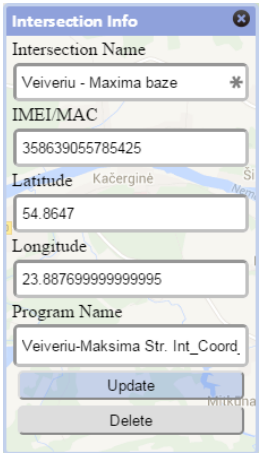
- Intersection name is clicked from the drop down located in *Intersections* form.



In the *Intersection Info* form after desired modifications are done, *Update* button is clicked for saving latest changes.

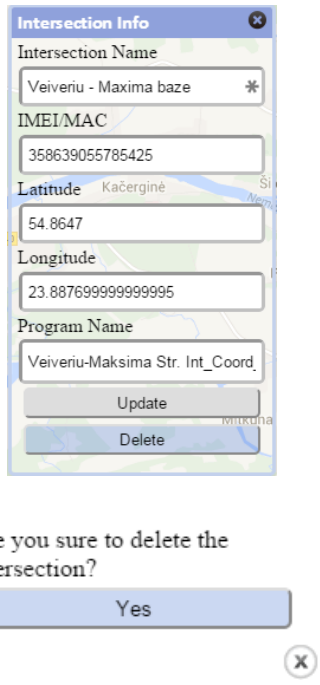
Intersection location is changed by moving intersection icon to a new location. To make the icon moveable, it should be double clicked. After the icon is made moveable and moved to a new

location, *Update* button is clicked from *Intersection Info* form.

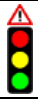


Deleting Intersection

To delete an intersection, first related *Intersection Info* form is opened, *Delete* button is clicked and deleting operation is confirmed.



Intersection State

	Normal (Intersection is in sequence, phase, phase transition or secure transition state).
	Closed
	Dark
	Flash
	Offline (Intersection is not connected to central system).
	Emergency Dark (Intersection is in emergency dark state, due to an error the intersection has applied *emergency dark* failure action).
	Emergency flash (Intersection is in emergency flash state, due to an error the intersection has applied *emergency flash* failure action).
	Warning (There's a failure, but the intersection is in normal state, because failure actions are not defined in intersection configuration file)
	Warning (There's a failure, but the intersection is in normal state, because failure actions are not defined in intersection configuration file)
	Downloading (Configuration file is being sent to intersection).

Intersection Notification Panel

Notification panel which is located at the right side of *Intersection Page*, is a panel that instantly notifies user about latest events occurred in intersections by both text and sound. There are 3 type of notifications:

- **Information**; displayed by blue color, remains active in the panel for 15-30 seconds.
- **Warning**; displayed by yellow color, remains active in the panel for 30-60 seconds.
- **Error**; displayed by red color, remains active in the panel for up to 90 seconds.

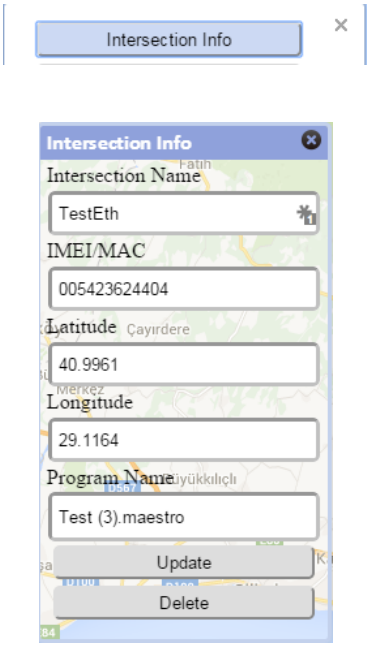
Intersection Options

Intersection options can opened by clicking right on related intersection's icon. When right clicked a menu will appear on top of the icon which includes the following options.

Intersection Information

Intersection Info option opens *Intersection Info* form, from where intersection related information can be updated or intersection can be completely deleted.

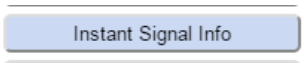
To open *Intersection Info* form for update or delete purpose, related intersection's icon is right clicked, *Intersection Info* option is clicked.

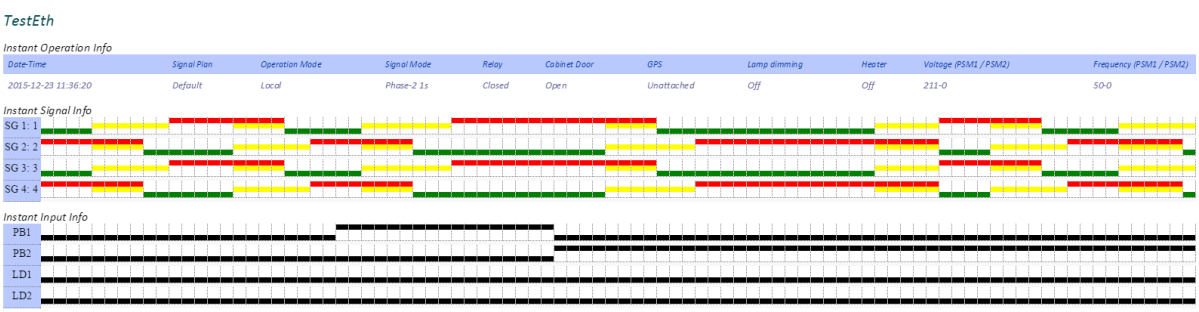


Instant Signal Information

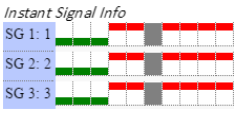
Instant Signal Info option lets users to instantly watch intersection's run-time data, including signal group outputs, digital and loop inputs, time, signal plan, operation mode, signal mode, relay, cabinet door, GPS, lamp dimming, heater states, PSM voltage and frequency.

To watch instant signal information of an intersection, related intersection's icon is right clicked, from the menu *Instant Signal Info* option is clicked.

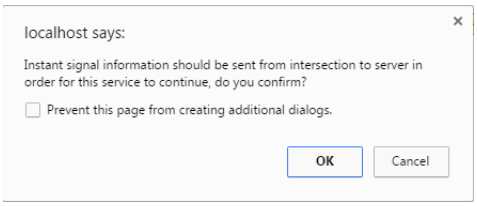




In the opened window every step represents one second. If due to communication problems the intersection can't send intersection signal info to the server, related step will be shown in gray color.



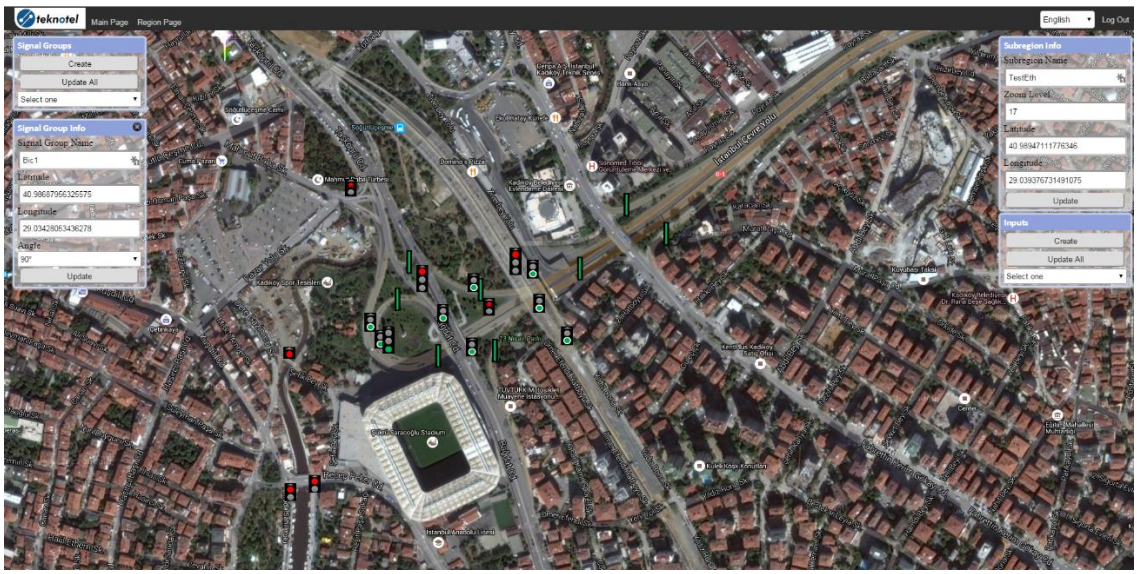
Intersection instantly sends all information needed for *Instant Signal Info* window. In order to avoid unnecessary data usage, after the first 5 minutes MCTS asks the user whether to continue getting information from Intersection or not.



If *OK* is clicked, intersection will continue sending data for another 5 minutes and ask for confirmation again. If *Cancel* is clicked, the user will be redirected to Region Page.

Instant Intersection Simulation

MCTS can instantly simulate intersection signal groups and inputs on map.

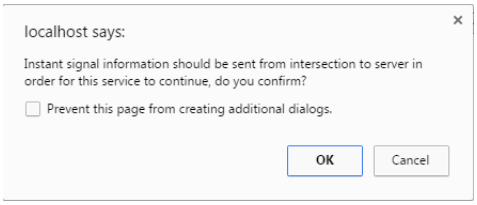


To watch signal group and input simulation of an intersection, related intersection icon is right clicked, Instant Signal Info – Map option is clicked.

When the option is clicked, *Sub-region Page* will be opened.

If the region is already updated and signal groups/inputs are created, user can watch instant signal group and input simulation.

Intersection instantly sends all information needed for *Instant Signal Info - Map* page. In order to avoid unnecessary data usage, after the first 5 minutes MCTS asks the user whether to continue getting information from Intersection or not.



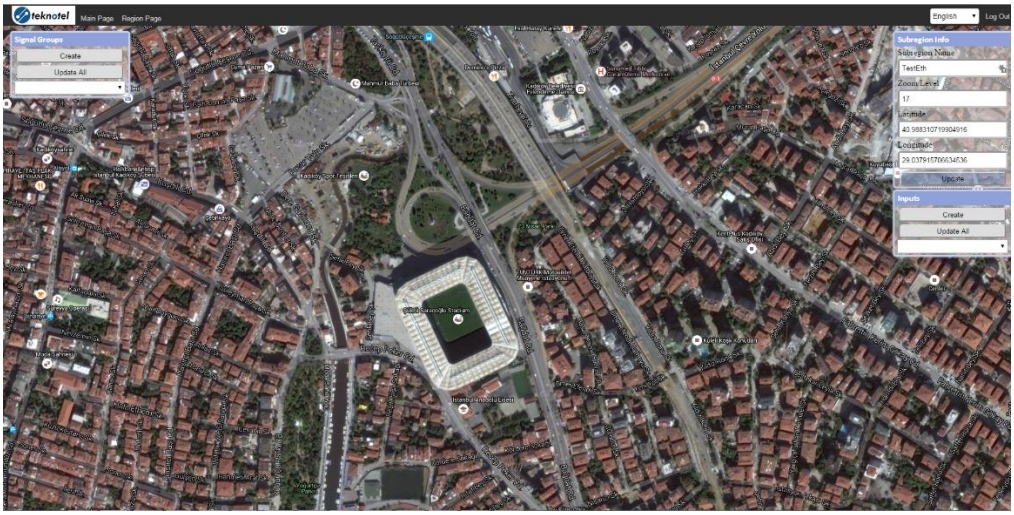
If *OK* is clicked, intersection will continue sending data for another 5 minutes and ask for

confirmation again. If *Cancel* is clicked, the user will be redirected to Region Page.

If related intersection's signal groups and inputs are not already created in *Sub-region Page*, a blank Google Maps hybrid map will be opened in which user can update region and add signal groups and inputs as follows.

Updating Sub-Region

In *Sub-region Page*, *Zoom Level*, *Longitude* and *Latitude* are adjusted using mouse and map, then *Update* button in *Sub-region Info* is clicked.



Creating Signal Groups

After the sub-region is adjusted, for signal group simulation, signal group icons are created by clicking *Create* button in *Signal Groups* form.

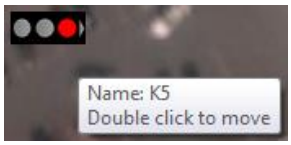
Updating All Signal Groups' Locations

After signal group icons are created, icons are located to preferred locations by double click and move operations. When icons are located, *Update All* button in *Signal Groups* form is clicked in order to permanently save icon locations.

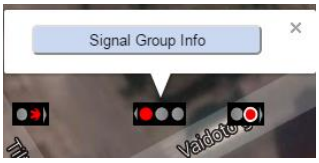
Updating Single Signal Group

For updating single signal group, first *Signal Group Info* form is opened by one of the following methods:

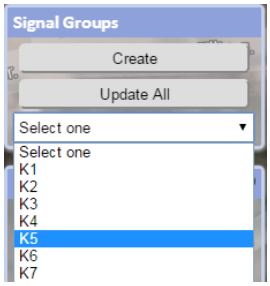
- Related signal group's icon is left clicked from the map.



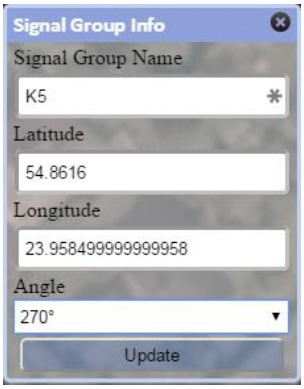
- Related signal group's icon is right clicked, then *Signal Group Info* option is clicked.



- Signal group name is clicked from the drop down located in *Signal Groups* form.



In the *Signal Group Info* form after desired modifications are done, *Update* button is clicked for saving latest changes.



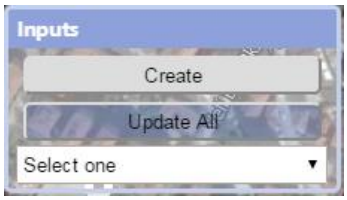
Signal group location is changed by moving signal group icon to a new location. To make the icon moveable, it should be double clicked. After the icon is made moveable and moved to a new location, *Update* button is clicked from *Signal Group Info* form.

Creating Inputs

After the sub-region is adjusted, for input simulation, input icons are created by clicking *Create* button in *Inputs* form.

Updating All Inputs' Locations

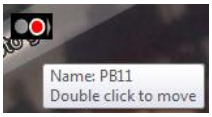
After input icons are created, icons are located to preferred locations by double click and move operations. When icons are located, *Update All* button in *Inputs* form is clicked in order to permanently save icon locations.



Updating Single Input

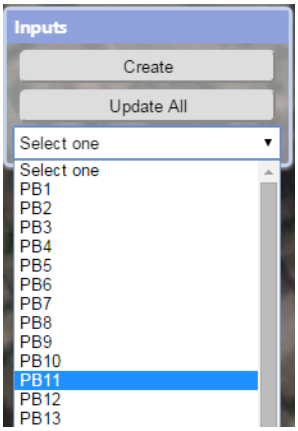
For updating single input, first *Input Info* form is opened by one of the following methods:

- Related input's icon is left clicked from the map.



- Related input's icon is right clicked, then *Input Info* option is clicked.

- Input name is clicked from the drop down located in *Inputs* form.

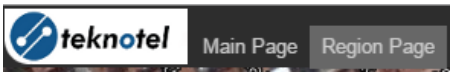


In the *Input Info* form after desired modifications are done, *Update* button is clicked for saving latest changes.

Input location is changed by moving input icon to a new location. To make the icon moveable, it should be double clicked. After the icon is made moveable and moved to a new location, *Update* button is clicked from *Input Info* form.

Returning To Region Page

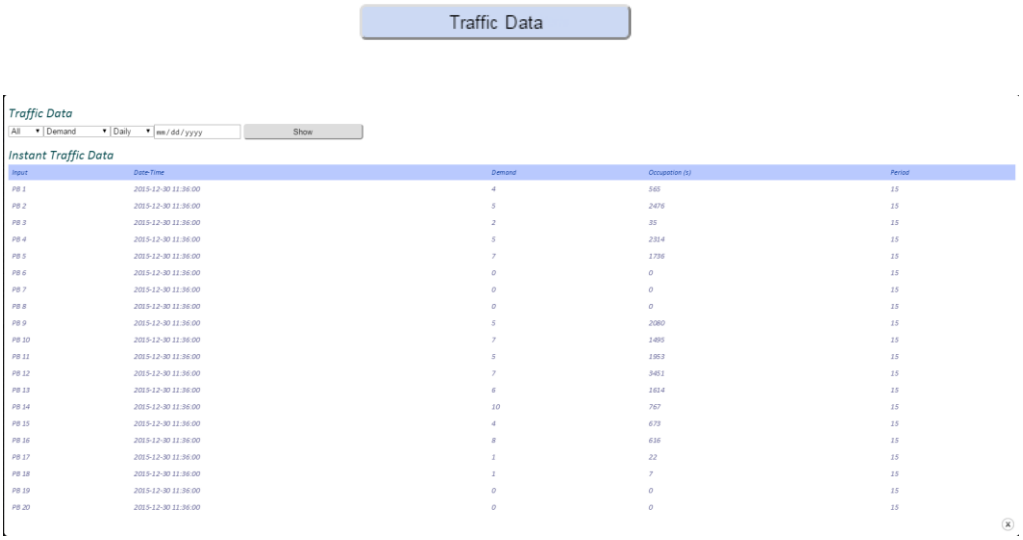
To return back to region page, *Region Page* button is clicked, located next to *Main Page* button.



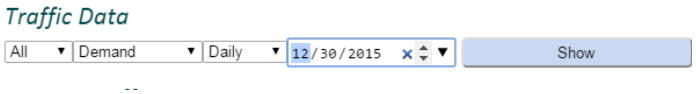
Traffic Data

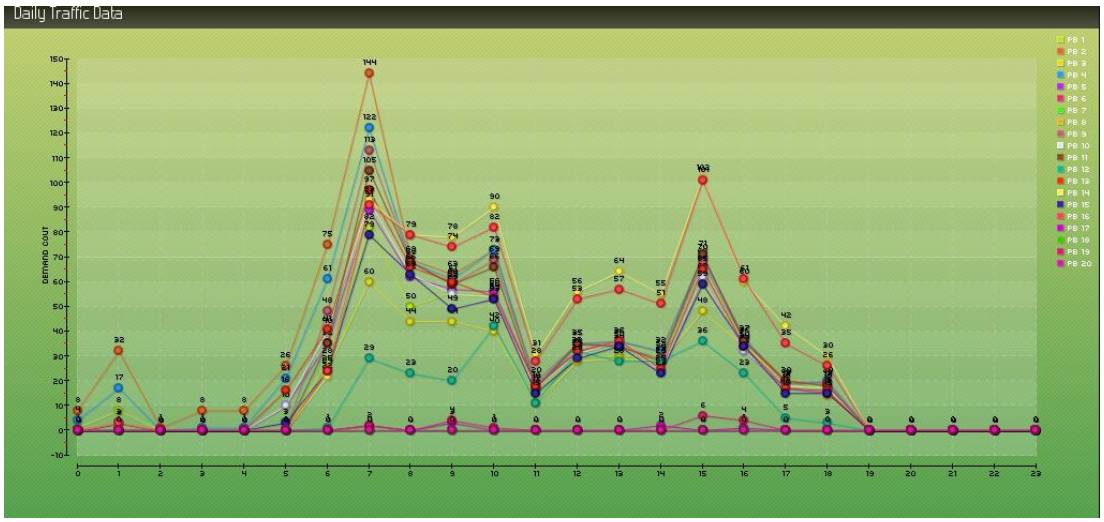
MCTS can instantly show digital and loop inputs' demand counts and occupations (in seconds) during a period. Period is normally set to 15 minutes. However, user can change the period to 30, 45 and 60 minutes from *Setting* option. In each period start, demand counts and occupations will be initialized.

To watch instant traffic data, related intersection's icon is right clicked, from the menu *Traffic Data* option is clicked.



In addition, MCTS can show all inputs' or a single input's daily, monthly and yearly traffic data on graph. For this, required options are selected as desired, then *Show* button is clicked in *Traffic Data* page.



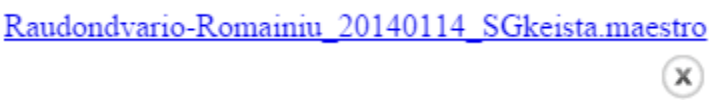


Downloading Configuration from Server

MCTS saves a copy of configuration programs which is added or updated for an intersection.

To download an intersection's latest added/updated configuration program, related intersection icons is left clicked, then *Read Program* option is clicked.

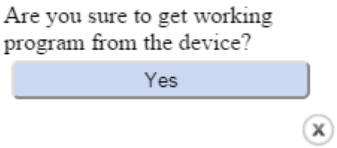
After clicking the link provided in the opened page, configuration program will be downloaded to local computer.



Downloading Configuration from Intersection

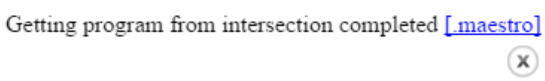
MCTS can also download running configuration program from device. To download an intersection's running configuration program from the device itself, the related intersection's icon is clicked, *Get Program from Intersection* option is clicked.

In the next page, the operations is confirmed.

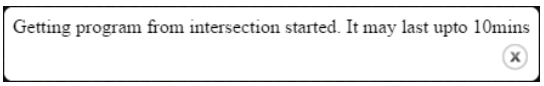


After confirmation, configuration download will start. Depending on the size of program and connection speed, the operation can last up to 10 minutes. When downloading finished, user will be notified.

After notification, *Get Program from Intersection* option is clicked again. After clicking the link provided in the opened page, the configuration will be downloaded to the local computer.

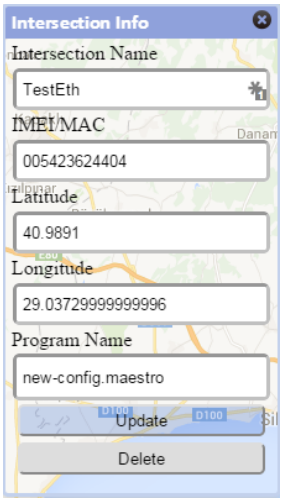


If the option is clicked while download operation is in progress, the user will be warned.

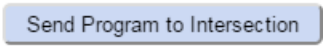


Sending Configuration to Intersection

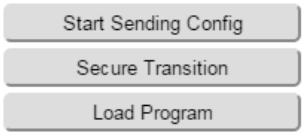
MCTS can send a completely new configuration program to the device. In order to update a device's running configuration program, first related intersection is updated with the program.



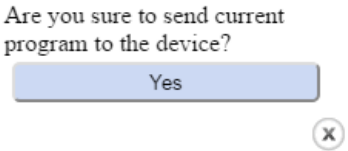
Then *Send Program to Intersection* option is clicked.



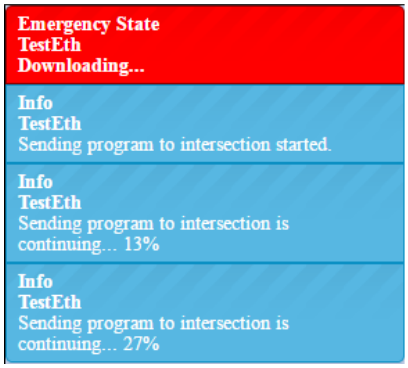
After the option is clicked, a new page with three options is opened.



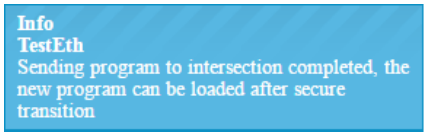
If the latest configuration file is not sent to Intersection yet, *Start Sending Config* option is clicked and the operation is confirmed.



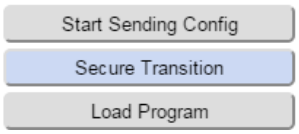
After the confirmation, MCTS will start sending the latest configuration file to the intersection. MCTS will also notify user with the latest status in the notification panel.



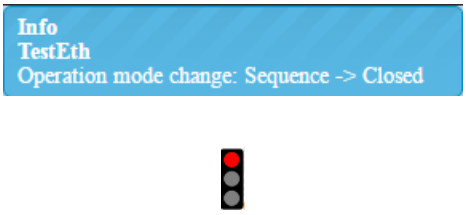
When sending process is finished, a notification is shown in the notification panel.



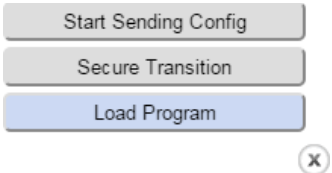
After the program is sent, user can click *Secure Transition* option in order to make the intersection apply secure transition phase and close all signal groups.



After secure transition is applied and all signal groups are closed, the user will be notified and the related intersection's icon will be changed.

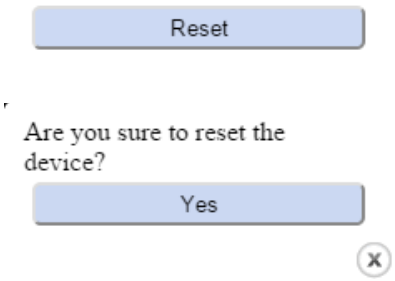


Finally, Load Program option is clicked to load latest sent program to intersection.



Restarting an Intersection

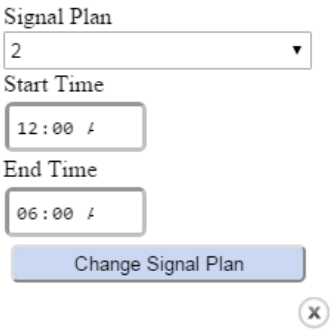
To restart an intersection, related intersection icon is left clicked, *Reset* option is clicked and operation is confirmed.



Changing Intersection Signal Plan

To change an intersection's signal plan, related intersection icon is left clicked, *Change Signal Plan* option is clicked.

In the opening page, desired signal plan number, signal plan start and end times are adjusted and *Change Signal Plan* button is clicked.

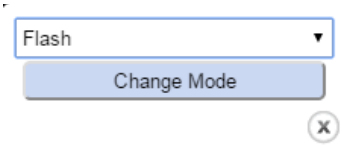


The intersection will run selected signal plan in specified time range (Signal plan 2 from 12:00 to 06:00 AM for the example above).

Changing Intersection Mode

User can remotely change an intersection's working mode to closed (all red), flash (all yellow flash), disabled (all dark) and normal. For changing an intersection's working mode related intersection icon is right clicked, *Change Mode* option is clicked.

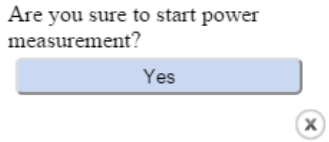
In the opening page, desired working mode is selected, *Change Mode* button is clicked.



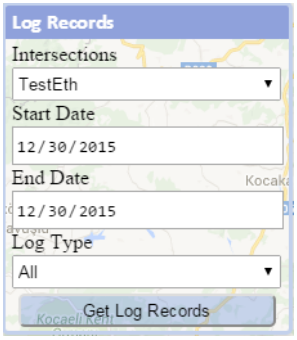
Starting Power Measurement

MCTS can remotely start measuring voltage and power consumption of all signal outputs connected to an intersection. To start power measurement for an intersection, related icon is right clicked, *Start Power Measurement* option is clicked.

In the opening page, operation is confirmed.



After the confirmation, device will start measuring voltage and power consumption of each connected signal group and send measurement results to the server. Measurement results can be seen in log records.



2015-12-30 20:20:03	*TestEth*	*Power measurement start*
2015-12-30 20:20:07	*TestEth*	*Signal Output 1: 2mA, 212V*

Changing Intersection Settings

User can change some of the default settings for an intersection, including *Configuration Mode*, *Sleep Mode Info*, *Log*, *Traffic Counts* and *Traffic Counts Period* settings.

Configuration Mode is a security setting which lets the user to enable or disable device configuration program acceptance over USB/Serial port. By default, this setting is set to *disable*.

Sleep Mode Info is a setting which enables or disables external battery usage for log and notification operations to server when mains power is cut and device is entering sleep mode. By default this setting is also set to *disable*. This setting should only be enabled for devices which has external battery attached, else log and notification operations will consume internal battery, thus making the device lose time.

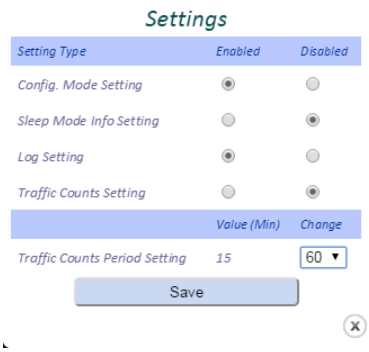
Log setting enables or disables sending logs from device to server. By default, this setting is set to *enable*.

Traffic Counts Setting enables or disables sending traffic data to server. By default, this setting is set to *disable*.

Traffic Counts Period setting sets the period (minutes) in which traffic data is collected in device. By default, this setting is set to 15 minutes.

To change an intersection's default settings, related intersection icon is left clicked, *Settings* option is clicked.

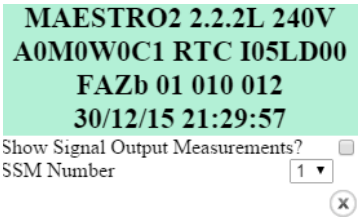
In the opening page, desired settings are adjusted, *Save* button is clicked.



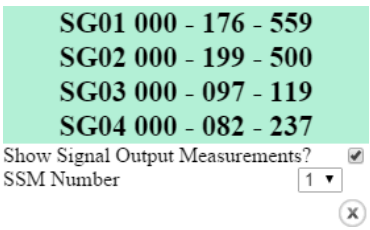
Watching Intersection LCD Screen

Intersection LCD Screen can be instantly watched from MCTS. In order to watch an intersection's LCD Screen, related intersection icon is left clicked, *Watch LCD Screen of Device* option is clicked.

In the opening page, LCD Screen data will be shown instantly.



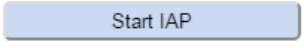
Signal groups' current measurements can also be instantly watched in this page. In order to watch signal group current measurements for each SSM Module, *Show Signal Output Measurements* check box is clicked, related *SSM Number* is selected.



Each line shows signal group number, minimum, present and maximum current measurements respectively.

Updating Intersection Firmware

Maestro devices running 2.2.0 and later firmware versions can be remotely upgraded. To upgrade a compatible intersection's firmware, related intersection icon is left clicked, *Start IAP* (In-application Programming) option is clicked.



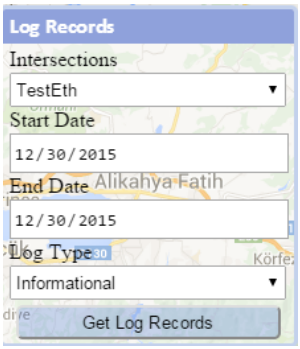
For this option, provider's technical support is needed.

Log Records

Maestro devices send logs to server when connected and *Log* setting is enabled. According to urgency level, device logs are classified into 3 categories:

- *Information*; least urgent logs used to give information about device operation.
- *Warnings*; middle level urgent logs, used to inform users about nonfatal errors.
- *Errors*; most urgent logs, used to inform users about fatal errors that need action to be taken.

In order to see log records for a specific intersection or all intersections in the same region, start date, end date and log type is selected, *Get Log Records* button is clicked in the *Log Records* form located at bottom-right of the *Region Page*.



When the button is clicked, related logs for the selected time range will be shown.

Date / Time	Intersection Name	Log Description
2015-12-30 14:10:51	TestEth	Central connection was severed
2015-12-30 14:11:03	TestEth	Central connection established
2015-12-30 00:00:00	TestEth	Signal program 2 active
2015-12-30 07:00:00	TestEth	Signal program 1 active
2015-12-30 14:13:18	TestEth	Central connection was severed
2015-12-30 14:13:50	TestEth	Central connection established
2015-12-30 14:26:22	TestEth	Central Download
2015-12-30 14:26:31	TestEth	Central Download
2015-12-30 14:26:31	TestEth	Power measurement start
2015-12-30 14:33:17	TestEth	Central Download
2015-12-30 14:33:37	TestEth	Fixed time table 1 active
2015-12-30 14:33:37	TestEth	Program time table 1 active
2015-12-30 14:33:37	TestEth	Signal program 2 active
2015-12-30 14:33:37	TestEth	Signal Group Set 1 Signaling mode: Opening -> Normal
2015-12-30 14:33:46	TestEth	SSM 2 module is working properly
2015-12-30 14:33:46	TestEth	Signal Group Set 1 Signaling mode: Opening -> Normal
2015-12-30 14:33:46	TestEth	SSM 3 module is working properly
2015-12-30 14:33:46	TestEth	Signal Group Set 1 Signaling mode: Opening -> Normal
2015-12-30 14:33:46	TestEth	Signal Group Set 1 Signaling mode: Normal -> Emergency Dark
2015-12-30 14:33:47	TestEth	Power measurement start
2015-12-30 14:34:04	TestEth	SSM 4 module is working properly
2015-12-30 14:34:04	TestEth	Signal Group Set 1 Signaling mode: Opening -> Normal
2015-12-30 14:34:05	TestEth	Signal Output 34: 0mA, 212V
2015-12-30 14:34:05	TestEth	Signal Output 37: 0mA, 212V
2015-12-30 14:34:08	TestEth	Signal Output 5: 1mA, 212V
2015-12-30 14:34:10	TestEth	Signal Output 2: 1mA, 210V
2015-12-30 14:34:16	TestEth	Signal Output 6: 0mA, 210V
2015-12-30 14:34:18	TestEth	Signal Output 3: 1mA, 211V
2015-12-30 14:34:41	TestEth	Signal Output 12: 2mA, 210V
2015-12-30 14:34:47	TestEth	Signal Output 1: 1mA, 210V
2015-12-30 14:34:47	TestEth	Signal Group Set 1 Signaling mode: Normal -> Emergency Flash
2015-12-30 14:34:50	TestEth	Signal Output 11: 2mA, 210V

Previewed log records can also be saved to a text file. For this, the *TXT* icon located at top-right of the *Logs Page* is clicked.

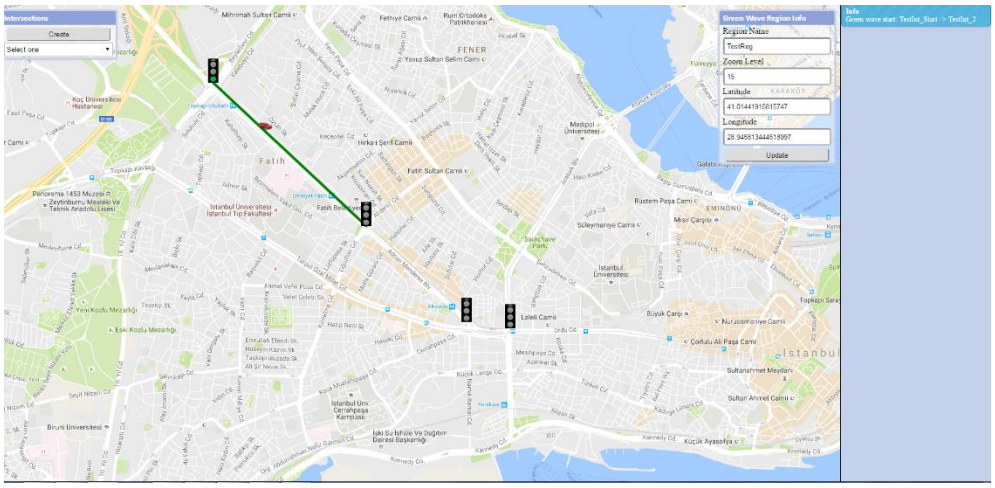
2015-12-30 - Notepad

File Edit Format View Help

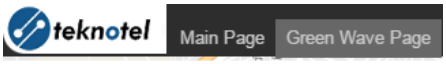
Date / Time	Intersection Name	Log Description
2015-12-30 14:10:51	TestEth	Central connection was severed
2015-12-30 14:11:03	TestEth	Central connection established
2015-12-30 00:00:00	TestEth	Signal program 2 active
2015-12-30 07:00:00	TestEth	Signal program 1 active
2015-12-30 14:13:18	TestEth	Central connection was severed
2015-12-30 14:13:50	TestEth	Central connection established
2015-12-30 14:26:22	TestEth	Central Download
2015-12-30 14:26:31	TestEth	Central Download
2015-12-30 14:26:31	TestEth	Power measurement start
2015-12-30 14:33:17	TestEth	Central Download
2015-12-30 14:33:37	TestEth	Fixed time table 1 active
2015-12-30 14:33:37	TestEth	Program time table 1 active
2015-12-30 14:33:37	TestEth	Signal program 2 active
2015-12-30 14:33:37	TestEth	Signal Group Set 1 Signaling mode: Opening -> Normal
2015-12-30 14:33:46	TestEth	SSM 2 module is working properly
2015-12-30 14:33:46	TestEth	Signal Group Set 1 Signaling mode: Opening -> Normal
2015-12-30 14:33:46	TestEth	SSM 3 module is working properly
2015-12-30 14:33:46	TestEth	Signal Group Set 1 Signaling mode: Opening -> Normal
2015-12-30 14:33:46	TestEth	Signal Group Set 1 Signaling mode: Normal -> Emergency Dark
2015-12-30 14:33:47	TestEth	Power measurement start
2015-12-30 14:34:04	TestEth	SSM 4 module is working properly
2015-12-30 14:34:04	TestEth	Signal Group Set 1 Signaling mode: Opening -> Normal
2015-12-30 14:34:05	TestEth	Signal Output 34: 0mA, 212V
2015-12-30 14:34:05	TestEth	Signal Output 37: 0mA, 212V
2015-12-30 14:34:08	TestEth	Signal Output 5: 1mA, 212V
2015-12-30 14:34:10	TestEth	Signal Output 2: 1mA, 210V
2015-12-30 14:34:16	TestEth	Signal Output 6: 0mA, 210V
2015-12-30 14:34:18	TestEth	Signal Output 3: 1mA, 211V
2015-12-30 14:34:41	TestEth	Signal Output 12: 2mA, 210V
2015-12-30 14:34:47	TestEth	Signal Output 1: 1mA, 210V
2015-12-30 14:34:47	TestEth	Signal Group Set 1 Signaling mode: Normal -> Emergency Flash
2015-12-30 14:34:50	TestEth	Signal Output 11: 2mA, 210V

Green Wave Page

MCTS can instantaneously simulate green wave intersections belonging to a green wave region by drawing a path and moving a car between sequential intersections. The simulation starts when the related signal group of the first green wave intersection in the region becomes green and ends when the relevant signal group of the last green wave intersection in the region becomes green.



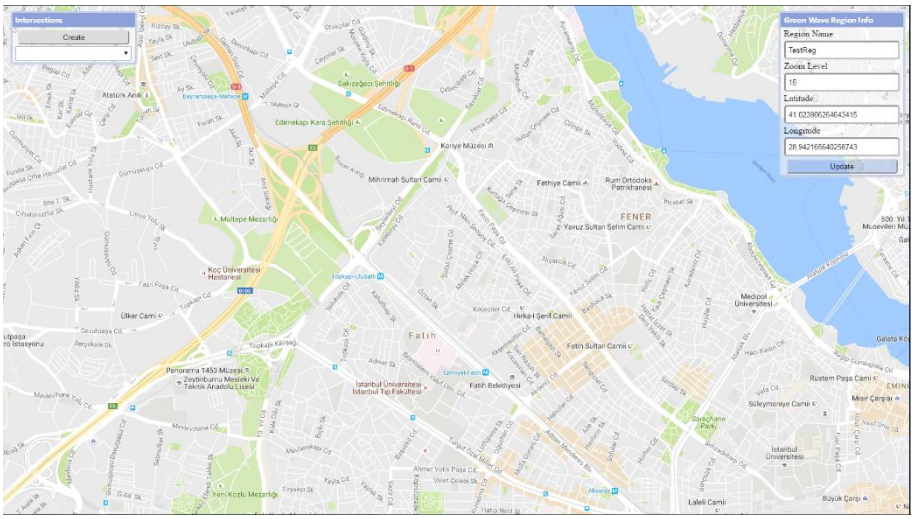
To start simulating green wave intersection in a region, *Green Wave Page* located in *Region Page* is clicked.



If green wave region is already updated and intersection are created, user can watch green wave intersections' simulation. If green wave intersections are not already created in *Green Wave Page*, a blank Google Maps road-map will be opened in which user can update region and add intersections as follows.

Update Green Wave Page

In *Green Wave Page*, *Zoom Level*, *Longitude* and *Latitude* are adjusted using mouse and map, then Update button in *Green Wave Region Info* is clicked.

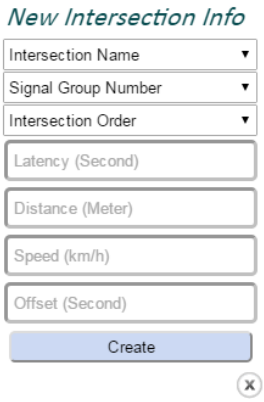


Create Green Wave Intersection

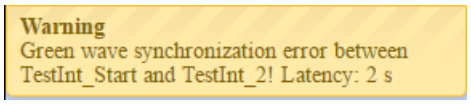
After *Green Wave Page* is adjusted, for green wave intersection simulation, intersection icons are created by clicking *Create* button in *Green Wave Intersections* form.

Not: In order to create a green wave intersection in the *Green Wave Region*, related intersection should be already created in the *Region Page*.

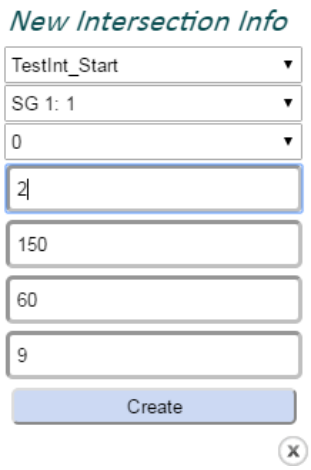
In the opening form following green wave intersection options are selected/inserted.



- *Intersection Name:* Green wave intersection name, selected from the list of all intersections which are created in the *Region Page*.
- *Signal Group Number:* Number and name of (if available) selected green wave intersection's signal group.
- *Intersection Order:* Order of the related intersection
    - *0:* Source intersection / green wave simulation starting point.
    - *[Maximum order]:* Destination intersection / green wave simulation endpoint.
- *Latency (Second):* Acceptable latency (in second) for related and subsequent intersections. If the subsequent intersection's related signal group doesn't become green after simulation car is arrived at the intersection and defined latency is passed, a warning will appear in the notification panel.



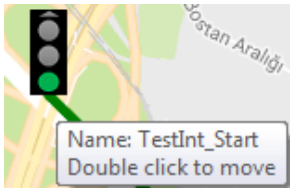
- *Distance (Meter):* Distance (in meter) between related and subsequent intersections.
- *Speed (km/h):* Speed of the cars (in kilometer per hour) moving from related intersection to subsequent intersection.
- *Offset (Second):* Offset (time taken to arrive at the subsequent intersection with defined speed and distance) between related and subsequent intersections. Offset is automatically calculated from defined speed and distance.



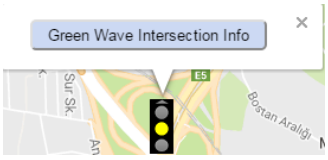
Update Green Wave Intersection

For updating green wave intersection, first *Green Wave Intersection Info* form is opened by one of the following methods:

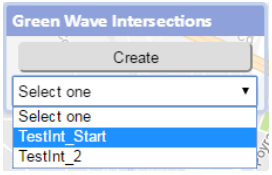
- Related green wave intersection's icon is left clicked from the map.



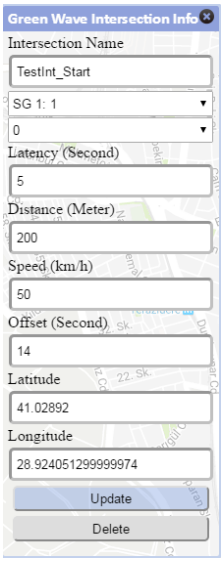
- Related green wave intersection's icon is right clicked, then *Green Wave Intersection Info* option is clicked.



- Green wave intersection name is clicked from the drop down located in *Green Wave Intersection Info* form.



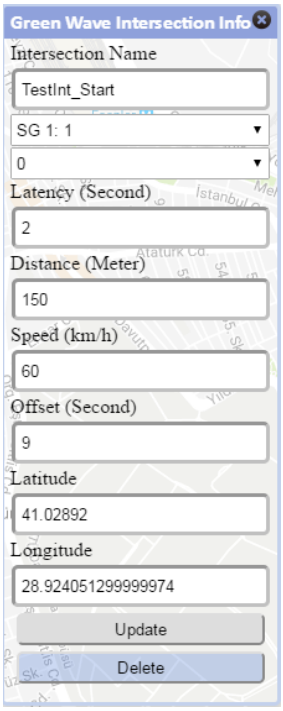
In the *Green Wave Intersection Info* form after desired modifications are done, *Update* button is clicked for saving latest changes.

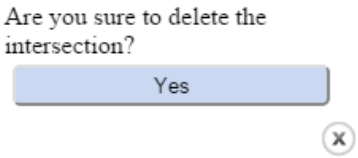


Signal group location is changed by moving signal group icon to a new location. To make the icon moveable, it should be double clicked. After the icon is made moveable and moved to a new location, *Update* button is clicked from *Green Wave Intersection Info* form.

Delete Green Wave Intersection

To delete a green wave intersection, first related *Green Wave Intersection Info* form is opened, *Delete* button is clicked and deleting operation is confirmed.

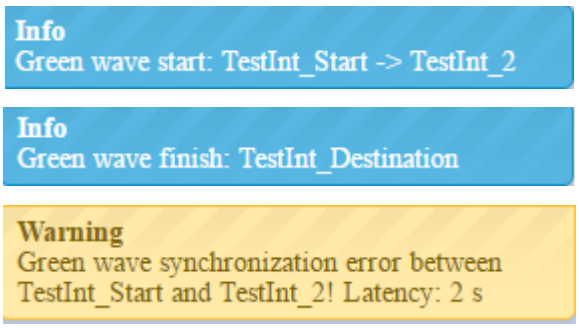




Green Wave Intersection Notification Panel

Notification panel which is located at the right side of *Green Wave Region*, is a panel that instantly notifies user about green wave synchronization start, finish and errors events. There are 2 type of notifications:

- **Information**; displayed by blue color, remains active in the panel for 15-30 seconds.
- **Warning**; displayed by yellow color, remains active in the panel for 30-60 seconds.



Returning To Region Page

To return back to region page, *Region Page* button is clicked, located next to *Main Page* button.