

Activity tracker plug-in

User guide

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Overview

This plug-in provides a professional detection module for iSpy, designed to detect and track any significant object especially for **large** monitored areas.

It has been used for many years, by professional or private users, with [successful detection stories](#).



It works as well with thermal cameras.

Installation

Install iSpyConnect

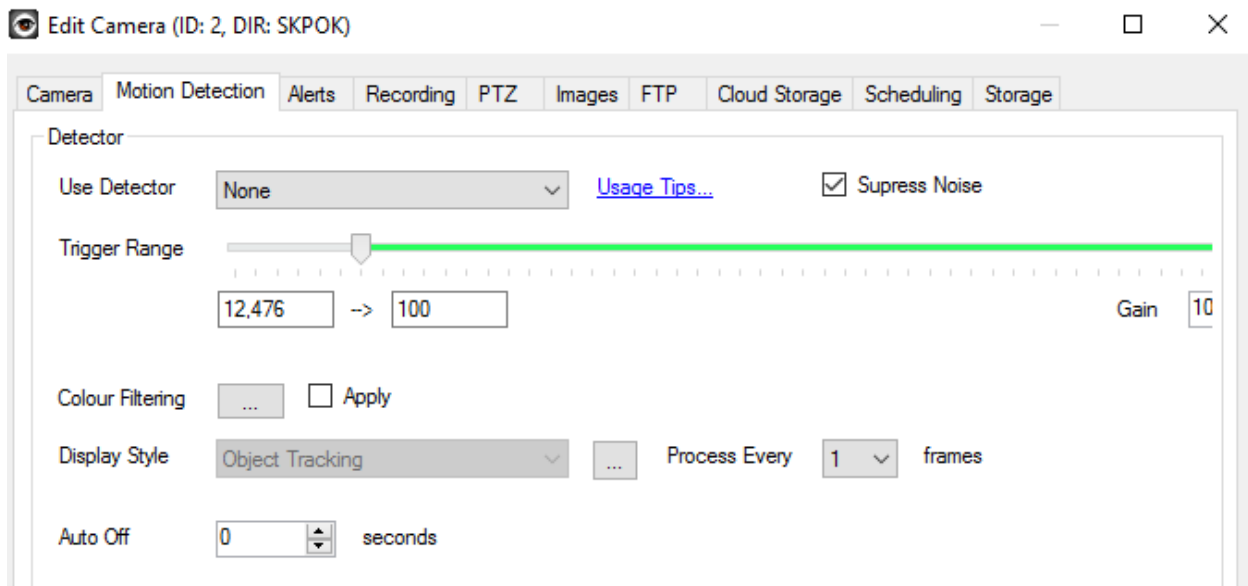
Download iSpyconnect installers here <https://www.ispyconnect.com/>

User guide is here: www.ispyconnect.com/userguide.aspx

Add one or more cameras.

Configure iSpyConnect

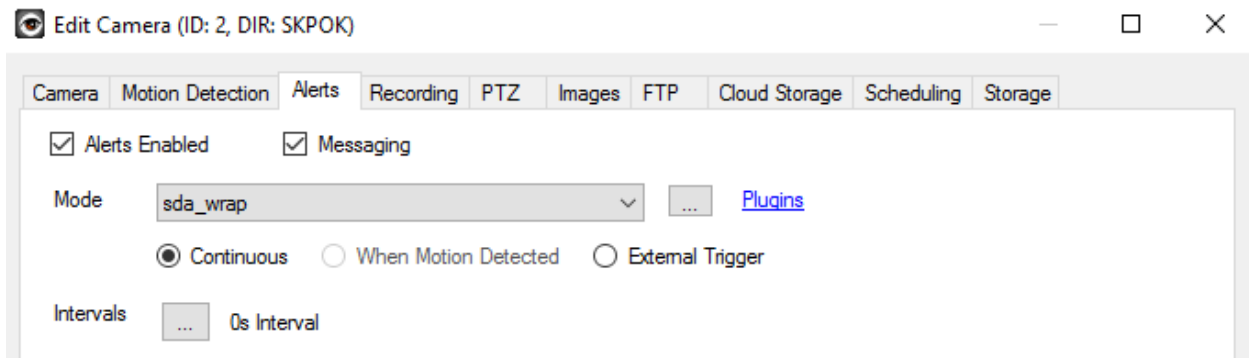
iSpyConnect embeds its own algorithms for motion detection. Try them and make your own experience, they could be efficient enough for your needs.



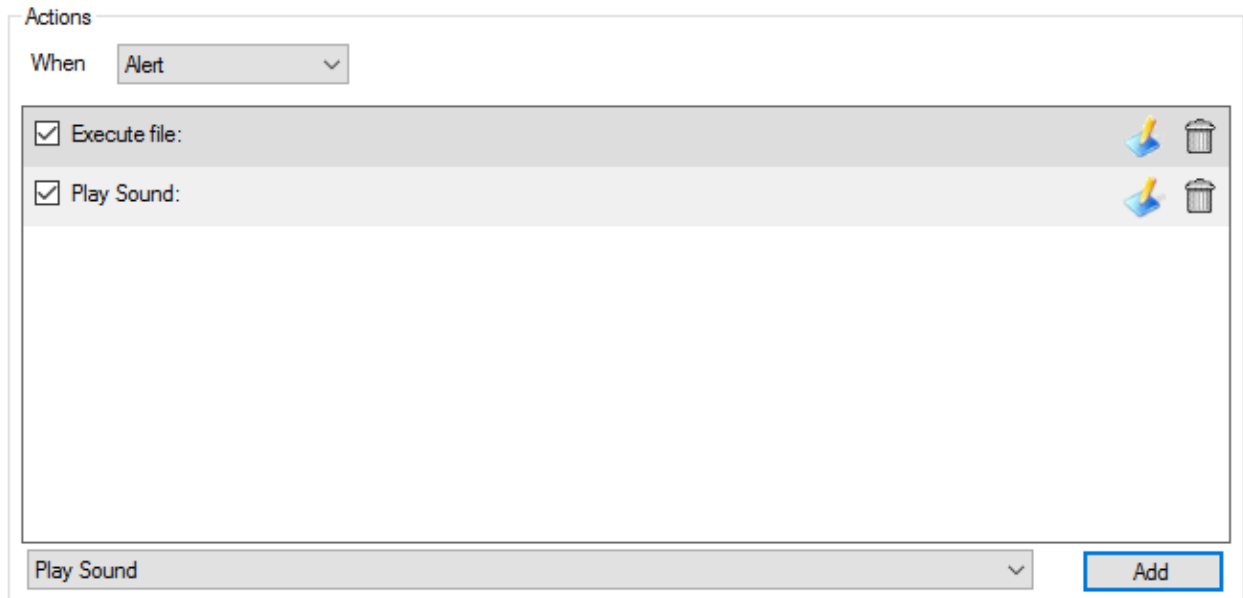
For performance reasons, unselect (None) motion detection and go to the Alerts tab to activate Activity tracker plug-in.

Note that you can also activate Activity tracker or any plug-in when motion is detected!

Other options are Continuous (plug-in activation) or External trigger (activation through HTTP commands www.ispyconnect.com/userguide-http.aspx).



At last, you can do many actions when Activity tracker triggers alerts:

















What a wonderful software (iSpy) !

Install plug-in

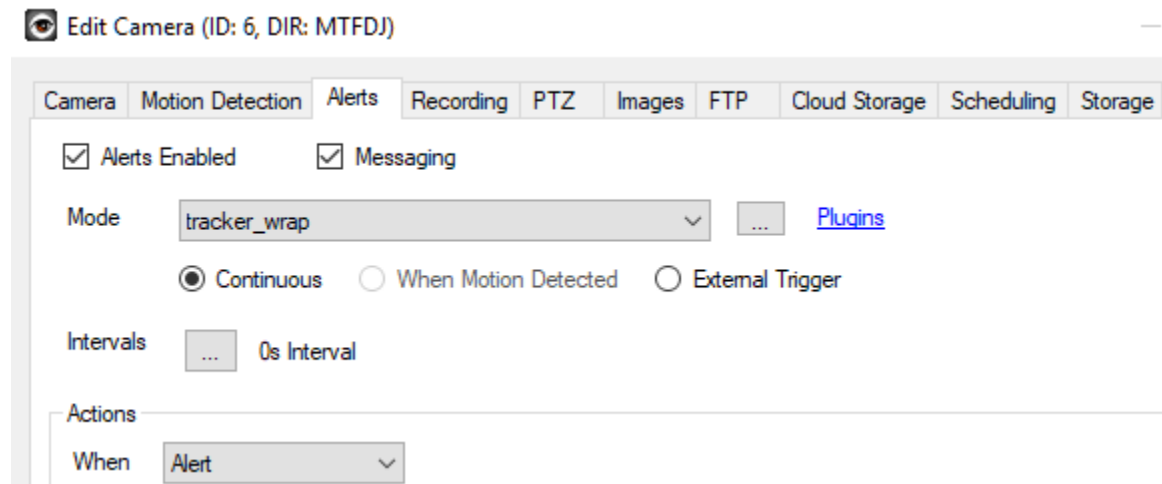
Download the plug-in .zip file at www.iplugins.eu/pl_tracker.html

X64 stands for 64bits machines and x86 for 32bits machines.

Unzip your files into iSpy plug-in directory (no sub-directories)

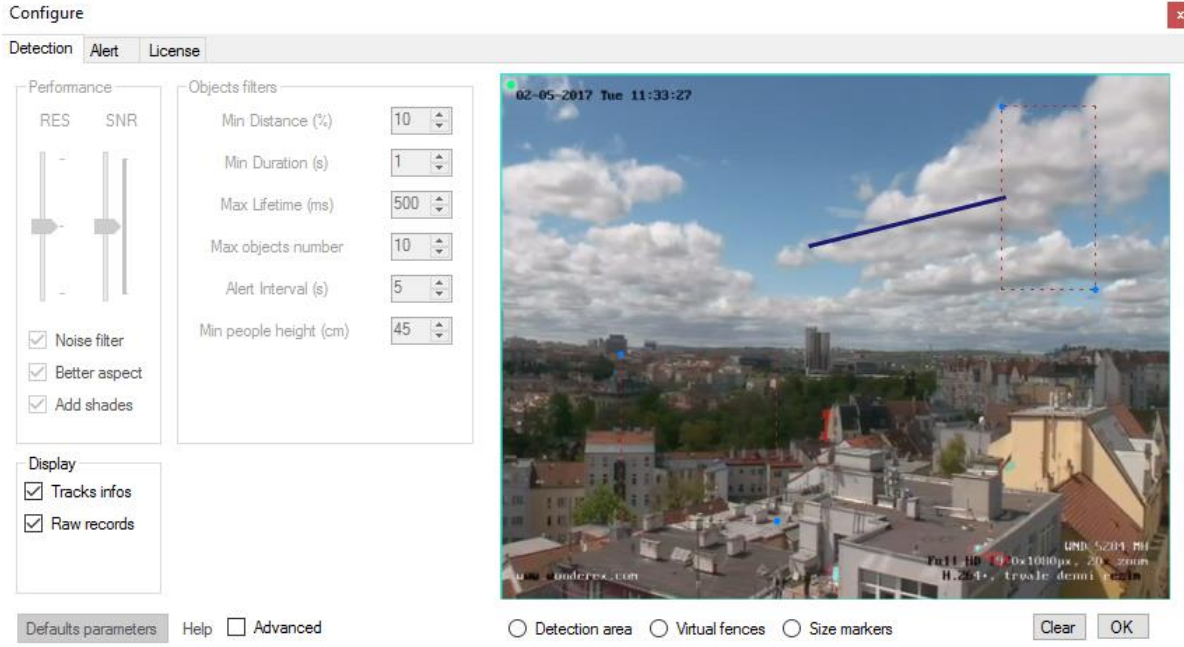
iSpy64 > Plugins				
Nom	Modifié le	Type	Taille	
 labels.xml	27/11/2017 14:06	Document XML	1 Ko	
 MobileNetSSD_300x300.prototxt	07/08/2017 09:16	Fichier PROTOTXT	29 Ko	
 MobileNetSSD_train.caffemodel	07/08/2017 09:11	Fichier CAFFEMO...	22 606 Ko	
 msvcpr120.dll	04/10/2013 23:58	Extension de l'app...	645 Ko	
 msvcr120.dll	04/10/2013 23:58	Extension de l'app...	941 Ko	
 opencv_core331.dll	30/11/2017 11:17	Extension de l'app...	12 979 Ko	
 opencv_dnn331.dll	30/11/2017 11:24	Extension de l'app...	4 848 Ko	
 opencv_highgui331.dll	30/11/2017 11:23	Extension de l'app...	199 Ko	
 opencv_imgcodecs331.dll	30/11/2017 11:22	Extension de l'app...	3 052 Ko	
 opencv_imgproc331.dll	30/11/2017 11:21	Extension de l'app...	41 837 Ko	
 opencv_video331.dll	30/11/2017 11:22	Extension de l'app...	527 Ko	
 opencv_videoio331.dll	30/11/2017 11:23	Extension de l'app...	308 Ko	
 tracker.dll	12/12/2017 10:49	Extension de l'app...	146 Ko	
 tracker_wrap.dll	12/12/2017 10:38	Extension de l'app...	123 Ko	

Launch iSpy again and go to Alerts tab:



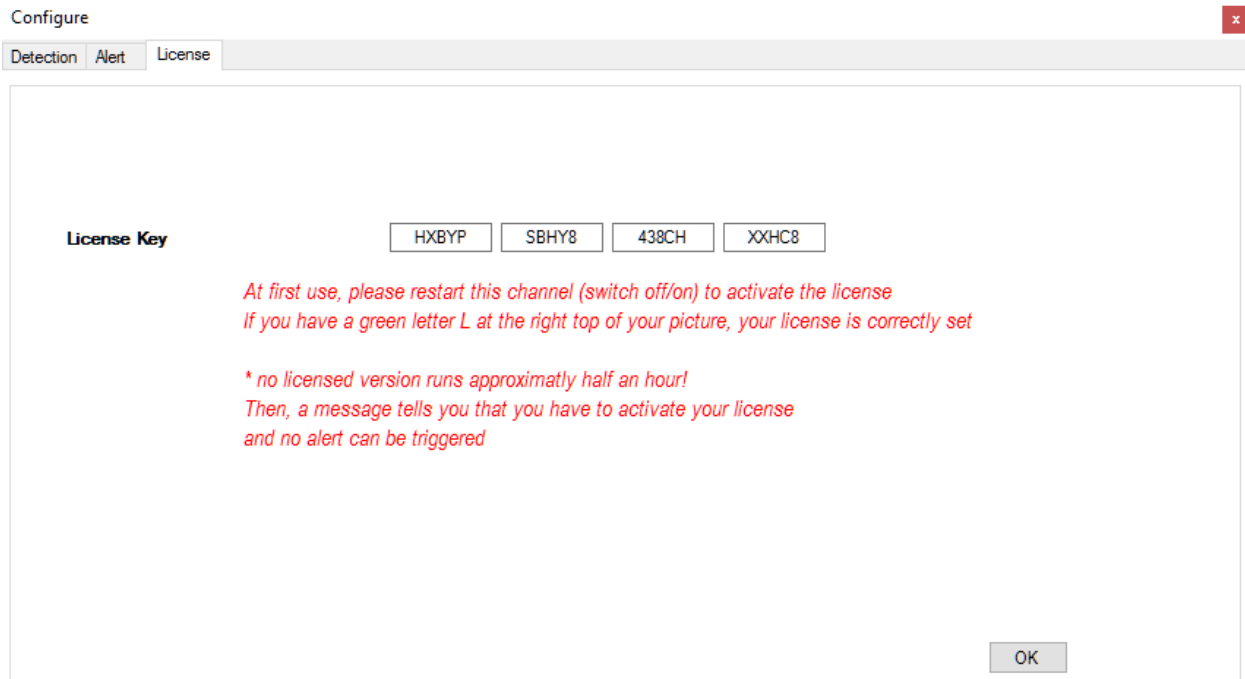
Check “Alerts enabled”, Select tracker_wrap, then click on the 3-dots button on the right to enter the plug-in configuration form.

There 4 tabs: Detection, Labels, Alert and License.

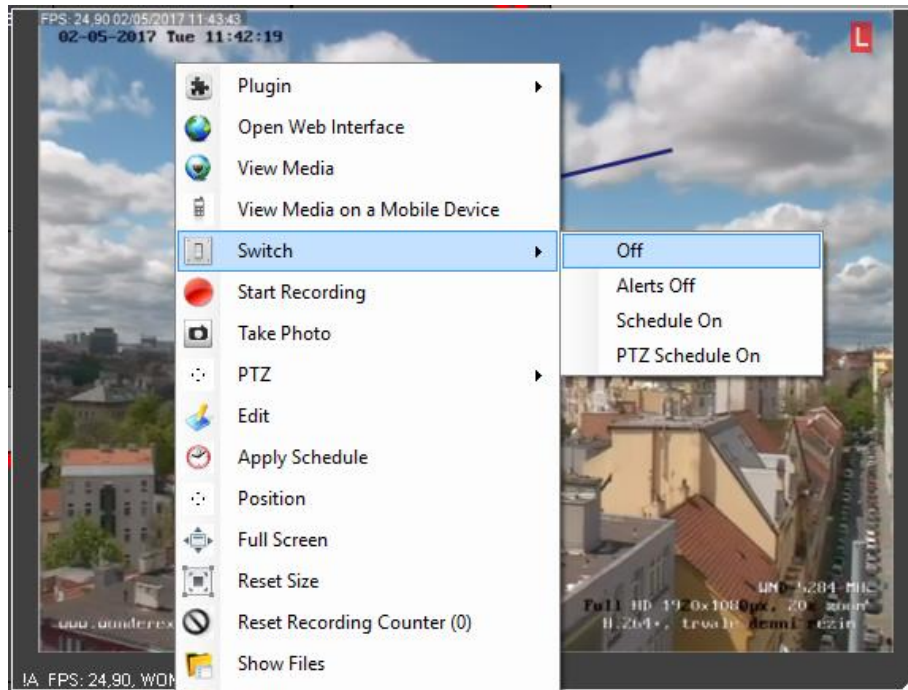


Set your license

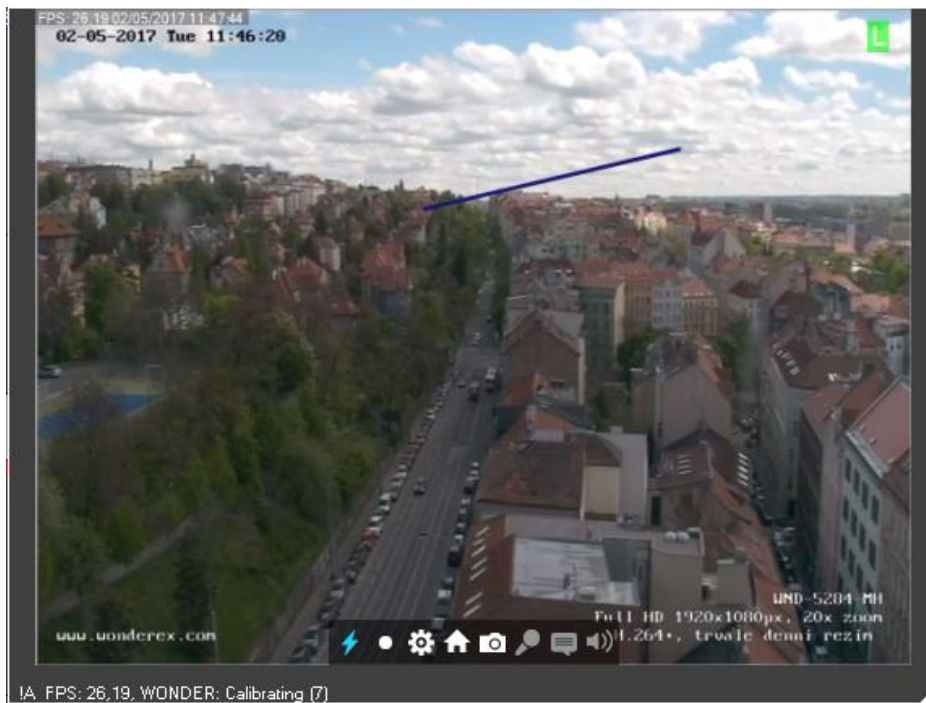
On license tab, please copy/paste your license key.



When your license key is filled, click OK and switch off / on your iSpy channel:



Then switch on, note that you have now a green L at the right top of your live video:



Configuration

Go to the detection tab in the plug-in configuration form:

The screenshot shows the 'Detection' tab of a configuration window. At the top, there are three tabs: 'Detection', 'Alert', and 'License'. The 'Detection' tab is active. It is divided into three main sections: 'Motion detection', 'Tracker', and 'Display'.
1. 'Motion detection': Contains two vertical sliders for 'RES' and 'SNR'. Below the sliders are three checked checkboxes: 'Noise filter', 'Better aspect', and 'Add shades'.
2. 'Tracker': Contains six numerical input fields with up/down arrows: 'Min Distance (%)' (10), 'Min Duration (s)' (1), 'Max Lifetime (ms)' (500), 'Max objects number' (10), 'Alert Interval (s)' (5), and 'Min people height (cm)' (45).
3. 'Display': Contains two checked checkboxes: 'Tracks infos' and 'Raw records'.
At the bottom of the window, there are three buttons: 'Defaults parameters' (highlighted in gray), 'Help' (in red text), and 'Advanced' (with a checked checkbox).

Default and advanced parameters

This plug-in is designed to work in almost all situations with default parameters.

At first use, click on Defaults parameters.

Then click to Advanced parameters, to ungray out all parameters, try them and look at their effect one by one.

If you don't have any detections anymore, come back to the Defaults parameters.

This screenshot shows the bottom buttons of the configuration window: 'Defaults parameters' (highlighted in gray), 'Help' (in red text), and 'Advanced' (with a checked checkbox).

Motion detection

It is the first stage of the detection.



RES stands for processing resolution.

Even with a HD camera, the processing is done with low resolution frame, because it is much more faster (CPU usage) and still efficient.

Default value is CIF resolution (352x288). You can select 1/4CIF (176x144) to be faster it could be enough for small areas.

You can also process in full resolution (if you use your camera low-res sub-stream for instance)

Don't worry, the recorded stream will be in full resolution in all cases.

SNR stands for Signal On Noise ratio, it is like a sensitivity parameter.

The range is 1 > 300.

1 is very sensitive

300 is very unsensitive

Common range is between 80 and 200 (very noisy environment).

To help you to set the good SNR, you have to set Tracks info.

Tracks infos

When it is set, you can see red areas on your live stream:



It is the detected motion. You have to set SNR in order to avoid red areas on trees or grass, and check if you still have a good detection on people.

- Noise filter
- Better aspect

In the same way, you can see the effect of Noise filtering and Better aspect options.

These options must be checked by default, unless you are in a very non-noisy environment (indoor, constant and good lightning conditions) and if you want to decrease your CPU usage.

- Add shades

Add shade is a very interesting option: Motion detector algorithm is able to dissociate people and their shade. By default, shades are included in the detected motion (red areas), but you can say that you don't want to consider them, in that way you will see them as gray areas in your live stream.



Add shades



Add shades

Tracker

Now that your motion detector is correctly set, you can configure the tracker engine.

Each detected people is tracked and we can play with its trajectory's properties:

- Trajectory length, from its original position to the current position (not a cumulative distance but the longest distance detected from the original position).
- Trajectory duration, from its creation time to the current time.
- Hidden time duration, in case of hidden trajectory (people walking behind a tree trunk), we count how long people remains hidden.

And set conditions on these properties in order to trigger or not an alert.

Tracker	
Min Distance (%)	10
Min Duration (s)	1
Max Lifetime (ms)	500
Max objects number	10
Alert Interval (s)	5
Min people height (cm)	45

Minimum distance: if the trajectory length is longer than 10% of the picture width, the condition is satisfied.

Minimum duration: if the trajectory duration is longer than 1 second, the condition is satisfied.

If both conditions are satisfied, an alert will be triggered.

Maximum lifetime: if the hidden trajectory is longer than 500 milliseconds, the trajectory is deleted.

To help you configuring the tracker, you may check:

Display	
<input checked="" type="checkbox"/>	Tracks infos
<input type="checkbox"/>	Raw records

It will display some tracking information for each detected object:

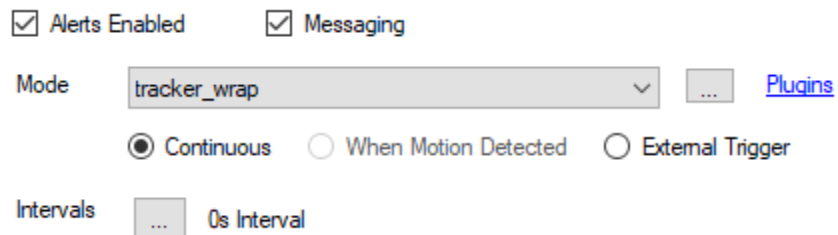


D	[elapsed time / minimum duration]	(seconds)
T	[walked distance / minimum distance]	(pixels)
L	[lifetime countdown]	(milliseconds)
	[people height]	(centimeters) (only if Size markers are set)

Max object number: set a maximum number of detected object, it can help to filter out very noisy situations.

Alert interval: the minimum duration in seconds between 2 alerts.

Note that iSpy provides its own alert interval parameter, take care to consider both configurations.



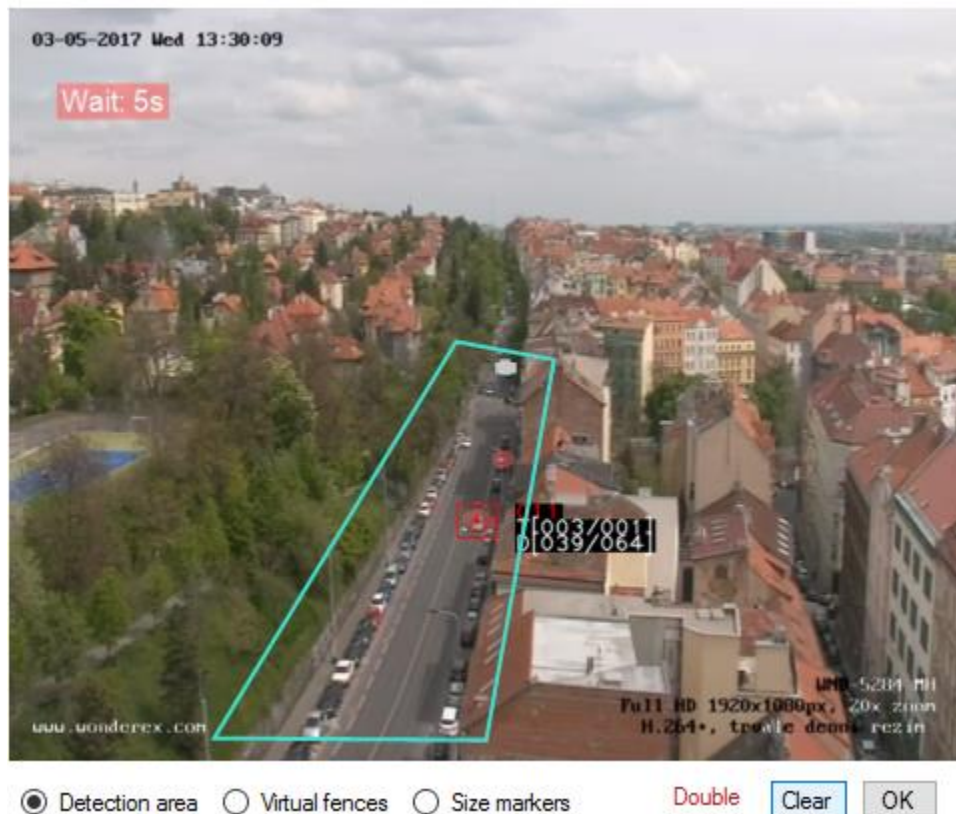
Min people height: you can set a minimum height for detecting a human. Any objects smaller than this minimum height (i.e cats, dogs or anything else) **will be detected but will not trigger alerts.**

You have to draw 2 calibration markers to activate this parameter, refer to the Calibration markers section.

Detection area

You can draw a **detection** area. Detections will occur in this area only.

Check Detection area, then double click to set the first and last polygon vertex.



Click on Clear to clear the detection area. By default, the detection area is the whole frame.

Virtual fences

If you want to detect not only loitering people but people crossing a given area, you can use virtual fences.

The alert will be triggered if someone cross the fence AND if its trajectory has a correct duration / length. It is an additional condition.

You can draw up to 4 fences.

Click on Clear to clear them. There is no default virtual fence.

Calibration markers (for size filtering)

To activate size filtering, you have to draw 2 calibration markers on your video stream, around one people close to the camera, and around another people far away the camera.

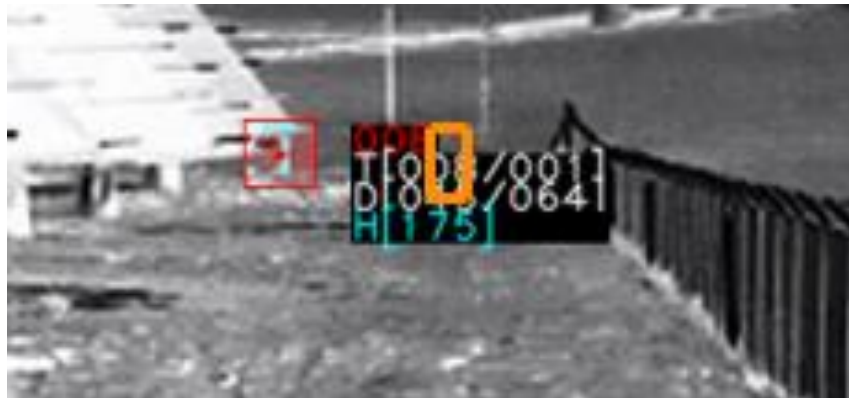
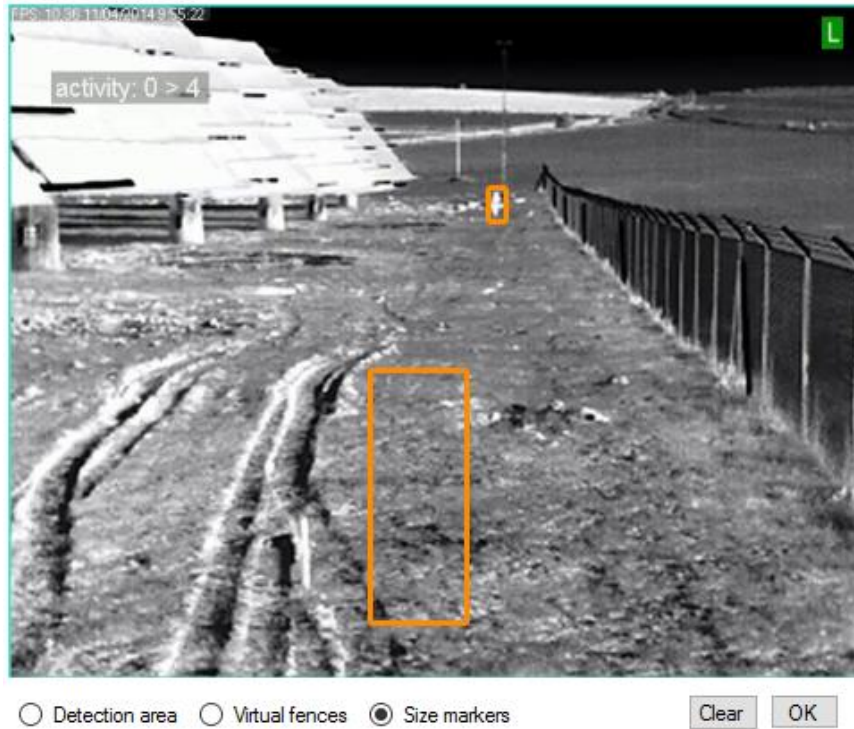
Then you can set a minimum height for detecting a human. That means that any objects smaller than this minimum height will be not detected (i.e cats, dogs or anything else).

It is the only criteria we use, by experience and for many reasons, especially because the detected sizes can be far from the reality (because of shades, low lightning, and 2D perspective effect).

Check Size markers then draw one bounding box around a people close to the camera.



Draw a second bounding box around a people far from the camera.



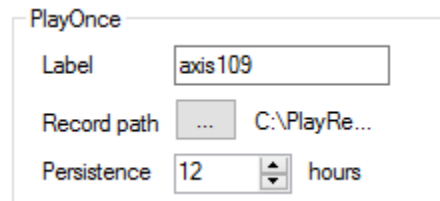
H is now available and is the estimated height in centimeters.

Min people height (cm) 45

Set a minimum height for detecting people. That means that any objects smaller than this minimum height (i.e cats, dogs or anything else) **will be detected but will not trigger alerts.**

PlayOnce

If you have the PlayOnce version of the plug-in, you should see an extra frame in the plug-in configuration form:



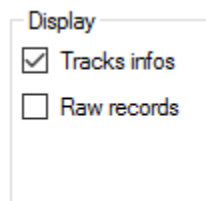
The screenshot shows a configuration window titled "PlayOnce". It contains three fields: "Label" with the text "axis109", "Record path" with a browse button and the path "C:\PlayRe...", and "Persistence" with a spinner box set to "12" and the unit "hours".

To activate PlayOnce recorder, set a camera label for each camera, avoid spaces or any non-alphanumeric character, **switch off / on the channel after this step.**

Set the record path and the number of recording hours (global properties to all channels).

You can count 1 Go per day per channel for a moderate traffic channel (1000 events per day).

Display



The screenshot shows a configuration window titled "Display". It contains two checkboxes: "Tracks infos" which is checked, and "Raw records" which is unchecked.

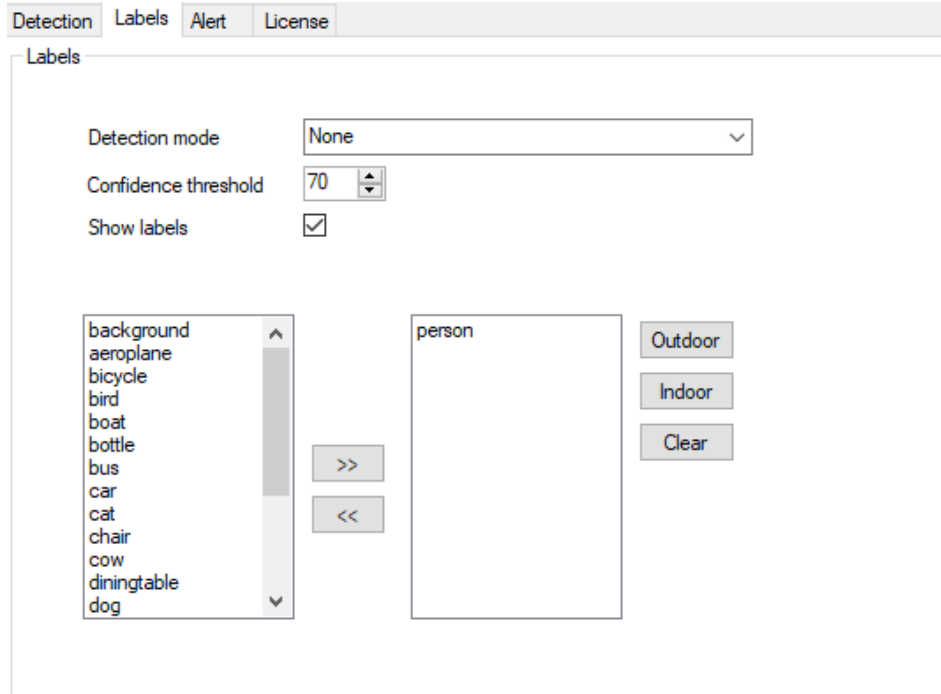
Tracks infos draw some extra information on each detected track, see Tracker section for details.

Check **Raw records** if you want to display and record video clips in iSpy without any extra drawing (detection boxes), i.e only raw video.

Note that if the configuration form is opened, extra information will never be drawn.

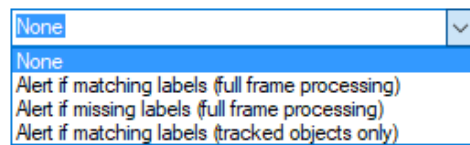
Object's classification

Warning: although object's classification could be very impressive, you should not use it as an intrusion detector. In low lightning conditions, it will not detect labels even with low confidence threshold. Use it for specific use cases like: vehicles detection on forbidden area, missing parked vehicles..



Enabled labels are in the right list. Use >> or <<, or double click to add/remove labels, or load preselected lists Outdoor and Indoor.

Detection modes



None: no label's detection, behaves like the basic tracker.

Alert if matching labels: add labels of your choice in the right list. If one of them is detected, an alert will be triggered. Each frame is processed. You can set a Detection area (it will not decrease CPU usage).

Alert if missing labels: If all selected labels are missing for a given duration

Max Lifetime (ms) , an alert is triggered.

Alert if matching labels (tracked objects only): Only tracked objects are classified. This results in a low CPU usage compared to other modes. An alert is triggered if trackers rules are satisfied (trajectories length, duration, fences,..) **and** if selected labels are detected.

Mail configuration

In case of alert, send an email with an attached alert picture:

Configure

Detection Alert License

Select alerts to send

email

Email

Smt

User

Password

Attach alarm

Label (optional)

Port SSL

Test

OK

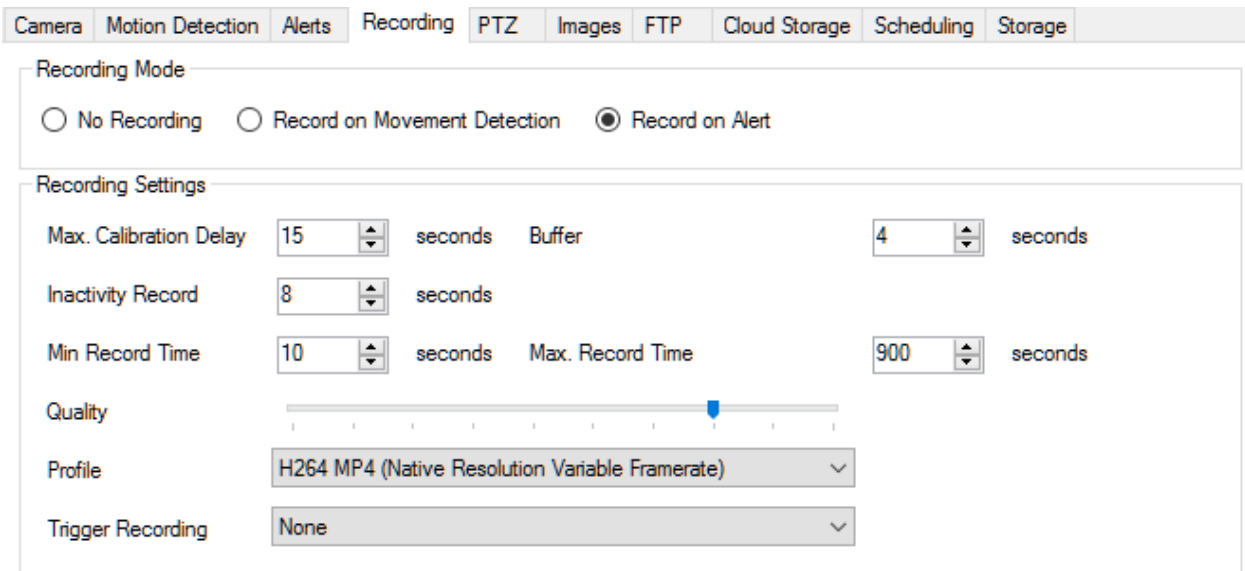
Add a label that will be added to your email subject.

Performance tips

- Process only **rtsp://** stream with **h264** encoding. **http://** with **mjpeg** feed is not supported.
- Don't process a stream whose resolution is higher than 640x480 (select the secondary stream with a low resolution, 352x288 is often enough).
- Don't process faster than 10 FPS (sometimes 5 FPS is enough).
- Set a constant or maximum bitrate to 1MB/s or even lower.

Recording

In iSpy, you can create a video clip for each alert, here is a configuration example:



The screenshot shows the 'Recording' settings panel in iSpy. At the top, there is a navigation bar with tabs for Camera, Motion Detection, Alerts, Recording (selected), PTZ, Images, FTP, Cloud Storage, Scheduling, and Storage. Below the navigation bar, the 'Recording Mode' section contains three radio buttons: 'No Recording', 'Record on Movement Detection', and 'Record on Alert' (which is selected). The 'Recording Settings' section includes several controls: 'Max. Calibration Delay' set to 15 seconds, 'Buffer' set to 4 seconds, 'Inactivity Record' set to 8 seconds, 'Min Record Time' set to 10 seconds, and 'Max. Record Time' set to 900 seconds. There is a 'Quality' slider, a 'Profile' dropdown menu set to 'H264 MP4 (Native Resolution Variable Framerate)', and a 'Trigger Recording' dropdown menu set to 'None'.

Buffer is the video duration that is recorded before the alert.

Min record time is the minimum video duration after the event if there is no alert anymore.

Inactivity record time is inactive for alerts.

You can set a Max record time, in case of continuous activity / alerts in your live stream.