

Selea ANPR Cameras and AVIGILON VMS

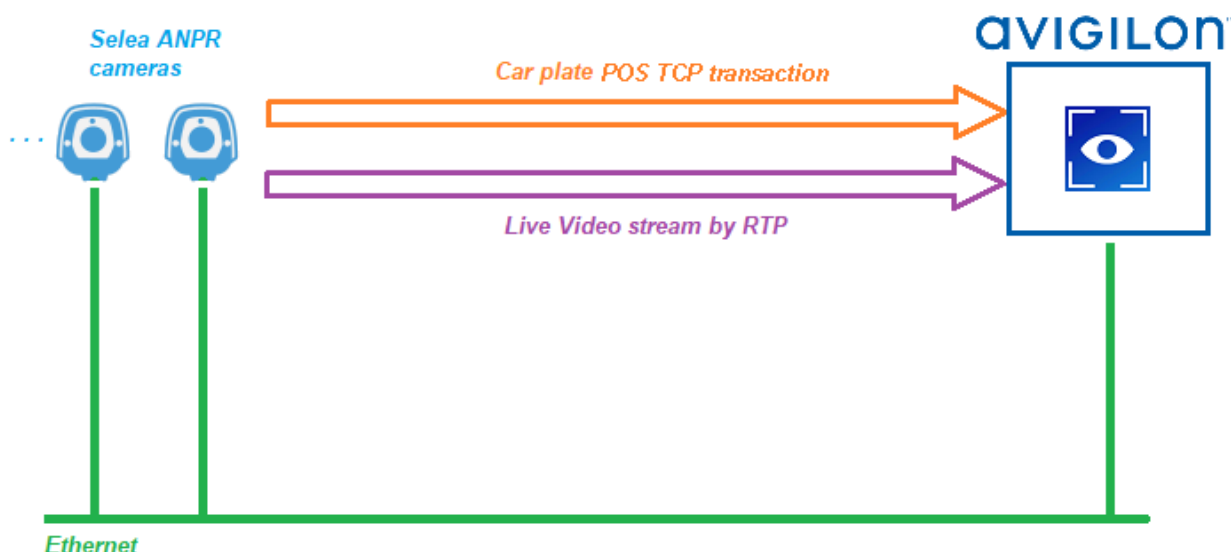
Rev1 (29th October 2020)

This guide describes how to integrate an *ANPR Selea* camera with *AVIGILON VMS*.

This guide doesn't describe how to install *AVIGILON VMS*. To do this, please refer to the specific *AVIGILON* documentation.

This guide, doesn't describe how to install *ANPR Selea* cameras. To do this, please refer to the specific *Selea* documentation for the first camera setup.

PART 1: CAPTURE A LIVE STREAM BY RTP



This guide is divided in two parts:

1. part 1 describes how to capture a live stream by RTP
2. part 2 describes how to manage car plates

In this first section are described all the steps to capture live stream produced by *Selea* ANPR cameras in *AVIGILON VMS*.

The RTP connection between the camera and *AVIGILON* is represented with the purple arrow in the above schema.

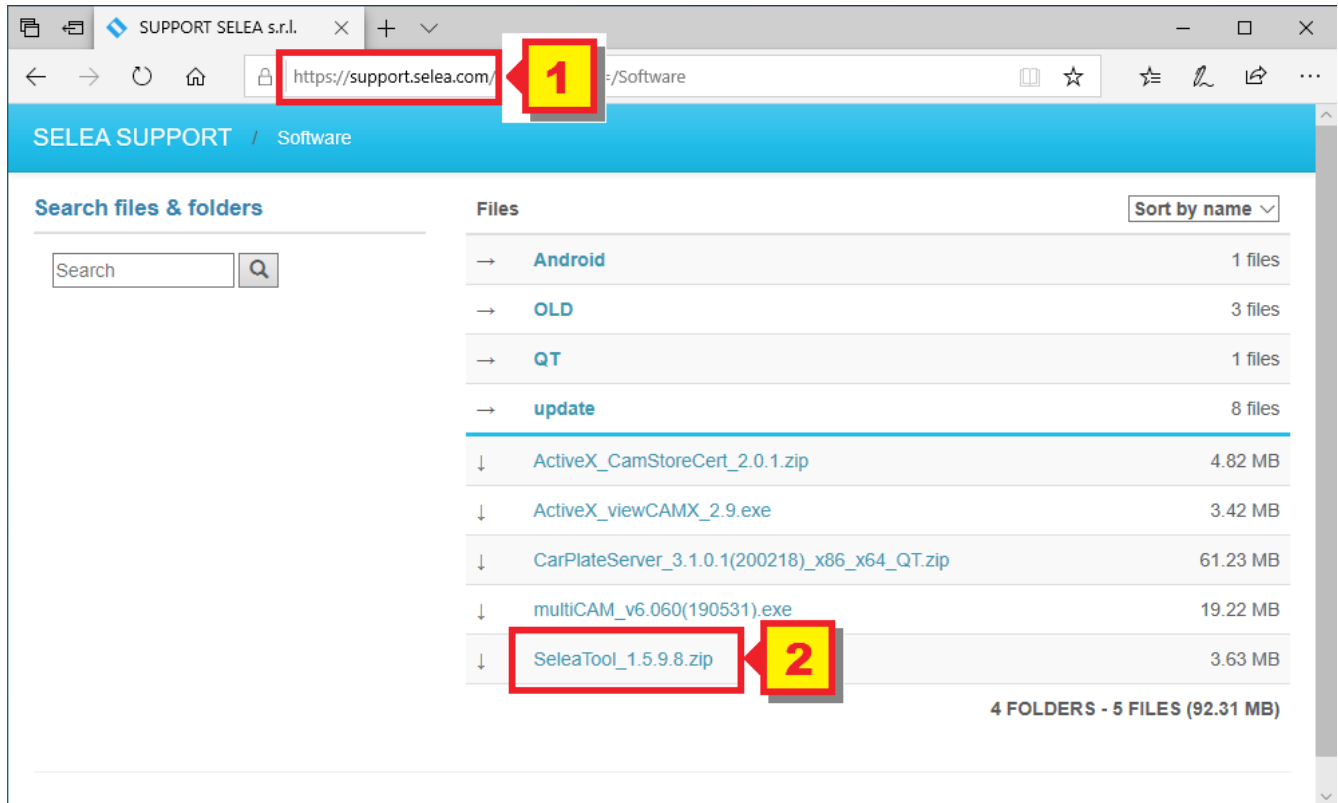
All the other connections will be described in part 2.

Step 1: Discover the camera

If you already know the IP address of the camera, please go to Step 2.

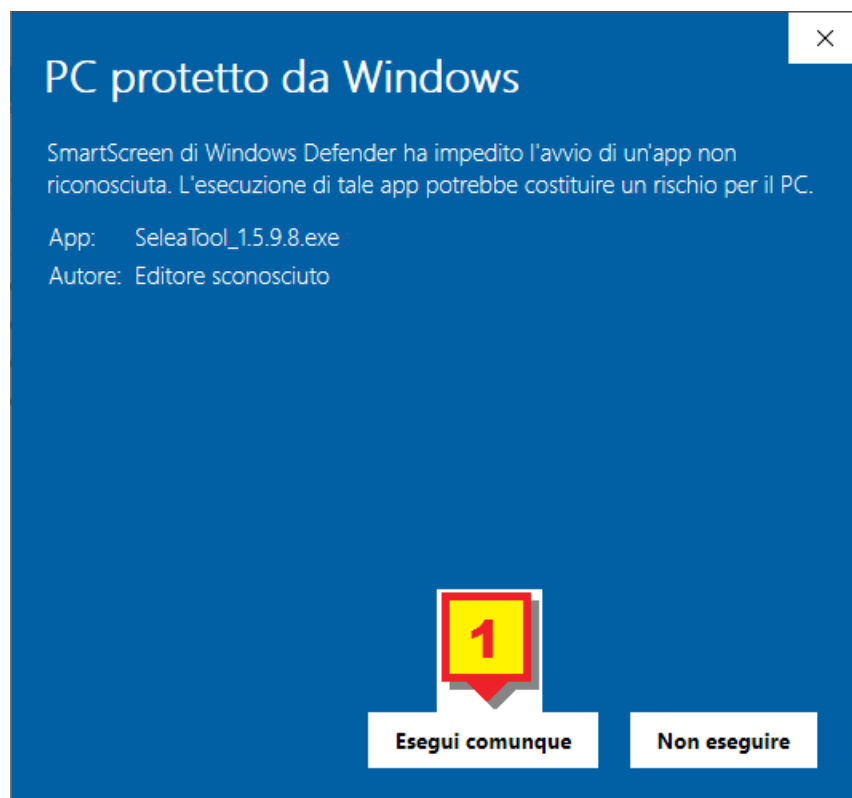
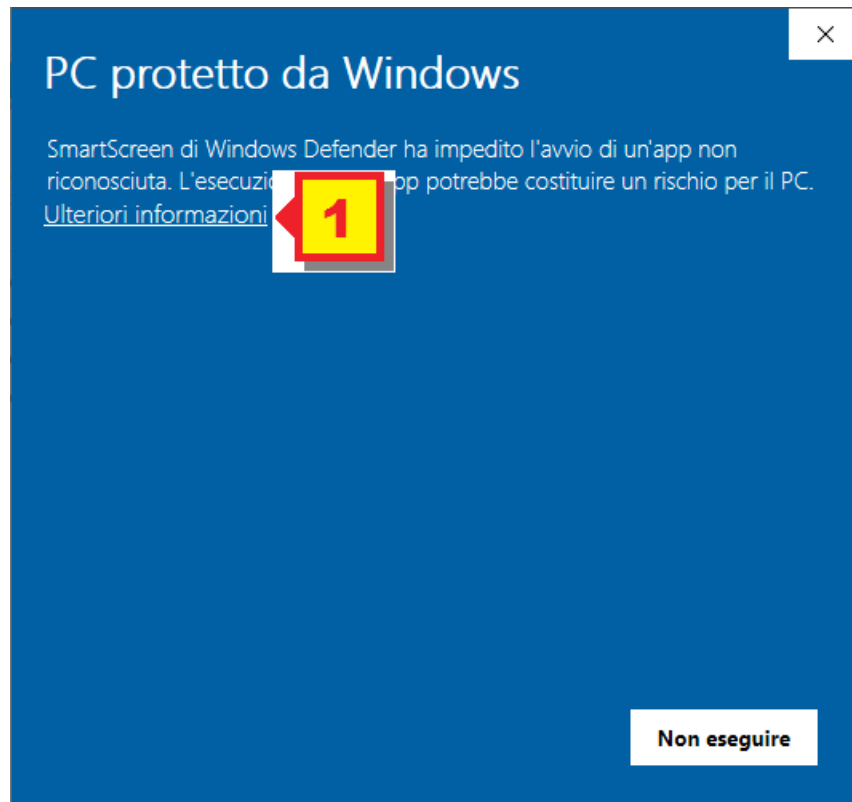
If you don't know the IP address of the camera, it's necessary to find the *Selea* camera in the network. To do that, please use the “*Selea Tool*”.

If the “*Selea Tool*” is not installed:



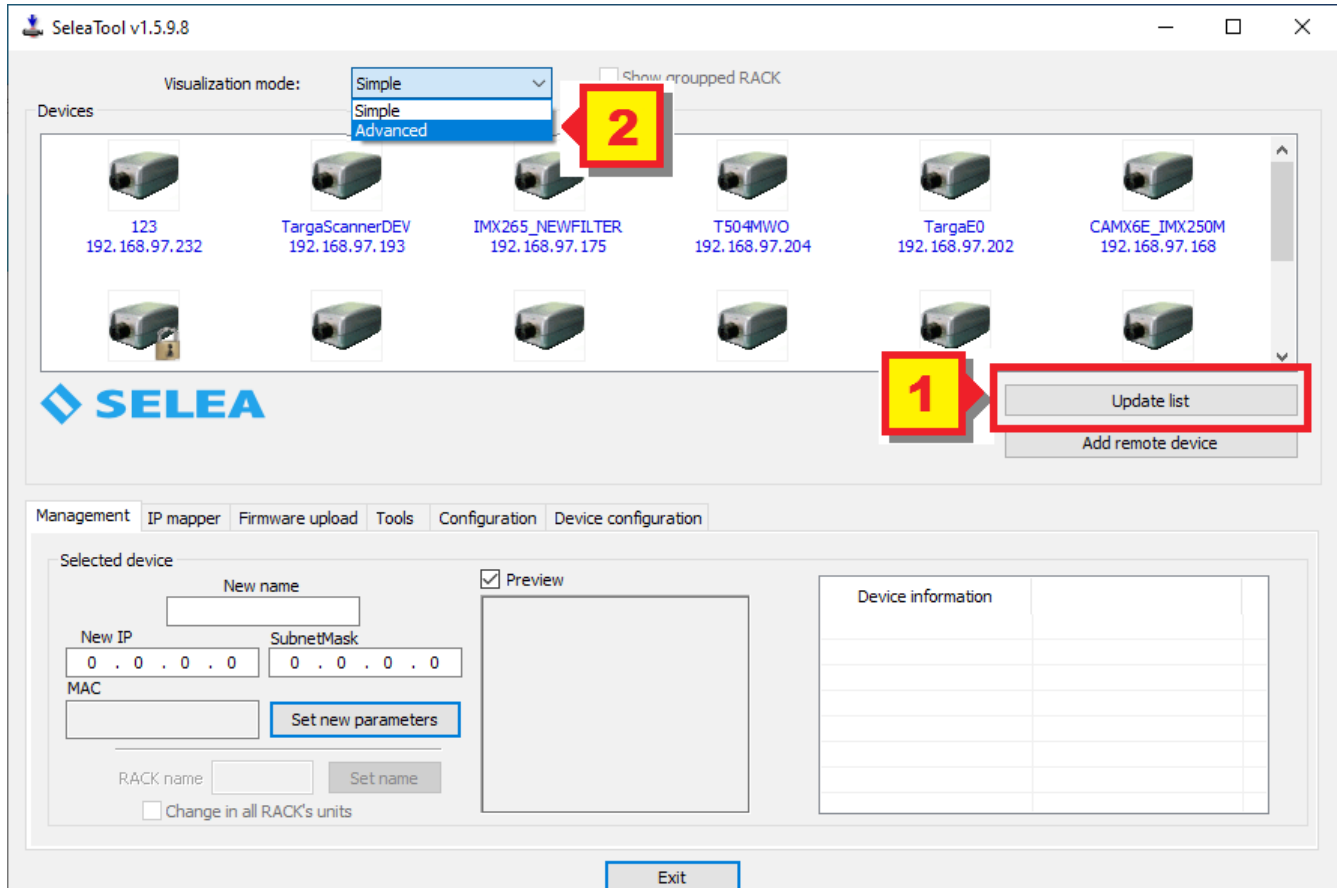
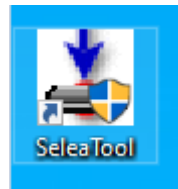
1. Open a browser and go to <http://support.selea.com>

2. Download the latest version of “*Selea Tool*”

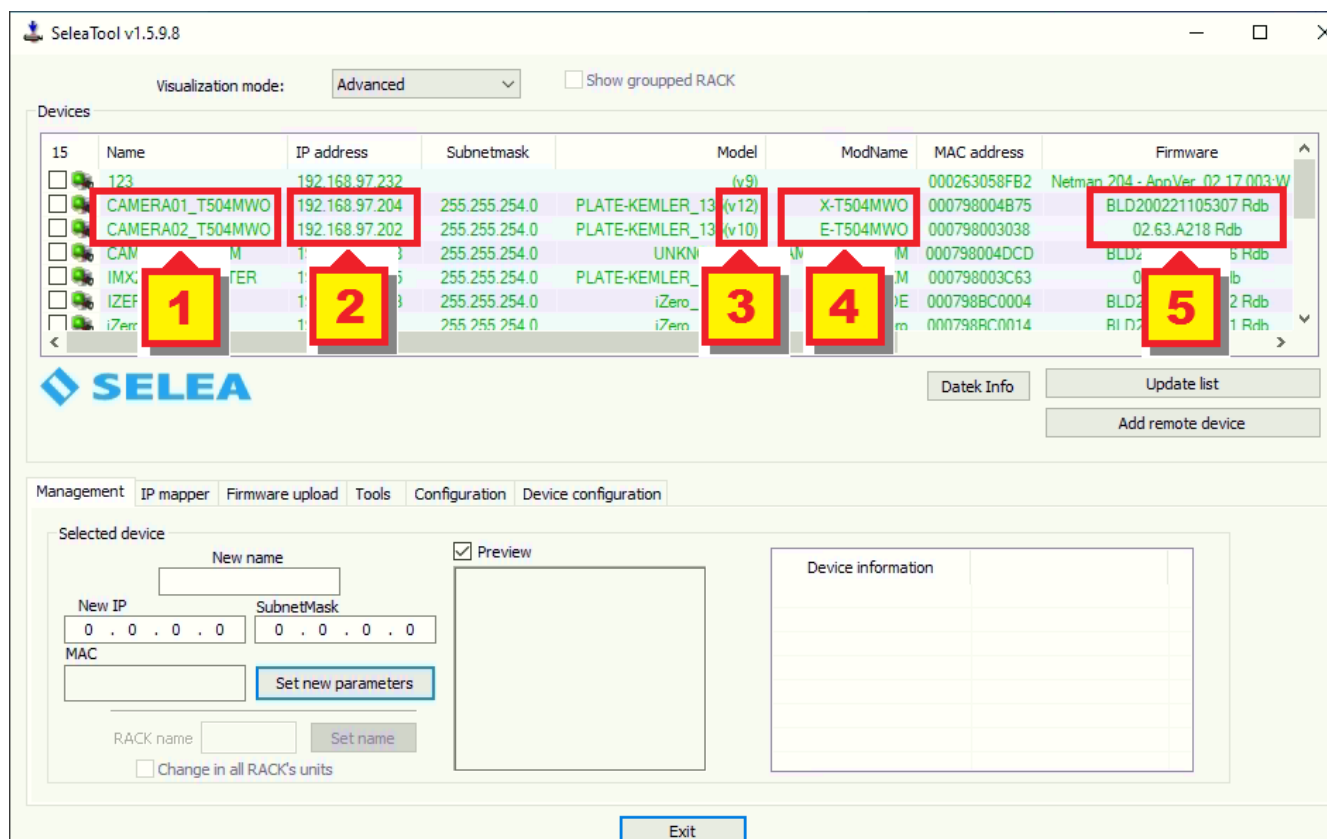


1.If *Windows* shows you the protection warning, proceed anyway and install.

Launch the “*Selea Tool*” by clicking on the following icon:



1. Press “*Update list*” to launch the discovery of all cameras connected to the LAN
2. Select the “*Advanced View*”



1. *Camera Name*: it's not strictly necessary that the camera name matches the one you'll type when the new hardware will be created in *AVIGILON Control Center Client* (see later)

2. *Camera IP Address*: this must match the one you'll type when the new hardware will be created in *AVIGILON Control Center Client* (see later)

3. *Hardware release*: the configurations described in this guide, are a little bit different in some steps between the two different hardware releases (V10 and V12). See also *ModName* column. When configurations change depending on *HardwareRelease/ModName*, both will be described in this guide.

4. *Model Name*: it's important to pay attention to the first letter of the model name:

X-Txxx: the "X" means that the camera has a new hardware (V12), released at the end of 2019

E-Txxx: the "E" means that the camera has the previous hardware (V10)

When configurations change depending on *HardwareRelease/ModName*, both will be described in this guide

5. *Firmware version*:

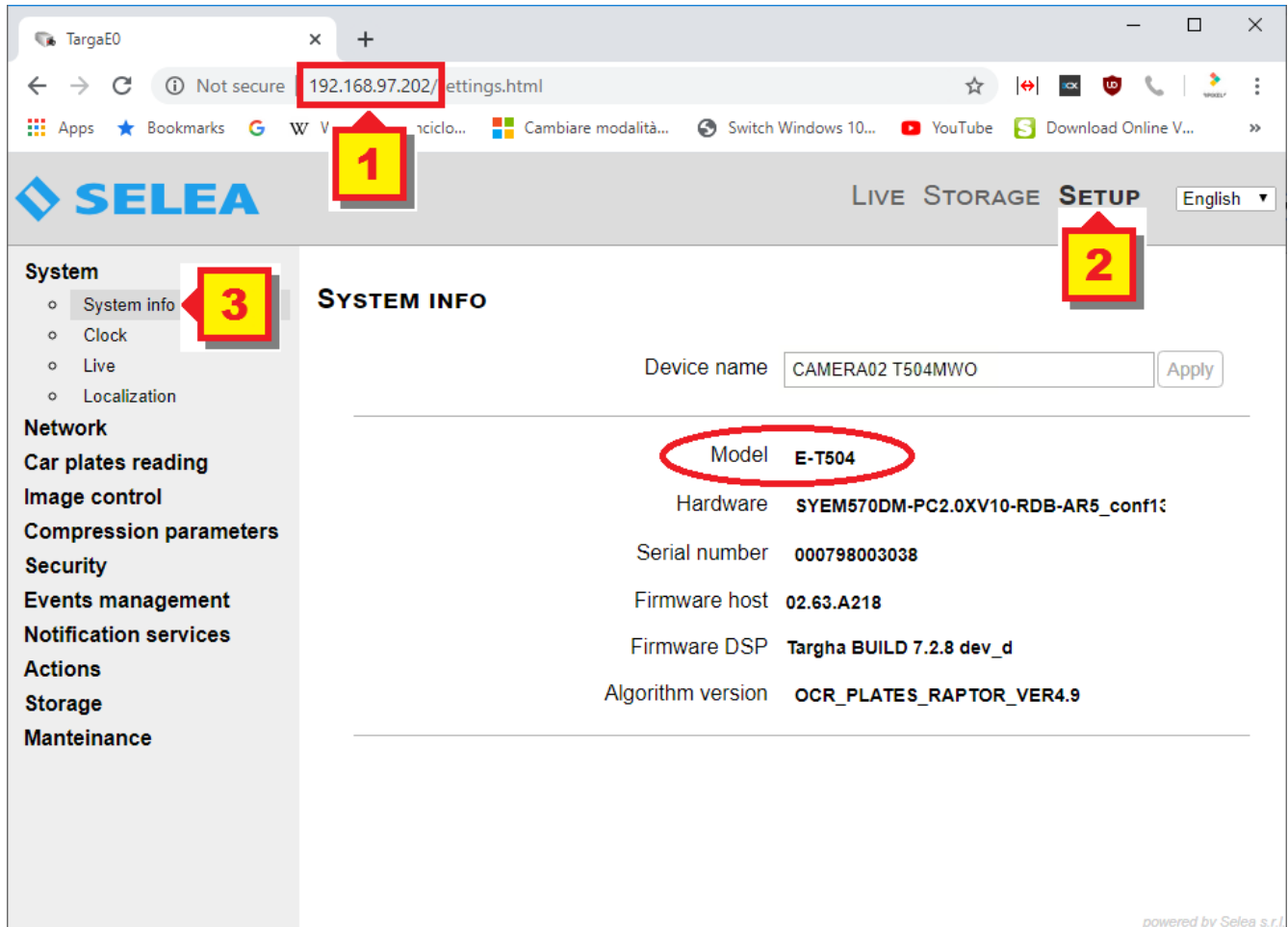
for model E-Txxx(V10), it's an incremental number with the format: *version.subVersion.build*

for model X-Txxx(V12), it's the build date and time with the format: *YY.MM.DD.hh.mm.ss*

Note: for model X-Txxx(V12), this guide is valid only if the firmware release is greater or equal than **BLD202004175406** (4th February 2020, 17:54:06).

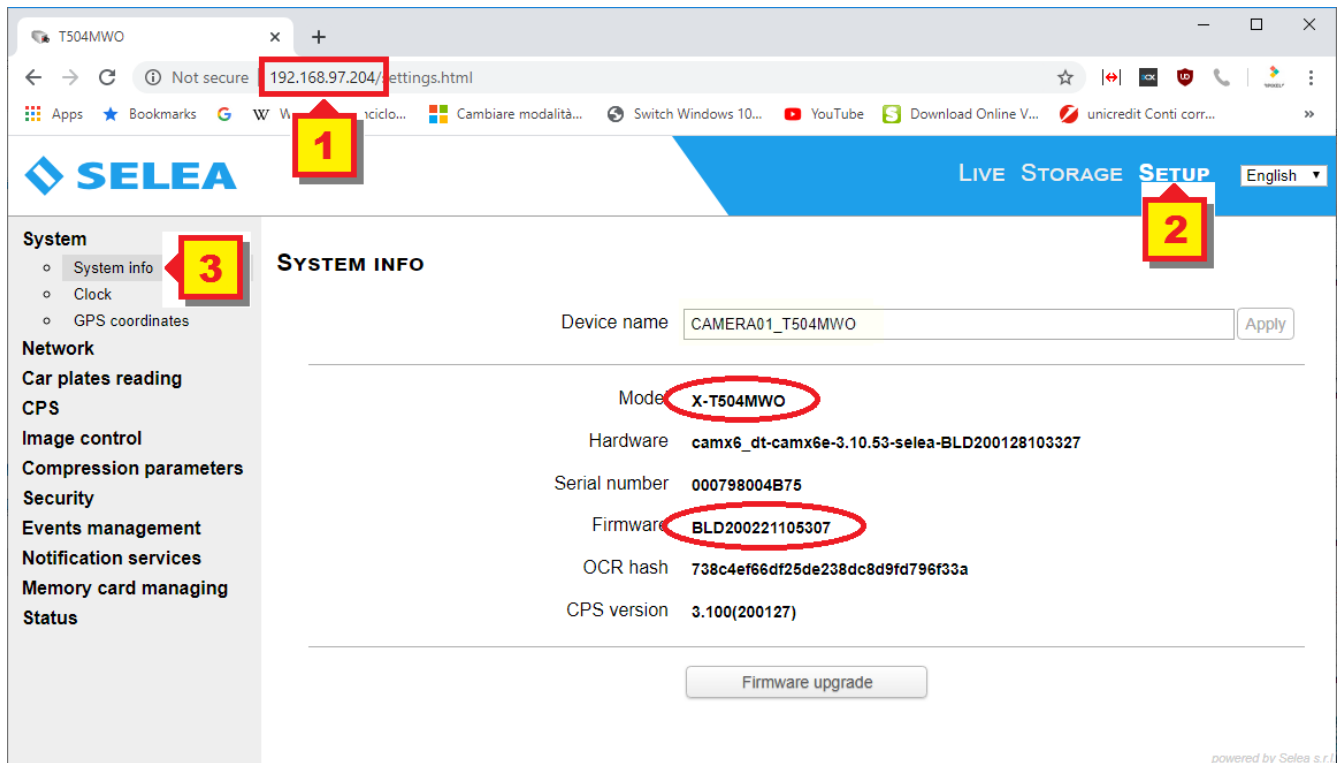
Step 2: Access to the camera WEB interface

Model E-Txxx(V10):



1. Open a browser and access the camera web interface by typing the camera IP address in the address bar of the Browser.
2. Go to "Setup"
3. Go to "System"/"System info" and check if the camera model starts with "E". In this case the camera has the previous hardware release.

Model X-Txxx(V12):

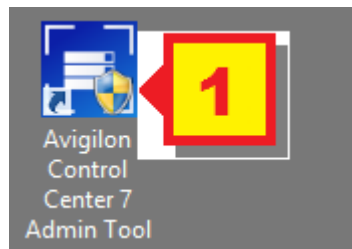


1. Open a browser and access the camera web interface by typing the camera IP address in the address bar of the Browser.
2. Go to “Setup”
3. Go to “System”/”System info” and check if the camera model is “iZero” or starts with “X”

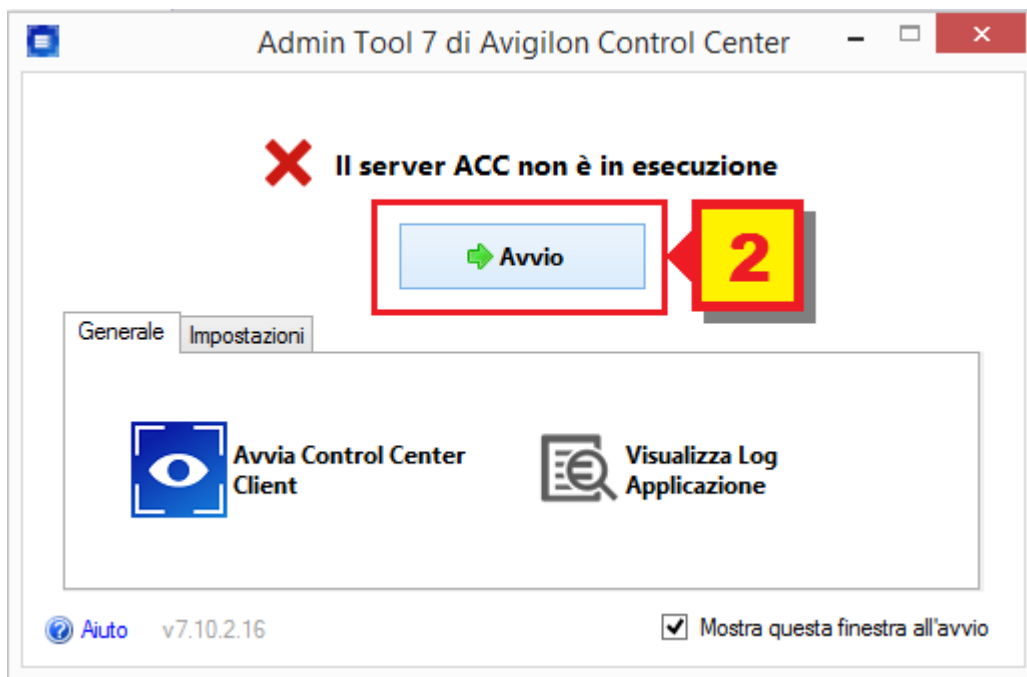
Note:

for “iZero”, “X-T512”, “X-T504”, “X-T704”, “X-T750”, “X-T805” models, the RTSP protocol is supported only by Firmware releases greater than or equal to **BLD202004175406**. Please, perform the firmware upgrade if the version is lower.

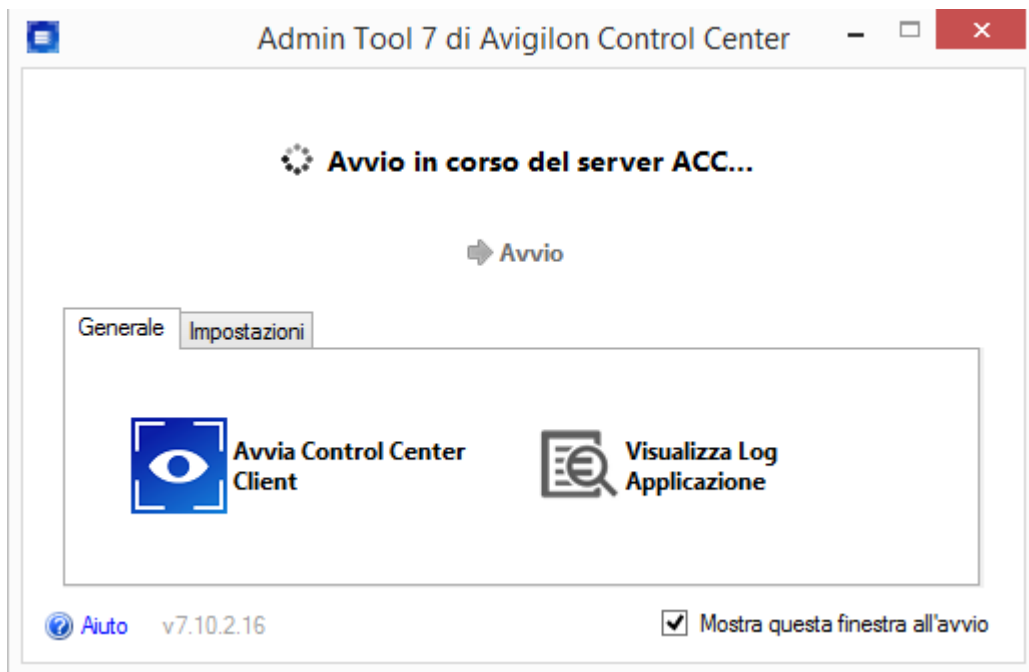
Step 3: Add the camera in *AVIGILON* via *AVIGILON Control Center Client*



1. Start the *Avigilon Control Center Admin Tool*



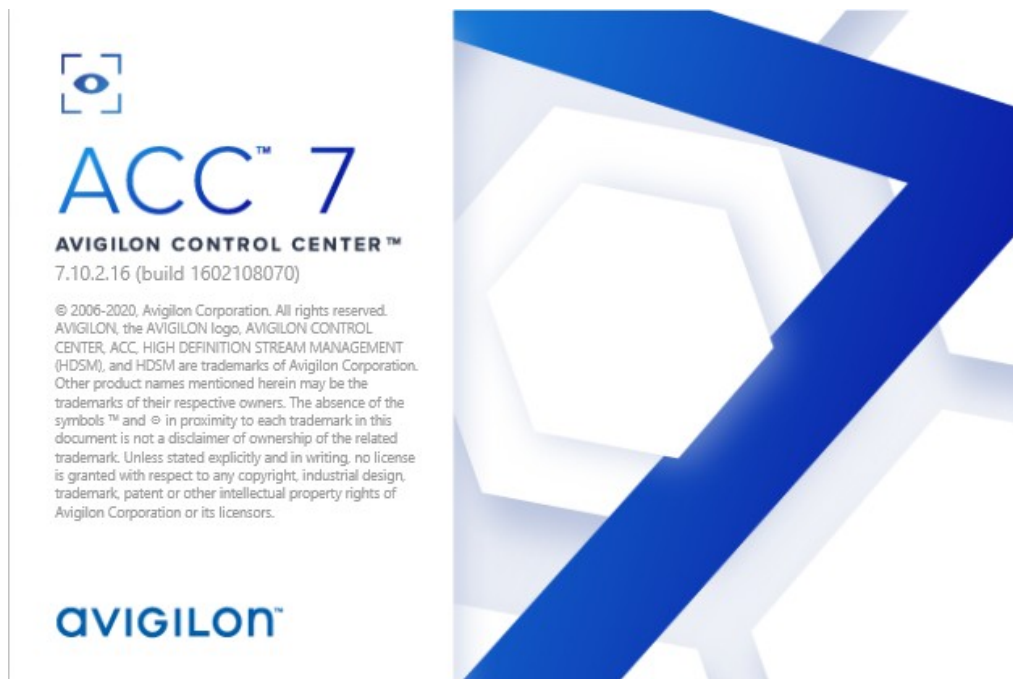
2. If the server is not running, start it.



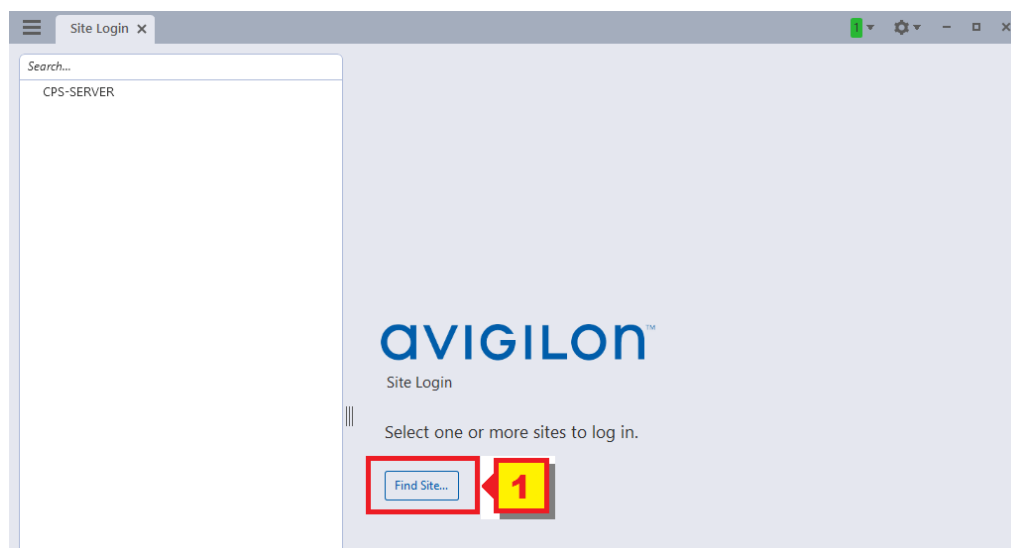
Wait until the server is not started.



3. When the server is running, launch the *Avigilon Control Cener Client*

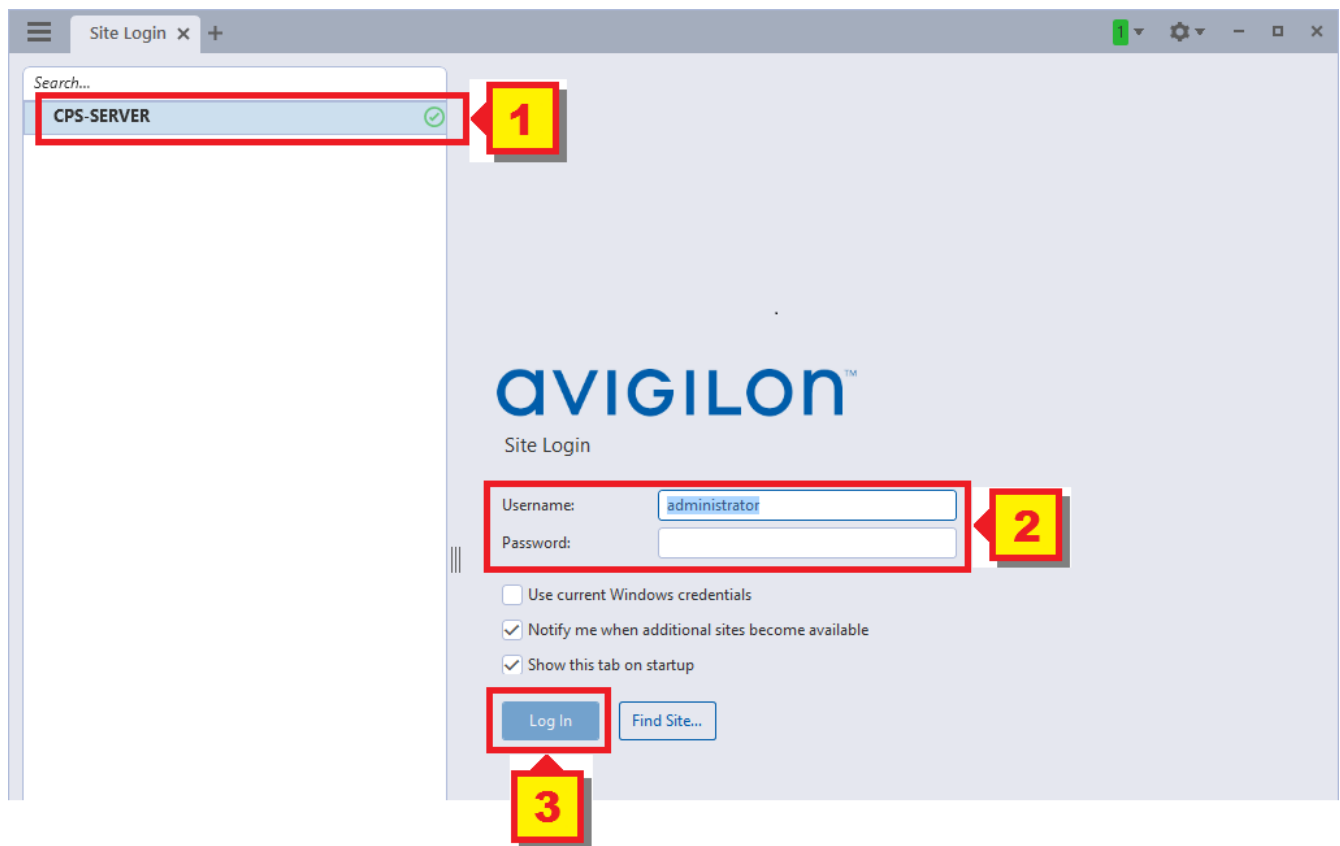


Wait few seconds until the the *Avigilon Control Center* is started.

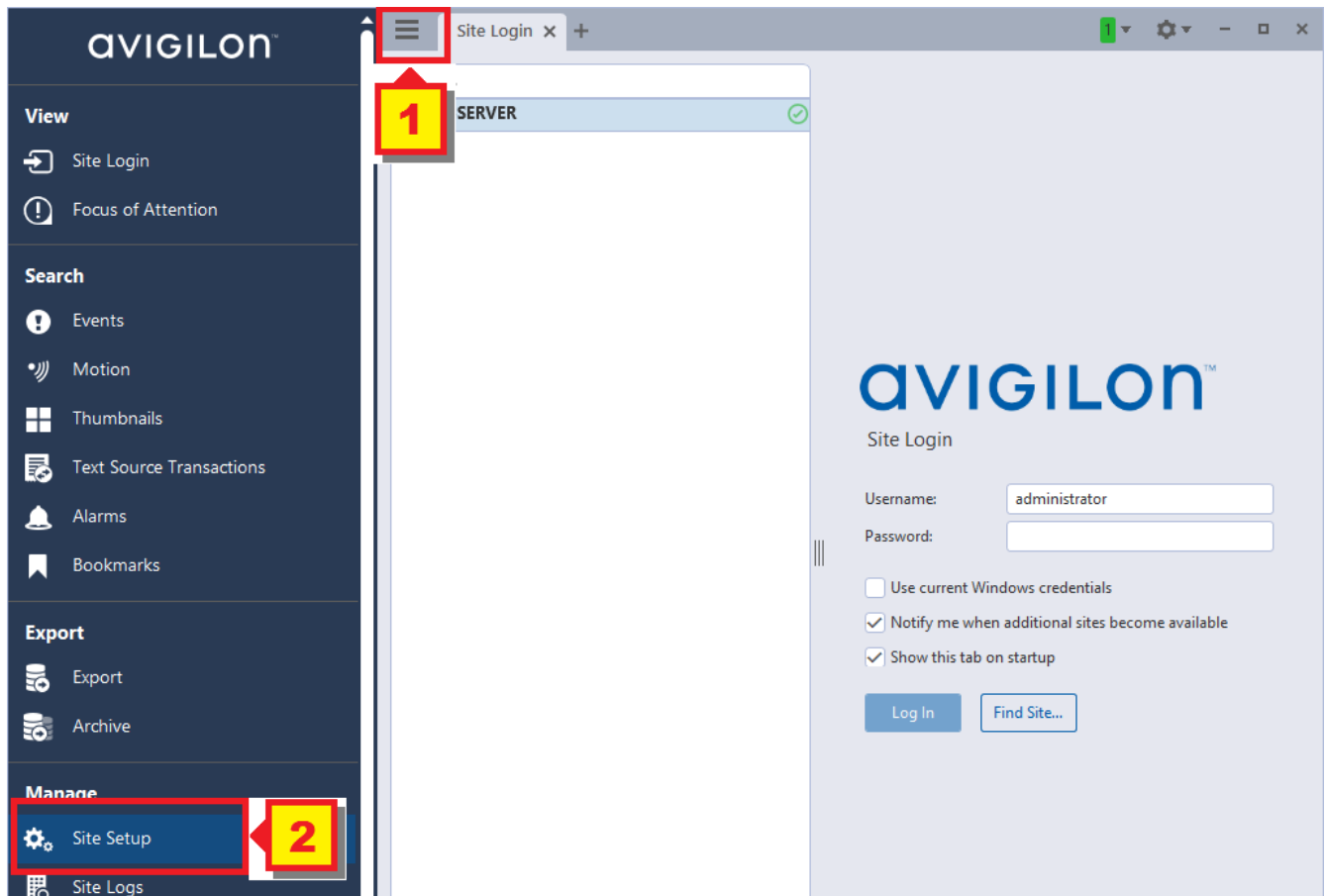


1. Press *Find Site...*

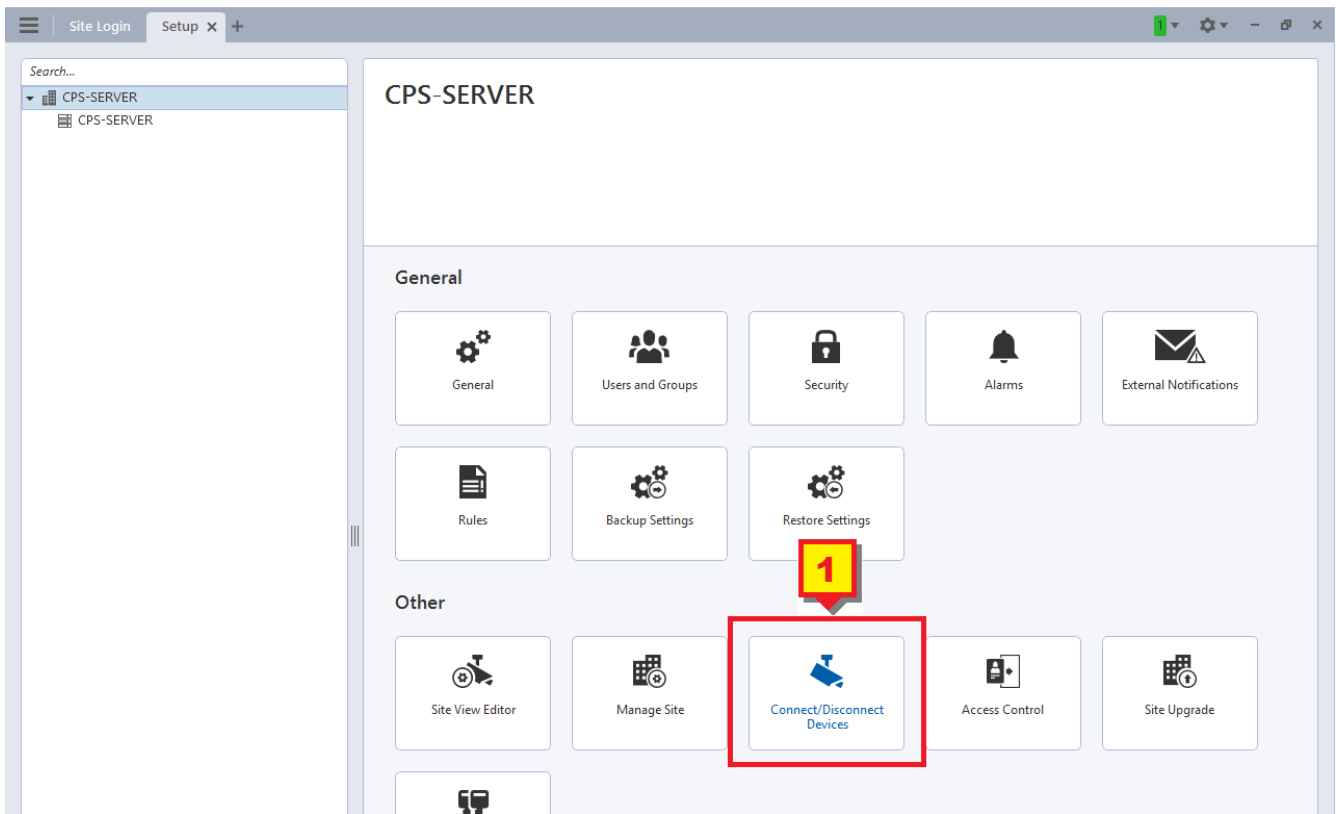
NOTE: in this guide is supposed that a server is already configured in the system. It's not the purpose of this guide to describe how to configure a server. Please refer to AIVIGILOG specific documentation.



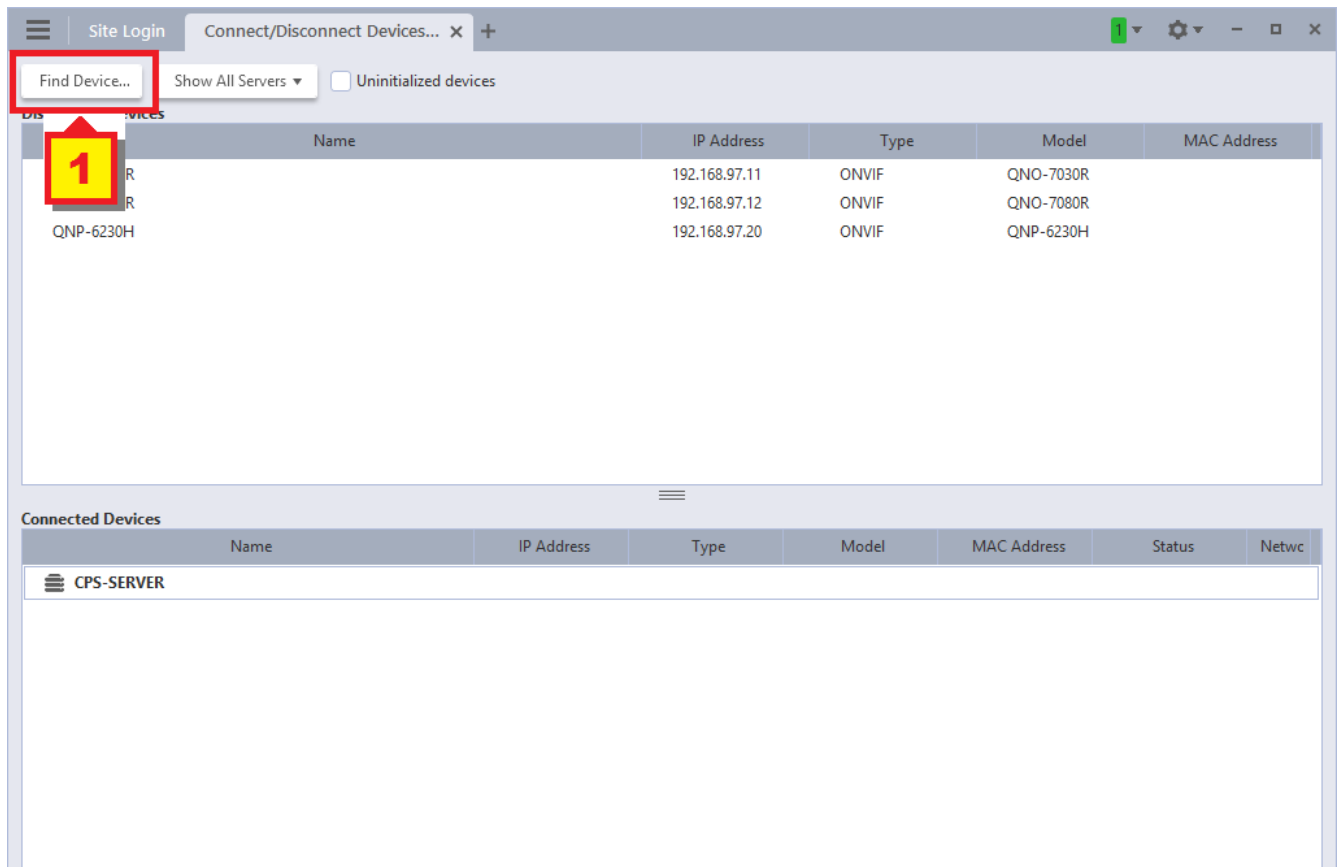
1. Check that the server is correctly found
2. Insert the right credentials
3. Press *Log In* button



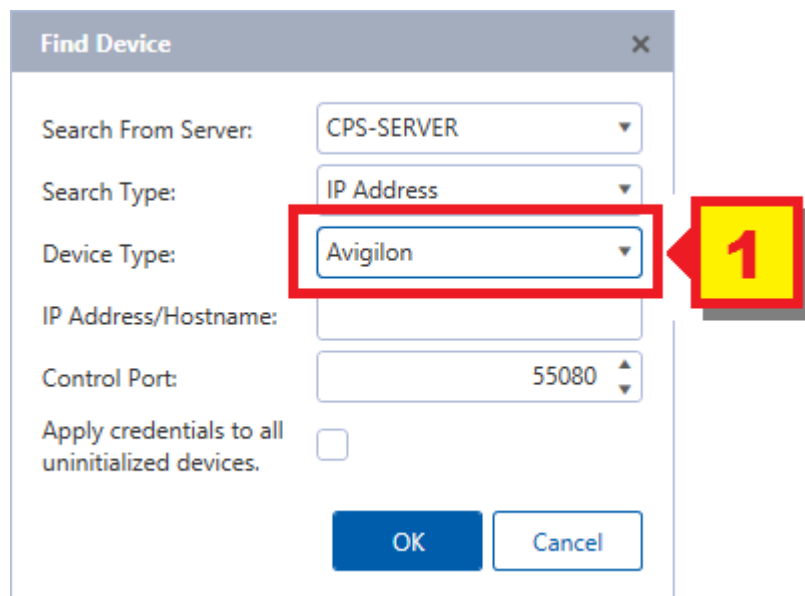
1. Open the menu
2. Goto *Site Setup* page



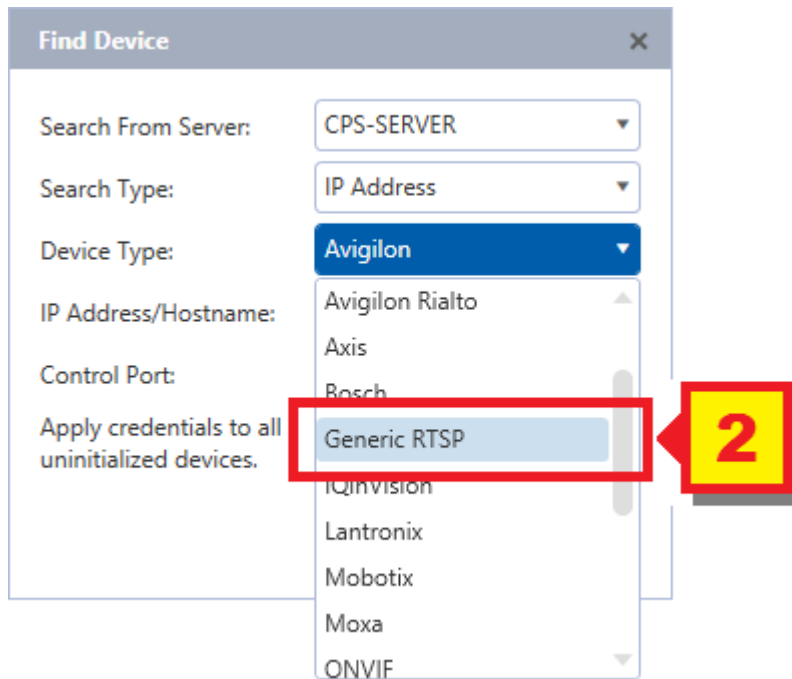
1. Press the “*Connect/Disconnect Devices*” button.



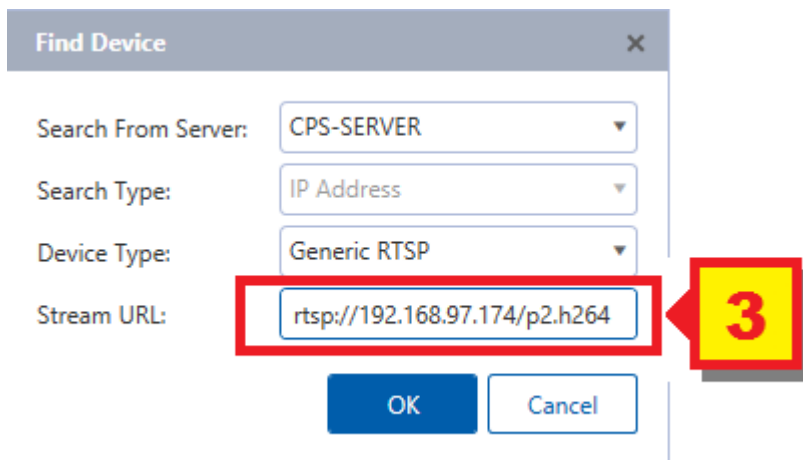
1. Press “*Find Device...*” button



1. In the PopUp window, select the *Device Type* drop-down menu



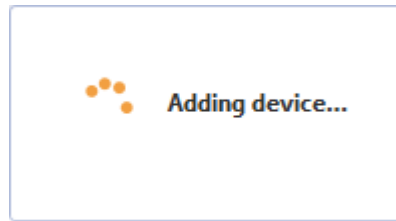
2. Select the *Generic RTSP* Device Type



3. Type the *Stream URL* of the camera.

NOTE: see Step 4 to know the exact URL to type

Then press “OK” button



Wait few seconds. The camera wil'be detected.

The screenshot shows a web application window titled "Connect/Disconnect Devices...". It has a top navigation bar with "Site Login" and a search bar. Below the navigation bar, there are buttons for "Find Device...", "Show All Servers", and a checkbox for "Uninitialized devices". The main content area is divided into two sections: "Discovered Devices" and "Connected Devices".

Discovered Devices Table:

Name	IP Address	Type	Model	MAC Address
QNO-7030R	192.168.97.11	ONVIF	QNO-7030R	
QNO-7080R	192.168.97.12	ONVIF	QNO-7080R	
QNO-6230H	192.168.97.13	ONVIF	QNO-6230H	
rtsp://192.168.97.174:554/p2.264	192.168.97.174	Generic RTSP		

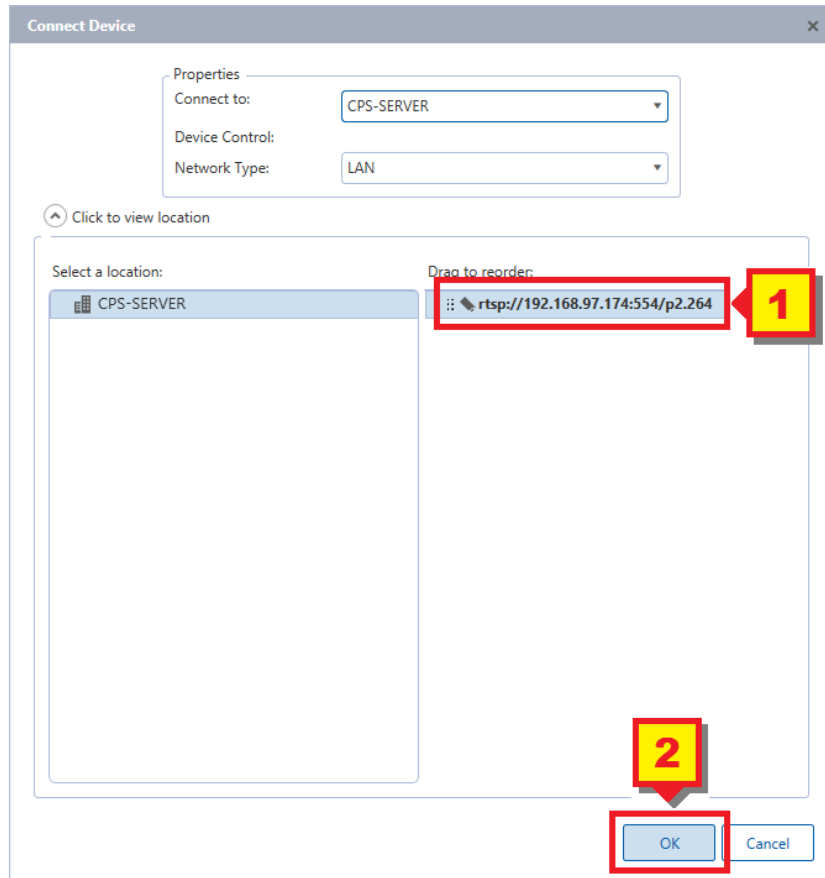
A red box highlights the row for "rtsp://192.168.97.174:554/p2.264", and a yellow callout with the number "1" points to it.

Connected Devices Table:

Name	IP Address	Type	Model	MAC Address	Status	Netwc
CPS-SERVER						

Below the "Connected Devices" table, there is a section for a disconnected device. It shows a camera icon, the stream URL "rtsp://192.168.97.174:554/p2.264", and the IP address "192.168.97.174". A yellow callout with the number "2" points to the "Connect..." button. A warning message states: "Device is Disconnected. This device is not connected to a server. Any events or images are not being recorded." There is also a "Replace..." button.

1. Select the just added stream
2. Press "Connect..." button



1. In the popup window, select the just added device
2. Press the “OK” button

Site Login

Connect/Disconnect Devices... x +

Find Device...

Show All Servers ▾

☐ Uninitialized devices

Discovered Devices

Name	IP Address	Type	Model	MAC Address
QNO-7030R	192.168.97.11	ONVIF	QNO-7030R	
QNO-7080R	192.168.97.12	ONVIF	QNO-7080R	
QNP-6230H	192.168.97.20	ONVIF	QNP-6230H	
rtsp://192.168.97.174:554/p1.mp4	192.168.97.174	Generic RTSP		
rtsp://192.168.97.174:554/p3.264	192.168.97.174	Generic RTSP		

Connected Devices

Name	IP Address	Type	Model	MAC Address	Status	Netwc
CPS-SERVER						
rtsp://192.168.97.174:554/p2.264	192.168.97.174	Generic RTSP			Connected	LAN

↑

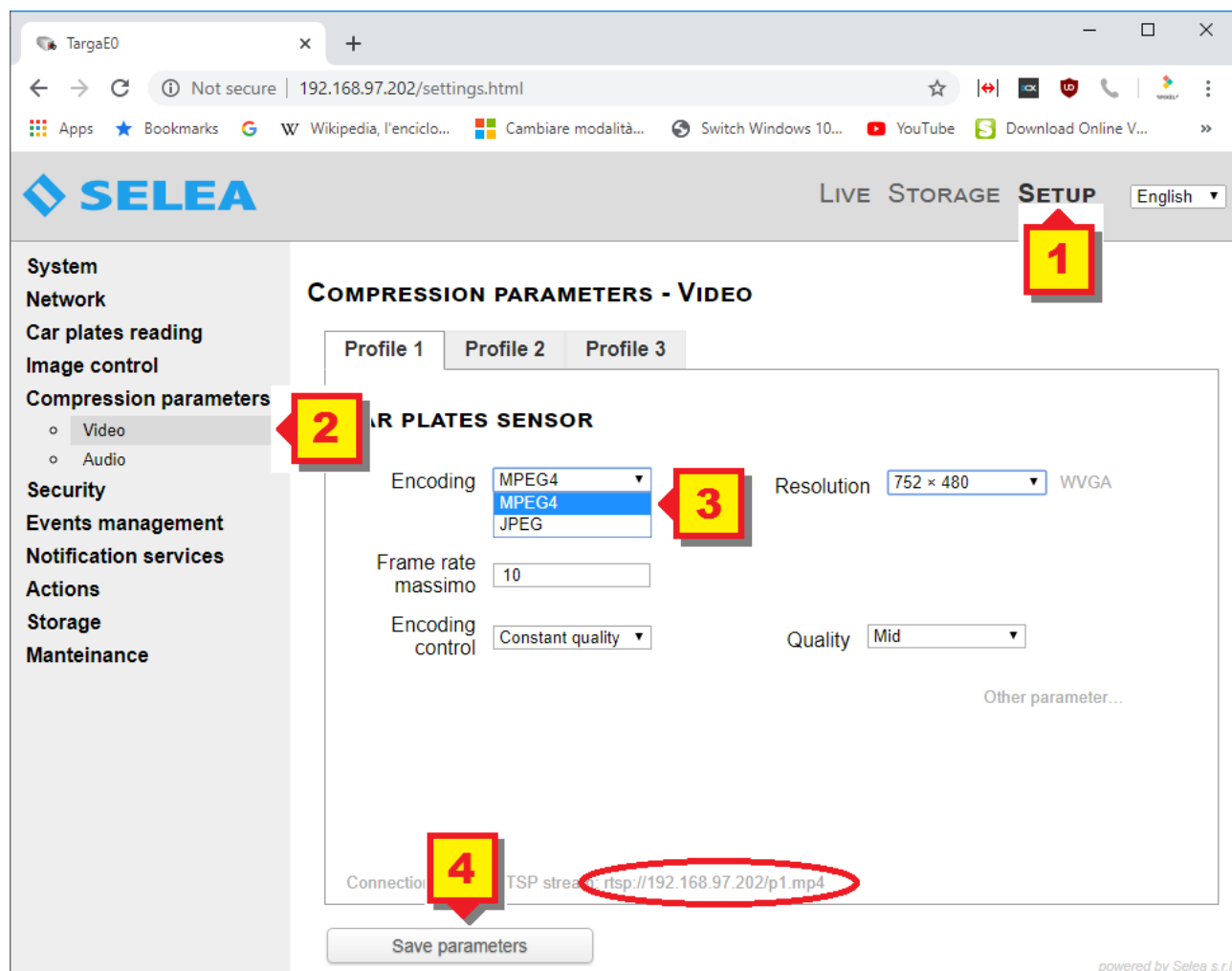
Select a device above

The new device will be visible in the list of connected devices under the desired server.

Step 4: Configure the RTP video stream at camera site

Configure the “E-Txxx” (V10) camera model

Models: E-T512, E-T504M, E-T504MWO, E-T704TKM



1. Go to the “Setup” page
2. Go to the “Compression parameters”/”Video” page
3. Select “MPEG4” as encoding video format
4. Save parameters

At the bottom of the page, an example of the URI is visible: `rtsp://<IP Address>/p1.mp4`

Note: only “MPEG4” video compression is supported for this model (V10).

Suggested parameters:

Encoding: MPEG4

Maximum Frame rate: 10

Resolution: 752x480 (*E-T512, E-T504, E-T704*), 960x544 (*E-T750, E-T805*)

Encoding control: Constant Quality

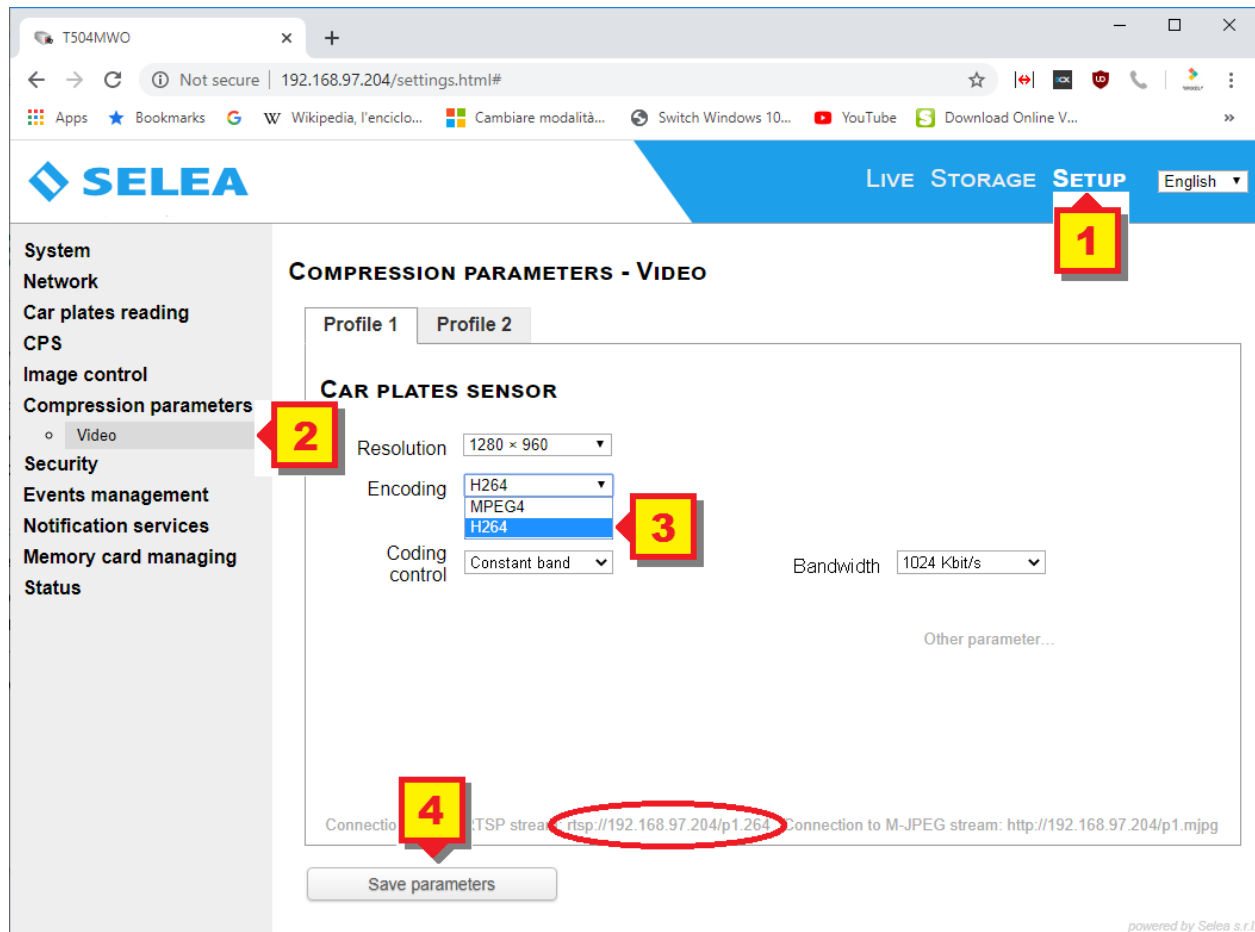
Quality: Mid

URL to type in “ *AVIGILON Management Client*”:

rtsp://<IP address>/p1.mp4	OCR
rtsp://<IP address>/p2.mp4	Context
rtsp://<IP address>/p3.mp4	Picture In Picture

Configure the “iZero” or “X-Txxx” camera models (V12)

Models: iZero, X-T504M, X-T504MWO, X-T704TKM



1. Go to the “Setup” page
2. Go to the “Compression parameters”/”Video” page
3. Select “MPEG4” or “H264” as encoding video format
4. Save parameters

At the bottom of the page, an example of the URI is visible:
`rtsp://<IP Address>/p1.264`

Note: this model (V12) also supports H264, in addition to MPEG4

Suggested parameters:

Encoding: H264

Resolution: 1280x960 (iZero, X-T512, X-T504, X-T704), 1024x544 (X-T750, X-T805)

Encoding control: Constant Band

Bandwidth: 1024Kbit/s or 2048Kbit/sec

URL to type in “ *AVIGILON Management Client*”:

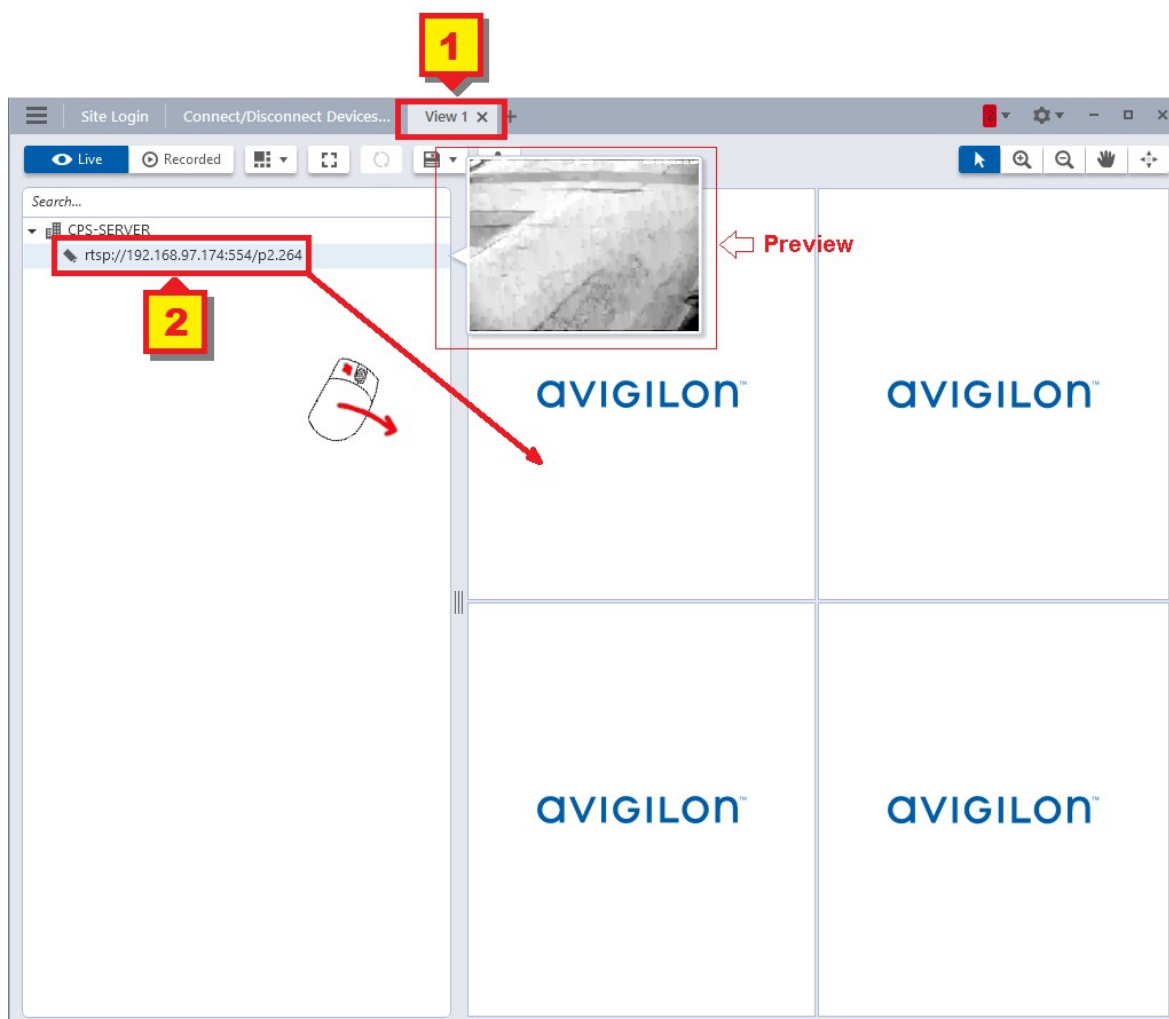
MPEG4:

rtsp://<IP address>/p1.mp4	OCR
rtsp://<IP address>/p2.mp4	OCR realtime
rtsp://<IP address>/p3.mp4	Picture In Picture

H264:

rtsp://<IP address>/p1.264	OCR
rtsp://<IP address>/p2.264	OCR realtime
rtsp://<IP address>/p3.264	Picture In Picture

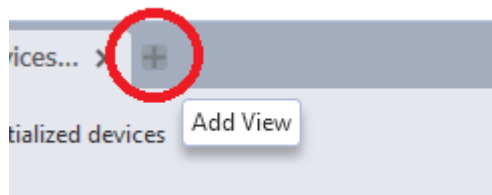
Step 5: view the live stream in *AVIGILON*

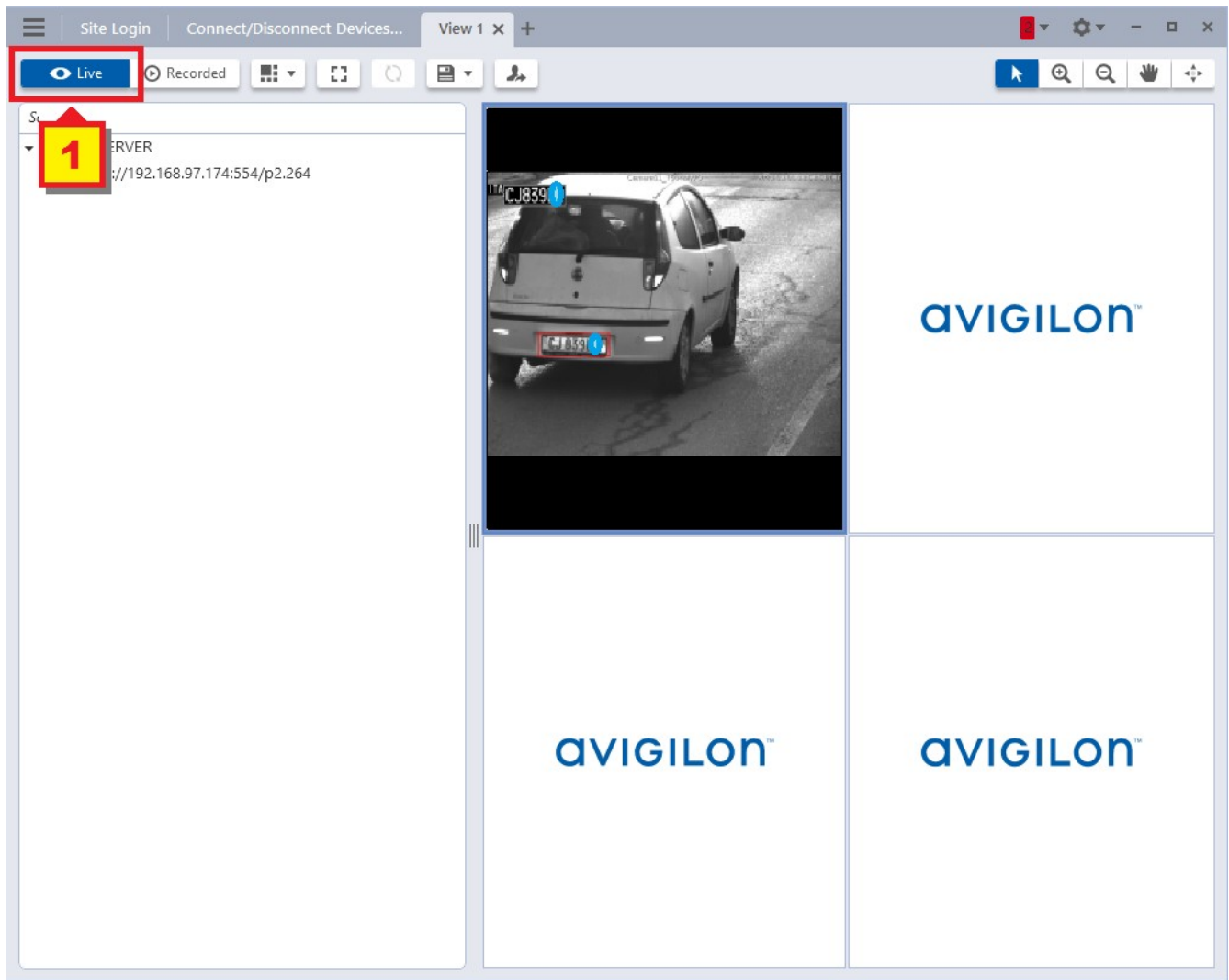


1. Select the “View” pane (*)
2. Select the new device and *drag&drop* in a free place.

(*) NOTE:

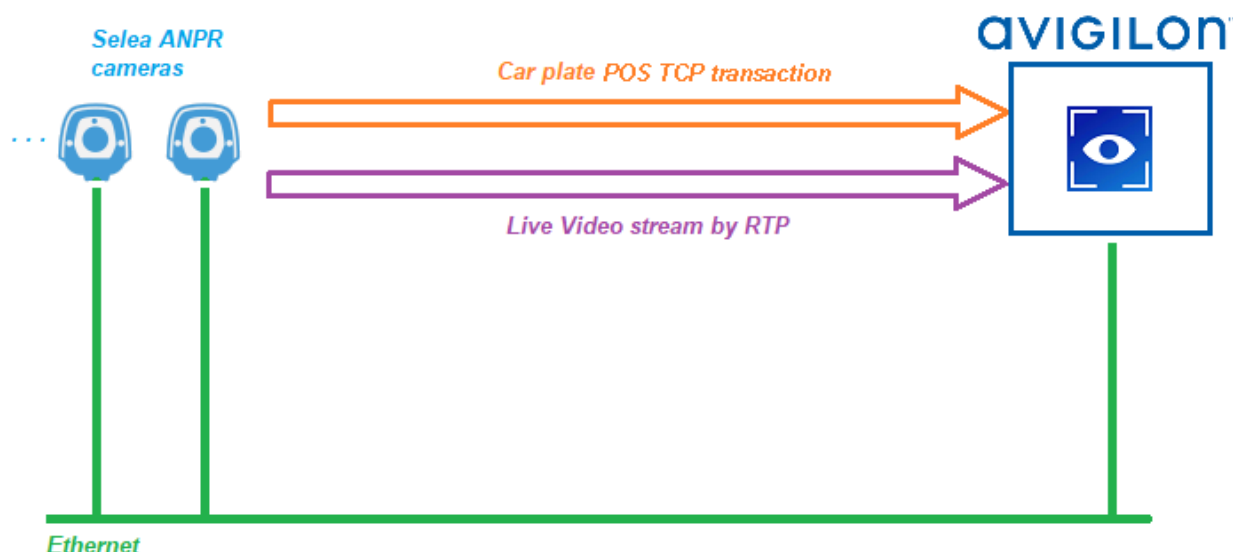
if the “View” pane is not visible, press the add button icon





1. Accessing the “Live” section, the live view is visible.

PART 2: MANAGING LICENCE PLATE METADATA BY POS TCP



Camera sends textual informations regarding the detected car plates to *AVIGILON* using *POS TCP* transaction.

The camera acts as a server and opens a port in listening mode. *AVIGILON* acts as a client that connects to the camera. At every detected car plates, the camera sends a textual *POS TCP* transaction.

At *AVIGILON* site, is possible to associate the *POS TCP* source to one or more live video stream.

Step 6: configure the *POS TCP* transaction at camera site

Configure the “E-Txxx” (V10) camera model

Models: E-T512, E-T504M, E-T504MWO, E-T704TKM

The screenshot shows the SELEA camera configuration web interface. The top bar includes the SELEA logo, 'LIVE STORAGE', and a 'SETUP' button (highlighted with a red box and a yellow callout '1'). A language dropdown is set to 'English'. The left sidebar menu has 'XML' highlighted under 'Notification services' (highlighted with a red box and a yellow callout '2'). The main content area is titled 'XML NOTIFICATIONS SETTING'. It includes a checkbox for 'Enable XML notifications' (checked, highlighted with a red box and a yellow callout '3'). Below this is the 'Server' section with fields for 'IP address' (blank, highlighted with a red box and a yellow callout '4'), 'Port' (23, highlighted with a red box and a yellow callout '5'), 'Username' (blank, highlighted with a red box and a yellow callout '6'), and 'Password' (blank, highlighted with a red box and a yellow callout '6'). The 'Sending options' section has a 'Service type' dropdown menu set to 'Milestone XProtect® Transact' (highlighted with a red box and a yellow callout '7') and a 'Milestone server UUID' field (blank). A 'Save parameters' button is at the bottom.

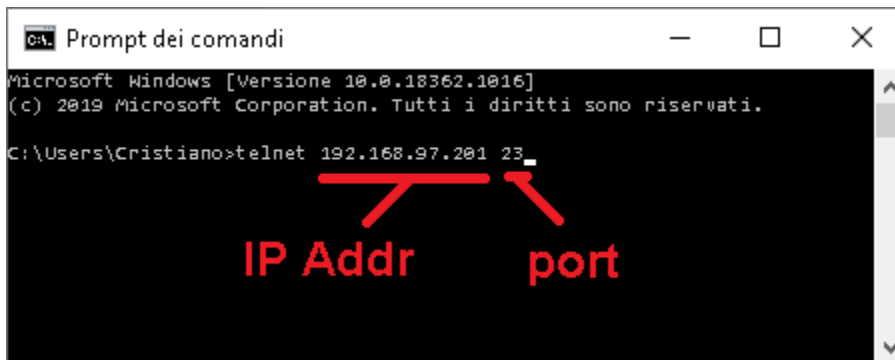
1. Goto “Setup” menu
2. Goto “Nonitication services”/”XML” submenu
3. Check the “Enable XML notifications” box
4. leave blank the “IP address”
NOTE: the camera acts as a server, and manage the incoming conections without the need to specify the IP address of the AVIGILON client.
5. Specify the port that will be used for POS TCP transaction.
NOTE: the same port number must be specified in the AVIGILON configuration. See later.
6. Leave blank the “username” and “password” credentials
7. In the “Servive type” drop-down menu, select the “Milestone XProtect Transact” and leave blanck the “Milestone server UUID”

Press “Save parameters” button to save the settings.

NOTE: the camera will reboots itself and turn back online after a couple o minutes.

Test the connection

When the camera turn back online after the reboot time, it's possible to test the connection by a simple DOS terminal.



Open a DOS terminal and type:

```
telnet <camera IP address> <port number>
```

Note: “*port number*” must match the ones specified in the camera setup page (see previous page). If you don't specify the port number, telnet command assumes the default port number equal to 23.



At every car plate detection, the camera sends the following POS transaction visible in the DOS consolle:

```
SELEA LPR camera
```

```
Carplate OCR: <car plate>
```

```
Carplate List: <car plate list>
```

Configure the “iZero” or “X-Txxx” camera models (V12)

Models: iZero, X-T504M, X-T504MWO, X-T704TKM

SELEA

LIVE STORAGE **SETUP** English ▼

System
Network
Car plates reading
CPS
Image control
Compression parameters
Security
Events management
Notification services
Memory card managing
Status

NOTIFICATION POS/IP

Server POS/IP

Enable ☒

Port 5666

Allowed IP access

1° 192.168.96.79

2°

3°

4°

Model

+ Add TAG

Sample templates ▼

Save parameters

powered by Selea s.r.l

1. Goto “Setup” menu
2. Goto “Notification services”/“Notification POS/IP” sub menu
3. Check the “Enable” box
4. Type the port that will be used for the transaction.
NOTE: the port number must match the one specified in *AVIGILON* configuration. See later.
5. Type the IP Address of the machine where *AVIGILON* is running.
NOTE: the camera acts as a server and manage the incoming connection coming from clients without the need to know the Ip addresses of clients. The four available IP addresses work just as credential filters.

System
Network
Car plates reading
CPS
Image control
Compression parameters
Security
Events management
Notification services
Memory card managing
Status

NOTIFICATION POS/IP

Server POS/IP

Enable ☒

Port

Allowed IP access

1°

2°

3°

4°

Save parameters

Model

Selea LPR Camera

Carplate OCR: \$CARPLATE\$
Carplate list: \$TYPE\$
TimeStamp: \$DATETIME\$
CameraName: \$CAMERANAME\$
CameraMAC: \$MACADDRESS\$
Type: \$CARPLATE_TYPE\$

+ Add TAG

In the new V12 model, respect to the previous V10, the POS transaction format is not fixed but is fully configurable. It's possible to select various precompiled templates. The most simple is the "Simple POS" template.

The precompiled template is made with the following information:

Simple LPR Camera

```

Carplate OCR: <car plate OCR>
Carplate list: <car plate list>
TimeStamp: <timestamp>
CameraName: <camera name>
CameraMAC: <MAC ADDRESS>
Type: <vehicle type>

```

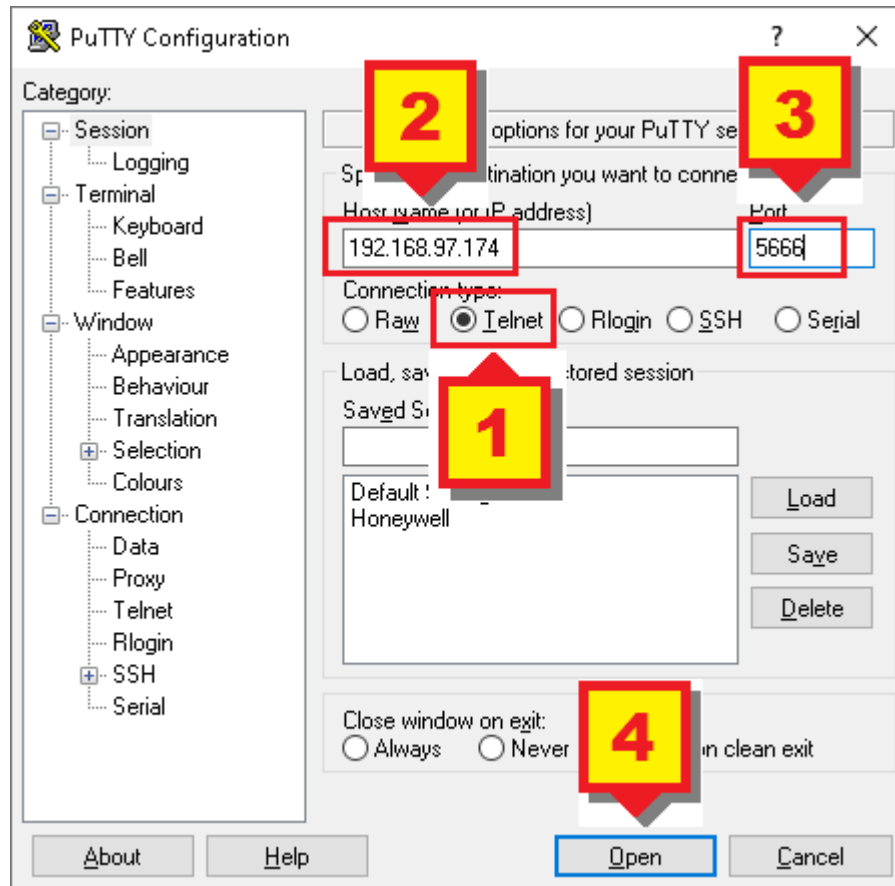
Where:

- car plate list: white list, black list or not in list
- Type: car, motobike, motorcycle, trailer

Press "Save parameters" to save the information. The camera doesn't need to be rebooted.

Test the connection

It's possible to test the connection by a program like *Putty*.



Run *Putty* (<https://www.putty.org/>) and open the “Session” menu.

1. Select the “Telnet” connection type
2. type the camera IP Address
3. type the port to use for the transaction.
NOTE: the port number must match the one specified in the camera configuration (see before).
4. Press “Open” button to open the connection.

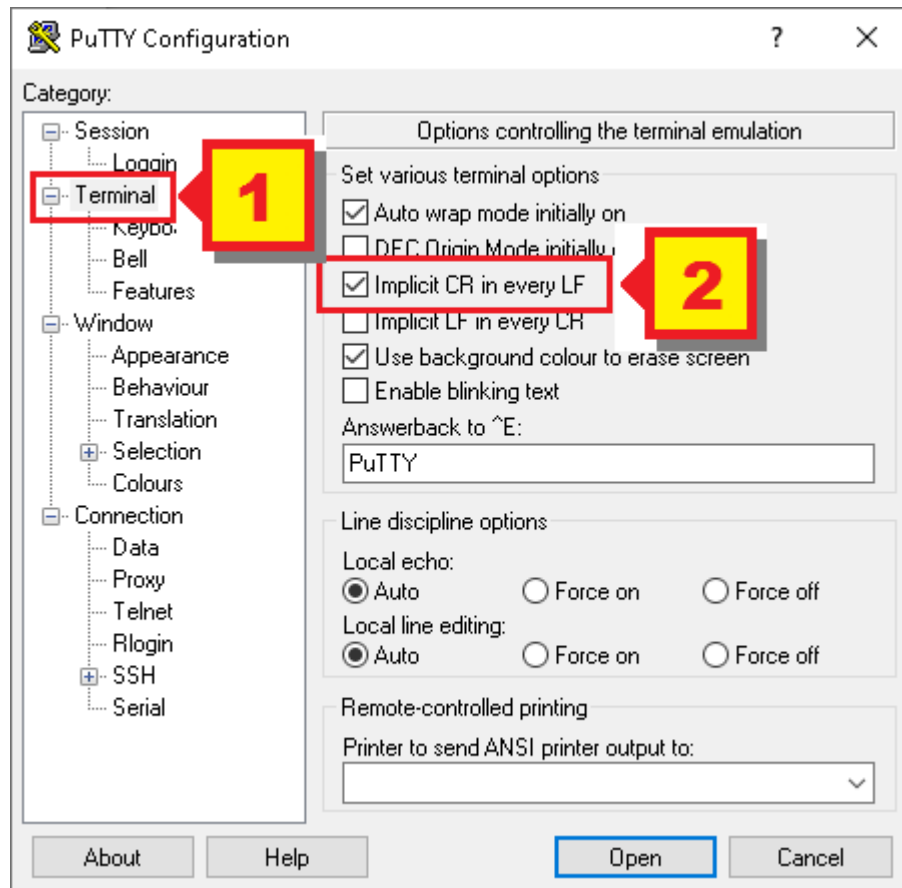

```
192.168.97.174 - PuTTY
504MD
    CameraMAC: 000798BC0031
                Type: AUTO
                Selea LPR Camera
                                Carplate OCR: FF919FA
                                Carp
late list: nolist
                TimeStamp: 2020-11-03T15:10:41.666000+01:00
                                CameraName: T504MD
                                Ca
meraMAC: 000798BC0031
                Type: AUTO
                Selea LPR Camera
                                Carplate OCR: FF919FA
                                Carplate 11
st: nolist
                TimeStamp: 2020-11-03T15:10:41.666000+01:00
                                CameraName: T504MD
                                CameraMAC
: 000798BC0031
                Type: AUTO
```

At every car plate detection, the camera sends the POS transaction visible in the console.

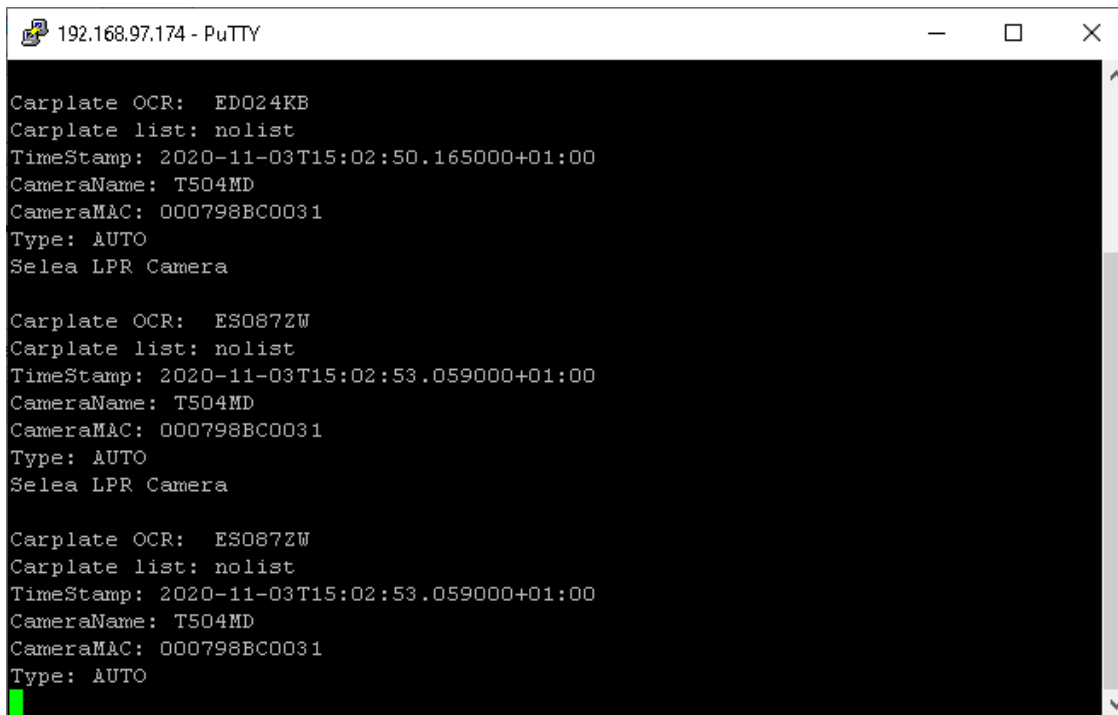
Note: the new model V12, is based on a Linux system and put just the *LF* (*Line Feed*) character as terminator instead of the couple *CRLF* (*carriage return + line feed*).

To see a better allignement, is possible to enable the “*implicit CR in every LF*” option in *Putty*. With this option, the text should appear better alligned.

Note: this option only affects the rapresentation, nothing change in the RAW character stream transaction send by the camera. *AVIGILOG* is able to parse the *POS* transaction even if the terminator is mabe by *LF* only.



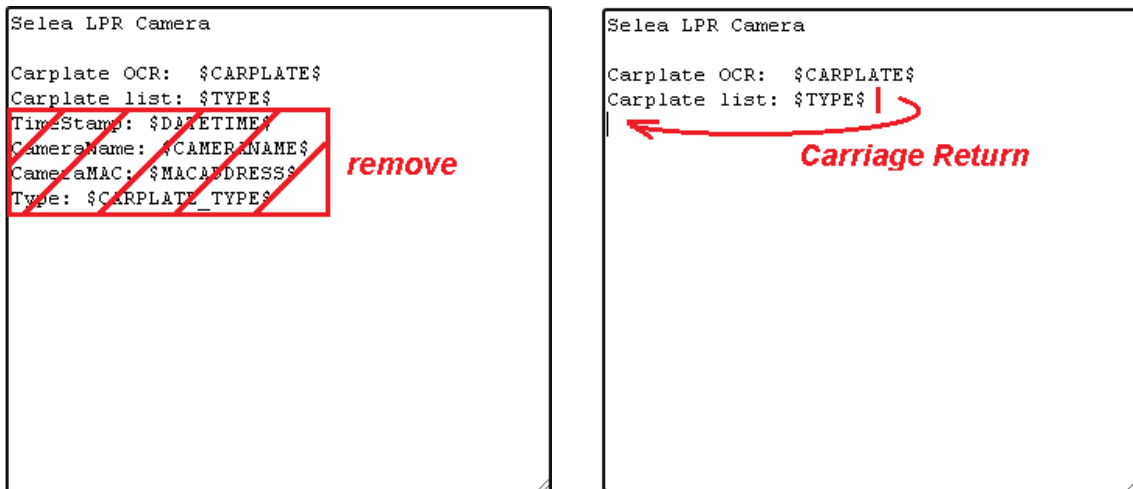
1. Goto “Terminal” menu
2. enable the “implicit CR in every LF” option”



Made a legacy POS transaction

In the new V12 camera model, the format of the transaction is fully customizable. It's also possible to reproduce exactly the format of the previous V10 camera model.

To obtain the same format of the previous V10 model:

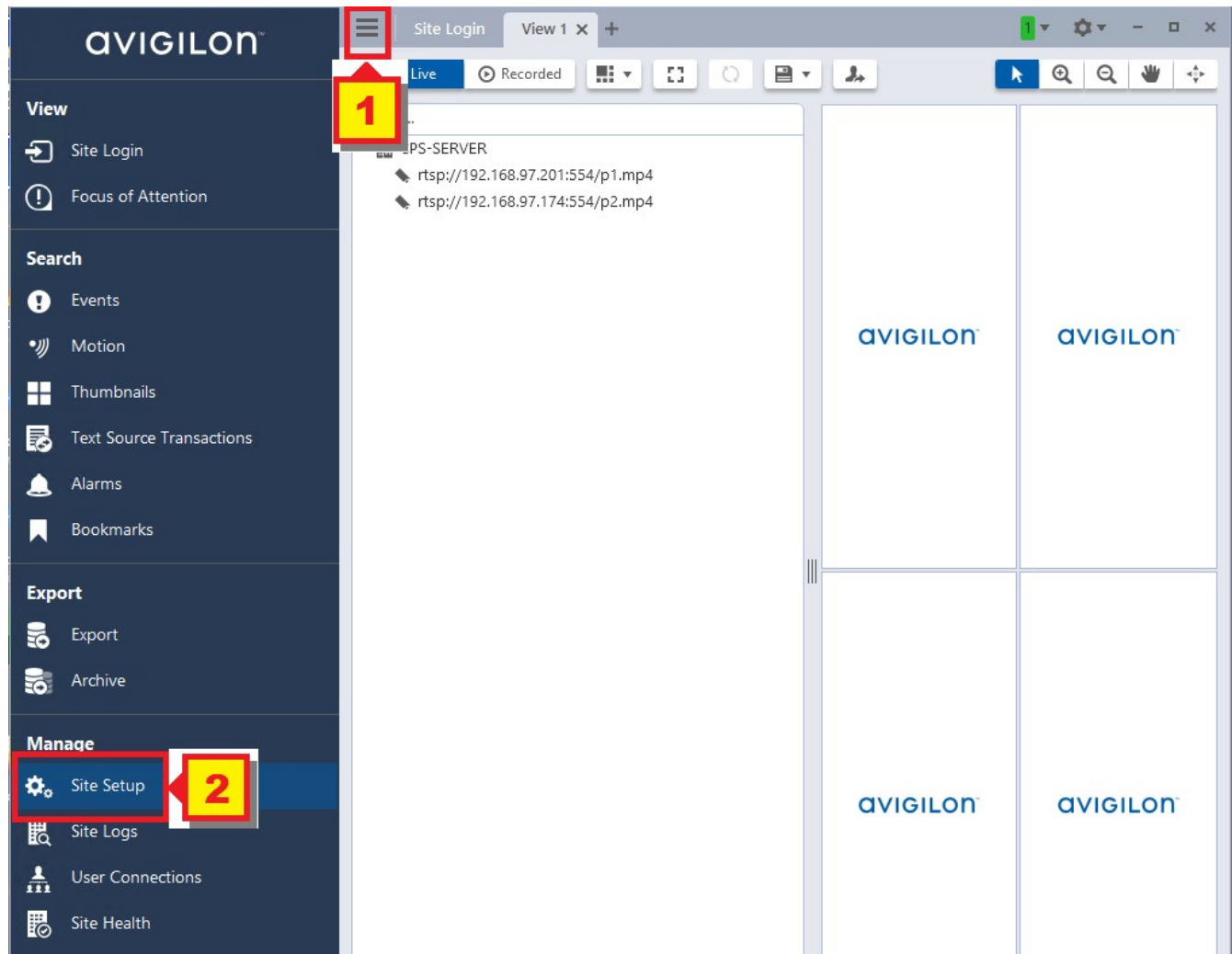


- remove the last four row and leave just “Carplate OCR” and “Carplate list”
- take care to insert a *Carriage Return* at the end of the file.

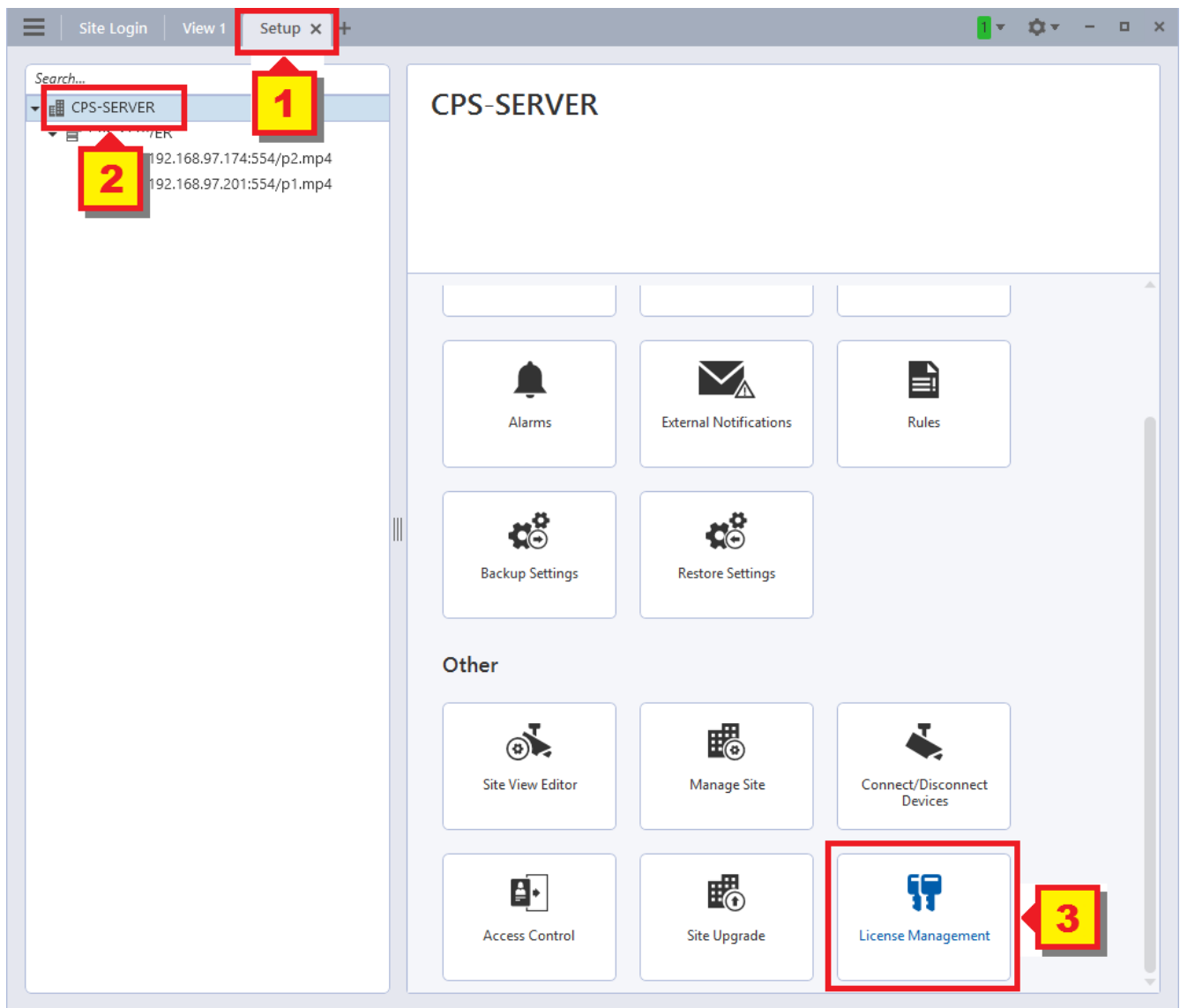


Now the output is identical to one obtained with the previous V10 model. You can compare with the one shown before.

Step 7: configure the *POS TCP* transaction at *AVIGILON* site



1. open the side menu
2. open the “*Site Setup*”



1. Goto "Setup" page
2. select the desired server
3. press the "License Management" button

License Management - CPS-SERVER

Select Edition: Enterprise Apply

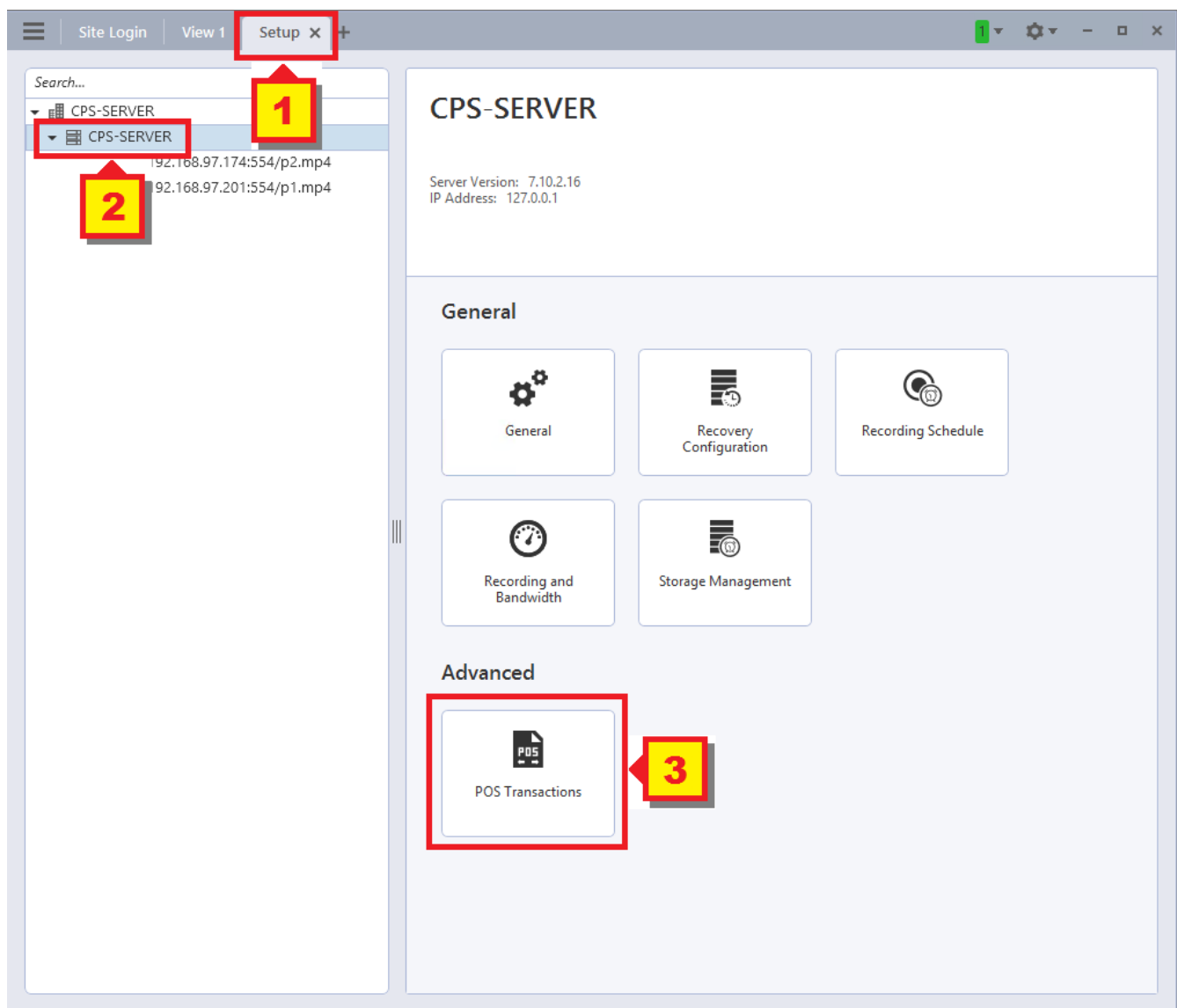
Product Key	Part Number	Cameras	Failover	POS	LPR6	Face	Expiry Date	Version
Active								
51D7-7457-A75C-48CE-BC0E-DF5C-68D3-5E18	ACC7-ENT-30D	300	0	0	0	0	26/11/2020	7
E473-E674-8CE2-4E20-866B-2100-79B0-514B	ACC7-POS-STR-30D	0	0	4	0	0	27/11/2020	7
Enterprise Total		300	0	4	0	0		

Add License... Remove License...

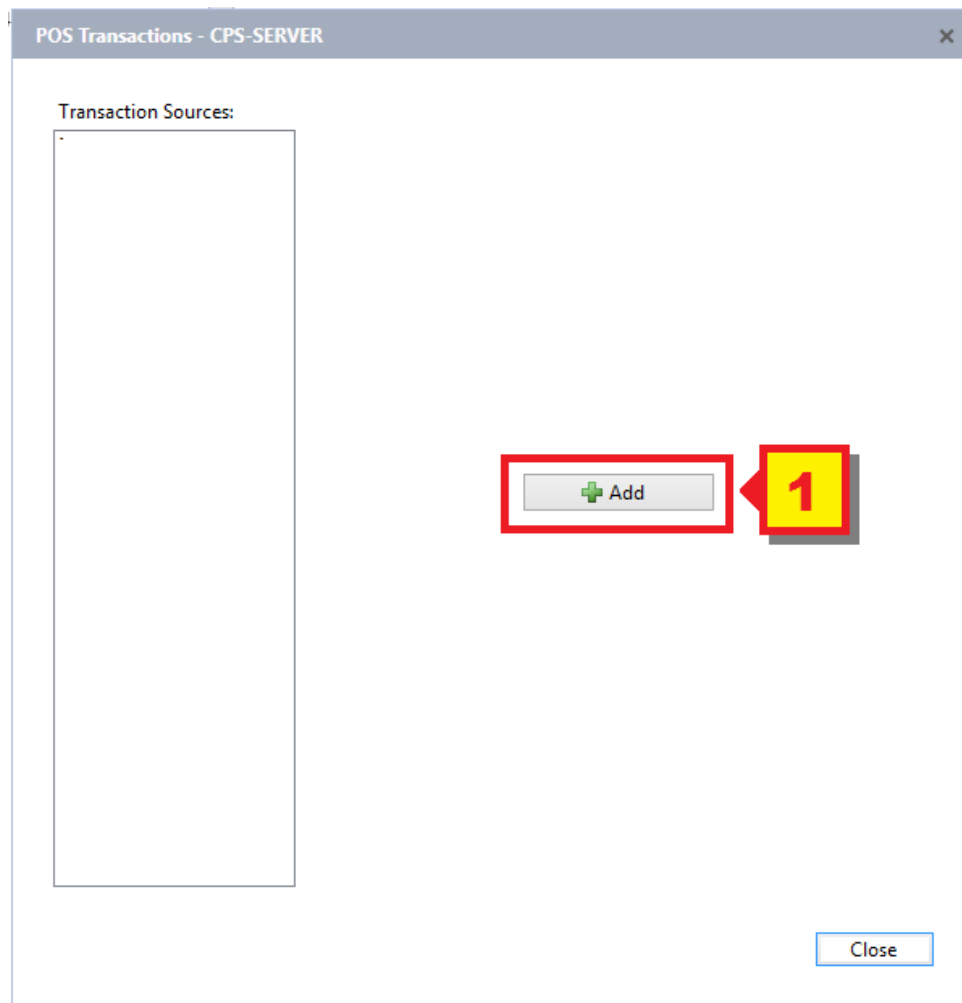
Close

In the *License Management* windows, check that under the *POS* column, a valid license is present in the system.

NOTE: to manage the *POS* transaction received from the camera, a valid licence is necessary. If you don't have a license, please contact *AVIGILON* support.



1. Goto “Setup” menu
2. select the running server
3. press the “POS Transaction” button



1. Press the “*Add*” button

POS Transactions Setup

Set Transaction Source Device

Set the IP address and port for the transaction source device:

Hostname/IP Address: 192.168.97.174

Port: 5666

Connection Type: ☒ Client ☐ Server

Previous Next Cancel

1. Type the camera IP Address and the TCP port used for transaction.
NOTE: the port number must match the one specified in the camera configuration (see before).
2. Select “Client” as “Connection Type” (note: the “server” role is done by the camera)
3. Press “Next” button

POS Transactions Setup

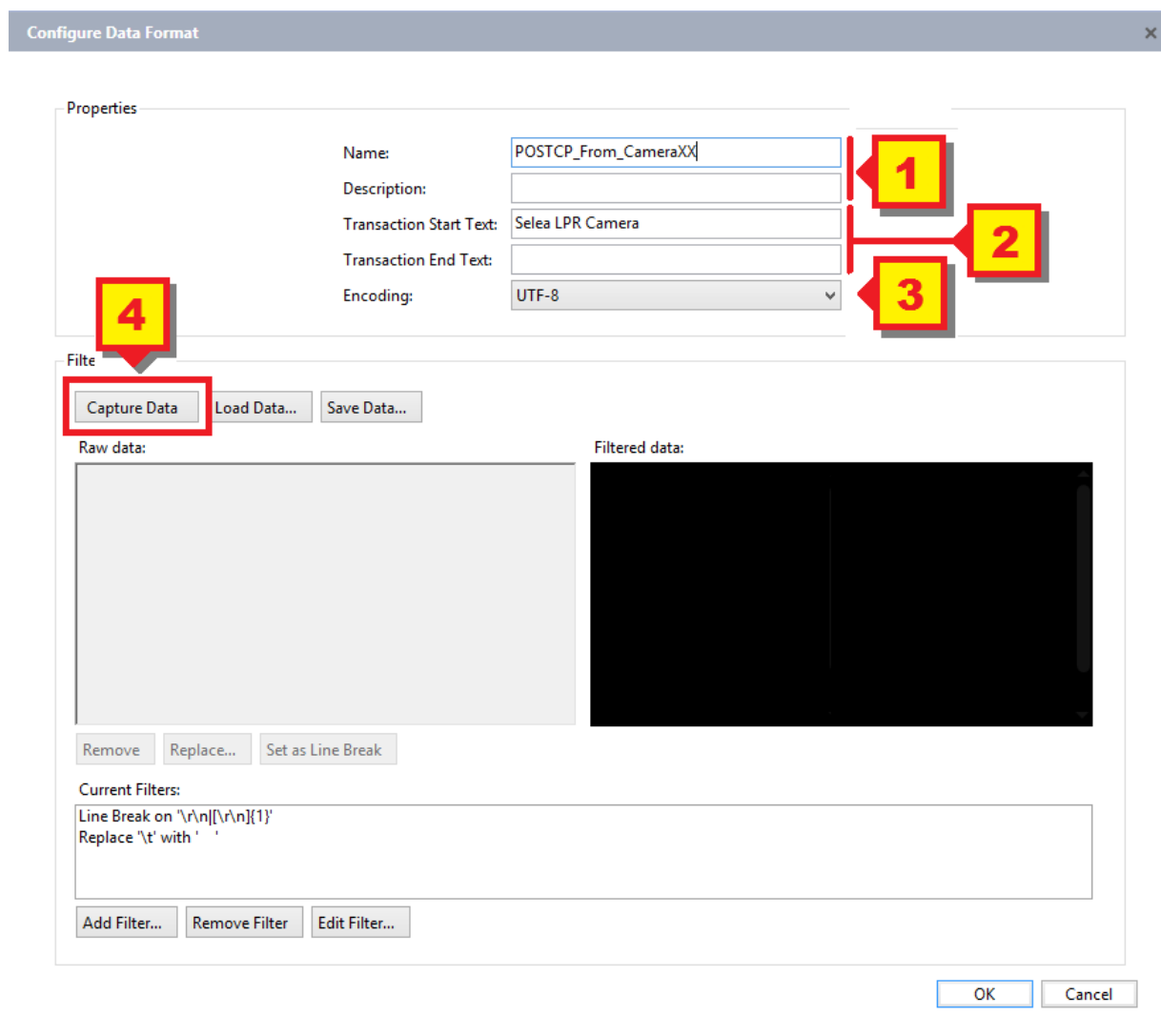
Set Transaction Source Data Format

Select the data format to use for this transaction source:

+ Add

Previous Next Cancel

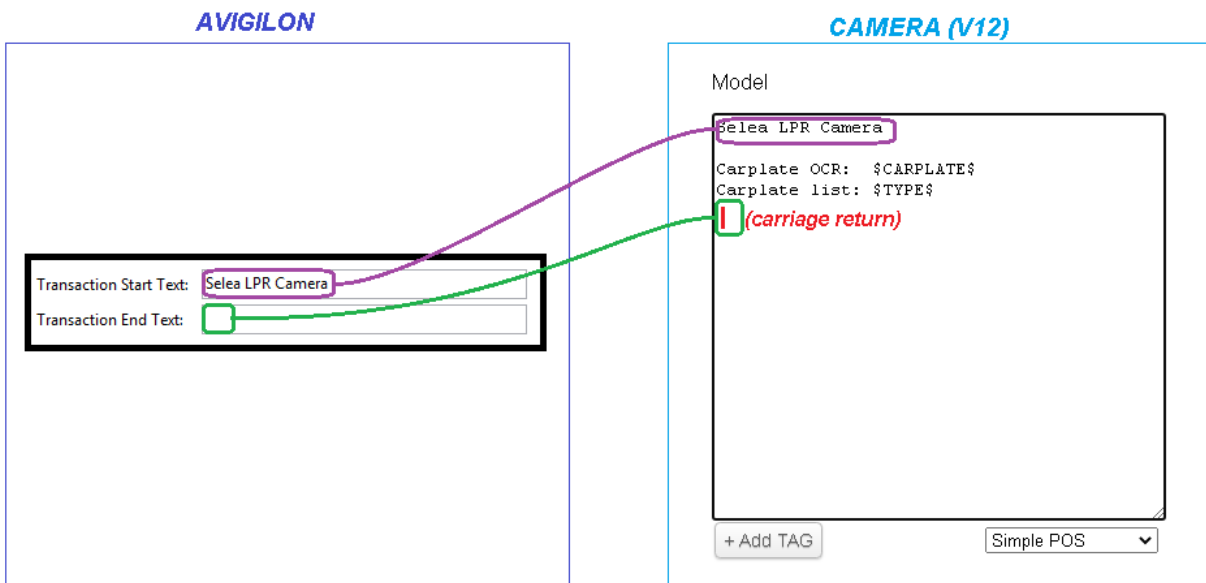
1. Press “Add” button



1. Type a name and a description for the new Transaction.
Note: the *Description* is not mandatory and you can leave it blank
2. Type the *Transaction Start Text* and the *Transaction End Text*.
The *Transaction Start Text* is used as a filter to determine the beginning of the POS transaction. The typed string must match with the one typed in the camera configuration.
The *Transaction End Text* is used as a filter to determine the end of the POS transaction. The typed string must match with the one typed in the camera configuration.

Note: if the camera is the previous V10 model, the format is fixed. So it's mandatory to specify "Selea LPR Camera" as start text.

If the camera is the new V12 model, the format is customizable from camera interface. It's important that the start text is identical to the one typed in camera interface as described in the following picture:



3. Select “UTF8” as encoding
4. Press “Capture Data” to test in realtime the effect of filters on raw string sent by the camera

Configure Data Format

Properties

Name:

POSTCP_From_CameraXX

Description:

Transaction Start Text:

Selea LPR Camera

Transaction End Text:

Encoding:

UTF-8

Filter

Stop Capture

Load Data...

Save Data...

Raw data:

Selea LPR CameraCarplate OCR: FH014HGOCarplate list: nolistSelea LPR CameraCarplate OCR: CG312MJCarplate list: nolistSelea LPR CameraCarplate OCR: CG312MJCarplate list: nolistSelea LPR CameraCarplate OCR: FR027CKCarplate list: nolistSelea LPR CameraCarplate OCR: FR027CKCarplate list: nolistSelea LPR CameraCarplate OCR: DF363NZCarplate list: nolist

Filtered data:

03/11/2020 16:59:20

Selea LPR Camera

Carplate OCR: FH014HG

Carplate list: nolist

03/11/2020 16:59:20

Selea LPR Camera

Carplate OCR: CG312MJ

Remove

Replace...

Set as Line Break

Current Filters:

Line Break on '\r\n|[\r\n]{1}'

Replace '\t' with ' '

Add Filter...

Remove Filter

Edit Filter...

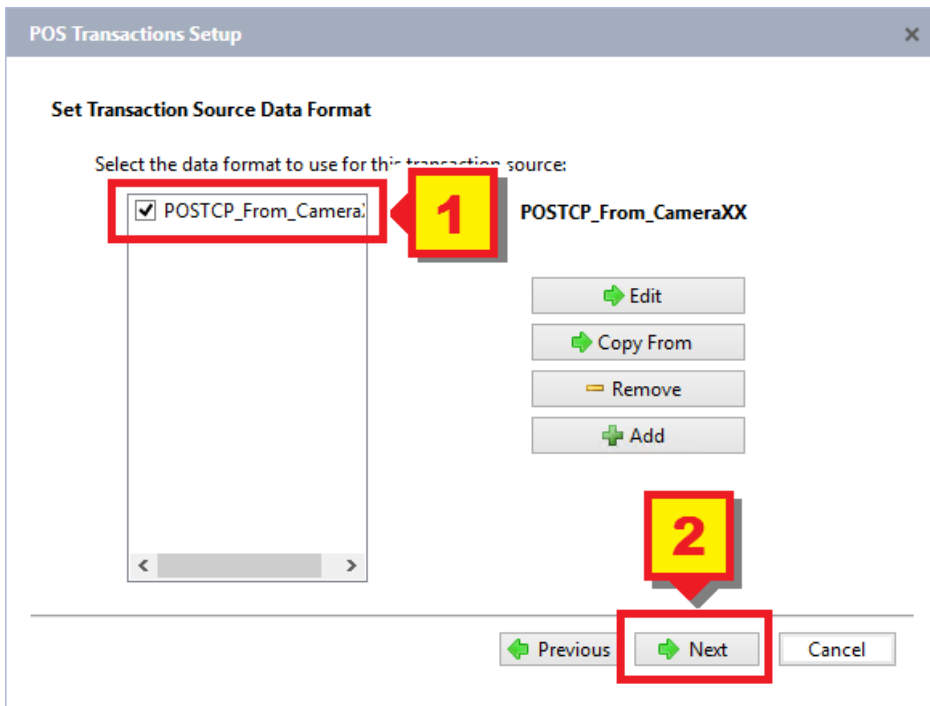
OK

Cancel

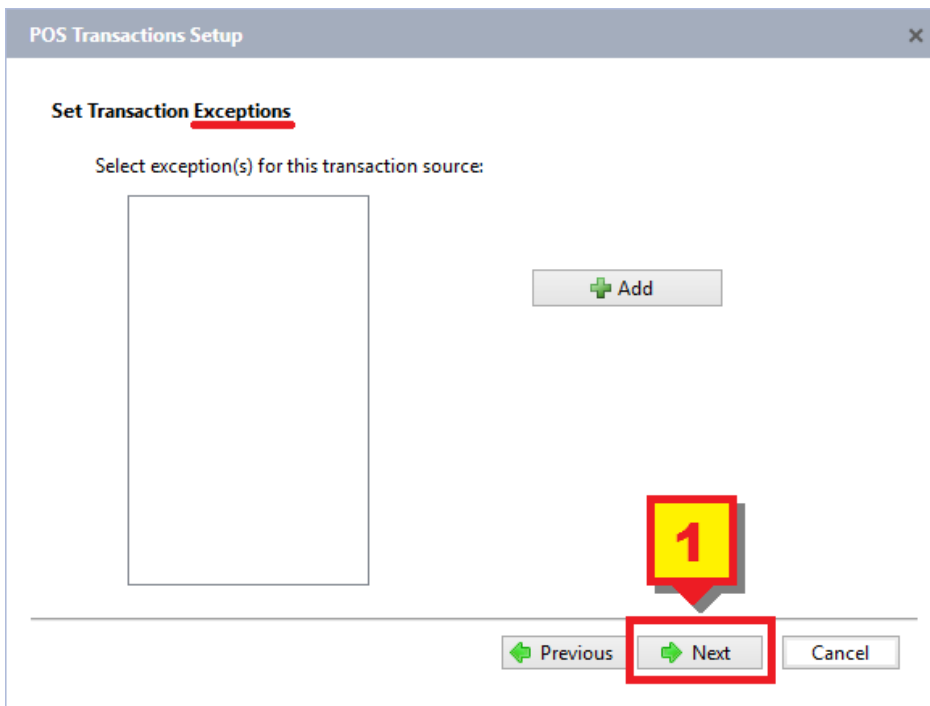
At every car plate detection, the RAW data sent by the camera is visible on the left pane. On the right is visible the filtered transaction.

1. Pres the “*Stop Capture*” button to stop the real time capture
2. Press the “*OK*” butto to procede

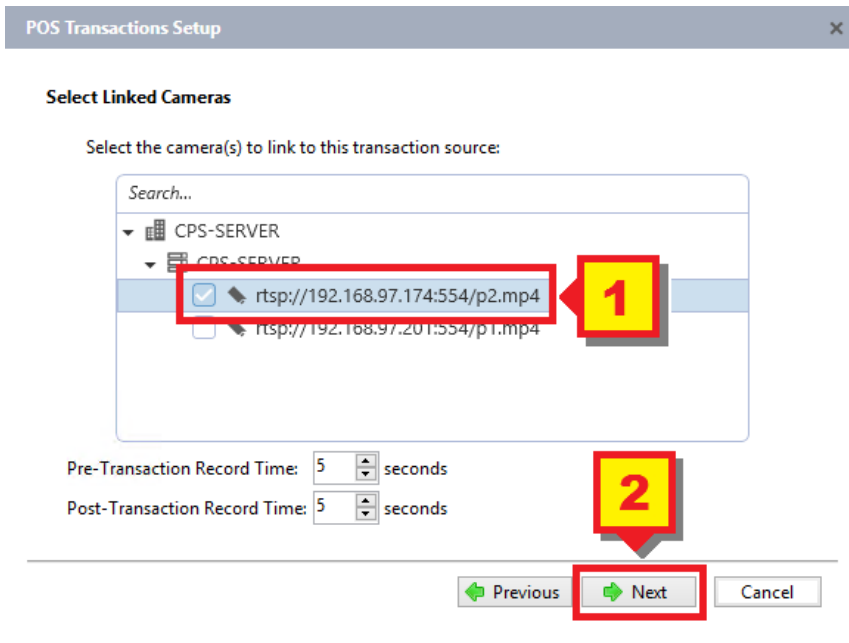
44



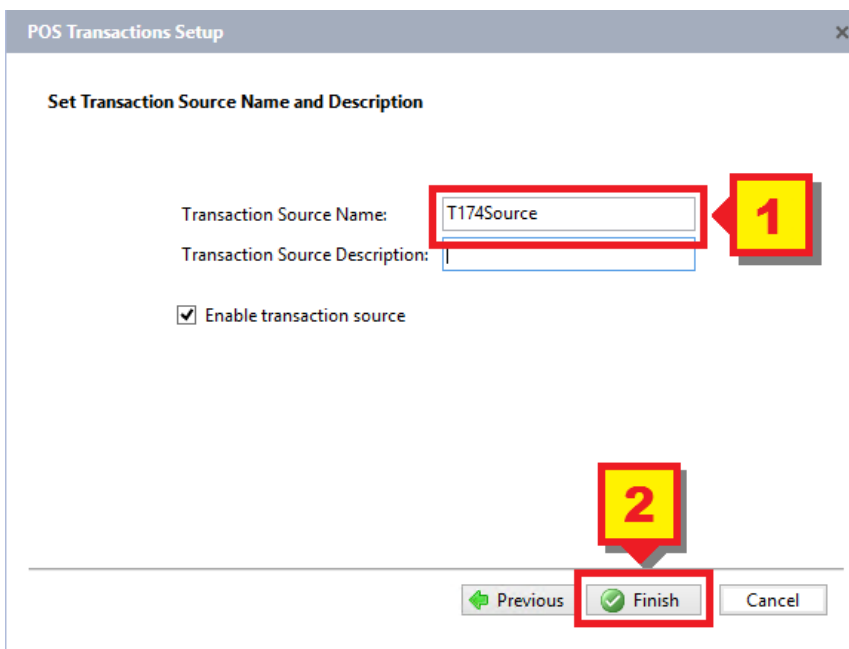
1. Select the new added source data format
2. Press “Next” button to procede



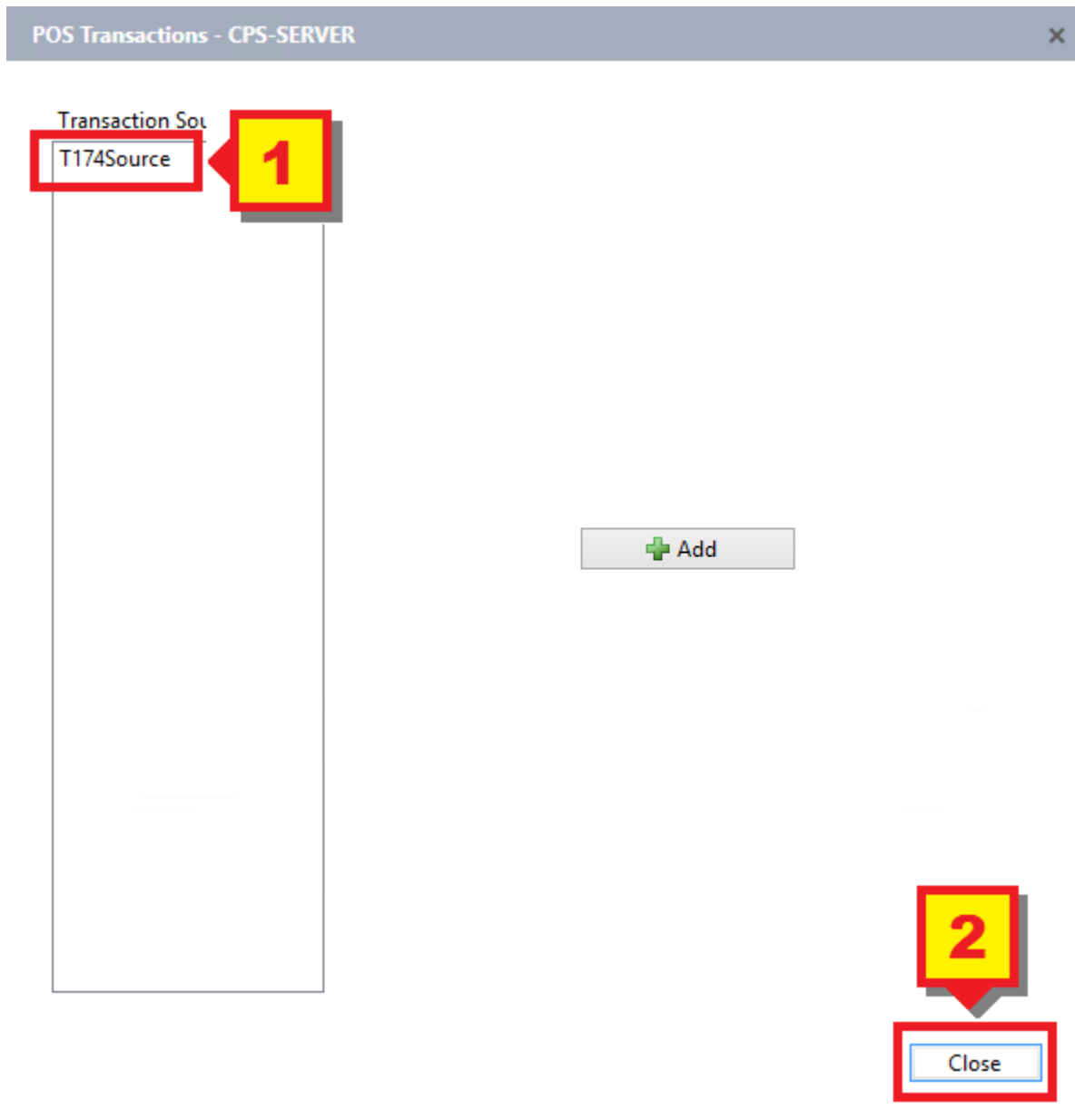
1. leave blank the *Exception* and press “Next” button to procede



1. select the camera (or cameras) to link to the transaction source. It means that the transaction coming from the camera will be linked to the selected video stream (or video streams).
Note: if a camera has an integrated contextual camera and *AVIGILON* collects both of them, could be a good idea to link the *POS* transaction to both video streams.
2. Press “Next” button

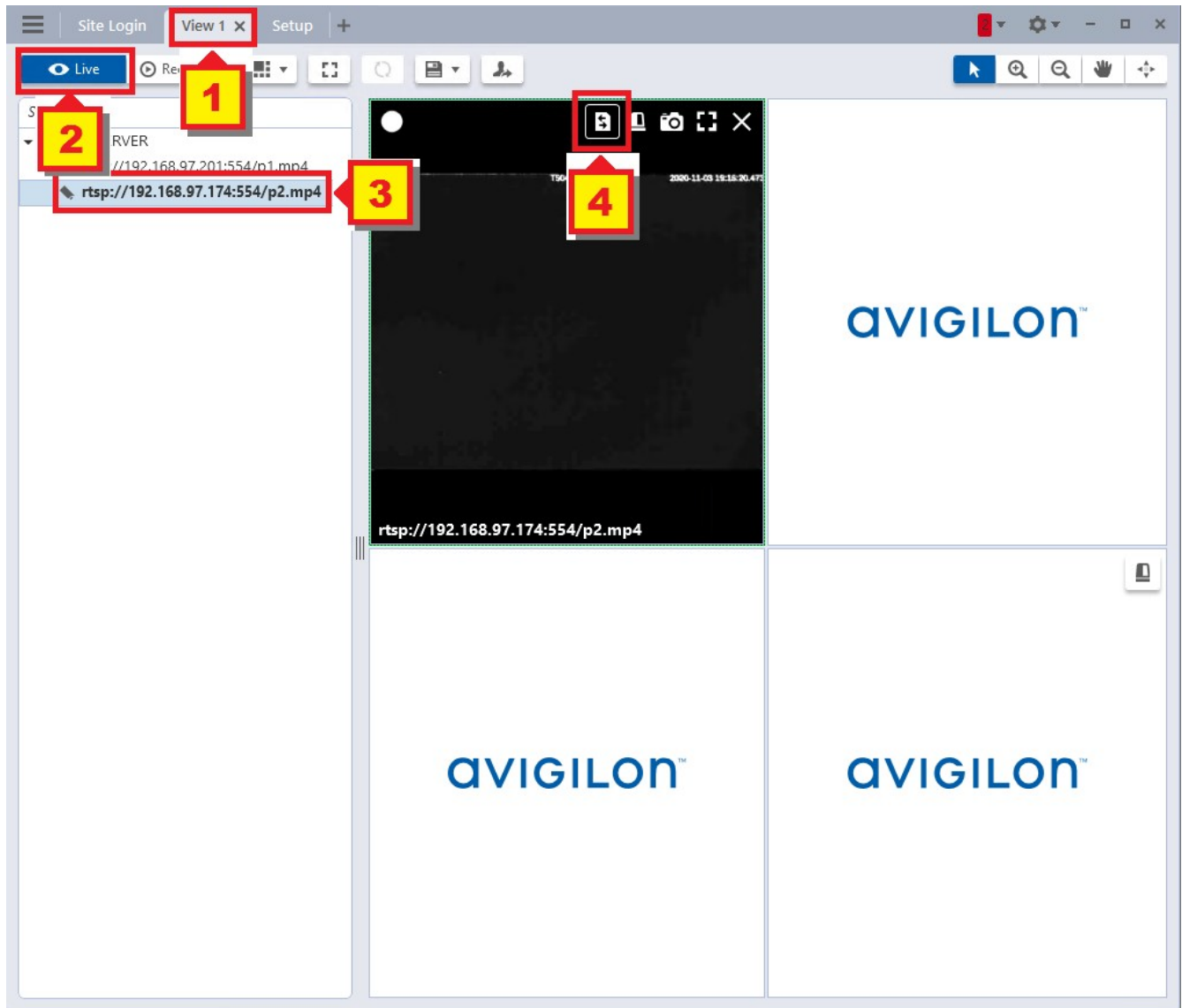


1. Type a name for the transaction Source
2. Press “Finish” button

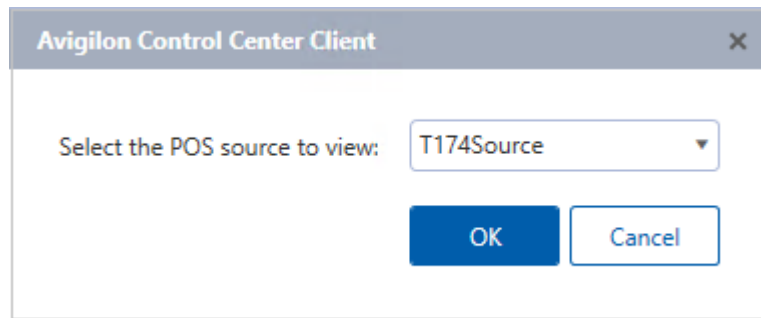


1. The new transaction is now visible on the left
2. Close the window pressing "*Close button*"

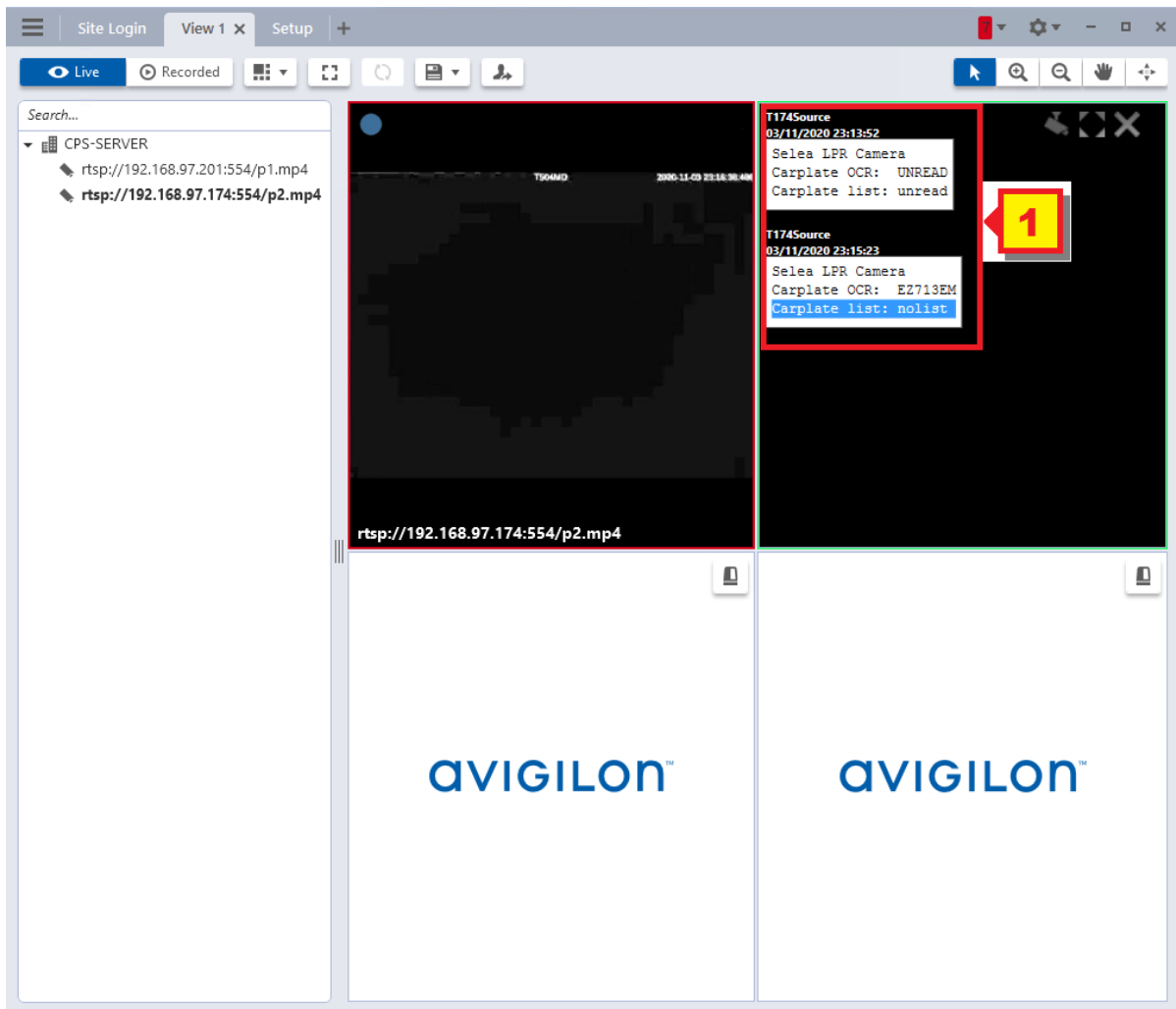
Step 8: view the real time *POS TCP* transactions



1. Select the “View” tab
2. Press the “Live” view
3. Select the desired device
4. Click on the center of the live view window and an additional menu will show on the top of the live view. Press the *transaction* icon.

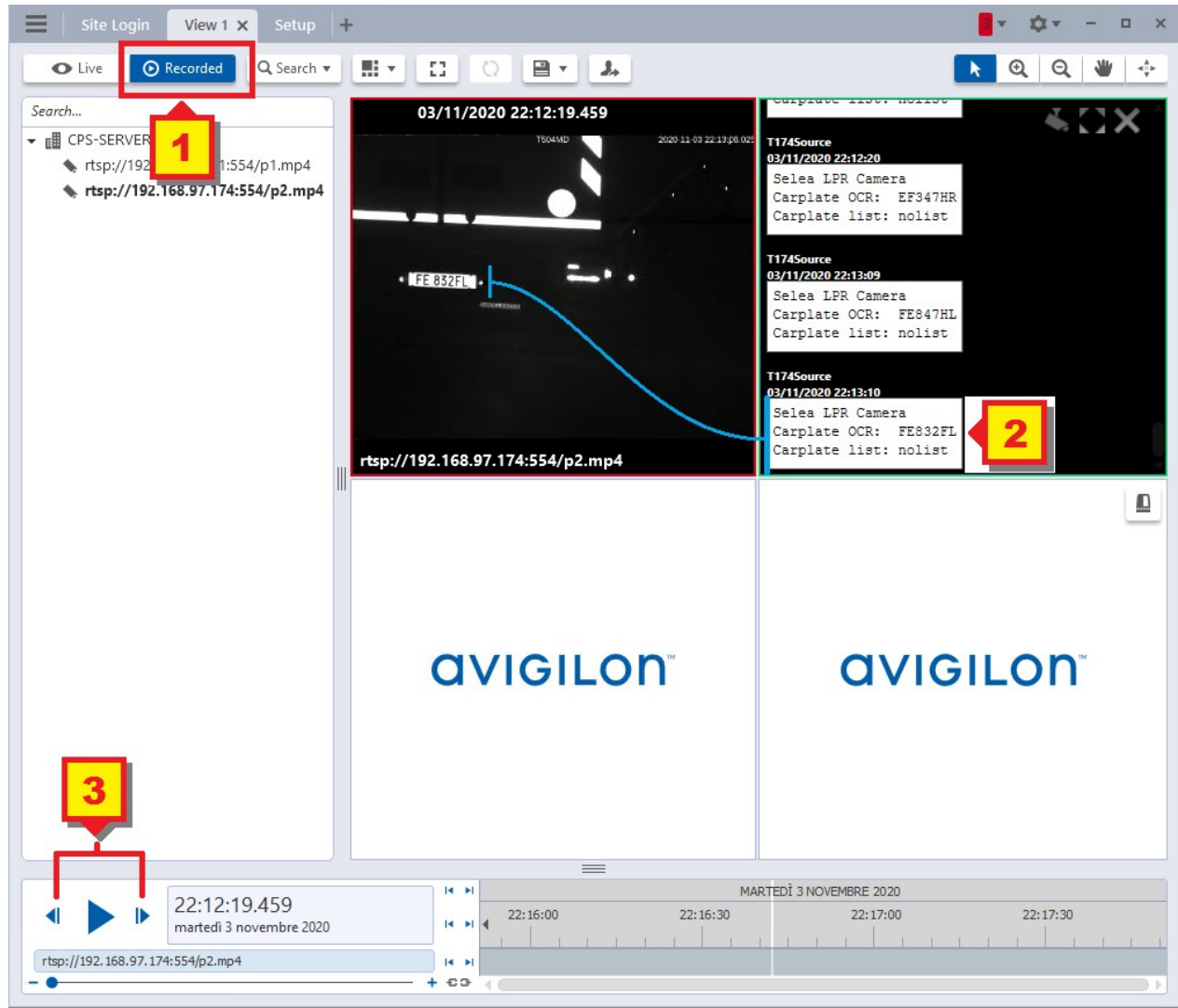


In the popup window, select the transaction linked to the device.



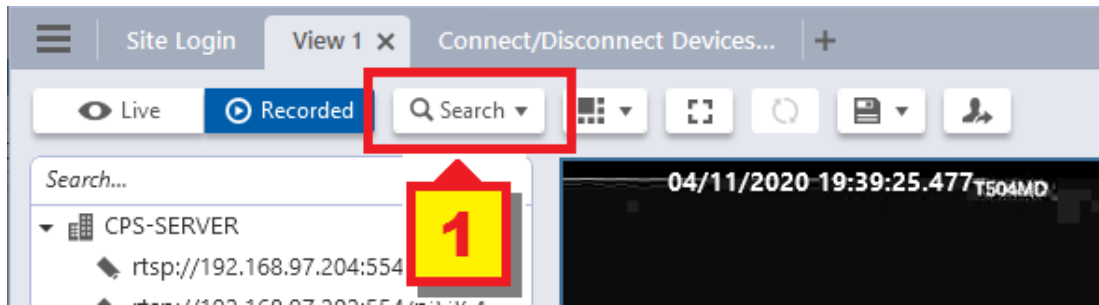
1. A new pane will be automatically filled up and all the real time POS transactions will be visible.

Step 9: find the recorded *POS TCP* transactions

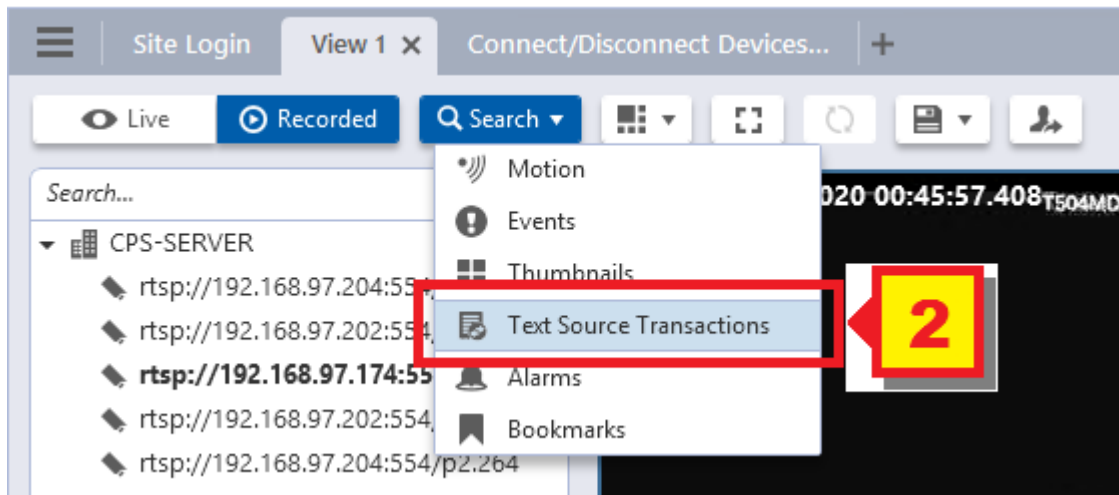


1. Press the “Recorded” button
2. Scroll and select the desired POS transactions
3. move backward and forward to analyze the video

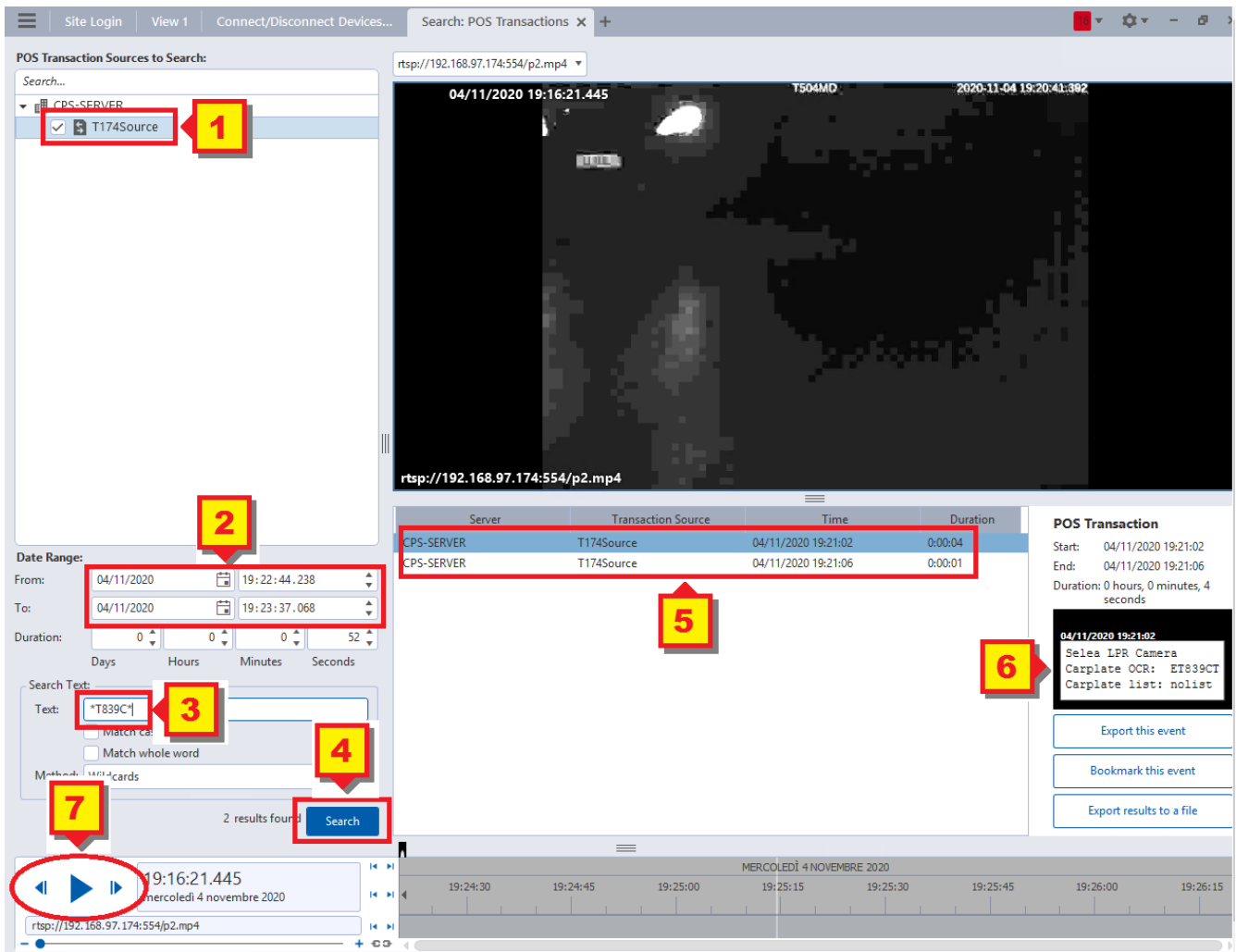
It's also possible to do searches inside the transactions database.



1. Press the “Search” button



2. Select “Text Source Transactions”



1. Select the desired *POS TCP* Source
2. specify a time range for the search
3. type the car plate to search
4. press the “Search” button
5. the list of carplate found within the time range will show. Select the desired.
6. The *POS* transaction become visible on the right
7. the recorded video stream opens at the *POS transaction* time. Move a little bit backward or forward to see the carplate.

NOTE: as the timestamp of the *POS transaction* is the arrival timestamp to AVIGILON system and not the car plate detection timestamp, the recorded video could be opened when the vehicle is not at the exact detection position. The time difference could change depending on the camera elaboration time and on the latency of the video stream.