

Table of Contents

CHAPTER 1 PRESENTATION.....	2
CHAPTER 2 CENTOS 7 INSTALL.....	3
2.1 Kickstart CentOS installation.....	3
CHAPTER 3 First settings after the reboot.....	7
CHAPTER 4 DOWNLOAD AND INSTALL METRICI TA.....	8
CHAPTER 5 TA SETTINGS.....	11
5.1 THERMAL ANALYZER INITIATING.....	11
5.2 APPLICATION SETTINGS.....	12
5.3 USERS ADMINISTRATION.....	13
5.4 TIME TABLES.....	14
5.5 LOCATIONS & CAMERAS.....	14
5.6 LICENSES.....	17
5.7 BACKUP AND RESTORE.....	17
5.8 LOGS.....	18
CHAPTER 6 THERMAL ANALYZER MODULE.....	18
6.1 THERMAL EVENTS.....	18
6.2 HOT OBJECTS.....	20
6.3 LIVE VIEW.....	20
6.4 REPORTS.....	21
6.5 ALARMS.....	22
6.6 SETTINGS.....	24
6.6 GENERAL.....	26
CHAPTER 7 METRICI CONTROL PANEL SETTING AND USING.....	27
7.0 License activation.....	29
7.1 Engine working mode & External Trigger.....	31
7.2 Thermal Stream & Calibration.....	37
7.3 Companion Stream.....	41
7.4 Live View.....	41

7.5 Reporting.....	42
7.6 Adding zones.....	44

USER GUIDE THERMAL ANALYZER

CHAPTER 1 PRESENTATION

Thermal Analyzer (TA) is Metrici solution developed to be used for temperature screening of people, objects, animals, in short any scenario where one is supposed to know the exact temperature of an item.

It is meant to be used with thermal cameras to scan, detect, recognize and deliver temperature for any object in a video stream.

The software solution is an Artificial Intelligence-powered detection technology initially developed to screen people for fever by ensuring social distancing.

The real-time performance allows the evaluation of hundreds of people per minute without restricting the flow.

This high-tech solution can automatically detect a person's temperature in a matter of milliseconds without the need for personal contact

As any Metrici software, this module is separated in two. On one hand, we have the **Metrici detection engines**, where we introduce general settings for the IP cameras and on the other hand there is a **Web Interface** which can be managed on any device, where we have a user friendly interaction and control tools.

Metrici Web Interface will let you see, change, manage all the zones, events, create groups, alarms, time tables, introduce new user or change other, change status etc.

Any number of cameras and locations can be managed from same interface with different administration rights for any user.

CHAPTER 2

CENTOS 7 INSTALL

The procedure for installing Metrici is the same no matter what module and what engine you are using. The first step is to install CentOS 7 operating software, under which Metrici works.

2.1 Kickstart CentOS installation

The indicated method to install CentOS7 and Metrici is the kickstart one- this is a completely automatic option and will result in creating new partitions on your system: 8 GB for SWAP and the rest of the disk reserved for ROOT.

CAUTION! In case the system isn't new and has already some data written on it, the installation will delete everything on this computer when installing the operating system.

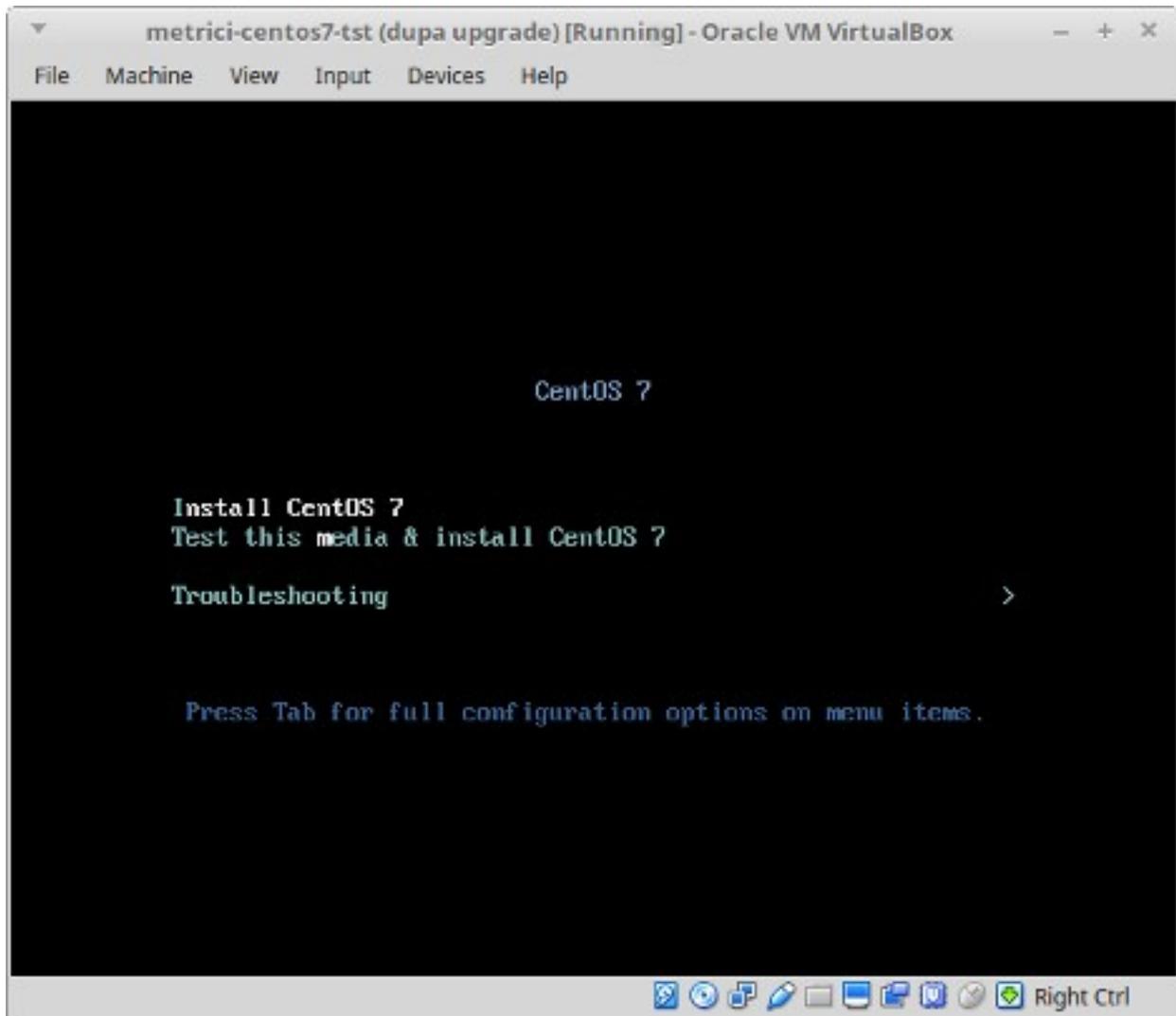
REMEMBER! For installing CentOS 7 and Metrici Thermal Analyzer, it is mandatory to have internet access, but only during install. After that, the web access is no longer mandatory and Metrici can work offline.

Download the image for CentOS: you can find the operating system on Metrici site at http://support.metrici.ro/operating_systems/

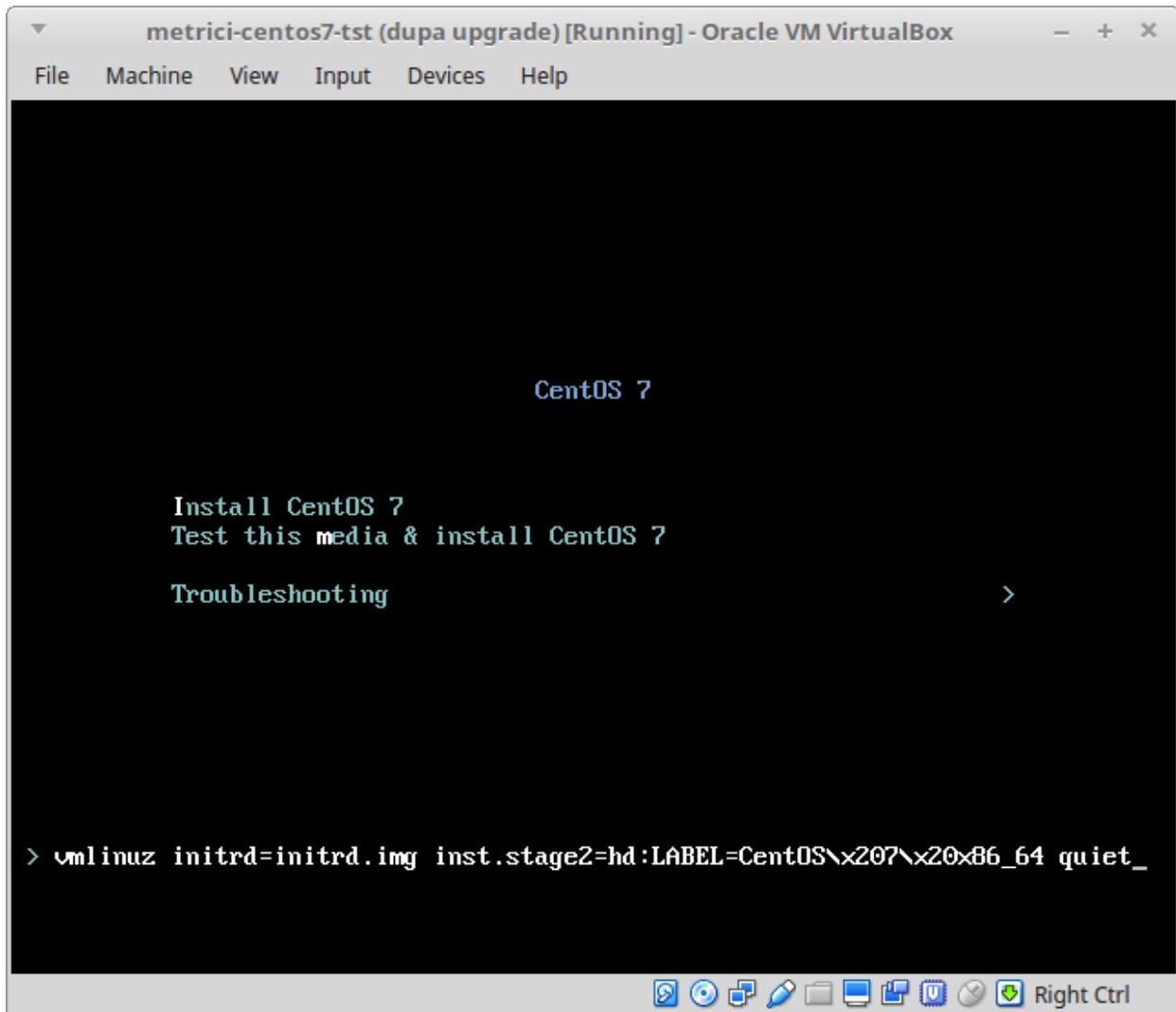
Download the Operating System and make a bootable stick or DVD.

REMEMBER! Before the installation, go to BIOS and make sure the PC will NOT BOOT in UEFI mode and will make the first boot from your USB stick.

At the first option screen, as in the next image, using the keyboard go to option Install CentOS, but **DO NOT PRESS ENTER!**



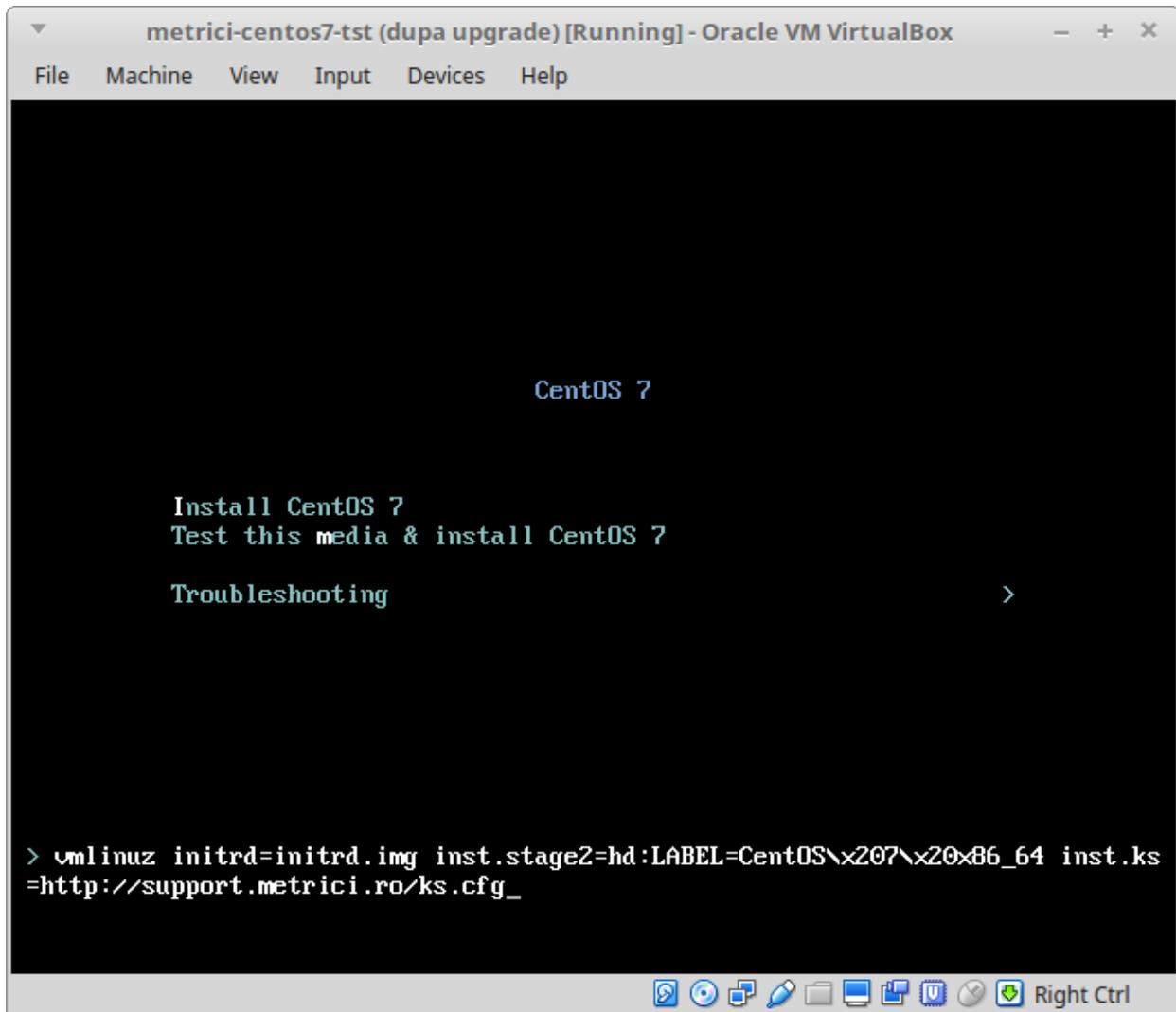
Press Tab instead. You will notice some parameters on the bottom of the screen. See next image.



Add a space and then type **inst.ks=<http://support.metricí.ro/ks.cfg>** at the end of the code and then press Enter. See the next image.

ATTENTION! If the storage is NVMe type, then you will have to type instead the following text

inst.ks=<http://support.metricí.ro/ks-nvme.cfg>



CentOS will be installed and all the settings made. This will create a user with the name "**metrici**" and a root password "**metriciadmin**".

Reboot the machine if it doesn't do it automatically.

CHAPTER 3

First settings after the reboot

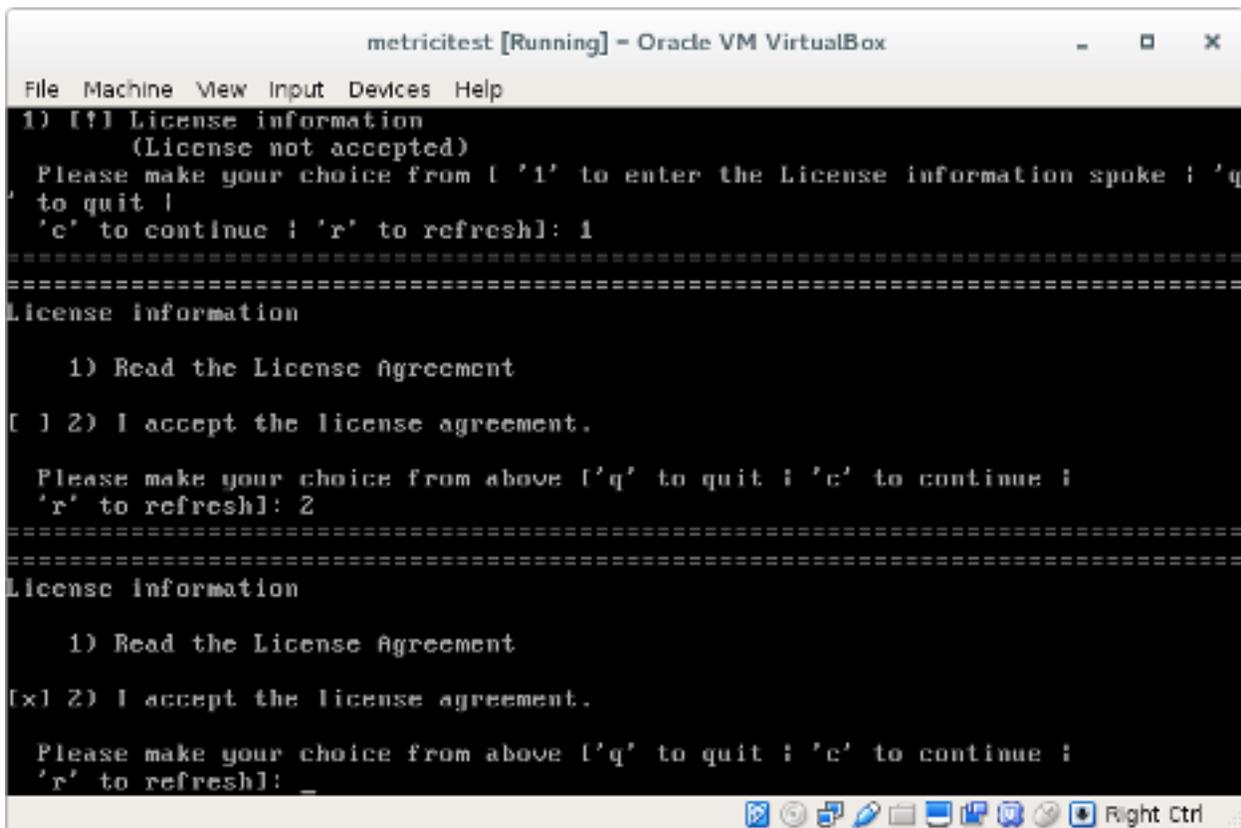
After the first boot, the system will ask for you to read the license agreement. You complete this task by choosing **LICENSE INFORMATION**.

In case you accept the terms, confirm by checking option **I accept the license agreement**.

You may continue after you click **FINISH CONFIGURATION** button, on the lower right.

NOTE

It is possible that during the reboot, the system to ask for license agreement in a written text as in image bellow. In this case the steps explained above will be ignored.



```
metricitest [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
1) [!] License information
   (License not accepted)
Please make your choice from [ '1' to enter the License information spoke ; 'q'
to quit ;
'c' to continue ; 'r' to refresh]: 1
=====
License information

1) Read the License Agreement
[ ] 2) I accept the license agreement.

Please make your choice from above [ 'q' to quit ; 'c' to continue ;
'r' to refresh]: 2
=====
License information

1) Read the License Agreement
[x] 2) I accept the license agreement.

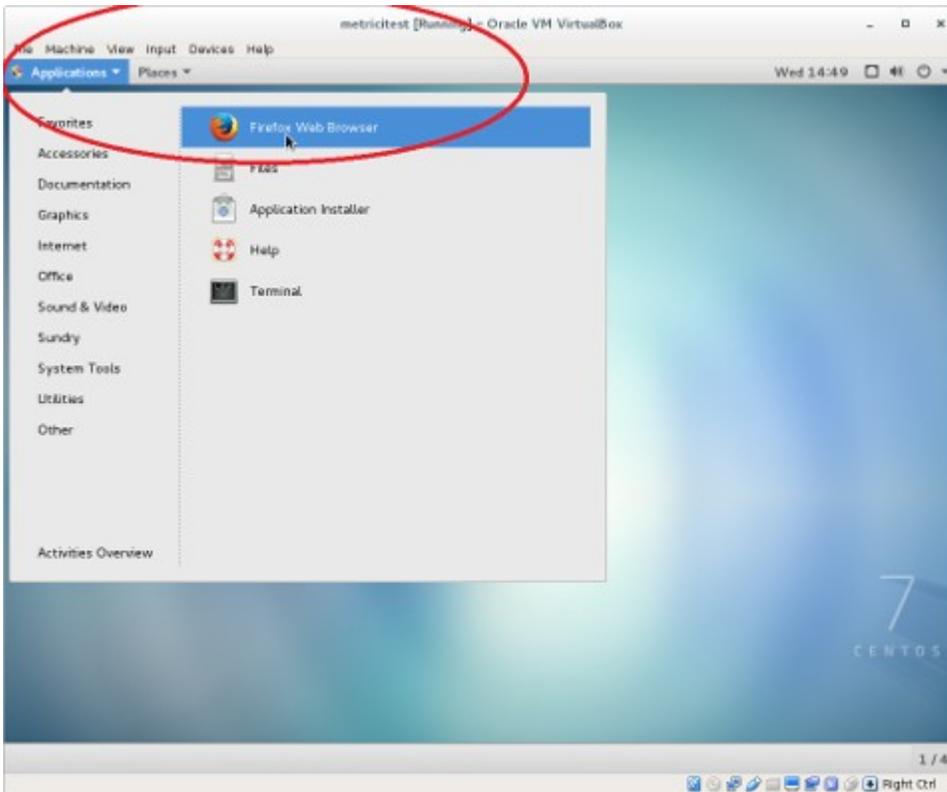
Please make your choice from above [ 'q' to quit ; 'c' to continue ;
'r' to refresh]: _
```

After the reboot, you can authenticate by using the user and password defined during installation. In case of kickstart installation that would be **metrici** and **metriciadmin**.

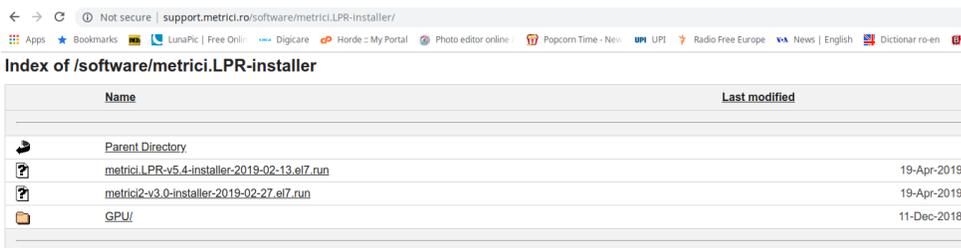
You navigate through the last settings, click Next.

CHAPTER 4

DOWNLOAD AND INSTALL METRICI TA



For **Metrici** kit to be downloaded, open Firefox browser from **Applications** menu, upper left.



Access the address

<http://support.metrici.ro/software/metrici-installer/>

Download

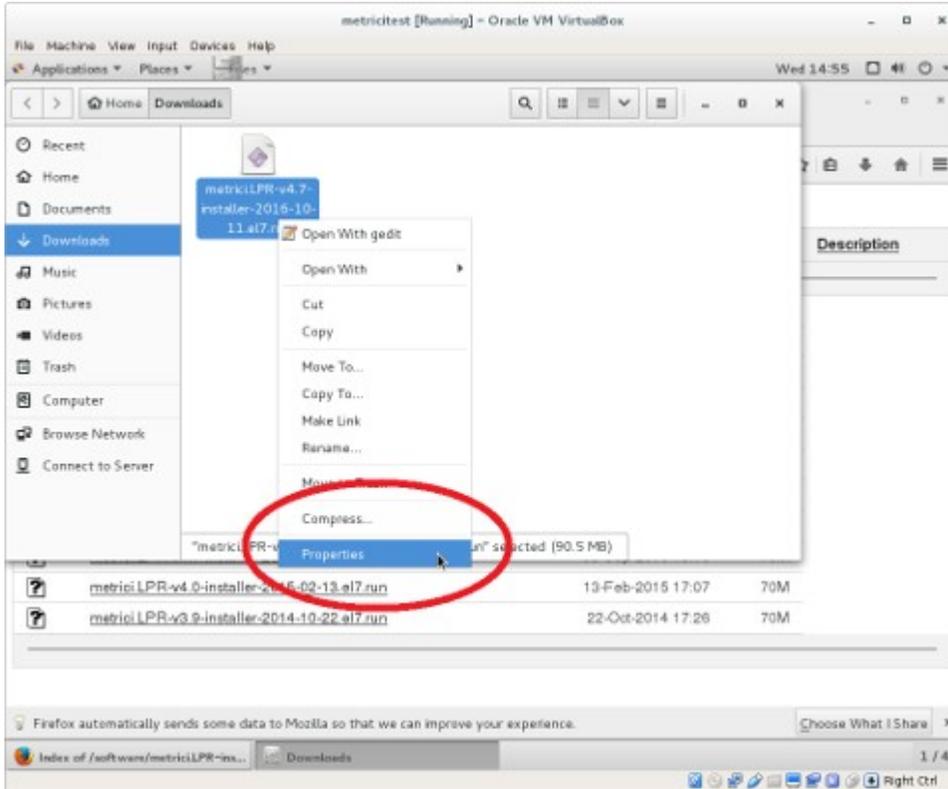
<http://support.metrici.ro/software/metrici-installer/metrici2-v3.4-installer-2020-07-01.el7.run>

or the latest version of the software, with the suffix el7.run

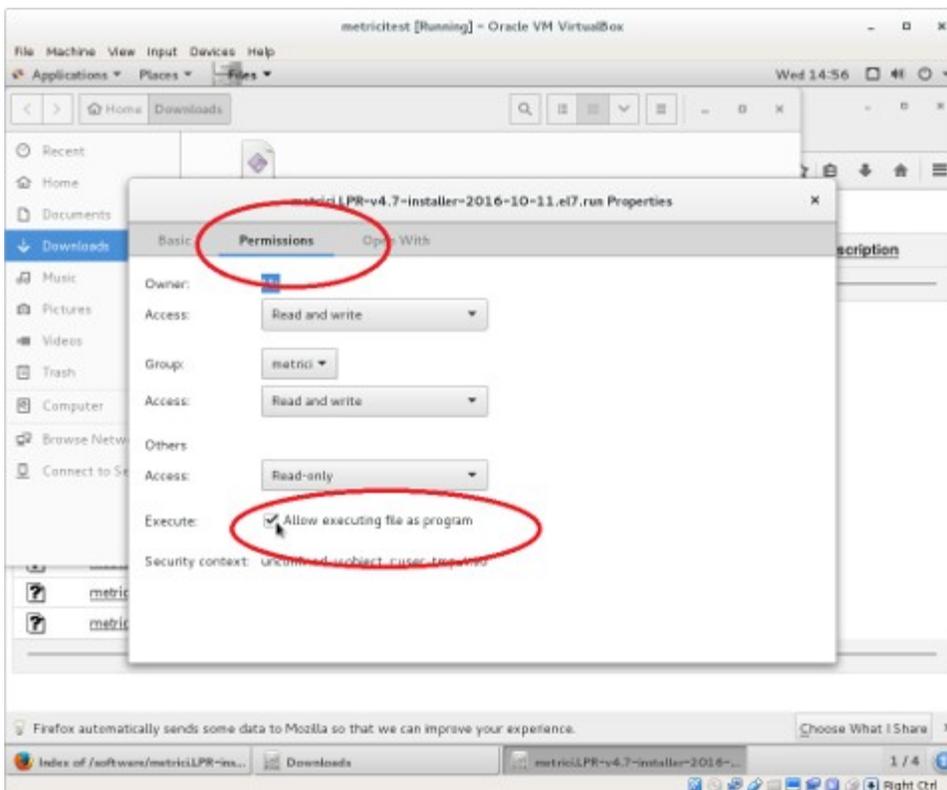
Save it on disk

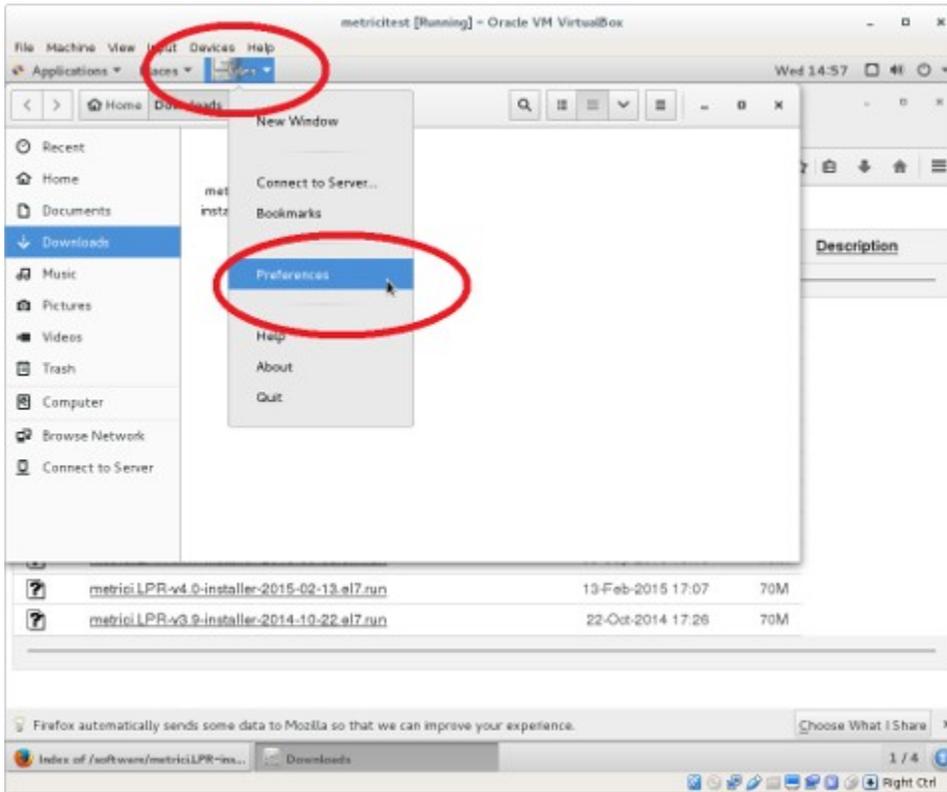
Open the folder where the file was saved (right click – Open Containing Folder).

You need to change the administration rights for the file (right click on the file- **Properties** menu).

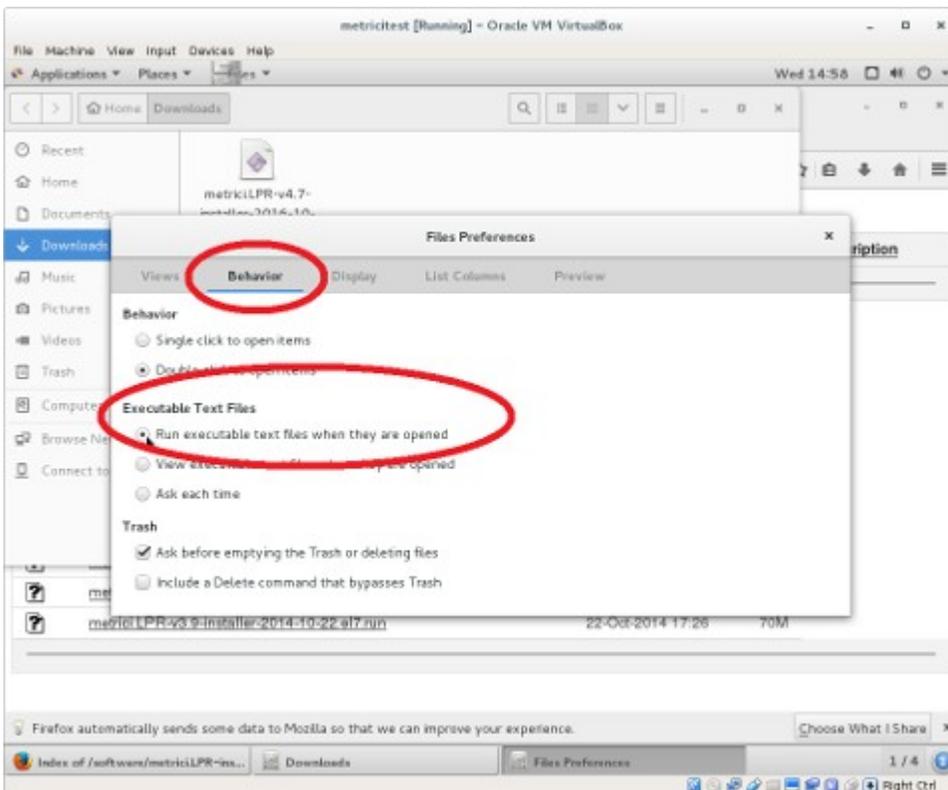


In the **Permissions** tab, check the option **Allow executing file as program**.





You access the menu **Files**, submenu **Preferences**, on the Operating system menu bar



In the **Behavior** tab, check the option **Run executable text files when they are opened. Install program as any**

CHAPTER 5 TA SETTINGS

5.1 THERMAL ANALYZER INITIATING

When login to **Metrici Interface**, you will see a list of all Metrici Modules. You will only have access to the module you bought licenses for. The others will be blocked. After the install the first login in localhost or on a remote server will be made with the credentials

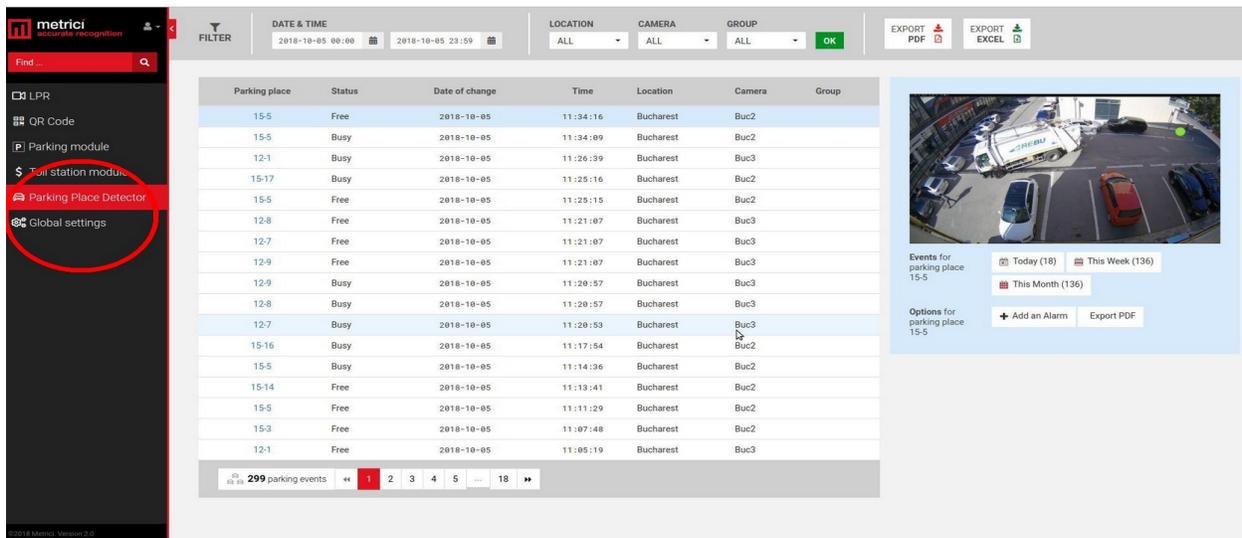
User: metrici@metrici.ro
Password: metriciadmin

Metrici recommends changing this password after log in.

After that any number of users and passwords can be created or modified. See Global Settings, Users Administration Chapter.

NOTE

No matter what module you manage, the first settings will be made in Interface Global Settings.



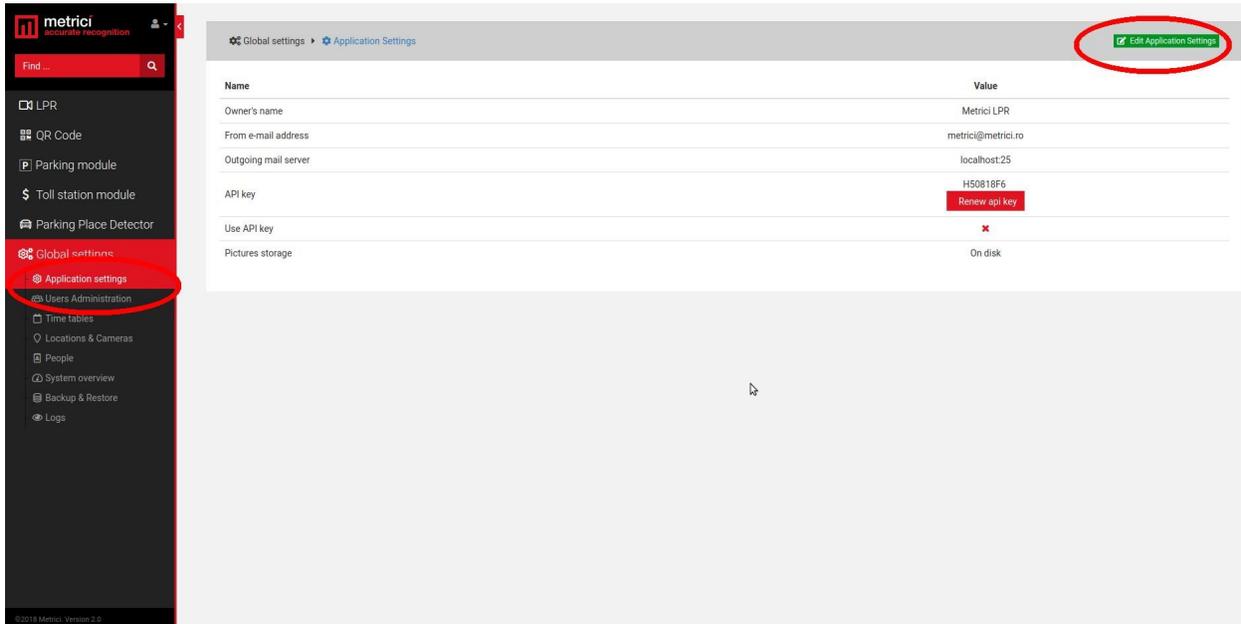
The screenshot shows the Metrici interface. On the left is a sidebar with a search bar and a list of modules: LPR, QR Code, Parking module, Toll station module, Parking Place Detector, and Global settings. The 'Global settings' option is circled in red. The main area displays a table of parking events with columns for Parking place, Status, Date of change, Time, Location, Camera, and Group. Below the table is a pagination bar showing 299 parking events. On the right, there is a camera feed of a parking lot and a summary of events for a specific parking place (15-5), including counts for Today (18), This Week (136), and This Month (136). There are also options to 'Add an Alarm' and 'Export PDF'.

Parking place	Status	Date of change	Time	Location	Camera	Group
15-5	Free	2018-10-05	11:34:16	Bucharest	Buc2	
15-5	Busy	2018-10-05	11:34:09	Bucharest	Buc2	
12-1	Busy	2018-10-05	11:26:39	Bucharest	Buc3	
15-17	Busy	2018-10-05	11:25:16	Bucharest	Buc2	
15-5	Free	2018-10-05	11:25:15	Bucharest	Buc2	
12-8	Free	2018-10-05	11:21:07	Bucharest	Buc3	
12-7	Free	2018-10-05	11:21:07	Bucharest	Buc3	
12-9	Free	2018-10-05	11:21:07	Bucharest	Buc3	
12-9	Busy	2018-10-05	11:20:57	Bucharest	Buc3	
12-8	Busy	2018-10-05	11:20:57	Bucharest	Buc3	
12-7	Busy	2018-10-05	11:20:53	Bucharest	Buc3	
15-16	Busy	2018-10-05	11:17:54	Bucharest	Buc2	
15-5	Busy	2018-10-05	11:14:36	Bucharest	Buc2	
15-14	Free	2018-10-05	11:13:41	Bucharest	Buc2	
15-5	Free	2018-10-05	11:11:29	Bucharest	Buc2	
15-3	Free	2018-10-05	11:07:48	Bucharest	Buc2	
12-1	Free	2018-10-05	11:05:19	Bucharest	Buc3	

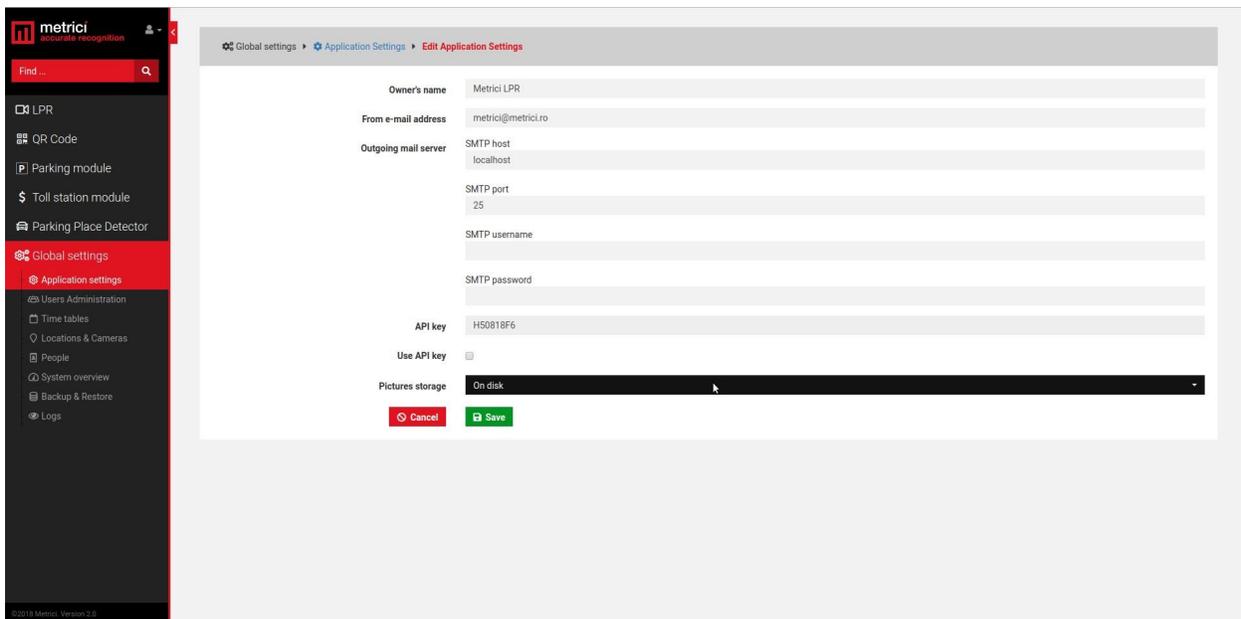
Fig.1

5.2 APPLICATION SETTINGS

In this menu you set the name of the owner. Also, you add the email address from which the alarms are sent.



After you click the green button upper right, a menu like next one is opened.



Owner's name is the name of the company or person who owns the Metrici system and has administration rights for it. "From email address" field is the address from which an email is sent when set in the Interface. This has to be a valid e-mail address.

Outgoing email services and SMTP ports are filled as they are known by the owner, as some servers.

Outgoing mail server: localhost

SMTP host: set to 25

Metrici knows natively to send emails from localhost, but there are servers who refuse to receive mail without authentication. In that case you have the options to send mails via SMTP. You will fill in the data of the remote mail server as they were set for this one.

SMTP port

SMTP username

SMTP password

API Key is an auto generated one. You will need this in case of a third application integration.

5.3 USERS ADMINISTRATION

Any number of users can be added to the system. Each one can have its own administration rights. When a user is inactive, he will not be able to log in any more in the interface. However, it may be made active again by **another user with administration rights**.

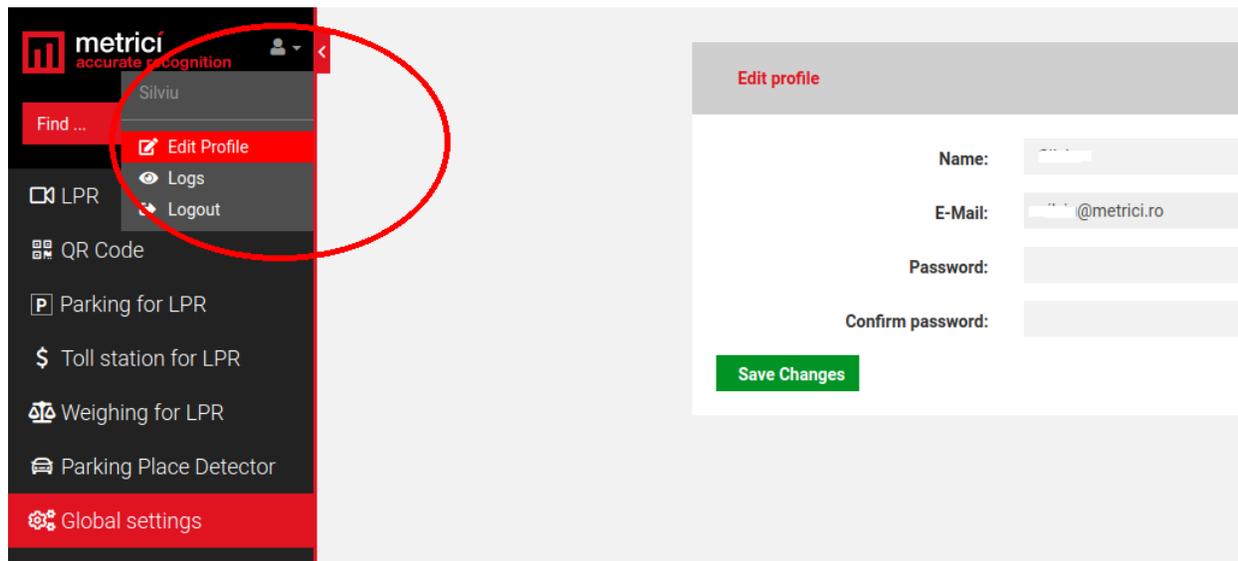
When a new user is added, choose a name for it, designate an email address, choose the language in which the menu is displayed, set a password and confirm it. These data will be used by that particular user when login.

Finally click on the sections and locations for which this user has administration and viewing rights, or just viewing rights.

At the default first page, choose on what menu or sub-menu you want this user to see first every time he logs in to Metrici Web Interface.

A user already created can change his password, after login, by click on the human symbol, upper left menu. Choose Edit profile and write a new password and confirm it.

An administrator of the system can also change the password for a different user in the same way.



5.4 TIME TABLES

A time table is designated to apply some rules or settings on a specific hourly/daily/weekly program. To be more flexible in setting, a user can choose to have alarms or actions made only when special conditions are met.

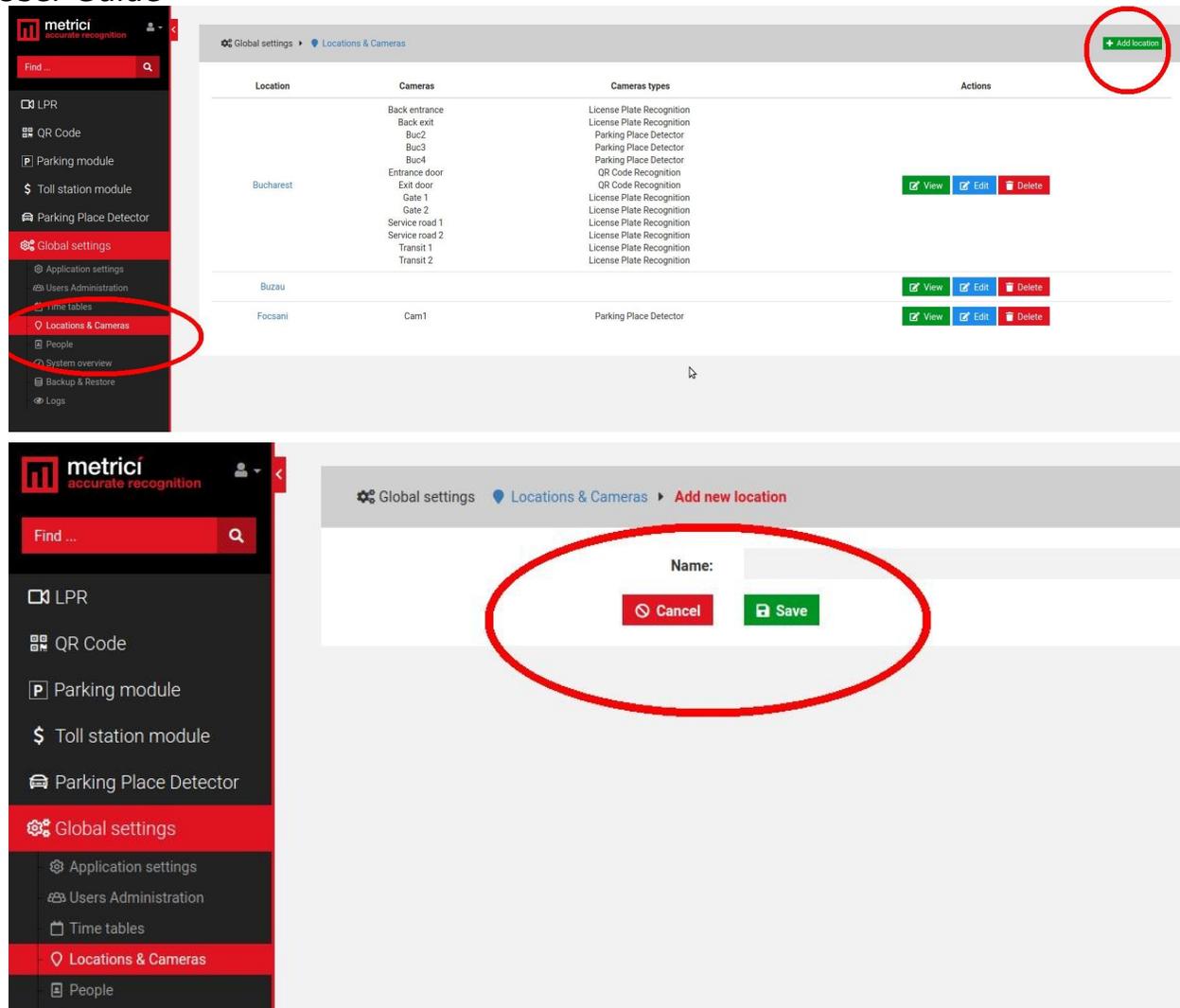
This setting is applied for now for the Metrici LPR modules. For a better use and understanding of this feature, see the other modules guide settings.

For example, a user can set to receive an alert email only when certain conditions are met.

Generally, the time table is used in Parking module, also, for toll stations, but also for QR code recognition engines.

5.5 LOCATIONS & CAMERAS

For a new location to be created, choose sub-menu Locations&Cameras and add a new location, click on the green button, upper right of the screen. Choose a name for it and Save.



After a location has been created, click on its name or on the “Cameras” green button to add new cameras. The **Edit button** will only let you change its name and company information. You must create a location and add a camera in order to access all menus and enjoy all the features.

Add a new camera or cameras to a location, by click on the **Add Camera** button on the upper right. Each camera you add to the system has some features.

Name: Choose a name for this camera to easily identify it and locate it

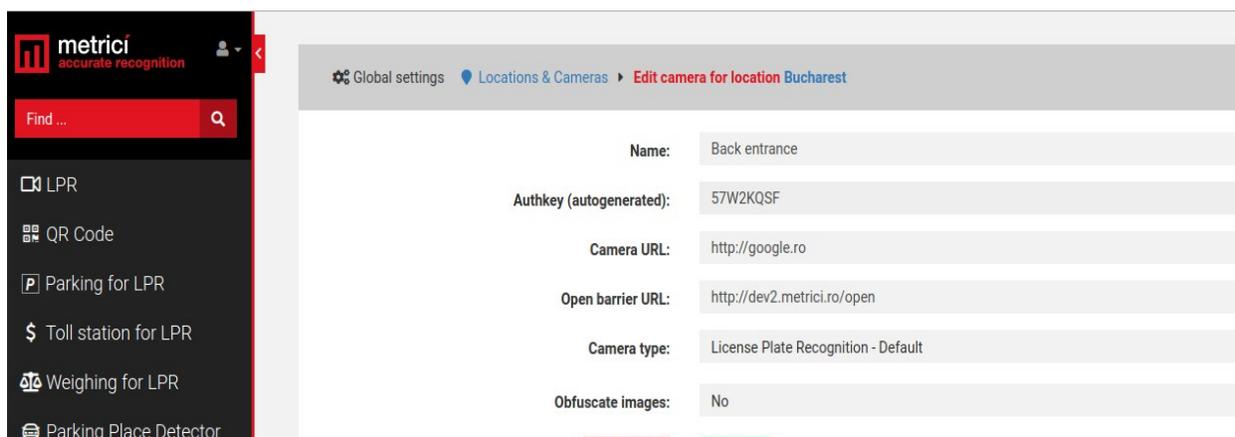
Authkey (autogenerated): This field is automatically filled by Metrici software when a camera is introduced in the interface. You will need this **key** and the **ID** in the **Metrici Control Panel** to integrate the camera with the **Web Interface** and to have the videostream in live view and all the other functions.

Camera URL: Is the IP address of the camera

Open barrier URL: is useful for LPR applications to open a barrier from live view, with a click on the screen. This is the IP address of the barrier connected to this particular camera. **This function will not be used for Thermal Analyzer. The function can be replaced by alarms setting.**

Also, the function is available in the detection engine itself where it takes the decision to make an action depending on the temperatures

Camera Type is the application for which this camera is used for. Choose the appropriate one- license plate recognition, parking place detector, QR code recognition etc. Keep in mind that if you don't select the correct application, you won't see that camera and settings in your module.

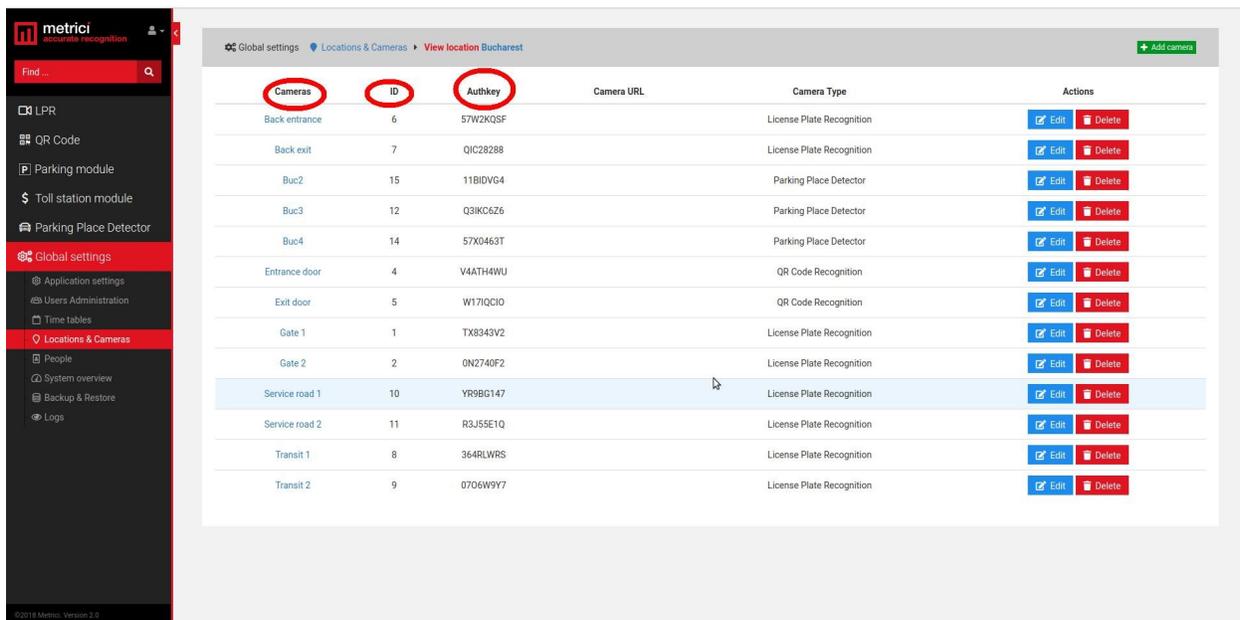


Obfuscate images: Is the Metrici feature that enables you to be GDPR compliant. For each camera in a location you can choose to blur the event photo recorded by Metrici. From the moment this option is checked, all photos for that camera will be blurred. The option can be unchecked at any given time, but the already altered images will remain as such.

After all the cameras were added to the system you will see a list like the in the next image. The ID and the authkey for each camera are mandatory to be added to the **Metrici Control Panel** where the detection engines are located, on the server which runs the Metrici software. This can be on the same machine or other one.

When the **ID** and the **authkey** of the cameras are added to the Metrici engines, this will facilitate the communication between the engines and the Web Interface. If this step is omitted, no data will be recorded in database and the system will not work. In

fact it will detect the people/objects etc, but no data will be sent to database and web interface.



All cameras on the system can be later edited or deleted, as the user chooses. Its type can be changed or the URL etc.

5.6 LICENSES

You can see here what type of licenses you have activated on your interface. The ones you don't have access to have the explanation text crossed out. You can update your license anytime with new modules and engines.

5.7 BACKUP AND RESTORE

You have two options for backup:

1. Export general settings

In this case you will save all the data set in Metrici Interface, but without the events. You will be able to save this way info about all the users, their administration rights, the locations name and settings of the cameras etc.

2. Full export (entire database) will save an SQL file with all the data as the first one plus the events list, but without the photos from the moment of detections.

In case of backup click on restore button, browse to a folder and choose an SQL file saved as the steps described before and click on Save.

5.8 LOGS

The user with administration rights can view here all the logins of any user and the changes one made within the system or menus. You can search events by date, user or time interval. You can export in excel format the search results.

CHAPTER 6 THERMAL ANALYZER MODULE

6.1 THERMAL EVENTS

This menu includes a list of all the changes intervened for any location. Anytime number of objects in an area changes, an event is saved in database and can be accessed in this menu. Several filters can be applied from the dedicated bar on top of the page- see next photo.

These settings refer to a time interval, the location or the locations you want to see, camera or the group you want to monitor and finally the object detected.

Any result, or the results of a search (filter) can be exported as a PDF file, XLS file or CSV.

A PDF file will contain a list of the selected search with all the data , along a still image of the moment the event occurred. If a companion camera is attached, the photo from this one will be saved too. An XLS file will include a list of data events, without the photo captures.



Each event has some info attached to it in the list: the zone where the event occurred, the counter, respectively how many objects were detected during that particular event, what kind of objects (people heads, boxes, animals etc), date and time when the changing status event occurred, location and the camera where the change took place in, as in the photo below.

Zone	Counter	Objects	Date of change	Time	Location	Camera
41-1	0	People Heads	2020-06-15	10:41:14	Test	Term1
41-1	1	People Heads	2020-06-15	10:41:04	Test	Term1
41-1	0	People Heads	2020-06-15	10:40:49	Test	Term1
41-1	2	People Heads	2020-06-15	10:40:40	Test	Term1
41-1	1	People Heads	2020-06-15	10:40:27	Test	Term1

5 thermal analyzer events

On the right side of the screen some additional info about the selected event and some actions that can be made.

For a selected event, a user can see the number of events for that zone in that day/ on that week and for the month. The buttons are interactive and can be clicked and the list on the left will change to the filter selected here: E.g. events for that particular zone for a day/week or month- you will see a list with the events chosen.

Some options are also available. Add an alarm for that zone, or export the event as PDF – When create an alarm, remember to add conditions to it, so to work.

one	Counter	Objects	Date of change	Time	Location	Camera
41-1	0	People Heads	2020-06-15	10:41:14	Test	Term1
41-1	1	People Heads	2020-06-15	10:41:04	Test	Term1
41-1	0	People Heads	2020-06-15	10:40:49	Test	Term1
41-1	2	People Heads	2020-06-15	10:40:40	Test	Term1
41-1	1	People Heads	2020-06-15	10:40:27	Test	Term1
41-1	0	People Heads	2020-06-12	19:23:02	Test	Term1
41-1	1	People Heads	2020-06-12	19:22:58	Test	Term1
41-1	0	People Heads	2020-06-10	19:08:10	Test	Term1
41-1	1	People Heads	2020-06-10	19:08:06	Test	Term1
41-1	0	People Heads	2020-06-10	19:04:02	Test	Term1
41-1	1	People Heads	2020-06-10	19:03:28	Test	Term1
41-2	0	People Heads	2020-06-08	18:44:16	Test	Term1
41-2	1	People Heads	2020-06-08	18:44:00	Test	Term1
41-2	0	People Heads	2020-06-02	20:45:58	Test	Term1
41-2	1	People Heads	2020-06-02	20:45:39	Test	Term1
41-1	0	People Heads	2020-06-02	20:45:39	Test	Term1

Events for thermal analyzer 41-1

Today (5) This Week (5) This Month (35)

Options for for thermal analyzer 41-1

+ Add an Alarm EXPORT PDF

Events for thermal analyzer 41-1

Today (5) This Week (5) This Month (35)

Options for for thermal analyzer 41-1

+ Add an Alarm EXPORT PDF

6.2 HOT OBJECTS

As the name suggests, in this menu you can see only the events beyond a certain temperature (or in a temperature interval). **These limits are to be set in Control Panel and each engine can have its own setting.**

The events here are a detail of the changes from previous menu: THERMAL EVENTS.

Each event registered here will have a temperature associated and will be marked on photo witness. For example in a group of people, there will be marked only the head with the temperature beyond the set limit.

Temperature	Zone	Objects	Date of change	Time	Location	Camera
37.83	41-1	People Heads	2020-06-15	10:41:04	Test	Term1
38.2	41-1	People Heads	2020-06-15	10:40:40	Test	Term1
38.01	41-1	People Heads	2020-06-15	10:40:40	Test	Term1
38.09	41-1	People Heads	2020-06-15	10:40:27	Test	Term1

4 thermal analyzer events



One can export these kind of events as PDF file or an entire list, as in Thermal Events.

6.3 LIVE VIEW

As the name suggests, in this page you can set what cameras you want to watch live.

You can add or delete cameras as you want from this menu, as long as they are introduced in **Global Settings, Location and Cameras** and set as Thermal Cameras and you, as a user, have **viewing rights** for this **menu and cameras**.

To add more cameras, choose the one you want from dropdown menu and click on ADD LIVE VIEW button, upper left.

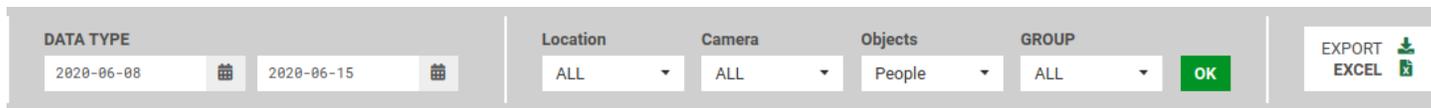
On a live view image click on the monitor diagram to maximize the view (full screen) or on X to close it. When you minimize an image that was made full screen, you will return to the view of all cameras set in live view.

By default the live view field is automatically filled in by Metrici in **Control Panel** with an URL such as http://localhost/io/ta/live_view.php. If the video will be sent and visualized to another address change localhost with another address or IP, for example http://metrici.ro/io/ta/live_view.php

6.4 REPORTS

In the reports section, a user can choose from three different scenarios, with the usual filters: a time interval, a location for which a report will be generated, the camera or cameras, the group, and the kind of objects for which to generate reports.

These are the filters you can select for the reports menu.



The screenshot shows a filter menu with the following sections:

- DATA TYPE:** Two date pickers showing '2020-06-08' and '2020-06-15'.
- Location:** A dropdown menu set to 'ALL'.
- Camera:** A dropdown menu set to 'ALL'.
- Objects:** A dropdown menu set to 'People'.
- GROUP:** A dropdown menu set to 'ALL'.
- OK:** A green button to confirm the selection.
- EXPORT EXCEL:** A button with a download icon to export the data.

Tip: If you don't want a report from all the cameras in a location but only for a few of them, you can create a group for the cameras in that section and choose a report for that particular group. SEE THE MENU GROUP in this guide.

Note: Depending on the size of the database and the report you want to generate, the display can take a while, for the calculation to be made.

Hot objects each hour will generate a report with the hot objects detected each hour in a location, a camera, or a group for selected time interval-one day. This is how a 24 hour report shows like for a location:



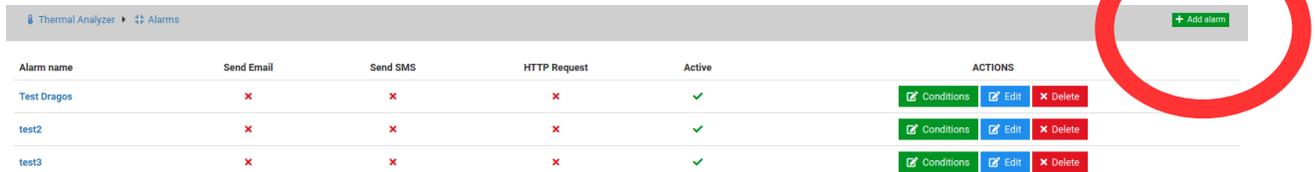
Hot objects each day will generate a report with the detection for the current week, by default, or another time interval set in the filter.

Hot objects each month will generate a graphic with the detection for the selected input data. By default, the system will generate a report for the current year, from the beginning of the year to today. These data can be changed in the filter menu.

6.5 ALARMS

Each event/ zone/ user can create each own alarm to be informed when a certain event occurs and if one condition or more conditions are met.

To begin create an alarm click on ADD ALARM green button upper right .



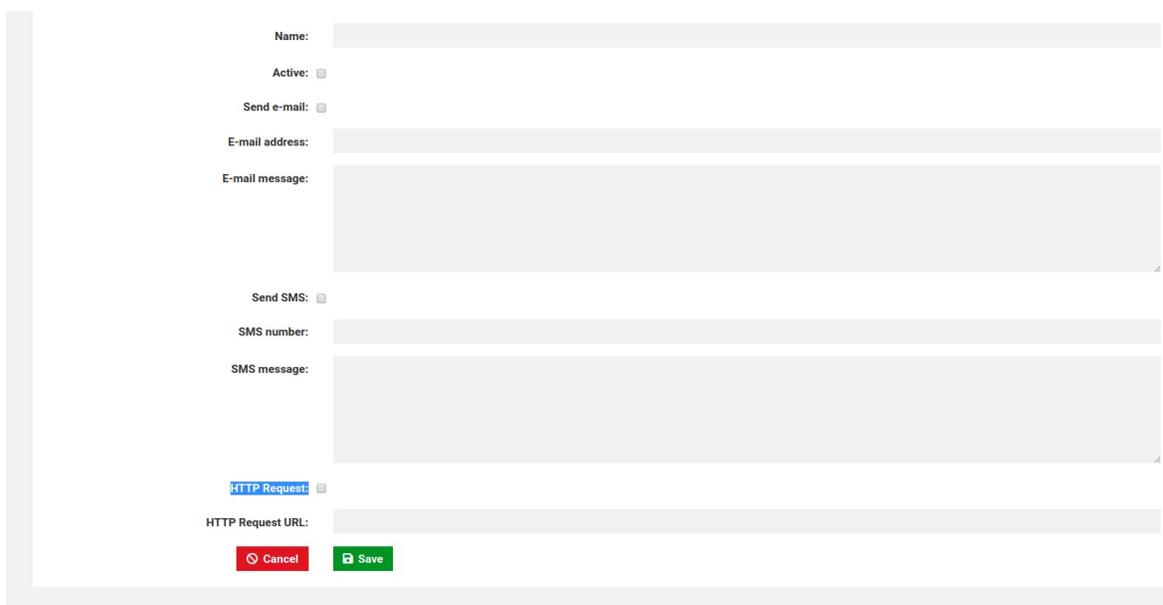
Alarm name	Send Email	Send SMS	HTTP Request	Active	ACTIONS
Test Dragos	x	x	x	✓	Conditions Edit Delete
test2	x	x	x	✓	Conditions Edit Delete
test3	x	x	x	✓	Conditions Edit Delete

The alarm can be set to be active or not and can be of two types: an email alert or a SMS message on a phone number if a GSM module is attached to the server.

E-mail address field will be filled with the address to which the mail will be sent. Also you can personalize the message that will be delivered.

The SMS option:. Click on Send SMS box, add in the phone number to which the message will be sent and write the message that will be delivered.

More phone numbers can receive a SMS alert, but these numbers will have their own alarm set. No multiple phone numbers can be set in one alarm.



Name:

Active:

Send e-mail:

E-mail address:

E-mail message:

Send SMS:

SMS number:

SMS message:

HTTP Request:

HTTP Request URL:

HTTP Requests refer to the fact the alarm can trigger an URL when set in this mode so it can activate a barrier or other external hardware system.

HTTP Requests URL - is the address Metrici accesses for this particular alarm.

After an alarm was created (has a name) and a type (SMS, email), **you will create the conditions in which this alarm is active**. Conditions are the specific parameters that have to be met for the alarm to activate: send email, send SMS, activate a hardware etc.

Click on **Conditions green button** to introduce new conditions for that alarm. The Edit button will let you change its name, whether is active or not etc.

Introduce as many conditions as you want and save them. In the next image you will see how an alarm shows like: in this case the alarm is set when zone 41-1 has a temperature reach above 37C.



IF	Condition	Actions
	Zone = (Term1) 41-1	Edit Delete
AND	Temperature > 37°C	Edit Delete

Keep in mind that for each condition you have a degree of comparison.

First condition for an alarm to be set is the establishment of an alarm item: this can take the form of Location, Group, or Zone. For these items you will have next different conditions to be added.

When a group is selected, you will have to choose for what group the alarm is active as the next condition.

Finally, when a zone is selected as the first item, you will set next which zone it is.

“=” a condition belongs to, is equal to a specific value

“!=” this condition means that the setting is different/ not included in Alarm Item

“<” smaller than (is usually used for the alarms with time units)

“<=” smaller or equal to (also used for the alarms set with time units or percentage)

“>” bigger than ... usually set for alarms set in timestamps

“>=” bigger or equal to a time unit, usually

For an alarm to be saved, finally you select a parameter to apply for.

If alarm item is set to Location, you choose a location at the last field

If Alarm Item is Group, choose a degree of comparison and the group for which this rule is applied

One can set an alarm to be active for example, when the counter for zone 23-4 is more than 0. So if an object appears in that zone, the alarm will be activated.

6.6 SETTINGS

Locations and cameras. Register Thermal Zone

For the events to be saved in database and viewed in the interface, you will have to REGISTER the zones in the interface.

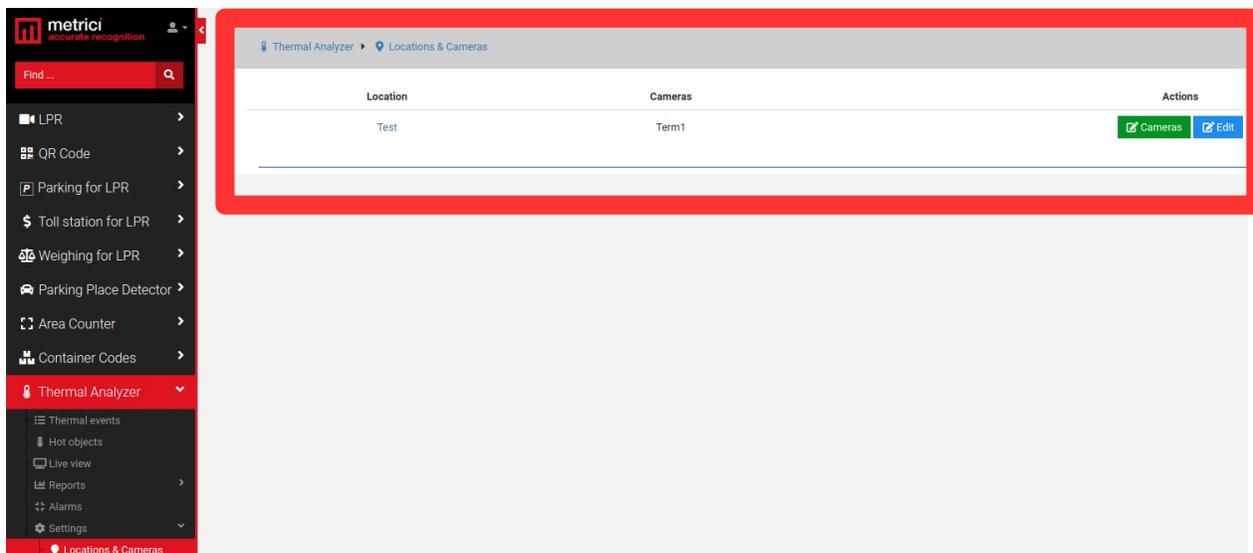
This is a Metricí feature to allow a better managing. For each zone you create in the detection engines and Control Panel, you will access this menu to register them or not.

Only locations introduced in Global Settings will appear in this menu. For a location to be displayed in Thermal Analyzer, this has to have at least one camera assigned.

IMPORTANT

After the zones were created in Metricí Control Panel, these must be registered in this menu. Without this step, the system will not work properly. By this operation you tell the system that a zone is available for detection. Later on, on same menu you can unregister it.

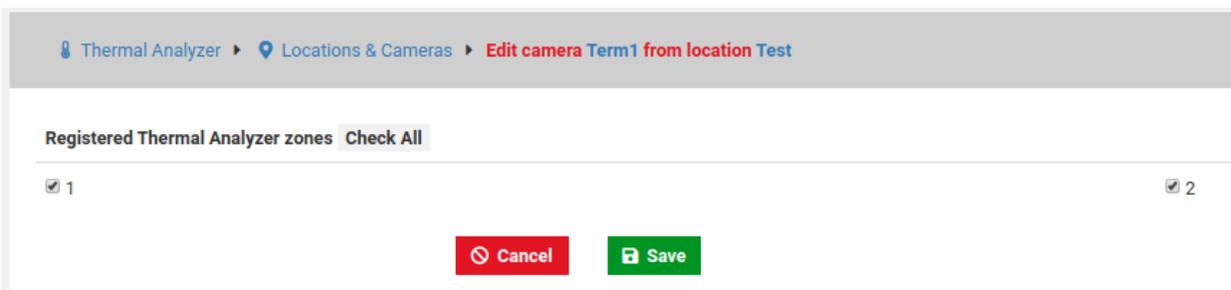
To register a zone or all zones for a location go to Thermal Analyzer **module menu** and choose **Locations & Cameras**.



Choose a location from your list and click on its name.

From the **list of cameras** in your location, **choose one for which you want to register the zones.**

From the **list of zones** allocated to that camera, **choose the ones you want to register or click on “Check all” button to activate them all.**



In case a zone becomes unavailable due to reconfiguration, this can be unregistered, so not to be taken into account when making calculations or registering events.

Groups

A group is a format of multiple zones that correspond to a specific characterization, set by the administrator.

METRICI Thermal Analyzer v1.0 User Guide

A group can include as zones from any number of cameras. Not necessarily all the zones set for a camera must be introduced in a newly created group. You can choose only one zone from a camera or more.

For example, you monitor a location AIRPORT, You have 20 entries and 20 exits. Each one has a camera and a dedicated detection engine. For each camera you can set one zone or 2 or three or how many you consider necessary. So you may end up with hundreds of detection zones. But you want a group only for the entries. Or for some of them. So you will choose the zones you are interested to create a group.

You will then have the possibility to see reports and data for that group no matter how many cameras and zones.

In Group menu, on location list, click on a location's name to view or add a group for that. Click on Add Group green button upper right of the window.

After a group was created go to the list of groups and click on a group name or View green button.

From the list of available zones on that location, click on the one that you want to add to that group.



ID	Group Name	Object	Number of zones	Actions
1	Test Dragos	People Heads	2	View Edit Delete

The group can be edited by clicking its name or View button. You can add or delete zones for a group at any time.

From the list of zones available in a location, from all cameras, **choose the ones that suit the characteristics of your group.**

The events registered by a group can be exported from “Thermal Events” menu, selecting the group name from filters menu.

6.6 GENERAL

Thermal Analyzer > Settings Edit Settings

Name	Value
Delete events after [days]	90
Events counter	65 events on database

You can set in this menu how long the events to be kept in database and see how many there are.

CHAPTER 7

METRICI CONTROL PANEL SETTING AND USING

Metrici Control Panel application is in fact a unit for processing detection applications/ engines as they are called by Metrici and data gathered by video cameras.

The data processed in this application will be send for recording and reporting towards the **Metrici Interface**, where they can be easily accessed in a friendly format. The detection applications can work independently, but **Metrici Control Panel** makes sure that the engines are not jamming and are working as they are meant to do. Also, this is where you can set, change or later execute many useful options, as we are about to explain in this chapter

Metrici Control Panel application will launch automatically each time the computer is on.

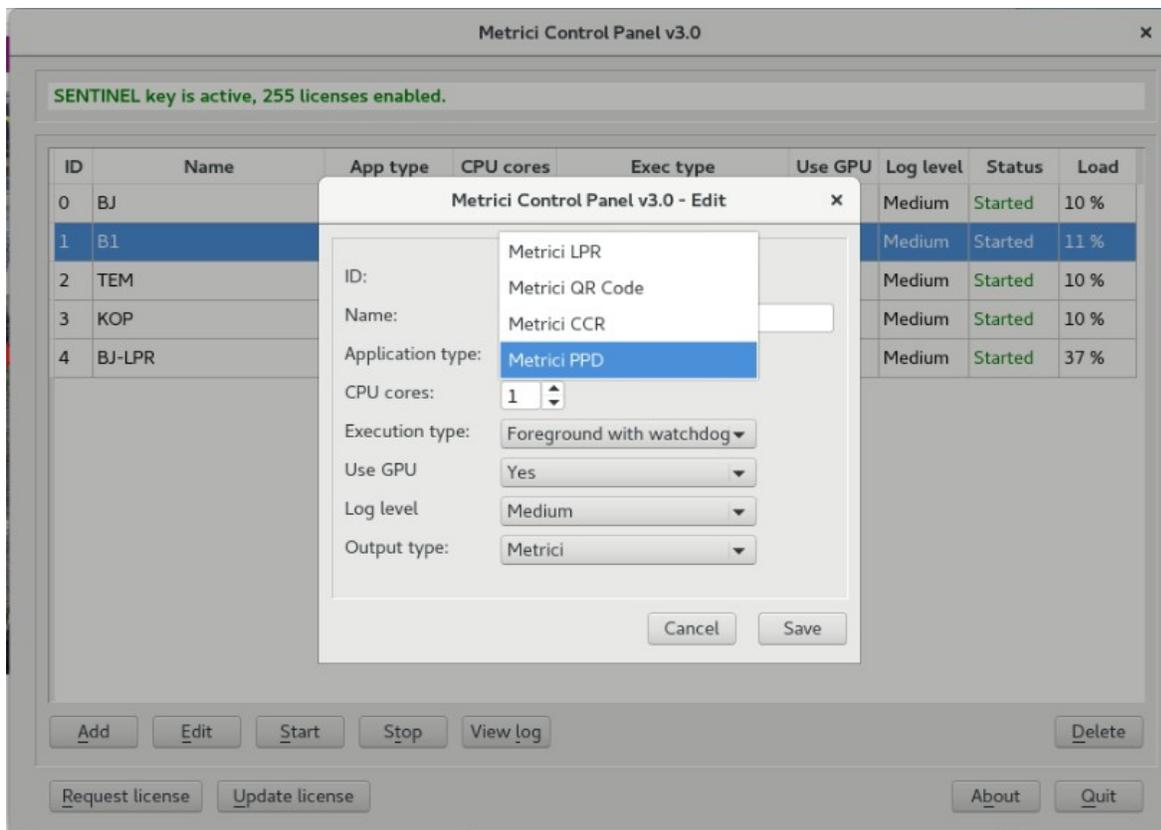
ATTENTION!

There are several Metrici engines (applications) that you can choose from- LPR, PPD, QR Code and Container Code Recognition, Thermal Analyzer, Area Counter.

BE AWARE ANY TIME YOU ADD A CAMERA AND A DETECTION ENGINE TO PROPERLY CHOOSE THE APPLICATION IT IS USED FOR!!!!

You can add a new detection engine by using the **Add** button. When adding a new application, you set the CPU and the number of **processing cores** for each camera. The more processing power for each camera, the better the detection, and the application will operate more frames in Ireal time.

Thermal Analyzer relies heavily on GPU so the more performant it is, the better and faster the application works. Also, you can add more engines on the same server.



When first adding a camera in Control Panel, an ID will automatically be assigned to it by Metrici. You can also choose a name for it to better identify it later on the list.

You must then choose what for what application type this camera is used for: Metrici LPR, Metrici QR Code, Metrici CCR or Metrici PPD, Area Counter, Thermal etc. Set the CPU cores and the execution type. Metrici recommends for installing and first setting using Execution Type Foreground with Watchdog.

At a later date, this working mode can be changed and we recommend doing it to Background with Watchdog as it needs less resources. The four possible settings for the detection software are:

- ➔ **Background:** the application will operate without showing the results of the detection on screen, but will send the data to **Metrici Interface**. This mode saves processing power.
- ➔ **Background with watchdog:** is the same way as Background, but the application will automatically restart in case of reboot or in case the computer is shut down.
- ➔ **Foreground:** the application detection is visible. This mode is especially used when installing the system to check the position of the camera, settings etc.
- ➔ **Foreground with watchdog:** the same as Foreground, but the application will automatically restart when shut down.

Metrici recommends a working mode set at **Background with watchdog**.

GPU - As for Parking Place Detector, Metrici recommends using a Graphics Processing Unit -GPU so Enable GPU.

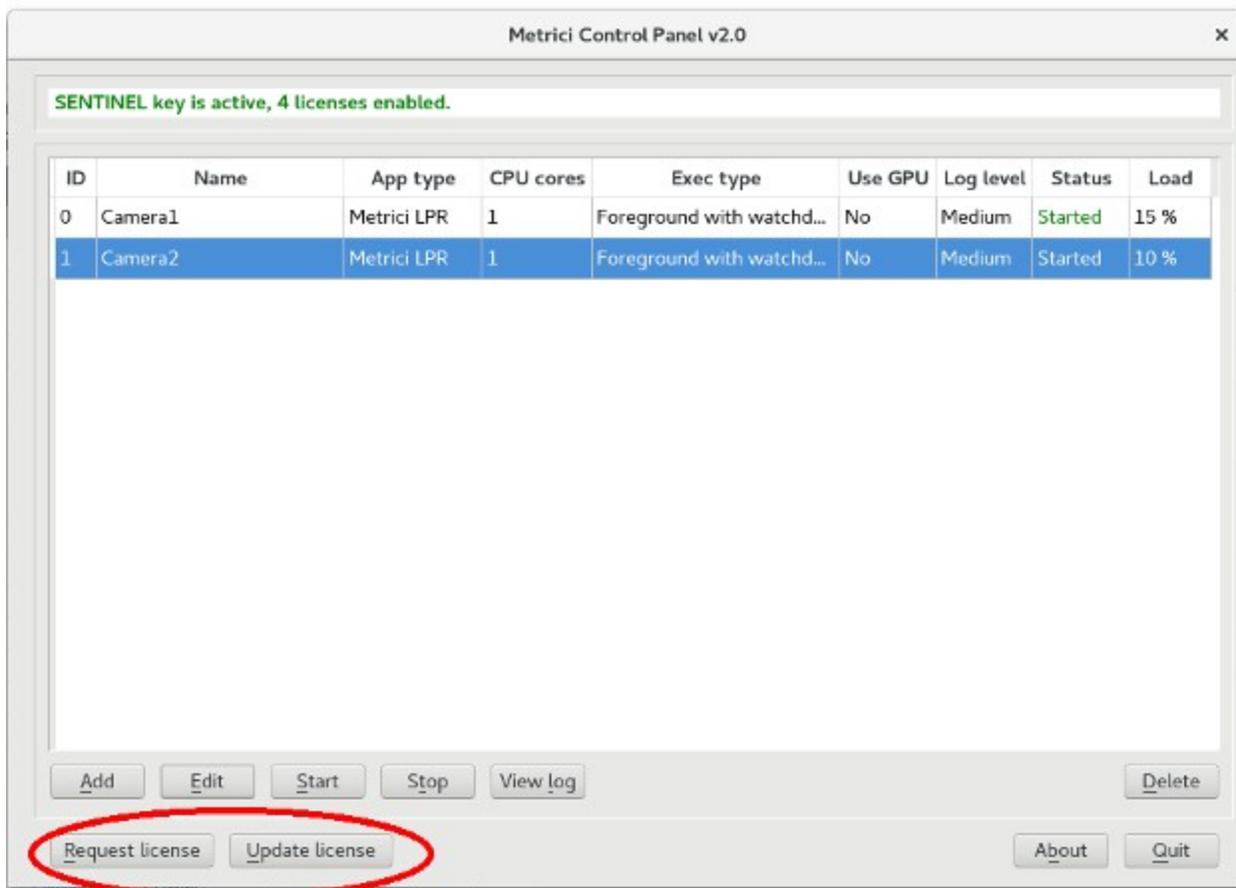
Log level- Metrici keeps track of all its activity, the communication with cameras, Interface or external systems. When a malfunction occurs you can check these logs to view what happened, so is better to have log level on Medium, at least.

REMEMBER! In case that more cameras will be connected to Control Panel, the settings in this chapter will be applied for each one of them, except license activation, which is made individually for the PC/server unit.

7.0 License activation

At the Beginning of the installation or after you've done all the settings in Metrici Control Panel you may want to activate your license. In Metrici Control Panel, click on Request license. In the new window fill in the product key that is written on the license certificate received from Metrici. Press OK.

This will generate a c2v file that will be saved on computer, usually on desktop.



Go to <http://support.metrici.ro/activate/> . In the designated fields write a valid e-mail address to which you have access and a phone number. Load the previously generated c2v file by pressing “Load the license request file”. In the end press “Request activation”.

It is important that you have access to the mail you provided because you will receive there the info for activation.

In about a two hour interval you will receive an email answer from Metrici such as

Activation license for Metrici

Hello, you can download activation file at:

<http://support.metrici.ro/activate/keys/8457847584788928ks.v2c>

Product code: 7866869_df93mo398-4k12e9i-29038-a9879-876nmcu6687.

You will download the file from that link, save it on computer and click on “Update license” in Metrici Control Panel. You will load there this file received from Metrici and Open.

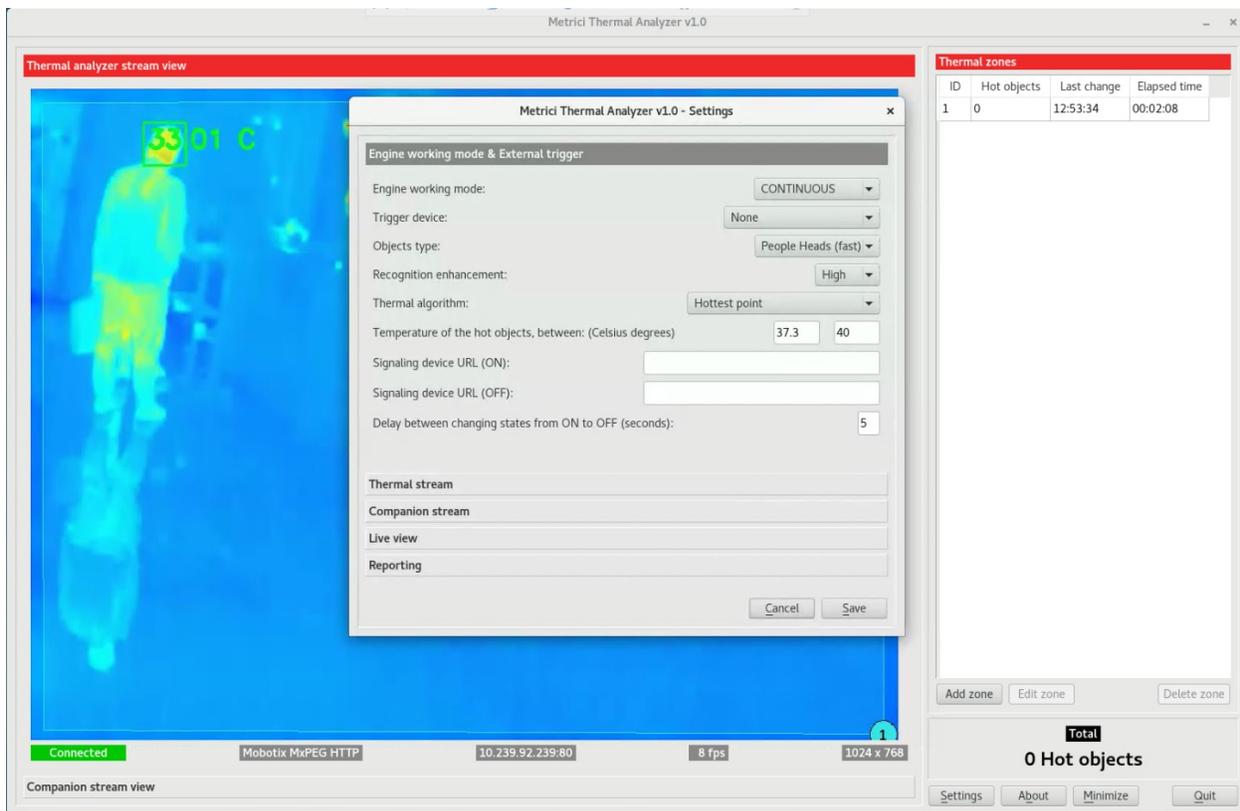
IMPORTANT: The procedure is to be followed for each server with Metrici. If you have, let's say, 10 servers with Metrici, you will follow this license activation procedure for each one of them.

7.1 Engine working mode & External Trigger

After you add the camera and set it to foreground with watchdog, press the **Settings** button to begin initializing it.

In this menu, you set how the detection works and you have two options **Continuous or Trigger**. (Continuous: Metrici is always looking for objects to detect or at trigger- meaning Metrici receives "a request" to start the detection for objects/people/animals etc.

Keep in mind that when setting the detection with trigger you can also choose how many seconds the engine is trying to detect the objects. So a 3 seconds rate will mean Metrici will analyze all the frames transmitted during three seconds trying to detect objects.



If you set the engine to be activated by **external trigger**, choose who sends the trigger and on what port- Barix or Metrici Virtual Trigger. Barix is a LAN Controller with a special developed Metrici firmware which is very versatile and used in so many applications- see the Barix Integration manual for more details.

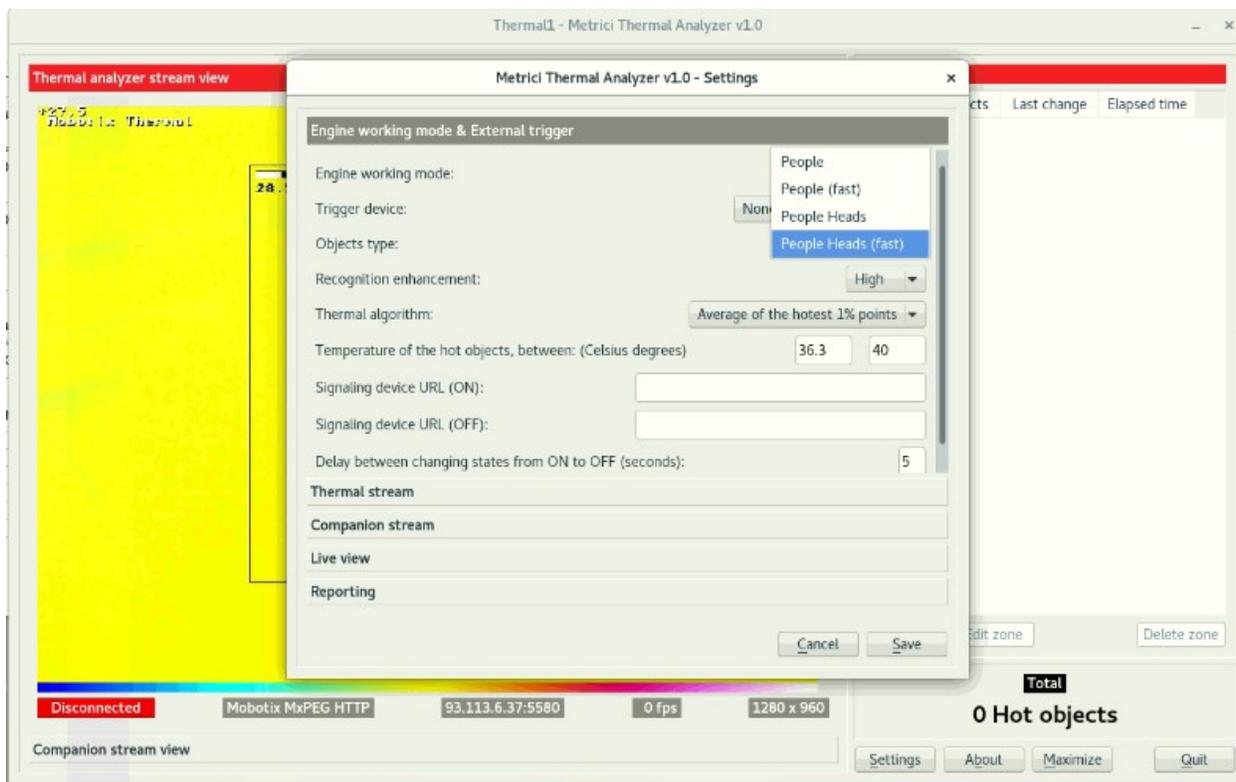
Also in this setting you can choose The **Recognition Enhancement**. See picture above.

What this will do is increase the accuracy of detection from Low to Ultra. The higher the precision, the more processing power is needed but the precision is much better. A normal setting would be just enough in most cases.

The smaller the objects to detect are in the video stream, the greater the accuracy must be so you will choose “high” or even “ultra”.

A **Metrici virtual trigger** is a copyright patent of Metrici when one detection engines is sending signals to activate other Metrici engine and so on. This is useful in applications where a cross checking is used but not only on that case.

Objects Type: You set what type of objects Metrici is searching for in the video stream: people, people heads, animals, boxes, cars etc.



For now you can choose from a dropdown menu:

People

People (fast)

People heads

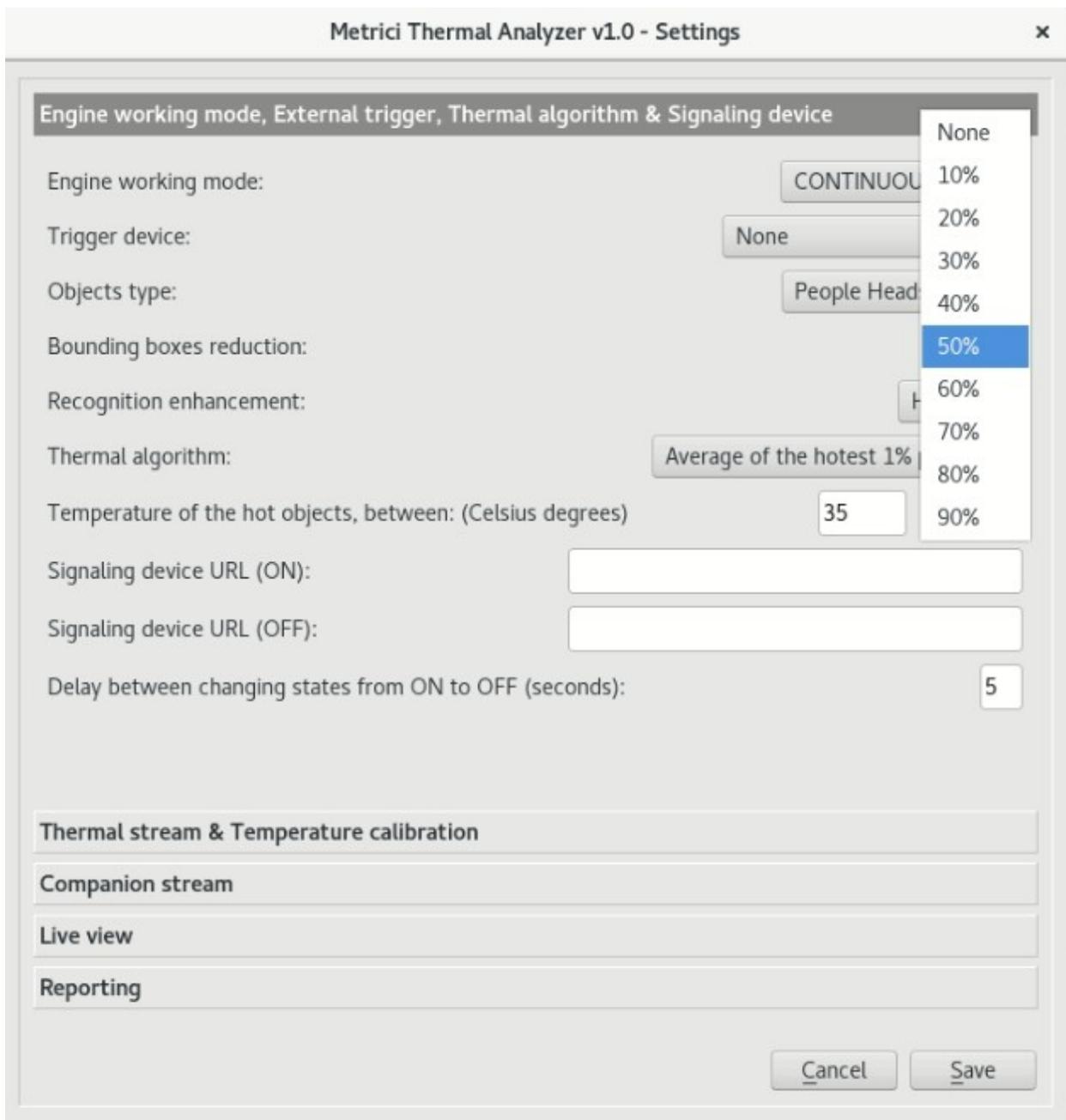
People heads (fast)

The **People** menu recognizes people with all the body (the head may be absent or not from the image and the humans are still recognized)

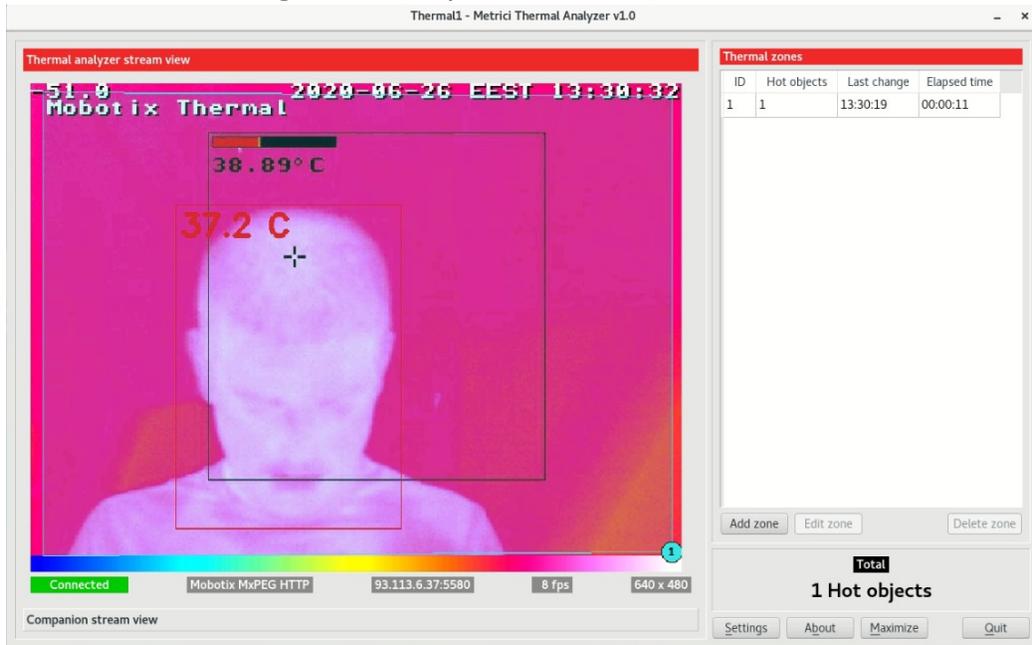
People heads will only recognize the heads. If this is not present in the frame no result is delivered. However for thermal images this is the solution to use, as normally head temperature is the right one.

Fast refers to the Metricí deep neuronal network (AI). A fast one delivers 8 times faster results at the same recognition enhancement value but the results are not so accurate for small objects or that are obscured by some others. However for Thermal Analyzer, as people are quite large in the frame **People Heads Fast** delivers the best results.

Bounding Boxes Reduction: This menu refers to the part of the image taken into account when calculating the object’s temperature. Metricí works by “drawing” a bounding box around the recognized object (head in our case). This is where it calculates the temperature, but it may include parts of surrounding. When narrowing down the bounding box, the results are more accurate. The percentages in the next image are the options to choose from by the user. By default this setting is left to none, but Metricí tests show that a 40% percent reduction is the closest to best.



This is how the bounding boxes around a head show like. Note that Metrici will calculate temperature on that boxes alone depending on this percentage you choose and the thermal algorithm (explained below).



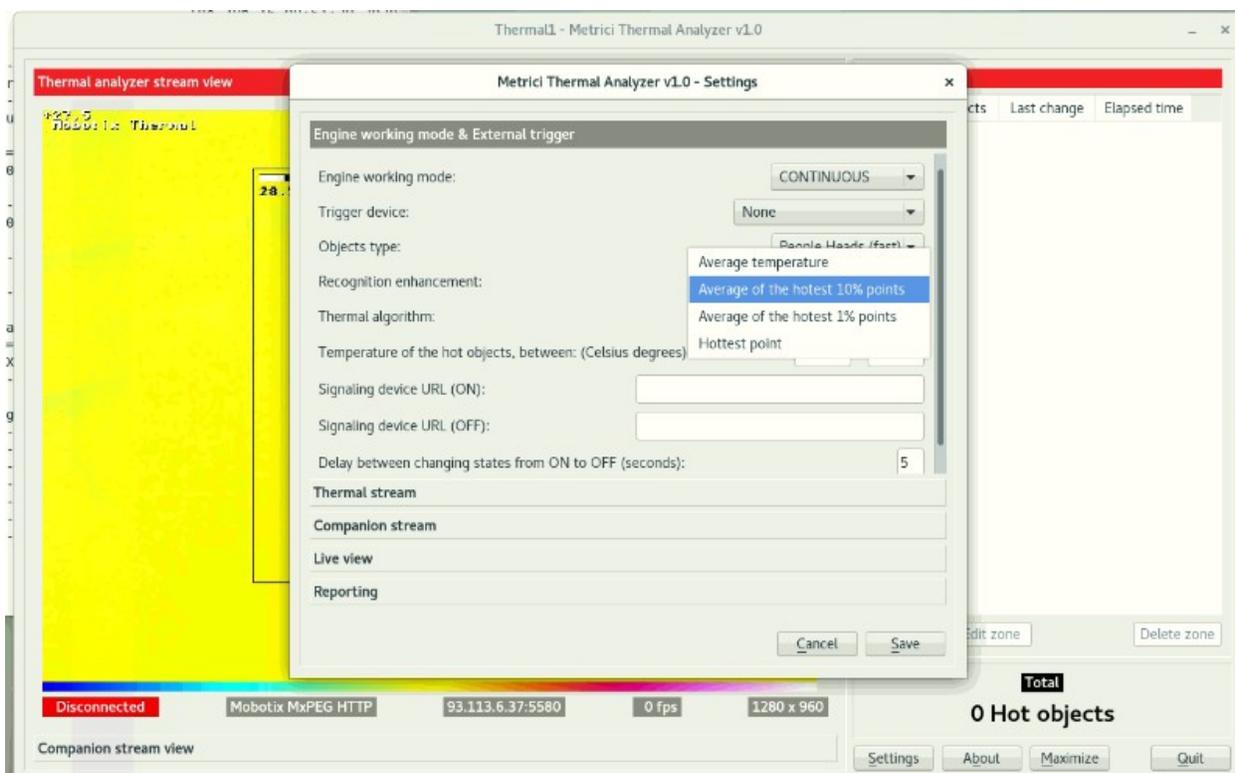
None: the red rectangle around person's head and neck



90 percent reduction: Note the red square around person's nose. This is where the temperature will be set.

Thermal Algorithm: This is how Metricí calculates temperature to report for the objects it detects. Usually a camera is transmitting thousands of temperature values (one for each pixels). Metricí recognizes an object, takes the temperature allocated for each pixels of that object. With this setting you establish how the reports are generated and you have three values:

- **Hottest point:** Metricí will take into account only the highest value for that object. The hottest pixels will be considered the objects' temperature.
- **10 percent hottest average:** from all the temperatures allocated to an object, Metricí will take ten percent of the hottest and will deliver an average.
- **1 percent hottest average** is the same as above, with the difference that only 1 percent will be taken into account.



Temperature of the hot objects is the interval for which the engines will deliver an event that will be recorded in HOT OBJECTS menu in the interface. Values that are outside of these settings will not be recorded in that menu.

Signaling device URL ON and OFF is the address of an external device/hardware/server/ software to be triggered when the above temperature was met. This can mean close a barrier, light a display etc.

Delay between changes is the time the trigger stays on. For example, the device can be as simple as a light which will signal that an object is beyond a certain temperature.

7.2 Thermal Stream & Calibration

Section **Thermal stream** will be filled with connectivity data of the camera attached to this engine: camera's type, IP, as well as the user and password as they were established when installing the camera, as in the example below. **Be careful to choose the correct video stream type: Mjpeg, H.264, as was set in the camera. If you don't set the correct type, you will not see images live and the detection will not work also.**

Limit FPS- this setting will not reduce camera's frames per second but will drop some of the frames if the camera delivers more than a value established here.

Thermal Sensor: When working with dual sensor camera, this setting allows Metrici to properly take the temperature values from the proper thermal sensors and not from a classic one.

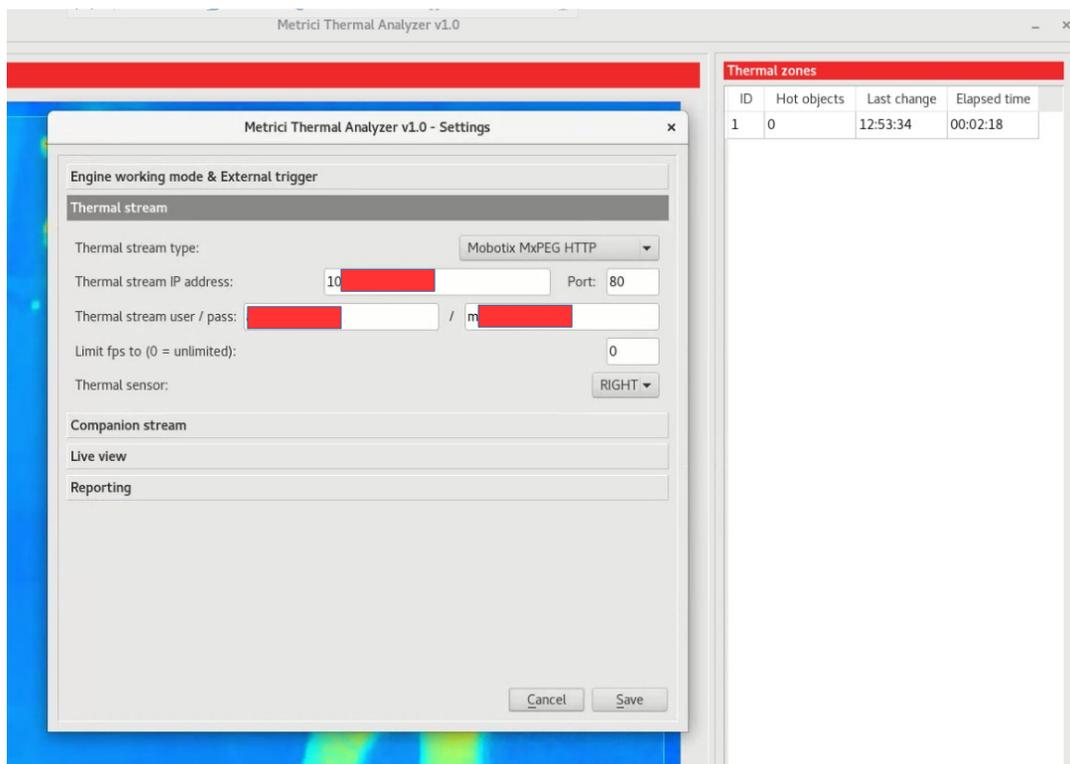
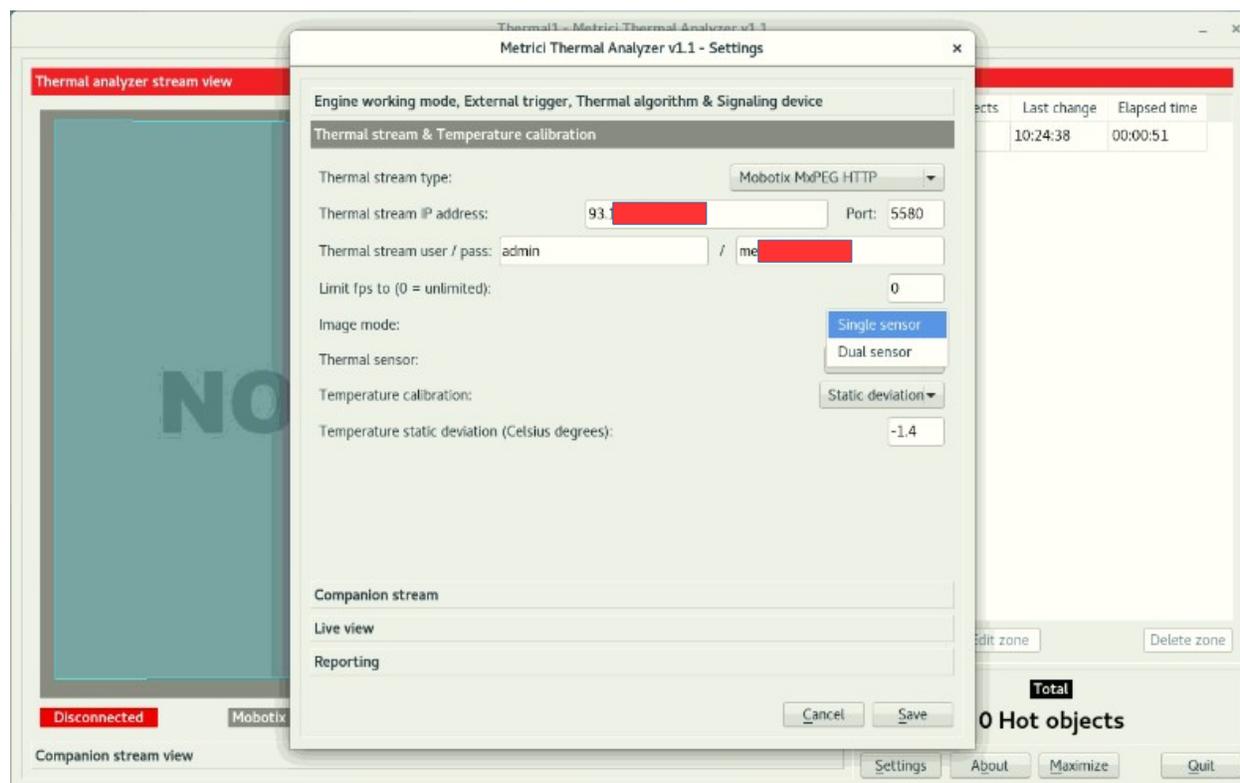


Image Mode: Single or Dual. The Mobotix camera can have one sensor or two. The two sensors can be either both thermal or, one thermal and for normal view.

In case you only have one thermal sensor, you will choose Single Sensor in the dropdown menu: as in the next image. After you choose the appropriate number, choose Right or Left in the **Thermal Sensor** menu. If you don't choose the correct position, Metrici can not read the temperature value and will out zero degrees. After choosing single sensor and the position, make sure to “draw” detection area/ areas in the input stream.

In case you have TWO thermal sensors, you will choose LEFT + RIGHT as their position and make sure you will make detection areas for BOTH of them. (see chapter 7.6 Adding Zones)



Temperature Calibration: For an accurate calibration of temperature reading, you have three options: None, Static Calibration and Black Body.

None: Metrici will record and deliver the temperature as they are sent by the camera for the area of interest.

METRICI Thermal Analyzer v1.0

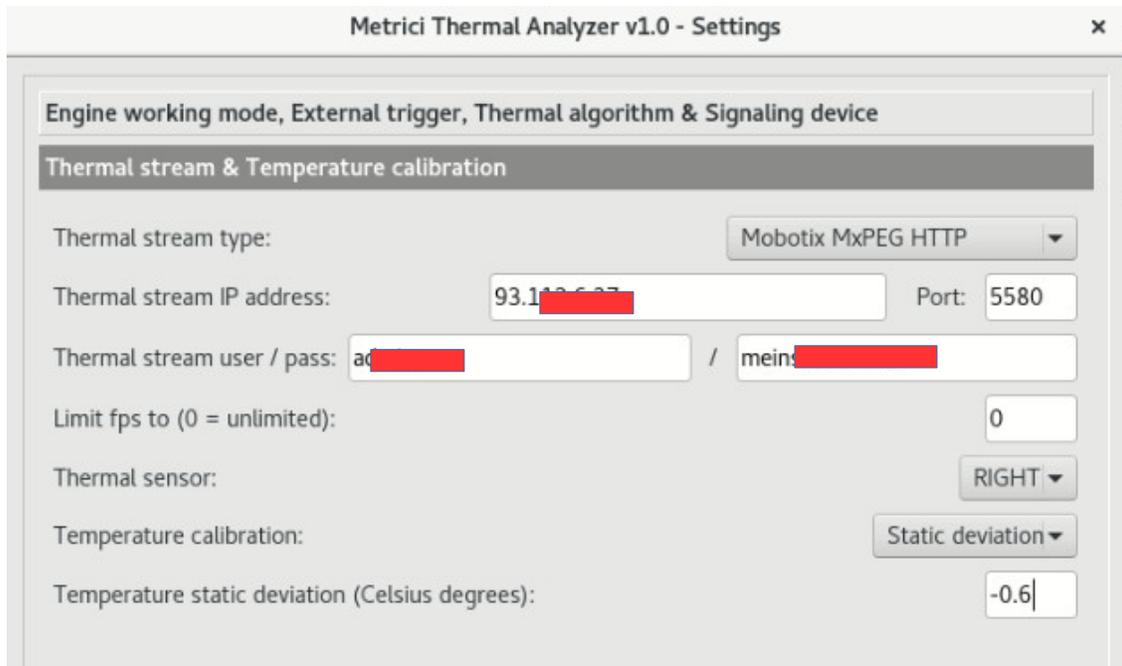
User Guide

Static Calibration: You will have to follow some steps to do this kind of calibration. First you set the Calibration to none, but you choose a bounding box of 90 percent reduction (see menu above). You notice where the bounding box is on the people heads (as in the next image of our example it is somewhere on the nose) but it may be anywhere on the head. You take a medical thermometer and you take the temperature in the exact same spot.

You note the two values: the one offered by thermal camera and the one given by the thermometer and calculate the difference. Let's say the temperature given by thermometer was 36.6. In this case of our example it is a difference of minus 0.6 degrees.



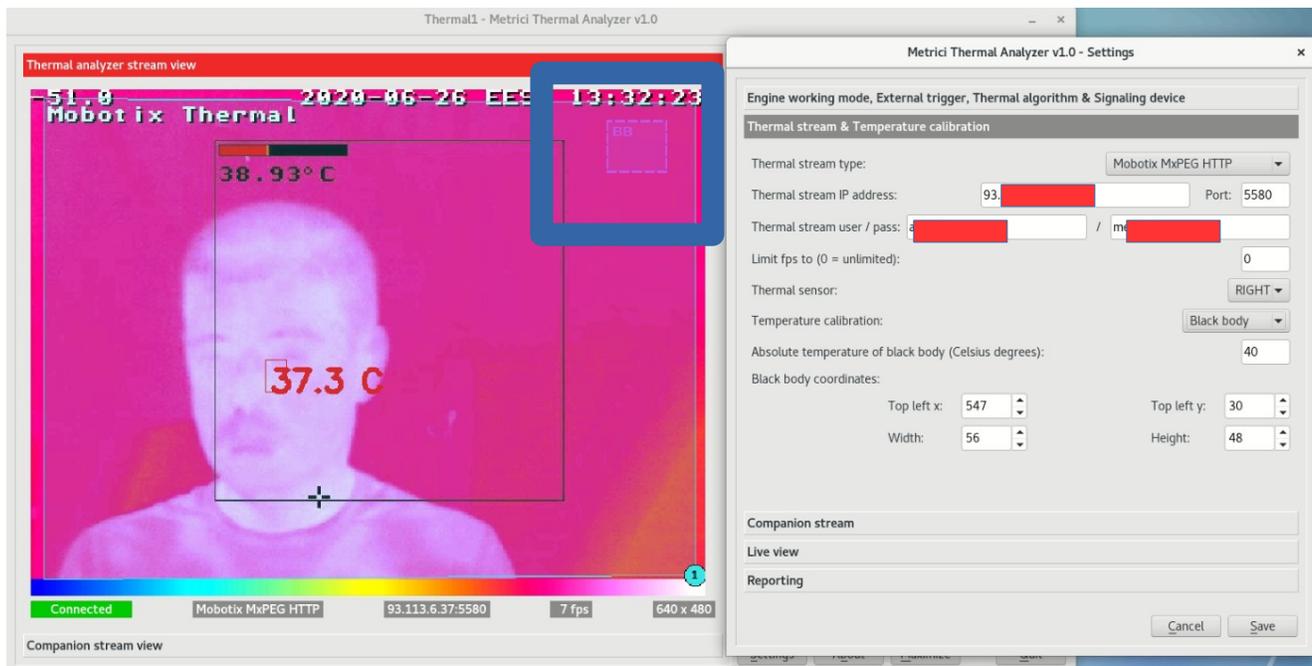
You will set the value Temperature calibration to Static Calibration and set the value of **Temperature Static Deviation** to minus 0.6 degrees.



So Metrici will subtract 0.6 degrees from every temperature offered by the thermal camera.

Black Body Calibration: It is a more precise calibration: In this case you will use an external hardware that will have always the same value. You will place the Black Body somewhere in the image not to be obscured by anything and move Metrici box where the body is placed. You can move it by drag it or changing the coordinates values in setting.

In our example image below we set the black body in the upper right corner. You then set the **Absolute Temperature of Black Body** to the appropriate value (let's say 40 degrees Celsius). For each reading Metrici will compare this temperature to the values offered by the camera and calculate an exact temperature for people.



7.3 Companion Stream

Companion Stream This option allows the user to set a new camera that will record an image along the one that captures the PPD/LPR/QR CODE/CCR events. The images from the two cameras will be saved together on web interface. You will fill the IP of the camera, the user and the password. Generally used in LPR, CCR and QR code, but not limited to these.

Companion Stream Type: Choose the model of the second camera. In case this model is not on the list, choose Generic camera and the video stream it uses.

Companion Stream IP address is the IP address of the second camera as was set when installed.

Companion stream user /pass - user and password of the camera as were set when installed.

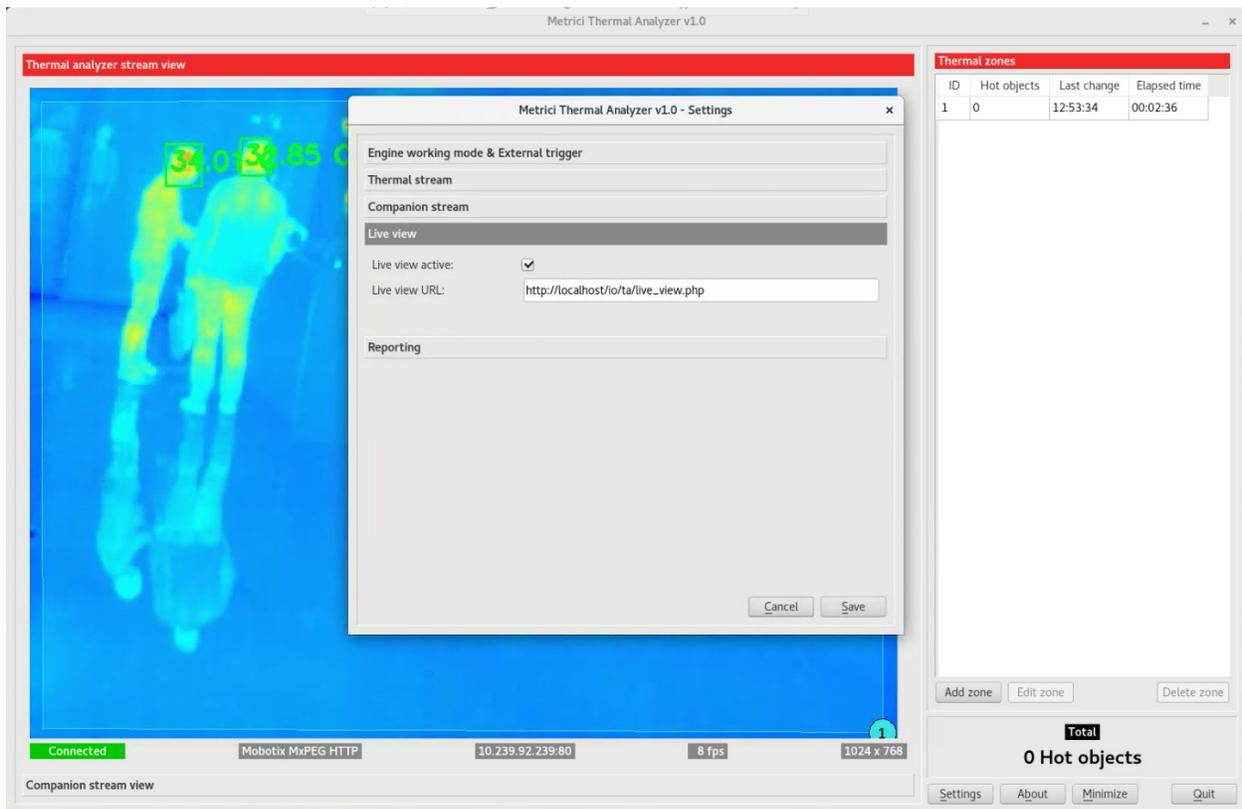
7.4 Live View

Live View tab, when checked active, will send the live stream images to a server, or on localhost.

By checking this button, images from detection camera will be broadcasted to the web interface or to an IP address and can be viewed in real time in the interface. If it is not checked, no live view will display in Metrici Interface

On Live View URL, you will fill in the address where the stream can be watched. If it is on same machine the address will have a form such as

http://localhost/io/ta/live_view.php which is automatically filled he by Metrici.



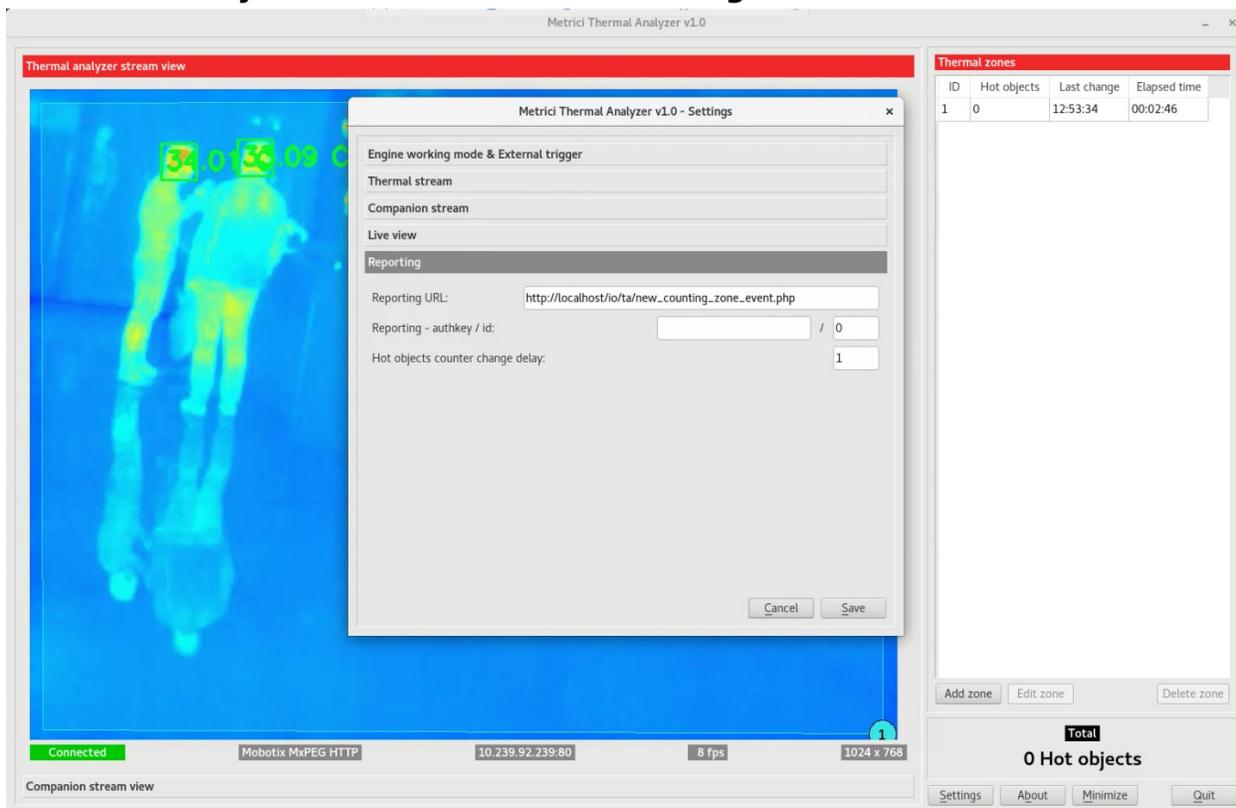
If the access is web based you will write an address such as http://IP_ADDRESS/io/ta/live_view.php and result a formula like http://192.1.1.1/io/ta/live_view.php or also http://metrici.ro/io/ta/live_view.php

7.5 Reporting

In the menu **Reporting** you will fill in the address where Metrici detection engine send the data about zone change counting or hot objects detected. In order to activate the communications between the engines and the interface, you will also fill in the authkey and the ID generated by Metrici Interface when the camera was

introduced in the **Locations and Camera** menu, which is the only way to integrate the communication between the detection unit and analysis centre. If you will not fill these data, you will not have access to Live View and you will not receive events, it will not build a database and it will not create reports and statistics. The detection itself will work, but will keep all data on a local buffer, where you don't have access to and will not send them to the database.

NOTE: ID and Authkey can be viewed in in **Metrici Interface** on Global Settings menu, **Locations&Cameras** submenu and choose a location to view all the cameras in . As in the next image.- **See chapter 5.5. Each camera has a unique ID and authkey which will be used in the engine.**



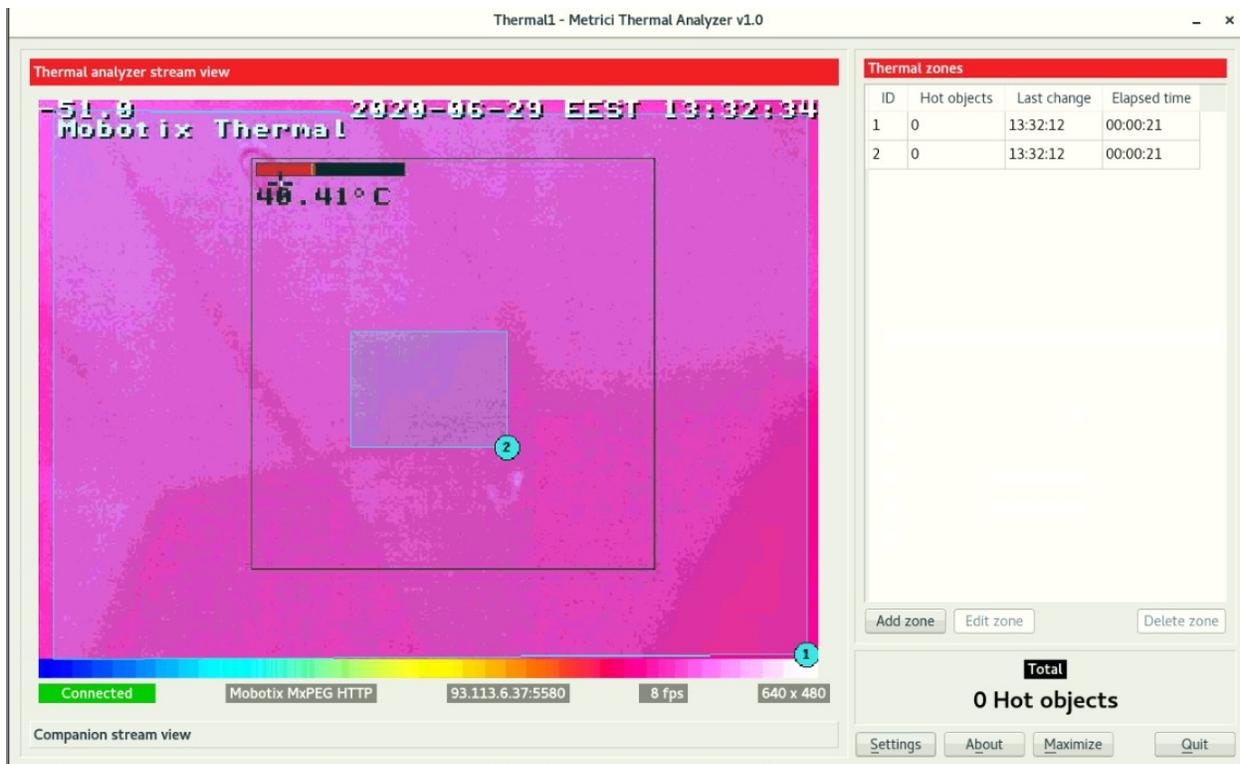
If the reporting is on same machine, the Reporting URL will take a form such as http://localhost/io/ta/new_counting_zone_event.php. This is how Metrici builds the database, the statistics and reports and creates the lists in Thermal Events. If the database is not on the same server and the reporting is done towards another URL you will fill in an address such as http://IP_ADRESS/io/ta/new_counting_zone_event.php and will result a formula such as http://192.1.1.1/io/ta/new_counting_zone_event.php or http://metrici.ro/io/ta/new_counting_zone_event.php

7.6 Adding zones

If all the above settings were done properly, you will have to see the camera live on screen and it is time to add the zones allocated to each camera for the detection. Metrici advises to add zones for the parts of interest to reduce processing power.

From the list of cameras go to each one of them and begin to add zones by click on the Add Zone button, on the lower right.

A purple square will appear in Stream View. You just drag the corners to where a zone is and click on save.



Repeat the process for each zone you want to create

NOTE: The detection system **Metrici Control Panel** can work independently of internet connection, records the data in a local buffer and will later save the information on server and on **Metrici Web Interface**, when a connection at internet /network is set.