



# ImFlow Central User Manual

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## 1. Introduction

### 1.1 Overview

ImFlow Central is a web-based system for monitoring and control of DAAP devices. It is an easy to use, secure and integrated environment.

This document describes how users can interact with ImFlow Central using a standard web browser and how they can configure tools and display settings for best performance.

ImFlow Central includes following features that will be detailed further in this document:

- Monitoring Intersections (DAAPs)
  - Status and performance data
  - List of currently active alarms
- Monitoring Links
  - Performance data
- SMS and e-mail reporting of critical events (alarms)
- Glance system state overview on a geographical map, pictograms of Intersections, Links and Areas
- Configurable display options for Links
- Policy based traffic management
- Scheduler overview
- Commands to DAAPs (manual overrides)
- Access to web interfaces:
  - DAAP operational and unit management
  - TLC operational and unit management
- Event Management
- Historical data collection
- Reports
- Management of users and permissions
- Persistent storage of network configuration, events, users, preferences and other system objects

The installation and configuration of the ImFlow Central is described in the [1](#) and is out of scope of this document. It is assumed that you have been granted access to an already installed and configured the ImFlow Central in normal operation.

### 1.2 Document conventions

This document uses the following conventions to convey important instructions and information.

**NOTE**

Notes contain helpful suggestions or references to materials not contained in this guide.

**CAUTION**

In this situation, you might do something that could result in loss of data.

## 1.3 Glossary

Imtech	Imtech/Peek organisation (see note in section on Copyright)
IP	Internet Protocol
PC	Personal Computer
TLC	Traffic light controller
DAAP	Distributed Adaptive Algorithm Product
GUI, UI	Graphical User Interface, User Interface
FT	Fixed Time
SAPS	System activated plan selection
TR	Traffic responsive
TA	Traffic adaptive
LOI	Level of importance
PT	Public transport
PTV	Public transport vehicle
RT	Real time
TSD	Time Space diagram
QD	Queue diagram
BIRT	Business Intelligence and Reporting Tools
SW	Software

## 1.4 References

Ref.	Title/Author/Publisher	Version	Date/Year
1	99-5117 ImFlow Installation Configuration Manual.docx	1	2013-12-18
2	9586_140_75010_ImFlow_Configuration_Manual.docx	1.2	July 2013
3	3522_838_40000_DAAP_IF_SPECIFICATION.docx	1.21	2013-10-29
4	UC_ImFlow_Configuration_Management.docx	0.4	2013-04-23
5	9586_140_75010_ImFlow_Configuration_Manual.docx	1.2	July 2013
6	Creating BIRT reports for UTMS reference guide		
7			
8			



## 2. ImFlow Central Clients

A standard browser is used for the user access to the ImFlow Central without the need to install any other components for normal operation.

It is assumed that your PC has network access to the ImFlow Central server and that you have the right user credentials required for accessing the ImFlow Central.

For best performance, use screen resolution of 1280 x 1024 or higher.

### 2.1 Web browsers

Recommended web browsers are:

- Internet Explorer 9.x

Supported browsers are:

- Mozilla Firefox (all versions above 6.x)
- Google Chrome (all versions)
- Internet Explorer 8.x with Google Chrome Frame add-on

### Java Runtime Environment (JRE)

The Java runtime environment (JRE) must be installed on your PC to be able to launch applets used in TLC web interface. If JRE is not installed on your PC, your browser will automatically identify the need for JRE and will offer you an automatic download/installation of the required software – allow the browser to do it. You can also download JRE manually from the following web address: <http://www.java.com/en/download/>.

### Google Chrome Frame add-on

This add-on is required for improved performance of Internet Explorer 8.x and is also recommended for Internet Explorer 9.x whose performance is also slightly improved with this add-on.

You can upgrade Internet Explorer with Google Chrome Frame Add-on from following web address: <http://www.google.com/chrome> or from the ImFlow Central server (from the login screen).

### Launching DAAP (and TLC) web interfaces

An ImFlow Central client allows you to access web interfaces of the DAAPs and TLCs connected to the system (both operational and unit management). Web interfaces are opened in a new browser window.

Refer to chapters 18, 19 and 20 for more details.

### Browser settings

Enable the following settings in your browser for normal operation:

#### 1. Enable browser cache

- Mozilla Firefox:

(Menu) Tools-> Option->Privacy tab: History -> Select "Firefox will Remember history"

- Internet Explorer:



(Menu) Internet Options -> Browsing history -> Settings: check option "Every time I visit the page"

## 2. Enable pop-up windows

- Mozilla Firefox:

(Menu) Tools-> Option->Content tab: un-check option "Block pop-up windows"

- Internet Explorer:

(Menu) Internet Options -> Privacy tab: -> un-check option "Turn on pop-up blocker"

## 3. Enable cookies

- Mozilla Firefox:

Automatically enabled if browser caching is enabled as described in #1.

Make sure that (Menu) Tools-> Option->Privacy tab: Tracking option ("Tell web sites I do not want to be track" in un-checked

- Internet Explorer:

(Menu) Internet Options -> Privacy tab: -> Advanced settings: "Accept cookies"

## 4. Enable JavaScript

- Mozilla Firefox:

(Menu) Tools-> Option->Content tab: check option "Enable Java Script"

- Internet Explorer:

(Menu) Internet Options -> Security tab: Internet/Custom level : Enable scripting

## 5. Enable add-ons

- Internet Explorer:

(Menu) Tools-> Manage Add-ons: check that Google Frame add-on is enabled (see Chapter 3.2)



### 3. ImFlow Central Users

#### 3.1 User Login

Open a web browser and enter the URL address of the ImFlow Central into your browser's address bar. The login page will be displayed:

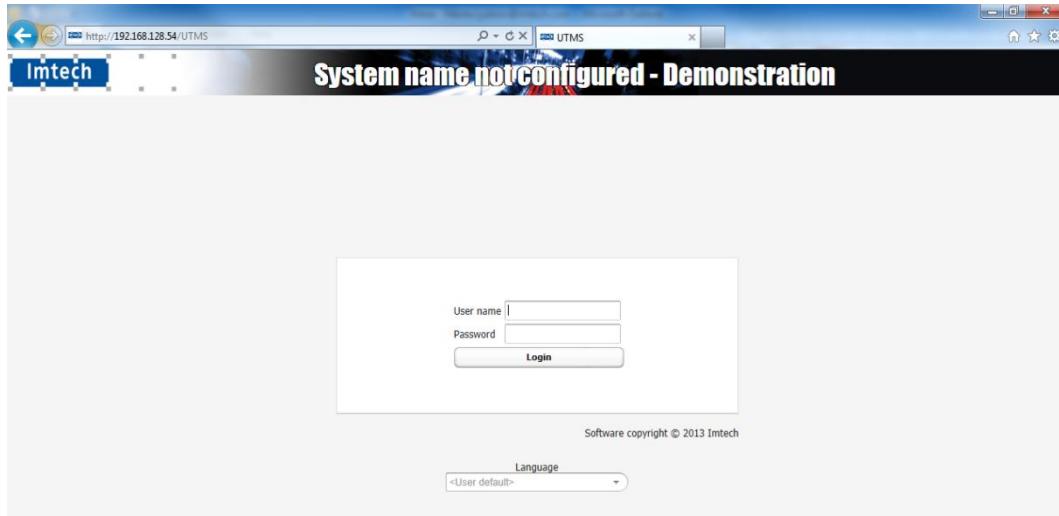


Figure 3-1 User Login screen

Enter your *User name* and *Password* and select *Language*. If language is not selected either the language from user preferences will be used or if there isn't any language defined in user preferences English language will be used. Any selected language is valid only for that session. Press the *Login* button to log in to the system.

If the user data was entered incorrectly, the login screen will display an error message indicating that you do not have the rights to access the ImFlow Central: "Incorrect username and/or password".



**NOTE:** If there is a problem with the validity of your license, the login screen will not be displayed and an error message will be displayed in its place. Please refer to Chapter 17 for detailed information.

When you login for the first time you will also be asked to enter initial user settings like language and time zone.



Please provide initial user settings:

Language *	<input type="text"/>
User timezone *	<input type="text"/> Europe/Belgrade
<input type="button" value="Apply"/>	

Figure 3-2 User settings on first Login

You will be asked to provide the settings only after first login but you can also change the settings later from ImFlow Central user interface. To do that, go to Administration -> User settings -> User settings -> Preferences.

Figure 3-3 User settings menu

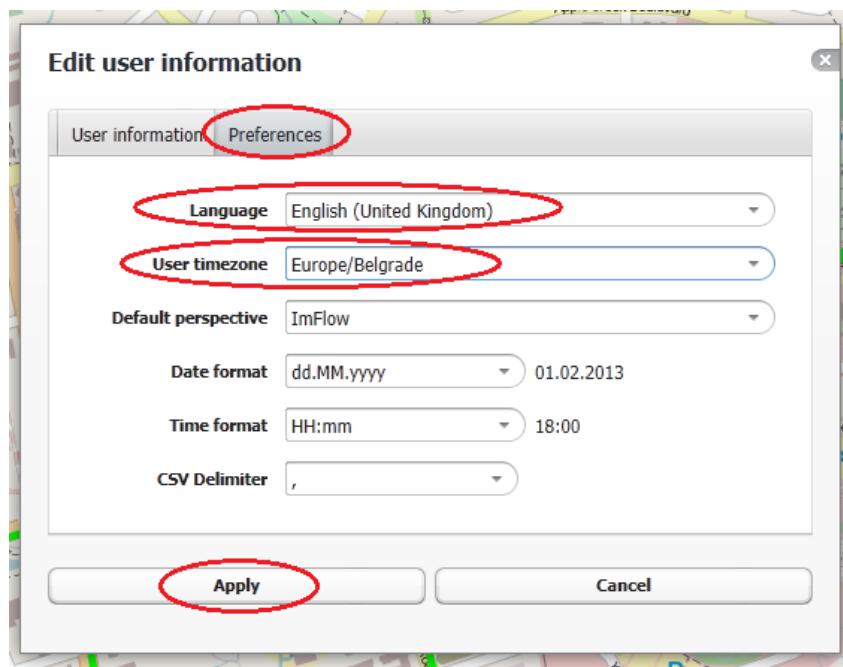


Figure 3-4 User settings screen

If login is successful, the main ImFlow Central user interface will be shown:

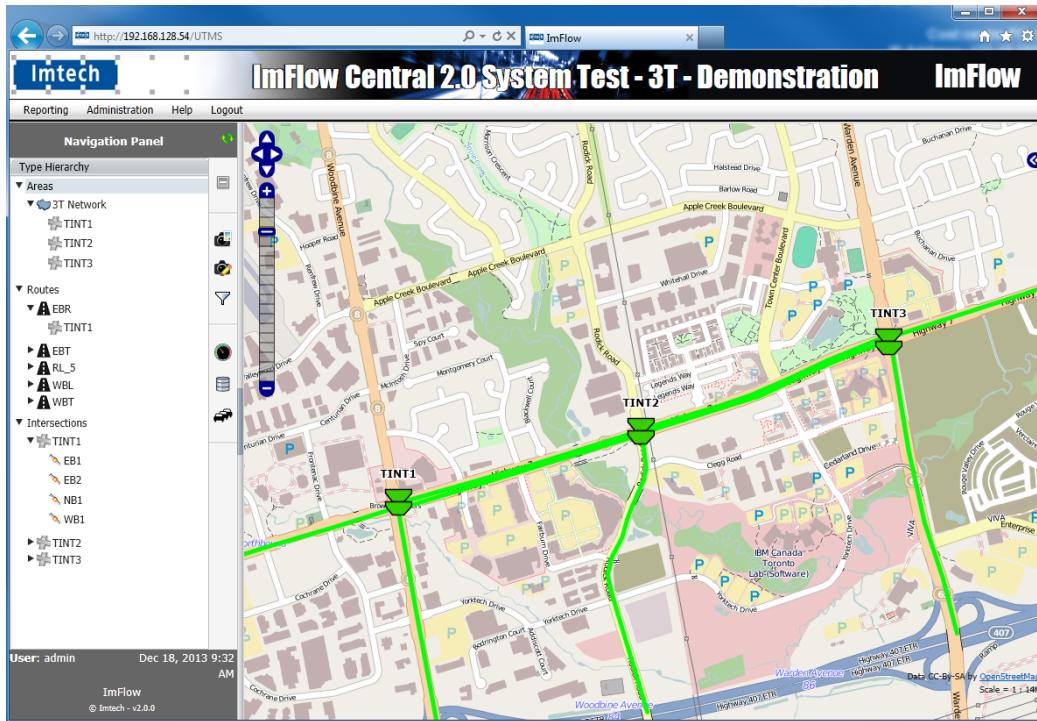


Figure 3-5 ImFlow Central GUI

You are now logged into the ImFlow Central with user rights available for your user group (user level).



### 3.2 Improve performance of Internet Explorer

The Google Chrome Frame add-on is strongly recommended for IE8 to improve the browser's performance. The add-on is not necessary for IE versions higher than 8 but can also be used to slightly improve the performance of those browsers.

When you run IE as an ImFlow Central client, ImFlow Central will automatically recognize the need for the add-on and will recommend the user to install it from the ImFlow Central server as shown on following screenshot of the ImFlow Central login screen:

**System name not configured - Demonstration**

User name   
Password

Software copyright © 2013 Imtech  
Language <User default>

**Speed up your browser**

To improve performance of Internet Explorer we suggest that you install Google Chrome frame add-on.  
When installation completes, enable newly installed addon, clear browser cache and restart your browser.

[Download from RMS Server](#)

**Speed up your browser**

To improve performance of Internet Explorer we suggest that you install Google Chrome frame add-on.  
When installation completes, enable newly installed addon, clear browser cache and restart your browser.

[Download from RMS Server](#)

Allow your browser to install the add-on (click on the "Run" button on installation dialog):

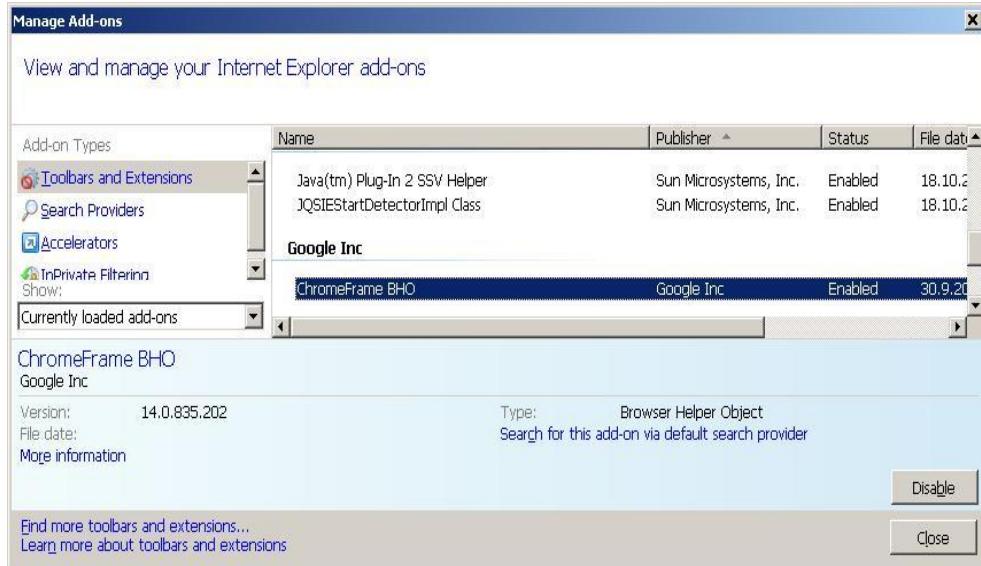
Do you want to run or save GoogleChromeFrameStandaloneEnterprise.msi from=192.168.128.40?

This type of file could harm your computer.

Run Save Cancel

When the installation procedure is finished **re-start Internet Explorer**.

You can check if Chrome Frame is correctly installed and enabled using IE's "Tools/Manage add-ons" dialog:



#### **NOTE**

Alternatively, you can install Chrome Frame add-on to your Internet Explorer from following web address: <http://www.google.com/chrome>.

### **3.3 User groups**

ImFlow Central has 5 predefined User Groups:

#### **1. Administrator**

Administrator is User role with unlimited permissions. The system administrator has access to all user functions, with exclusive access to the following configuration functions:

- Install and configure ImFlow Central
- Add/edit/delete users and user groups

#### **2. Traffic Engineer**

User role with focus on traffic control aspects of DAAPs connected to the ImFlow Central, like detailed DAAP and TLC status, traffic control programs, traffic data and DAAP commands.

#### **3. Service Engineer**

User role with focus on service and maintenance of the ImFlow Central and the DAAPs connected to the system, like DAAP and TLC status, alarms, events and diagnostics.

#### **4. Imtech Engineer**

User role with the same user rights as Administrator except the access to User Management.



## 5. Guest

Guest is User role with read-only access. This role can only display status information, without an access to user actions, commands and administrative futures.

The detailed user rights for the 5 predefined user groups are listed in the following table:

Description of Privileges	Administrator	Traffic Engineer	Service Engineer	Imtech Engineer	Guest
To access intersection monitoring functions	✓	✓		✓	✓
To access PT monitoring functions	✓	✓		✓	✓
To access report functions	✓	✓	✓	✓	
To access ImFlow tuning functions	✓	✓			
To access scheduling functions	✓	✓		✓	
To access user administration functions	✓		✓		
To acknowledge alarms of events under Event Management	✓	✓	✓	✓	
To execute manual override commands	✓	✓	✓	✓	
To execute operator commands	✓	✓	✓	✓	
To modify LOI in a policy plan	✓	✓		✓	
To select preconfigured policy plans	✓	✓		✓	
To set performance index in a policy plan	✓	✓		✓	

## 4. GUI Layout

The main ImFlow Central GUI layout consists of following functional areas:

1. **The Navigation panel** is used to navigate through ImFlow network configuration. ImFlow network configuration consists of Areas, Routes, Intersections and Links. It can't be configured in the GUI; hence the navigation panel has only one predefined view.
2. **The Navigation panel toolbar** – provides options for collapsing Navigation panel, using map filters and snapshots, changing Link colour coding.
3. **The Main display area** provides an “at a glance” view of the system / Intersection and Link status and a quick access to Intersection related user actions, depending on the user function selected from the Menu bar or current user selection in the Navigation panel. The ImFlow Central GUI can be restricted to display currently active content in the Main display area exclusively or to allow the opening of multiple concurrent windows. By default the Main display area is used to display the Area map and other ImFlow Central contents can displayed in multiple concurrent (floating) windows.
4. **The Main menu bar** provides access to specific ImFlow Central features.

The main ImFlow Central GUI layout is shown in Figure 4-1 below:

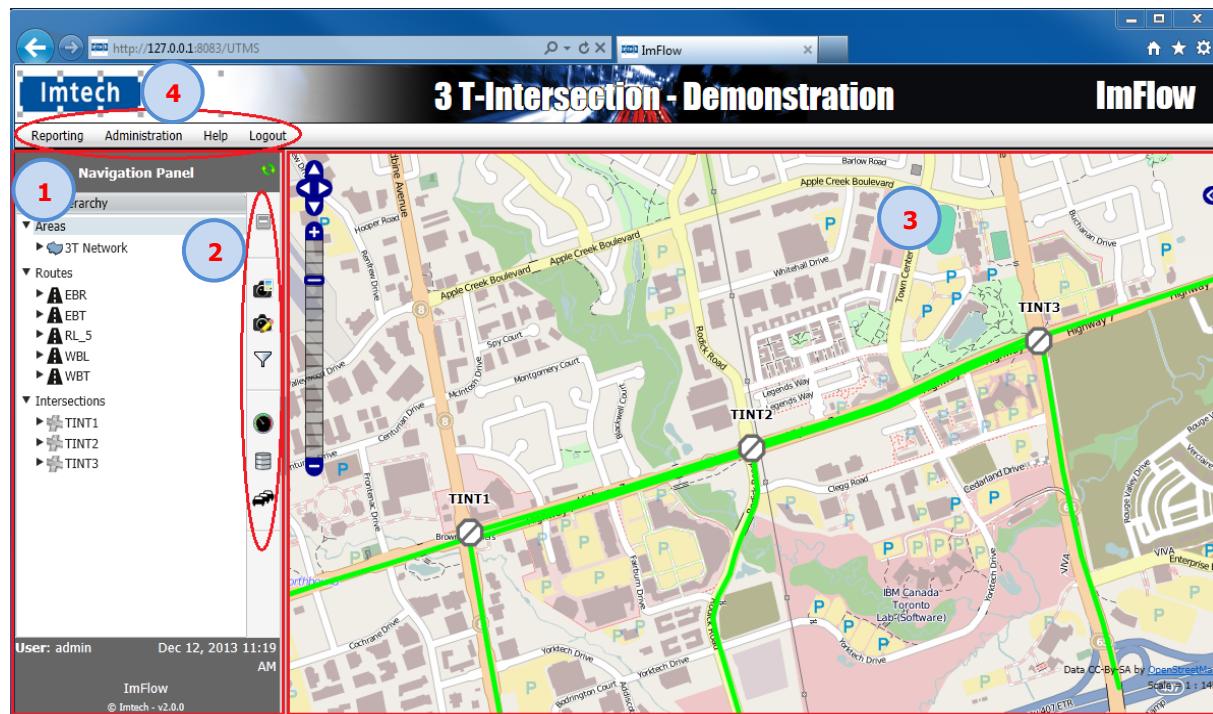


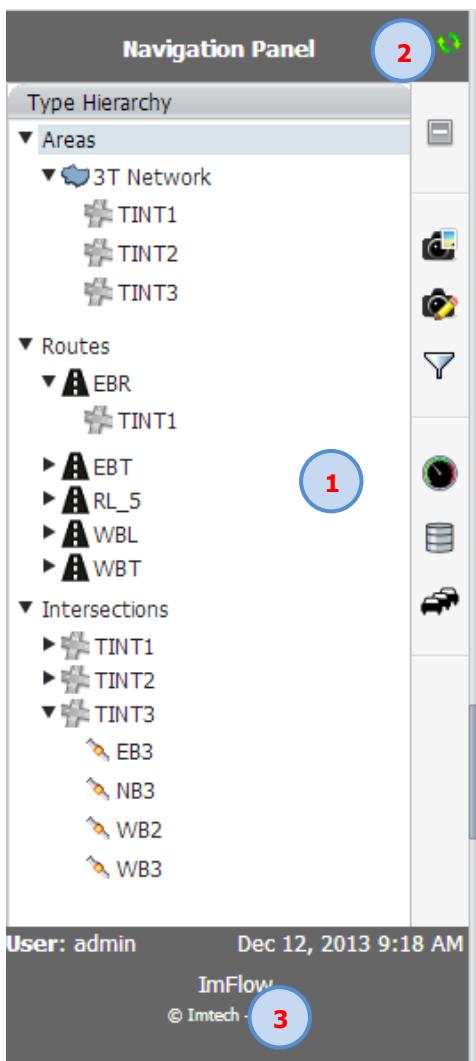
Figure 4-1 ImFlow GUI layout

### 4.1 The Navigation Panel

The navigation panel lists ImFlow network configuration elements. Elements are grouped in following manner:

- **Areas** (group containing all ImFlow areas)
  - **Area** (specific ImFlow area, contains all Intersections associated to that area)
    - **Intersection**
- **Routes** (group containing all ImFlow routes)
  - **Route** (specific ImFlow route, contains all intersections associated to that route)
    - **Intersection**
- **Intersections** (group containing all ImFlow intersections)
  - **Intersection** (specific ImFlow intersection, contains all links associated to that intersection)
    - **Link**

#### 4.1.1 Layout



Navigation panel's layout (see Figure 4-2):

- 1. Predefined network configuration view:** Components are grouped as defined by the configuration and described above
- 2. Reload preset views:** If the new configuration is imported the reload button is changed notifying the user that a reload is required. Press the button to reload the Navigation Panel. Every time this button gets pressed the screen is reload in such fashion as if the root item was selected (Main Map area is also adjusted).
- 3. The following system information** is available in the lower tab:
  - Username of current user
  - ImFlow Central server date/time
  - Product name, version and copyright

Figure 4-2 Navigation panel

#### 4.1.2 Navigation

The navigation panel is used to navigate through and to select Areas, Routes, Intersections and Links defined in ImFlow network configuration. A current selection in the navigation panel is shown by selecting a component and all its sub-components and it is followed in a view displayed in the Main display area. The user can select each network element.

Example of an Area map displayed in the Main display area:

- If 'Areas' group is selected in the Navigation panel, the map view will be adjusted to display all areas in the monitoring area
- If specific Area is selected in the Navigation panel, the map view will be automatically adjusted for that Area display; **only** Intersections belonging to the selected Area are then displayed.

The same behaviour is applied for all elements with the exception of Intersections. When a single Intersection is selected in the Navigation Panel, the Main display area will automatically switch to the Intersection status screen display.

#### 4.1.3 User-actions in the Navigation panel

##### Drop-down menu

To open the drop-down for menu for network element click on the right mouse button in the Navigation panel. Example of the drop-down menu for Intersections can be seen in Figure 4-3.

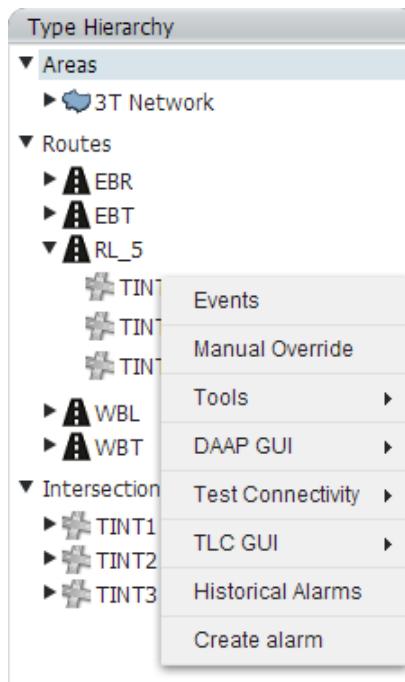


Figure 4-3 Drop-down menu example

For details on all available drop-down menus and their actions refer to Chapter 7.



##### NOTES

Available menu items depend on the user rights of the currently logged in user and also depend on selected network element.

---

Refer to Chapter 3 for details about user permissions for different ImFlow Central user groups.

---

## 4.2 The Navigation Panel toolbar

The Toolbar on the right side of the navigation panel provides quick access to different views of the main display area.

	Collapse All: When selecting this option, all elements in the navigation panel will collapse to the default setting.
	Take map snapshot: It provides possibility for the user to save his current view and restore it again from "Select and edit snapshot" option which is placed directly under this option. This option can be useful when there are multiple users with different interests (see Chapter 5.9)
	Select and edit snapshot: Displays list of all saved snapshots for this particular user. By selecting one of the stored snapshots the user restores the exact view that was saved with "Take map snapshot". If there are no saved snapshots, message indicating that is visible.
	Open Map Filtering: By selecting this option user is able to create or open filter with which he can filter the intersections based on their status information (see Chapter 5.8)
	Set Link Colour Coding to Speed: Changes Link colour coding to Speed. This view provides information about the actual speed on roads within the network (see 14.5)
	Set Link Colour coding to volume: Changes link colour coding to volume. This view presents information about the actual traffic volume on roads within the network (see 14.5)
	Set link colour coding to queue length: Changes link colour coding to queue in meters. This view presents information about the actual queue lengths on roads within the network (see 14.5)

Table 4-1 Toolbar buttons

## 4.3 The Main Menu bar

The main menu provides access to specific ImFlow Central screens that can be displayed in the Main display area and/or as (multiple concurrent) floating windows, depending on the display configuration. The content of the ImFlow Central screens depends on the function selected from the Main menu. Access to the following ImFlow Central screens is available from the Main menu:

Function	Description
<b>Event log</b>	List of events for all Areas, Routes and Intersections
<b>Tools</b>	Sub-menus: <ul style="list-style-type: none"> <li>• Queue diagram -&gt; Opens Queue diagram configuration dialog</li> <li>• Time Space diagram -&gt; Opens Time Space diagram configuration dialog</li> </ul>
<b>Reports</b>	List of reports available for viewing
<b>Administration</b>	Configuration of the ImFlow Central, users and other <b>Sub-menus:</b> <ul style="list-style-type: none"> <li>• Map configuration -&gt; Configure map sources and default zoom boundaries</li> <li>• Configuration Management -&gt; Import of the ImFlow network configuration</li> <li>• Communication Management -&gt; Starting and stopping communication with the DAAPs</li> </ul>

	<ul style="list-style-type: none"> <li>• Events and Alarms configuration -&gt; Detailed event and alarm logs and configuration</li> <li>• System Event log -&gt; Info on system related events</li> <li>• EMS -&gt; Alarm forwarding (SMS/Email) configuration</li> <li>• EMS Dynamic schedule -&gt; EMS Dynamic schedule configuration</li> <li>• Display settings -&gt; Configure display settings</li> <li>• Users -&gt; User management (add/edit/delete users)</li> <li>• User settings <ul style="list-style-type: none"> <li>◦ Change password -&gt; Change password for logged-in user</li> <li>◦ User settings -&gt; Edit user's preferences for logged-in user</li> </ul> </li> </ul>
<b>Help</b>	User help. Sub menus: <ul style="list-style-type: none"> <li>• About -&gt; Software version info</li> <li>• User manual -&gt; ImFlow Central user manual</li> </ul>
<b>Logout</b>	Log out from the ImFlow Central

Table 4-2 Menu bar items



### NOTES

Available Main menu items depend on the user rights of the currently logged in user:

- User actions available for different user groups on different screens can be limited by user group rights.
- All users have access to their own user settings: *Administration/User settings* and *Administration/Change password*.

If the corresponding ImFlow Central function is not available for the currently logged in user, the menu item will not be displayed or will be greyed-out and permanently disabled.

## 4.4 Main display Area

By default, the Main display area is used to display the area map and other ImFlow Central content is displayed in multiple (concurrent) floating windows. Other configurations are also possible, where only one, currently active screen is always displayed in the Main display area, depending on the user selected function selected from the Menu bar or the current user selection in the Navigation panel.

The default configuration recommended for the GUI setting: area map is always displayed, providing an “at a glance” view of the system and quick access to field devices, while other screens can be displayed in floating windows custom arranged on top of the Area map and/or in new browser windows. This is especially useful in dual-monitor (or multiple monitors) configurations where the area map is always displayed on the “main” monitor and the other ImFlow Central screens can be easily moved to additional monitors (drag-and-drop).

### 4.4.1 Floating windows

Different ImFlow Central screens can be displayed simultaneously by means of multiple floating windows. The user can resize the windows and graphical elements of the screen (tables, frames) and move the windows freely with the mouse pointer around the main screen. This way the user can customise the display as shown on the example in Figure 4-4.

With multiple monitors the user can drag-and-drop individual screens to other monitor(s).

The content of the floating window can easily be moved to a new browser window by clicking the *Open in new window/tab* button, placed in the top-right corner of the screen:



**NOTE:**

1. Depending on the browser configuration, the screens are displayed either in a new browser window or a new browser tab.
2. This functionality is available only to limited number of screens only.

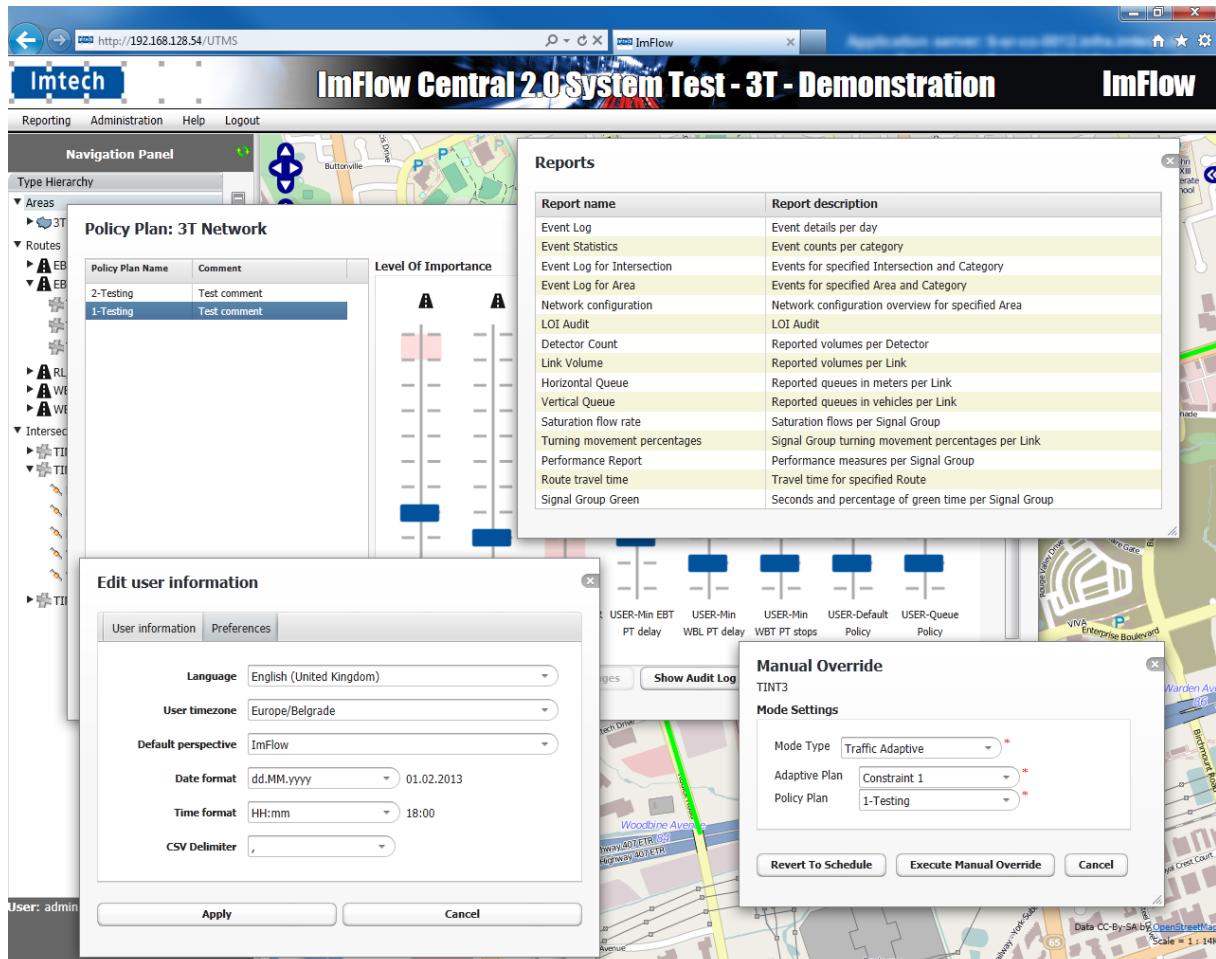


Figure 4-4 ImFlow Central floating windows

## 5. The Area Map

The purpose of the Geographical Map is to give the user an at-a-glance overview of the overall status of the network elements being monitored. The current status of a monitored element is presented by means of easily recognisable coloured icons placed at their geographical positions on the map.

The zoom and pan functionality is provided for the user to adjust the map scale and position for the required display. The Area map display supports multiple layers that can be switched on/off.

The Area map is displayed in Figure 5-1.

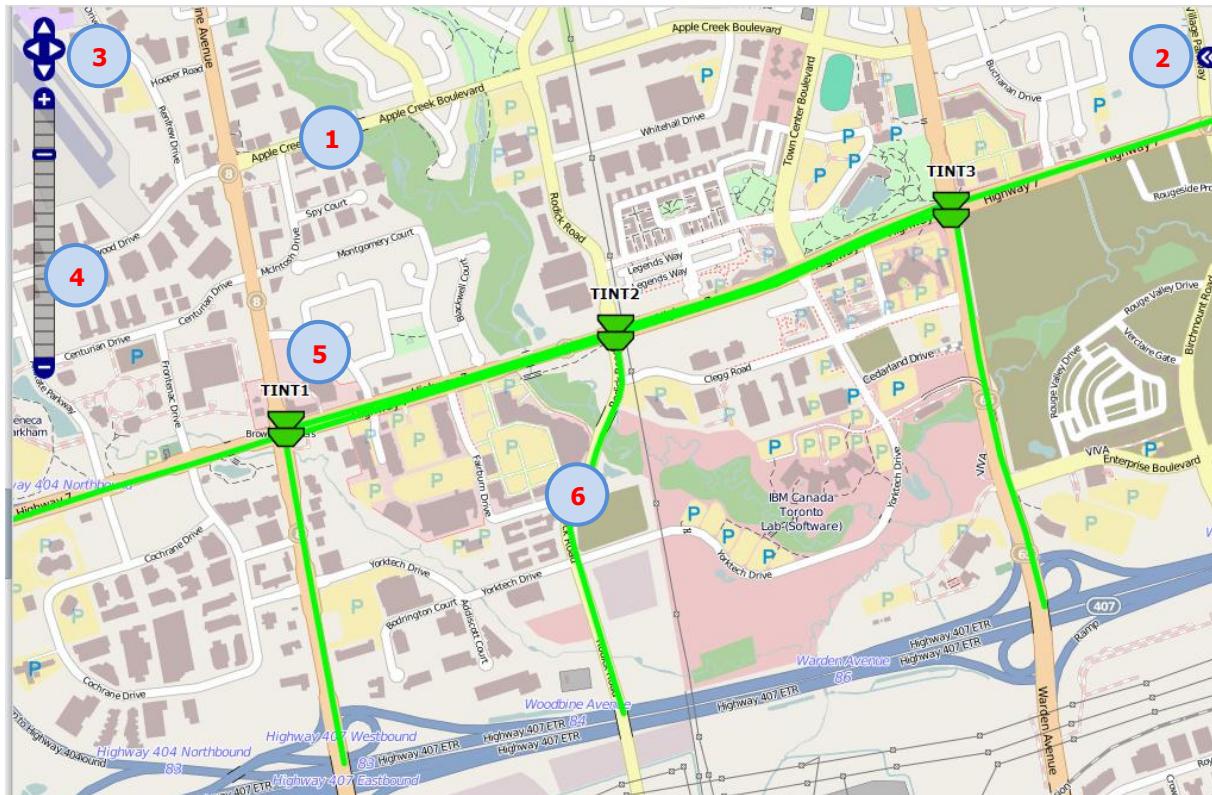


Figure 5-1 Area map

Main components of the area map window:

1. **Geographical map** (background map)
2. **Layers button** which opens the layers control dialog (show/hide option for multiple layers)
3. **Panning control**: move the map around the Main display area
4. **Zoom control**: zoom in/out, changing map scale
5. **Intersection icon**
6. **Link icon** (line)

### 5.1 Background map and map layers



#### NOTE

Refer to section 16.3 for instructions for configuring map layers (sources for background map) and default map zoom/pan (boundaries).

The ImFlow Central supports multiple map formats for configuring the background geographical map for the Area Map view, like Open Street Maps or Google maps. Multiple layers are supported for the background map (for example map, satellite image, hybrid view) and for the display of different objects on the map (Intersections and Links are shown as separate layer).

Refer to  1 for instructions about map configuration.

## 5.2 Map layer controls

The map Layers control dialog box can be used to select a background map and switch map layers on/off from the display (show/hide layers).



Figure 5-2 Map layers control dialog

### Base Layer

The selection of a background map depends on the background map configuration. In the case shown in Figure 5-2 the first 2 items, Open Street map (simple and full), refers to maps imported in the ImFlow Central PostGIS database. The third item, Open Street Map, can be selected if the ImFlow Central should use online maps instead (or in case when no maps are imported from the ImFlow Central database).

### Overlays

Overlays section lists additional layers that can be displayed on top of the background map. In the UTMS only one additional overlay is available for the devices. In case of ImFlow Central this overlay consists of ImFlow pictograms (for Areas, Intersections and Links).

## 5.3 Map positioning and navigating options

### Manual Map positioning (panning)

A map can be moved around the display area (map panning) with the mouse pointer, by moving the mouse while holding down the left mouse button, or by using map controls , ,  and .

### Manual Map scaling (zooming)

An Area map scale can be changed (zoom in and out) by using the mouse wheel or the map scale control, by using the scale slider or the buttons  and .

### Automatic Map adjustment following selection in the Navigation panel

When a network element (except Intersections) or group is selected in the Navigation panel, the area map will automatically be zoomed/panned to adjust the display for the best view of elements belonging to the selected element.

## Automatic switching between three functional zoom levels

The functional zoom levels can be configured to optimise the map display on different map scales. Depending on the current map scales the area map will display different types of network elements that are suitable for the current scale of monitored map area:

- For large map scales (more map details are displayed), the Area map displays pictograms of the Intersections and Links at their geographical position on the map.
- For small map scales, the area map displays pictograms of the ImFlow Areas where a single map symbol is used to show the Area containing a group of Intersections. The position of the Area pictogram is automatically calculated to approximately fit in the centre of the area defined by the positions of the Intersection and Link pictograms belonging to that area.

## 5.4 Automatic map display adjustments

The Area map display is automatically adjusted for the optimal view following the user selection in the Navigation panel. The following mechanisms are used in conjunction with each other to give the best possible overview of the user's areas of interest and the display performance with simplified user controls:

- **Only** symbols of Intersections and Links or Areas (depending of map scale) selected in the Navigation panel are displayed on the map
- The parameters of the map (map boundaries, position and scale) are automatically set for the best display performance and for the optimal overview of the user's area of interest
- The functional zoom levels automatically change when changing between different map scales
- The size of the map icons automatically adjust to the map scale
- The text with additional information about the network elements can be displayed on the map, beside the map icons. To prevent text overlaps between neighbouring icons, the text will be automatically excluded from the display on (configured) large map scales
- The user can always use the manual zoom and pan controls to additionally adjust the display

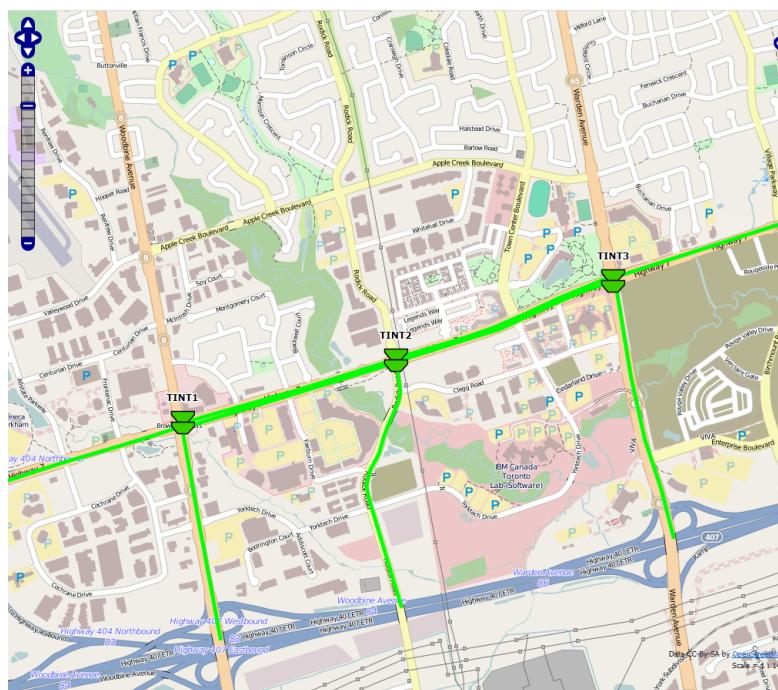


### NOTE

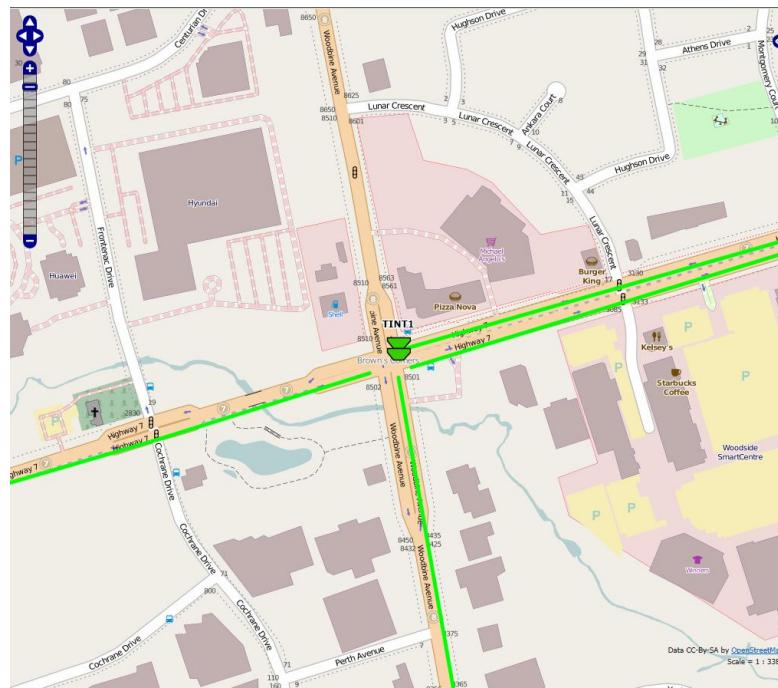
When a single Intersection is selected in the Navigation Panel, the Main display area will automatically switch to the Intersection status screen display.

The following figures show a few examples of the automatic display adjustment of the area map:

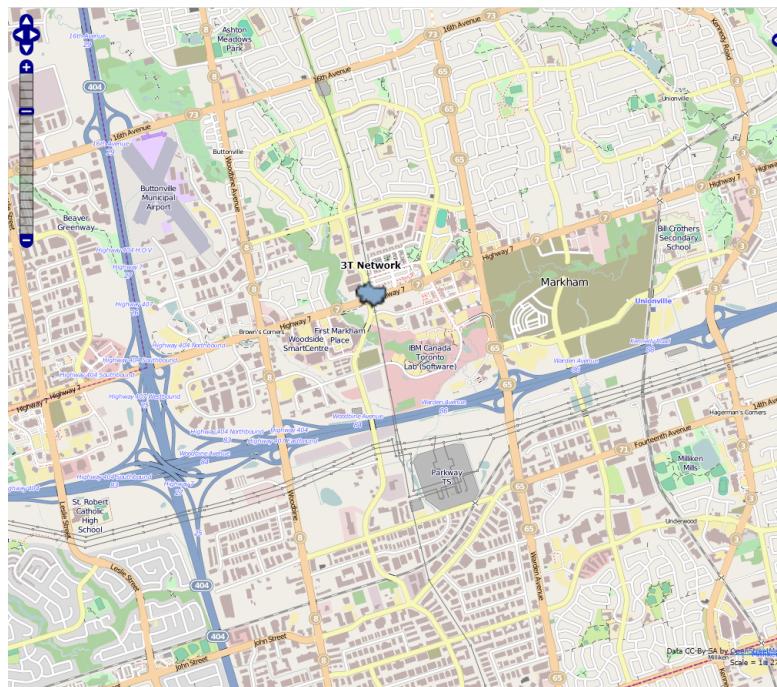
1. When Area is selected in the Navigation panel



## 2. When a Route with one intersection is selected in the Navigation panel



## 3. Manual zoom out to Area level



## 5.5 Map pictograms

There are three different objects which can be displayed on the area map by means of easily recognisable pictograms. The objects represent Area, Intersection or Link. Their behaviour depends on which network element they represent.

1. **Intersection:** A monitored intersection (DAAP + TLC) is displayed at its geographical position on the *area map*. The colours of the pictogram represent the status of DAAP and TLC. Colours are not configurable for the Intersections.
2. **Link:** A monitored link is displayed as a line at its geographical position (determined by multiple geographical points). The status of the link is represented by the colour of the pictogram (line). The colours and thickness of Link pictograms are configurable. They can be configured by selecting 'Administration' -> 'Display settings' menu.
3. **Area:** An ImFlow control Area. Its position on the map is calculated from the geographical position of its children (Intersections and Links associated to that Area). The Area pictogram is static, meaning it doesn't change colour.

## 5.6 Status information (pictogram colours)

The colour of the Intersection and Link pictograms on the map represents the current *status* of the monitored objects.

### 5.6.1 Intersections

Intersection pictogram contains two sections, one on top of the other. See Figure 5-3 for example of the Intersection pictogram.



Figure 5-3 Intersection map pictogram

The upper part represents the status of the DAAP and the lower status of the TLC. Both sections are in the shape of truncated pyramid turned upside down. For details on the colours see Table 5-1 and Table 5-2 bellow.

DAAP status	Description	Colour
<b>Traffic Adaptive</b>	DAAP is in the adaptive mode	
<b>Fixed Time</b>	DAAP is running a fixed time plan	
<b>Undefined</b>	DAAP status is unknown	

Table 5-1 DAAP status

TLC status	Description	Colour
<b>UTC</b>	TLC is under the UTC control	
<b>Off</b>	TLC is turned off	
<b>Local</b>	TLC is in the Local mode	
<b>Stand By</b>	TLC is in Stand By mode (amber flashing)	
<b>Not connected</b>	DAAP is not connected to TLC	
<b>Undefined</b>	TLC state is unknown	

Table 5-2 TLC status

These pictograms are used to display DAAP and TLC status when ImFlow Central is connected to DAAP(s) and receives status information from the DAAP(s). When Central is not connected to the DAAP(s) a different map pictogram is displayed indicating that there is no communication. This pictogram can be seen in Figure 5-4 bellow.



Figure 5-4 Intersection map pictogram (no communication)

**NOTE**

Not connected status and Undefined status are the same statuses and represented with the same icon.

**5.6.2 Links**

Link pictograms are in the shape of lines. The colour of the line represents the status of the Link. Links are coloured using a colour coding selected from the Navigation panel toolbar (see section 4.2). Colour coding specifies which type of data is used when displaying Link status. The following three colour coding options are available:

1. Speed

2. Volume
3. Queue in meters

Each of these has three levels representing the status of selected coding. The status is calculated by comparing the value of the selected coding to the high and low thresholds for that coding. Thresholds are defined as system parameters and can be configured with ImFlow Configurator tool (see  5 for details). Threshold value is not possible to change in ImFlow Central. For details on the colours see Table 5-3 bellow.

Link status	Description	Colour
<b>Low</b>	Value of the selected coding is bellow low threshold	
<b>Medium</b>	Value of the selected coding is between low and high thresholds	
<b>High</b>	Value of the selected coding is above high threshold	

Table 5-3 Link status

**NOTE**

Link colours and line thickness can be configured in the 'Display settings' (see Chapter 14.5). Above colours are the default values.

**NOTE**

If no colour coding is selected all links are coloured in green.

## 5.7 User-actions from area map icons

Clicking on the map icons with the LEFT mouse button will open a pop-up window where the user can obtain extended information about the selected network element.

Clicking on the network element icon with the RIGHT mouse button will open a drop-down menu with a list of the user-actions available for the selected device. For details on all available drop-down menus and their actions refer to Chapter 7.

### 5.7.1 Pop-up screens

There are three pop-up screens supported by the ImFlow central. They are available for following network elements:

- Area
- Intersection
- Link

See images bellow for examples of the pop-ups.

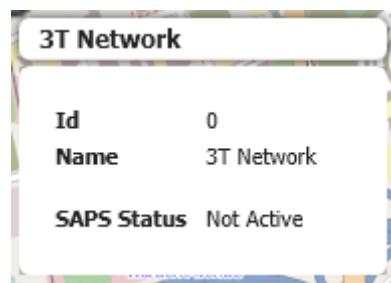


Figure 5-5 Pop-up display for Area

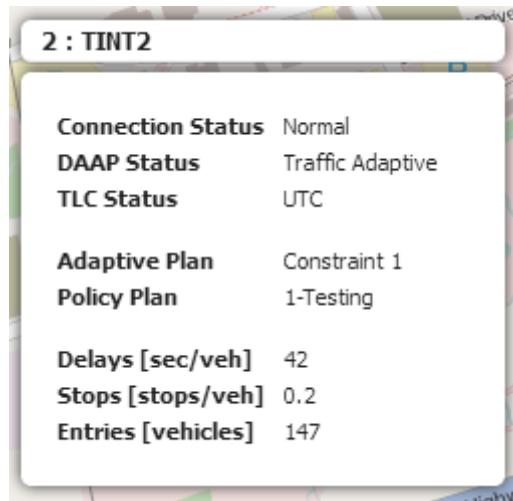


Figure 5-6 Pop-up display for Intersection

**NOTE:**

1. Values for 'Delays', 'Stops' and 'Entries' represent the latest information received from the DAAP. In normal operation they are not older than 5 minutes.
2. Values for 'Stops' and 'Delays' are in context of the total entries and hence their units are 'stops/veh' and 'sec/veh'.
3. Entries are calculated with the counts at the stop line detectors. So entries are the number of vehicles that have left the link.

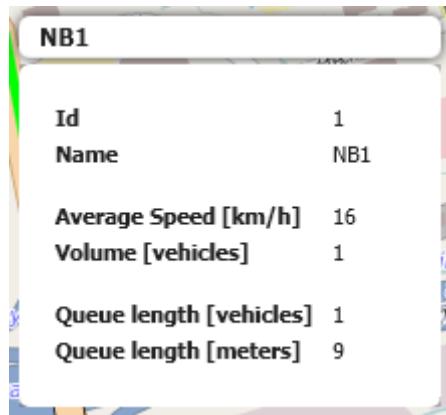


Figure 5-7 Pop-up display for Link



**NOTE:** Values for 'Average Speed', 'Volume' and both 'Queue lengths' are per Link and represent the latest information received from the DAAP. In normal operation they are not older than 5 minutes. All mentioned values are averages.

## 5.8 Map Filters

Selecting the "map filter" button () from the Navigation Panel toolbar will open the Map filter dialog. Map filtering is used to filter Intersections in the current view based on their current status. Map filter dialog can be seen in Figure 5-8.

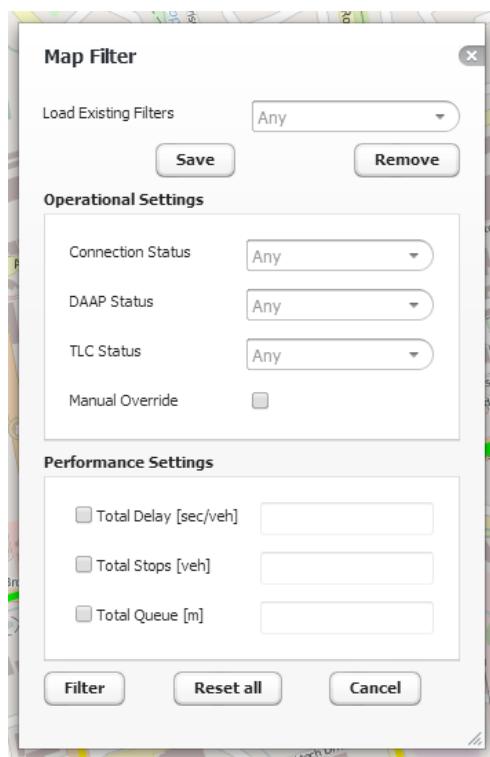


Figure 5-8 Map Filter dialog

To filter the Intersections populate the desired filter settings and press "Filter" button. Only Intersections that satisfy the filter settings will be displayed on the map. While filter is active

(indicated by changed filter icon  in the navigation panel toolbar) Intersections are automatically checked each time their status changes.

The following settings are available for editing filter:

- Operational settings:
  - Connections status
  - DAAP status
  - TLC status
  - Manual Override
- Performance settings:
  - Total Delay
  - Total Stops
  - Total Queue

**NOTE**

When filtering based on performance settings, the current performance value for the Intersection is checked to be higher than the specified value in the filter.

Map filters can be saved for easier and quicker access in the future. To save the filter, enter the desired filter settings and select "Save" button. The save filter dialog will appear asking for the filter name. See Figure 5-9.

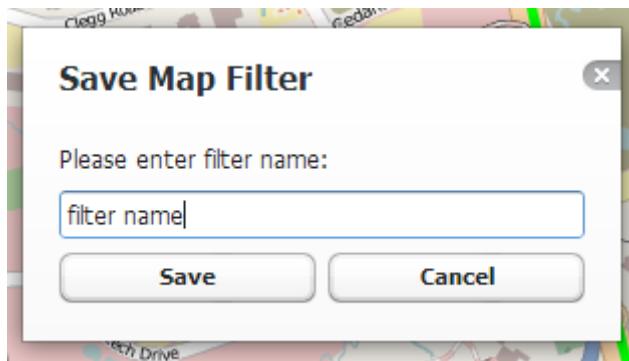


Figure 5-9 Save Map Filter dialog

Enter the desired filter name and select "Save" button. The filter will be automatically added in the selection box at the top of the Map Filter dialog. See Figure 5-10.

**NOTE**

Filters are saved per user. This means that filters saved by one user will not be available to others.

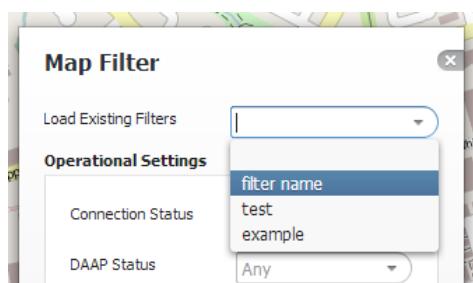


Figure 5-10 Map Filter selection

When a filter is selected from the selection box its settings are automatically applied. Press "Filter" button again to filter the Intersections using the selected filter.

To turn map filtering off, select "Reset All" button and press "Filter" button. This will disable filters and will show all Intersections in the current view independently of their status.

## 5.9 Map snapshots

Map snapshots give means for quick navigation to points of interest on the map. To create new snapshot manually navigate (pan and zoom) to desired point of interest on the map and select the

"Take Snapshot" button (  ) from the Navigation Panel toolbar. The Save Snapshot dialog will appear, see Figure 5-11.

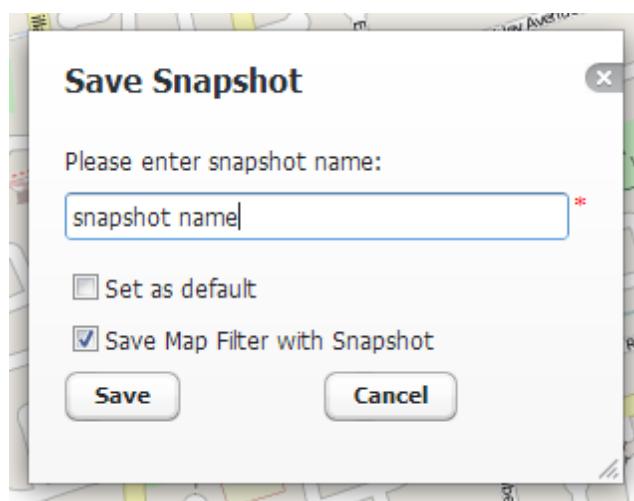


Figure 5-11 Save Snapshot dialog

Enter the desired snapshot name, check desired additional settings and select "Save" button. The following additional settings are available when saving map snapshot:

- Set as default – snapshot will be the default view which is opened when the user logs in the system
- Save Map Filter with Snapshot – saves the current filter settings together with the snapshot



#### NOTE

The current Link Colour Coding is always saved with the snapshot.

To navigate to desired map snapshot select the "Select and edit snapshot" button (  ) in the Navigation Panel toolbar. The Select Snapshot dialog will appear, see Figure 5-12.

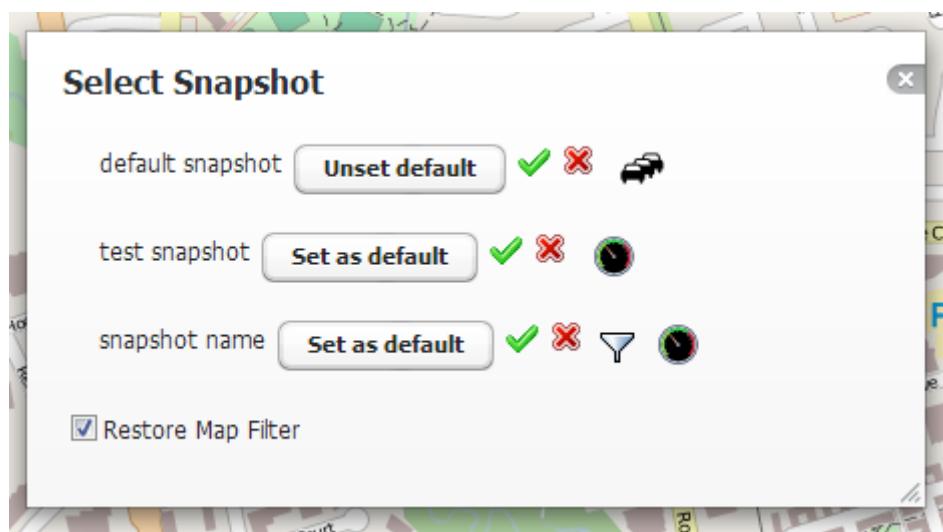


Figure 5-12 Map Snapshot Select

Use the "Apply" button (✓) to apply the desired snapshot. Applying snapshot will result in following:

- Map will be panned and zoomed to the saved view
- Link Colour Coding will be changed to the one stored with the snapshot
- If "Restore Map Filter" option is checked, map filter stored with the snapshot will also be applied

Use the "Remove" button (✗) to delete snapshots.

Use the "Unset default" and "Set as default" buttons to manage the default snapshot.

Use the "Restore Map Filter" checkbox to switch between restoring saved map filter with the snapshot or not.

## 6. Intersection dialog

Selecting a single Intersection in the Navigation panel will open an Intersection dialog box. The layout of the screen is shown in the following figure:

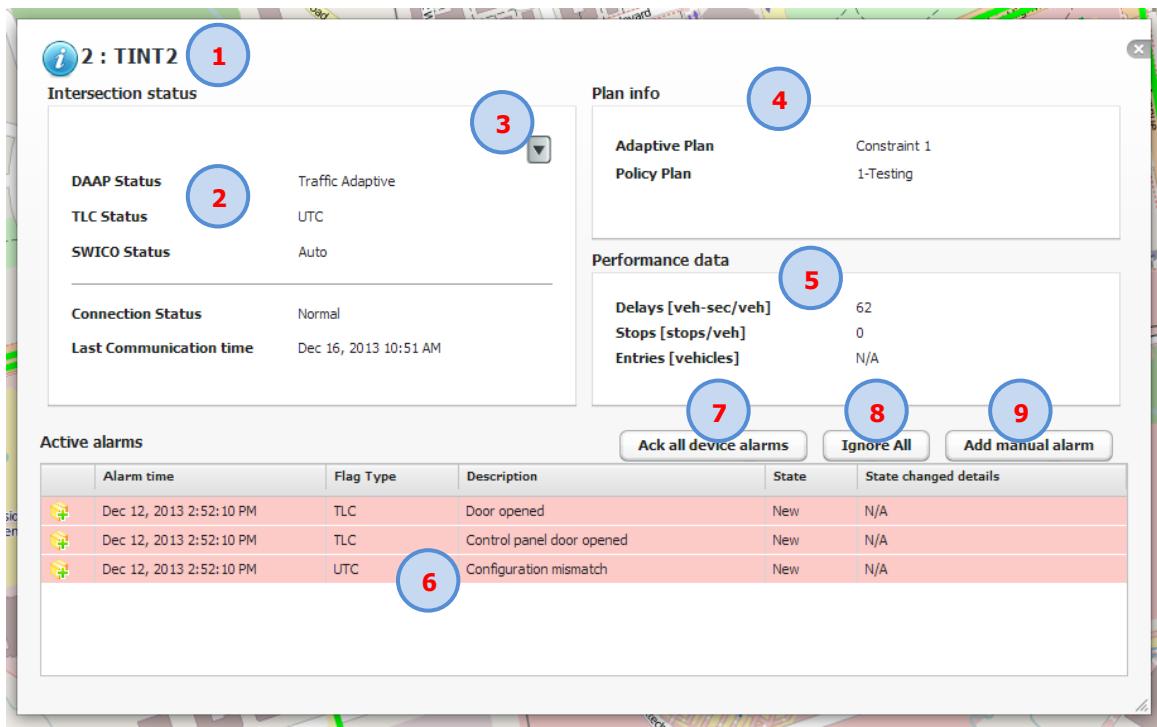


Figure 6-1 Intersection Dialog

The basic description of the specific areas of the Device screen is given in the following table and will be described in more details in the following pages.

#	Section	Description	Additional info
1.	<b>Title</b>	Shows the ID and name of the Intersection	
2.	<b>Intersection status</b>	The current status of the Intersection	Automatically refreshes when intersection status changes
3.	<b>Intersection user-actions</b>	Access to user-actions available for the intersection	List of options depends on the logged-in user's privileges.
4.	<b>Plan Info</b>	Currently active fixed time or traffic adaptive and policy plans	Automatically refreshes when intersection status changes
5.	<b>Performance data</b>	Performance data for the intersection in last 5 minutes	Automatically refreshes when intersection status changes (5 min interval)
6.	<b>Active alarms</b>	List of currently active alarms for the intersection	List is updated/refreshed automatically as new alarms are registered
7.	<b>Acknowledge all alarms</b>	Acknowledge all active (non-acknowledged alarms) for the intersection.	Alarms can be also acknowledged individually in the Active alarms table.
8.	<b>Ignore all</b>	Ignores all active (non-acknowledged) alarms for the intersection	
9.	<b>Add manual alarms</b>	Opens dialog for adding new manual alarm	

Table 6-1 Intersection Dialog description

## 6.1 Intersection status

The following intersection status information is available in the Intersection dialog:

- Intersection status
  - DAAP Status
  - TLC Status
  - SWICO Status
  - Connections Status
  - Last communication time
- Plan Info
  - Adaptive and Policy plans / Fixed time plan
- Performance data
  - Delays
  - Stops
  - Entries

All information is automatically updated on change.

## 6.2 Active alarms

The active alarms table contains a list of all currently active alarms for the selected device:

Active alarms		Ack all device alarms		Ignore All		Add manual alarm
	Alarm time	Flag Type	Description	State	State changed details	
	Dec 12, 2013 2:52:10 PM	TLC	Control panel door opened	New	N/A	
	Dec 12, 2013 2:52:10 PM	TLC	Door opened	New	N/A	
	Dec 12, 2013 2:52:10 PM	UTC	Configuration mismatch	New	N/A	

Figure 6-2 Active alarms table

By clicking on "Add manual alarm" button you can easily create a new alarm for the selected device.

**Add manual alarm**

<b>Device</b>	101-220
<b>Alarm severity</b>	Attention *
<b>Alarm category</b>	Safety error *
<b>Description</b>	The device door opened. *
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

Figure 6-3 Manual Alarm add

There are also buttons for acknowledging or ignoring all alarms. If you want to do it for an individual alarm, that can be done by right clicking on the alarm itself.

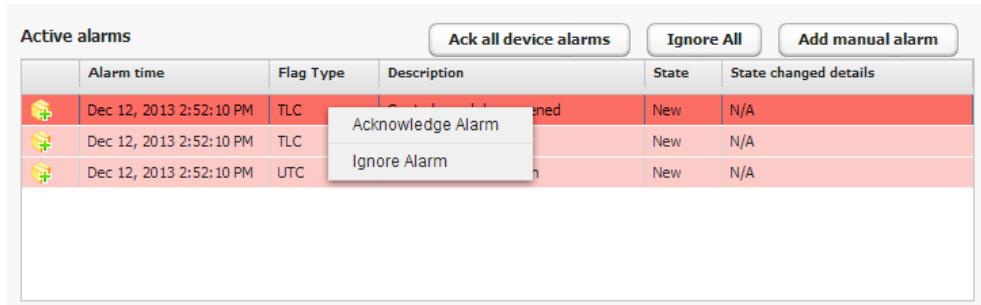


Figure 6-4 Alarm context menu

Even more options will be available for alarms that were manually created.

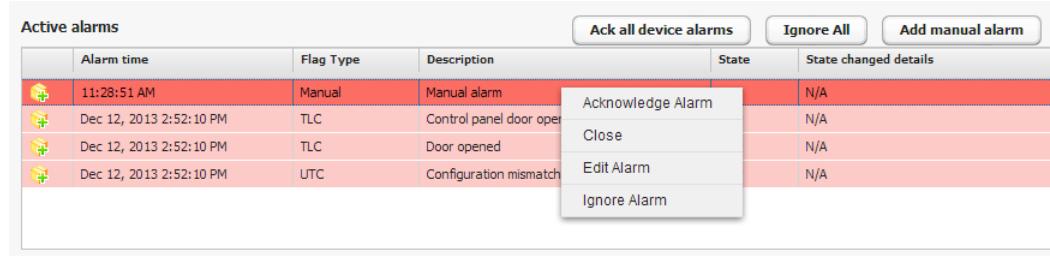


Figure 6-5 manual alarm context menu

Menu action	Description
<b>Acknowledge alarm</b>	Acknowledges selected alarm
<b>Ignore alarm</b>	Ignores selected alarm

<b>Close</b>	Closes the alarm. Only for manual alarms that you created.
<b>Edit alarm</b>	Opens edit alarm window to make changes. Only for manual alarms.

Table 6-2 Alarm context menus

Acknowledged or ignored alarms remain present in the table. Alarms are removed only when they are no longer active in the system. Manual alarms are removed manually when users select option 'Close' from the right click context menus. System alarms area removed automatically when alarms are no longer active.

### 6.3 User-actions

Clicking on the *Intersection commands* icon will a display drop-down menu with the user-actions available for that intersection.

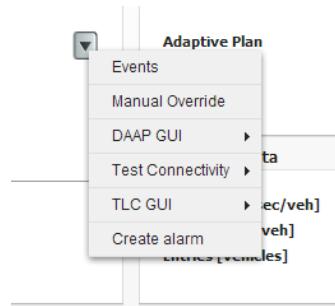


Figure 6-6 Drop-down menu with user-actions

For details on all available drop-down menus and their actions refer to Chapter 7.



## 7. Context menus

Context (drop-down) menus are actions that can be invoked on specific network elements. They can be accessed by:

- Right clicking on the network element in the Navigation Panel
- Right clicking on the network element in the Map
- Left clicking on the Intersection Commands button in Intersection dialog

The contents of the context menus depend on the selected network element and the user privileges of the current user. Context menus are available for the following network elements:

- Areas
- Routes
- Intersections

### 7.1 Area context menus

The table below lists and explains the Area context menus:

Menu items	Description
<b>Events</b>	Opens the Event Log dialog with events for the selected Area and Intersections associated to that Area only
<b>Policies</b>	Opens the Policy Plan dialog for selected Area
<b>Scheduler</b>	Opens the schedule overview for selected Area
<b>Manual Override</b>	Opens the Manual Override dialog for selected Area

### 7.2 Route context menus

The table below lists and explains the Area context menus:

Menu items	Description
<b>Events</b>	Opens the Event Log dialog with events for the selected Route and Intersections associated to that Route only
<b>Manual Override</b>	Opens the Manual Override dialog for selected Route
<b>Tools</b>	
<b>-&gt; PT Tabular</b>	Opens the RT PT Tabular monitoring. Available for PT Routes only.

### 7.3 Intersection context menus

The table below lists and explains the Area context menus:

Menu items	Description
<b>Events</b>	Opens the Event Log dialog with events for the selected Intersection
<b>Manual Override</b>	Opens Manual Override dialog for the selected Intersection
<b>Tools</b>	Opens the sub menu with tools available for the Intersection
<b>-&gt; Queue diagram</b>	Opens the Queue diagram for the Intersection. If there are multiple Queue diagrams configured for the Intersection asks which one to open.
<b>DAAP GUI</b>	Opens the sub-menu with DAAP GUIs

<b>-&gt; Operational</b>	Opens the DAAP operational GUI in new browser window or tab depending on the browser
<b>-&gt; Unit Management</b>	Opens the DAAP unit management GUI in new browser window or tab depending on the browser
<b>Test Connectivity</b>	Opens the sub-menu with DAAP and TLC test connectivity menus
<b>-&gt; DAAP</b>	Tests the connectivity with the DAAP (ping)
<b>-&gt; TLC</b>	Tests the connectivity with the TLC (ping)
<b>TLC GUI</b>	Opens the sub-menu with TLC GUIs
<b>-&gt; Operational</b>	Opens the TLC operational GUI in new browser window or tab depending on the browser
<b>-&gt; Unit Management</b>	Opens the TLC unit management GUI in new browser window or tab depending on the browser
<b>Historical Alarms</b>	Lists closed alarms for the Intersection
<b>Create alarm</b>	Open dialog for manual alarm creation



**NOTE:** for both the DAAP and TLC GUIs:

- Operational GUI is web interface of the application
- Unit Management GUI is web interface of the board on which the application runs

## 8. Event Log

The event log displays all events in the ImFlow Central which relate to the ImFlow network elements, system functionality, user actions, etc. Selecting the option “Event log” from the main Menu bar, will open the Event log dialog box:

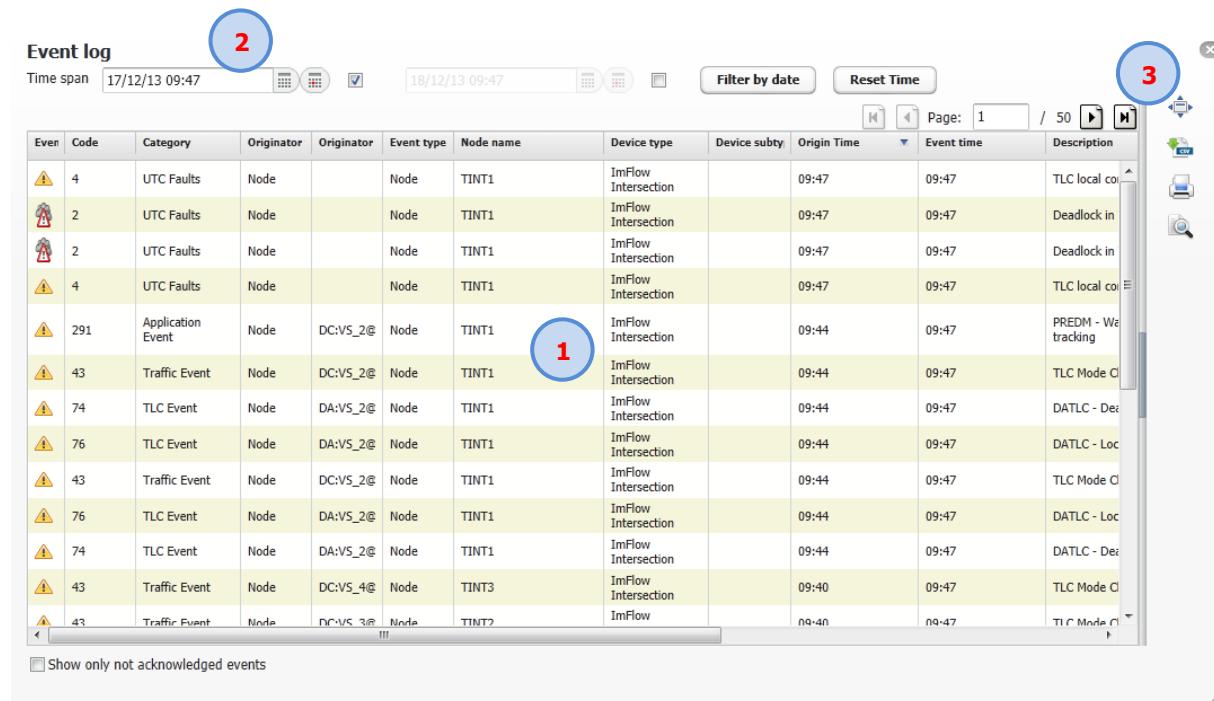


Figure 8-1 Event Log

Main components on the Event Log dialog	
1.	<b>Event log table</b>
2.	<b>Table time filter/search</b> Apply/Reset filter buttons
3.	<b>Options</b> <ul style="list-style-type: none"> <li>Open in new window/tab</li> <li>Export to CVS format</li> <li>Open in printer-friendly format</li> <li>Open advanced filter</li> </ul>

Table 8-1 Components of Event Log dialog

### 8.1 Information listed in the Event Log table

You can choose which columns you want to see by right clicking on any column header and selecting the categories needed. Selected combination of columns to be shown is saved for each user.

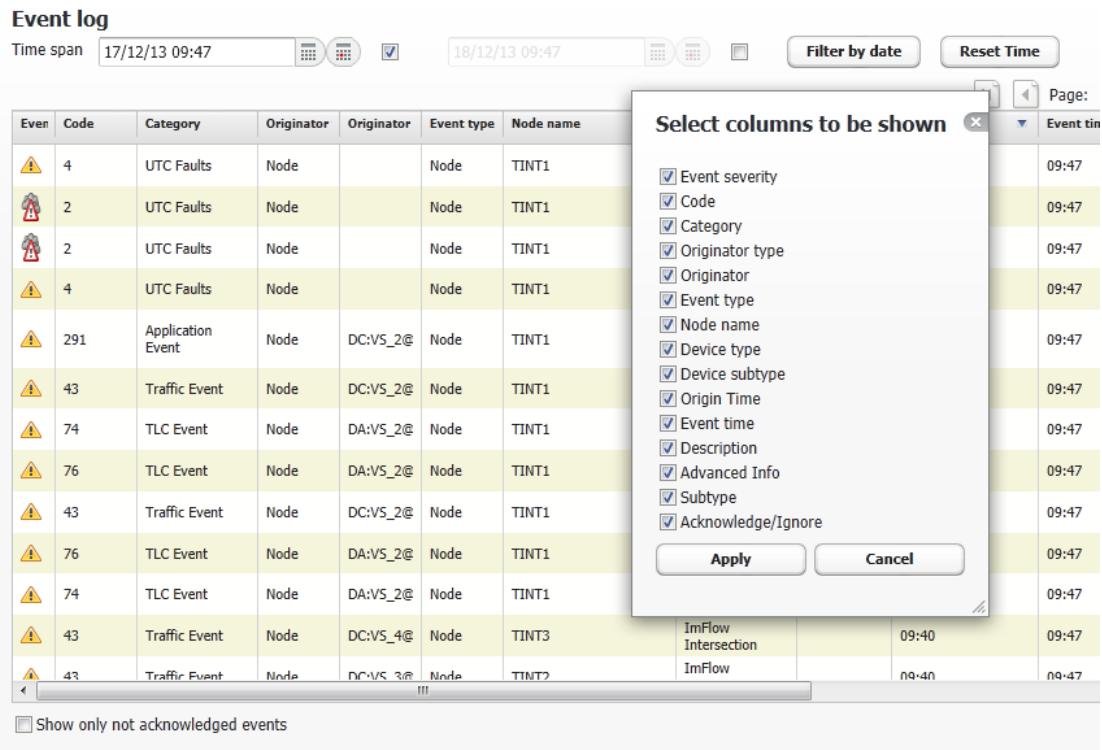


Figure 8-2 Event Log columns

	Description	Additional information
<b>Event</b>	Icon of the event severity	Serious, attention, informational, normal, minor
<b>Code</b>	Event code	APPENDIX A: Event Codes
<b>Category</b>	Event category	
<b>Originator type</b>	Indicates if the event came from intersection, route or area or if it was created by user	
<b>Originator</b>	Who originated the event	
<b>Event type</b>	Type of the event	
<b>Node name</b>	The name entered when adding new field device	
<b>Device type</b>	The exact device model	
<b>Device subtype</b>	The subtype of the device model	
<b>Origin time</b>	The time that the event originated	
<b>Event time</b>	Time of the event	Events related to the current day will not have date displayed (only time).
<b>Description</b>	Descriptive text about the event	
<b>Advanced info</b>	Additional details	
<b>Subtype</b>	Event subtype	
<b>Acknowledge/Ignore</b>	Button for acknowledging or ignoring	

Table 8-2 Information in Event log dialog

By default, the table is sorted by the event time, with last time on top. The table can be sorted by any column, by clicking on the column header.

**NOTE**

Only events that are currently applied to the filter/search criteria are listed in the Status table.  
By default, there is no filter applied on the table (shows all events).

## 8.2 Time-filtering and searching event logs

You can use the time filtering options in the top section of the Event log dialog box to quickly filter the events according to specific time criteria. You can specify start and end dates or just use one of the available options.

Example:

Show events registered between 13.10.2013. 09:59 AM and 15.10.2013. 09:43 AM

Time span

Show all events after 13.10.2013. 09:59 AM

Time span

Show all events before 15.10.2013. 09:43 AM

Time span

For resetting dates there is a button "Set the date back to today" which sets date to today. This button can be clicked only if the box next to it is checked.

Time span

More options are available by clicking on the advanced filter button (see Chapter 8.4)

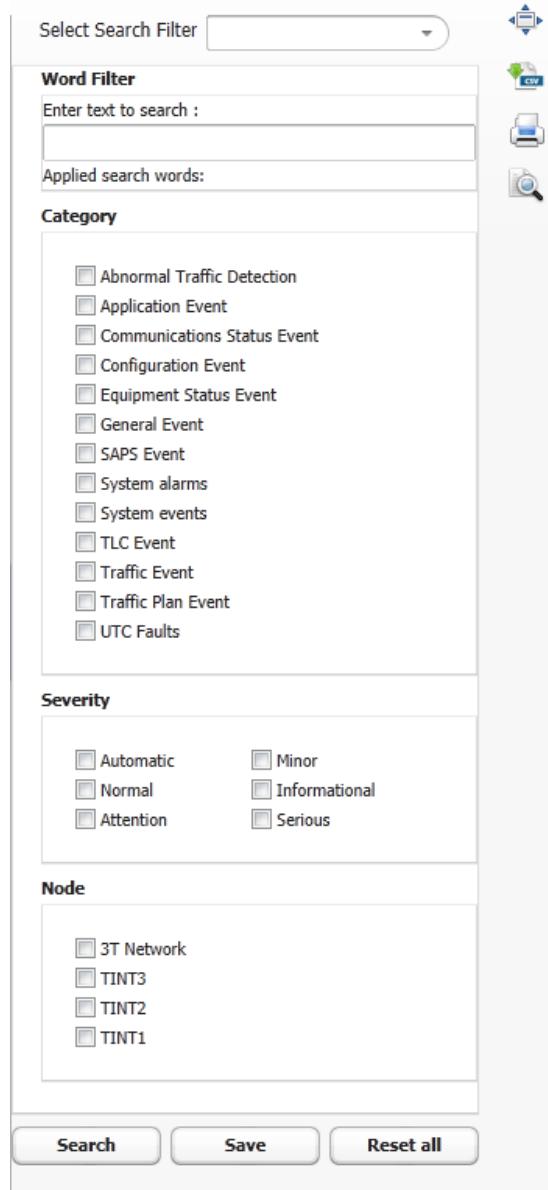
## 8.3 Options

Additional options are available through the toolbars in the top-right corner of the Event log screen:

	Open Event log screen in new browser window / tab
	Export Alarms data to CSV file which can be opened by MS Excel or similar program
	Open print-friendly display of Event log (new window)
	Displays the advanced filter panel which enables the advanced filtering options

## 8.4 Advanced filter

By expanding the advanced filter panel it is possible to use a wide range of filtering criteria. You can combine filters to get more specific results.



**Select Search Filter**

**Word Filter**  
Enter text to search :   
Applied search words:

**Category**

- Abnormal Traffic Detection
- Application Event
- Communications Status Event
- Configuration Event
- Equipment Status Event
- General Event
- SAPS Event
- System alarms
- System events
- TLC Event
- Traffic Event
- Traffic Plan Event
- UTC Faults

**Severity**

<input type="checkbox"/> Automatic	<input type="checkbox"/> Minor
<input type="checkbox"/> Normal	<input type="checkbox"/> Informational
<input type="checkbox"/> Attention	<input type="checkbox"/> Serious

**Node**

- 3T Network
- TINT3
- TINT2
- TINT1

**Buttons**

**Search** **Save** **Reset all**

Figure 8-3 Event Log advanced filter

When selecting Node in advance filter, only events for that specific node will be shown. Node is a generic UTMS name for all entities in UTMS product. Nodes in ImFlow Central are Areas, Routes, Intersections and Links. Selecting Area Node only will display events for that Area only and will not include events from the associated Intersections. To view events for all Intersections in an Area use context specific Event Log (right click on desired Area and select option 'Events').

Operation which is used between different types of filters is AND. That means that both filters have to be satisfied for event to be shown (e.g. selecting Severity 'Automatic' and Node '3T Network' will display only 'Automatic' events for '3T Network' Area).

On the other hand, operation that is used inside filter is OR. That means that either one of those fields needs to be satisfied for event to be shown (e.g. selecting Severities 'Automatic' and 'Normal' and Node '3T Network' will display 'Automatic' and 'Normal' events for '3T Network' Area).

---

### NOTE

"Word filter" will filter events by some columns only (as other filters can be used to filter on other columns). The following columns are used when filtering with "word filter":



- Originator type
- Event code
- Description
- Advanced information
- Acknowledge / Ignore

When multiple search words are used they all need to be satisfied for the event to be shown (AND operator).

---

## 9. Traffic management Policies

To view the traffic management policies right click on the desired area and select option "Policies". The following screen will appear:

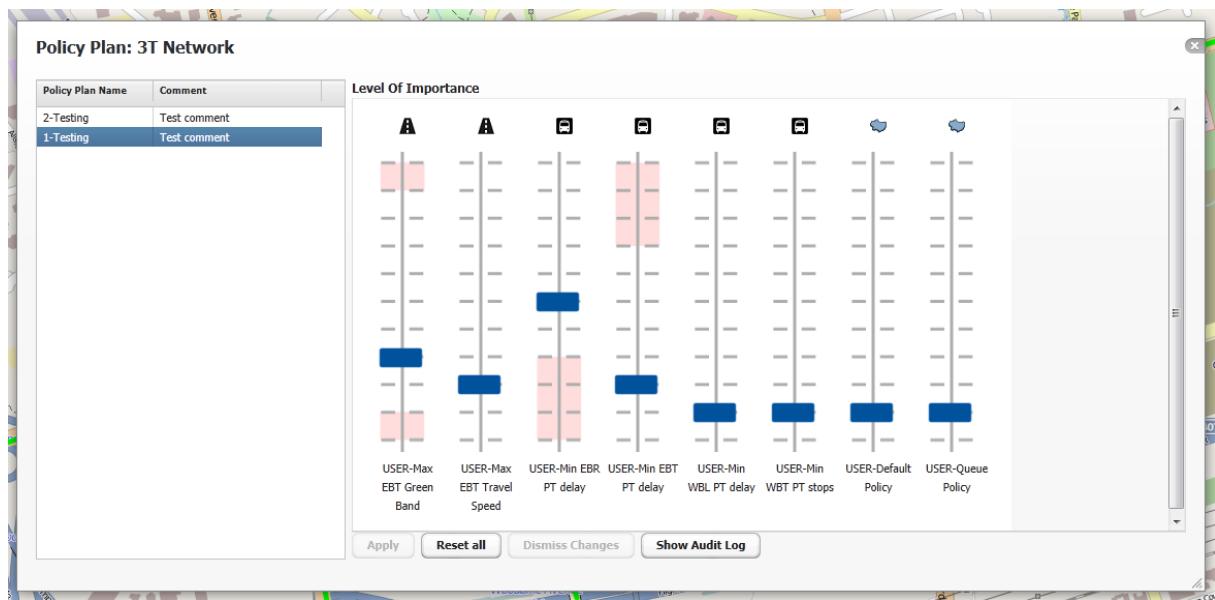


Figure 9-1 Policy screen

The left part of the screen contains a table with all policy plans associated with the selected Area. To view (and edit) policies for the specific plan, left click on it in the table.

The right part of the screen will be populated with that plan's policies. Level of importance (LOI) of a policy can be adjusted by moving corresponding slider up (increased importance) and down (decreased importance). Red background colour of the LOI slider indicates which LOI is not allowed for that specific policy. These ranges are defined in the ImFlow Configurator. The icon above the slider describes the type of the policy. The table below shows the possible icons and the type of policies they represent.

Icon	Policy type
	Area policy
	Vehicle route policy
	Public Transport route policy

Table 9-1 Policy type icons

After editing the LOIs, press "Apply" button to save new values and apply them in the system. The following confirmation dialog will appear:

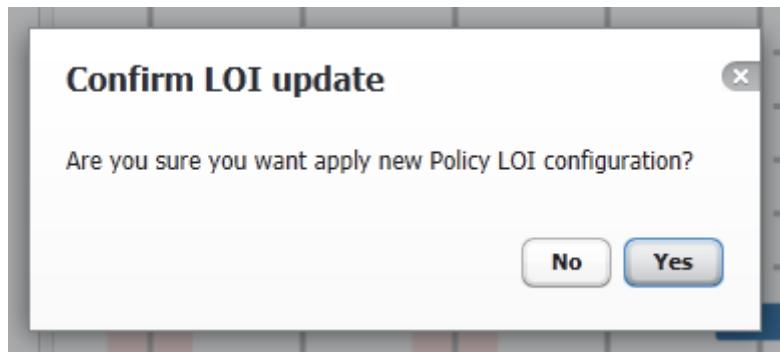
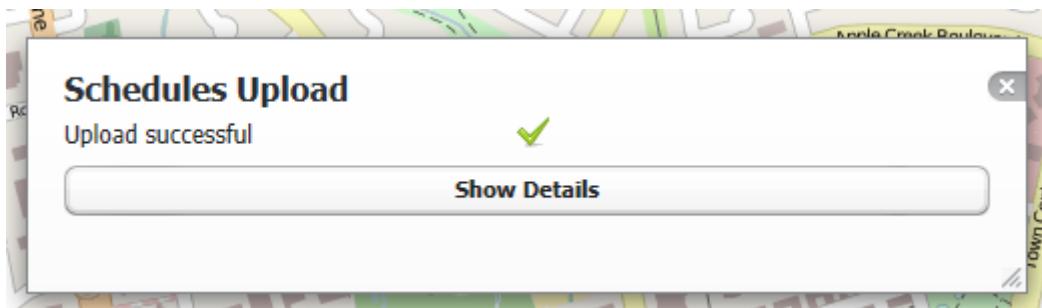


Figure 9-2 Policy update confirmation

Select "Yes" to confirm the LOI update. To apply LOI changes to the entire ImFlow system Schedule (which includes LOI configuration) must be distributed to the DAAPs. After the LOI changes are applied in the Central system, mechanism for distributing Schedule to DAAPs is executed. The mechanism is same as when schedule is distributed from the Scheduler overview (see Chapter 10.2 for details).

After the LOI update has completed the following dialog displaying the results will appear:



---

**NOTE**

In case the Schedule distribution fails (e.g. because of connection problems) the changes to the LOI configuration and the LOI audit will remain in the Central system. Once the issue which caused the distribution to fail has been addressed the users only need to redistribute the schedule and need not edit the LOI configuration again.

Schedule can be re-distributed by applying LOI changes again or selecting 'Upload schedule to DAAPs' button from the Schedule overview dialog. See Chapter 10.2 for more details.

---

## 10. Scheduler

### 10.1 Scheduler Overview

Scheduler is available for Areas only. To open the Scheduler overview, right click on the desired Area and select "Scheduler" context menu. The Scheduler dialog will appear, see Figure 10-1 bellow.

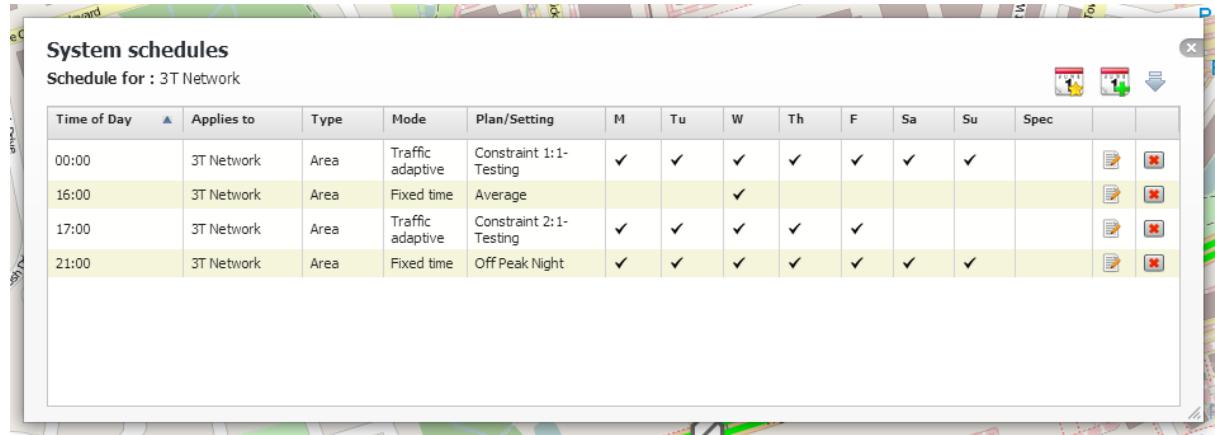


Figure 10-1 Scheduler overview

The Scheduler screen is used for viewing the schedule only. Editing schedule is not currently available in the ImFlow Central. Use the ImFlow Configurator to edit the Schedule.

Schedule is displayed in the form of table with Schedule events. Table displays the following settings for each Schedule event:

- Time of Day – the time of day at which the event is activated. The format used to display time is 'HH:mm'.
- Applies To – the name of the Area the Schedule is applied to
- Type – type of the schedule (Area or Intersection)
- Mode – ImFlow mode of operation to be activated, one of:
  - Traffic Adaptive
  - Traffic Responsive
  - Fixed Time
- Plan/setting – additional settings for the mode of operation (e.g. the name of the fixed time plan for Fixed Time mode)
- Remaining settings represent the days in week and special day when the event is active

Icon	Action
	Opens Special Day overview dialog
	Opens the dialog for adding new Schedule events
	Uploads the schedule to DAAPs
	Opens the dialog for editing event
	Deletes the vent from Schedule

Table 10-1 Schedule options

To view the configured special days select the "Special Day" button ( ) in the top right area of the screen. The following dialog will appear:

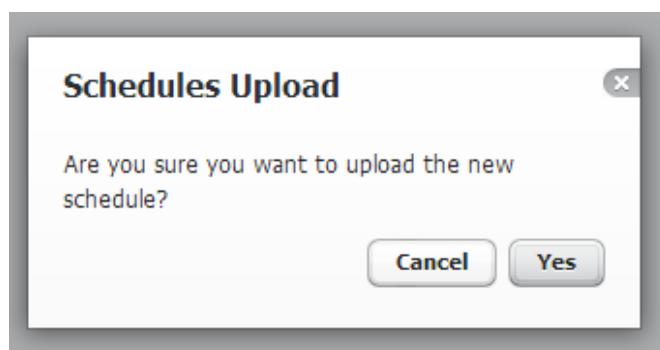


Type	Start Date	End Date	Specific date
Monthly	Oct 30, 2013 12:00:00 AM	Feb 28, 2014 12:00:00 AM	25
Yearly	Oct 30, 2013 12:00:00 AM	Aug 30, 2014 12:00:00 AM	18.10.

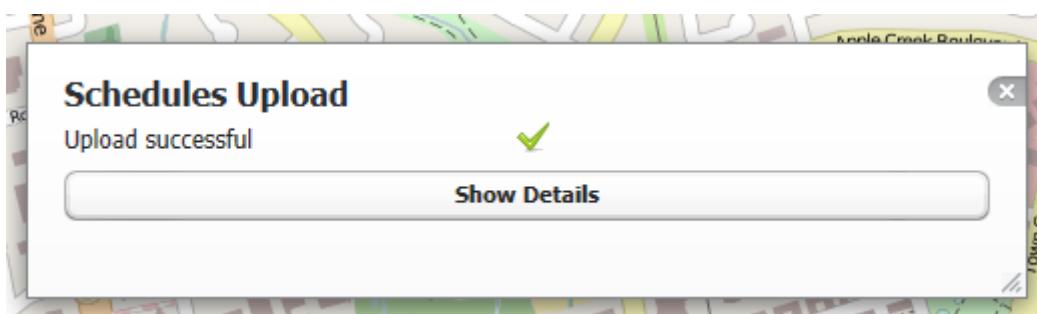
Figure 10-2 Special Day overview

## 10.2 Schedule upload

To upload the schedule to DAAPs select the “Upload schedule” button (⬇) in the top right part of the Scheduler dialog. The following confirmation dialog will appear:



Press “Yes” to continue with the schedule upload. After the schedule upload has completed the following dialog displaying the results will appear:



## 10.3 Schedule modification

Schedule can be modified in 3 ways:

1. Editing existing events
2. Deleting existing events
3. Adding new events

To add new events select 'Add new event' button () . The following dialog will appear:

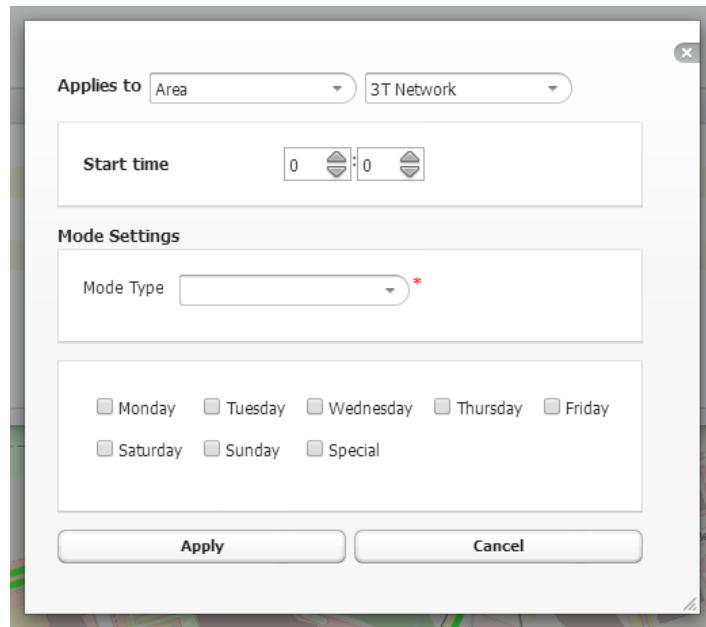


Figure 10-3 Schedule event add dialog

To create a new Schedule event the user must specify all event settings (described in previous chapter). When editing existing events the same dialog will appear with one difference – all fields will be populated with values from selected event.

After specifying the event settings press 'Apply' button to save changes. Pressing 'Cancel' button will dismiss changes and close the dialog.

After Schedule has been modified the 'Upload to DAAPs' button () will change appearance () to indicate that the schedule has been changed and that it should be distributed to the DAAPs. Changes to the Schedule are persisted (saved and stored in the database) only when distribution is started. To disregard changes to the schedule simply close the dialog without distributing the schedule.

## 11. Manual override

The Manual override screen allows users to change the ImFlow mode of operation or revert to schedule. Manual override is available for:

- Intersections
- Routes
- Areas

When a Manual override is selected for a Route or Area it will be executed for all Intersections associated to that Route/Area. To access the Manual Override screen right click on the desired network element and select "Manual override" menu. The following dialog will appear:

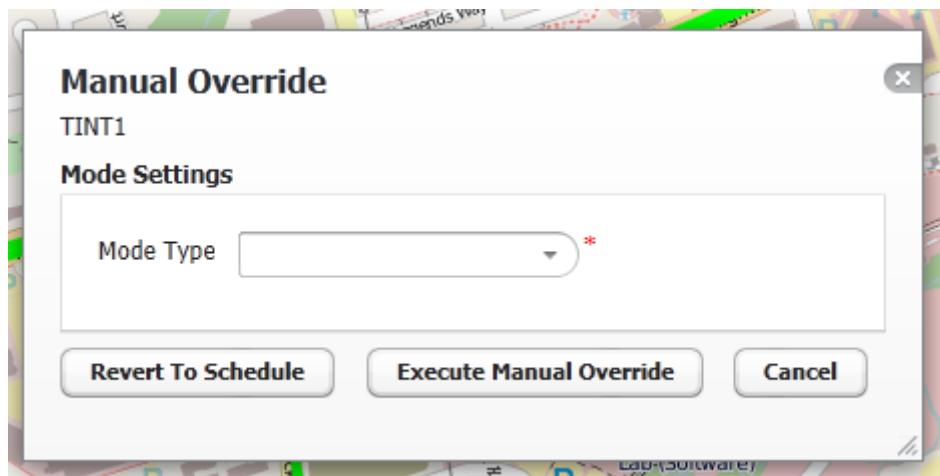


Figure 11-1 Manual Override dialog

The Manual Override screen will display for which network element it is opened and allow options based on that context. There are three buttons at the bottom of the screen allowing the users to:

1. Execute Manual override
2. Revert To Schedule
3. Cancel

To execute a manual override it is necessary to populate override settings. The overview of available modes and additional options for each mode can be seen in the Table 11-1.

#	Mode	Options
1.	Traffic Adaptive	Adaptive Constraints plan Policy plan
2.	Traffic Responsive (Area only)	Start (Starts to send FT plan overrides calculated by SAPS) Stop (Stops sending FT plans, last FT plan remains active unless 'Revert to Schedule' is sent)
3.	Fixed Time	Fixed time plan
4.	Local	Off (Dark) Stand By (Amber Flashing) Local
5.	User command	Reset TLC Alarms

		Reset TLC detector Alarms Synchronise time on TLC Reset DAAP Alarms
--	--	---

Table 11-1 Manual override settings

Example of populated Manual Override screen can be seen bellow:

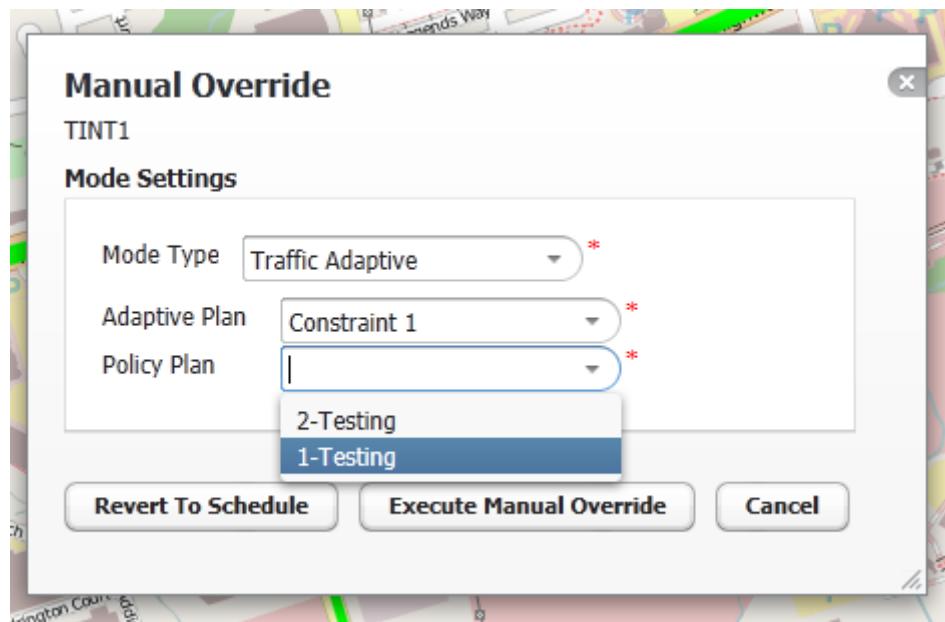


Table 11-2 Manual Override screen with settings

After populating the Manual Override screen with desired settings press the "Execute Manual Override" button to execute the override. The following screen will appear displaying the result of the override:

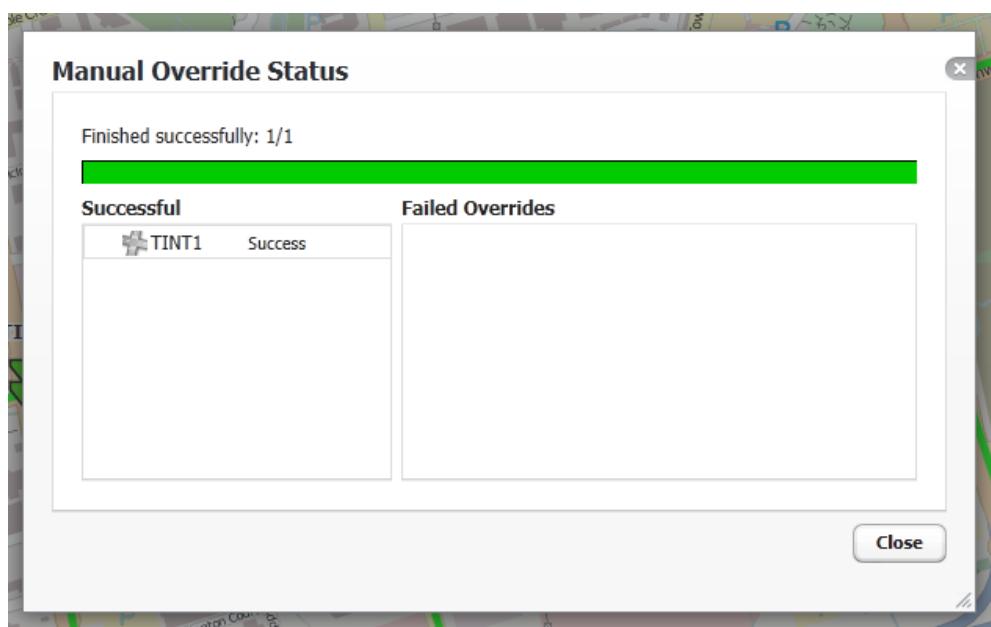


Table 11-3 Manual Override result screen



When the override is executed on multiple Intersections the result of each override is displayed.

## 12. Tools

This chapter describes ImFlow Central tools. Tools are features of the ImFlow central which display real time data received from the DAAPs.



### NOTE

Access to specific tool can be limited by logged-in user access-rights – refer to Chapter 3 for more information on access rights for ImFlow Central user groups.

### 12.1 TLC configuration

In order to use the functionality of TLC tools in UTMS (e.g. Time space diagram), it is necessary to provide configuration of Signal groups, Detectors and Inputs/Outputs (where available) for each device.

ImFlow Central only communicates with the DAAPs which provide real time data for Signal Groups only. This means that TLC configuration in ImFlow is made of Signal Groups only. TLC configuration is automatically created when the Network configuration is imported. For details about network configuration import refer to Chapter 15.

### 12.2 Time space diagram

The Time-Space diagram (TSD) is used to monitor the “green wave” between multiple Intersections in real-time, by displaying dynamic signal group status information from multiple intersections on the same time-line.

The main features of the Time-Space diagram tool are:

1. Diagram configuration; multiple configurations can be saved for future use
2. Display diagram in ‘live’ mode (on-line)
3. Save diagram data - diagram recording – manual or scheduled automatic recording
4. Playback recorded diagram
5. Diagram print
6. Export data to plain \*.txt file



### NOTE

During the Network configuration import default TSD configurations are created. They are created using the Route information from the configuration. They consist of Intersections and Signal Groups on which a route is defined.

#### 12.2.1 Configuration dialog

The button “Time-Space diagram” from the “Tools” menu of the Main menu bar will open the Time-Space configuration dialog box.

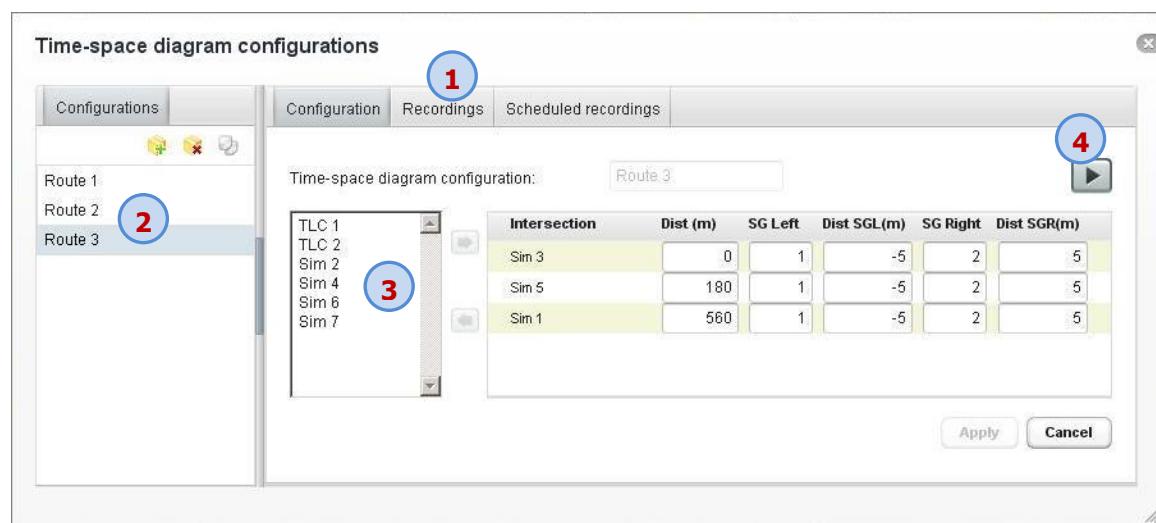


Figure 12-1 Time-space configuration dialog box

Main components on Time-Space configuration dialog	
1.	Tabs: Configurations, Recordings, Schedule recordings
2.	Configurations
3.	Configuration editor
4.	Display dynamic diagram with selected configuration

Table 12-1: Components of Time-space configuration dialog

### 12.2.1.1 Configuration tab



#### Configuration options:

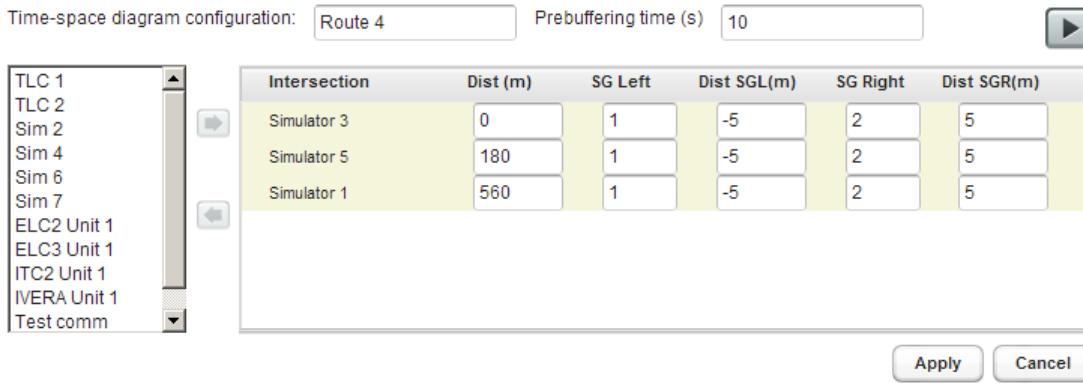
1. **List** of saved configurations
2. **Add new** configuration
3. **Delete** configuration
4. **Copy** configuration (create new from existing one)

Figure 12-2 Configurations

**NOTE**

Be careful when deleting a Configuration: all saved recordings or schedules for this configuration will also be deleted!

The configuration editor is used to add new or edit existing configurations:



The screenshot shows the configuration interface for a Time-space diagram. On the left, a vertical list box contains items such as TLC 1, TLC 2, Sim 2, Sim 4, Sim 6, Sim 7, ELC2 Unit 1, ELC3 Unit 1, ITC2 Unit 1, IVERA Unit 1, and Test comm. In the center, there is a table with columns: Intersection, Dist (m), SG Left, Dist SGL(m), SG Right, and Dist SGR(m). The table rows are Simulator 3, Simulator 5, and Simulator 1. At the bottom right are 'Apply' and 'Cancel' buttons.

Intersection	Dist (m)	SG Left	Dist SGL(m)	SG Right	Dist SGR(m)
Simulator 3	0	1	-5	2	5
Simulator 5	180	1	-5	2	5
Simulator 1	560	1	-5	2	5

Figure 12-3 Configuration parameters for Time space diagram

Configuring a new diagram:

1. The intersections for the diagram display must be selected from the list box on the left side and moved to the list of diagram intersections, using the arrows between the two boxes.
2. The diagram parameters for individual devices must be configured, as follows:

Parameter	Description
<b>Time-space diagram configuration</b>	Configuration name (custom user entry)
<b>Prebuffering time (s)</b>	Time in seconds to buffer data before starting display (used for field devices with slower response times)
<b>Intersection</b>	Intersection name (selected from the list of RMS devices)
<b>Dist (m)</b>	Distance in meters from first-left (referent) controller on the coordinated route. First controller on the route will normally have distance =0. Distance is normally measured from centre of the intersection
<b>SG Left</b>	Number (ID) of signal group for monitoring 'left' direction of 'green wave'.
<b>Dist SGL (m)</b>	Distance offset (in meters) for signal group configured as SG Left - SG distance from centre of intersection - can be configured for best diagram accuracy
<b>SG Right</b>	Number (ID) of signal group t for monitoring 'right' direction of 'green wave'.
<b>Dist SGR (m)</b>	Distance offset (in meters) for signal group configured as SG Right - SG distance from centre of intersection - can be configured for best diagram accuracy

Table 12-2: Time-space configuration parameters

### **12.2.1.2 Recordings tab**

The 'Recordings' tab, lists the recordings (save diagrams) for a selected diagram configuration.

Time-space diagram configurations		Configuration	Recordings	Scheduled recordings				
Configurations								
Route 1								
Route 2								
Route 3								
Recording name		Recorded by	Start time	End time				
Route 3 - 2011.10.21 11:33:34		admin	11:24:33	11:26:34				
Route 3		SCH/admin	12:50:54	12:51:54				

## 12-4 Recordings table

## Figure

Table column	Description
<b>Recording name</b>	Recording name is entered by user when recorded
<b>Recorded by</b>	Name of user who made a recording. If recording was scheduled, "SCH/" string is added before the name of user who scheduled it
<b>Start time</b>	Recording start time
<b>End time</b>	Recording end time
	Display recorded diagram
	Delete recording
	Refresh list of recordings from RMS database

Table 12-3: Information in Recordings table

#### **12.2.1.3 Scheduled recordings tab**

The “Scheduled recordings” tab lists the currently scheduled recordings.

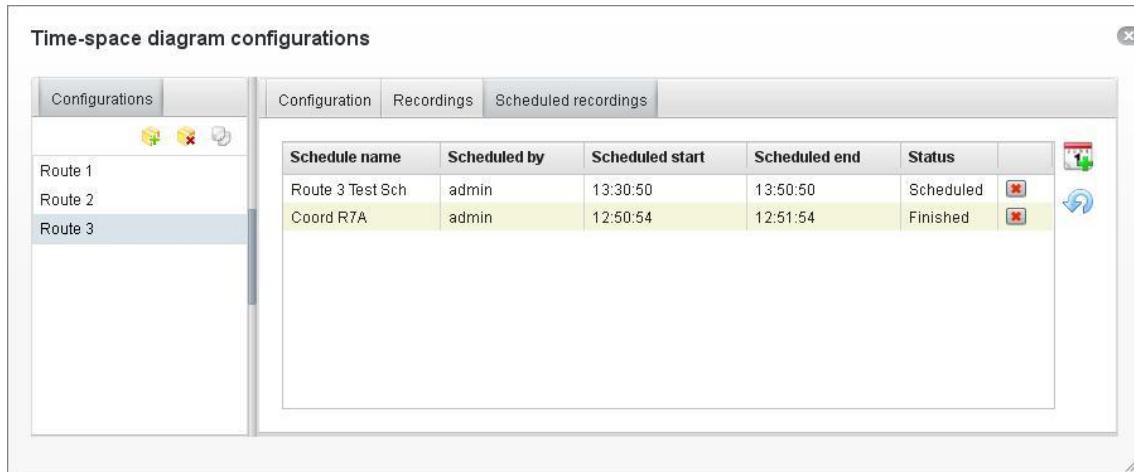


Figure 12-5 Scheduled recordings table

Table column	Description
<b>Schedule name</b>	Schedule name entered by user who added the schedule
<b>Scheduled by</b>	Name of user who scheduled the recording
<b>Scheduled start</b>	Recording start time
<b>Scheduled end</b>	Recording end time
<b>Status</b>	1. Scheduled: waiting execution 2. Recording: recording started, in progress 3. Finished: recording completed
	Delete schedule (not allowed if recording already started)
	Refresh list of schedules from RMS database

Table 12-4: Information in Scheduled recordings table

### 12.2.2 Diagram display

The time-space diagram can be displayed in the 'live' or 'playback' mode.

#### Live mode

In the 'live' mode, the diagram displays real-time data received from DAAPs. The mode is started by pressing the 'Play' button for the selected configuration from the 'Configuration' tab of the Configuration dialog box.

#### Playback mode

In the 'playback' mode, the diagram displays the recorded data which is stored in the ImFlow Central database. The mode is started by pressing the 'Play' button for the selected recording in the 'Recordings' tab of the Configuration dialog box.

Graphically, the diagram display is the same in both modes but with different user options available in the diagram control panel.

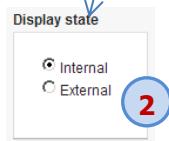
### Dynamic diagram

The Intersections are displayed as vertical lines positioned with a horizontal "distance" coordinate. The distance is measured in meters from the first intersection on the monitored route - first left Intersection; placed on as a reference point with the distance=0m.

The dynamic status of the signal groups is displayed in a time-progressive manner, in 1s steps, in the direction of vertical "time" coordinate - drawing SG states from bottom to top. Two signal groups are displayed per intersection- 'SG Left' and 'SG Right'.



Figure 12-6 Time-Space diagram display



<b>Main components on Time-Space diagram display</b>	
<b>1</b>	<b>Dynamic status of signal groups</b>
<b>2</b>	<b>Display state</b> Switch between displaying internal and external signal group states
<b>3</b>	<b>Display options</b>
<b>4</b>	<b>Speed vectors</b> Right and left speed vectors are displayed by means of colours strips
<b>5</b>	<b>Display control panel</b> Has different controls in 'live' and 'playback' mode
<b>6</b>	<b>Intersection information</b>
<b>7</b>	<b>Options</b> Save (recording) Print Display

Table 12-5: Components of Time-Space diagram display

### 12.2.2.1 Dynamic status of signal groups

Time-Space diagram can use external or internal signal group states for the display.

The external states of the signal groups are used for the Time-Space diagram display in order to reflect the realistic states (lamp outputs) of the traffic light signal heads:

The internal states of the signal groups can be used for the Time-Space diagram display when more detailed information about logical signal group's states is required:

<b>Internal signal state</b>	<b>Colour</b>	<b>External signal state</b>	<b>Colour</b>
Red/Amber	Orange	Red-Amber	Orange
Minimum green	Dark Green	Green	Light Green
Variable minimum green	Dark Green	Green	Light Green
Passive green	Green	Green	Light Green
Green extension	Light Green	Green	Light Green
Green extension by local co-ordination	Light Green	Green	Light Green
Fixed past end green	Light Green	Green	Light Green
Vehicle actuated past-end-green	Light Green	Green	Light Green
Red Synchronisation	Red	Red	Red
Green blinking (Pedestrian groups)	Light Green	Green Flashing	Light Green
Amber flashing	Dark Grey	Amber Flashing	Dark Grey
Fixed amber	Yellow	Amber	Yellow
Amber (dark output)	Dark Grey	Dark (off)	Dark Grey

Vehicle actuated amber		Amber	
Vehicle actuated minimum red		Red	
Red clearance interval		Red	
Minimum red		Red	
Passive red		Red	
Red Request		Red	
Red-Priority		Red	
Red privilege		Red	
Red wait		Red	
Red stop		Red	
Intergreen / start-delay		Red	
Fixed yellow start		Amber	
Fixed red start		Red	
Unknown		Unknown	

Table 12-6: Signal group status colours (internal and external states)

**NOTE**

During a TLC 'Starting sequence' and a 'Plan change sequence', the signal group status is shown in Grey, to indicate the state of the control program is out of the scope for the 'green wave'.

**NOTE**

DAAP doesn't provide all information about signal group states that TSD supports and displays. For details on DAAP signal group state colour mapping and conversion to TSD colours refer to APPENDIX B: DAAP Signal Group states.

### 12.2.2.2 Display state

Control which signal states will be displayed in diagram – Internal states of signal groups or External states of signal groups.

In live mode the control will be disabled while a diagram is running – in order to change Display state a diagram must be stopped.



Figure 12-7 Display state control

### **12.2.2.3 Display options**

The display options are related to the display of the Speed vectors on the Time-Space diagram:

#### **Speed vectors**

Select one of vector display options:

- Display both vectors
- Only Right,
- Only Left
- None (do not display speed vectors)

Both of the vectors are displayed by default.

#### **Speed (km/h)**

The speed of the 'green wave' in km/h (angle of speed vectors)

### **12.2.2.4 Speed vectors**

Speed vectors are graphically presented in the time-space diagram display, in means of equally spaced coloured strips. The angle of the graphical speed vector is proportional to the 'green-wave speed' entered in display options.

### **12.2.2.5 Control panel**

#### **Live mode**



Figure 12-8 Diagram controls in Live mode

- Play: Starts displaying the diagram. The Play button is disabled while the diagram is running.
- Stop: Stop diagram display. Pressing the Play button after the Stop button will re-start the diagram display

## Playback mode

During Play:



Figure 12-9 Diagram controls in Playback mode (play)

- \* The Buttons Play, Step forward and Step backward are disabled.
- \* The Time-slider is showing the diagram progress but the user control of the slider has no effect on the display

During Pause:

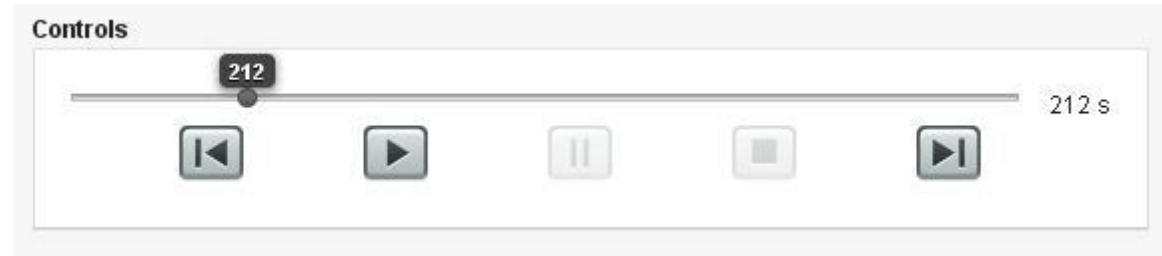


Figure 12-10 Diagram controls in Playback mode (paused)

- \* The Buttons Stop and Pause are disabled
- \* The Time-slider is showing the diagram progress and the user can control the display time-base by moving the slider.

The description of the buttons on the Control panel is given in Table 12-7.

### Control panel

1.	Play: Start displaying diagram
----	--------------------------------

<b>2.</b>	<b>Pause:</b> Pause the diagram display; pressing Play button resumes diagram display
<b>3.</b>	<b>Stop:</b> Stop diagram display; pressing Play button starts diagram display from beginning
<b>4.</b>	<b>Step forward:</b> Step 1 sec. forward in diagram time-base (manual stepping)
<b>5.</b>	<b>Step backward:</b> Step 1 sec. backward in diagram time-base (manual stepping)
<b>6.</b>	<b>Current time of the diagram recording in seconds</b>
<b>7.</b>	<b>Time-slider:</b> Used for navigation through the recording by manually changing diagram time-base

Table 12-7: Buttons on Time-Space diagram control panel

### 12.2.2.6 Intersection information

#### Date/Time

Time when RT data is received

#### Plan

DAAPs don't provide plan information in the RT data.

#### Cy (Cycle)

DAAPs don't provide cycle information in the RT data.

### 12.2.2.7 Options

Additional options are available through the toolbars in the bottom-right corner of the diagram screen:

	Save diagram
	Open print-friendly display of the diagram (new window)
	Exports data in the plain *.txt file

#### Save

In the Live mode, the diagram data can be saved for future playback. The save option is available after the diagram display has Stopped. In the 'Save recording' dialog box, the user can enter the name of the recording.



Figure 12-11 Recording save dialog box

## Print

The current display of the diagram can be exported to print both in the Live and Playback modes. A printer-friendly display will be opened in a new browser window, including the Configuration/Recording name and the date/time of the print export. The print display will look similar to one shown in the below figure:

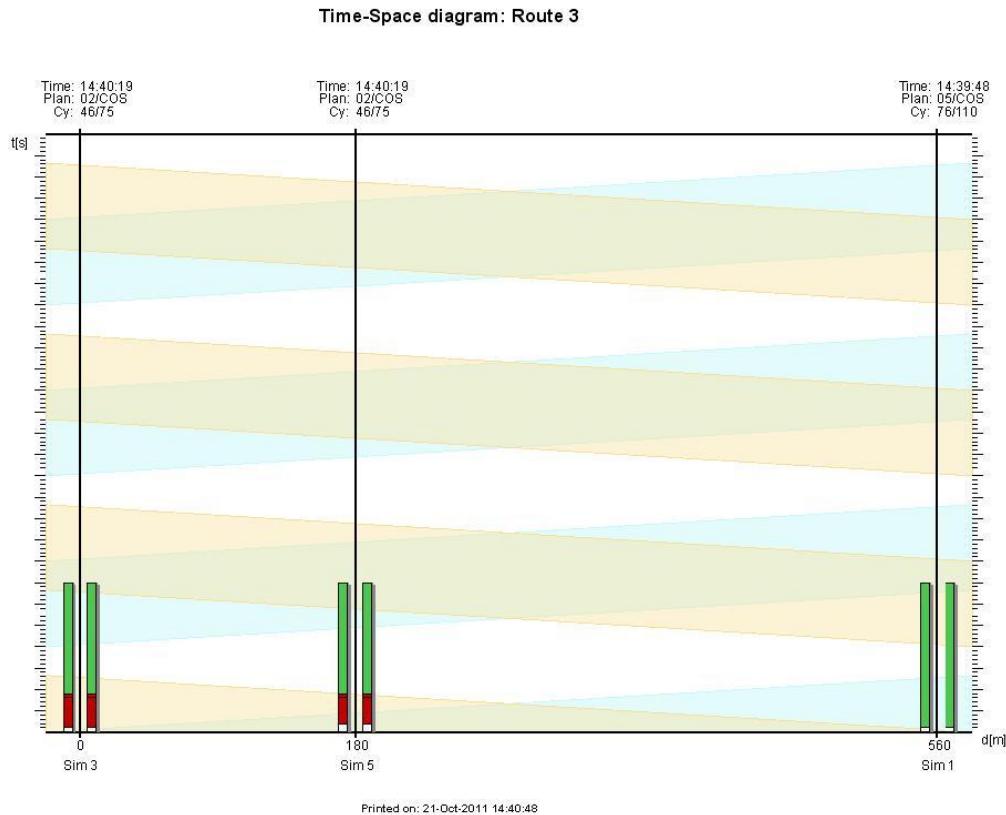


Figure 12-12 time-space diagram captured in printer-friendly format

## Export

In "Live" mode the detailed recorded data can be exported in a plain \*.txt file.

## 12.3 Queue diagram

Queue diagram displays status of the queues (in meters and vehicles) for the Signal Groups in the form of the real time line graph.

### 12.3.1 Queue diagram configuration

To configure Queue diagram go to 'Tools -> Queue Diagram' menu. The following dialog will appear:

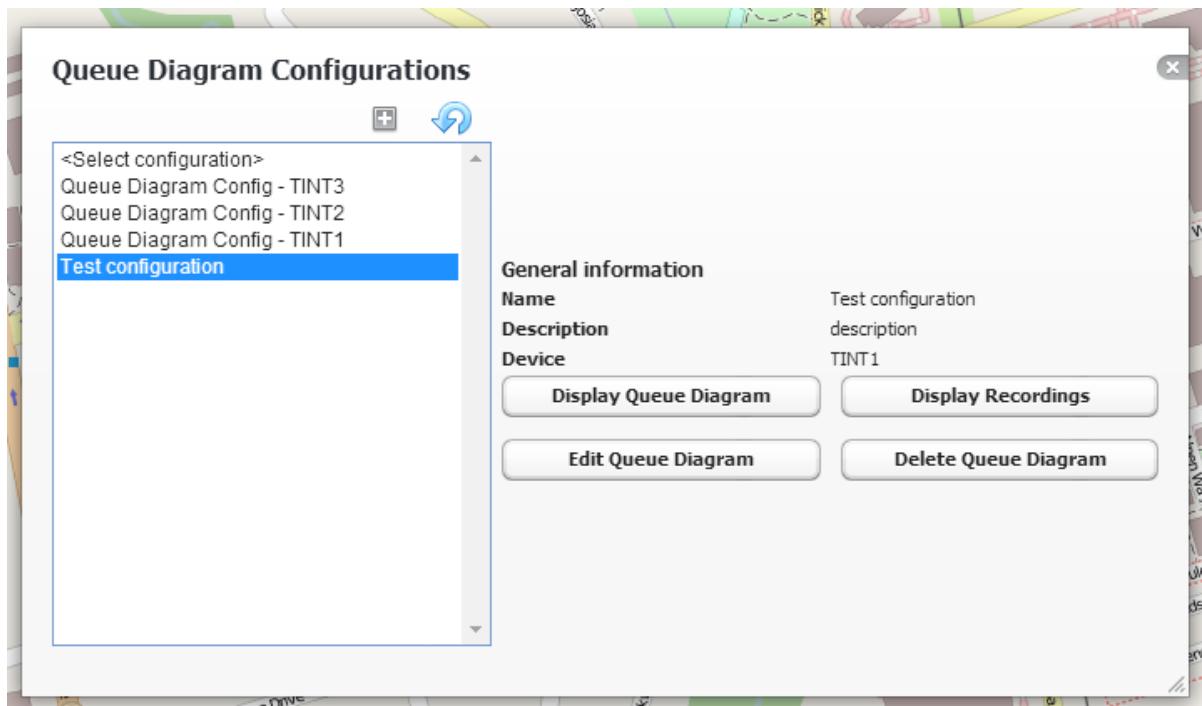


Figure 12-13 Queue diagram configuration

To create a new diagram, click on the plus sign.



Queue diagram configuration editor window will open.

## Queue Diagram configuration editor

### general info

Name	Test configuration	<input type="button" value="Save"/>
Description	demo test	<input type="button" value="Load from TLC configuration"/>
Device	TINT1	
Type	Both	
Resolution [sec]	240	
Queue in meters limit	20	
Queue in vehicles limit	10	

SG Id	Name	Actions
0	WBT	 
1	WBL	
2	NBR	
3	NBL	
4	EBR	
5	EBT	
6	PedE	
7	PedS	

Figure 12-14 Queue diagram configuration editor

**Name** – the name you want to be set for the diagram

**Description** – description of the diagram

**Device** – select the Intersection that will be used

**Type** – queue in meters / queue in vehicles / both

**Resolution** – the resolution to be displayed

**Queue in meters limit** – define the maximum queue in meters to be displayed

**Queue in vehicles limit** – define the maximum queue in vehicles to be displayed

**Save** – save the configuration

**Load from TLC configuration** – loads the signal groups from the Intersection configuration automatically

Signal groups can also be added manually by using the traffic light icon  or removed with the delete icon .

**IMPORTANT NOTE**

Creating Queue diagram configurations with too many signal groups may lead to slow performance. Also note that selecting both queue types will double the queues shown.

### 12.3.2 Queue diagram display

To display the queue diagram select the desired diagram and click on the display queue diagram button.

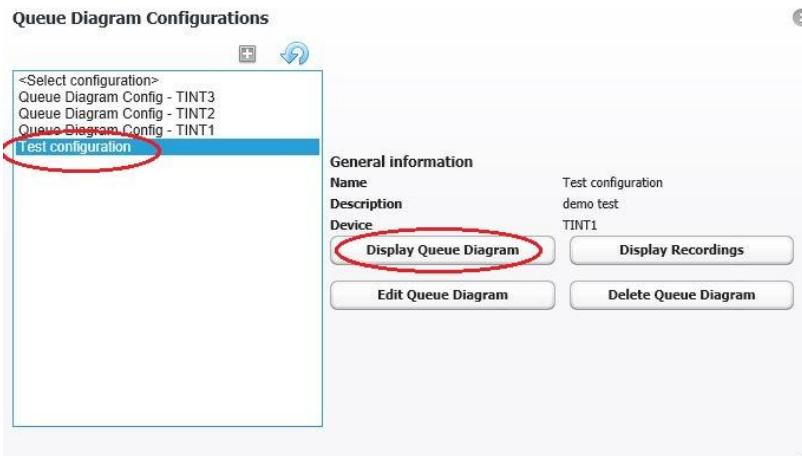


Figure 12-15 Queue diagram configurations



Use the control buttons to start and stop the simulation

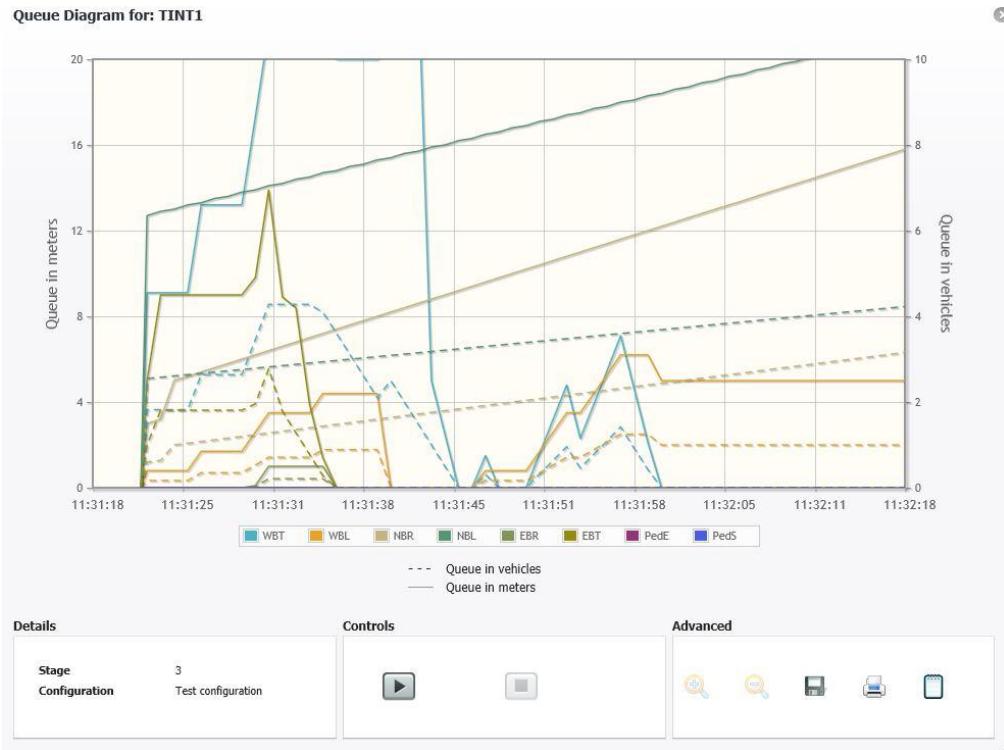


Figure 12-16 Display queue diagram

Use the advanced buttons for additional control:

	zoom in or out
	Save diagram for later viewing
	Open print-friendly display of the diagram (new window)
	Exports data in the plain *.txt file. The data is comma delimited and can then be imported to Microsoft excel or some other supporting application for further analysis.

Table 12-8 Queue diagram advanced controls

Example of the plain text file imported in MS Excel.

	A	B	C	D	E	F	G	H	I
1	Wed Jul 09 11:36:51 CEST 2014								
2	StageSgData [intersectionId=1	currentStageId=3	inTransition=true	timeSinceStartOfStage=0	signalGroupCount=8]				
3	{ SignalGroupData - signalGroupId=[0]	currentState=[Green]	stateTime=[499]	demandState=[Off]	extensionState=[On]	syncState=[Following]	verticalQueue=[26]	horizontalQueue=[13]	
4	{ SignalGroupData - signalGroupId=[1]	currentState=[Green]	stateTime=[9]	demandState=[Off]	extensionState=[On]	syncState=[Following]	verticalQueue=[159]	horizontalQueue=[79]	
5	{ SignalGroupData - signalGroupId=[2]	currentState=[Red]	stateTime=[1619]	demandState=[Demand]	extensionState=[Off]	syncState=[Following]	verticalQueue=[173]	horizontalQueue=[86]	
6	{ SignalGroupData - signalGroupId=[3]	currentState=[Red]	stateTime=[519]	demandState=[Demand]	extensionState=[Off]	syncState=[Following]	verticalQueue=[268]	horizontalQueue=[134]	
7	{ SignalGroupData - signalGroupId=[4]	currentState=[Red]	stateTime=[41]	demandState=[Off]	extensionState=[Off]	syncState=[Following]	verticalQueue=[0]	horizontalQueue=[0]	
8	{ SignalGroupData - signalGroupId=[5]	currentState=[Red]	stateTime=[19]	demandState=[Demand]	extensionState=[Off]	syncState=[Following]	verticalQueue=[0]	horizontalQueue=[0]	
9	{ SignalGroupData - signalGroupId=[6]	currentState=[Red]	stateTime=[579]	demandState=[Demand]	extensionState=[Off]	syncState=[Following]	verticalQueue=[0]	horizontalQueue=[0]	
10	{ SignalGroupData - signalGroupId=[7]	currentState=[Red]	stateTime=[229]	demandState=[Demand]	extensionState=[Off]	syncState=[Following]	verticalQueue=[0]	horizontalQueue=[0]	
11	Wed Jul 09 11:36:52 CEST 2014								
12	StageSgData [intersectionId=1	currentStageId=3	inTransition=false	timeSinceStartOfStage=0	signalGroupCount=8]				
13	{ SignalGroupData - signalGroupId=[0]	currentState=[Green]	stateTime=[509]	demandState=[Off]	extensionState=[On]	syncState=[Following]	verticalQueue=[0]	horizontalQueue=[0]	
14	{ SignalGroupData - signalGroupId=[1]	currentState=[Green]	stateTime=[19]	demandState=[Off]	extensionState=[On]	syncState=[Following]	verticalQueue=[159]	horizontalQueue=[79]	
15	{ SignalGroupData - signalGroupId=[2]	currentState=[Green]	stateTime=[9]	demandState=[Off]	extensionState=[On]	syncState=[Following]	verticalQueue=[174]	horizontalQueue=[87]	
16	{ SignalGroupData - signalGroupId=[3]	currentState=[Red]	stateTime=[529]	demandState=[Demand]	extensionState=[Off]	syncState=[Following]	verticalQueue=[272]	horizontalQueue=[136]	
17	{ SignalGroupData - signalGroupId=[4]	currentState=[Red]	stateTime=[51]	demandState=[Off]	extensionState=[Off]	syncState=[Following]	verticalQueue=[0]	horizontalQueue=[0]	
18	{ SignalGroupData - signalGroupId=[5]	currentState=[Red]	stateTime=[29]	demandState=[Demand]	extensionState=[Off]	syncState=[Following]	verticalQueue=[0]	horizontalQueue=[0]	
19	{ SignalGroupData - signalGroupId=[6]	currentState=[Red]	stateTime=[589]	demandState=[Demand]	extensionState=[Off]	syncState=[Following]	verticalQueue=[0]	horizontalQueue=[0]	
20	{ SignalGroupData - signalGroupId=[7]	currentState=[Red]	stateTime=[239]	demandState=[Demand]	extensionState=[Off]	syncState=[Following]	verticalQueue=[0]	horizontalQueue=[0]	



### IMPORTANT NOTE

Starting multiple Queue diagram displays at the same time may lead to slow performance.

#### 12.3.3 Display recording

All saved recordings for a certain configuration can be seen by pressing the display recordings button.

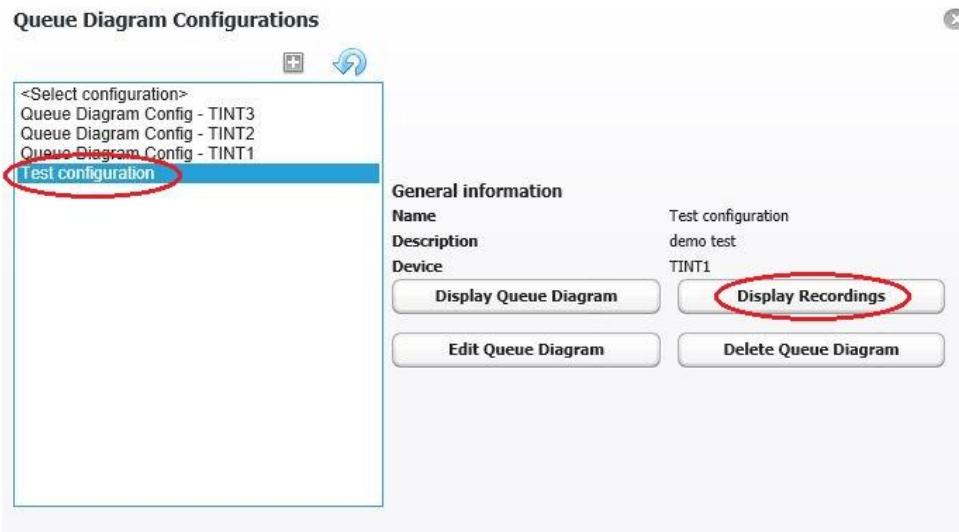


Figure 12-17 Queue diagram configurations

Queue Diagram for: TINT1

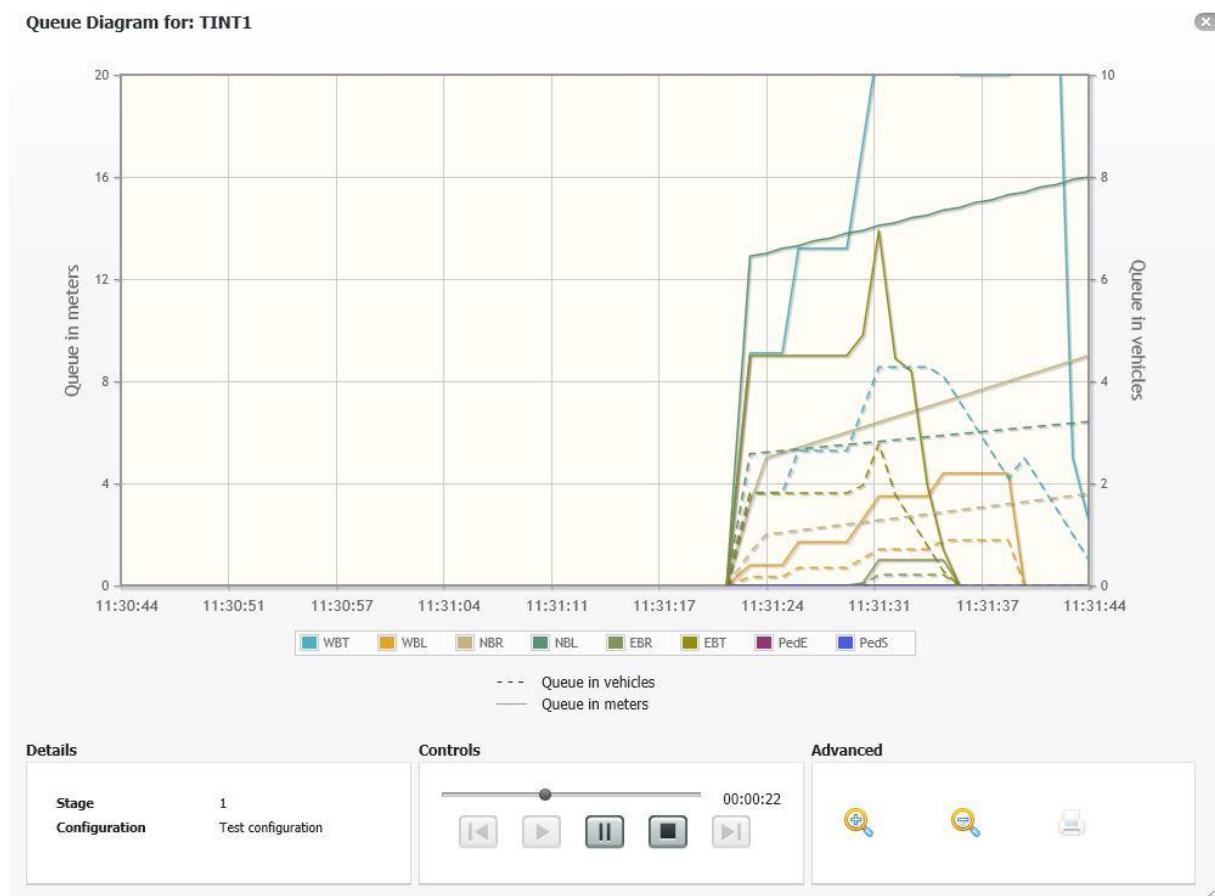


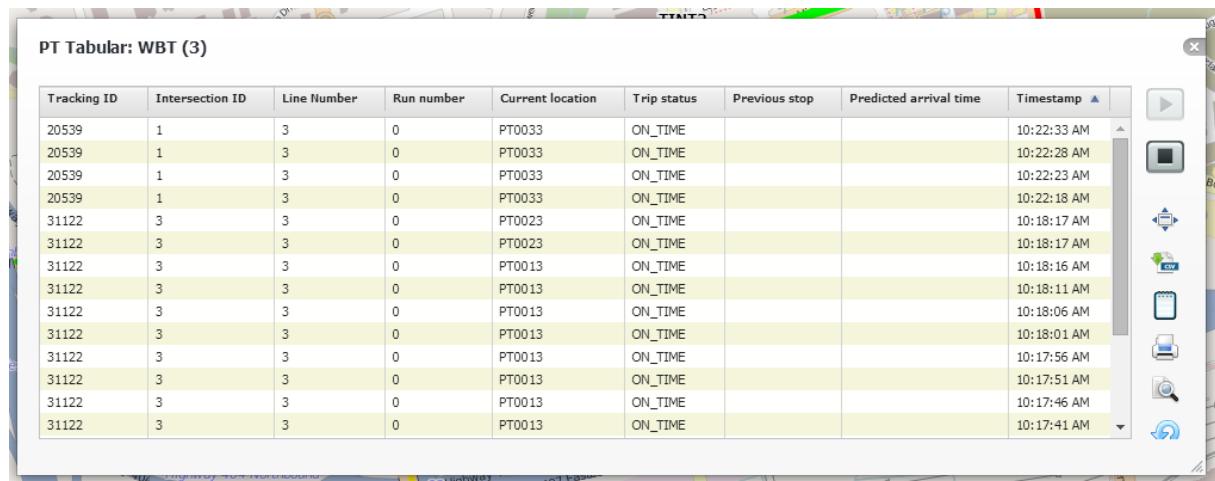
Figure 12-18 Queue diagram recording display

Controls	
1.	<b>Play:</b> Start displaying diagram
2.	<b>Pause:</b> Pause the diagram display; pressing Play button resumes diagram display
3.	<b>Stop:</b> Stop diagram display; pressing Play button starts diagram display from beginning
4.	<b>Step forward:</b> Step 1 sec. forward in diagram time-base (manual stepping)
5.	<b>Step backward:</b> Step 1 sec. backward in diagram time-base (manual stepping)
6.	<b>Current time of the diagram recording in seconds</b>
7.	<b>Time-slider:</b> Used for navigation through the recording by manually changing diagram time-base

Table 12-9 Queue diagram recording controls

## 12.4 PT Tabular monitoring

Public transport Tabular monitoring provides a table with PT events received from the DAAPs. Table is updated in real time when events are sent by DAAPs. To open the PT Tabular overview right click on a PT Route in the Navigator and select 'Tools -> PT Tabular'. The following dialog will appear:



Tracking ID	Intersection ID	Line Number	Run number	Current location	Trip status	Previous stop	Predicted arrival time	Timestamp
20539	1	3	0	PT0033	ON_TIME			10:22:33 AM
20539	1	3	0	PT0033	ON_TIME			10:22:28 AM
20539	1	3	0	PT0033	ON_TIME			10:22:23 AM
20539	1	3	0	PT0033	ON_TIME			10:22:18 AM
31122	3	3	0	PT0023	ON_TIME			10:18:17 AM
31122	3	3	0	PT0023	ON_TIME			10:18:17 AM
31122	3	3	0	PT0013	ON_TIME			10:18:16 AM
31122	3	3	0	PT0013	ON_TIME			10:18:11 AM
31122	3	3	0	PT0013	ON_TIME			10:18:06 AM
31122	3	3	0	PT0013	ON_TIME			10:18:01 AM
31122	3	3	0	PT0013	ON_TIME			10:17:56 AM
31122	3	3	0	PT0013	ON_TIME			10:17:51 AM
31122	3	3	0	PT0013	ON_TIME			10:17:46 AM
31122	3	3	0	PT0013	ON_TIME			10:17:41 AM

Figure 12-19 PT Tabular

PT Tabular provides the following information from the PT events:

- Tracking ID – ID of the vehicle on the current run
- Intersection ID – ID of the Intersection which has detected the vehicle
- Line number
- Run number
- Current location – PT detector which has detected the vehicle
- Trip status
- Previous stop
- Predicted arrival time
- Time stamp



### NOTE

Depending on received the event type some of the information might not be available

The following table describes the options available in the PT Tabular:

Icon	Action
	Starts the RT display
	Stops the RT display
	Opens the dialog in a new window/tab
	Exports the data to the CSV file

	Exports data to plain .txt file
	Opens the print friendly view of the table
	Opens the vehicle filter area
	Reloads available tracking IDs in filter

Table 12-10 PT Tabular options

All received PTV events are automatically stored in the historical database and are available for viewing using the PT reports

#### 12.4.1 Vehicle filter

Selecting the 'Vehicle filter' button () will open the vehicle filter area in the PT Tabular overview:

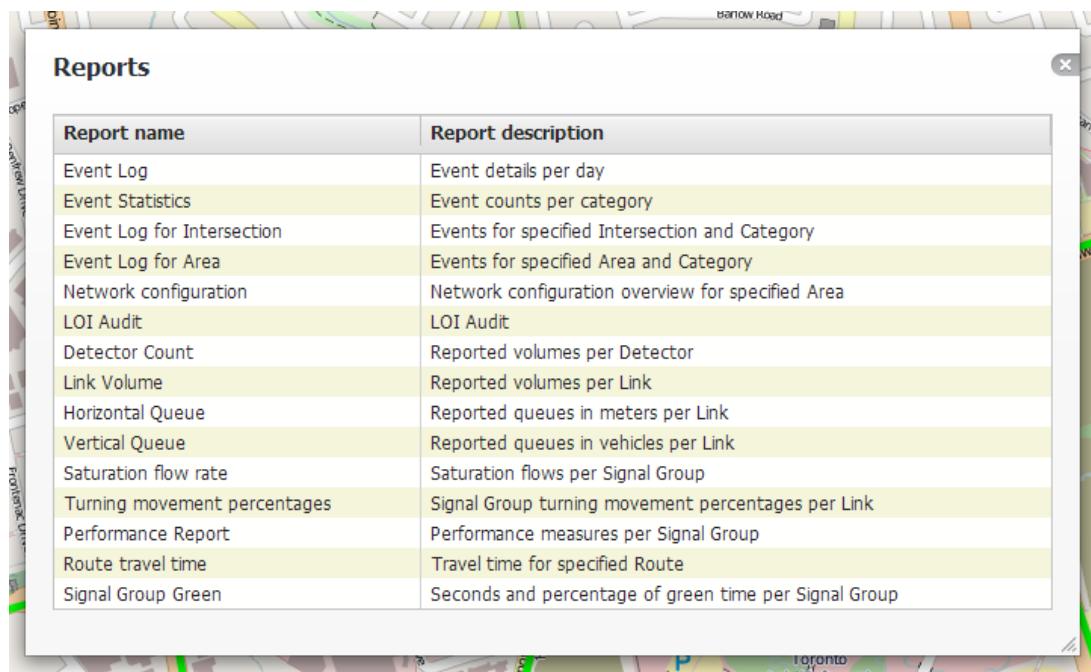


PT vehicles are filtered using the tracking ID. Select the tracking IDs you wish to filter by moving them from 'Available' section to the 'Selected' section. Press 'Search' button to filter the PT Tabular. Only events which relate to specified tracking IDs will be displayed.

Pressing 'Reset all' button will reset the filter and show all PTV events.

## 13. Reports

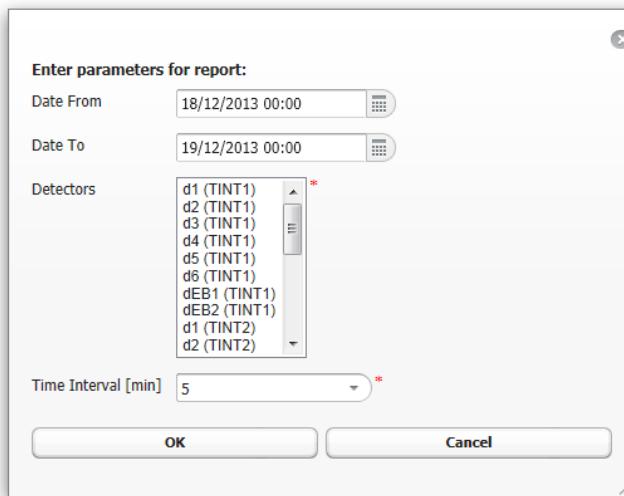
To view available reports in the system select the "Reporting -> Reports" menu from the main Menu bar. The following dialog will appear:



Report name	Report description
Event Log	Event details per day
Event Statistics	Event counts per category
Event Log for Intersection	Events for specified Intersection and Category
Event Log for Area	Events for specified Area and Category
Network configuration	Network configuration overview for specified Area
LOI Audit	LOI Audit
Detector Count	Reported volumes per Detector
Link Volume	Reported volumes per Link
Horizontal Queue	Reported queues in meters per Link
Vertical Queue	Reported queues in vehicles per Link
Saturation flow rate	Saturation flows per Signal Group
Turning movement percentages	Signal Group turning movement percentages per Link
Performance Report	Performance measures per Signal Group
Route travel time	Travel time for specified Route
Signal Group Green	Seconds and percentage of green time per Signal Group

Figure 13-1 Report listing screen

The table in the screen lists all reports and gives a short description of each. To view a report, double click on it in the table. If the report requires additional parameters the Report Parameter dialog will appear. See Figure 13-2 bellow.



Enter parameters for report:

Date From: 18/12/2013 00:00

Date To: 19/12/2013 00:00

Detectors:

- d1 (TINT1)
- d2 (TINT1)
- d3 (TINT1)
- d4 (TINT1)
- d5 (TINT1)
- d6 (TINT1)
- dEB1 (TINT1)
- dEB2 (TINT1)
- d1 (TINT2)
- d2 (TINT2)

Time Interval [min]: 5

OK Cancel

Figure 13-2 Report Parameter dialog

Specify all required parameters and select "OK" button to view the report.

The following reports are available for viewing in ImFlow Central:

- Event reports:
  1. Event Log
  2. Event Statistics
  3. Event Log for Intersection
  4. Event Log for Area
- Configuration reports:
  1. Network configuration
- Policy reports
  1. LOI audit
- Traffic reports
  1. Detector Count
  2. Link Volume
  3. Horizontal Queue
  4. Vertical Queue
  5. Saturation flow
  6. Turning movement percentages
- Performance reports
  1. SG Performance
  2. PT Route Performance
  3. Route travel time
- Operational reports
  1. Signal Group green
- PT reports
  1. PT Number of Stops at Signals
  2. PT Travel Times
  3. PT Events
- Scheduler reports
  1. Schedules



#### **IMPORTANT NOTE**

Some reports may run for longer period of time if larger date spans are selected. This especially applies for Detector count report which runs slow if more than few days are selected.



#### **NOTE**

PT reports will have data in the time span when PT tabular for specific PT Route was activated. This is due to PT reports display data from real time PTV messages.



#### **NOTE**

The route travel time is calculated by the free flow travel time including the delay.

An example of the report (Detector Count) can be seen below.

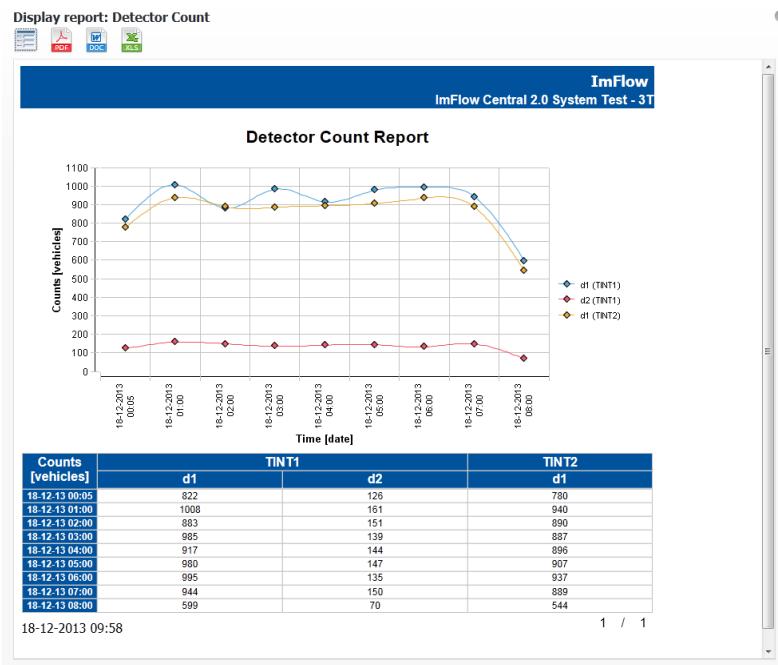


Figure 13-3 Report preview example

Reports can be exported to the following file formats:

- PDF
- DOC
- XLS

To export a report, press the corresponding button from the report toolbar. See Figure 13-4 bellow.



Figure 13-4 Report dialog toolbar

The leftmost button will open the Report Parameter dialog allowing reinitialising of the current report. Second button from the left will open a dialog for saving current report as template. See Chapter 13.2 for more details on report templates. The remaining three buttons will export current report to one of the supported formats.

### 13.1 Custom reports

It is possible to upload customized BIRT reports directly to ImFlow Central from the custom reports tab. Simply press the "Upload custom reports" button and choose the report file you want to upload.

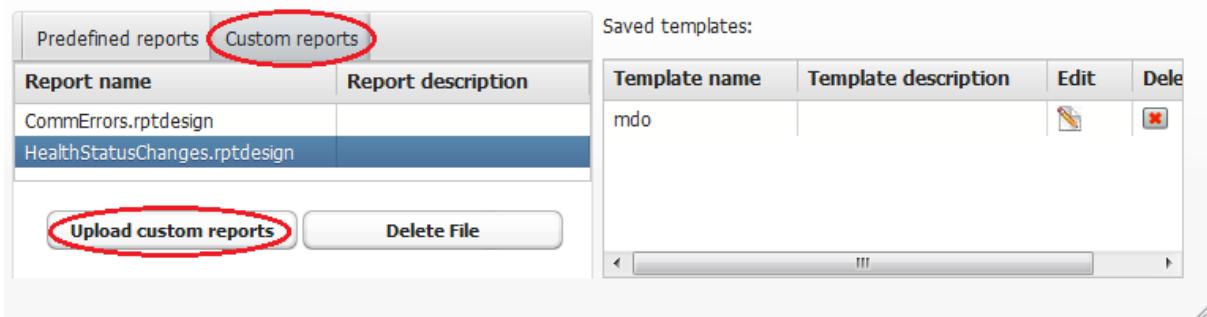
Once the report is uploaded to the system it will be shown in the custom reports list and is ready to use in the same way as predefined reports (opening, changing parameters, saving templates...). The only difference is that custom reports can be deleted from the system by pressing the "Delete file" button.



### NOTE

If reports that are uploaded to ImFlow Central use library, localization, image, css files or any other resources that are not provided by ImFlow Central, all those files must be uploaded to the system using the "Upload custom reports" button. All uploaded resource files are shown in the same table as reports and can be deleted by pressing "Delete File" button.

## Reports



Template name	Template description	Edit	Delete
mdo			

Figure 13-5 Custom reports tab

BIRT (Business Intelligence and Reporting Tools) is an open-source reporting tool.

The technical information required to create BIRT reports for UTMS can be found in the referenced document  6.

More information on BIRT (including downloads) can be found at [www.eclipse.org/birt](http://www.eclipse.org/birt).

### 13.2 Templates

Selecting a "Save as Template" button in the report toolbar allows users to save current report settings (i.e. report parameters) as template for quicker report generation in the future. After selecting specified button, following dialog will appear:

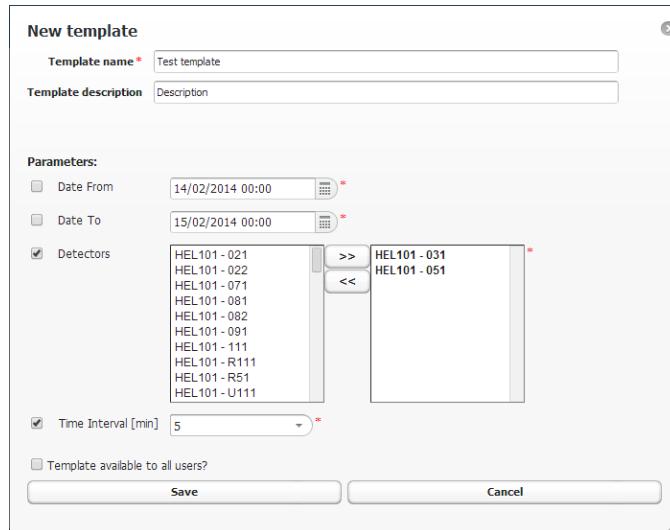


Figure 13-6 Report template screen

Enter the template name (mandatory) and description (optional), specify desired parameters to be saved with the template and press "Save" button. The template will be saved with the report and will be listed in the right area of the Report dialog. See Figure 13-7 below:

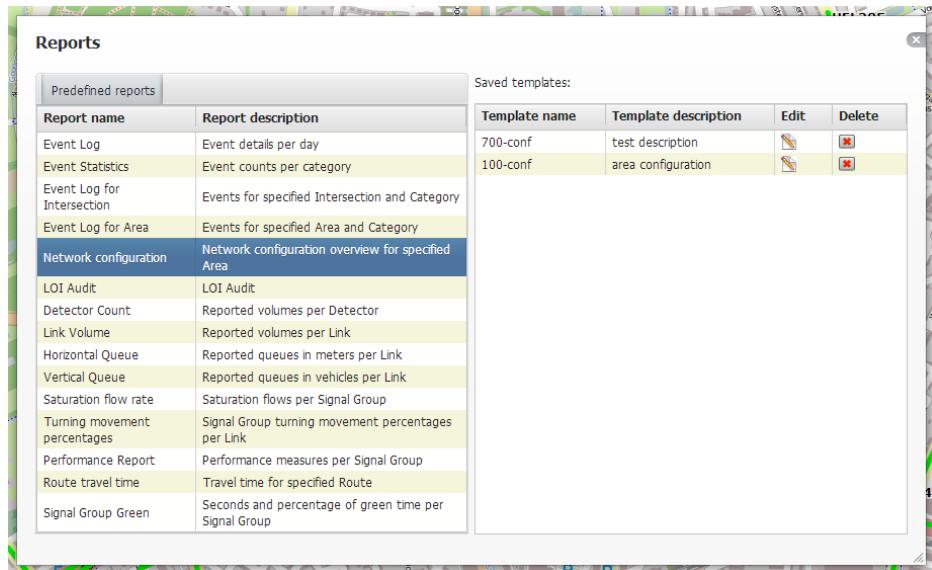


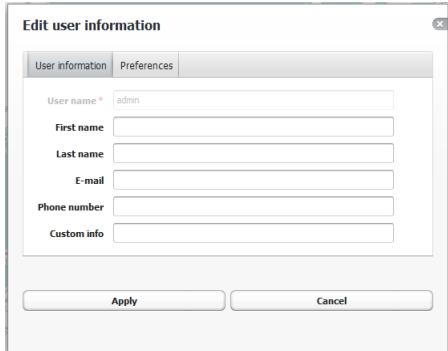
Figure 13-7 Reports screen

To view report templates select desired report in the left part of the screen. Templates for selected report will be shown in the right part of the screen. Double click on a template to run report with the parameters from the template. Templates can be edited and deleted by selecting the corresponding buttons.

## 14. User options

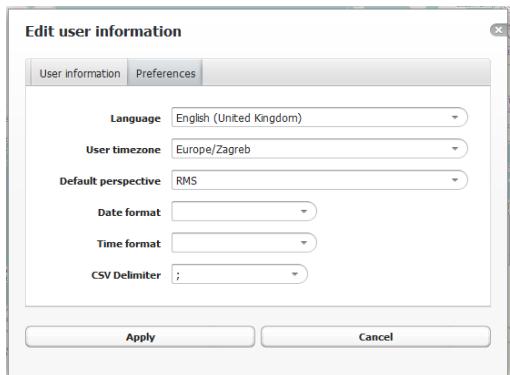
### 14.1 User settings

The users settings dialog box allows any user to change their personal information:



First name
Last name
E-mail address
Phone number
Additional (custom) information.

Figure 14-1 User Settings (User information)

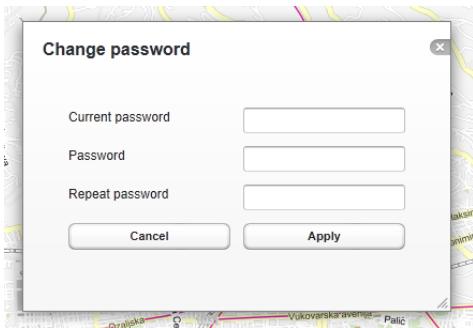


Default language
Time-zone
Default perspective is ImFlow. May be multiple available perspectives if multiple UTMS system installed on the same system (e.g. RMS and ImFlow Central)
Date format
Time Format
Delimiter character for CSV data export

Figure 14-2 User Settings (User preferences)

### 14.2 Change password

This option is available for all users in the system and provides an easy way for a user to change their own password for accessing the UTMS (includes access to all perspectives, including ImFlow Central).



To change a password, the user must:

1. Enter the current password
2. Enter the new password
3. Repeat the new password

After selecting the "Apply" button, the new password will be stored.

Figure 14-3 Change password



If the "Current password" is not valid, or if the new password is not entered correctly an error will be displayed.

If the user has forgotten their password they must contact the administrator of the ImFlow Central to provide them with a new password.

### 14.3 Logout

By clicking the "Logout" button in the main menu the user leaves the ImFlow Central. The session is terminated and the login screen is displayed.

## 15. Network configuration

ImFlow network configuration is created (and configured) by the ImFlow Configurator tool. Configuration is stored in the XML configuration file. The file which needs to be imported in the ImFlow Central is generated in the same directory as the \*.INI files which are distributed to DAAPs. To import the configuration in the ImFlow Central the configuration must be zipped in a ZIP file archive. When importing a new configuration into the ImFlow Central it is important to follow the procedures described below. This is to avoid any possible issues with reconfiguring the network.

### 15.1 Configuration tags

Configuration tags are markers which are used in ImFlow to identify configurations. This feature is used to detect discrepancies in configuration which is uploaded in the Central and configurations which are distributed to DAAPs. If the configuration on a DAAP has different tag than the one in the Central an alarm is automatically raised against the Intersection represented by that DAAP. Each Intersection in the ImFlow Central has its own tag.

Depending on the type of the import some of them, all or none are updated. See following chapters for details.

### 15.2 Full configuration import

The default import type is 'Full' configuration import. This action will clear existing configuration from ImFlow central and update it completely from the uploaded Network configuration file. The procedure is described below.

#### Configuration import procedure:

- 1. Stop the communication** with the DAAP(s) -> communication is stopped by selecting the "Administration -> Communication management -> Stop communication" menu

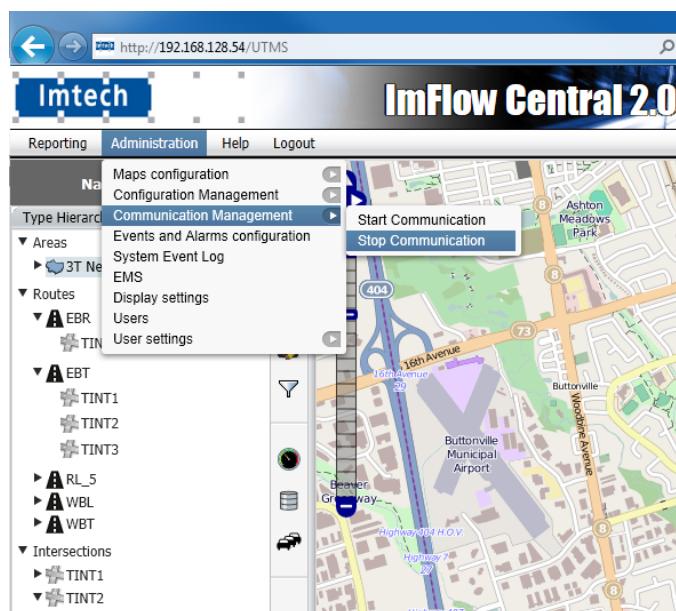


Figure 15-1 Stop communication menu



- 2. Import network configuration** -> to import a new configuration select the "Administration" -> Configuration management -> Import configuration" menu

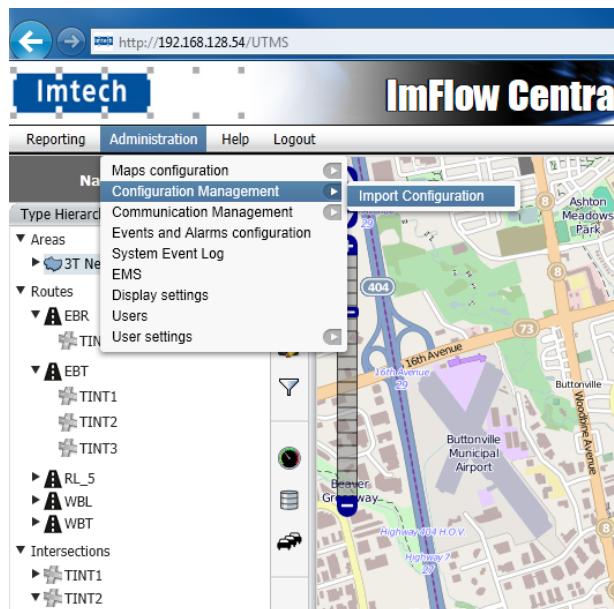


Figure 15-2 Configuration import menu

After selecting the import menu, the 'Configuration import' dialog will appear:

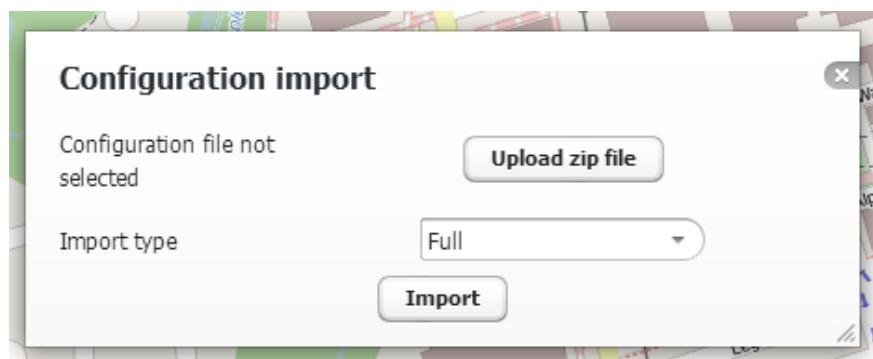


Figure 15-3 Configuration import dialog

Press the 'Upload zip file' button. The following file selection dialog will appear:

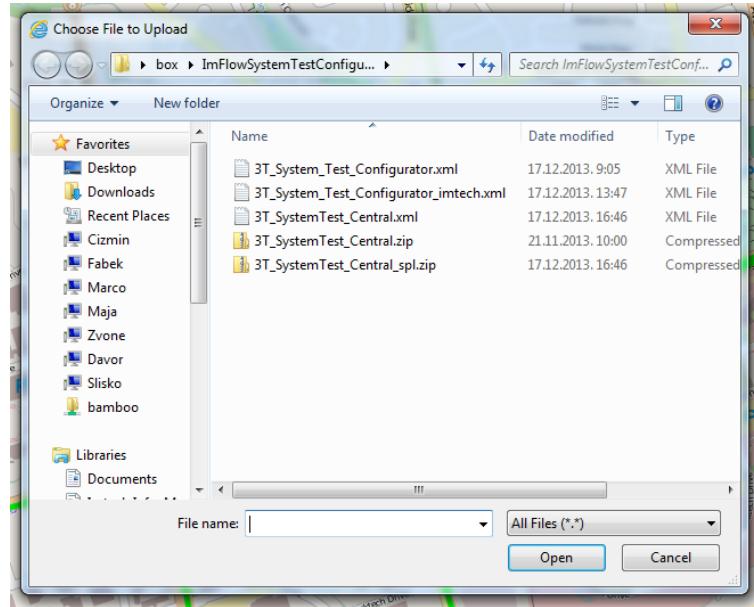


Figure 15-4 File selection dialog

Choose a ZIP archive with the network configuration you wish to import and select button "Open". The ZIP archive will be uploaded to the ImFlow Central. Leave 'Full' setting as the import type and press the 'Import' button. Uploaded configuration will be imported. The status of the configuration import and final result can be seen in the following screen:

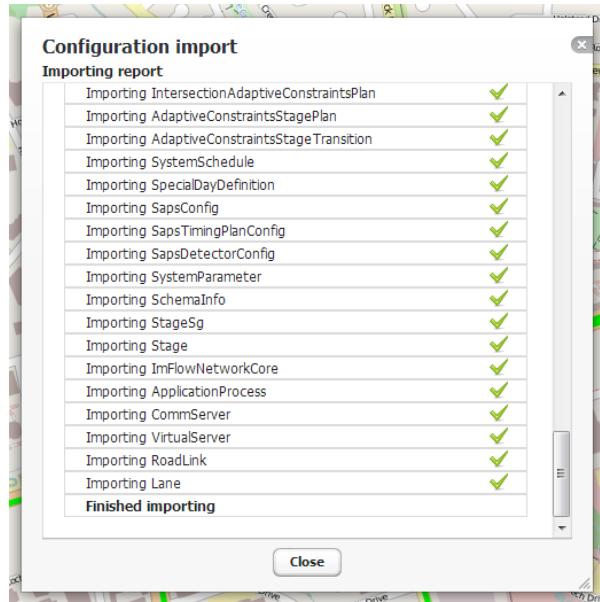


Figure 15-5 Configuration import result screen

Full configuration import will update all Intersection tags with the value defined in the configuration file.

**NOTE**

Before a configuration is imported a license check is executed to verify if the configured number of DAAPs (Intersections) is less than or equal to the number permitted by the license. For details about the license refer to Chapter 17.

- 3. Start the communication** with the DAAP(s) -> communication is started by selecting the "Administration -> Communication management -> Start communication" menu

**NOTE**

For a detail description on the distribution of the ImFlow network configuration and interaction between the ImFlow Central and the Configurator refer to use cases described in  4.

### 15.3 Partial configuration import

Partial configuration update allows users to update configuration for some Intersections only. To execute partial configuration import follow the same procedure as for the 'Full' import with one difference – select 'Partial' for the import type setting. After pressing 'Import' button an additional dialog with available Intersections will appear:

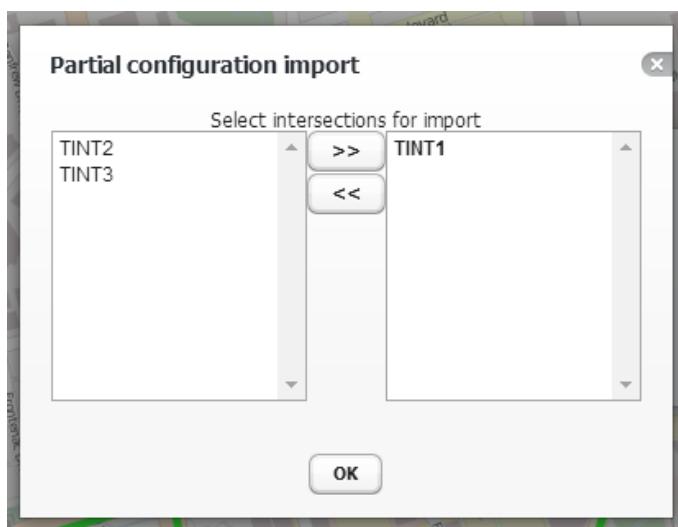


Figure 15-6 Intersection selection dialog

Select at least one Intersection and press 'Ok' button. Configuration for selected Intersections will be updated and results displayed as in 'Full' import. Partial import will update configuration tags of selected Intersections only.

As the name suggests, 'Partial configuration import', will update only part of the configuration related to the Intersection (including detectors and signal groups related to that Intersection). Other parts of

configuration will not be imported. Use this type of import for minor updates to the configuration only or to refresh configuration tags if configuration has been redistributed to few DAAPs only.



---

**NOTE**

When any changes which are not minor have been made to the configuration, 'Full' import type should be used!

---

## 16. ImFlow Central Configuration

The ImFlow Central is a highly configurable system. The Administrators can configure users, views, SMS and e-mail forwarding and many other things. Other users also have some configuration options, for example changing their password.

---

**NOTE**

The full functionality of the system is available to the Administrators only. Other user groups may or may not be able to configure some options, depending on their permissions. Refer to Chapter 3 for details about user permissions.

---

### 16.1 Users

The ImFlow Central is a secure system, so all access needs to be authenticated. The users must provide their user name and password to use the ImFlow Central. Not all functionality is available to all users. Each user belongs to a user group, and each user group has its own set of functionality enabled.

There are several predefined user groups already created at installation:

- Administrators
- Guests
- Imtech engineers
- Service Engineers
- Traffic Engineers

You can add as many users as you like, and each user must belong to a single user group.

To manage the users, click the "Users" button in the "Administration" menu, the "Users" dialog box appears:

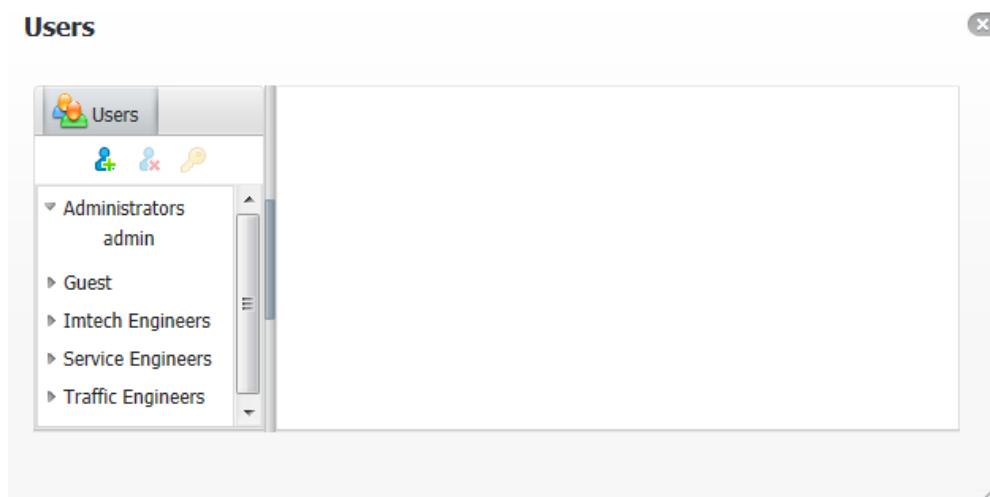




Figure 16-1 Users configuration dialog box

Next, you may want to browse to your user groups, or add, edit and delete users.

**NOTE**

This functionality is available to the Administrators only.

### 16.1.1 View, Export and Print user list

By selecting the user groups or "All users" in the tree, this will display a list of all users belonging to the selected group.

User name	First name	Last name	E-mail	Phone number
admin	Administrator		admin@peek.hr	

Figure 16-2 User list dialog box

For every user in a selected group the following data is displayed:

	Description
User name	User's login name
First name	User's first name
Last name	User's last name
E-mail	E-mail address
Phone number	Phone number
User group	Name of group user belongs to

Table 16-1: User Data

The displayed information can be exported or printed using following functions:

	Export User list to CSV file which can be opened by MS Excel or similar program
	Open print-friendly display of User list (new window)

### 16.1.2 Adding new users

By selecting the button  , this will open the "Add new user" wizard:

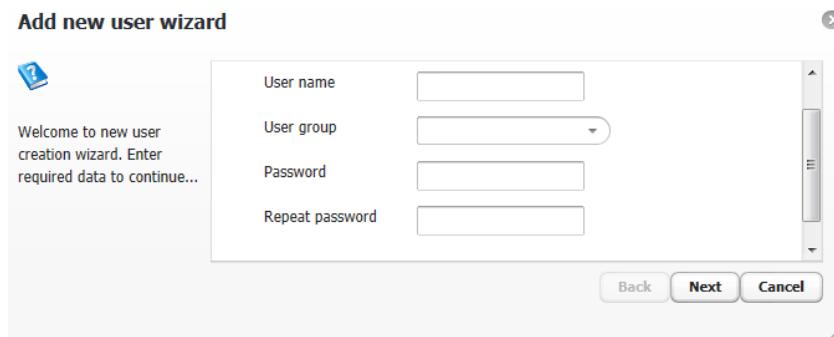


Figure 16-3 Add new user wizard

In order to add a new user the following information must be provided:

	Description
<b>User name</b>	User's login name
<b>User group</b>	Name of group user belongs to
<b>Password</b>	Password for login
<b>Repeat password</b>	Repeat password for login

Table 16-2: User Data required for data entry

When all required information has been entered, select the "Next" button to validate the data and proceed to the next step.

Entering data on next page is optional, so the fields can be left blank. This information can also be changed later by the users themselves. Enter any information and select the "Finish" button to complete the process of adding a new user to the system.

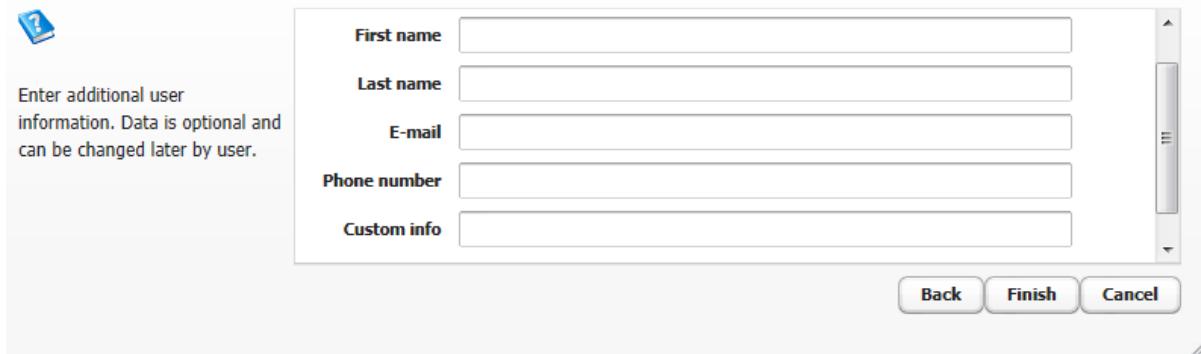
**Add new user wizard**

Figure 16-4 New user contact information wizard

	<b>Description</b>
<b>First name</b>	User's first name
<b>Last name</b>	User's last name
<b>E-mail</b>	E-mail address
<b>Phone number</b>	Phone number
<b>Custom info</b>	Custom information about user

Table 16-3: Additional user Data for optional data entry

**16.1.3 Editing existing users**

Selecting a user's name from the tree will open the user editor panel:

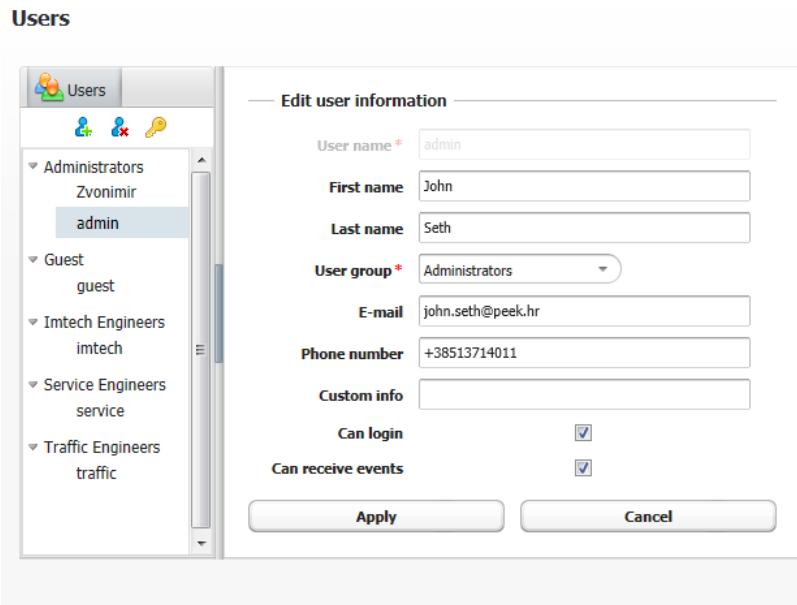


Figure 16-5 Editable User information dialog box

After making changes to the user information, select the “Apply” button to validate and save the changes.

#### 16.1.4 Removing users

To remove a user from the ImFlow Central, select the user’s name from the tree and select the  button. Select the “Yes” button on the confirmation dialog box. This will remove the user from the ImFlow Central.

#### 16.1.5 Changing a user’s password

If a user has forgotten their own password, the Administrator can reset their password.

By selecting the user name from the tree and click on the button  this will display the “Set user password” dialog box.

In the “Password” field enter a new password, and then repeat it in the “Repeat password” field. Click on the “Apply” button and this will change the user’s password.

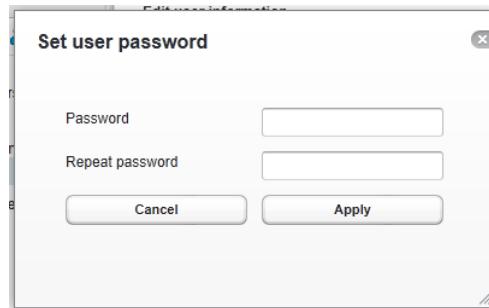
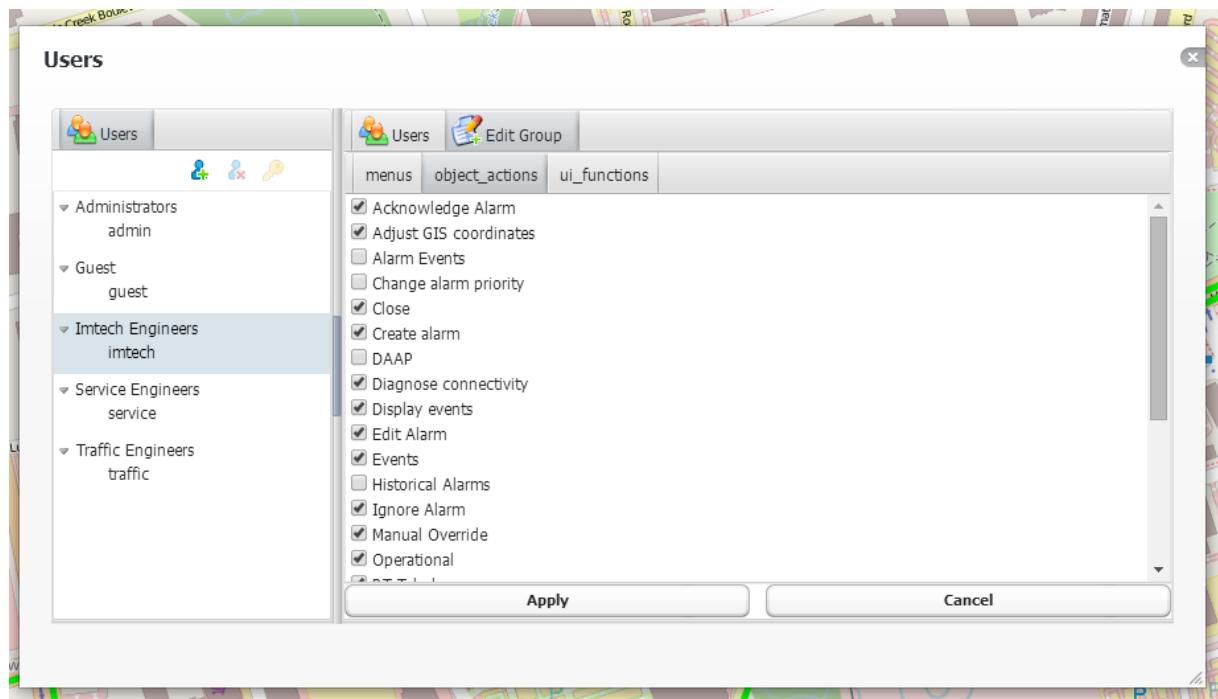


Figure 16-6 Changing a user's password dialog box

### 16.1.6 Configuring access permissions

ImFlow Central allows the users with 'Administrator' privileges to configure the access right for other user groups. To configure the access permissions for a group first select it in the 'Users' dialog and then select the 'Edit group tab'. The following tab will appear in the 'Users' dialog:



There are three security contexts which can be edited:

- Menus
- Actions
- UI functions

When a context is selected a list of securable items in that context is listed. Check box next to the item indicates whether the selected user group has access to this item. To change the access permissions simply click the checkbox next to the item you wish to modify. After modifying the access permissions press 'Apply' button to save the changes.

**NOTE:**

This functionality is available to the Administrators only.

Access permissions can be changed for the entire user group only. Modifications for specific users are not supported.

## 16.2 EMS

The EMS is a messaging system which enables you to forward alarms received from a DAAP to specified people as SMS messages or as e-mails. The messages can be delivered to groups of recipients (as opposed to individual recipients) for easier management. The system can be configured for which events/alarms from which DAAP will be forwarded to which recipients.

**NOTE:**

Configuration of this functionality is available to the Administrators only.

Click on "Administration" in the main menu and then click on the "EMS" button. The EMS dialog box will appear:

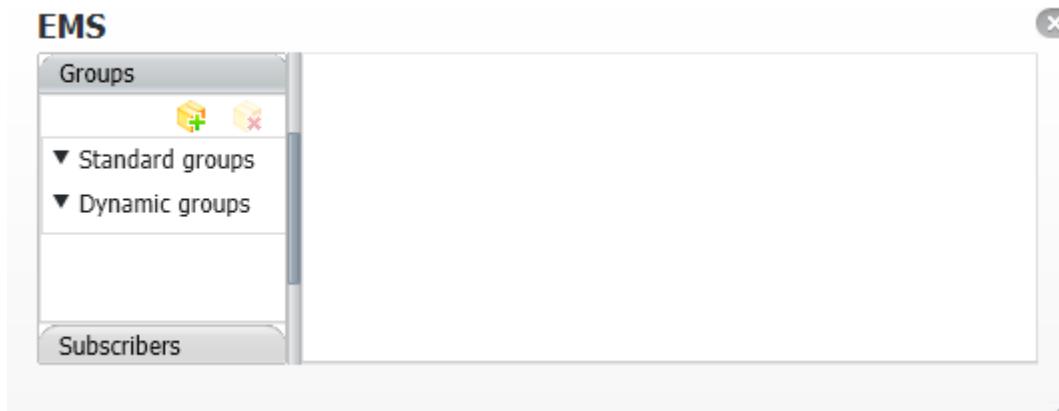


Figure 16-7 EMS Dialog box

The EMS Group defines:

- list of devices from which events will be sent
- list of event from device to send
- list of subscribers which will receive events
- the forwarding methods either e-mail or SMS

By default the sent message will contain both event category and event code. Event categories for specific events (codes) can be configured in event and alarm configuration. To configure these settings, select "Administration -> Events and Alarms configuration" from the main menu bar.

### 16.2.1 Add group

To create a new EMS Group, select the  button and then configure the settings for the group.

Type the name of the new recipient group and select the forwarding methods and acceptable times for low priority events.

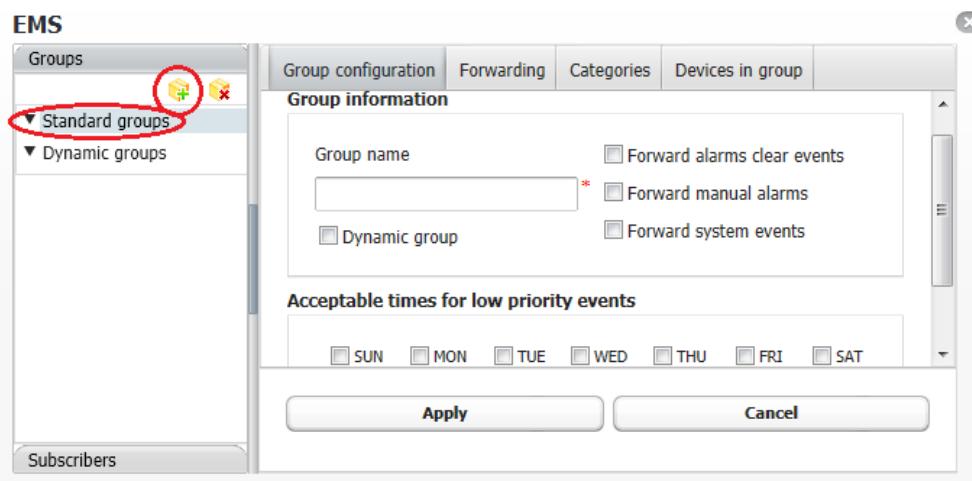


Figure 16-8 New EMS group wizard dialog box

Available options for Group configuration tab:

- Forward alarms clear events – if checked the subscribers will receive event when alarms are cleared
- Forward manual alarms – if checked the subscribers will receive events regarding manual alarms
- Forward system events – if checked the subscribers will receive system events (events that are not related to a field device)
- Acceptable times for low priority events – low priority events are only sent to subscribers on the days (or specific time interval in a day if specified) that are checked. If low priority events happen during an acceptable time they will be sent immediately and if they happen before acceptable times they will be postponed and sent when an acceptable time starts.

Example: If Monday and Tuesday are selected and a low priority event happens on Wednesday morning it will be postponed until next Monday.

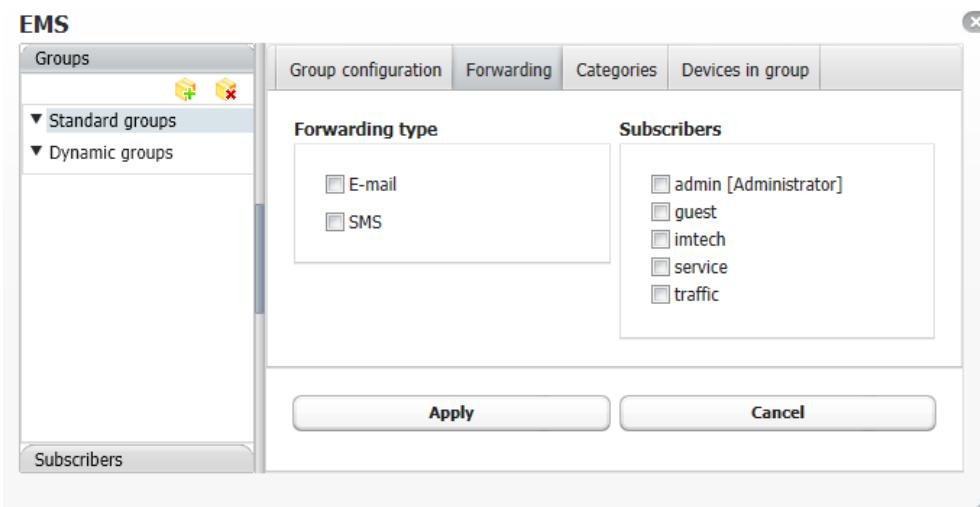
Acceptable time format for day is time interval in format "start hour – end hour" (e.g. 12-14).



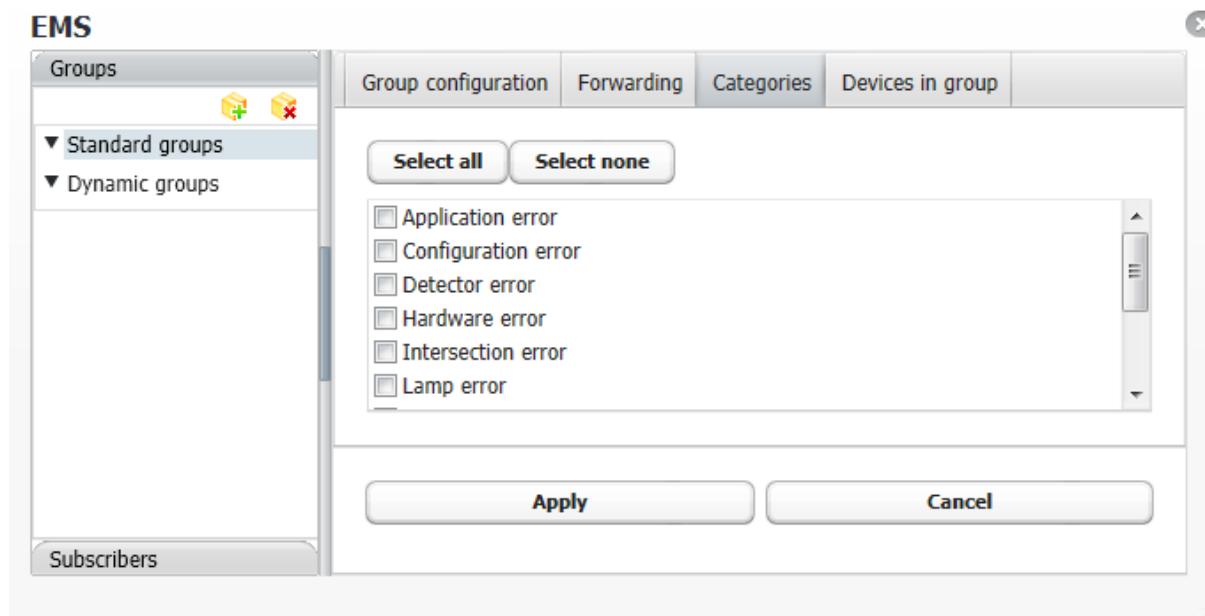
**NOTE:** Low priority events are events that occur for devices which are marked as low priority. This is UTMS feature but is not currently used in ImFlow Central.

---

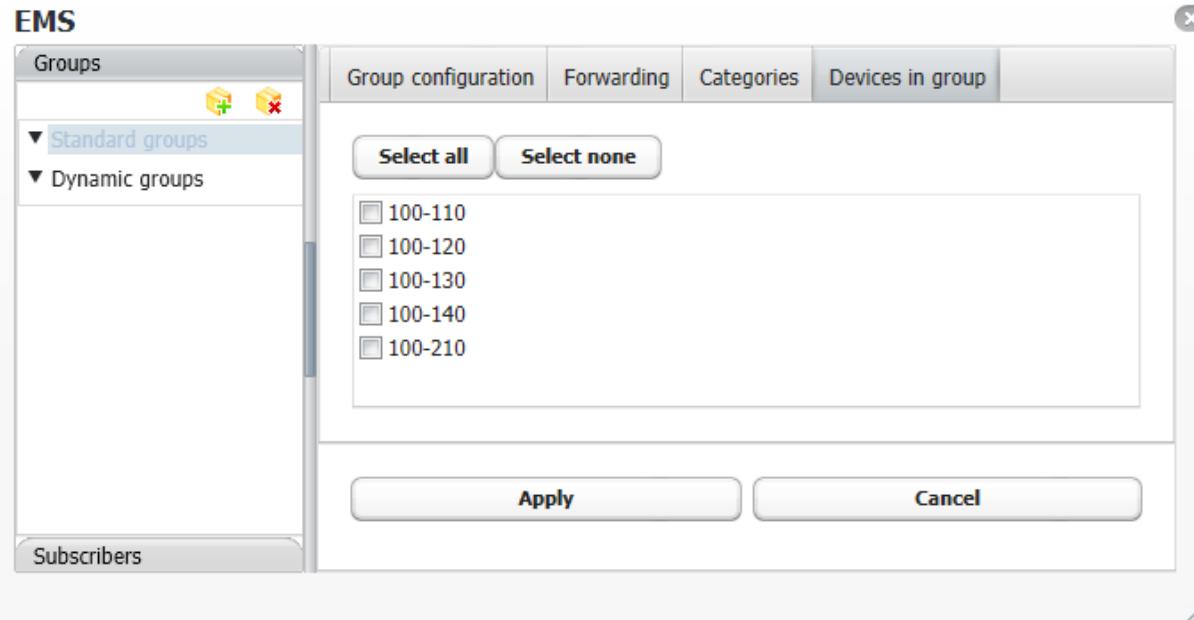
The Forwarding tab allows you to choose between e-mail and SMS and to select subscribers which will be notified.



If you prefer to get notifications just for specific event codes they can be selected on the categories tab or you can choose *select all* if you want the group to receive all notifications.



Devices (DAAPs in case of ImFlow Central) from which events will be sent are available for selection on the last tab.



### 16.2.2 Removing group

To remove a group, select the group from the tree and select the  button. Selecting the "Yes" button in the confirmation dialog box will remove the EMS group from the configuration.

### 16.2.3 Editing existing groups

If you want to change settings you have to select the group, make modifications as needed and save the changes using the apply button.

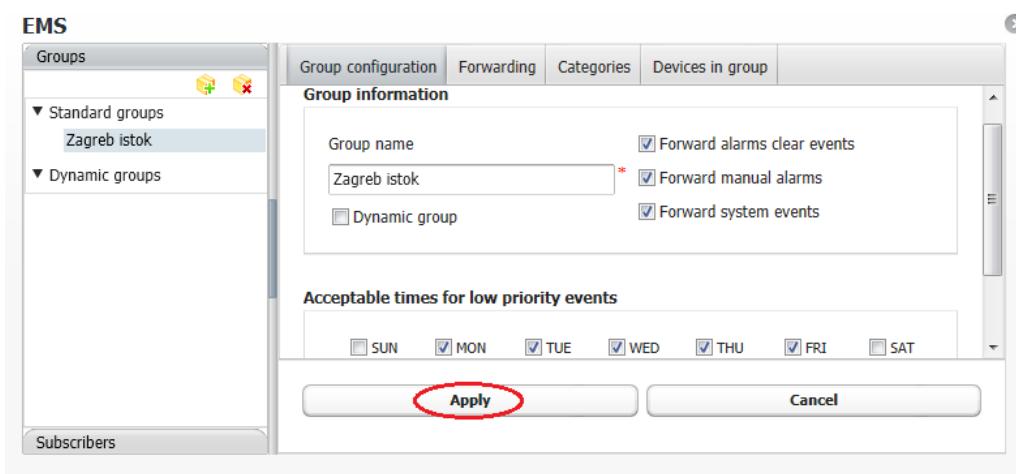
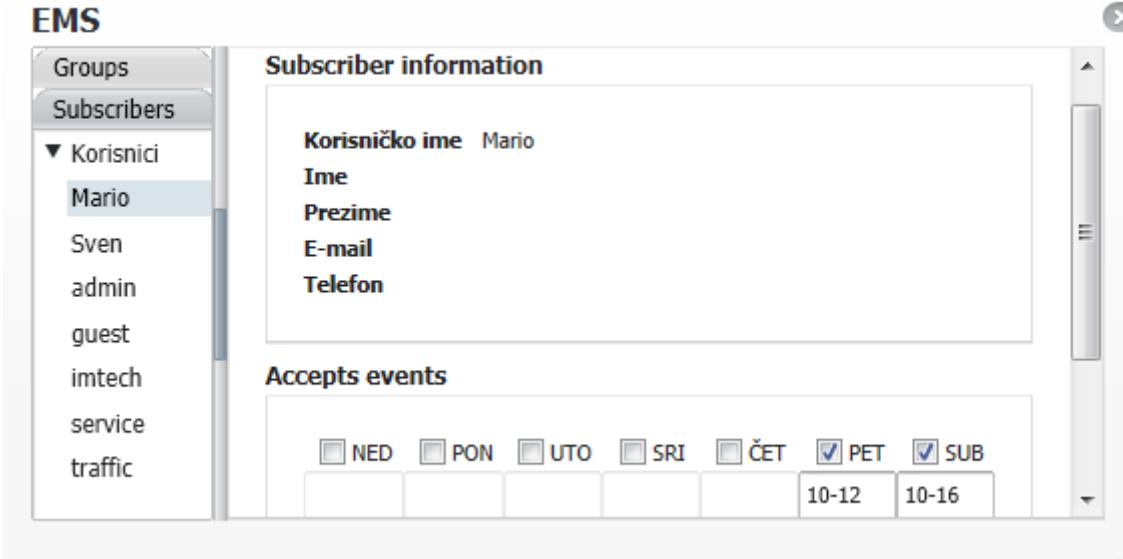


Figure 16-9 Editing the EMS device groups

#### 16.2.4 Subscribers

Additionally if you need to further customize events you can specify acceptable days and times for each individual subscriber.

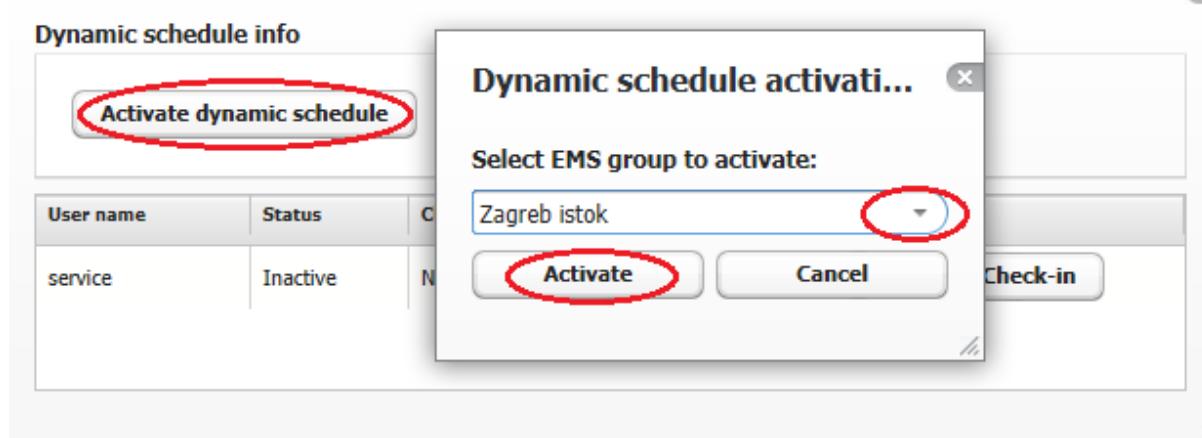



**NOTE:** Both settings (Groups and Subscribers) must be satisfied for message to be forwarded.

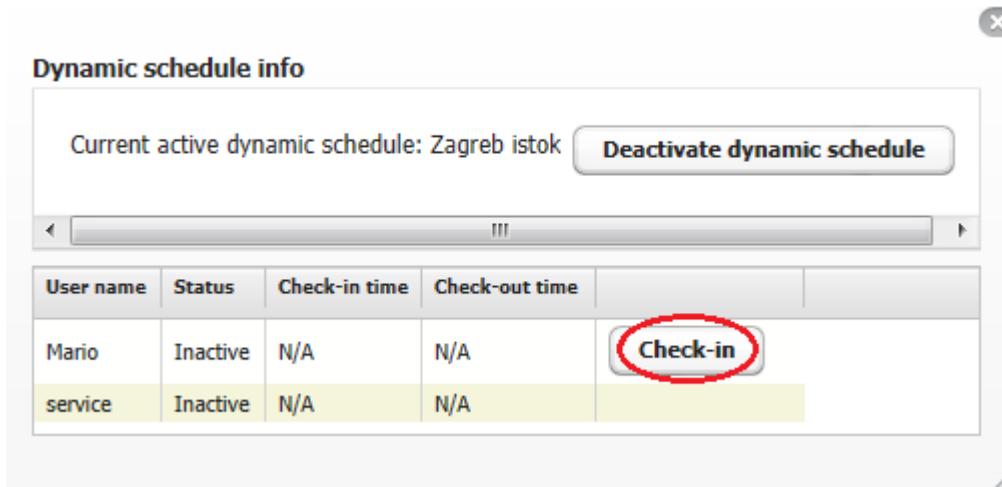
#### 16.2.5 Dynamic groups

If you create a dynamic group all events are sent only to subscribers that are currently "checked-in" to dynamic schedule.

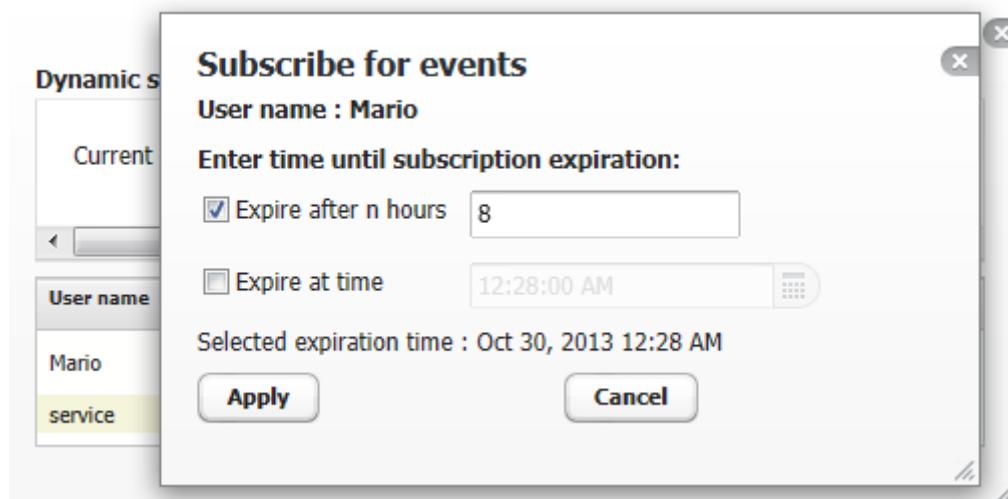
To activate dynamic groups after creating them you need to activate the dynamic schedule. Open *administration* menu -> *EMS dynamic schedule* -> *activate dynamic schedule* and select the group from the drop-down menu.



Dynamic schedule check-in/checkout is available to Service engineers, and Service engineer Group manager. For user to check-in to dynamic schedule open *Administration* menu -> *EMS dynamic schedule*.



Click on "Check-in" beside users name – and select time until he will be checked-in (he will be automatically checked out after n hours or at specific time).



Checking in or checking out can also be done, by Administrator or Service Group manager.

Additionally if no Service Engineer is currently checked in to Dynamic schedule – all events will be sent to Service Engineer Group manager (whether he is checked in or not).



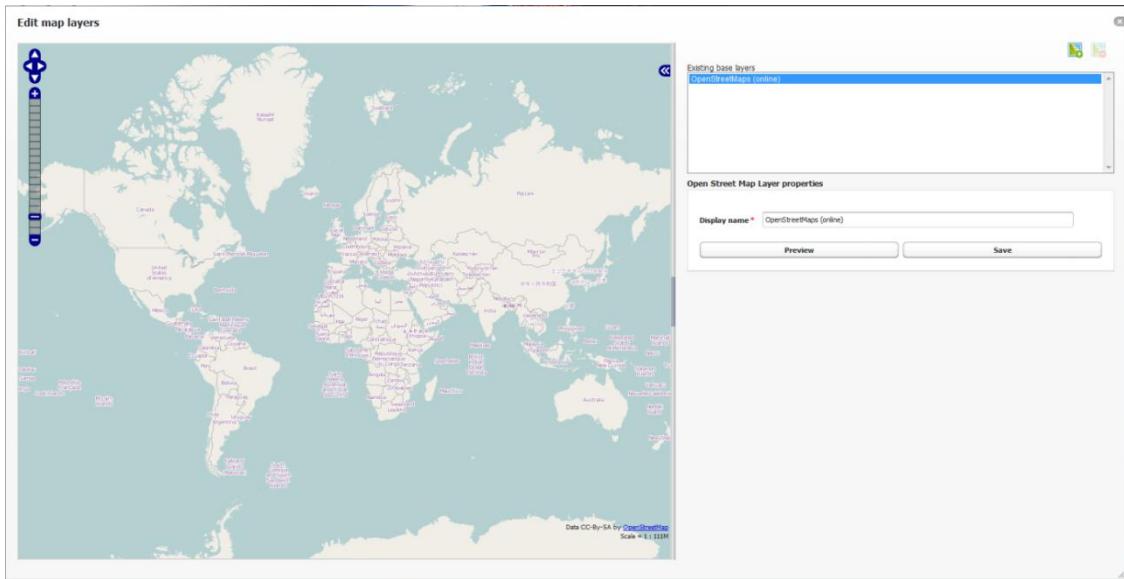
**NOTE:** Service Engineer Group manager is a user in the Service Engineer group marked as manager. Configuring this option is available to *Administrators* in user configuration.

## 16.3 Map configuration

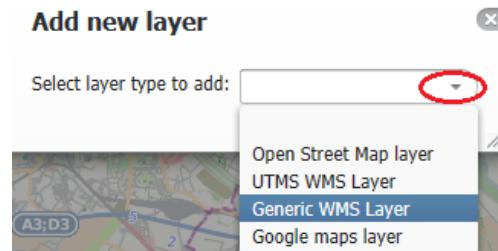
### 16.3.1 Edit map layer

Layers are different map sources that will be used for displaying geographical maps in the user interface. To configure the available layers or to add new layers the user needs to click on Administration -> Maps configuration -> Edit map layers.

1. A new window displays which consists of a map preview area, a list of all existing layers, details about selected layers and buttons to add new or remove existing layer.



2. To add a new layer the user needs to click on the *Add layer* button in the top right corner of the window. A new pop-up window appears with a selection of possible layer types to add:



3. Selecting a layer from the dropdown list automatically adds a new layer to the list. Selecting a newly added (or any of the existing ones) layer the user can then edit its properties:

**WMS Map Layer properties**

<b>Display name *</b>	UTMS WMS layer
<b>Copyright text</b>	Map data (c) OpenStreetMap contributors, CC-BY-SA
<b>Host address</b>	http://192.168.128.46/
<b>Server URI *</b>	geoserver/gwc/service/wms
<b>Layers *</b>	osm
<input type="button" value="Preview"/> <input type="button" value="Save"/>	

4. To check if the properties are ok the user can click on the *Preview* button. If everything is OK a preview of the layer should be visible on the left pane.
5. When the user is finished editing the properties and wishes to save them the *Save* button needs to be clicked.

To remove an existing layer the user needs to click on the *Remove layer* button next to the *Add layer* button.

### 16.3.2 Layer types

There are three possible layers types:

- Open Street Map layer – Online map data source (requires internet connection at the user's web browser)
- UTMS WMS layer – UTMS GeoServer is used as map data source
- Generic WMS layer – any other WMS (Web Map Service standard) compatible map data source
- Google maps layer – create layer using Google maps

Open Street Map layer properties:

Name	Description	Default value
<b>Display name</b>	Name of layer that will be displayed in layer switcher on main map.	OpenStreetMaps (online)

UTMS WMS layer properties:

Name	Description	Default value
<b>Display name</b>	Name of layer that will be displayed in layer switcher on	UTMS WMS layer

	main map.	
<b>Copyright text</b>	Copyright text required depending on the imported map source provider.	Map data (c) OpenStreetMap contributors, CC-BY-SA
<b>Host address</b>	URL and IP address of UTMS GeoServer.	http://127.0.0.1/
<b>Server URI</b>	URL path to WMS service on UTMS GeoServer relative to host address.	geoserver/gwc/service/wms
<b>Layers</b>	Name of layer defined in GeoServer that will be displayed.	osm

---

**NOTE**

Most of the properties for UTMS WMS layer are configured by default and default values should work out-of-the-box.

The Host address must be changed to the real IP address of UTMS GeoServer.

---

Generic WMS layer properties:

Name	Description	Default value
<b>Display name</b>	Name of layer that will be displayed in layer switcher on main map.	
<b>Copyright text</b>	Copyright text required depending on the imported map source provider.	
<b>Host address</b>	URL and IP address of WMS Server.	
<b>Server URI</b>	URL path to WMS service on WMS Server relative to host address.	
<b>Layers</b>	Name of layer defined in Server that will be displayed.	

---

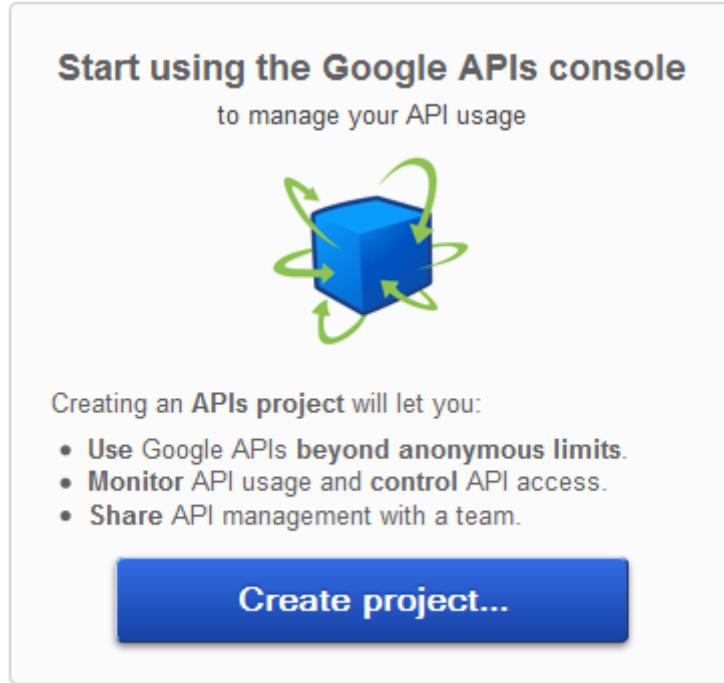
**NOTE**

For WMS Server properties (except Display name) the user should contact the WMS service provider.

---

Google maps layer –

First you will need a specific API key from Google.  
The key is free, and is required to complete this process.  
Go to <https://code.google.com/apis/console/>, and log in with your Google Account.  
The following will appear:



Click on the "Create Project" button.

In the list of services, find **Google Maps API v3**, and click on "off" to turn it on.

In the next screen, check "I Agree..." and the click the "Accept" button. You will now see that the button next to Google Maps API v3 has changed to "on".

Then click "API Access" in the menu to the left. It will ask you to "Create an OAuth 2.0 client id..." .

In the next screen, provide a product name (e.g. "demo"), upload an image (if you want to) as a logo of your project, and click the "Next" button.

In the next screen, choose Application type ("Web application"), and type in your web address, and then click the "Create Client Id" button.

In the next screen, you have got an API key, and it will look something like this:



### Simple API Access

Use API keys to identify your project when you do not need to access user data. [Learn more](#)

#### Key for browser apps (with referers)

API key: A1zaSyDY0kkJiTPVd2U7aTOAwhc9ySH6oHxOIYM

Referers: Any referer allowed

Activated on: Mar 20, 2012 5:46 AM

Activated by: support@w3schools.com – **you**

[Create new Server key...](#)

[Create new Browser key...](#)

The New layers configuration will be available the next time user clicks on some Local area group in the Navigator panel and the Main display area is refreshed.

Also, the configured map layers can be switched between using the Layers button which opens the layers control dialog.

### 16.3.3 Edit map bounds

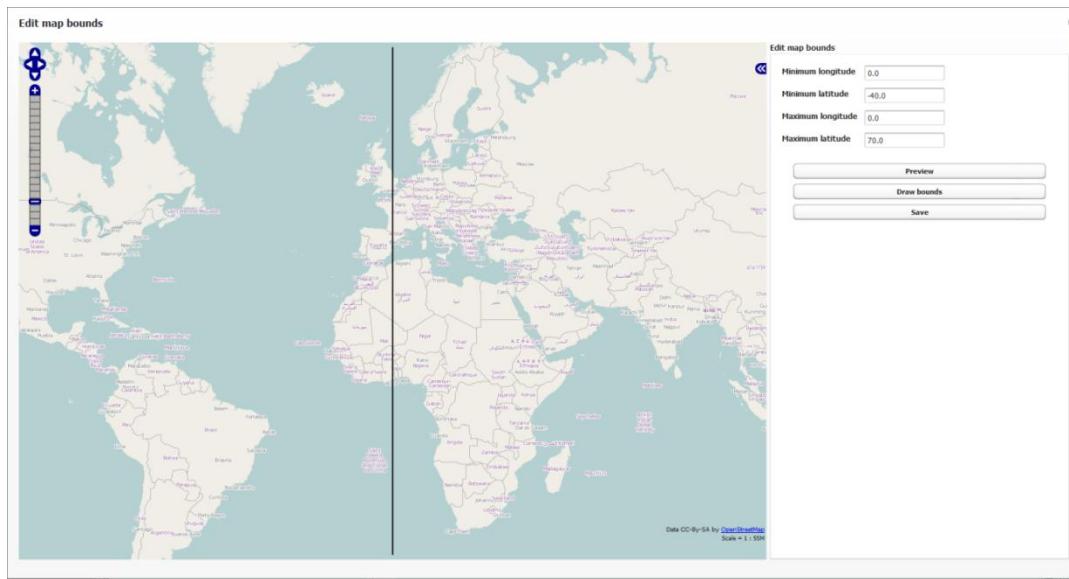
Map bounds are used to set map's default zoom and pan to the area of interest – typically, this would be a geographical area which is little wider than the area to be monitored by ImFlow Central.

To set map bounds user needs to click on Administrator -> Maps configuration -> Edit map bounds.

A new window shows up which consists of map preview area and control panel with:

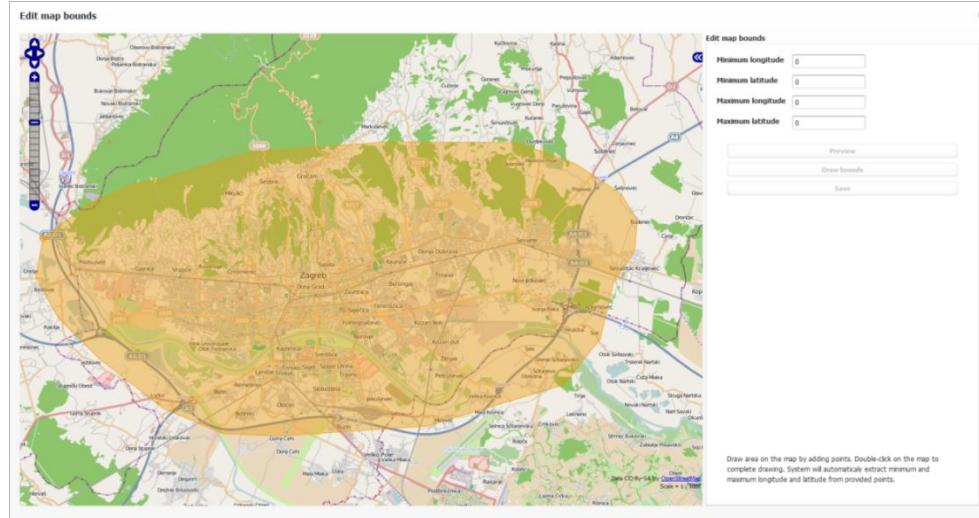
Buttons: Draw bounds, Preview and Save.

Data fields: Numeric map bound values (longitude/latitude)

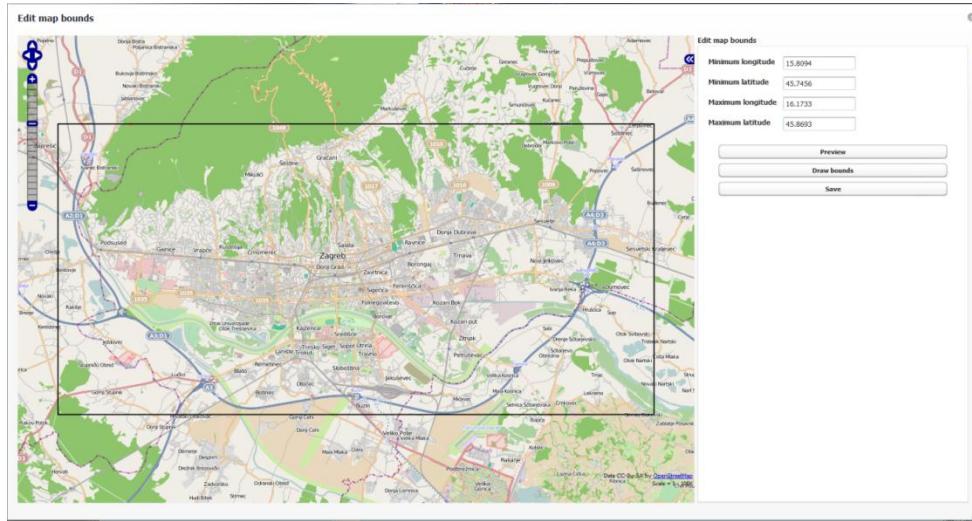


1. Press *Draw bounds* button to "draw" the desired area bounds

When setting map bounds by drawing a polygon that surrounds the desired area the user needs only to draw a polygon by clicking on the map and the surrounding desired area:



2. To close the polygon the user needs to double-click and the first and the last point will be connected:



Rectangle that surrounds drawn polygon is shown and numerical values are updated.

3. *Preview* button can be used to check which area will be displayed by default with currently defined boundaries.
4. If the user is satisfied with set map bounds he needs to click on *Save* button to save them.

Manual data entry:

When entering map bounds numerically the user needs to enter minimal and maximal longitudes and latitudes of a rectangle that surrounds the desired map area. Values are specified in degrees.

'Preview' button allows the users to preview the current boundaries they have entered without saving them. Once the desired boundaries are entered pressing the 'Save' button will save and apply them.

## 16.4 Display settings

### 16.4.1 Map styles

The ImFlow Central makes it easy for users to see the state of a particular DAAP or Link just from a glance at the map. The default pictograms are quite informative – you can tell the status of a DAAP or Link just by looking at the pictogram.

However, if you need a more customised display for Links, it can be configured to your specification with size and colour of the pictogram (line) and other parameters that can also be configured.



**NOTE:** This functionality is available to ImFlow Central Administrators only.

Click on the “Display settings” button in the “Administration” menu then the “Display settings” editor is shown:

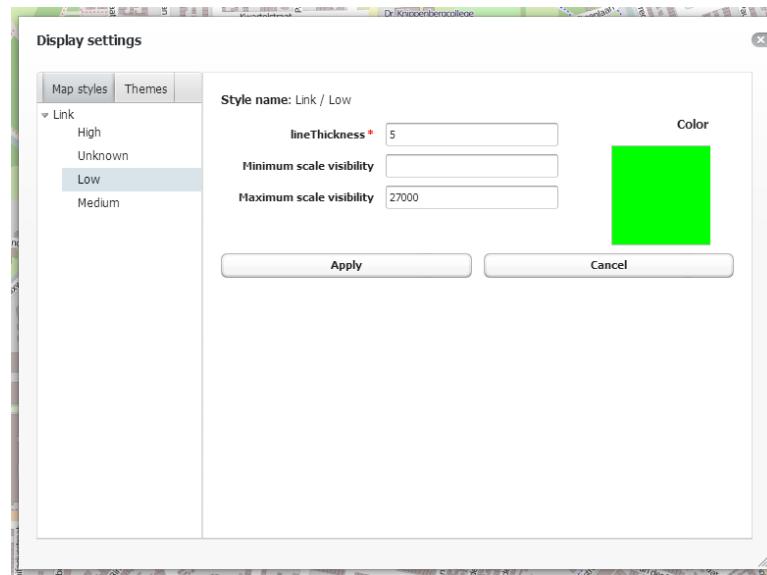


Figure 16-10 Display Settings for Link

The Left hand side tree displays all available style variations used in the ImFlow Central, grouped by feature type.

List of possible style names for Link:

Style name	Description
<b>Unknown</b>	Indicates that Link status is <b>Unknown</b>
<b>High</b>	Indicates that Link status is above high threshold
<b>Medium</b>	Indicates that Link status is between high and low thresholds
<b>Low</b>	Indicates that Link status is bellow low threshold

Table 16-4: Display Style names for Link

The style information explanations:

	Description	Possible values
<b>Line Thickness</b>	Line thickness to be used	1-40
<b>Minimum scale visibility*</b>	Minimum Map scale at which style will be applied	

<b>Maximum scale visibility*</b>	Maximum Map scale at which style will be applied	
<b>Colour</b>	Click in coloured square to pick colour to be used for selected style	

Table 16-5 Display Style explanations



**NOTE:** When changing Display Settings, user must reload the screen by pressing the “Reload preset views” button in Navigation Panel in order to apply changes.

\* Scale visibility:

The minimum and maximum scale visibilities determine the map scale range (zoom level) and which specific style will be used.

For example:

A Link style has the maximum scale visibility value set to 27000. This means that Link will be shown on the map when the map scale is between 1:1 (e.g. street level) and 1: 27000.

The Area has min scale visibility set to 27001, and max scale visibility not set - which means that the Area will be shown on the map when the map scale is from 1:27001 to any lower scale.

The label max scale visibility is the map scale at which feature labels will be shown.

The map scale can be read from the Map display – in lower right corner:



Figure 16-11 Map scale display

If the desired map scale for the display style is 1:108K then the value entered into the field must have a value of 108000.

### 16.4.2 Map themes

In addition to pictograms, two icon themes are provided by UTM and can be viewed and applied using themes tab. ImFlow Central currently doesn't support any of the icons from the UTMS theme.

## 16.5 Events and alarms configuration

To configure the settings regarding events and alarms open events and alarms configuration from the administration menu.

If you select events or alarms tab double clicking on a specific item will provide you with available configuration options.

**Events and Alarms configuration**

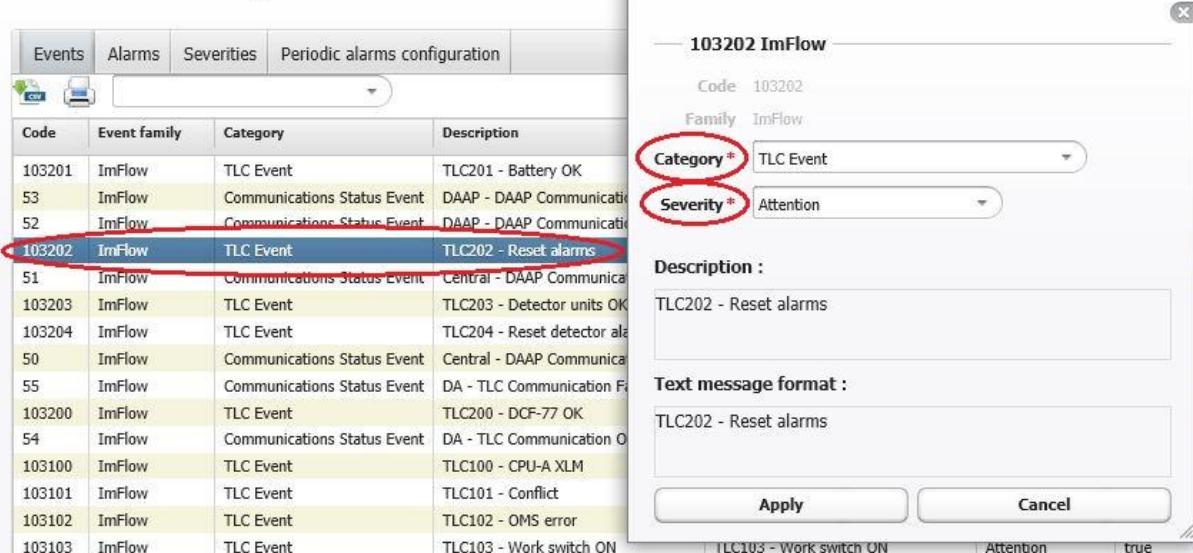


Figure 16-12 Events and alarms configuration window

On the severity tab there are four options that can be selected for each of the event severity categories.

**Events and Alarms configuration**

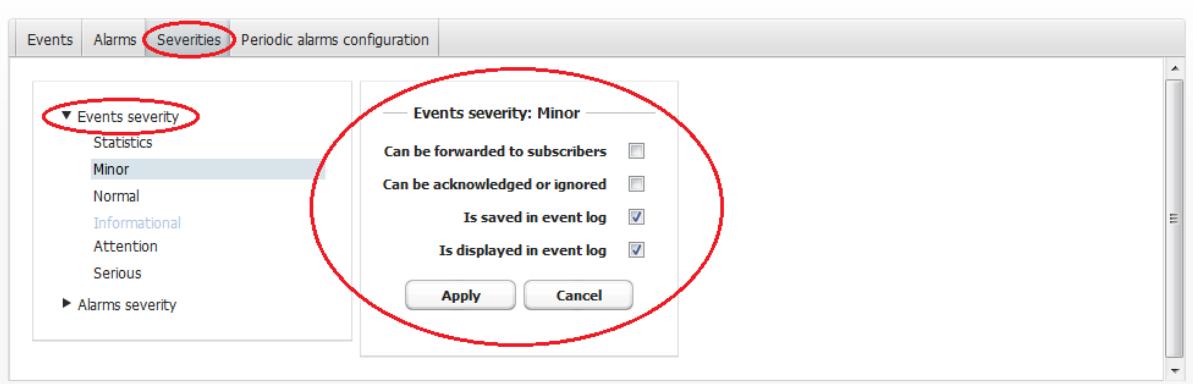


Figure 16-13 Events severity

The only option that can be selected for alarms severity category is "can be acknowledged or ignored"

## Events and Alarms configuration

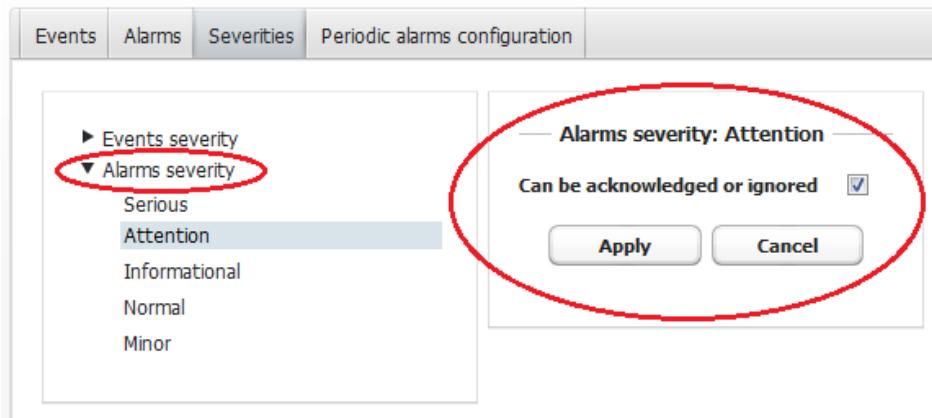
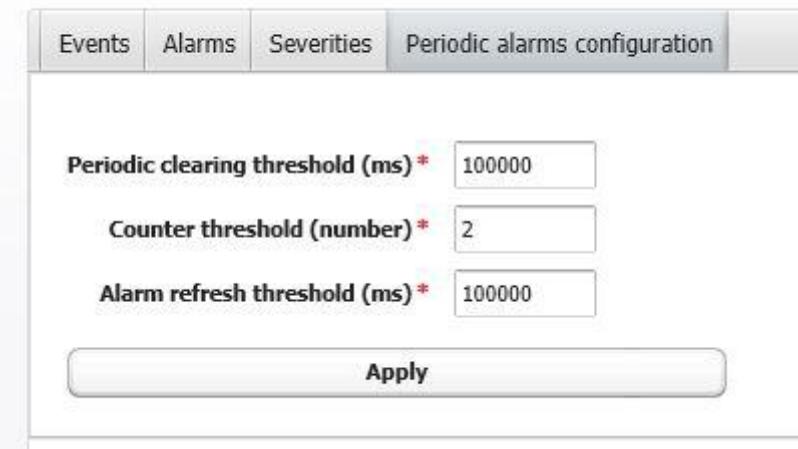


Figure 16-14 Alarms severity

Additionally on the last tab named periodic alarms configuration the user can specify periodic clearing threshold, counter threshold and alarms refresh threshold.

## Events and Alarms configuration



Periodic clearing threshold (ms) *	100000
Counter threshold (number) *	2
Alarm refresh threshold (ms) *	100000

**Apply**

Figure 16-15 Periodic alarms configuration

## 17. Licensing

It is intended that for the most part, adequate licenses will be purchased and installed well ahead of time in which case the end user will never need to know anything about licenses. This chapter deals with the cases when ImFlow Central is used beyond its licensed terms.

### 17.1 Information

Effort has been made to make licensing as transparent as possible so that breaches of license (and the negative usability side-effects) are minimised. All relevant information about the currently installed license is available in the 'About' dialog by selecting "Help -> About"

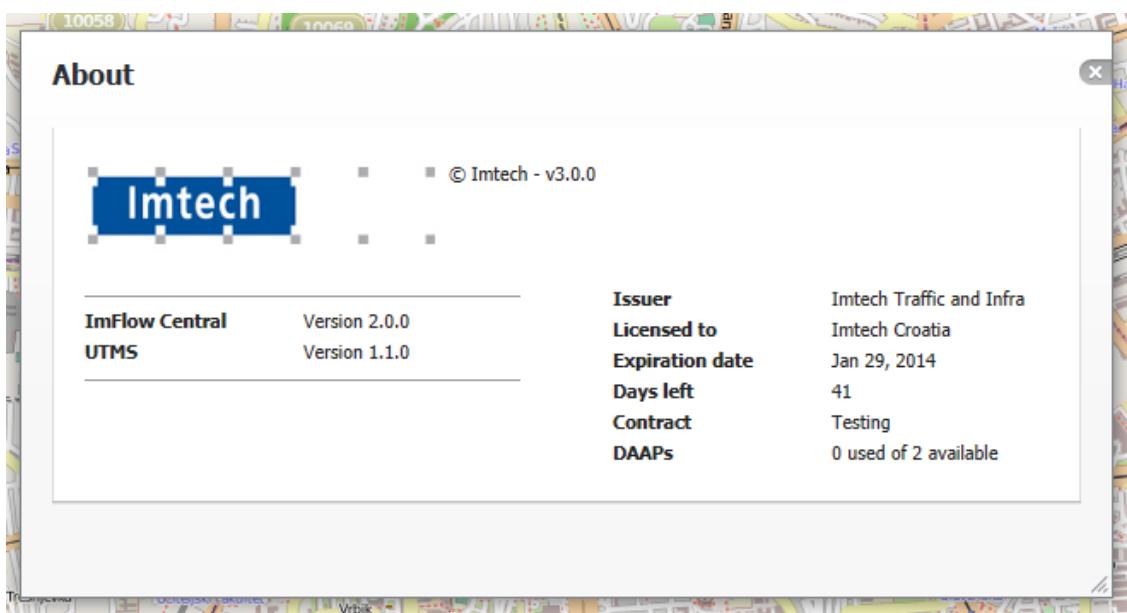


Figure 17-1 ImFlow Central 'About' Dialog

### 17.2 Expiration

A license allows access to ImFlow Central for fixed length of time a single machine. If the license is not present, is not valid (e.g. expired) or cannot be validated, the login dialog will become unavailable and an error message will be displayed instead:

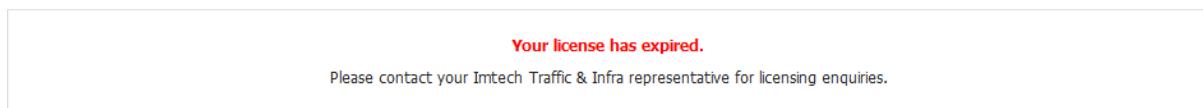


Figure 17-2: Licensing Error Message

There are several reasons why the system license might not be valid. In each case, the cause of error, including required remedial action, is displayed.

**NOTE**

Exceptionally, if no license is present, ImFlow Central will run for an initial 30 day demonstration period.

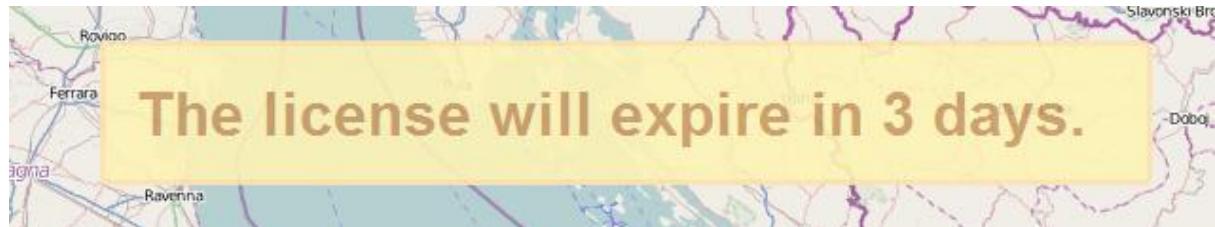


Figure 17-3: Expiry Warning Message

As time nears to within one week of the license expiration date, a warning message will appear on each user login.

### 17.3 DAAPs

A license may restrict the maximum number of DAAPs (Intersections) which can be configured in ImFlow. To see whether this restriction applies, open the licensing information in the About dialog (see Figure 17-1).

When importing an ImFlow network configuration, attempting to add more than the maximum licensed number of DAAPs will cause the following message dialog to appear:

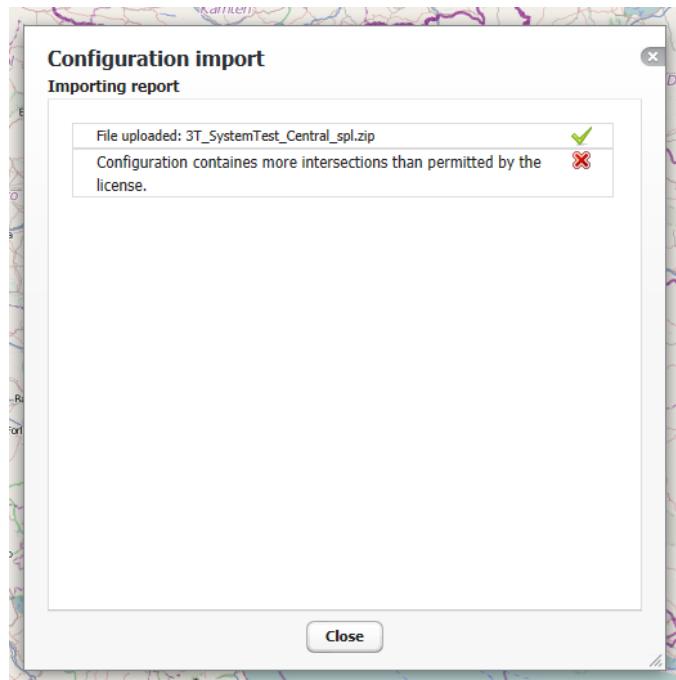


Figure 17-4 License error in configuration import

## 17.4 What to do?

In the case of any licensing issue, please contact your Imtech Traffic & Infra representative for advice and assistance.



**NOTE:**

Don't panic! In the event that the login is disabled, background services will continue to run for a time and everything will return to normal once a new license is installed.



## 18. DAAP GUI

Each DAAP is equipped with its own web based GUI. A link to the DAAP GUI is provided in the right click context menu of each intersection.

The home page of the DAAP-GUI shows:

- The navigation panel (to left of the screen)
- The status of the intersection.

The number of intersections displayed in the DAAP-GUI depends on the number of intersections running on the DAAP. Typically there is one intersection per physical DAAP unit.

Current time / timestep	2010-04-05T13:04:00.000 / 39839
Intersection status	UTC
Intersection mode	ADAPTIVE
Current stage	1(I0)
Policy plan	2
Adaptive constraint plan	1
Pre-timed plan	1
UTC status (LOCAL / USER / DISABLED)	- / - / -
UTC status (DEADLOCK / CONFLICT / PREEMPTION)	- / - / -
UTC status (LOCKED / COMMS / NTP / ADAP)	- / COMMS / - / -
TLC faults (SYSTEM / FAULT / LAMP / DETECTOR)	- / - / -
TLC door status (DOOR / CP-DOOR)	OPEN / OPEN
VACM - utcModeRequestInitTimer	0
VACM - daModeRequestTimer	60
VACM - plannedTimingSequenceStateTimer	14
VACM - utcModeFailureResetTimer	3388
VACM - utcModeFailureCountdown	3

Figure 18-1 Home Page of ImFlow-DAAP GUI

### 18.1 Configuration

Users can view the DAAP configuration using the DAAP-GUI. The following configuration files can be viewed:

- **Communication** -> The system configuration, including communication servers, virtual servers, applications, communication channels, etc.
- **Road & Intersection** -> The configuration of the network applicable to this intersection, including links, road links, lanes, signal groups, detectors, stages, etc.

- **Turning Movements** -> The default turning movement counts.
- **Schedule & Policy** -> The configuration of the scheduled policy plans, adaptive constraint plans, fixed time plans, etc.

**NOTE**

Please refer to ImFlow configurator manual (§ 2) for an understanding of the DAAP configuration. For a detailed description of the configuration please refer to the ImFlow DAAP interface specification (§ 3).

## 18.2 Monitoring

The DAAP GUI provides monitoring information including:

1. Planned Timing
2. Signal Group Status
3. Detector Data
4. Vehicle tracking
5. PT Route

Each monitoring screen contains a status header with the following information.

TimeStep	DAAP Mode	TLC Status	Stage	AC Plan	Policy Plan	FT Plan	UTC Flags	TLC Flags	VACM status
53801	ADAPTIVE	UTC	4(t0)	1	1	1	0000	0013	60 : 60 : 14 : 2084 : 3

Figure 18-2 DAAP GUI - Monitoring - Header

Field	Description	Values
<b>TimeStep</b>	The current time step (i.e. time steps since midnight).	0..86399
<b>DAAP mode</b>	The current DAAP mode.	PRE-TIMED ADAPTIVE
<b>TLC status</b>	The current TLC status.	UTC, LOCAL, STANDBY, OFF
<b>Stage</b>	The current stage number and between brackets the time that the stage has been active. A 't' indicates that the ImFlow is in transition to the stage.	
<b>AC Plan</b>	The current adaptive constraint Plan number	
<b>Policy Plan</b>	The current policy plan number	
<b>FT Plan</b>	The current pre-timed plan number	
<b>UTC flags</b>	The UTC flags as provided by the TLC.	
<b>TLC flags</b>	The TLC flags as provided by the TLC.	

<b>VACM Status</b>	The status of the intersection optimizer (i.e. VA logic). The status consists of 5 parts separated by ":", they are: <ul style="list-style-type: none"> <li>• The UTC mode request init timer in seconds</li> <li>• The DA Mode request timer in seconds</li> <li>• The timer between receiving planned time sequence from DC in 100ms</li> <li>• Timer of DAAP running in UTC mode</li> <li>• Number of times that DAAP failed to change into UTC mode</li> </ul>	
--------------------	--	--

### 18.3 Monitoring – Planned timing

The planned timing shows the history of the stages executed by ImFlow and the planned stages in the future.

DAAP Monitoring: Planned Timing Sequence										
TimeStep	DAAP Mode	TLC Status	Stage	AC Plan	Policy Plan	FT Plan	UTC Flags	TLC Flags	VACM status	
53801	ADAPTIVE	UTC	4(t0)	1	1	1	0000	0013	60 : 60 : 14 : 2084 : 3	
Time	Duration	Stage Name	Signal Group							
	13	SG5-11								
	18	SG8-9								
	23	SG2-8								
	7	SG2-3								
	13	LV								
	13	SG5-11								
	4	SG8-9								
	65	SG2-8								
	20	SG2-3								
	3 / 13	LV								
	9	21	SG5-11							
	30	5	SG8-9							
	35		SG2-8							

Figure 18-3 DAAP GUI – Monitoring - Planned Timing

Time	The number of seconds until the planned stage will be implemented (or empty for a historic stage or the current stage)
Duration	The actual duration of the stage (history) The actual and planned duration of the current stage (actual/planned) The planned duration of the planned stages

Stage Name	The user defined name of the stage
Signal Group	The signal groups implemented in the stage (history) The signal groups implemented and planned in the current stage. The planned (primary) signal groups in the stage (planned stages).

## 18.4 Monitoring – Signal group status

The signal group status provided the current status of the configured signal groups.

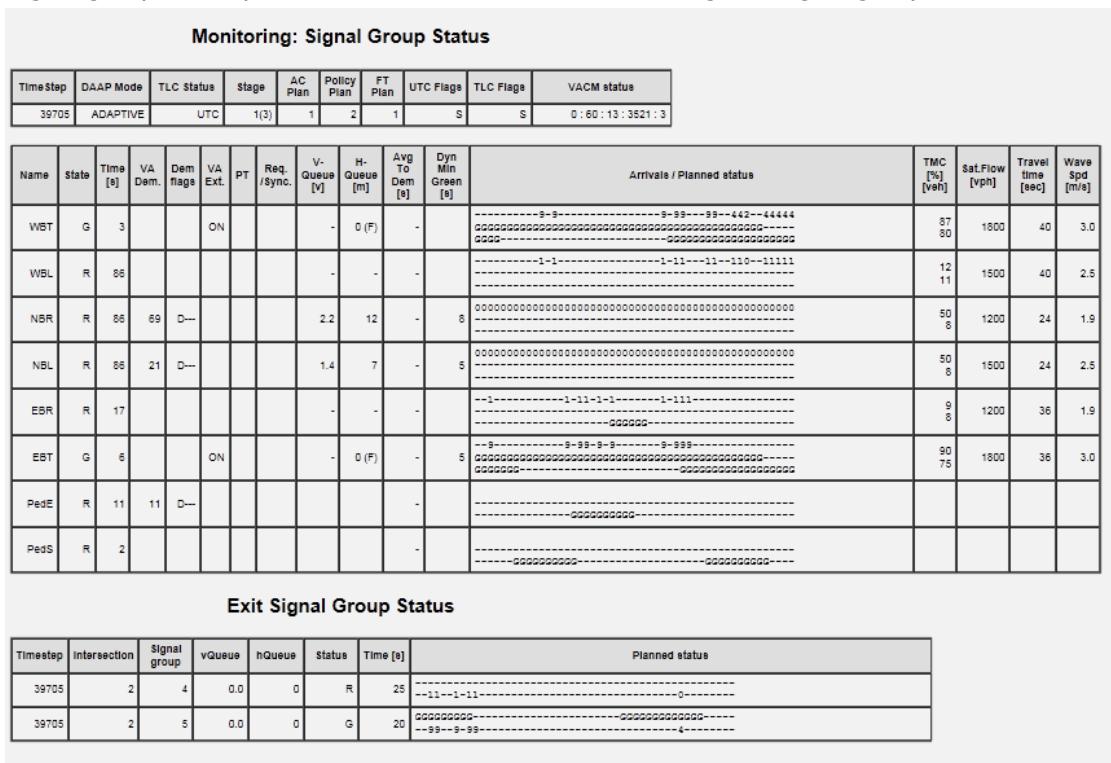


Figure 18-4 DAAP GUI – Monitoring – Signal group status

Each signal group configured in the DAAP forms one line in the table. The columns of the table are as following:

Field	Description	Values
<b>Name</b>	The name of the signal group	
<b>State</b>	The current state of the signal group. If the current state in the TLC differs from the state requested by the DAAP two states (separated by a /) will be shown.	G - Green R - Red A - Amber
<b>Time [s]</b>	The number of seconds in the current state	

<b>VA Dem.</b>	The time in seconds since the start of a demand or blank is no VA demand is set.	
<b>Dem flags</b>	The detailed demand status. A combined status consisting of: Demand(D), Co-demand(C), Demand2(d) and Co-demand2(c).	
<b>VA Ext.</b>	The status of the VA extension condition.	ON
<b>PT Dem.</b>	The time in seconds since the start of a PT demand or blank is no PT demand is set.	
<b>Req./Sync.</b>	A combined status of consisting of the STOP/DRIVE request from ImFlow to the TLC and the synchronisation state reported by the TLC. The field is blank if DAAP and TLC are synchronised.	DRIVE STOP
<b>V-Queue [v]</b>	The (vertical) queue in vehicles.	
<b>H-Queue [m]</b>	The (horizontal) queue in meters followed by some letters. Possible letters and their meanings are: <ul style="list-style-type: none"> <li>• F = freeflow</li> <li>• U = Queue is over its back of queue threshold (active when it's over the upper bound, reset when it turns below its lower bound)</li> <li>• S = Spillback, the queue is longer than the capacity of the road link which causes spillback for other traffic arrivals</li> <li>• C = congestion, there is traffic, but it cannot drive because something blocks it.</li> </ul>	
<b>Avg To Dem [s]</b>	The average time in seconds between the start of red and a VA demand being set.	
<b>Arrivals / Planned status</b>	The first line contains the arrival vector. The second line contains the signal group planning. The third line contains the history of the signal group status.	
<b>TMC [%] [veh]</b>	The predicted turning percentage and turning count. Defined as the percentage of the traffic on the link assigned to this signal group.	
<b>Sat.Flow [vph]</b>	The predicted saturation flow in vehicles per hour.	
<b>Link Spd [km/h]</b>	The predicted link speed in km/h.	
<b>Travel time [sec]</b>	The predicted link travel time in seconds.	
<b>Wave Spd [m/s]</b>	The predicted wave speed in meters per second.	

## 18.5 Monitoring – Detector data

The detector data screen provides the current status of the configured link entry, mid-block and stop line detectors. Please note that VA detectors are not included in the table.

DAAP Monitoring: Vehicle Detector Data										
Time Step	DAAP Mode	TLC Status	Stage	AC Plan	Policy Plan	FT Plan	UTC Flags	TLC Flags	VACM status	
53801	ADAPTIVE	UTC	4(t0)	1	1	1	0000	0013	60 : 60 : 14 : 2084 : 3	

DAAP Monitoring: Vehicle Detector Data											
Name	Counts	Time [s]	State	OCC [ms]	Perm.	SPD [kph]	LEN [dm]	Vol Counts	Vol Time [s]	Reset	Last Reset Time
021	207	3	OK	500				207	3	<button>Reset</button>	N/A
022	198	1	OK	900				198	1	<button>Reset</button>	N/A
031	6	120	OK	65535				6	120	<button>Reset</button>	N/A
051	48	93	OK		ON			48	93	<button>Reset</button>	N/A
071	29	22	OK	600				29	22	<button>Reset</button>	N/A
081	239	26	OK		ON			239	26	<button>Reset</button>	N/A
082	238	22	OK		ON			238	22	<button>Reset</button>	N/A
091	23	160	OK	31000				23	160	<button>Reset</button>	N/A

Figure 18-5 DAAP GUI - Monitoring – Detector data

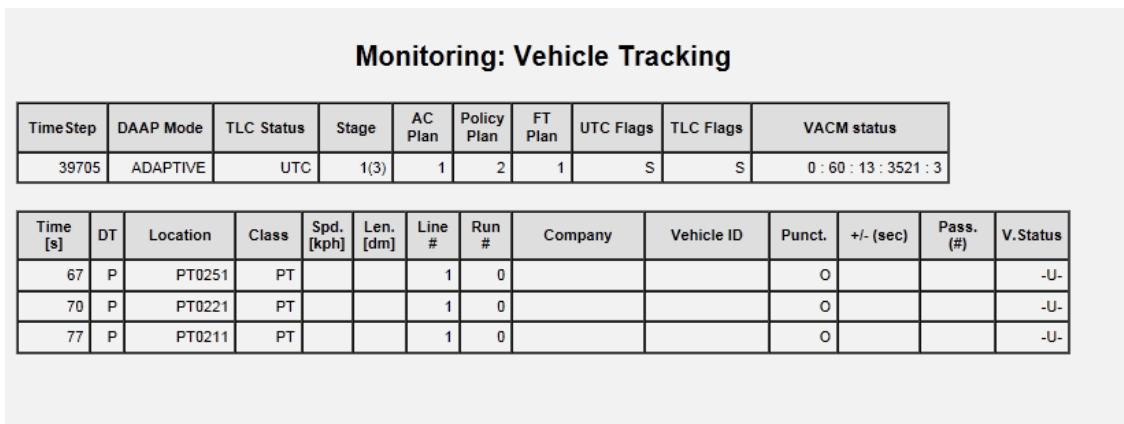
Each detector configured in the DAAP forms one line in the table. The columns of the table are:

Field	Description	Values
<b>Name</b>	The name of the detector	
<b>Counts</b>	The number of vehicles counted on the detector	
<b>Time</b>	The time in seconds since the last detected vehicle	
<b>State</b>	The health state of the detector	OK
<b>OCC</b>	The time the last detected vehicle occupied the detector in milliseconds.	
<b>Perm.</b>	When this column is ON, the detector has been occupied longer than a configured threshold time	ON
<b>SPD</b>	The speed of the last detected vehicle in Km/h	
<b>LEN</b>	The length of the last detected vehicle in decimetre	

<b>Vol Counts</b>	The number of vehicles processed by the algorithm for detectors on a link. <ul style="list-style-type: none"><li>• Typically volume counts = counts.</li><li>• If a detector is not assigned to a link then volume counts will remain 0.</li><li>• For a virtual detector the volume counts will be incremented while counts will remain at zero.</li></ul>	
<b>Vol Time</b>	Time in seconds since the last increment of vol counts.	
<b>Reset</b>	Pressing the reset button will reset the detector count.	
<b>Last reset time</b>	A date/time stamp when the last reset was executed.	

## 18.6 Monitoring – Vehicle tracking

The vehicle tracking screen contains a list of PT vehicles detected by PT detectors.



TimeStep	DAAP Mode	TLC Status	Stage	AC Plan	Policy Plan	FT Plan	UTC Flags	TLC Flags	VACM status
39705	ADAPTIVE	UTC	1(3)	1	2	1	S	S	0 : 60 : 13 : 3521 : 3

Time [s]	DT	Location	Class	Spd. [kph]	Len. [dm]	Line #	Run #	Company	Vehicle ID	Punct.	+/- (sec)	Pass. (#)	V.Status
67	P	PT0251	PT			1	0			0			-U-
70	P	PT0221	PT			1	0			0			-U-
77	P	PT0211	PT			1	0			0			-U-

Figure 18-6 DAAP GUI – Monitoring - Vehicle Tracking

The PT Tracking Data table contains the following information:

Field	Description	Values
<b>Time</b>	The number of seconds since the PT vehicle being detected	
<b>DT</b>	The type of detection point <ul style="list-style-type: none"><li>• Physical detection point</li><li>• Virtual detection point</li></ul>	P V
<b>Location</b>	The name of the PT detection point on which the vehicle was detected	

<b>Class</b>	The class of priority vehicle <ul style="list-style-type: none"> <li>• Public Transport</li> <li>• Emergency vehicle</li> </ul>	PT EM
<b>Spd</b>	The speed of the vehicle in km/h.	
<b>Len</b>	The length of the vehicle in dm.	
<b>Line #</b>	The line number of the vehicle.	1..9999
<b>Run #</b>	The run number of the vehicle.	1..9999
<b>Company</b>	The company ID of the vehicle.	
<b>Vehicle ID</b>	The vehicle ID of the vehicle.	
<b>Punct.</b>	The punctuality of the vehicle. <ul style="list-style-type: none"> <li>• On-time</li> <li>• Late</li> <li>• Early</li> </ul>	O L E
<b>+/- (sec)</b>	The deviation (in seconds)	
<b>Pass (#)</b>	The number of passengers in the PT vehicle.	
<b>V.Status</b>	The vehicle status <ul style="list-style-type: none"> <li>- Driving</li> <li>- The vehicle has stopped</li> <li>- The vehicle is ready to depart from a PT-STOP</li> <li>- The vehicle is standing still at a PT-STOP.</li> </ul>	-U- (undefined) DRIVE STOP READY STAND

## 18.7 Monitoring – PT route

The status of a PT-route can be monitored on the DAAP-GUI. A DAAP can be either a member on a PT-route or be the manager of a PT-route. The PT-route manager has all status information of a PT-route, where a member only has the status that is relevant to the intersection (associated with the DAAP).

PT Route Management										
TimeStep	DAAP Mode	TLC Status	Stage	AC Plan	Policy Plan	FT Plan	UTC Flags	TLC Flags	VACM status	
39705	ADAPTIVE	UTC	1(3)	1	2	1	S	S	0 : 60 : 13 : 3521 : 3	

Latest PT Detection(s)													
Time [s]	DT	Location	Class	Spd. [kph]	Len. [dm]	Line #	Run #	Company	Vehicle ID	Punct.	+/- (sec)	Pass. (#)	V.Status
67	P	PT0251	PT			1	0			O			-U-
70	P	PT0221	PT			1	0			O			-U-
77	P	PT0211	PT			1	0			O			-U-

Current PTV Arrivals																				
route ID	Int. ID	Seg. ID	State	Time	Planned depart	Track #	Line #	Run #	Veh. ID	Hits	Prev Det. Location	Prev Det. Time Step	Prev Stop ID	Prev Stop Time Step	Prev Int. ID	Prev Int. Time Step	Signal State	Travel Time	Stops	Delay
3	1	1	PLANNED	119 (48)		30001	3	0		1	PT0013	39675	-	-	-	-	G	30	0	0

Figure 18-7 DAAP GUI – Monitoring – PT-route

Please refer 'monitoring – vehicle tracking' for a description of the fields in the table with latest PT detection(s).

The table with current PTV arrivals has the following fields.

Field	Description	Values
RouteId	The ID of the PT route configured in ImFlow	
Int ID	The ID of the intersection.	
Seg. ID	The ID of the PT segment on which the PT vehicle is currently located.	
State	The current state of the PT vehicle <ul style="list-style-type: none"> <li>The vehicle is planned to depart from the upstream intersection.</li> <li>The vehicle is at a PT_STOP</li> <li>The vehicle is expected at a PT detection point on the route.</li> <li>The vehicle is driving.</li> <li>The vehicle is in the queue at the stop line</li> <li>The vehicle is expected at the checkout detector after the stop line</li> <li>The vehicle is blocked due to spillback.</li> </ul>	NONE PLANNED PT_STOP DETECTOR DRIVING QUEUE CHECKOUT BLOCKED
Time	The planned travel time to the stop line of this intersection.  Between ()	

	<ul style="list-style-type: none"> <li>Planned departure time from the upstream intersection if state=PLANNED</li> <li>The remaining dwell time if state = PT_STOP</li> </ul> <p>Q=value. The position in the queue if state=QUEUE or BLOCKED.</p>	
<b>Planned depart</b>	The planned departure (in seconds) of the PT vehicle from the stop line.	
<b>Track #</b>	The unique tracking ID assigned to the PT vehicle by ImFlow.	
<b>Line #</b>	The PT line number.	
<b>Run #</b>	The PT run number.	
<b>Veh. ID</b>	The vehicle ID as provided by the PT vehicle.	
<b>Hits</b>	The number of detection points that have detected the PT vehicle on the route.	
<b>Prev Det. Location</b>	The name of the PT detector on which the PT vehicle was last detected.	
<b>Prev Det. Time step</b>	The timestep when the PT vehicle was last detected.	
<b>Prev Stop ID</b>	ID of the PT stop on which the PT vehicle last stopped.	
<b>Prev Stop Time step</b>	The timestep when the PT vehicle stopped on the PT stop.	
<b>Prev Int. ID</b>	The ID of the intersection that the PT vehicle last crossed.	
<b>Prev Int Time step</b>	The timestep when the PT vehicle crossed the stop line of intersection.	
<b>Signal state</b>	The current state of the signal group at the downstream intersection (red, red/amber, green, green flashing, amber)	R R/A G GF A
<b>Delay</b>	The delay in seconds the PT vehicle has incurred from the start of the PT route.	
<b>Stops</b>	The number of stops the PT vehicle has incurred from the start of the PT route.	

## 18.8 Diagnostics

In DAAP GUI, 3 types of diagnostics information are provided:

1. Communication Channel information

2. Application process performance information
3. Linux system log information

## 18.9 Diagnostics – Communication channels

Each communication channel will appear as row in the table. The typical connections of a DAAP are:

- Communication channel to the ImFlow central;
- Communication channel to the TLC;
- Communication channels to the neighbouring DAAP's.

DAAP Diagnostic: Communication Channels							
Name	IP(port)	State	Rx (msg)	Tx (msg)	Drops (msg)	Last Connect Time	Reset
central	127.0.0.1(8004)	UNINITIALISED	0	0	592	N/A	<button>Reset</button>
TLC[HEL101]	127.0.0.1(30101)	CONNECTED	4092	2949	0	28 JUL 2011 16:30:12	<button>Reset</button>
TLC[HEL102]	127.0.0.1(30102)	CONNECTED	8536	3073	0	28 JUL 2011 16:30:01	<button>Reset</button>
TLC[HEL103]	127.0.0.1(30103)	CONNECTED	7407	2441	0	28 JUL 2011 16:30:01	<button>Reset</button>
TLC[HEL104]	127.0.0.1(30400)	CONNECTED	4358	3145	0	28 JUL 2011 16:30:01	<button>Reset</button>
TLC[HEL113]	127.0.0.1(30113)	CONNECTED	9514	3126	0	28 JUL 2011 16:30:01	<button>Reset</button>

Figure 18-8 DAAP GUI – Diagnostics – Communication channels

The table contains the following information:

Field	Description	Values
<b>Name</b>	The name of the communication channel.	
<b>IP(port)</b>	The remote IP address and the TCP port number.	
<b>State</b>	The state of the communication channel	UNINITIALISED CONNECTING CONNECTED ERROR
<b>Rx (msg)</b>	The number of received messages.	
<b>Tx (msg)</b>	The number of transmitted messages.	
<b>Drops (msg)</b>	The number of messages dropped as result of a communication problem.	
<b>Last connect time</b>	The timestep when the last connection with the peer was established.	
<b>Reset</b>	Pressing the button with reset the diagnostic message counters	

## 18.10 Diagnostics – Process performance

The process performance information is provided in 6 tables.

CPU Load Average.	Contains CPU load data of 1minute average, 5 minutes average and 15 minutes average.
DAAP Running Record	Contains the DAAP start/stop information including time and reason.
Process performance	Contains performance data of each of the DAAP Applications.
Process Status	Contains communication statistic values of each DAAP Applications.
LSGOM 1 Minute Performance	Contains LSGOM average performance data summarized per minute.
LSGOM performance	Contains LSGOM performance data for the last 20 optimizer runs.

**DAAP Diagnostic: Process Performance & Status**

CPU Load Average		
1 Min Avg	5 Min Avg	15 Min Avg

DAAP Running Records		
Startup Time	Termination Time	Termination Reason
20 JUN 2012 20:43:29		

Process Performance						
Name	Avg (ms)	Max (ms)	Min (ms)	OVR (#)	HeartBeat (#)	CPU (%)
RoseSC	0	0	0	0	14565	0.0
RoseLOG	0	0	0	0	3775	0.0
RoseSH	1013	1030	1000	0	3023	0.0
RoseTS	101	2638	0	67	14565	0.0
RoseWS	0	0	0	0	3019	0.0
RoseCRS	0	0	0	0	3019	0.0
RoseCM	1013	1050	1000	0	3023	0.0
RoseDC	1007	3420	76	0	1456	0.0
RoseDA	100	2638	10	44	14565	0.0

Figure 18-9 DAAP GUI – Diagnostics – Process performance and status

Field	Description
<b>Name</b>	The name of the process.
<b>Avg (ms)</b>	The average time interval of the process.
<b>Max (ms)</b>	The maximum time interval in milliseconds.
<b>Min (ms)</b>	The minimum time interval in milliseconds.
<b>OVR (#)</b>	The number of times the execution of the process exceeded the CPU



	time threshold.
<b>Heartbeat (#)</b>	Incremented each time the process sends a heartbeat signal to the system health process.
<b>CPU (%)</b>	The percentage of the CPU time used by this process.

Process Status									
Name	Rx Total (msg)	Rx Total (bytes)	Rx Drop (no space)	Rx Drop (oversize)	Tx Total (msg)	Tx Total (bytes)	Tx Drop (peer down)	Tx Drop (no space)	
RoseSC	14565	174780	0	0	14565	174780	0	0	
RoseLOG	1207	100677	0	0	507	13182	507	0	
RoseSH	0	0	0	0	117	1626	100	0	
RoseTS	87395	757500	0	0	14565	174780	0	0	
RoseWS	0	0	0	0	0	0	0	0	
RoseCRS	0	0	0	0	0	0	0	0	
RoseCM	0	0	0	0	0	0	0	0	
RoseDC	30007	2790282	0	0	32253	1756271	1	0	
RoseDA	2854	494854	0	0	17135	1891529	0	0	

Field	Description
<b>Name</b>	The name of the process.
<b>Rx Total (msg)</b>	The total number of received messages.
<b>Rx Total (bytes)</b>	The total number of received bytes.
<b>Rx Drop (no space)</b>	The number of dropped messages, due to buffer overflows.
<b>Rx Drop (oversize)</b>	The number of messages that have been dropped, due to message size > buffer size.
<b>Tx Total (msg)</b>	The total number of transmitted messages.
<b>Tx Total (bytes)</b>	The total number of bytes in the transmitted messages.
<b>Tx Drop (peer down)</b>	The number of message dropped due to the fact that the remote peer is not reachable.
<b>Tx Drop (no space)</b>	The number of message dropped due a message buffer overflow.

LSGOM 1 minute performance

Timestep	Time	State [%]	Cost
39660	4 [0 - 16]	2 [0 - 9]	[11774 - 18685]
39628	6 [0 - 16]	6 [2 - 16]	[4063 - 15880]

Field	Description	Values
-------	-------------	--------

<b>Timestep</b>	The timestep at which the data was collected.	
<b>Time</b>	The execution time of the optimizer in milliseconds.	Average [Min – Max]
<b>State [%]</b>	The percentage of the state buffer used by the optimizer	Average [Min – Max]
<b>Cost</b>	The optimizer cost value	[Min – Max]

LSGOM performance				
Timestep	Stage	Time	State [%]	Cost
39705	1	15	8	16847
39704	1	16	4	16588
39703	1	15	5	17685
39702	1	0	5	18685
39701	1	0	4	16418
39700	1	0	4	17611
39699	1	0	4	17779
39698	1	0	2	17862
39697	1	0	3	17878
39696	1	0	3	17970
39695	1	0	2	17683
39694	1	0	1	17701
39693	1	15	2	12723
39692	1	15	2	12688
39691	1	16	1	12778
39690	1	0	2	13411
39689	1	0	2	13730
39688	1	0	2	13944
39687	1	0	2	14265
39686	1	0	1	14443

## 18.11 Diagnostics – System log

The Linux system log is displayed in the screen for diagnostic use.

## System Event Log

Details
ERROR: May 26 17:26:48 172 user,err RoseLOG: [C2049V2049A56]:404 Invalid ACK/NAK response 204
ERROR: May 26 17:26:05 172 user,err RoseDC: [C2049V2A22]:700 dcHandleTimeStep: cpfmd-predm-lsgom libDaap errors
NOTICE: May 26 17:26:03 172 user.notice root: daap_cfg.sh: New conf ./NID101_scenario1_20110526_1725.tgz installed
NOTICE: May 26 17:26:02 172 user.notice root: daap_cfg.sh: MD5 check succeeded
NOTICE: Last message repeated 29 times
ERROR: May 26 14:08:32 172 user,err RoseLOG: [C2049V2049A56]:404 Invalid ACK/NAK response 204
NOTICE: May 26 14:08:24 172 user.notice root: daap_start.sh: Starting DAAP S/W Rev 17289 2011-05-1716:45:15 (attempt 1 of 6)
ERROR: May 26 14:08:17 172 user,err RoseDC: [C2049V2A22]:700 RoseDC: Stopped!
ERROR: May 26 14:08:17 172 user,err RoseDA: [C2049V2A21]:755 RoseDA: Stopped!
ERROR: May 26 14:08:17 172 user,err RoseDA: [C2049V2A21]:755 RoseDA: Shutdown request
NOTICE: May 26 14:08:58 172 user.notice root: daap_cfg.sh: New conf ./NID101_scenario1_20110526_1406.tgz installed
NOTICE: May 26 14:08:57 172 user.notice root: daap_cfg.sh: MD5 check succeeded
NOTICE: Last message repeated 76 times

Figure 18-10 DAAP GUI - Diagnostic – System Log

## 18.12 Administration

Administration screens allow the user to:

- To change the Signal group SWICO status;
- To change the Detector SWICO status;
- To give commands.

## 18.13 Administration – Signal group swico

In this screen, the Signal group demand SWICO status and Signal group extension status can be checked and changed.

### DAAP Administration: Signal Group SWICO

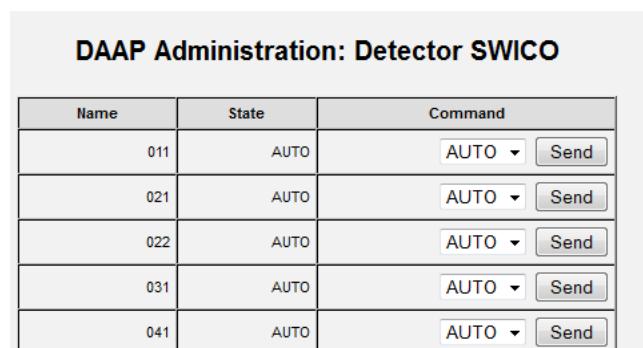
Name	DEM	Demand Command	EXT	Extension Command
01	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>
02	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>
03	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>
04	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>
05	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>
06	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>	AUTO	<input type="button" value="AUTO ▾"/> <input type="button" value="Send"/>

Figure 18-11 DAAP GUI - Administration – Signal Group SWICO

Field	Description	Values
<b>Name</b>	The name of the signal group	
<b>DEM</b>	The current state of the VA demand swico	OFF, ON, AUTO
<b>Demand Command</b>	Select the state in the dropdown list and press send to execute.	
<b>EXT</b>	The current state of the VA extension swico	OFF, ON, AUTO
<b>Extension Command</b>	Select the state in the dropdown list and press send to execute.	

## 18.14 Administration – Detector swico

In this screen, the detector SWICO status can be checked and changed.



The screenshot shows a table titled "DAAP Administration: Detector SWICO" with five rows. Each row contains a detector ID (011, 021, 022, 031, 041), its current state (all listed as AUTO), and a command column with a dropdown menu set to "AUTO" and a "Send" button.

Name	State	Command
011	AUTO	AUTO ▾ Send
021	AUTO	AUTO ▾ Send
022	AUTO	AUTO ▾ Send
031	AUTO	AUTO ▾ Send
041	AUTO	AUTO ▾ Send

Figure 18-12 DAAP GUI -> Administration – Detector SWICO

Field	Description	Values
<b>Name</b>	The name of the detector	
<b>State</b>	The current state of the detector swico	OFF, ON, AUTO
<b>Command</b>	Select the state in the dropdown list and press send to execute.	

The table below outlines the behaviour of ImFlow regarding detector state.

Detector state	Behaviour
<b>Operational</b>	ImFlow uses the information (counts and occupancy from the detector)
<b>Fault</b>	ImFlow uses the information from the configured backup detector. If not available than ImFlow switches to a degraded 'link simulation' mode.
<b>SWICO ON</b>	ImFlow uses the information from the configured backup detector. If not available than ImFlow switches to a degraded 'link simulation' mode.
<b>SWICO OFF</b>	ImFlow switches to a degraded 'link simulation' mode and ignores the counts and occupancy from the detector.

## 18.15 Administration – User commands

The following user commands can be sent from the DAAP GUI:

Changing DAAP mode

Changing TLC mode

Sending TLC commands

Restarting DAAP

**DAAP Administration: User Commands**

DAAP Mode			
Status	REQ	Command	Last Command Time
ADAPTIVE	Schedule	Schedule <input type="button" value="Send"/>	N/A

TLC Mode			
Status	REQ	Command	Last Command Time
UTC	Schedule	Schedule <input type="button" value="Send"/>	N/A

TLC Commands		
Command		Last Command Time
<input type="button" value="Reset Alarms"/>		<input type="button" value="Send"/> N/A

DAAP Restart		
Command		Last Command Time
<input type="button" value="Restart"/>		<input type="button" value="Send"/> N/A

Table 1: DAAP Mode

Field	Description	Values
<b>State</b>	The current DAAP mode	ADAPTIVE, PRE-TIMED
<b>Req</b>	The currently manually requested DAAP mode	Schedule, ADAPTIVE, PRE-TIMED
<b>Command</b>	Select the state in the dropdown list and press send to execute.	
<b>Last Command time</b>	The time stamp of the last executed command.	

Table 2: TLC mode

Field	Description	Values
<b>Status</b>	The current TLC mode	OFF, STAND-BY, LOCAL, UTC

<b>Req</b>	The currently manually requested TLC mode	Schedule, OFF, STAND-BY, LOCAL UTC
<b>Command</b>	Select the state in the dropdown list and press send to execute.	Schedule, OFF, STAND-BY, LOCAL, UTC
<b>Last Command time</b>	The time stamp of the last executed command.	

Table 3: TLC Command

Field	Description	Values
<b>Command</b>	Select the command in the dropdown list and press send to execute.	Reset Alarms Reset TLC Alarms Sync TLC time
<b>Last Command time</b>	The time stamp of the last executed command.	

Table 4: Restart DAAP

Field	Description	Values
<b>Command</b>	Select the command in the dropdown list and press send to execute.	Restart
<b>Last Command time</b>	The time stamp of the last executed command.	

The DAAP Restart command can be issued from this table, All the DAAP applications are shut down and restarted, please note that this won't reboot the Linux operating system.

## 18.16 Logging – Events

In this screen, the most recent 100 records of event log are displayed in the table.

History Event Log						
#	Code	Additional Text	Time Stamp	Software Source	Device Name	Ack State
620	000268	53649 minQ 01 q:100 s:2	2011-07-28T16:54:10.000	DC:VS_4@DAAP_2049	DC@HEL102	ACK
619	000268	Link_Zuid_XP102 ID:1 negBal:-35 total:-35 abs:35 bal:0	2011-07-28T16:54:06.000	DC:VS_4@DAAP_2049	DC@HEL102	ACK
618	000268	53645 minQ 05 q:100 s:2	2011-07-28T16:54:06.000	DC:VS_4@DAAP_2049	DC@HEL102	ACK
617	000268	Link_XP113_XP102 ID:19 negBal:-30 total:-30 abs:30 bal:0	2011-07-28T16:54:04.000	DC:VS_4@DAAP_2049	DC@HEL102	ACK
616	000268	53641 resetQ 11 q:113 t:5/16 s:1	2011-07-28T16:54:02.000	DC:VS_4@DAAP_2049	DC@HEL102	ACK
615	000268	53640 minQ 03 q:100 s:2	2011-07-28T16:54:01.000	DC:VS_4@DAAP_2049	DC@HEL102	ACK
614	000268	53639 minQ 10 q:100 s:2	2011-07-28T16:54:00.000	DC:VS_4@DAAP_2049	DC@HEL102	ACK
613	108000	DET_DK1362_B--	2012-06-20T21:07:18.000	TLC:VS_2@DAAP_2049	DK1362@TLC104	ACK
...	...	...	...	...	...	...

Figure 18-13 DAAP GUI -&gt; Logging – Events

Field	Description	Values
#	The sequence number of the event.	
Code	The ID (ie code) of the event. Each event has a unique ID.	
Additional text	Additional information provided with the event code.	
Time Stamp	The (local) time at which the event was generated.	
Software Source	The source that generated the event.	
Device Name	The device associated to the event.	
Ack State	The acknowledge state.	ACK PENDING

## 18.17 Logging – Traffic summary

In this screen, the traffic summary data of the last 5 minutes is displayed in table. The table contains a row for each stop line, mid block and link entry detector.

### Traffic Summary Data

Link	SPD (Lane) (kph)	Lane	SAT Flow (vph)	Detector	Type	Volume	SPD (Det.) (kph)	OCC (ms)	Valid
EBT2	56	2008	1800	13	LE	61	56	25400	VSO--
WBT1	0	1002	1800	0	SL	36	57	45600	VSO--
WBL1	0	1003	1500	1	SL	1	0	39900	VSO--
NBR1	0	1004	1200	2	SL	7	17	173300	VSO--
NBL1	0	1006	1500	3	SL	11	16	186700	VSO--
EBR1	0	1007	1200	4	SL	10	14	87100	VSO--
EBT1	57	1008	1800	5	SL	54	56	107500	VSO--
EBT1	57	1008	1800	12	LE	77	57	30900	VSO--

Name	TMC [%] [Veh]	Sat.Flow [vph]	Link Spd [km/h]	Travel time [sec]	Wave Spd [m/s]	Delay [s/veh]	Stops [at/veh]	avgWT [sec]	maxWT [sec]	Green [sec]	Demand [sec]	Block [sec]	V-Queue [V]	H-Queue [m]
WBT	97 36	1800	50	40	3.0	3.1	0.3	21	21	215	66	0	0.4 [0 - 6]	2 [0 - 33]
WBL	2 1	1500	50	40	2.5	61.0	2.5	41	41	31	49	0	0.2 [0 - 1]	1 [0 - 5]
NBR	38 7	1200	50	24	1.9	58.6	0.9	109	120	37	220	0	1.4 [0 - 3]	7 [0 - 17]
NBL	61 11	1500	50	24	2.5	43.6	0.6	91	92	40	185	0	1.6 [0 - 3]	8 [0 - 18]
EBR	15 10	1200	50	36	1.9	11.8	0.3	26	40	88	81	0	0.4 [0 - 2]	2 [0 - 12]
EBT	84 54	1800	50	36	3.0	14.3	0.6	28	36	194	90	0	2.6 [0 - 14]	17 [0 - 97]
PedE								74	92	48	225	0		
Peds								21	45	99	111	0		

Figure 18-14 DAAP GUI - Logging - Traffic Summary Data

Field	Description	Values
<b>Link</b>	The name of the configured road link.	
<b>SPD(lane)(kph)</b>	The measured speed on the link in km/h.	
<b>Lane</b>	The ID of the lane	
<b>SAT Flow (vph)</b>	The saturation flow measured on the lane in vehicles per hour.	
<b>Detector</b>	The ID of the detector.	
<b>Type</b>	The Type of detector	SL, MB, LE
<b>Volume</b>	The number of vehicles counted on the detector in the last 5 minutes.	
<b>Green VOL</b>	The volume (during green) counted on stop line detectors.	
<b>SPD(Det.)(kph)</b>	The speed measured on the detector in km/h.	

<b>OCC (ms)</b>	The total occupancy in milliseconds during the last 5 minutes.	
<b>Valid</b>	The detector valid flags. V – Measured volume is valid S – Measured speed is valid O – Measured occupancy is valid B – Measured data is from a backup detector V – Detector is a virtual detector	VSOBV

## 19. DAAP Unit Management GUI

The DAAP software is running on a Peek Linux based hardware platform (i.e. the DAAP unit). The DAAP unit has a web based management GUI that can be accessed from the ImFlow Operational GUI.

To open the DAAP Unit Management GUI right click on an Intersection and select "DAAP GUI -> Unit Management". A separate web browser window will be opened. The user needs to login by entering the correct username and password to use the DAAP unit management GUI.

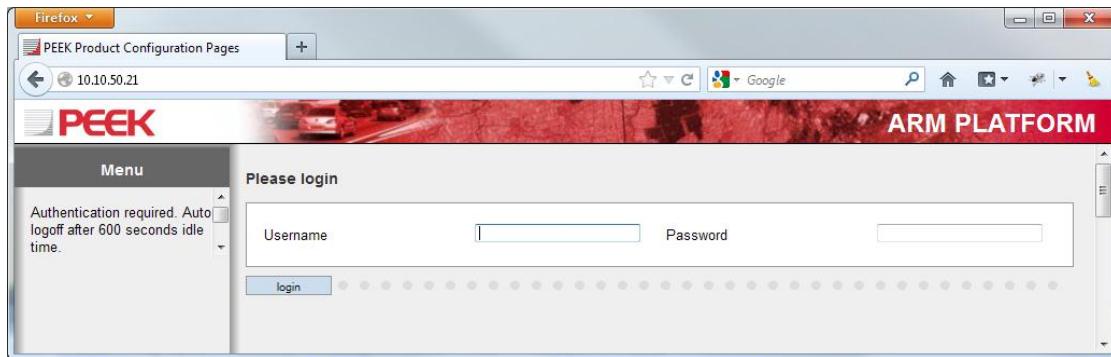


Figure 19-1 Login Page for DAAP Unit Management GUI



### NOTE

Please refer to the user manual of the hardware unit for a description of the user interface.

## 20. TLC GUI

Each TLC is equipped with its own operational GUI and Management GUI. Links to the TLC Operational GUI and Unit Management GUI are provided by the right click context menu of intersection.

### 20.1 TLC Operational GUI

An example of the TLC operational GUI is the web interface of the Peek EC-2 traffic light controller.



#### NOTE

Please refer to the user manual of the traffic light controller for a description of the user interface.

### 20.2 TLC Management GUI

An example of the TLC Management GUI is the management web interface of the Peek EC-2 traffic light controller.



#### NOTE

Please refer to the user manual of the traffic light controller for a description of the user interface.

## APPENDIX A: Event Codes

### DAAP events:

Code	Category	Description	Severity	Ack	Display	Forward	Log
0	UTC Faults	UTC disabled	Serious	Yes	Yes	Yes	Yes
1	UTC Faults	TLC waiting subscription	Attention	Yes	Yes	Yes	Yes
2	UTC Faults	Deadlock in TLC	Serious	Yes	Yes	Yes	Yes
4	UTC Faults	TLC local control	Attention	Yes	Yes	Yes	Yes
5	UTC Faults	Pre-emption local control	Attention	Yes	Yes	Yes	Yes
6	UTC Faults	User local control	Serious	Yes	Yes	Yes	Yes
7	UTC Faults	System failure	Serious	Yes	Yes	Yes	Yes
8	UTC Faults	Signal group conflict	Attention	Yes	Yes	Yes	Yes
15	UTC Faults	TLC configuration mismatch	Serious	Yes	Yes	Yes	Yes
16	UTC Faults	Time synchronization failed	Attention	Yes	Yes	Yes	Yes
17	UTC Faults	Adaptive mode disabled	Serious	Yes	Yes	Yes	Yes
18	UTC Faults	DAAP Locked	Serious	Yes	Yes	Yes	Yes
19	UTC Faults	Communication failure	Serious	Yes	Yes	Yes	Yes
20	Application Event	Application Start Up	Attention	Yes	Yes	Yes	Yes
21	Application Event	Application Ready	Attention	Yes	Yes	Yes	Yes
22	Application Event	Application Shutdown	Attention	Yes	Yes	Yes	Yes
23	Application Event	Application Failed	Serious	Yes	Yes	Yes	Yes
24	Application Event	Application Heartbeat	Attention	Yes	Yes	Yes	Yes
25	Application Event	Application Initialization Failed	Attention	Yes	Yes	Yes	Yes
41	Traffic Event	Plan Change	Attention	Yes	Yes	Yes	Yes
42	Traffic Event	DAAP Mode Change	Attention	Yes	Yes	Yes	Yes
43	Traffic Event	TLC Mode Change	Attention	Yes	Yes	Yes	Yes
44	Traffic Event	SWICO Change	Attention	Yes	Yes	Yes	Yes
45	Traffic Event	User Command	Attention	Yes	Yes	Yes	Yes
46	Traffic Event	TLC Mode Request	Attention	Yes	Yes	Yes	Yes
47	Traffic Event	Adaptive constraint Plan Change	Attention	Yes	Yes	Yes	Yes
48	Traffic Event	Policy Plan Change	Attention	Yes	Yes	Yes	Yes
50	Communications Status Event	Central - DAAP Communication OK	Attention	Yes	Yes	Yes	Yes
51	Communications Status Event	Central - DAAP Communication Failed	Serious	Yes	Yes	Yes	Yes
52	Communications Status Event	DAAP - DAAP Communication OK	Attention	Yes	Yes	Yes	Yes
53	Communications Status Event	DAAP - DAAP Communication Failed	Serious	Yes	Yes	Yes	Yes
54	Communications Status Event	DA - TLC Communication OK	Attention	Yes	Yes	Yes	Yes
55	Communications Status Event	DA - TLC Communication Failed	Serious	Yes	Yes	Yes	Yes
61	Communications Status Event	DA - Timestep Error	Attention	Yes	Yes	Yes	Yes

62	TLC Event	DATLC - Subscribing to Stream	Attention	Yes	Yes	Yes	Yes
63	TLC Event	DATLC - Subscribing to Signal Groups	Attention	Yes	Yes	Yes	Yes
64	TLC Event	DATLC - Subscribing to Detectors	Attention	Yes	Yes	Yes	Yes
73	TLC Event	DATLC - UTC disabled	Attention	Yes	Yes	Yes	Yes
74	TLC Event	DATLC - Deadlock	Attention	Yes	Yes	Yes	Yes
76	TLC Event	DATLC - Local	Attention	Yes	Yes	Yes	Yes
77	TLC Event	DATLC - Pre-emption	Attention	Yes	Yes	Yes	Yes
78	TLC Event	DATLC - User	Attention	Yes	Yes	Yes	Yes
79	TLC Event	DATLC - System fault	Attention	Yes	Yes	Yes	Yes
80	TLC Event	DATLC - Conflict	Attention	Yes	Yes	Yes	Yes
81	TLC Event	DATLC - Stream Door Open	Attention	Yes	Yes	Yes	Yes
82	TLC Event	DATLC - Stream Control Panel Door Open	Attention	Yes	Yes	Yes	Yes
83	TLC Event	DATLC - Stream Detector Fault	Attention	Yes	Yes	Yes	Yes
84	TLC Event	DATLC - Stream Lamp Fault	Attention	Yes	Yes	Yes	Yes
85	TLC Event	DATLC - Stream Fault	Attention	Yes	Yes	Yes	Yes
91	Configuration Event	CFGDIST - Connection successful	Attention	Yes	Yes	Yes	Yes
92	Configuration Event	CFGDIST - Connection failed	Serious	Yes	Yes	Yes	Yes
93	Configuration Event	CFGDIST - Transfer successful	Attention	Yes	Yes	Yes	Yes
94	Configuration Event	CFGDIST - Transfer failed	Serious	Yes	Yes	Yes	Yes
95	Configuration Event	CFGDIST - DAAP configuration updated successfully	Attention	Yes	Yes	Yes	Yes
96	Configuration Event	CFGDIST - DAAP configuration update failed	Serious	Yes	Yes	Yes	Yes
100	TLC Event	Door opened	Informational	No	Yes	No	Yes
101	TLC Event	Control panel door opened	Informational	No	Yes	No	Yes
102	TLC Event	Detector fault	Attention	Yes	Yes	Yes	Yes
103	TLC Event	Lamp fault	Attention	Yes	Yes	Yes	Yes
104	TLC Event	TLC fault	Serious	Yes	Yes	Yes	Yes
105	Configuration Event	LSGOM - Event - Intergreen timings updated	Minor	No	Yes	No	Yes
106	Configuration Event	LSGOM - Event - Signal group timings updated	Minor	No	Yes	No	Yes
107	Configuration Event	LSGOM - Event - Reload schedule	Minor	No	Yes	No	Yes
112	Application Event	LSGOM - Warning - adaptive mode disallowed	Attention	Yes	Yes	Yes	Yes
113	Application Event	LSGOM - Warning - adaptive mode allowed	Attention	Yes	Yes	Yes	Yes
115	Application Event	LSGOM - Warning - optimization time limit exceeded	Attention	Yes	Yes	Yes	Yes
116	Application Event	LSGOM - Error - unexpected condition	Serious	Yes	Yes	Yes	Yes
120	Application Event	LSGOM - Warning - State buffer too small	Attention	Yes	Yes	Yes	Yes
121	Application Event	LSGOM - Warning - No solution found	Attention	Yes	Yes	Yes	Yes
122	Application Event	LSGOM - Warning - Cost limit reached	Attention	Yes	Yes	Yes	Yes
123	Application Event	LSGOM - Error - unexpected condition	Serious	Yes	Yes	Yes	Yes
142	Application Event	DC - Remote message OK	Attention	Yes	Yes	Yes	Yes
143	Application Event	DC - Remote message expired	Attention	Yes	Yes	Yes	Yes

144	Application Event	DC - Data flow error	Attention	Yes	Yes	Yes	Yes
145	Application Event	DC - Traffic Data Collection	Attention	Yes	Yes	Yes	Yes
146	Application Event	DC - Remote Time synchronization failure	Attention	Yes	Yes	Yes	Yes
147	Application Event	DC - Remote Time synchronization OK	Attention	Yes	Yes	Yes	Yes
170	Application Event	SH - Forcing DAAP Reset	Attention	Yes	Yes	Yes	Yes
171	Application Event	SH - Central Requesting DAAP Reset	Attention	Yes	Yes	Yes	Yes
172	Application Event	SH -Time synchronization failure	Attention	Yes	Yes	Yes	Yes
173	Application Event	SH -Time synchronization OK	Attention	Yes	Yes	Yes	Yes
175	Application Event	EMS - Notification Failure	Attention	Yes	Yes	Yes	Yes
176	Application Event	EMS - Notification Dropped	Attention	Yes	Yes	Yes	Yes
182	Application Event	VACM - Event - DA mode requested	Minor	No	Yes	No	Yes
183	Configuration Event	VACM - Event - Intergreen timing updated	Minor	No	Yes	No	Yes
184	Configuration Event	VACM - Event - Signal group timing updated	Minor	No	Yes	No	Yes
185	Application Event	VACM - Event - Priority stage request	Serious	Yes	Yes	Yes	Yes
188	Application Event	VACM - Error - Unexpected condition	Serious	Yes	Yes	Yes	Yes
189	Application Event	VACM - Event - Longest waiting algorithm	Serious	Yes	Yes	Yes	Yes
191	Application Event	VACM - Event - DA mode changed	Minor	No	Yes	No	Yes
192	Application Event	VACM - Event - UTC flags changed	Minor	No	Yes	No	Yes
193	Application Event	VACM - Warning - exceeded failure limit	Attention	Yes	Yes	Yes	Yes
194	Application Event	VACM - Warning - failed UTC transition	Attention	Yes	Yes	Yes	Yes
195	Application Event	VACM - Warning - feedback failure	Attention	Yes	Yes	Yes	Yes
196	Application Event	VACM - Warning - stale planned timing sequence	Attention	Yes	Yes	Yes	Yes
197	Application Event	VACM - Error - Unexpected condition	Attention	Yes	Yes	Yes	Yes
200	Application Event	SCHEDM - Event - Control Request	Minor	No	Yes	No	Yes
201	Configuration Event	SCHEDM - Error - Reload schedule failed	Attention	Yes	Yes	Yes	Yes
202	Application Event	Schedm - Event - Local Control Request	Minor	No	Yes	No	Yes
203	Application Event	Schedm - Warning - Invalid Local Control Request	Attention	Yes	Yes	Yes	Yes
206	Application Event	SCHEDM - Warning - Invalid Control Request	Attention	Yes	Yes	Yes	Yes
207	Configuration Event	SCHEDM - Event - Reload Schedule	Attention	Yes	Yes	Yes	Yes
208	Application Event	SCHEDM - Event - Scheduled event	Attention	Yes	Yes	Yes	Yes
209	Application Event	SCHEDM - Warning - Adaptive control disabled.	Attention	Yes	Yes	Yes	Yes
210	Application Event	SCHEDM - Event - Adaptive control enabled.	Attention	Yes	Yes	Yes	Yes
221	Configuration Event	PRETIM - Error - Schedule reload failed	Minor	No	Yes	No	Yes
228	Configuration Event	PRETIM - Event - Reload Schedule	Attention	Yes	Yes	Yes	Yes
243	Application Event	CPFDM - Error - Failed to process message	Attention	Yes	Yes	Yes	Yes
263	Application Event	PREDM - Error - Failed to process message	Attention	Yes	Yes	Yes	Yes
268	Application Event	PREDM - Diagnostic - Queue info	Attention	Yes	Yes	Yes	Yes
269	Application Event	PREDM - Diagnostic - Arrival flow status	Attention	Yes	Yes	Yes	Yes
270	Application Event	PREDM - Diagnostic - Queue status	Attention	Yes	Yes	Yes	Yes

271	Application Event	PREDM - Diagnostic - Link simulation status	Attention	Yes	Yes	Yes	Yes
290	Application Event	PREDM - Diagnostic - PT vehicle status	Attention	Yes	Yes	Yes	Yes
291	Application Event	PREDM - Warning - PT vehicle tracking	Attention	Yes	Yes	Yes	Yes
300	Abnormal Traffic Detection	ATD - Atypical Speed Raise	Attention	Yes	Yes	Yes	Yes
301	Abnormal Traffic Detection	ATD - Atypical Speed Lower	Attention	Yes	Yes	Yes	Yes
302	Abnormal Traffic Detection	ATD - Atypical Flow Raise	Attention	Yes	Yes	Yes	Yes
303	Abnormal Traffic Detection	ATD - Atypical Flow Lower	Attention	Yes	Yes	Yes	Yes
304	Abnormal Traffic Detection	ATD - Atypical Outflow Raise	Attention	Yes	Yes	Yes	Yes
305	Abnormal Traffic Detection	ATD - Atypical Outflow Lower	Attention	Yes	Yes	Yes	Yes
306	Abnormal Traffic Detection	ATD - Abnormal Speed Raise	Attention	Yes	Yes	Yes	Yes
307	Abnormal Traffic Detection	ATD - Abnormal Speed Lower	Attention	Yes	Yes	Yes	Yes
308	Abnormal Traffic Detection	ATD - Abnormal Outflow Raise	Attention	Yes	Yes	Yes	Yes
309	Abnormal Traffic Detection	ATD - Abnormal Outflow Lower	Attention	Yes	Yes	Yes	Yes
310	Abnormal Traffic Detection	ATD - Abnormal Congestion Raise	Attention	Yes	Yes	Yes	Yes
311	Abnormal Traffic Detection	ATD - Abnormal Congestion Lower	Attention	Yes	Yes	Yes	Yes
312	Abnormal Traffic Detection	ATD - Abnormal Queue Length Raise	Attention	Yes	Yes	Yes	Yes
313	Abnormal Traffic Detection	ATD - Abnormal Queue Length Lower	Attention	Yes	Yes	Yes	Yes
330	Application Event	TRC - Requesting Plan Override	Attention	Yes	Yes	Yes	Yes
331	Application Event	TRC - Removing Plan Override Request	Attention	Yes	Yes	Yes	Yes
332	Application Event	TRC - Received Start Override Request	Attention	Yes	Yes	Yes	Yes
333	Application Event	TRC - Received Stop Override Request	Attention	Yes	Yes	Yes	Yes
334	Application Event	TRC - Received Revert Override Request	Attention	Yes	Yes	Yes	Yes
360	Application Event	SCX - Requesting Plan Override	Attention	Yes	Yes	Yes	Yes
361	Application Event	SCX - Removing Plan Override Request	Attention	Yes	Yes	Yes	Yes
390	Application Event	GUI - Manual Override Issued	Attention	Yes	Yes	Yes	Yes
391	Application Event	GUI - Manual Override Failure	Serious	Yes	Yes	Yes	Yes
392	Application Event	GUI - Schedule Modification Issued	Attention	Yes	Yes	Yes	Yes
393	Application Event	GUI - Schedule Modification Failure	Serious	Yes	Yes	Yes	Yes
394	Application Event	GUI - Policy Plan Modification Issued	Attention	Yes	Yes	Yes	Yes
395	Application Event	GUI - Policy Plan Modification Failure	Serious	Yes	Yes	Yes	Yes
1000	Communications Status Event	Communication with DAAP lost	Serious	Yes	Yes	Yes	Yes
1001	Communications Status Event	Configuration mismatch	Serious	Yes	Yes	Yes	Yes
1002	Communications Status Event	Wrong DAAP protocol version	Serious	Yes	Yes	Yes	Yes
10001	SAPS Event	SAPS Started	Informational	No	Yes	No	Yes
10002	SAPS Event	SAPS Stopped	Informational	No	Yes	No	Yes

				Informational	No	Yes	No	Yes
10003	SAPS Event	SAPS Override executed		Informational	No	Yes	No	Yes
10004	System Events	LOI Changed		Informational	No	Yes	No	Yes
10005	System Events	Manual Override		Informational	No	Yes	No	Yes
101000	TLC Event	TLC - Plan change		Minor	No	Yes	No	Yes
102000	TLC Event	TLC - Mode change		Attention	Yes	Yes	Yes	Yes
103000	TLC Event	TLC - Power failure		Attention	Yes	Yes	Yes	Yes
103001	TLC Event	TLC001 - Mains voltage low		Attention	Yes	Yes	Yes	Yes
103002	TLC Event	TLC002 - CPU-B CRC CODE		Attention	Yes	Yes	Yes	Yes
103003	TLC Event	TLC003 - CPU-B CRC DATA		Attention	Yes	Yes	Yes	Yes
103004	TLC Event	TLC004 - CPU-B LCM		Attention	Yes	Yes	Yes	Yes
103005	TLC Event	TLC005 - CPU-B OVERLOAD		Attention	Yes	Yes	Yes	Yes
103006	TLC Event	TLC006 - CPU-B LCM DIAG		Attention	Yes	Yes	Yes	Yes
103007	TLC Event	TLC007 - CPU-B LOT SLOW		Attention	Yes	Yes	Yes	Yes
103008	TLC Event	TLC008 - CPU-A ALARM		Attention	Yes	Yes	Yes	Yes
103009	TLC Event	TLC009 - XP ALARM		Attention	Yes	Yes	Yes	Yes
103010	TLC Event	TLC010 - User alarm		Attention	Yes	Yes	Yes	Yes
103011	TLC Event	TLC011 - Mains synchronization failure		Attention	Yes	Yes	Yes	Yes
103012	TLC Event	TLC012 - LV		Attention	Yes	Yes	Yes	Yes
103013	TLC Event	TLC013 - CPU-B LOC-LOC		Attention	Yes	Yes	Yes	Yes
103014	TLC Event	TLC014 - CPU-B COM CPU-A		Attention	Yes	Yes	Yes	Yes
103015	TLC Event	TLC015 - CPU-B PHAS		Attention	Yes	Yes	Yes	Yes
103016	TLC Event	TLC016 - CPU-A (INT)		Attention	Yes	Yes	Yes	Yes
103017	TLC Event	TLC017 - Application alarm		Attention	Yes	Yes	Yes	Yes
103018	TLC Event	TLC018 - Self test		Attention	Yes	Yes	Yes	Yes
103019	TLC Event	TLC019 - CPU-A LCM diagnostics		Attention	Yes	Yes	Yes	Yes
103021	TLC Event	TLC021 - LCM configuration error		Attention	Yes	Yes	Yes	Yes
103025	TLC Event	TLC025 - CPU-A COM CPU-B		Attention	Yes	Yes	Yes	Yes
103026	TLC Event	TLC026 - CPU-A (EXT)		Attention	Yes	Yes	Yes	Yes
103027	TLC Event	TLC027 - CPU-A (EXT)		Attention	Yes	Yes	Yes	Yes
103028	TLC Event	TLC028 - CPU-A (EXT)		Attention	Yes	Yes	Yes	Yes
103050	TLC Event	TLC050 - CIF application error		Attention	Yes	Yes	Yes	Yes
103051	TLC Event	TLC051 - GUS-WUS error		Attention	Yes	Yes	Yes	Yes
103052	TLC Event	TLC052 - Deadlock		Attention	Yes	Yes	Yes	Yes
103053	TLC Event	TLC053 - Execution time failure		Attention	Yes	Yes	Yes	Yes
103060	TLC Event	TLC060 - Manual control		Attention	Yes	Yes	Yes	Yes
103061	TLC Event	TLC061 - Manual stage selection		Attention	Yes	Yes	Yes	Yes
103062	TLC Event	TLC062 - Manual control error		Attention	Yes	Yes	Yes	Yes
103064	TLC Event	TLC064 - Cycle timeout		Attention	Yes	Yes	Yes	Yes
103065	TLC Event	TLC065 - Conflict		Attention	Yes	Yes	Yes	Yes
103066	TLC Event	TLC066 - Minimum green error		Attention	Yes	Yes	Yes	Yes

103067	TLC Event	TLC067 - Application deadlock	Attention	Yes	Yes	Yes	Yes
103068	TLC Event	TLC068 - Application error	Attention	Yes	Yes	Yes	Yes
103069	TLC Event	TLC069 - Minimum red	Attention	Yes	Yes	Yes	Yes
103070	TLC Event	TLC070 - PU ERR	Attention	Yes	Yes	Yes	Yes
103071	TLC Event	TLC071 - PU ERR	Attention	Yes	Yes	Yes	Yes
103072	TLC Event	TLC072 - Application logic	Attention	Yes	Yes	Yes	Yes
103073	TLC Event	TLC073 - Application swon	Attention	Yes	Yes	Yes	Yes
103080	TLC Event	TLC080 - Outstation Telemetry Unit (OTU)	Attention	Yes	Yes	Yes	Yes
103081	TLC Event	TLC081 - Phase inhibit	Attention	Yes	Yes	Yes	Yes
103099	TLC Event	TLC099 - Logbook cleared	Attention	Yes	Yes	Yes	Yes
103100	TLC Event	TLC100 - CPU-A XLM	Attention	Yes	Yes	Yes	Yes
103101	TLC Event	TLC101 - Conflict	Attention	Yes	Yes	Yes	Yes
103102	TLC Event	TLC102 - OMS error	Attention	Yes	Yes	Yes	Yes
103103	TLC Event	TLC103 - Work switch ON	Attention	Yes	Yes	Yes	Yes
103104	TLC Event	TLC104 - Work switch OFF	Attention	Yes	Yes	Yes	Yes
103105	TLC Event	TLC105 - VCU	Attention	Yes	Yes	Yes	Yes
103106	TLC Event	TLC106 - DIAL CCS	Attention	Yes	Yes	Yes	Yes
103107	TLC Event	TLC107 - CPU-C configuration error	Attention	Yes	Yes	Yes	Yes
103108	TLC Event	TLC108 - CPU-C communication	Attention	Yes	Yes	Yes	Yes
103109	TLC Event	TLC109 - CPU-C version	Attention	Yes	Yes	Yes	Yes
103110	TLC Event	TLC110 - Parameter logbook	Attention	Yes	Yes	Yes	Yes
103111	TLC Event	TLC111 - Railway error	Attention	Yes	Yes	Yes	Yes
103112	TLC Event	TLC112 - Reset railway error	Attention	Yes	Yes	Yes	Yes
103113	TLC Event	TLC113 - Dump state	Attention	Yes	Yes	Yes	Yes
103115	TLC Event	TLC115 - Weather station OK	Attention	Yes	Yes	Yes	Yes
103116	TLC Event	TLC116 - Weather station no update	Attention	Yes	Yes	Yes	Yes
103117	TLC Event	TLC117 - Weather station error	Attention	Yes	Yes	Yes	Yes
103130	TLC Event	TLC130 - CPU-C ABORT	Attention	Yes	Yes	Yes	Yes
103131	TLC Event	TLC131 - CPU-C ERROR	Attention	Yes	Yes	Yes	Yes
103132	TLC Event	TLC132 - CPU-C RESET	Attention	Yes	Yes	Yes	Yes
103150	TLC Event	TLC150 - DCF-77 error	Attention	Yes	Yes	Yes	Yes
103151	TLC Event	TLC151 - Battery error	Attention	Yes	Yes	Yes	Yes
103185	TLC Event	TLC185 - UTC mode request (OFF)	Attention	Yes	Yes	Yes	Yes
103186	TLC Event	TLC186 - UTC mode request (STANDBY)	Attention	Yes	Yes	Yes	Yes
103187	TLC Event	TLC187 - UTC mode request (UTC)	Attention	Yes	Yes	Yes	Yes
103188	TLC Event	TLC188 - UTC mode request (LOCAL)	Attention	Yes	Yes	Yes	Yes
103189	TLC Event	TLC189 - UTC mode (LOCAL)	Attention	Yes	Yes	Yes	Yes
103190	TLC Event	TLC190 - UTC mode (CENTRAL)	Attention	Yes	Yes	Yes	Yes
103191	TLC Event	TLC191 - Connected to UTC	Attention	Yes	Yes	Yes	Yes
103192	TLC Event	TLC192 - Disconnected from UTC	Attention	Yes	Yes	Yes	Yes

103193	TLC Event	TLC193 - UTC deadlock	Attention	Yes	Yes	Yes	Yes
103194	TLC Event	TLC194 - UTC conflict	Attention	Yes	Yes	Yes	Yes
103195	TLC Event	TLC195 - UTC too many deadlocks	Attention	Yes	Yes	Yes	Yes
103196	TLC Event	TLC196 - UTC too many conflicts	Attention	Yes	Yes	Yes	Yes
103197	TLC Event	TLC197 - UTC mode (LOCAL->CENTRAL)	Attention	Yes	Yes	Yes	Yes
103200	TLC Event	TLC200 - DCF-77 OK	Attention	Yes	Yes	Yes	Yes
103201	TLC Event	TLC201 - Battery OK	Attention	Yes	Yes	Yes	Yes
103202	TLC Event	TLC202 - Reset alarms	Attention	Yes	Yes	Yes	Yes
103203	TLC Event	TLC203 - Detector units OK	Attention	Yes	Yes	Yes	Yes
103204	TLC Event	TLC204 - Reset detector alarms	Attention	Yes	Yes	Yes	Yes
103205	TLC Event	TLC205 - Dropped PT vehicle	Attention	Yes	Yes	Yes	Yes
103206	TLC Event	TLC206 - Lamp tracking autoset	Attention	Yes	Yes	Yes	Yes
103207	TLC Event	TLC207 - RESET PREF MAL	Attention	Yes	Yes	Yes	Yes
103208	TLC Event	TLC208 - Lamp auto set error	Attention	Yes	Yes	Yes	Yes
103209	TLC Event	TLC209 - Dial back	Attention	Yes	Yes	Yes	Yes
103210	TLC Event	TLC210 - Emergency program request	Attention	Yes	Yes	Yes	Yes
103211	TLC Event	TLC211 - Emergency program	Attention	Yes	Yes	Yes	Yes
103212	TLC Event	TLC212 - Time master error	Attention	Yes	Yes	Yes	Yes
103213	TLC Event	TLC213 - Automatic fault reset	Attention	Yes	Yes	Yes	Yes
103214	TLC Event	TLC214 - Automatic fault reset (lock)	Attention	Yes	Yes	Yes	Yes
103215	TLC Event	TLC215 - Lamp auto set OK	Attention	Yes	Yes	Yes	Yes
103216	TLC Event	TLC216 - TDC DISK FULL	Attention	Yes	Yes	Yes	Yes
103217	TLC Event	TLC217 - MIMIC MODE	Attention	Yes	Yes	Yes	Yes
103218	TLC Event	TLC218 - CPU-A/B ID mismatch	Attention	Yes	Yes	Yes	Yes
103234	TLC Event	TLC234 - PTP illegal port	Attention	Yes	Yes	Yes	Yes
103235	TLC Event	TLC235 - WAITTIME	Attention	Yes	Yes	Yes	Yes
103236	TLC Event	TLC236 - PTP	Attention	Yes	Yes	Yes	Yes
103237	TLC Event	TLC237 - UPS	Attention	Yes	Yes	Yes	Yes
103238	TLC Event	TLC238 - DOOR	Attention	Yes	Yes	Yes	Yes
103239	TLC Event	TLC239 - DOOR (Control panel)	Attention	Yes	Yes	Yes	Yes
103240	TLC Event	TLC240 - DOOR (Energy compartment)	Attention	Yes	Yes	Yes	Yes
103241	TLC Event	TLC241 - TRY	Attention	Yes	Yes	Yes	Yes
103242	TLC Event	TLC242 - ZAP	Attention	Yes	Yes	Yes	Yes
103243	TLC Event	TLC243 - WATCHDOG	Attention	Yes	Yes	Yes	Yes
103244	TLC Event	TLC244 - BACKUP SUPPLY	Attention	Yes	Yes	Yes	Yes
103245	TLC Event	TLC245 - SOFT RESET	Attention	Yes	Yes	Yes	Yes
103246	TLC Event	TLC246 - Reset program parameters	Attention	Yes	Yes	Yes	Yes
103247	TLC Event	TLC247 - Program	Attention	Yes	Yes	Yes	Yes
103248	TLC Event	TLC248 - Reset program	Attention	Yes	Yes	Yes	Yes
103249	TLC Event	TLC249 - Reset CPU	Attention	Yes	Yes	Yes	Yes

103250	TLC Event	TLC250 - MAINS OFF	Attention	Yes	Yes	Yes	Yes
103251	TLC Event	TLC251 - OLD TIME	Attention	Yes	Yes	Yes	Yes
103252	TLC Event	TLC252 - NEW TIME	Attention	Yes	Yes	Yes	Yes
103253	TLC Event	TLC253 - MAINS ON	Attention	Yes	Yes	Yes	Yes
103254	TLC Event	TLC254 - CP ALARM	Attention	Yes	Yes	Yes	Yes
103255	TLC Event	TLC255 - SERIOUS ALARM	Attention	Yes	Yes	Yes	Yes
104000	TLC Event	TLC - CPU-B Intersection error	Attention	Yes	Yes	Yes	Yes
105000	TLC Event	TLC - Mode of operation change	Minor	No	Yes	No	Yes
106000	TLC Event	TLC - Functional safety error	Serious	Yes	Yes	Yes	Yes
107000	TLC Event	TLC - Lamp event	Serious	Yes	Yes	Yes	Yes
108000	TLC Event	TLC - Detector event	Attention	Yes	Yes	Yes	Yes
109000	TLC Event	TLC - OMS event	Serious	Yes	Yes	Yes	Yes
110000	TLC Event	TLC - Hardware unit event	Serious	Yes	Yes	Yes	Yes
200000	TLC Event	IVERA - event	Minor	No	Yes	No	Yes
200001	TLC Event	IVERA - device specific event	Minor	No	Yes	No	Yes
200002	TLC Event	IVERA - application specific event	Minor	No	Yes	No	Yes

## System events

Code	Category	Description	Event severity	Ack	Display	Forward	Log
0	System events	statusUpdate	Informational	No	Yes	No	Yes
1	System events	Command executed	Informational	No	Yes	No	Yes
2	System events	File Sync	Informational	No	Yes	No	Yes
3	System events	Dial up info	Informational	No	Yes	No	Yes
4	System events	Entered maintenance mode	Informational	No	Yes	No	Yes
5	System events	Exited maintenance mode	Informational	No	Yes	No	Yes
100	System events	Time synchronization error	Attention	Yes	Yes	Yes	Yes
101	System events	Field device not reachable	Attention	Yes	Yes	Yes	Yes
102	System events	File synchronization failed	Attention	Yes	Yes	Yes	Yes
103	System events	Internal communication failed	Attention	Yes	Yes	Yes	Yes
104	System events	Internal communication restored	Informational	No	Yes	No	Yes
9000000	System events	UNKNWON	Informational	No	Yes	No	Yes
9000001	System events	User logged in	Informational	No	Yes	No	Yes
9000002	System events	User logged out	Informational	No	Yes	No	Yes
9000003	System events	Login failed - password	Informational	No	Yes	No	Yes
9000004	System events	Login failed - username	Informational	No	Yes	No	Yes
9000005	System events	User action	Statistics	No	No	No	Yes
9000006	System events	Opened menu	Statistics	No	No	No	Yes
9000010	System events	New node added	Informational	No	Yes	No	Yes
9000011	System events	Node changed	Informational	No	Yes	No	Yes

9000012	System events	Node removed	Informational	No	Yes	No	Yes
9000020	System events	Dynamic schedule user subscribed	Informational	No	Yes	No	Yes
9000021	System events	Dynamic schedule user unsubscribed	Informational	No	Yes	No	Yes
9000022	System events	Dynamic schedule user unsubscribed	Informational	No	Yes	No	Yes
9000023	System events	Dynamic schedule user unsubscribed	Informational	No	Yes	No	Yes
9000024	System events	Dynamic schedule activated	Informational	No	Yes	No	Yes
9000025	System events	Dynamic schedule deactivated	Informational	No	Yes	No	Yes
9000026	System events	No subscriber - forwarding to group manager	Informational	No	Yes	No	Yes

## APPENDIX B: DAAP Signal Group states

The status of the Signal Groups in ImFlow Central is defined using the three values received from DAAPs for each Signal Group:

- Signal state
- Demand state
- Extension state

The following table provides mappings from these states to the colours visible on RT diagrams.

Signal state	Demand state	Extension state	Internal colour	External colour
Unknown	Undefined	Undefined	Grey	Grey
Green	Undefined	Undefined	Green	Green
Green	Off	Off	Green	Green
Green	Demand	Off	Green darker	Green
Green	Off	On	Green lighter	Green
GreenFlashing	Undefined	Undefined	Yellow	Green
GreenFlashing	Off	Off	Yellow	Green
GreenFlashing	Off	On	Yellow	Green
Red	Undefined	Undefined	Red	Red
Red	Off	Off	Red	Red
Red	Demand	Off	Red darker	Red
Red	Off	On	Red lighter	Red
RedAmber	Undefined	Undefined	Orange	Red
RedAmber	Off	Off	Orange	Red
Amber	Undefined	Undefined	Yellow	Red
Amber	Off	Off	Yellow	Red
Amber	Demand	Off	Yellow	Red
Amber	Off	On	Yellow	Red

Table 0-1 Signal Group state colour mapping

Time space diagram uses predefined colours. DAAP signal group states defined above are mapped to those defined in TSD.