IP CAMERAS & DARTFISH

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Document history

Date	Updated by	Summary of update
23 May 2013	Neil Melville	First release
20 June 2013	Valentin Wegmann	Updated list of tested cameras
21 June 2013	Valentin Wegmann	Added Basler camera to tested devices list. Added Axis specific setup info
21 June 213	Serge Ayer	Product notes added to tested devices list
04 Sept 2013	Neil Melville	Update to Onvif Device manager test
20 Oct 2015	Neil Melville	Updates to support section and other minor updates. Appendix 1 (table of supported devices) moved to Support section
21 Oct 2015	Valentin Wegmann	Update of the support section and the list of tested devices
01 June 2016	Olympia Craft	Added Lilin camera to tested devices list. Added Lilin specific setup info
02 Nov 2016	Olympia Craft	Added Axis Q1615 MK II to tested devices list
14 Nov 2017	Olympia Craft	Added Dahua camera to tested devices list. Added Dahua specific setup info
23 Feb 2018	Adrien Widmer	Added myDF Express and Dartfish Video Replay in the table
08 May 2018	Adrien Widmer	Added PTZ Optics camera to DFSW10
29 July 2019	Adrien Widmer	Added Bosch Autodome 800 HD, Cisco IPC 6930, Axis M3106 L Mk II and Axis Q3515 to the list of supported cameras

INTRODUCTION

An IP camera streams video across a network using internet protocols (IP). There are many types of IP cameras offering a wide range of features and although designed for security or other monitoring purposes, they can offer a practical solution for live video capture needs with Dartfish. The purpose of this document is to give an overview of the use and configuration of IP cameras. It is in three parts, the first part to help you to understand the solution, the second part detailing specifics on the configuration and the third part of further information and troubleshooting

Who is the customer for this solution?

IP cameras are ideal for fixed installations: Stadiums, sports halls, tennis courts, golf driving ranges, classroom monitoring etc. The camera and cable infrastructure is fixed and all the user has to do is connect his computer to the network. Because that network might even be a wireless network, one can imagine possibilities that this offers to Dartfish users. Multiple users can access the same camera(s) simultaneously or, because video can be streamed from multiple cameras on the same network, the video analyst can pick which he wants to view/record, with simultaneous recording from two cameras possible using InTheAction. Finally, because the camera encodes the video, the video stream can be configured to best suit those using it: the video can be more or less compressed than that provided by a camcorder or webcam, for example.

WHAT IS AN IP CAMERA? It is essentially a box containing a video camera, (optionally) a microphone, and a computer. This functions as a web server which encodes and delivers a live AV stream and also web pages for configuration and monitoring camera settings. You communicate with an IP camera by entering its IP address, e.g. 192.168.0.90, into a browser. Certain models have a motorized mounting which enables remote control over field of view this is referred to as PTZ (pan-tilt-zoom).

Simpler use cases such as bike fitting or gait analysis are also candidates, where the benefits listed above plus better lenses, better zoom capabilities, and higher frame rates outweigh the low cost and easy connection advantages of other solutions such as a high quality webcam such as the Logitech c920.

DARTFISH SUPPORT FOR IP CAMERAS

DARTFISH SOFTWARE 7, 8 OR 9 (LATEST PATCH INSTALLED): Cameras listed in the “Devices tested by Dartfish” are fully supported.

IMPORTANT: The implementation of the standard ONVIF is variable between manufacturers and Dartfish is not able to support all ONVIF devices: All Axis, Bosch and Merit Lilin cameras *that have been tested* work but it cannot be assumed that other products or firmware upgrades from these manufacturers will be supported by Dartfish. Please contact your nearest Dartfish sales representative before you buy an IP camera to ensure the compatibility with our Software.

WHAT IS ONVIF? The aim of the *Open Network Video Interface Forum* is to create a global, open source standard which defines how IP video products are accessed and controlled across a network. The organization was started in 2008 by Axis, Bosch and Sony. ONVIF is not a video format nor is it a protocol for transporting video across a network.

Dartfish technical support service for IP camera users

Due to the varied and technical nature of networked cameras, Dartfish, regrettably, sets restrictions on the technical support we can offer:

- Dartfish cannot support issues around network setup or the ONVIF compatibility of the camera chosen, so we will only provide support after the user has successfully configured the camera on the network; as checked by ensuring that the ONVIF device manager can automatically receive a video stream without the need to manually add a device.
- We will only provide support to users who have purchased a **DARTFISH PREMIUM SUPPORT PACKAGE**. In the case of a third party vendor or installer seeking help on behalf of a customer who does not have premium support, we will charge the third party **€85/$100 PER HOUR**.
- We can only help with issues related to Axis, Bosch, Merit Lilin, PTZ Optics and Dahua cameras where the firmware has been tested by Dartfish (see table below).

DEVICES TESTED BY DARTFISH

Camera manufacturer and model	Type	PTZ	Zoom	Max resolution	Max. Frame rate	Firmware compatible DFSW 8	Firmware compatible DFSW 9	Firmware compatible DFSW 10	Firmware compatible DF Video Replay	Firmware compatible DF Express (mobile app)
Axis P1344	Fix	-	Yes	720p	25/30	5.40.9.8	Not Tested	Not Tested	Not Tested	Not Tested
Axis P1346	Fix	-	Yes	1080p	25/30	5.40.9.8	Not Tested	Not Tested	Not Tested	Not Tested
Axis P1354	Fix	-	Yes	720p	25/30	5.90.1	5.90.1	5.90.1	5.90.1	5.90.1
Axis P1365	Fix	-	Yes	1080p	50/60	5.75.3.1	Not Tested	Not Tested	Not Tested	Not Tested
Cicso IPC 6930	Dome	Yes	20x optical	1080p	30	Not Tested	Not Tested	2.8.1-7	Not Tested	Not Tested
Bosch Autodome 800 HD	Dome	Yes	20x optical 12x digital	1080p	30	No Tested	39500570	39500570	39500570	Not Tested
Axis P5415-E	Dome	-	18x optical 12x digital	1080p	25/30	5.55.1.5	Not Tested	Not Tested	Not Tested	Not Tested
Axis P5534	Dome	Yes	18x optical 12x digital	720p	25/30	5.40.9.5	Not Tested	Not Tested	Not Tested	Not Tested
Axis Q1615	Fix	-	Yes	1080p	50/60	5.80.1.2	Not Tested	Not Tested	Not Tested	Not Tested
Axis Q1615 MK II	Fix	-	Yes	1080p	100/120	6.25.2	6.25.2	Not Tested	6.25.2	6.25.2
Axis Q3505	Dome	Yes	3x optical 2x digital	1080p	50/60	5.80.1.2	Not Tested	Not Tested	Not Tested	Not Tested
Axis M5014	Dome	Yes	3x digital	720p	25/30	5.50.3.1	5.50.3.1	5.30.3.1	5.50.3.1	5.50.3.1

Bosch DINION HD 720p IVA	Fix	-	Yes	720p	50/60	73500580	6.61.0025 (21500611)	6.61.0025 (21500611)	6.61.0025 (21500611)	6.11.0021 (21500611)
Merit LILIN UFG1122	Fix	Yes	Not Tested	1080p	100/120	Not Tested	1.3.54	1.3.54	1.3.54	1.3.54 (Needs to be added manually)
Dahua IPC-HDBW2221R-ZS	Dome	-	16x digital	1080p	25/30	Not Tested	2.620.0000.0.R	2.620.0000.0.	2.620.0000.0.R	Not compatible
PTZ Optics 20X USB GY G2	Dome	Yes	20x optical	720p	60	Not Tested	V001	V001	Not compatible	Not compatible
PTZ Optics PTVL-ZCAM	Fix	-	4x optical	1080p	60	Not Tested	V001	V001	Not compatible	Not compatible
Axis M3106-L Mk II	Dome	-	-	1520p	30	Not Tested	Not Tested	7.30.1.1	Not Tested	7.30.1.1
Axis Q3515-LV	Dome	-	2.4x optical	1080p	60	Not Tested	Not Tested	7.35.3	Not Tested	7.35.3

IP CAMERA SETUP

SUMMARY

Here is a summary of the process required to setup an IP camera. As the specifics for different devices vary, it is intended to be indicative rather than a comprehensive checklist. The various steps are explained further in subsequent sections.

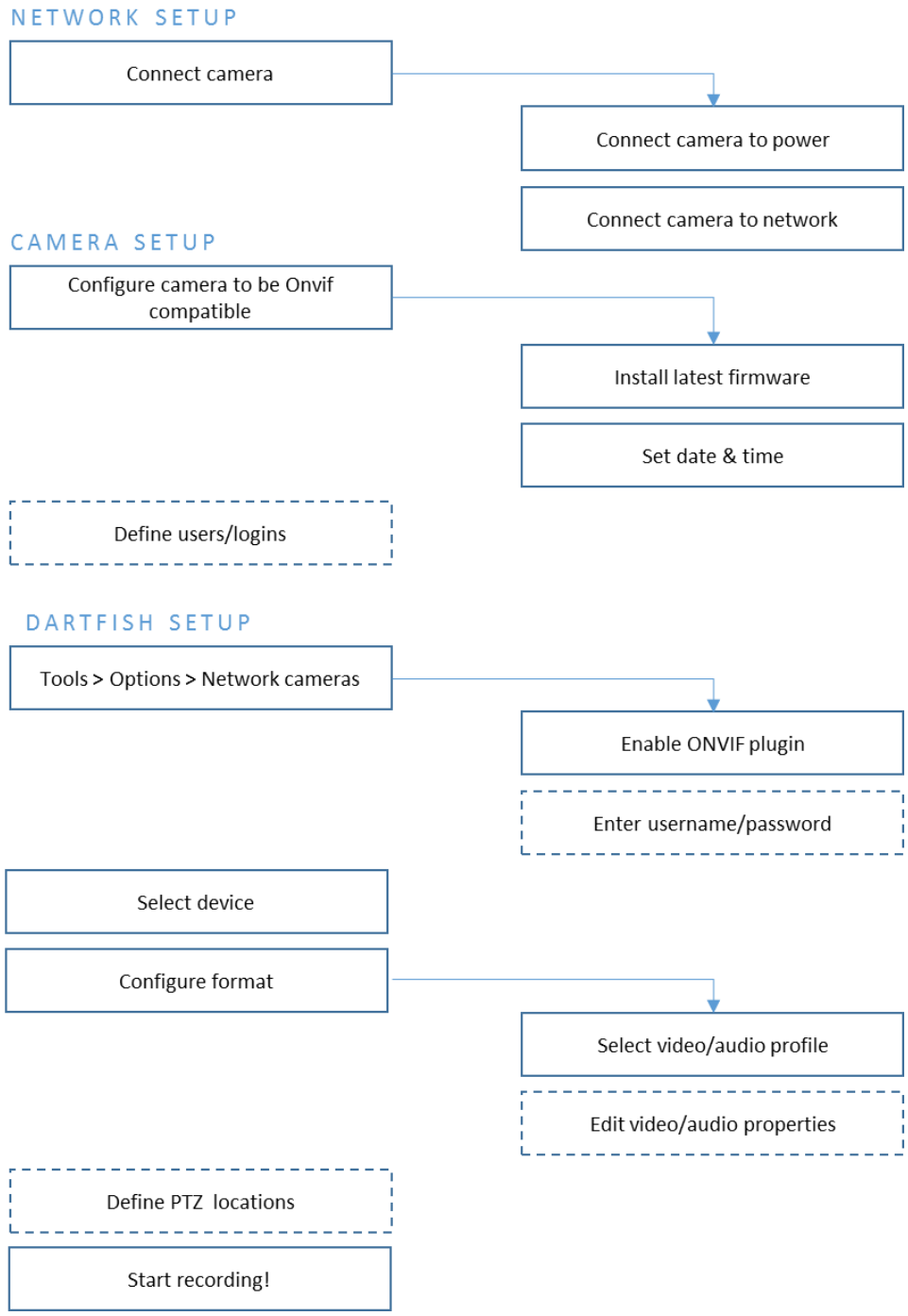


Figure 1: Summary of steps to use IP cameras with Dartfish

CONNECTING IP CAMERAS TO NETWORKS

The connection to your computer can be as simple as a direct cable connection to the Ethernet port. It can even be wireless if the camera is equipped with Wi-Fi capability.

The connection can be via a hub (wired or Wi-Fi). Enabling the possibility to have more than one computer connected to more than one camera

Cameras can be located anywhere on a much larger network. Remember that if an IP camera shares a network with other computers or devices, the bandwidth of the network will be shared with those devices. That may force compromises in the video quality or disrupt the connection.

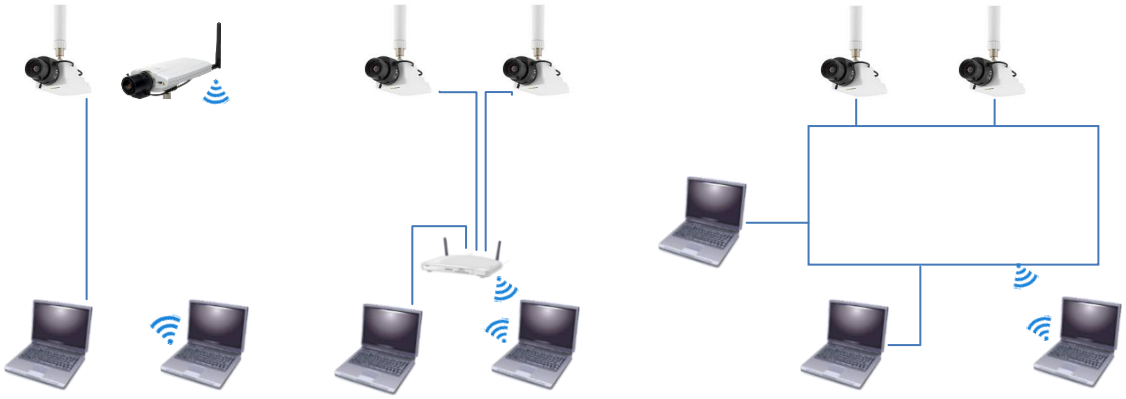
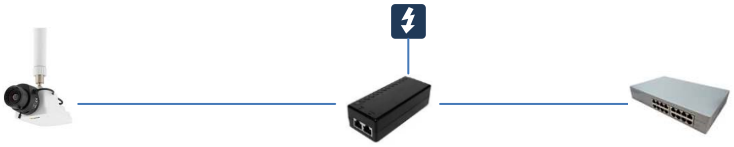


Figure 2: IP cameras can be networked in various ways

Creating a simple router based network is within the capabilities of a computer enthusiast. Larger infrastructures, use of an existing network, or security protection of data are, for obvious reasons, the jobs for a professional.

POWER SUPPLY TO AN IP CAMERA

An IP camera requires a power supply. A direct power supply is often inconvenient, so it will more usually receive power via its ethernet connection by one of these alternatives:



Power injector – hardware that connects between the camera and the rest of the network. It is connected to a power supply. One power injector per camera is required and consideration must be given to the wattage required by the camera.

Power over Ethernet (POE) – the camera receives its power from a POE router or switch to which it is connected. The router receives the power supply. A POE hub which is capable of supplying the required wattage must be used.

INITIAL CAMERA CONFIGURATION

The initial setup and ongoing configuration of the camera is done by its web page (see Figure 4). On simple networks this can be easily accessed via the Network section of the Windows File Explorer (see Figure 3)

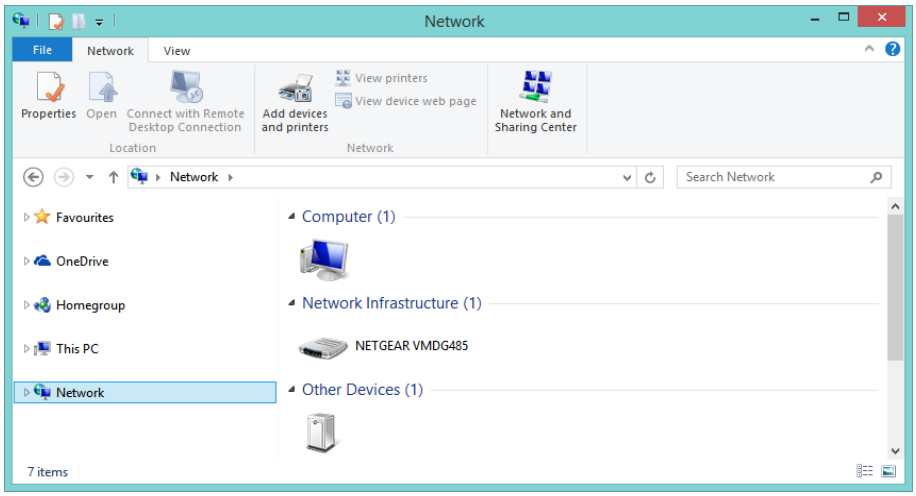


Figure 3: Windows file explorer can be used to access camera configuration

The camera's IP address, if known, may be typed into a browser or a dedicated utility may be provided by the camera manufacturer. Consult the camera user manual on how to access and configure the device.

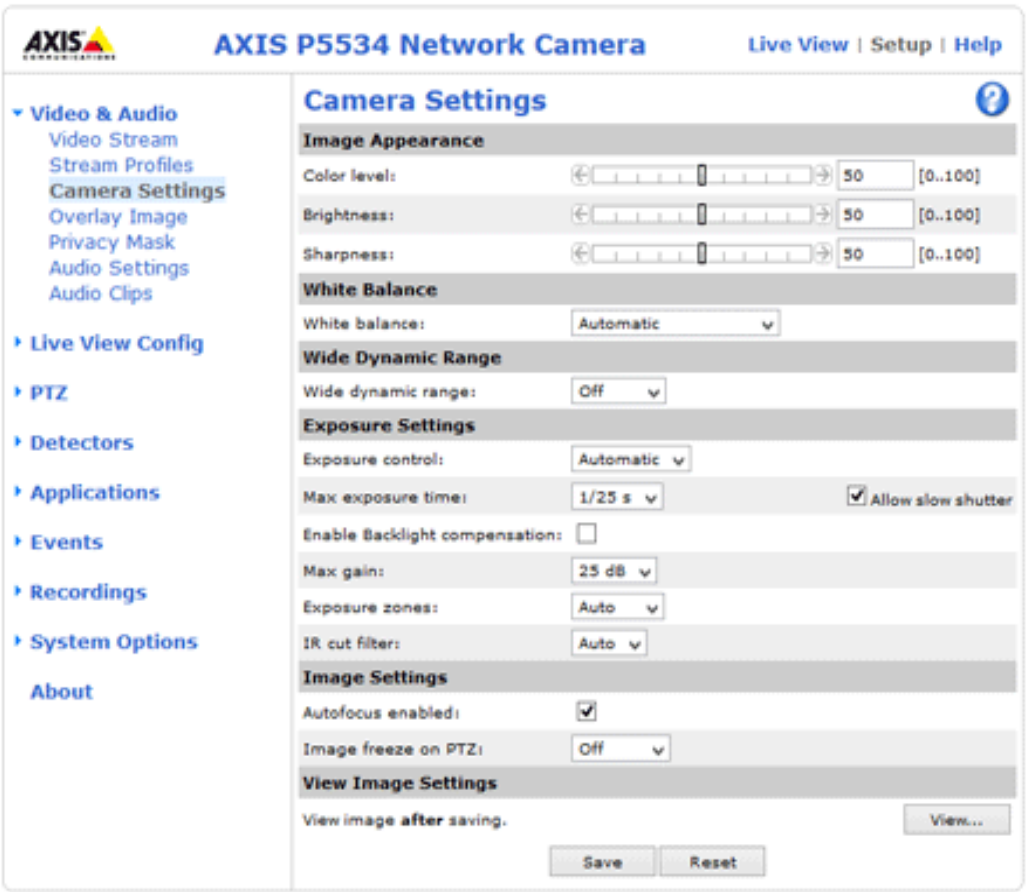


Figure 4: an example of a configuration page viewed in a browser.

Here are the priorities when configuring a new camera:

Update firmware

There may be a button or link to do this on the configuration page. Otherwise, the manufacturer's support website should be checked to discover if there is an update. Interoperability with Dartfish may depend on this.

Set date and time of camera

Setting the camera date and time to that of the computer may be important to ensure correct communication.

Set sensor base frame rate

The sensor frame rate must be set to the frequency of the AC power supply of your country e.g. 60 Hz for the US and 50 Hz for Europe. Failure to do this may result in poor image quality and flickering video. Different cameras will refer to this using different terminology. For example, some might talk about an 'anti-flicker' setting. Consult its documentation

FRAME RATE v BASE FRAME RATE: Frame rate is a potentially confusing topic because we must differentiate between the base frame rate at which the sensor captures images and the frame rate of the video output. Even if the base frame rate is set to 50 or 60 Hz, it is possible to define a different effective frame rate for the video by modifying or creating a media profile.

Create or modify user profiles

The camera will have an administrator profile. Additional profiles can be created and passwords assigned to control access to cameras (see Dartfish Configuration below).

DARTFISH CONFIGURATION

ENABLE NETWORK CAMERA

01 From the Dartfish *Tools* menu > *Options* > Network cameras

02 Select the ONVIF IP Camera then select *Enable plugin*

03 Enter user name and password (if user profiles defined for camera)

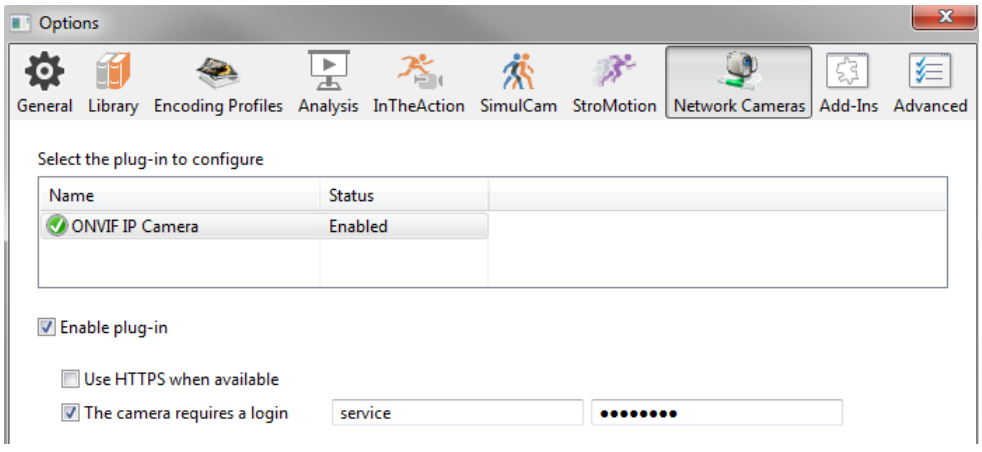


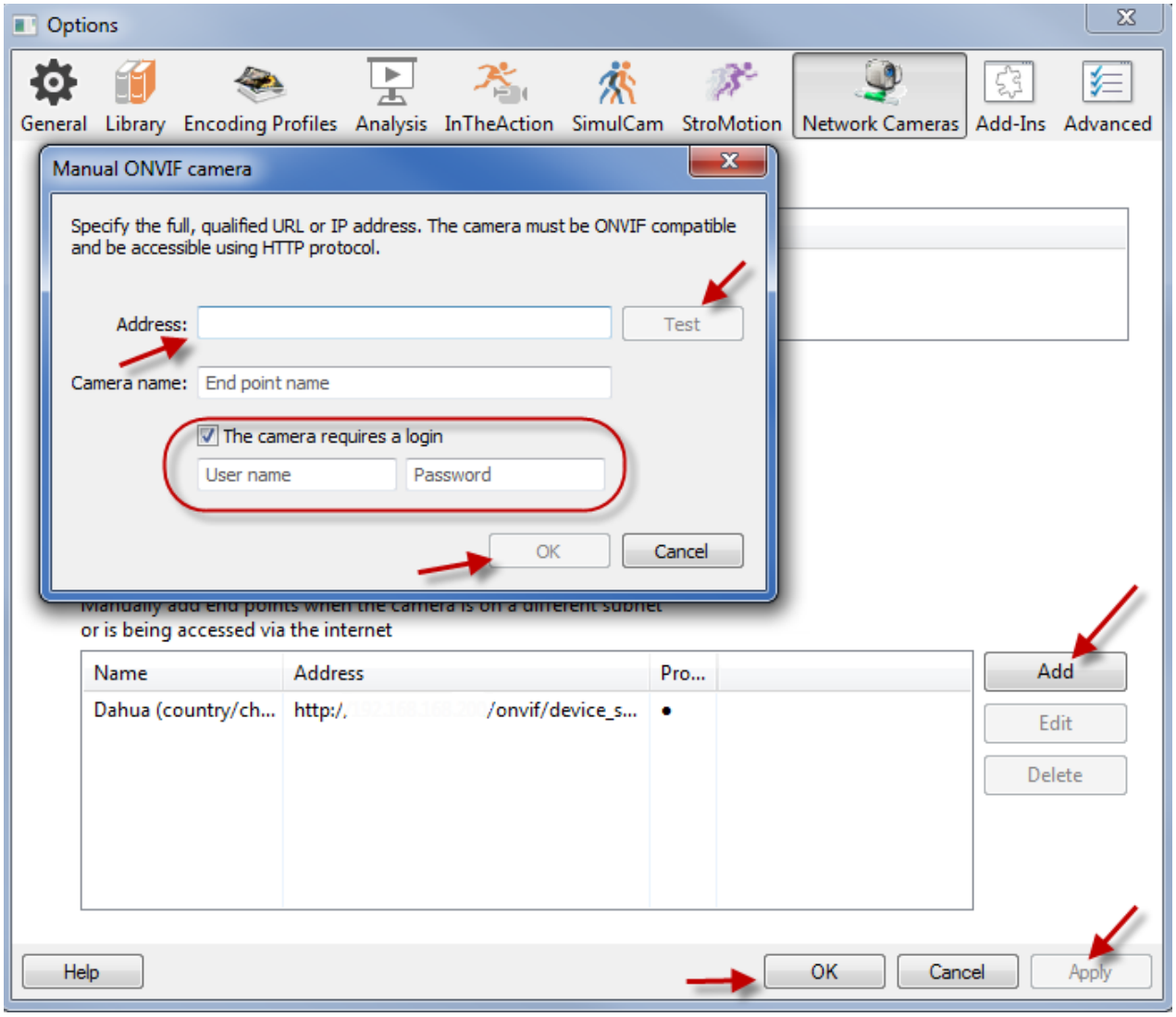
Figure 5: enable ONVIF and provide login details in Dartfish settings

The login relates to user profiles created on the camera. Dartfish does not allow the user to login to individual cameras but instead offers a global login which gives the user access to all the cameras with those login credentials. Of course, setting a password on a user profile is not mandatory but doing so will enable:

- **CONTROL OVER WHICH CAMERAS ARE VISIBLE:** Imagine several cameras on a network and several Dartfish users. To restrict an individual user to, say, two of these, set those two cameras with identical login credentials
- **CONTROL WHO CAN SET VIDEO PROFILES:** User profiles with admin rights can use Dartfish to modify the camera's video and audio settings using Dartfish. To prevent this, give the user profile viewing rights only.

If the camera is on a sub network or is set as non discoverable, it needs to be manually added in the Dartfish software:

01 From the Dartfish *Tools* menu > *Options* > Network cameras
02 Click on Add
03 In the Manual ONVIF camera window, type the IP address of the camera, tick the box "The camera requires a login", enter user name and password of the user profile defined for the camera
04 Click on Test then OK
05 Click on Apply and OK on the Options window



HTTPS or HTTP?

Selecting the *'Use HTTPS when available'* option ensures that communication between camera and computer is secure. However, be aware that:

- Not all devices offer HTTPS encryption. Ticking the box will have no effect in this case.
- HTTPS does not encrypt video; it only provides secure communication between camera and computer of information such as login. For those interested, video streaming uses the RTP protocol.
- The feature principally exists to facilitate error logging when contacting Dartfish Technical Support.

CAMERA SELECTION

In the Dartfish video recording tool of choice (Importer/Video Recorder, InTheAction, Tag Live). Any available camera can be selected in the *Capture device* section of the module. After selecting a camera, buttons to configure video, audio and (if available) PTZ settings will be displayed next to the selected device.

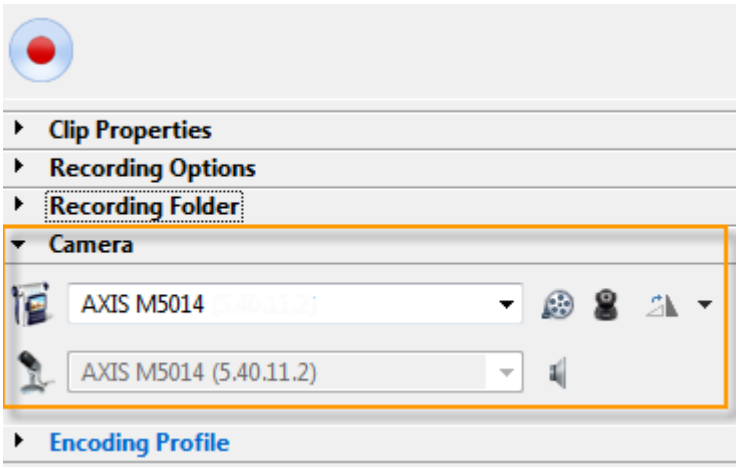


Figure 6: select device as seen in Dartfish video recorder

NOTE: When using an IP camera, it is not possible to use a different audio source other than the camera. It is possible to have no audio recorded:

01 Click the **CONFIGURE AUDIO** button
02 Select the profile that you want to use according to your video requirement (see below)
03 Click the edit button
04 Choose **(NONE)** for the **AUDIO SOURCE** property as shown in Figure 7

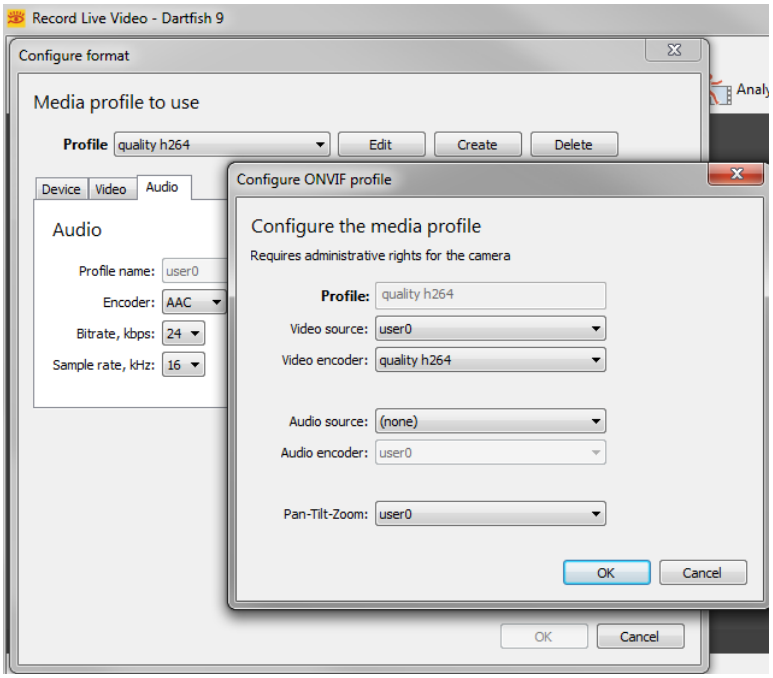


Figure 7: switching off audio

REMEMBER that audio is switched off on this media profile for **ALL** users of the camera and not just for the software where the choice was made so the change may affect other users.

CONFIGURE VIDEO PROPERTIES

In Figure 4 it can be seen how the camera's configuration page can be used to set video and audio properties. You can also configure image properties such as shutter speed, exposure time, white balance, etc.

For typical uses, **DARTFISH RECOMMENDS THAT YOU IGNORE THESE SETTINGS** and instead define appropriate settings from Dartfish software. To configure video properties using Dartfish, click the *configure format* icon shown next to the selected device. The Configure Format page will appear as shown below.

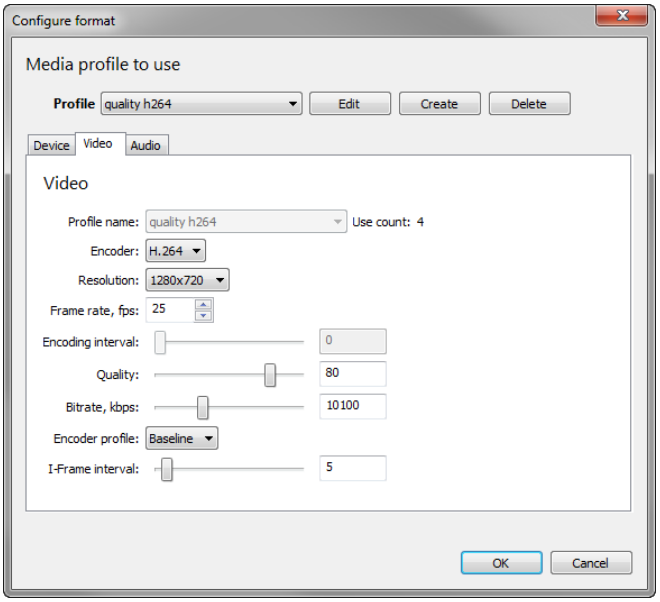


Figure 8: video properties selection in Dartfish

This is a generic set of properties defined by the ONVIF standard. Some cameras may not allow certain properties to be modified by the user e.g. in Figure 8, encoding interval cannot be set.

The optimal/easiest way to define video settings is to choose one of the camera's pre-defined **PROFILES**, however, to meet the bandwidth requirements of your network or particular analysis needs, you may want to create or customise a profile.

- Other video settings (where available) can be modified on the camera's configuration page
- Some or all settings may be unavailable to you if your user profile does not have administration rights
- Creating and modifying media profiles affects all other users of the camera

MEDIA PROFILES: Let's remember that the job of a security camera is different to the needs of video analysis: The provided media profiles might optimise video encoding for recording for days or months or to allow a property owner to get a live video feed to their mobile phone when they receive an intruder alert. Neither of these profiles are likely to be suitable for video analysis. Editing a media profile is a job for someone who understands both the needs of analysis and the implications for the network because all the various properties work together to influence the bit rate of the video.

ENCODER: H.264 and MJPEG are supported. MPEG-4 is not supported

- H.264 offers better image quality/compression ratio but may introduce latency (delay in the 'live' image appearing on the screen).
- MJPEG generally provides lower latency but for any given quality, file sizes will be larger

FRAME RATE/ENCODING INTERVAL: For technical analysis we often want the highest possible frame rate so you should be aware that media profiles can use both these properties to define the *effective* frame rate i.e. the frame rate at which the device is encoding and delivering frames to Dartfish. In actual fact, effective frame rate is determined by three parameters:

01 The capture or base frame rate is the frame rate at which the device sensor is capturing frames. This frame rate must be configured to the frequency of the power network (50Hz or 60Hz)
02 The frame rate property of the video stream
03 The encoding interval property which determines the frequency at which frames are sent to the encoder. e.g. If the base frame rate = 60 fps and encoding interval = 2, 30 frames will be encoded per second.

To configure the effective frame rate, some devices use the frame rate parameter, others the encoding interval and others use both in combination. In the latter case the encoding interval parameter influences the frame rate parameter e.g. base frame rate = 60, frame rate parameter = 30, encoding interval = 2, effective frame rate = 15 fps.

RESOLUTION: Choose a resolution which allows the level of detail required for analysis. Of course the network infrastructure which you build must also support the resolution requirement of the video.

QUALITY: Set between 80 and 100%. Quality below 80% may not be suitable for video analysis but lower qualities may be required when streaming wirelessly.

I WANT THE BEST! Say you want HD video at the highest possible frame rate but this creates video at a bitrate which is too high. Is there anything that you can do? You could reduce the quality parameter in Dartfish or you could reduce the iFrame interval parameter in the camera configuration. The principal of iFrame based video encoding is that a GOP (group of pictures) are encoded based on changes from the iFrame. Since every detail of every frame does not have to be encoded, the amount of data and hence the bit rate, is reduced. The larger the GOP, the lower the bit rate.

BITRATE: The bit rate property sets a bit rate limit so it is best to configure it to something that is supported by the network e.g. 5 Mbps for SD video and 8-12 for HD video, then adapt the other settings to provide the best image quality within the specified bitrate constraint. Frames are dropped if the bitrate property is exceeded.

Configure audio properties

AUDIO ENCODER: G.711 and G.726 codecs are currently not supported. The audio encoder must be AAC.
Edit the media profile to turn audio recording on/off

HOW TO CHECK IF THE VIDEO CONFIGURATION IS APPROPRIATE

Just because a video image is seen in Dartfish does not mean that it is a correct video image! The frames per second (fps) indication shown in the Dartfish status bar (see Figure 9) provides a good indication when there are problems with the configuration. Here are some examples:

FRAME RATE RECEIVED NOT MATCHING THE FRAME RATE SET: We have discovered that some devices allow you to configure a frame rate of up to 30 fps, but the camera sensor only provides a maximum of 25 fps. In this case, the user must configure the frame rate to no more than 25 fps to prevent recording problems.

VIDEO BIT RATE EXCEDING THE CAPACITY OF THE NETWORK: In Figure 9 you can see that the video stream being sent by the camera is 60 fps but video is being displayed at 32.6 fps. Clearly something is wrong!

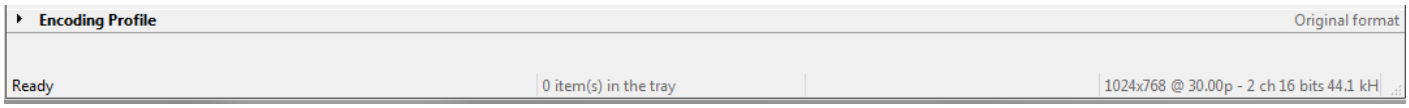


Figure 9: The status bar indicates a disparity between the expected fps and the actual fps

REMOTE CONTROL OF PAN-TILT-ZOOM (PTZ)

Some IP cameras allow remote control of the direction and zoom of the camera. Dartfish provides a PTZ control and a new tagging panel button which triggers the camera to move to a PTZ preset position. PTZ can also be remote controlled by hardware controllers provided by the manufacturer.

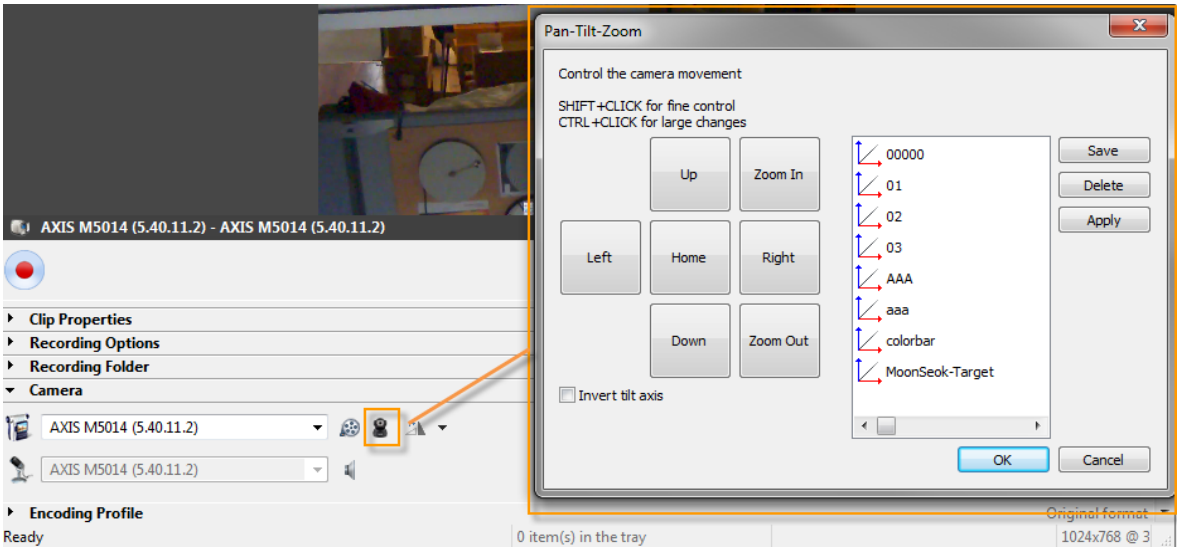
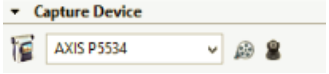


Figure 10: PTZ button and PTZ control panel

Using the Dartfish PTZ control

01 Modify the media profile to turn PTZ control on.

02 To display the PTZ control, click the *PTZ icon* next to the selected device.



On the left of the PTZ control (see Figure 10) you see buttons to remote control pan, tilt and zoom and on the right you can see preset positions. You can create a preset by:

01 Pointing and zooming the camera

02 Click the *Save* button

03 Enter a name for the preset

- The PTZ control can also be displayed by right-clicking the video display.
- It is not possible to use the PTZ control while recording with InTheAction – a PTZ preset should be selected in the 'Setup Capture devices' screen before proceeding.

Using a tagging panel to select PTZ presets

This may be useful to quickly point the camera to a particular area of the court, field or pitch. To do this:

01 Create PTZ presets as described above

02 Add a PTZ button to your tagging panel

03 Set the **PTZ PRESET NAME** property to one of the presets

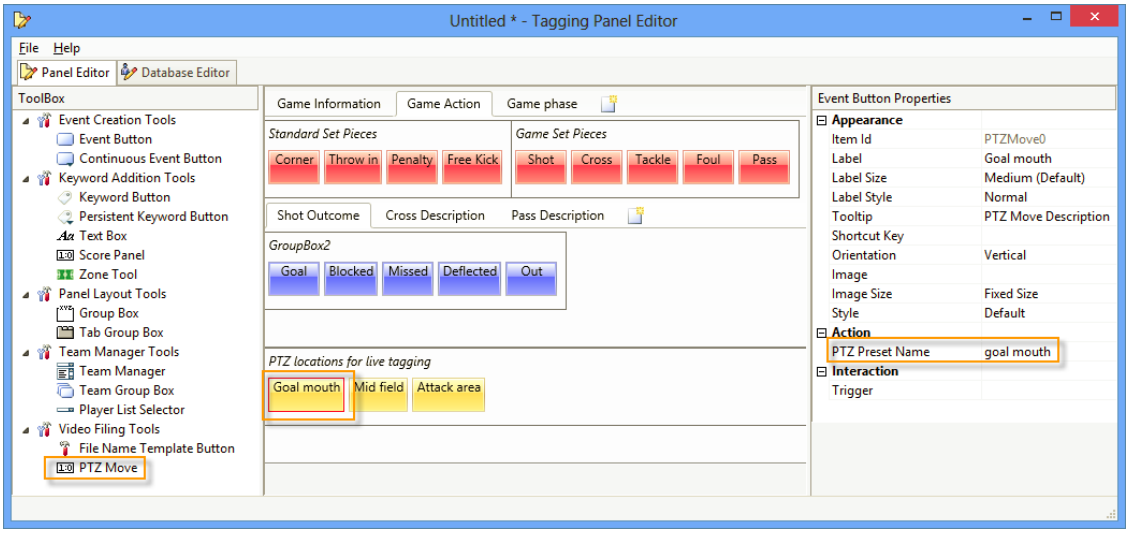


Figure 11: PTZ presets can be selected using a PTZ move button and defining its PTZ preset name property

You can see from the properties in Figure 11 that a PTZ button can have a keyboard short cut assigned and it can trigger other tagging panel tools and vice versa. For example, clicking the 'corner' button might trigger the PTZ move button which selects the 'goal mouth' preset.

TROUBLE SHOOTING

Using the ONVIF device manager

The ONVIF device manager is used to verify that your computer is receiving an ONVIF compatible video stream. When it is launched it should be able to automatically detect the video stream. If a camera has to be manually added in Onvif Device Manager, you need to add it manually in Dartfish as well. Dartfish technical support is not available to any user where this check in ONVIF Device Manager has not been successful.

My camera is not listed in Dartfish

- First, establish whether the camera is visible on the network. Check the network connection from camera to computer, that the camera is correctly connected to the network and has an adequate power supply according to the manufacturer's recommendations
- Download and install the ONVIF Device Manager tool to validate ONVIF compatibility of your device
- Check the camera configuration from the device configuration page (refer to the camera user manual)
- Check that the login used corresponds to a user profile on the camera

Dartfish displays "E_NOT_AUTH" error

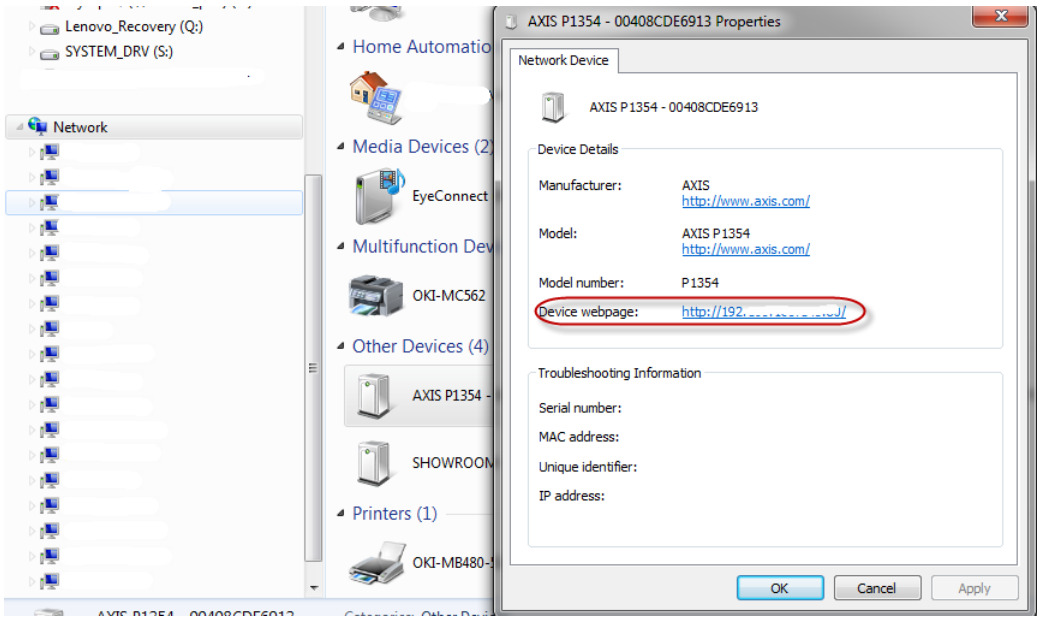
From the device configuration or ONVIF Device Manager, resynchronize the date and time of the device.

INSTALLATION / CONFIGURATION FOR AXIS CAMERAS

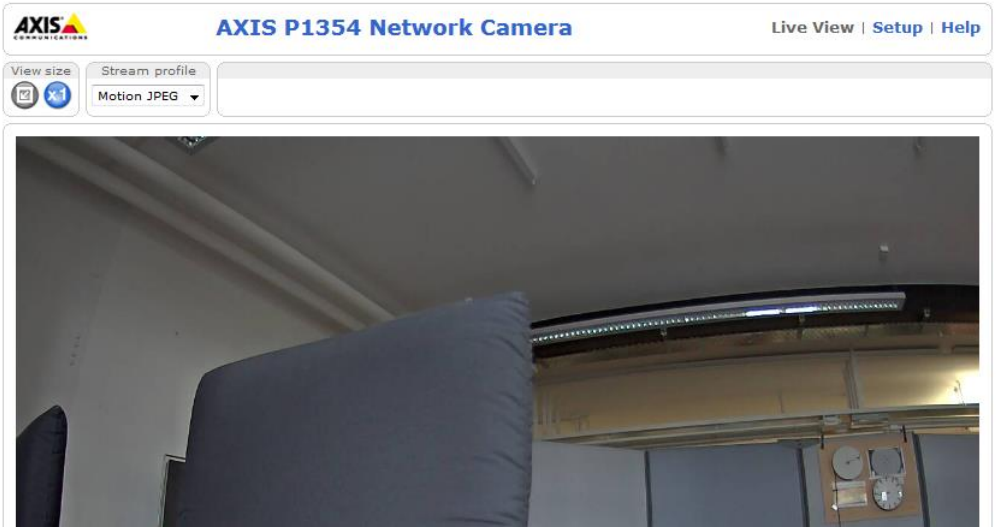
CAMERA ACCESS

Configuration of Axis cameras can be done using the ONVIF utility or using an Internet browser as described below and enter your admin login information in order to gain access to the camera.

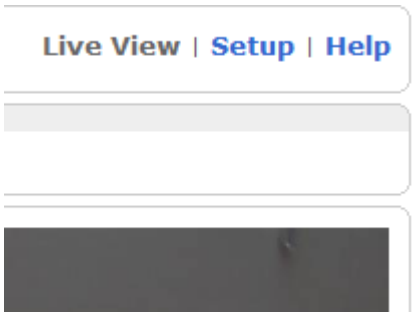
01 Open Windows File Explorer
02 Select **Network** from the list on the left. The camera should show up as a network item
03 Right click on the device's icon > **Properties** and click on the link under **device webpage…**



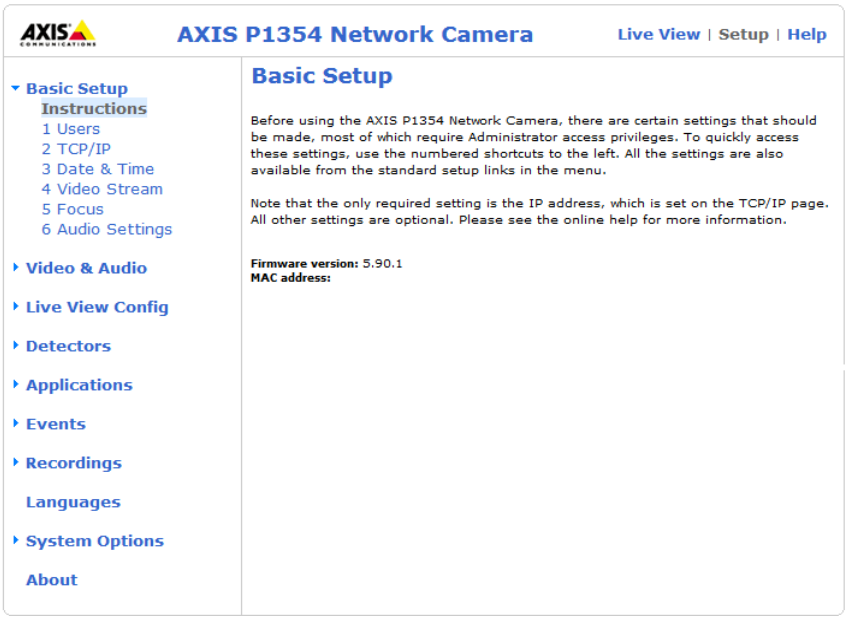
… or double click the device's icon to open the configuration tool



04 To configure the camera's settings click on **Setup** at the top right



05 On the Setup page you'll see the customizable options on the left:



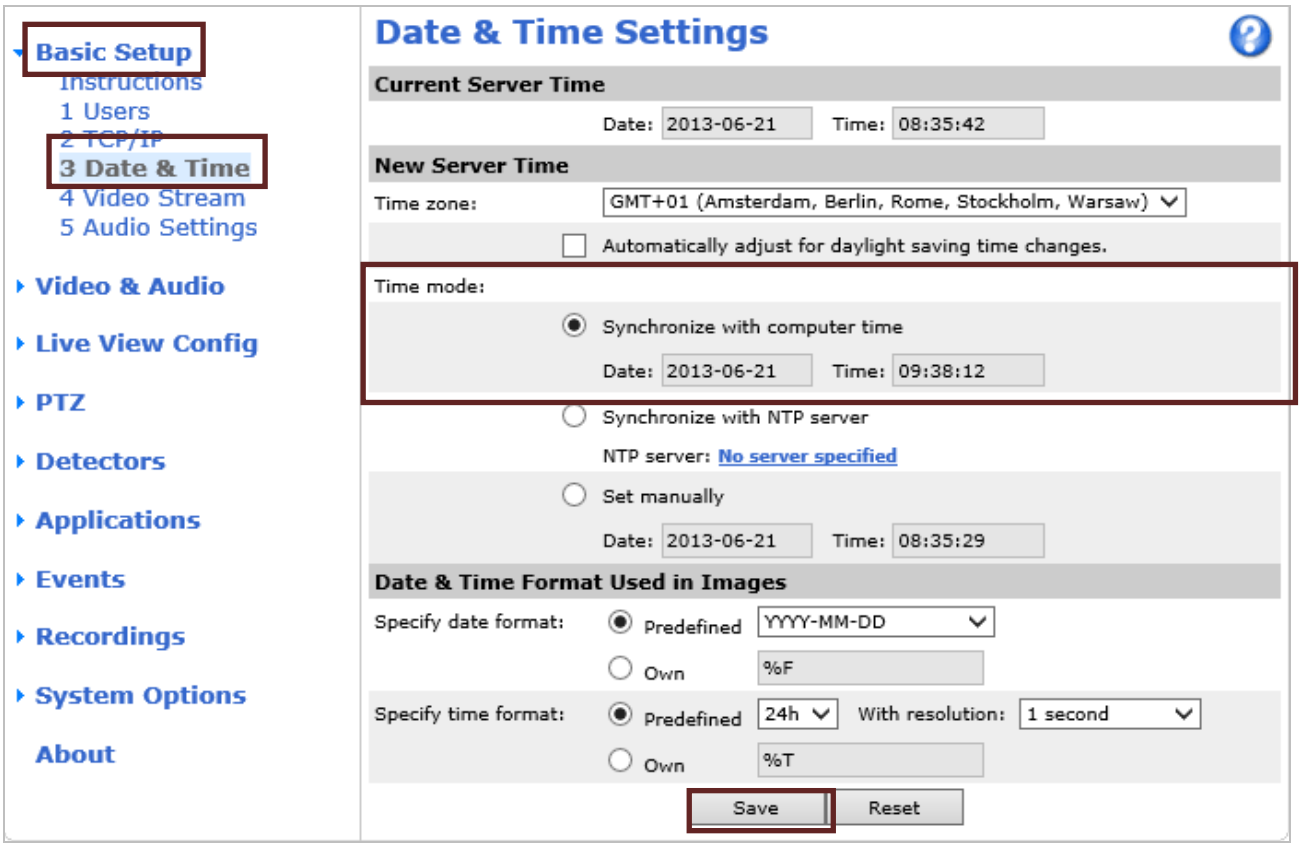
MANDATORY STEPS

Synchronize date & time

01 Setup -> Basic Setup -> Date & Time

02 Select **Synchronize with computer time**

03 Click the **Save** button.



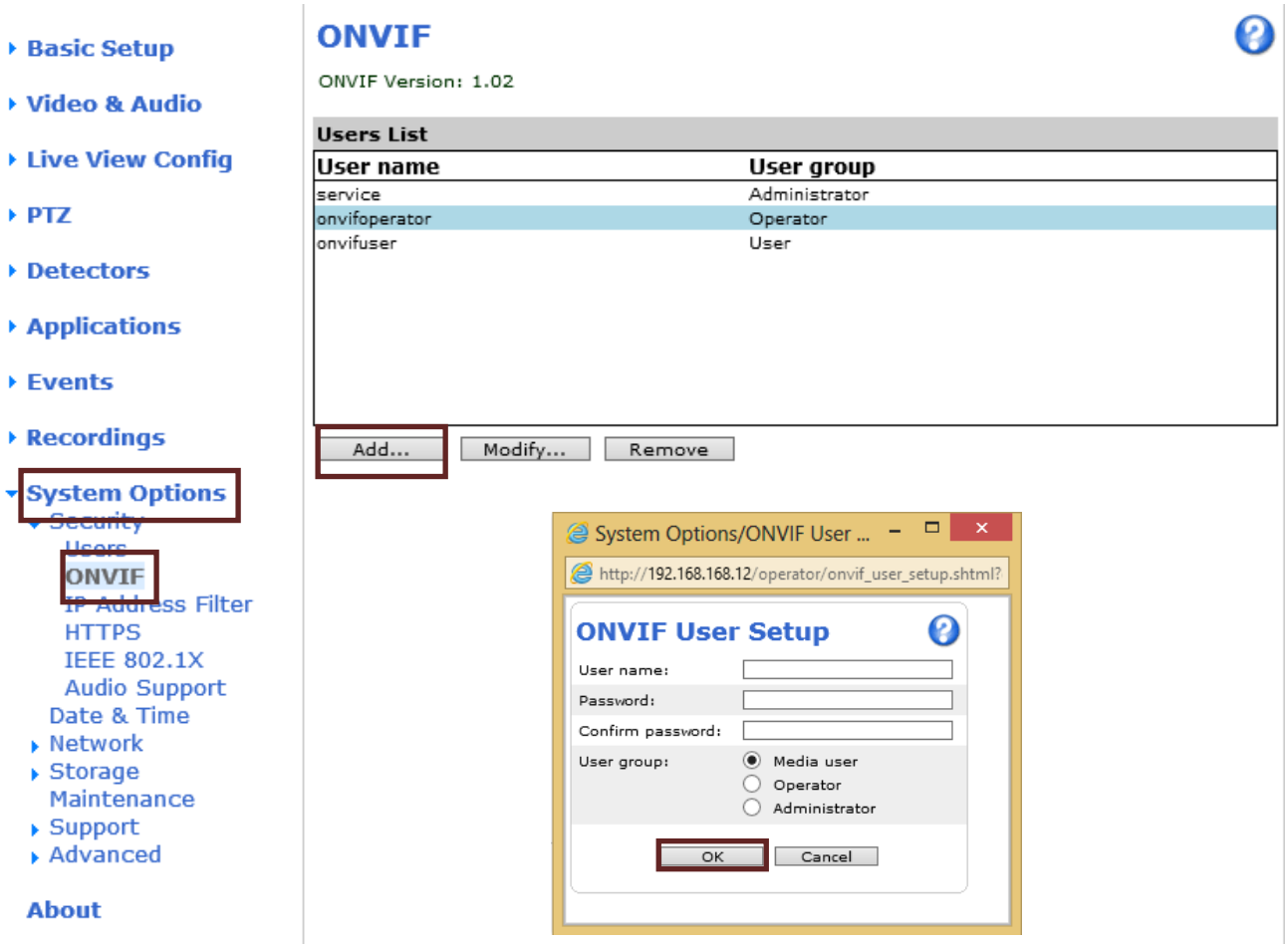
Define onvif user

It is mandatory for the Axis camera to have at least one ONVIF user defined (admin, operator, media user) in order to access the camera from the Dartfish Software.

01 Setup -> System Options -> Security -> ONVIF

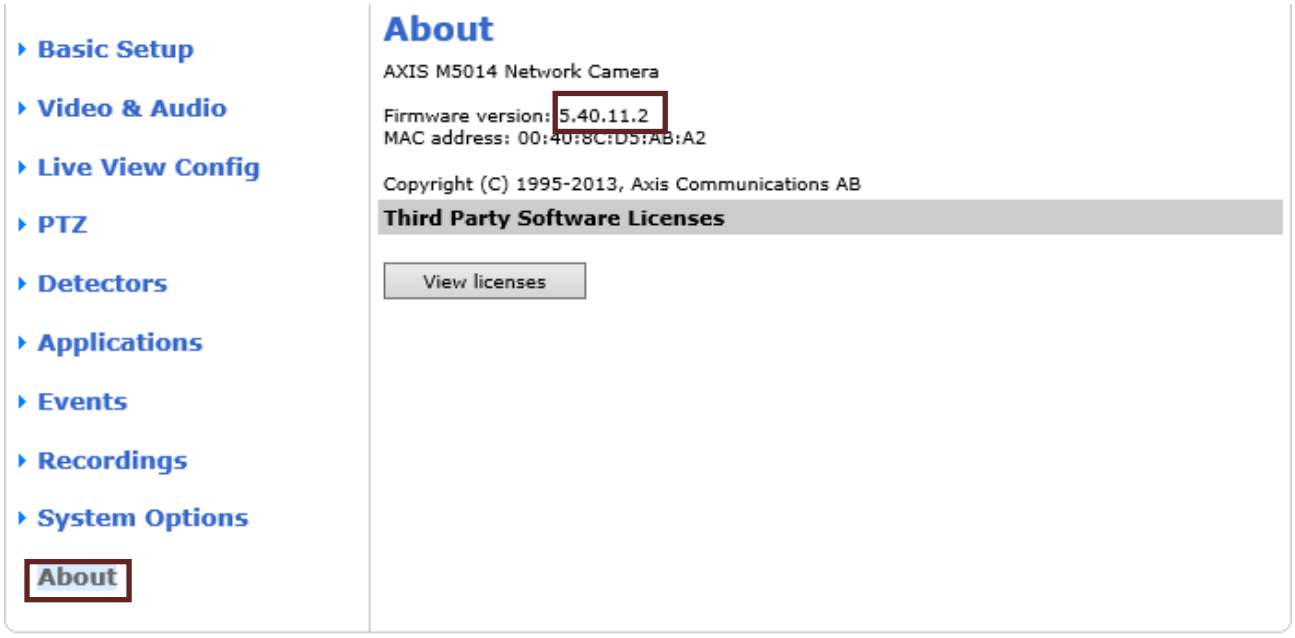
02 To define a new user select **Add**.

03 Now enter a **User name**, the **Password** and define the role. Click **Ok** to confirm (see image below)



Firmware update

01 First check the version of your firmware: Setup -> About

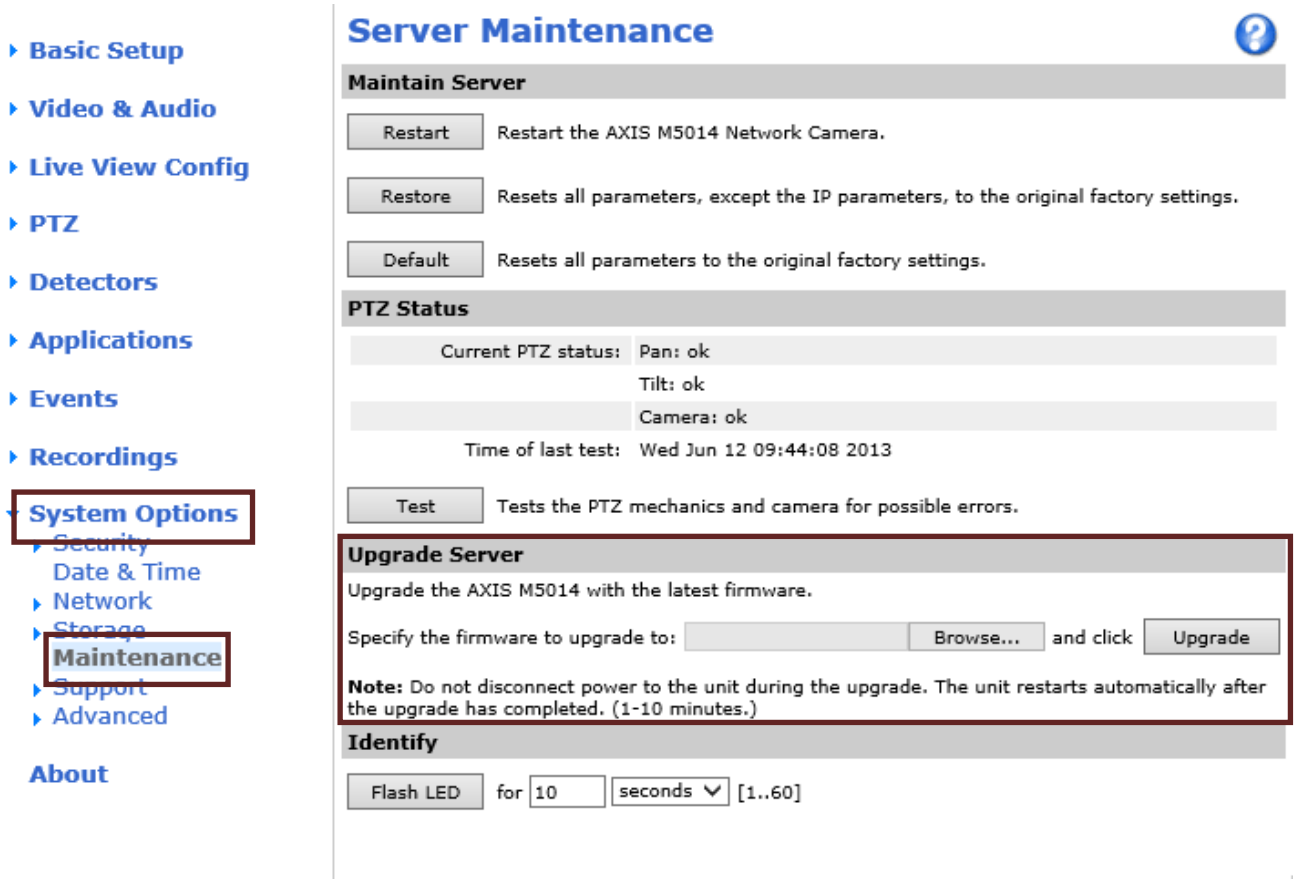


02 Now go to the Axis firmware page to check whether there is an updated firmware available.
http://www.axis.com/techsup/firmware.php

03 Find your camera and download if necessary the corresponding firmware to a folder of your choice (Registration for Axis might be required).

04 Setup -> System Options -> Maintenance

05 Click **Browse** and select the previously downloaded file. Hit **Upgrade** to start the process.



Set the base frame rate

Power line frequency is set the first time the Axis product is accessed and can only be changed from Plain Config (To open Plain Config, go to System Options > Advanced > Plain Config) or by resetting the product to factory default.

Select the power line frequency (50 Hz or 60 Hz) used at the location of the Axis product. Selecting the wrong frequency may cause image flicker if the product is used in fluorescent light environments.

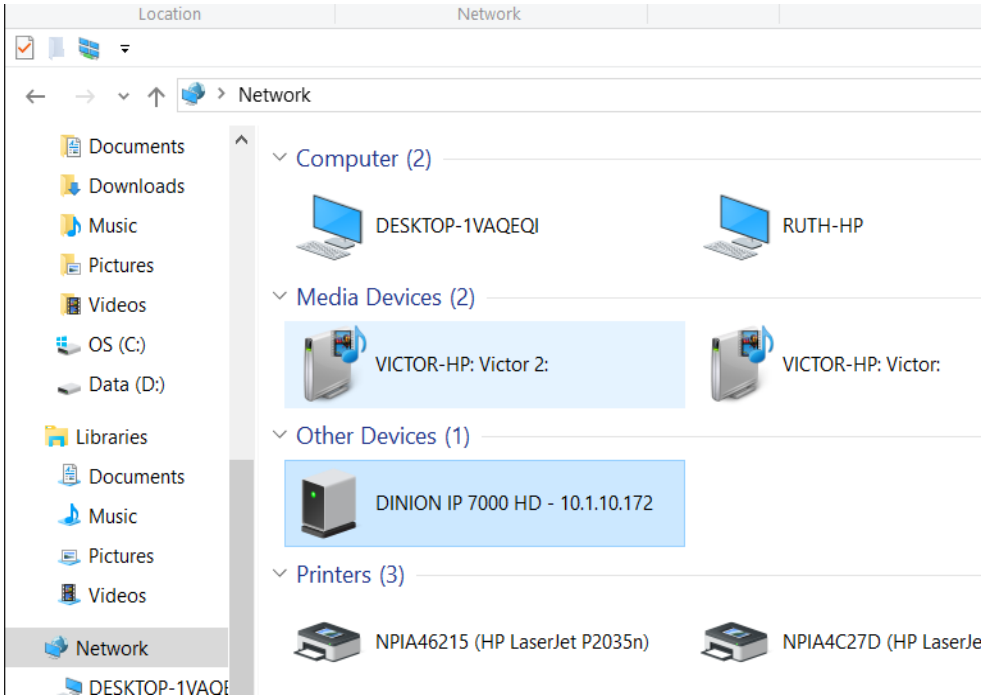
INSTALLATION/CONFIGURATION FOR BOSCH CAMERAS

CAMERA ACCESS

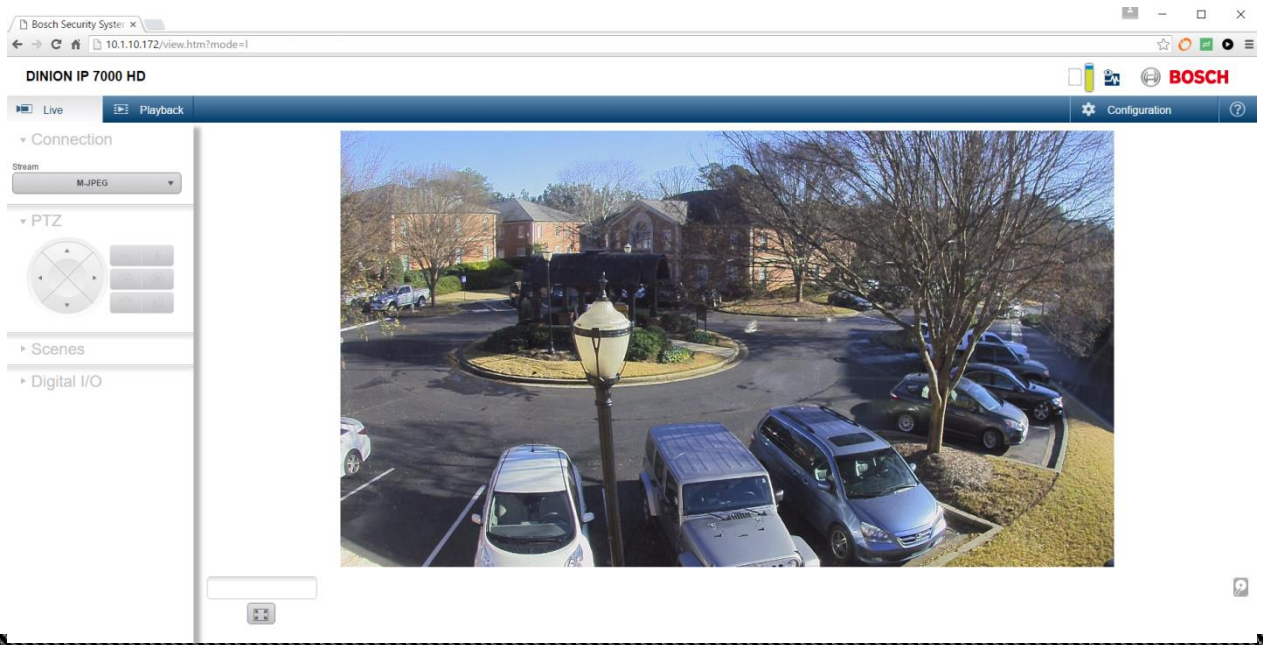
Configuration of Bosch cameras can be done using the ONVIF utility or using an Internet browser as described below and enter your admin login information in order to gain access to the camera.

01 Open Windows File Explorer

02 Select **Network** from the list on the left. The camera should show up as a network item and display its IP address.

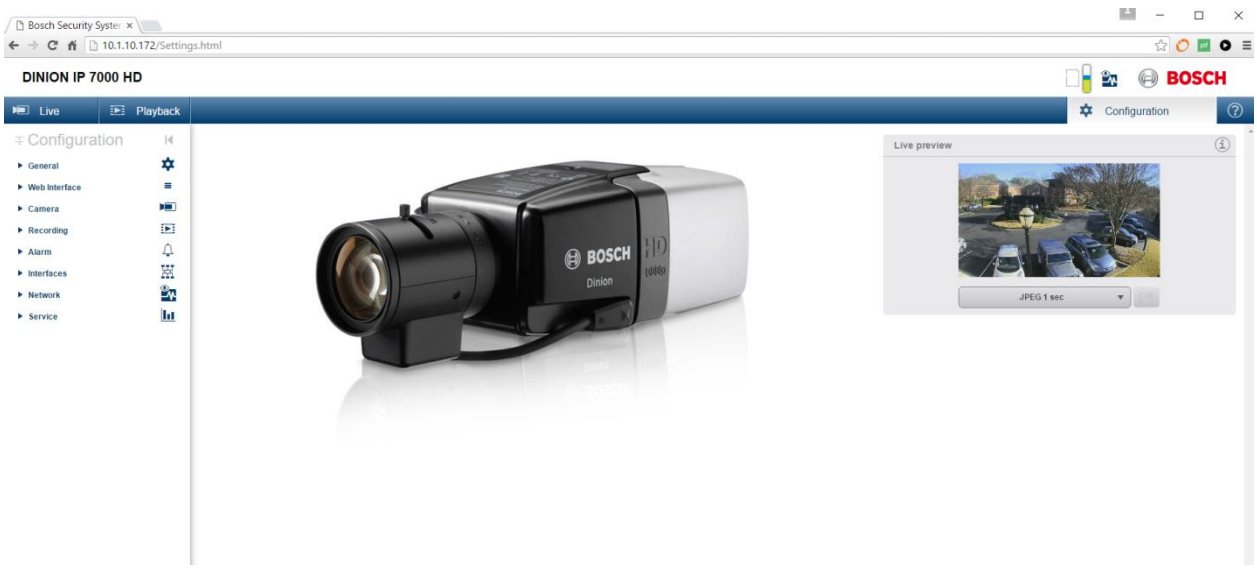


03 Either type the IP address into your browser or double click the device's icon to open the configuration tool.



04 To configure the camera's settings click **Configuration** at the top right:

05 On the Configuration page you'll see the customizable options on the left:

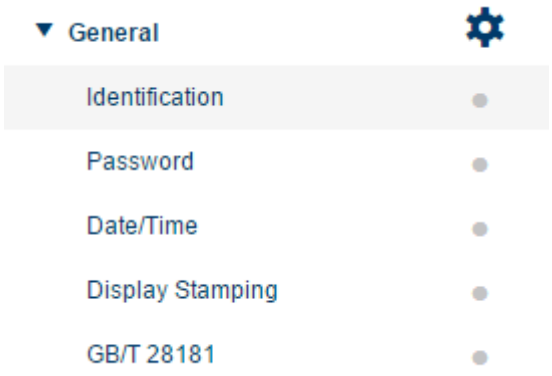


MANDATORY STEPS

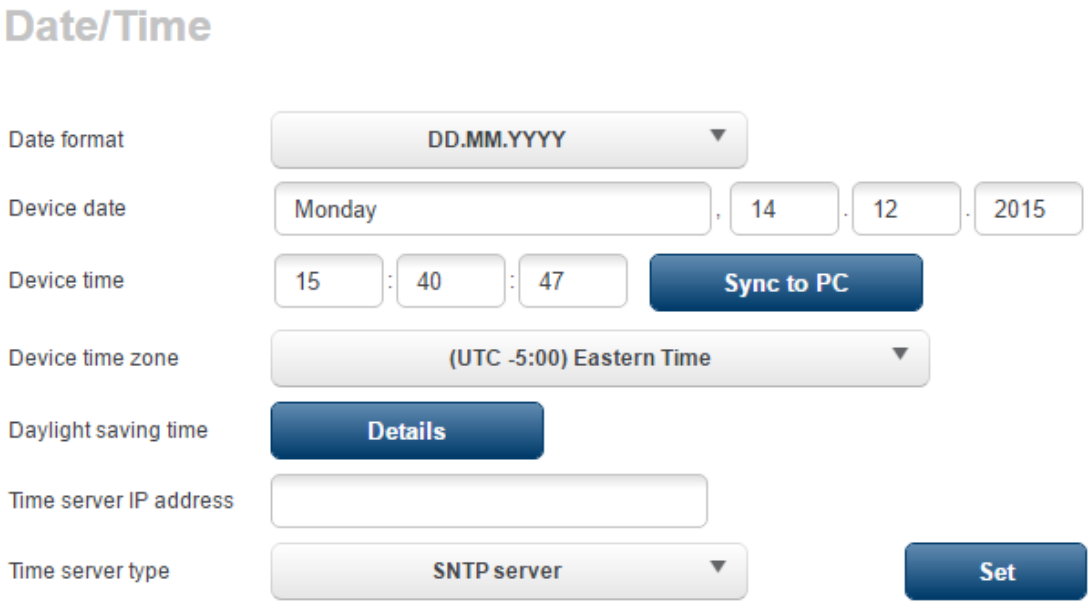
Synchronize date and time

It is important that the camera's date/time setting matches your computer

01 Select **General** > **Date/Time**



02 Click the **Sync to PC** button



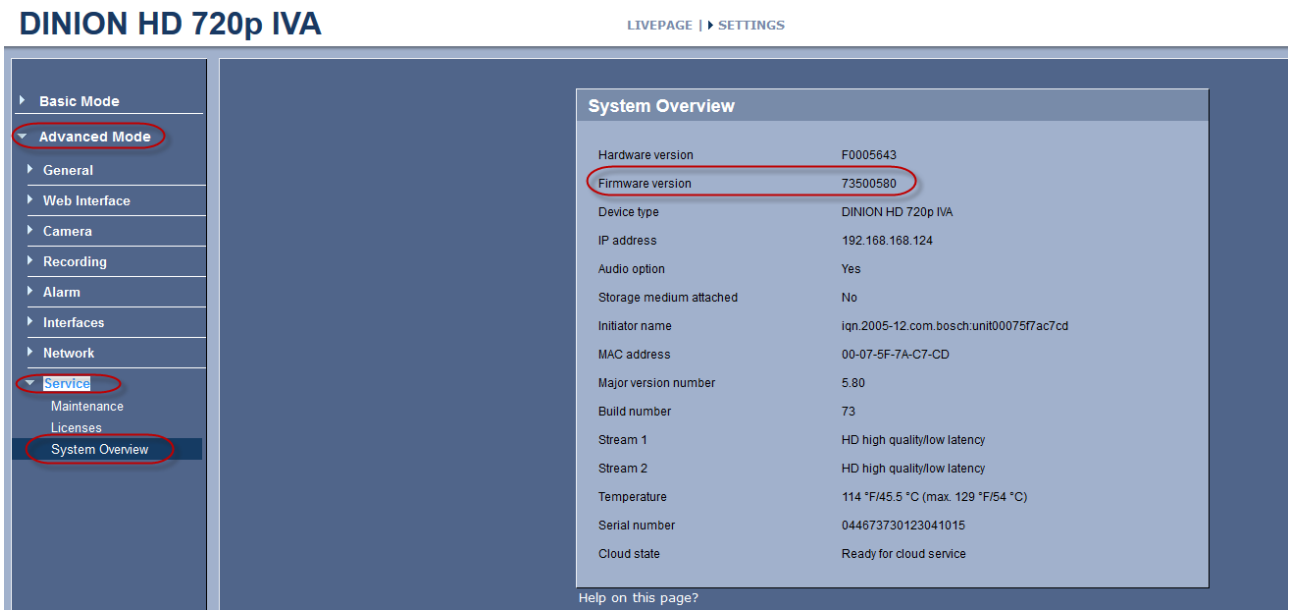
03 Click the **Set** button

BE SURE TO REMEMBER TO DO THIS

Firmware update

01 First check the version of your firmware:

Advanced mode > **Service** > **System overview**



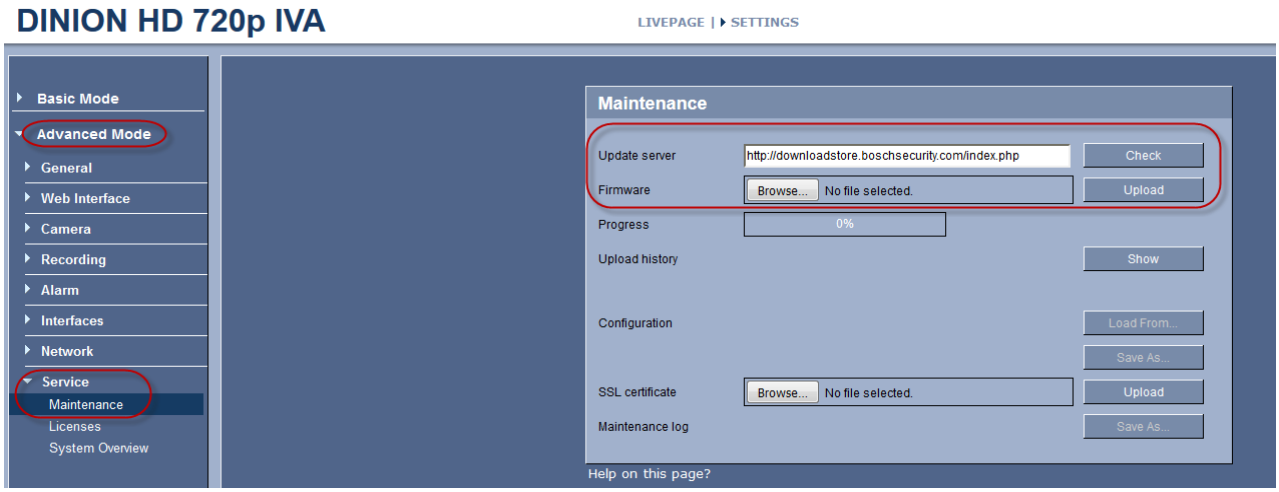
02 If the firmware does not have the same version as the one recommended by Dartfish, download the update from http://downloadstore.boschsecurity.com/index.php

03 Enter your installation code that you can find under **Advanced mode** > **Service** > **Licenses**.

04 Look for the correct firmware then go to **Advanced mode** > **Service** > **Maintenance**

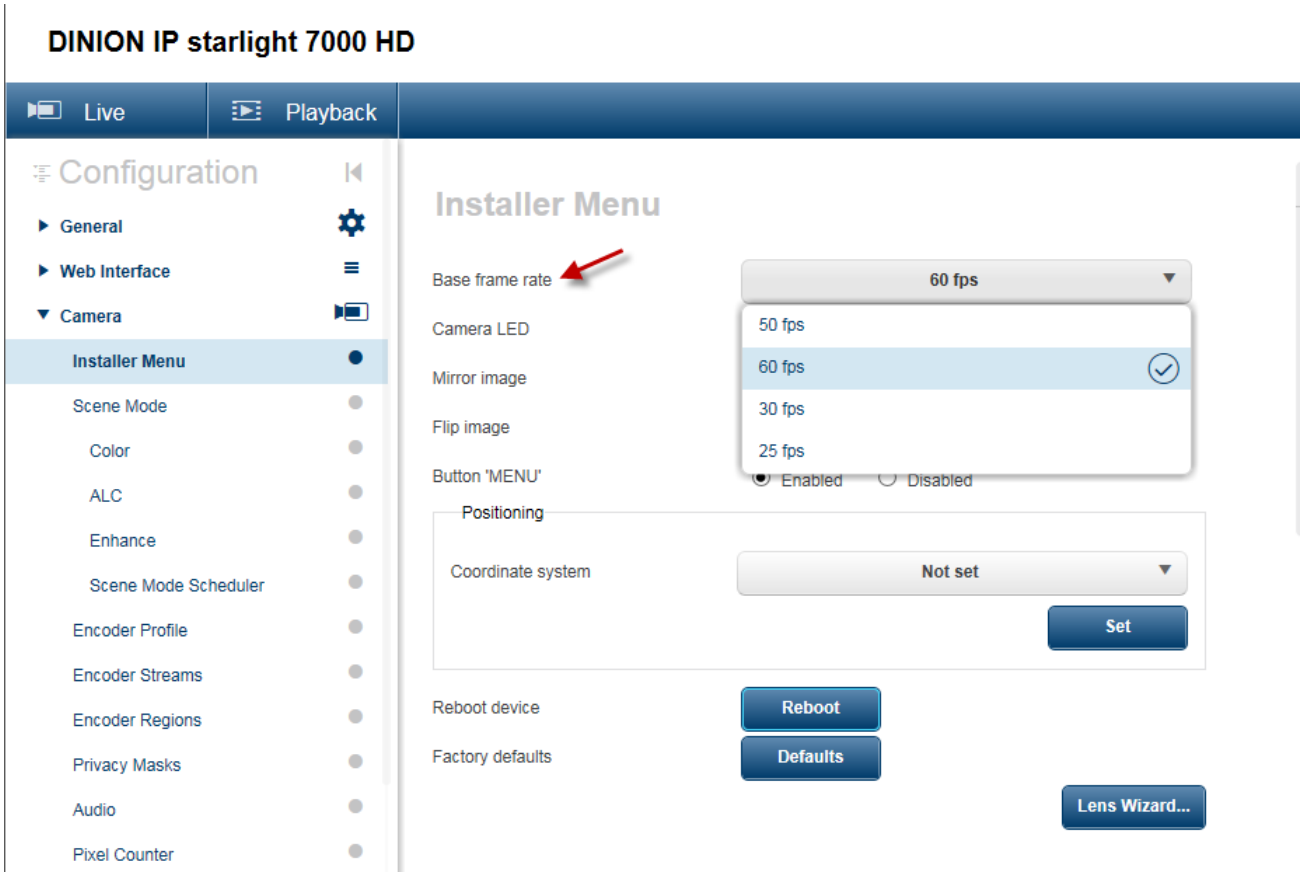
05 Click **Browse…** and find the previously downloaded file.

06 Click the **Upload** button to start the process.



Set the base frame rate

01 Select **Camera** > **Installer Menu**



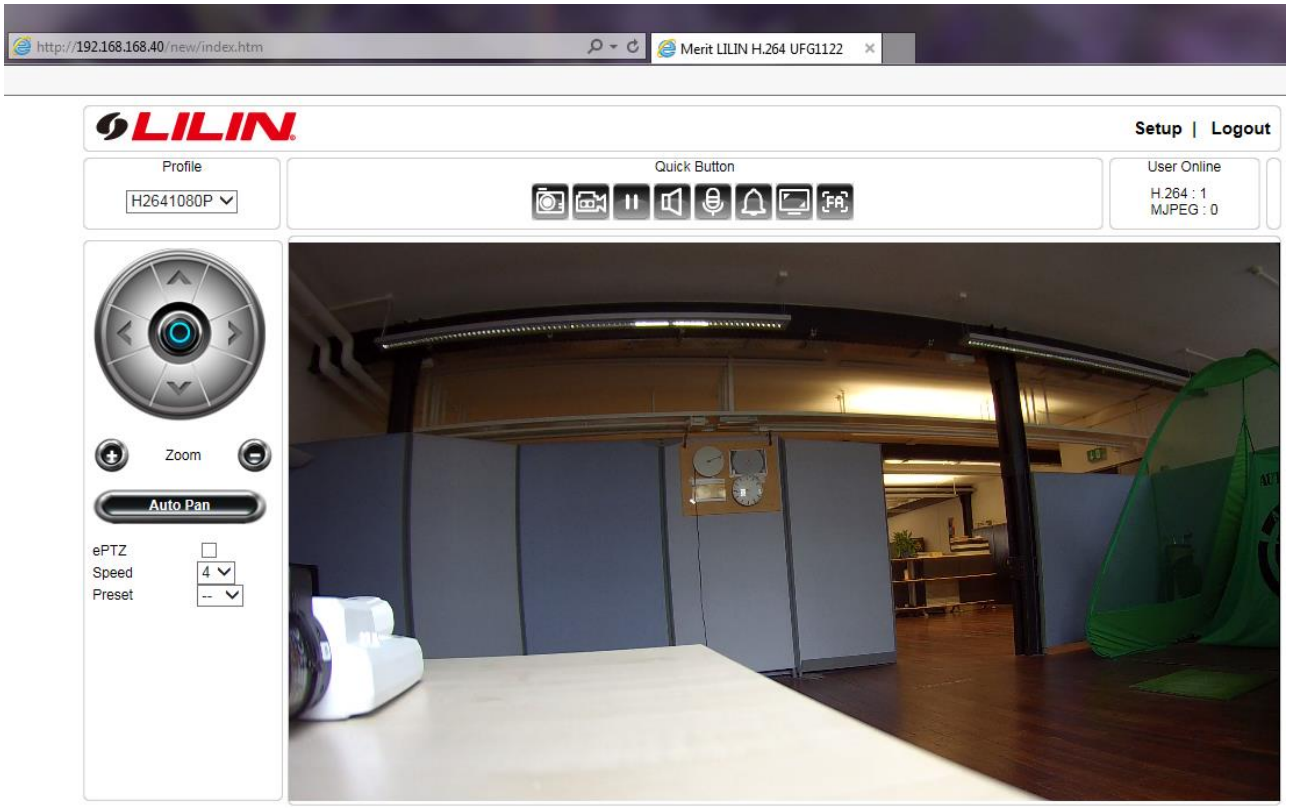
02 Set the **Base Frame Rate** to match the AC power frequency for your region

INSTALLATION / CONFIGURATION FOR LILIN CAMERAS

CAMERA ACCESS

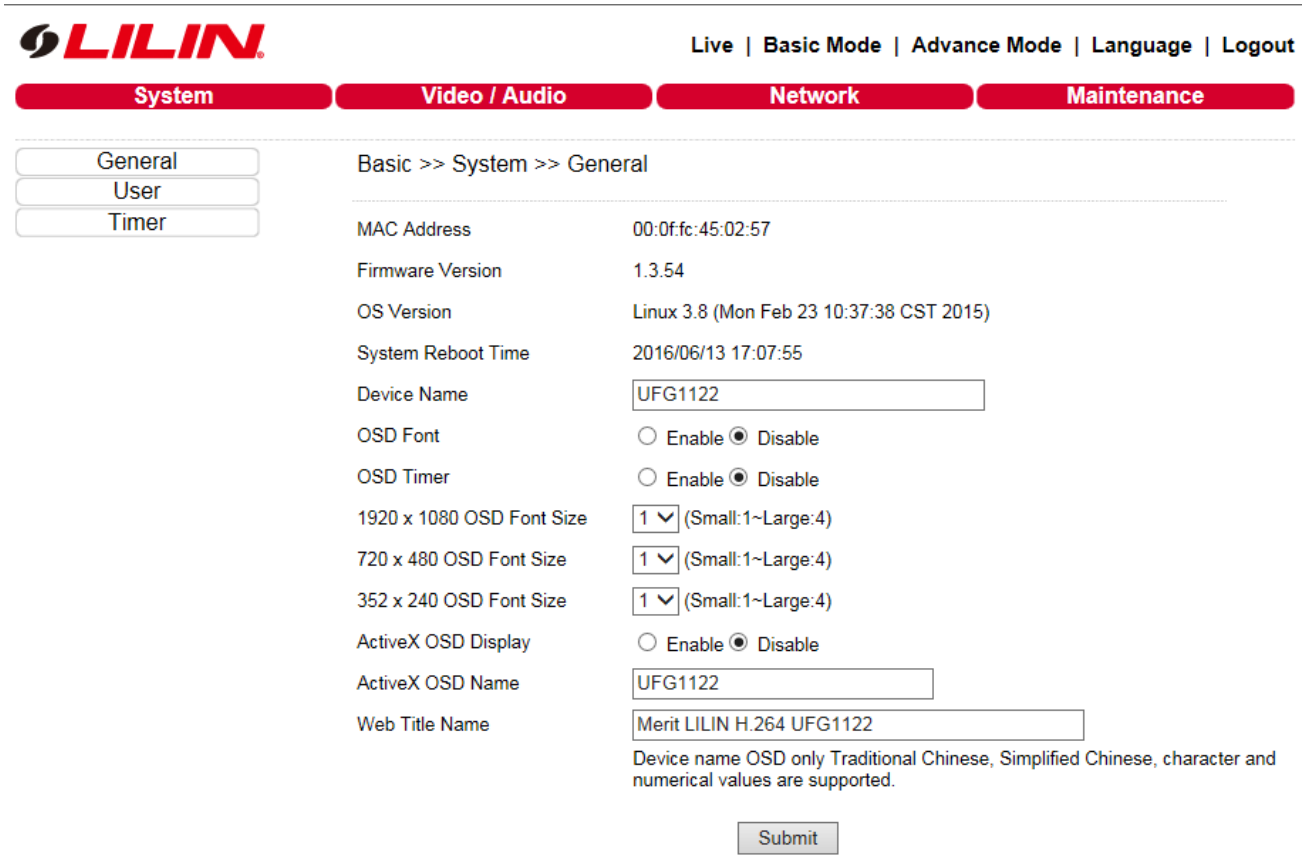
Configuration of Lilin cameras can be done using the ONVIF utility or using an Internet browser as described below and enter your admin login information in order to gain access to the camera.

01 Open Windows File Explorer
02 Select **Network** from the list on the left. The camera should show up as a network item and display its IP address.
03 Either type the IP address into your browser or double click the device's icon to open the configuration tool.



04 To configure the camera's settings click **Setup** at the top right:

05 On the Setup page you'll see the customizable options on the left



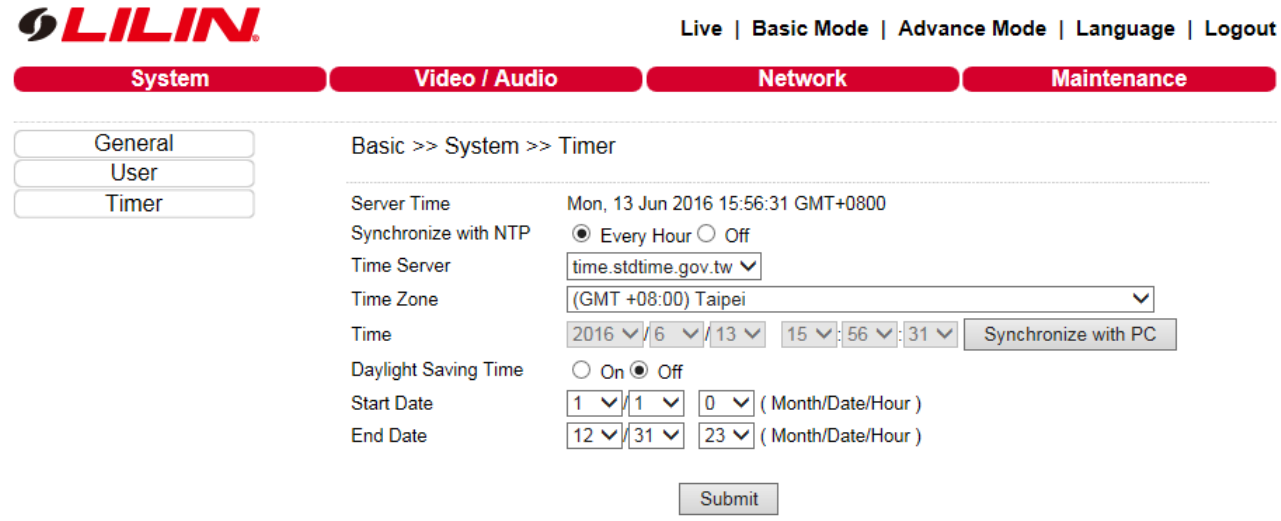
MANDATORY STEPS

Synchronize date and time

It is important that the camera's date/time setting matches your computer

01 Select **Timer**

02 Click the **Synchronize with PC** button



03 Click the **Submit** button

BE SURE TO REMEMBER TO DO THIS

Firmware update

01 You can check the version of your firmware under :
Basic > **System** > **General**

02 If the firmware does not have the same version as the one recommended by Dartfish, download the update from http://www.meritlilin.com/webe/html/download/index.aspx?p=D

03 Look for the correct firmware then go to **Advance** > **Maintenance** > **Firmware Update**

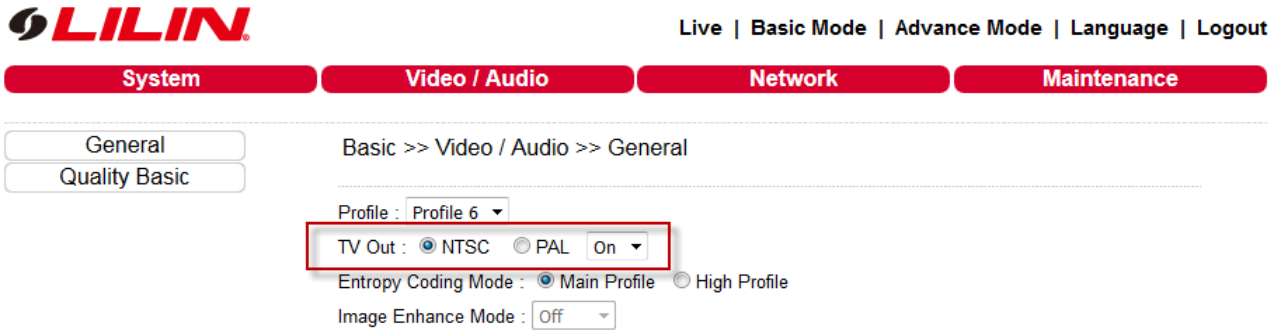
04 Click **Browse…** and find the previously downloaded file.

05 Click the **Submit** button to start the process.

Set the base frame rate

01 Select **Video/ Audio > General**

02 Set the TV Out to **NTSC** or **PAL** to match the AC power frequency for your region



INSTALLATION / CONFIGURATION FOR DAHUA CAMERAS

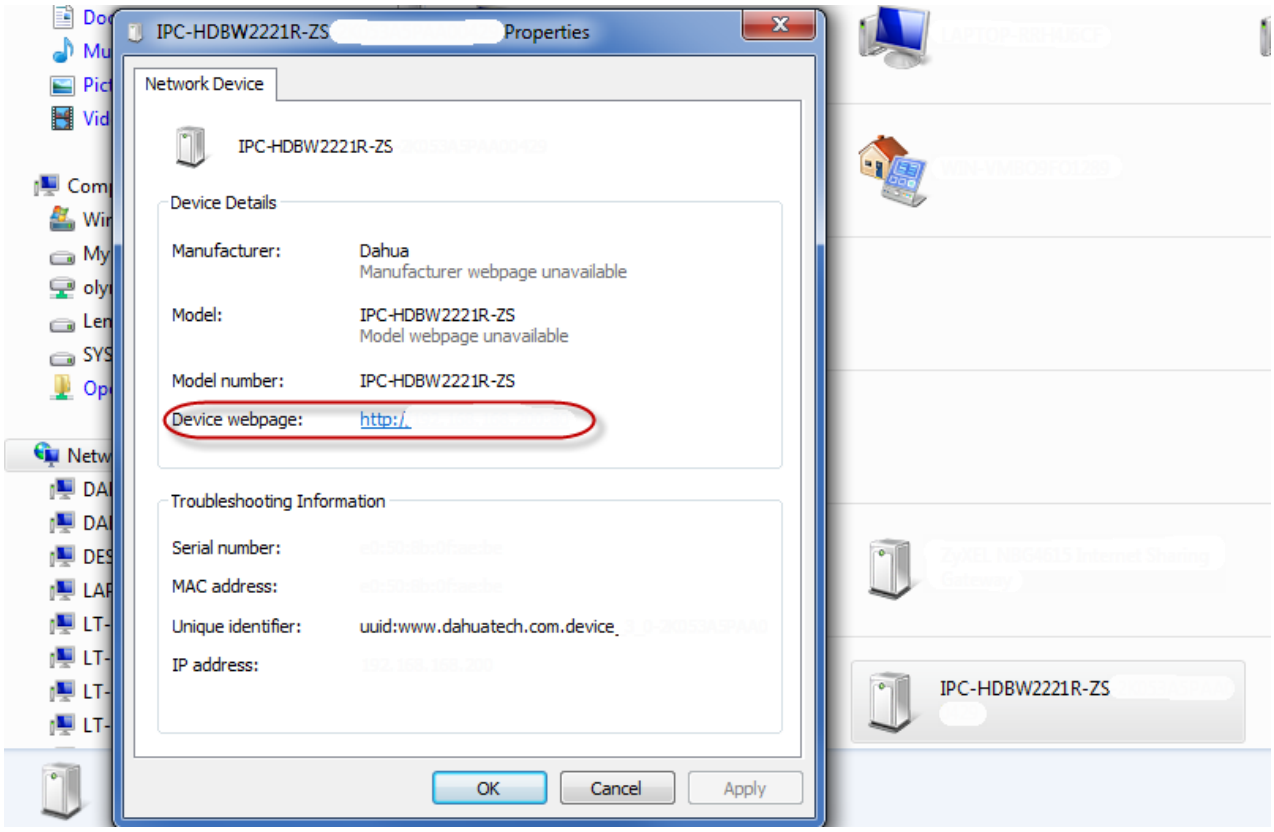
CAMERA ACCESS

Configuration of Dahua cameras can be done using the ONVIF utility or using an Internet browser as described below and enter your admin login information in order to gain access to the camera.

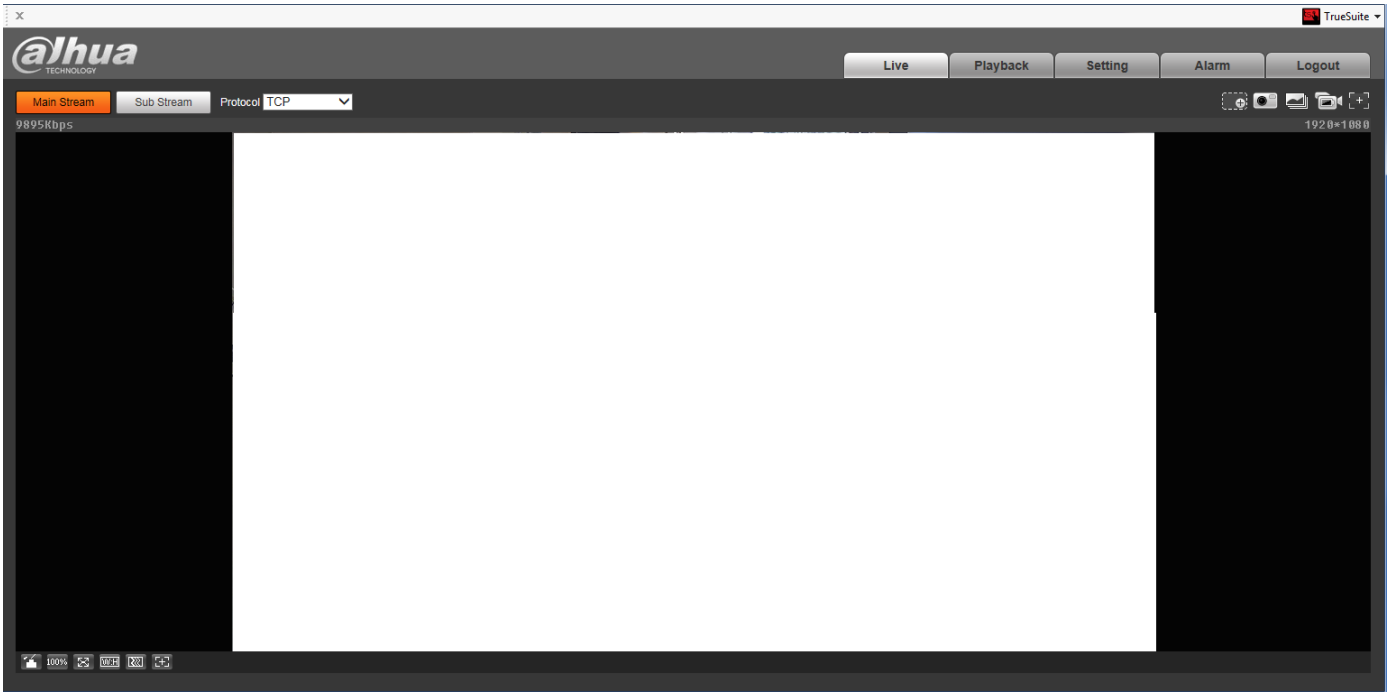
01 Open Windows File Explorer

02 Select **Network** from the list on the left. The camera should show up as a network item

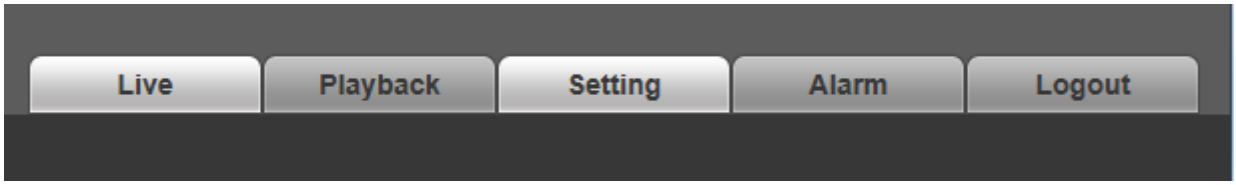
03 Right click on the device's icon > **Properties** and click on the link under **device webpage…**



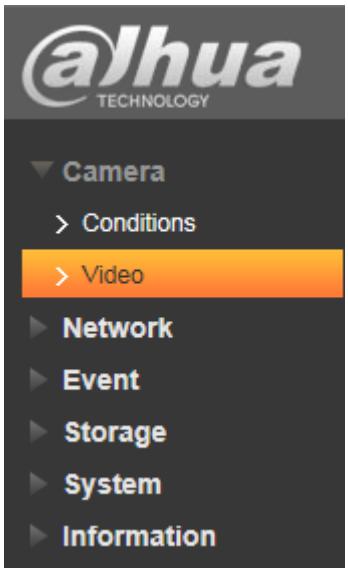
… or double click the device's icon to open the configuration tool



04 To configure the camera's settings click on **Setting** at the top right



05 On the Setup page you'll see the customizable options on the left:



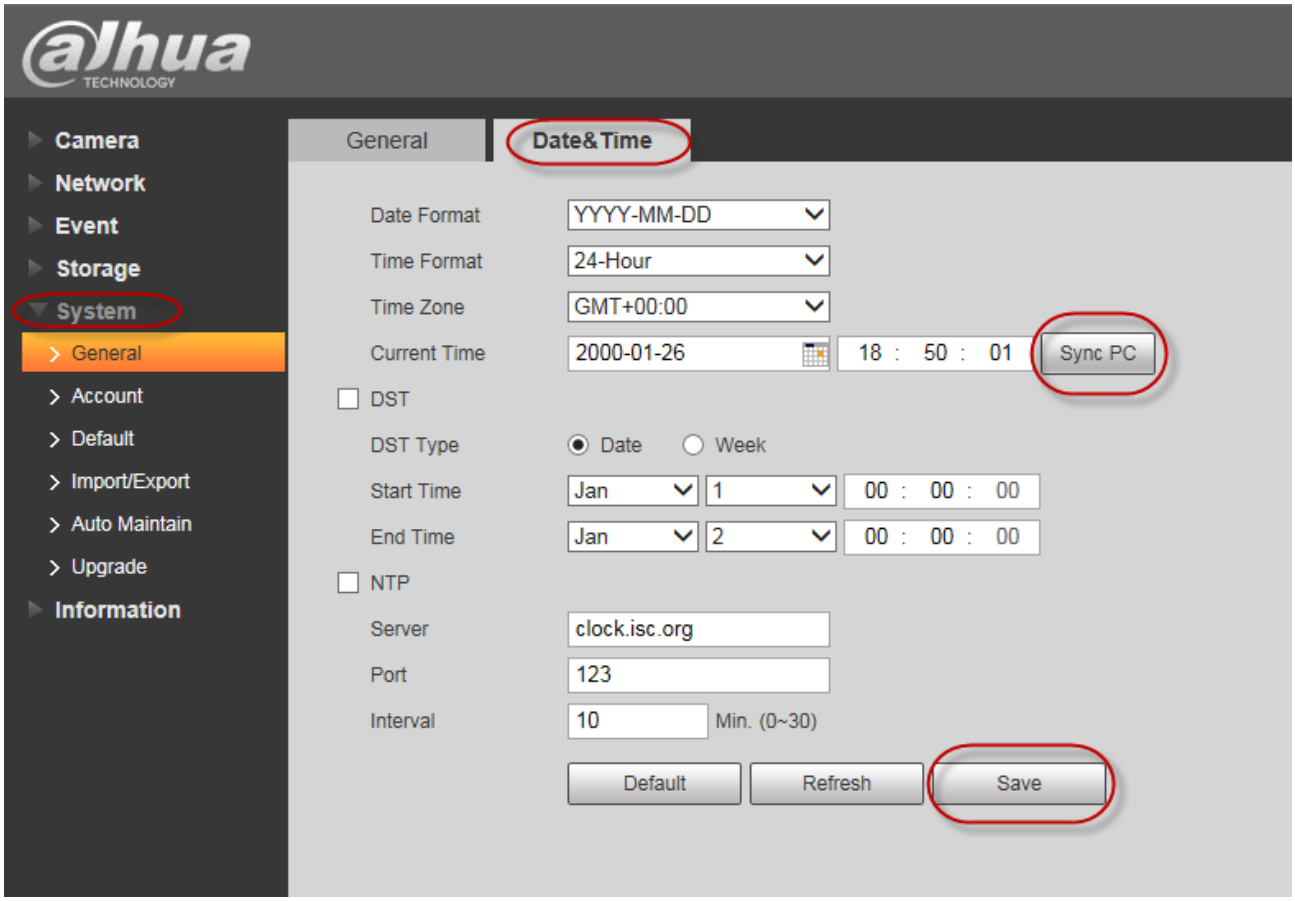
MANDATORY STEPS

Synchronize date & time

01 Setting -> System -> General -> Date & Time

02 Click on **Sync PC**

03 Click the **Save** button.



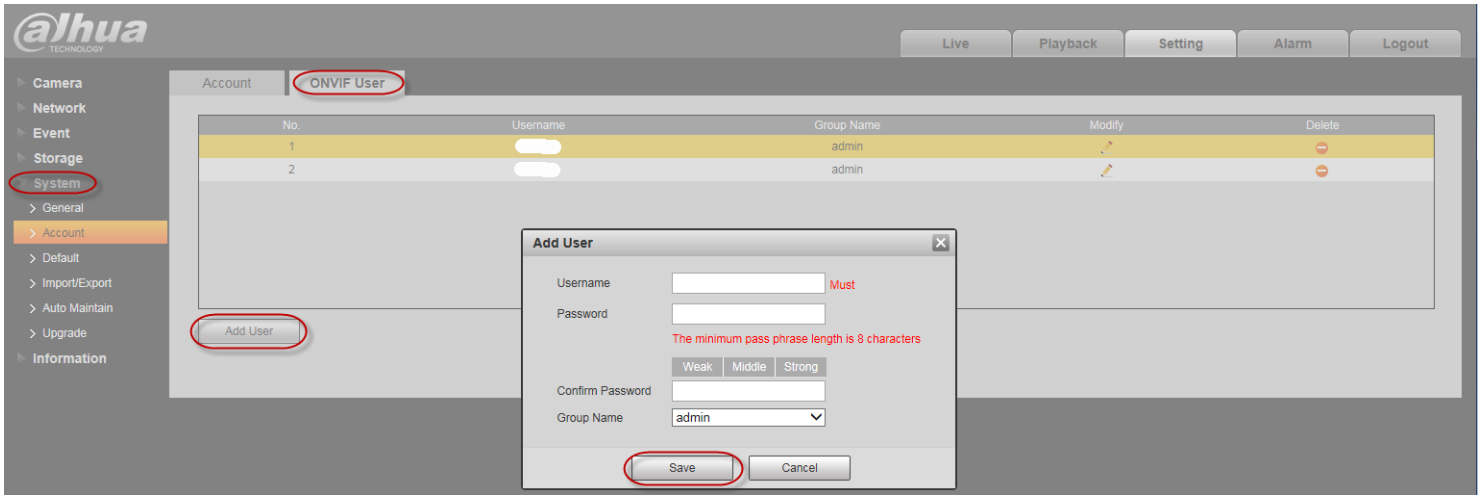
Define onvif user

It is mandatory for the Dahua cameras to have at least one ONVIF user defined (admin, operator, media user) in order to access the camera from the Dartfish Software.

01 Setting -> System -> Account -> ONVIF User

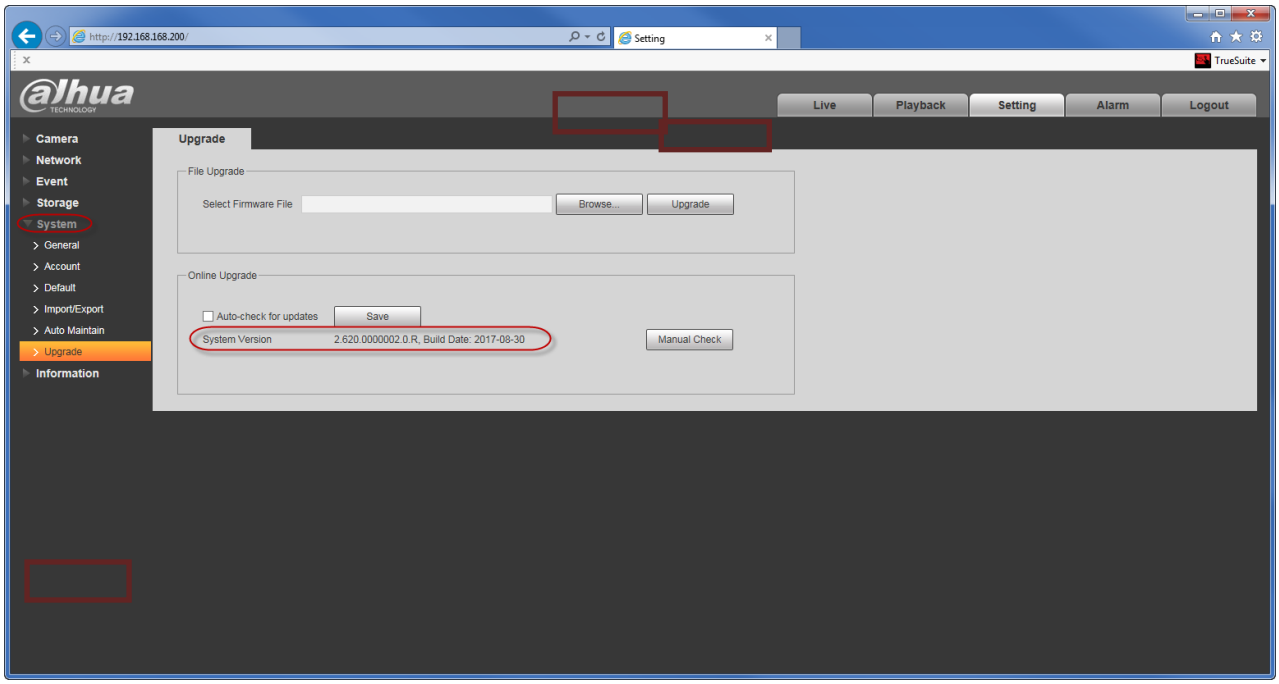
02 To define a new user select **Add**.

03 Now enter a **User name**, the **Password** and define the role. Click **Ok** to confirm (see image below)

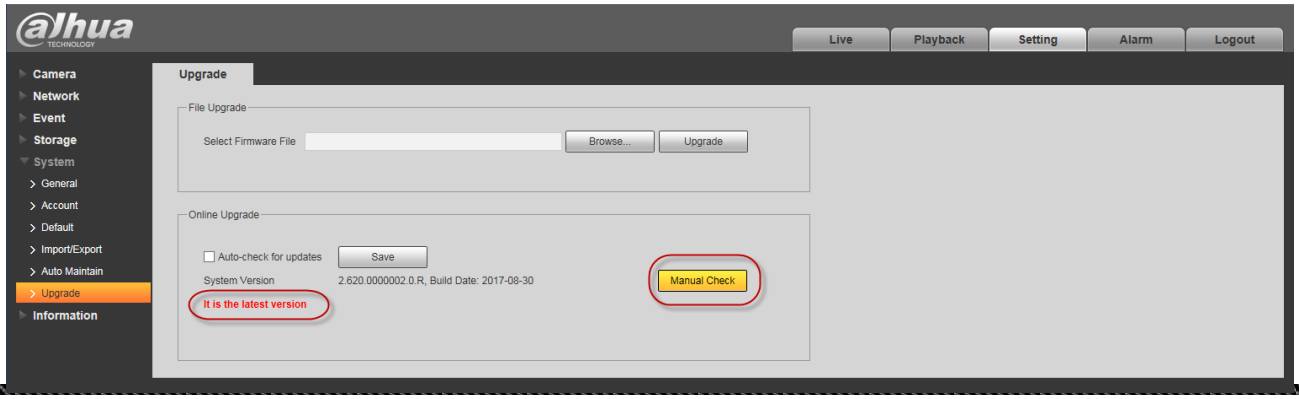


Firmware update

01 First check the version of your firmware: Setting ->System -> Upgrade



02 To update the firmware, you can either click on **Manual Check**. This will tell you if you have the latest firmware installed :

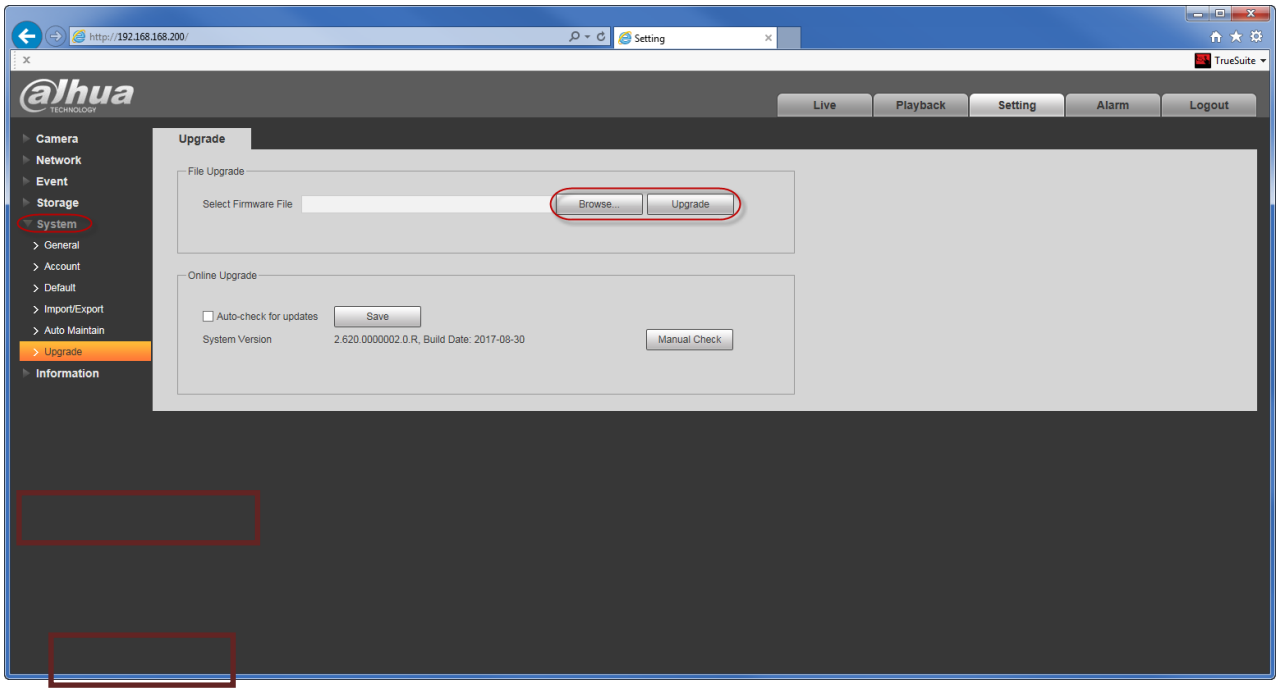


03 Or you can go to the Dahua firmware page to check whether there is an updated firmware available. http://www.dahuasecurity.com/firmware_111.html

04 Find your camera and download if necessary the corresponding firmware to a folder of your choice.

05 Setting -> System -> Upgrade

06 Click **Browse** and select the previously downloaded file. Hit **Upgrade** to start the process.



Set the base frame rate

01 Select Setting -> System -> General

02 Set the Video Standard to **NTSC** or **PAL** to match the AC power frequency for your region

Selecting the wrong frequency may cause image flicker if the product is used in fluorescent light environments.

INSTALLATION / CONFIGURATION FOR PTZ OPTICS CAMERAS

CAMERA ACCESS

Configuration of Lilin cameras can be done using the ONVIF utility or using an Internet browser as described below and enter your admin login information in order to gain access to the camera.

03 Open Windows File Explorer

04 Select **Network** from the list on the left. The camera should show up as a network item and display its IP address.

05 Either type the IP address into your browser or double click the device's icon to open the configuration tool.

06 On this page you'll see the customizable options on the left

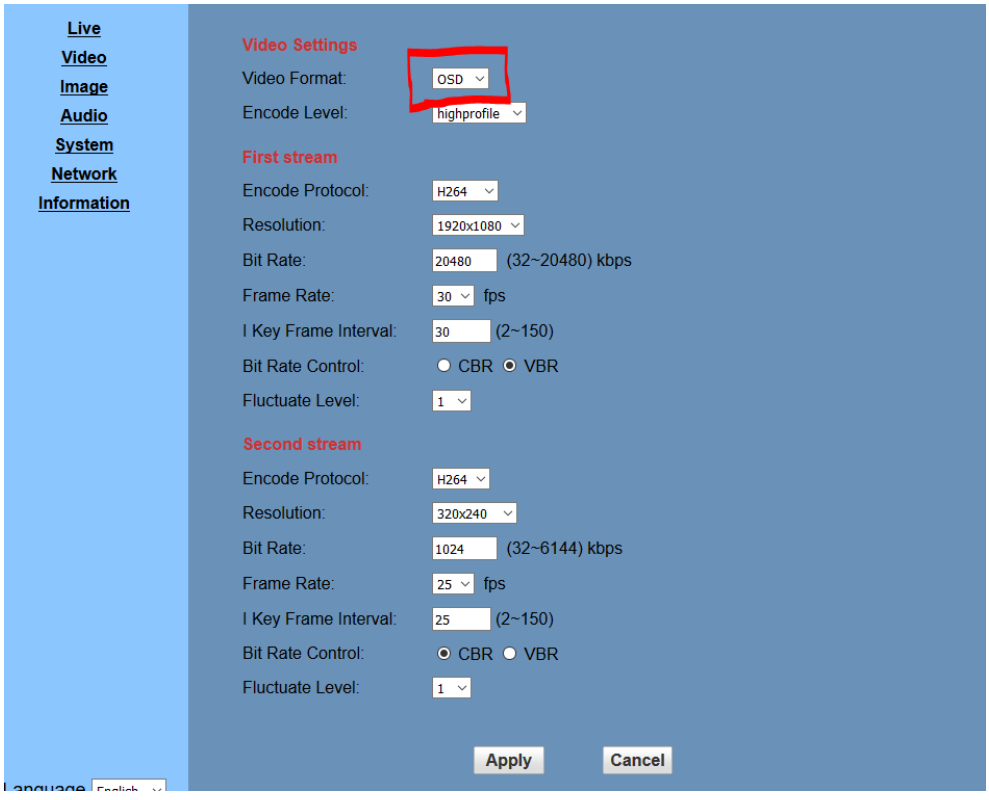
MANDATORY STEPS

Set the base frame rate

07 Select **Video**

08 Set the video format to OSD

09 Click on Apply



APPENDIX 1 – USEFUL LINKS

About ONVIF

- http://en.wikipedia.org/wiki/Open_Network_Video_Interface_Forum
- http://www.onvif.org
- http://en.wikipedia.org/wiki/Real-time_Transport_Protocol
- http://en.wikipedia.org/wiki/Power_over_Ethernet

About ONVIF profile S

- http://www.onvif.org/Portals/0/documents/op/20984_11763r01ONVIF_Members-Profile_S_Specification.pdf

List of profile S compliant products on the market:

- http://www.onvif.org/ConformantProducts/ProfileS.aspx

Axis Cameras

- http://www.axis.com/fr/products/video/camera/index.htm

BOSCH Dinion and Flexidome

- http://video.boschsecurity.com/category/video-solutions/1

Merit LILIN Cameras

- http://www.meritlilin.com/en/product

DAHUA Cameras

- http://www.dahuasecurity.com/products.html