

A complex graphic composed of overlapping, semi-transparent blue polygons and shapes, creating a sense of depth and movement. The Ksenos logo is positioned on the left side of this graphic.

**KSENOS**  
DIGITAL VIDEO SURVEILLANCE

# Ksenos Prime Installer's handbook

Version 2.4.8

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Now that the physical installations are done, it is time to configure Ksenos Prime software to work as the system's core. This small handbook offers helpful points and examples on how to get Ksenos to work seamlessly with cameras, video servers, controllers, and other devices. Ksenos supports a wide range of hardware by default, so installation procedure should be easy. Have a nice time studying this handbook!

As the DVR starts up, you will have a pre-installed Ksenos DVR software in front of you. By default, the system consist of recorder software and essential drivers. Ksenos can also be installed for remote use on most modern computers with sufficient specifications.

# 1.1 Contents

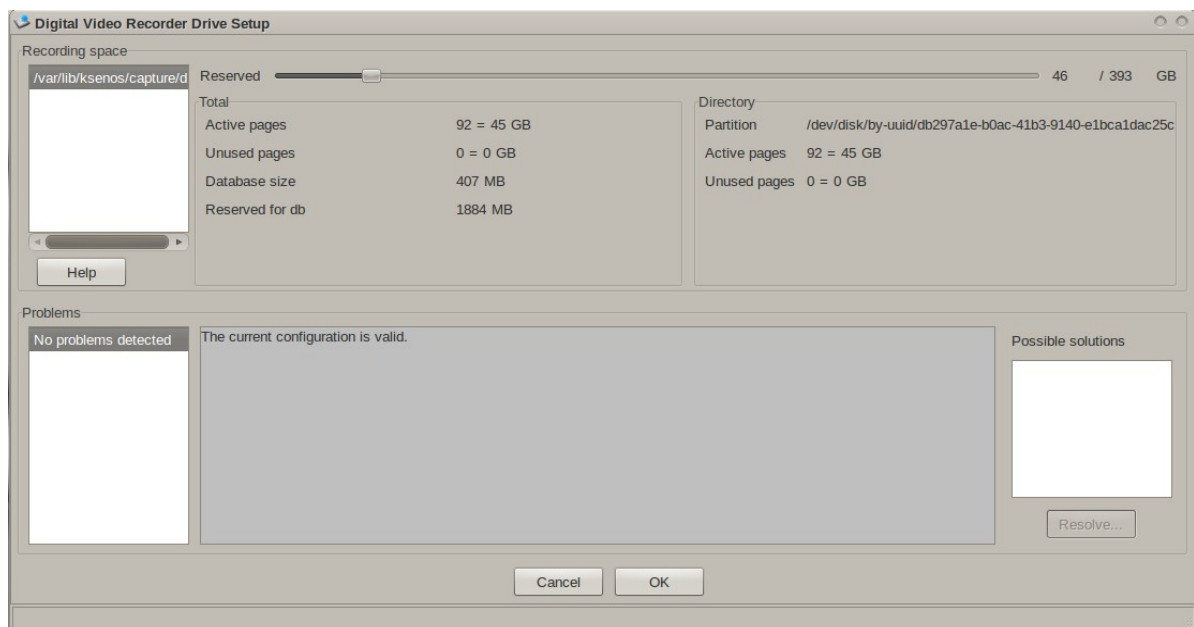
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## 2 Setting up devices and servers

### 2.1 Recording space and database

The default hard drive configuration for Ksenos consists from at least two disks. The first one is a traditional mechanic disk for the system and recordings, and second one is a smaller disk (traditional mechanic or SSD drive) for the recordings database. To reserve hard disk space for the recordings and database, a bundled application called “DriveSetup” is provided. On Windows systems this application can be found under the installation folder. On Linux, the DriveSetup tool can be started by pressing “Alt+F2” and typing “drivesetup” in the dialog. Partition “D” is always meant to be used by the database, and partition “E” (and next partitions in alphabetical order) is for recordings. These names for locations are used in all systems, regardless of operating system or physical path.



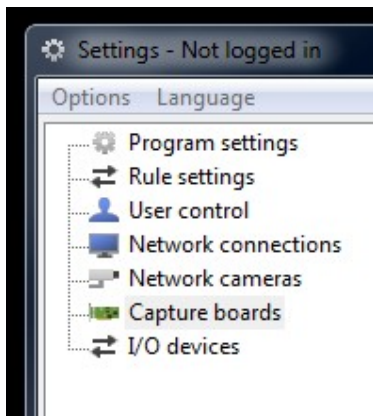
DriveSetup can also be used to set smaller recording areas

DriveSetup guides you through reserving space and creating database. The application tells you if some parts of the setup is not within recommended values. The “Create” or “Resolve” button reserves space for recordings and creates empty database. If everything is OK within database and recording space, you can move on to add cameras and other devices. Please note that Ksenos must not be running when using DriveSetup.

How much recordings will fit on a 2-terabyte hard disk? There's no simple answer to that question. It depends completely on the quality of recorded images and how much movement is expected on those cameras. The question "How much hard disk space does a database require?" can be answered much more easily. The recommended setup for database space is five per cent of the recording space. Less than two per cent ratio can cause faulty function of the recorder. For example, 2TB recording space would need 100GB of database space and 4TB would need 200GB space, respectively. Database space can never be too big compared to recording space. Sufficient database space will make browsing recordings faster and reduce possibility of errors.

## 2.2 Settings overview

The settings are separated to 7 groups:



**Program settings** - General settings of the DVR

**Rule settings** - Programming of recording schedules, digital output triggering etc.

**User control** - Users and user rights

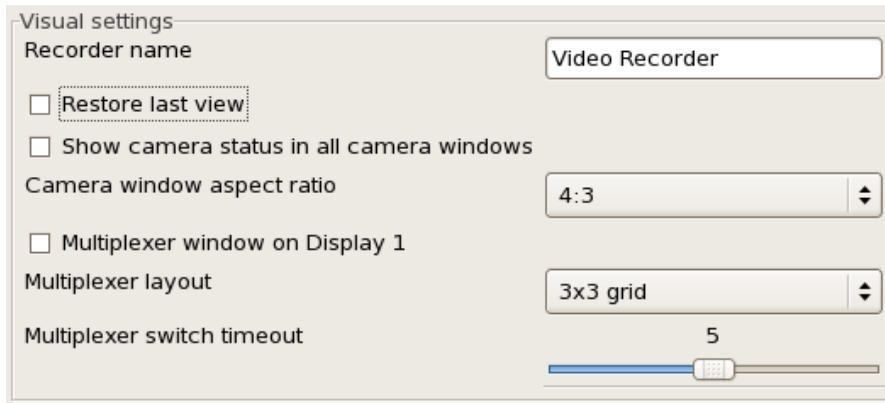
**Network Connections** - Server settings and connections.

**Network Cameras** - Connected network cameras

**Capture boards** - Installed analog capture boards

**I/O devices** - PTZ joystick and digital I/O devices

## 2.3 Program settings



Visual settings

Recorder name

Restore last view

Show camera status in all camera windows

Camera window aspect ratio

Multiplexer window on Display 1

Multiplexer layout

Multiplexer switch timeout

### Visual settings

**Recorder name** – Type in the name of the recorder. This is useful for identification eg. when multiple recorders are behind a KVM switch or when remote clients are connected to multiple remote servers.

**Restore last view** – If the DVR is restarted or the user has logged out and logged in, this option brings back the camera window layout which was active when the DVR program was shut down or logged out.

**Show camera status in all camera windows** – This feature shows status information about the camera: the frame rate, compression and size of the stored video.

**Camera window aspect ratio** – Select the average aspect ratio of the cameras. This setting affects the camera window aspect ratio of the automatically arranged views.

**Multiplexer window on Display x** – This feature is usually used with multiple monitors. The monitor will act as a traditional switcher of single cameras or camera grids (2x2, 3x3, 4x4, 5x5).

**Multiplexer switch timeout** – The period of time before switching to next camera or grid of cameras.

## Program settings



Program settings

Show advanced settings

Start automatically at system startup

Video export resolution: 352x288 (PAL)

Video export quality: Normal

Global recording rule: No rule ...

**Show advanced settings** - Show advanced options related to program settings.

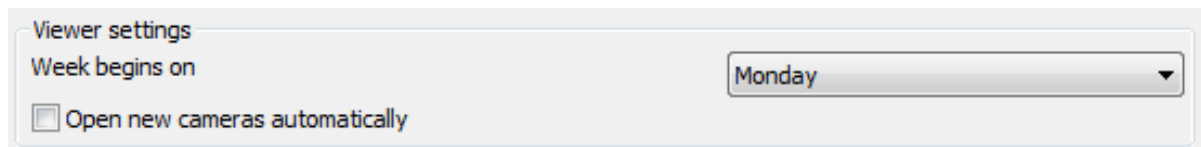
**Start automatically at system startup** - Ksenos starts up together with Windows automatically when this box is checked.

**Video export resolution** - The resolution of video clips (multiplex clips and edited video clips).

**Video export quality** - The compression quality of the video clips. Higher quality means bigger video files.

**Global recording rule** - This selection affects the recording of all cameras. Create a suitable rule (eg. a schedule) in the *rule settings* if necessary.

## Viewer settings



Viewer settings

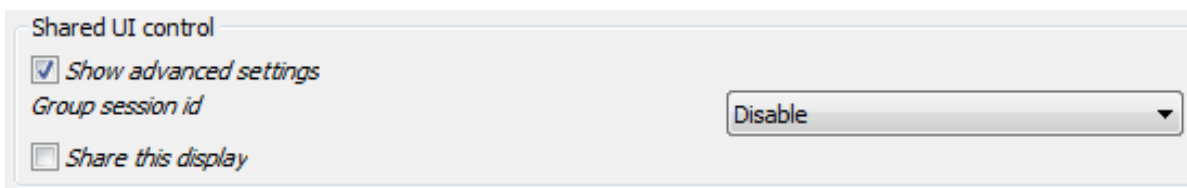
Week begins on: Monday

Open new cameras automatically

**Week begins on** - Select the first day of the week. This selection affects the calendar layout.

**Open new cameras automatically** - When a camera is added, for example when opening a remote connection or backup, open the camera window(s) automatically. If this is not selected, the new cameras have to be opened from the "Display" menu.

## Shared UI control

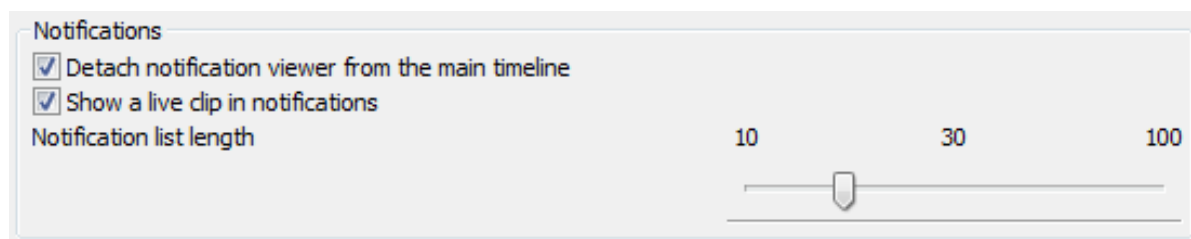


Shared UI control is an advanced feature mainly to be used in control rooms with workstations that are connected to a shared video wall. The shared video wall consists of the displays that are connected to this server.

**Group session id** - ID number of the shared session.

**Share this display** - Share the user interface of this Ksenos server

## Notifications

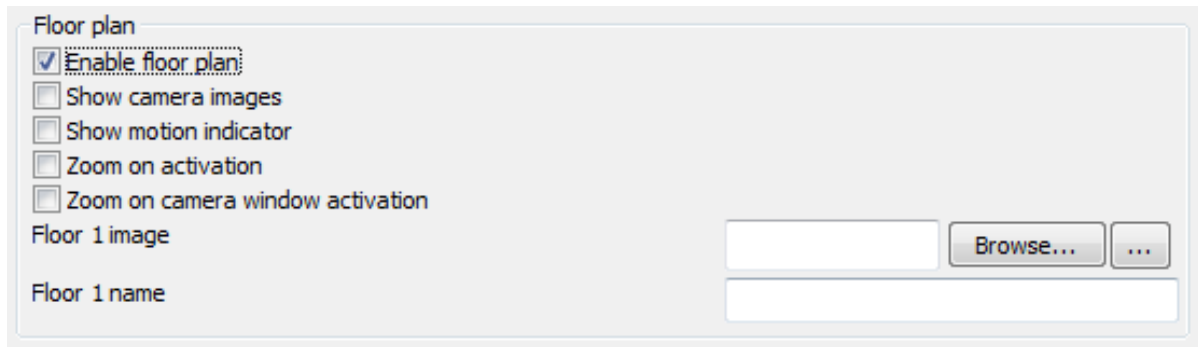


**Detach notification viewer from the main timeline** - When selected, the viewer window will jump to the related recordings of the notification on it's own independent time line. This won't affect any other camera windows. When this is deselected the main time line will jump to the notification's time. All cameras will be synchronized to the time of the notification.

**Show a live clip in notifications** - Show a short clip of live image on the notification list when notifications show up.

**Notification list length** - The maximum number of notifications on the notification window.

## Floor plan



Floor plan

- Enable floor plan
- Show camera images
- Show motion indicator
- Zoom on activation
- Zoom on camera window activation

Floor 1 image

Floor 1 name

**Enable floor plan** - Enable the floor plan function and show the floor plan button in the top window.

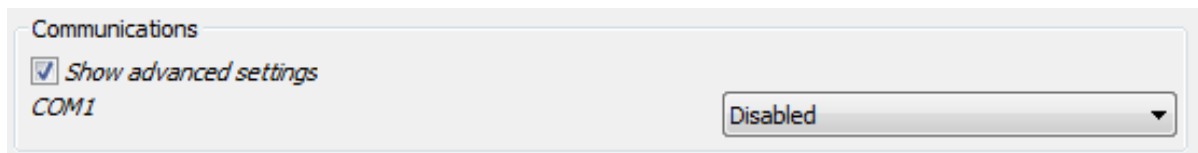
**Show camera images** - Show the camera images in the specified locations of the floor plan. The floor plan shows a camera icon instead of the camera image when this is disabled.

**Show motion indicator** - Show motion indicator next to the image or camera icon.

**Zoom on activation** - When active, clicking on a camera moves and zooms the view of the floor plan window to show the camera's live image.

**Zoom on camera window activation** - When clicking a camera window, the floor plan window will move and zoom to the camera's location to show its live image.

## Communications



Communications

- Show advanced settings

COM1

Communications ports that can be used for PTZ control. The PTZ control through a communications port requires an RS-485 adapter in order to work with PTZ cameras.

Select the communication speed for the PTZ control from the drop-down menu.

## 2.4 Rule settings

**Alarm 1**

**Conditions**

Motion Detection in camera Office 3 , hold for 30 seconds

Schedule

Add condition

All conditions are met  
 Some of the conditions are met  
 Only one condition is met

**Actions**

Action to perform if the rule is true:

Control a digital output  Release action Remove

XeCap1 XeCap1

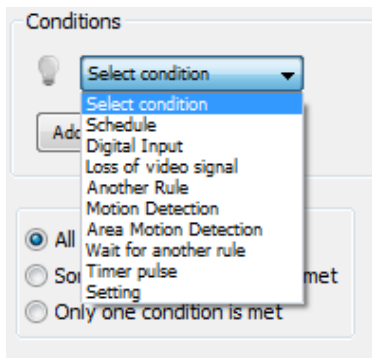
Output 1 Output 1

Open (NC) Close (NO)

The **rule settings** cover the programming of recording schedules, communication with external devices and the software behavior in defined conditions.

A rule consist of *conditions*, an *operator* and an *action*. An *action* will be triggered when a *condition* or multiple *conditions* simultaneously change their state from **false** to **true**.

## Rule conditions



### Name:

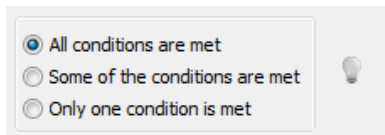
- Schedule
- Digital input
- Loss of video signal
- Another rule
- Wait for another rule
- Motion detection
- Area motion detection
- Timer pulse
- Setting

### True if...

- the present hour in schedule is true
- an input of a connected I/O device is active
- the selected analog video signal is lost
- another rule is true
- another rule has been true for x seconds
- motion is detected in the determined camera
- motion is detected in the drawn areas of the camera image
- the on/off timer's present state is on
- the selected setting is true

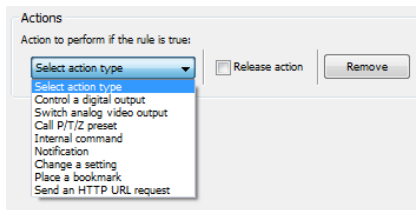
The state is indicated with the image of a light bulb next to the condition. When the light is on, the state is **true**. The condition

## Rule operators



The operator selection (All conditions are met, Some of the conditions are met, Only one condition is met) determines the specific occasion when the action is triggered. For example "All conditions are met" requires all conditions to be true simultaneously before the action is triggered. When the light bulb is on next to the operators, the action is triggered.

## Rule actions



### Name:

- Control a digital output
- Switch analog video output
- Call P/T/Z preset
- Internal command
- Notification
- Change a setting
- Place a bookmark
- Send an HTTP URL request

### Description:

Trigger a digital output of a connected I/O device

Switch the analog output of the analog capture board to show the image of a certain analog camera.

Call a preset of a certain P/T/Z camera

Perform an internal command (Only for advanced use)

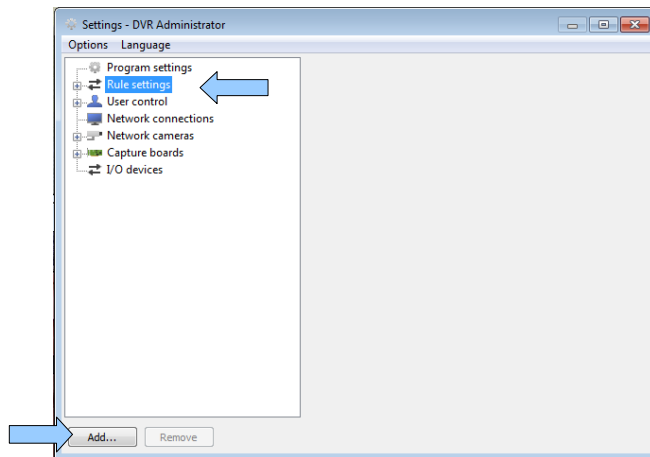
Pop-up a notification event

Change a certain setting of the program.

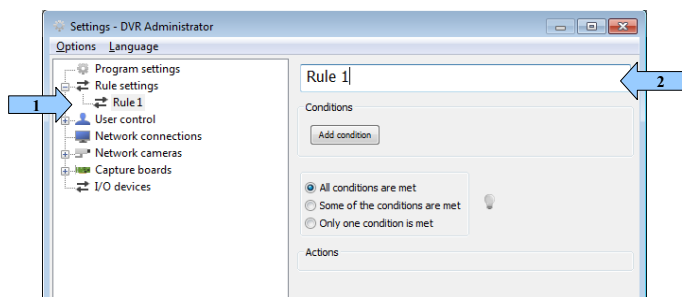
Place a bookmark in the recordings at the time of trigger.

Control an external web service by requesting an HTTP URL

## Example rule 1 – Control a digital output on video loss

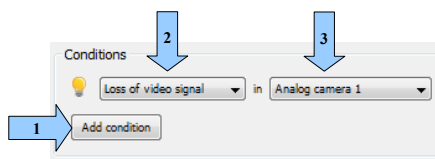


To create a new rule: Click “Rule settings” and click the “Add” button.



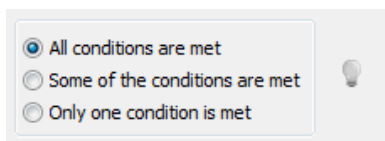
1) Select the created rule for editing.

2) The rule can be renamed from the text field.

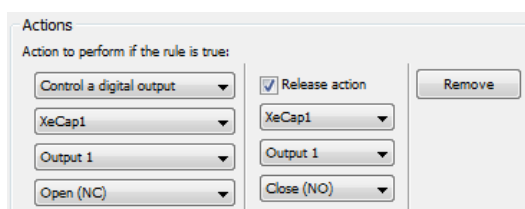


1) Click “Add condition” 2) select “Loss of video signal” 3) select an analog camera.

Instead of selecting a single camera it is possible to select all cameras of a device by selecting the capture board below the text “Any channel on a device”.

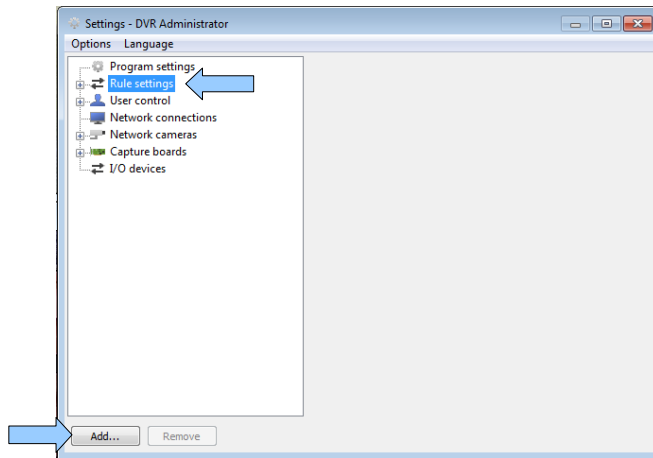


Any of the operators above will fit this rule. There is just one condition.

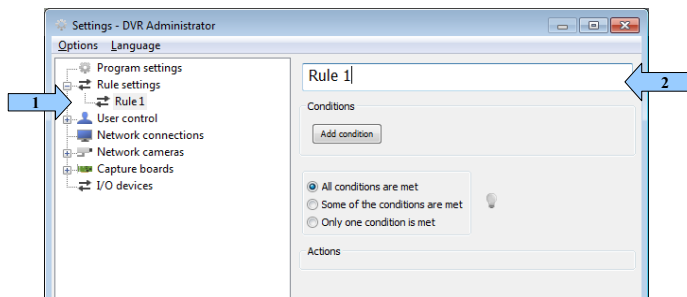


Select action “Control a digital output”. Select the device and the preferred output. Choose the state of the output when triggered.

## Example rule 2 – Notification from area motion detection according to a schedule



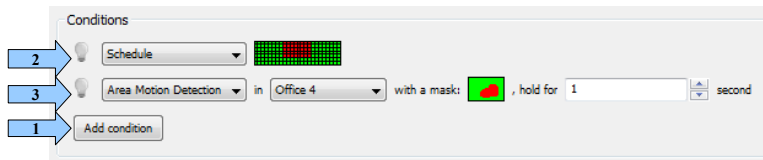
To create a new rule: Click “Rule settings” and click the “Add” button.



1) Select the created rule for editing.

2) The rule can be renamed from the text field.

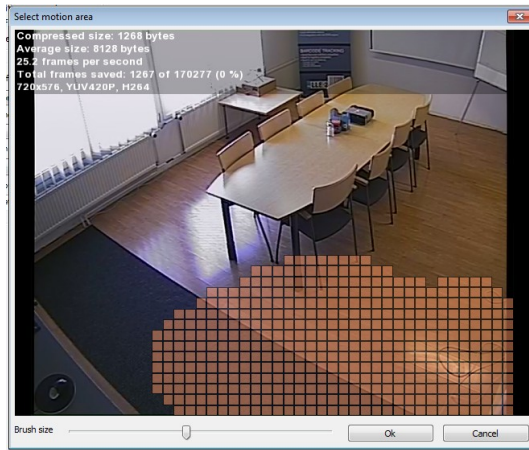
1) Add two conditions from the “Add condition” button. 2) Select “Schedule” to the first dropdown and 3) “Area motion detection” to the another one.



Select condition “Schedule” and click on the green grid next to the drop-down menu.

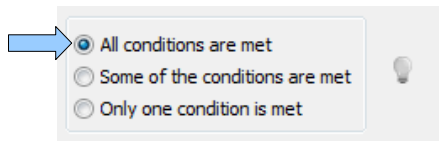


Deselect desired hours (for example working hours) and click OK. In this case the rule will not trigger any action between 8 and 16 from monday to friday.

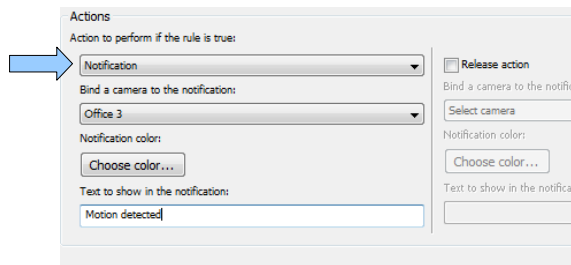


Open the “Select motion area” window by clicking the green square next to the “Area motion detection” condition.

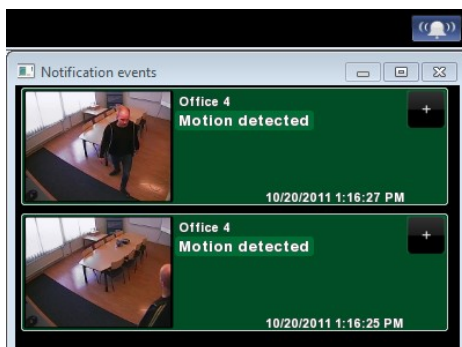
Press and hold the left mouse button on the camera image to draw the mask for motion detection. The drawn orange area is for triggering the action and the rest is ignored. Press OK to accept.



Select “All conditions are met” from the operators above. In this case the rule will require that the schedule is true when the motion is detected.

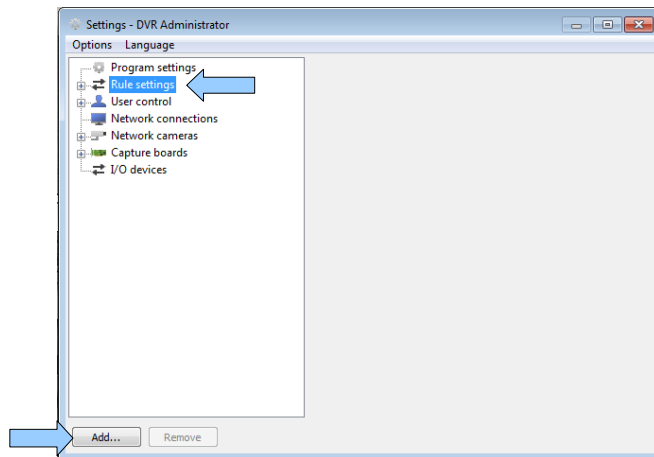


Select “Notification” from the drop-down menu. Select the camera for the notification event. Choose a color for the notification background and type in the notification text.



Now when the notification events window is open it will receive notifications triggered by the area motion detection in the camera “Office 4”. These notifications pop-up also in the remote client's notification events window.

## Example rule 3 – Wait for another rule and place a bookmark

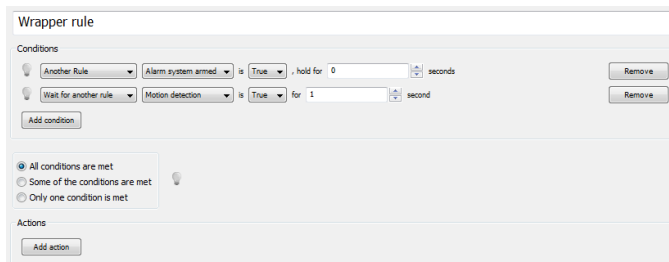


Create 3 rules: Click the “Rule settings” and click the “Add” button three times.

See examples 1 and 2 of creating rules. This rule explains one use case of “wait for another rule” condition. This rule will trigger an action if another rule is true.

Select the first rule (Rule 1), rename it and make it look like the rule above. This rule is used as a condition. It is true outside working hours (Schedule condition) when an external alarm system triggers the input of the I/O board (Digital input condition).

Select the second rule (Rule 2) and add motion detection conditions for desired cameras. Rename the rule as “Motion detection” for further identification.

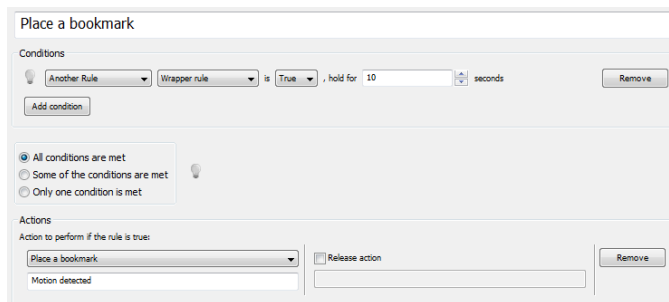


Select the third rule (Rule 3) and add two conditions. “Another rule” for “Alarm system armed” rule and “Wait for another rule” for “Motion detection” rule.

“Another rule's” condition is based on the selected rule's state. In this case when “Alarm system armed” rule is true.

“Wait for another rule” requires the rule to be true or false for a determined time in seconds. In this case it acts as a “time threshold” for the motion.

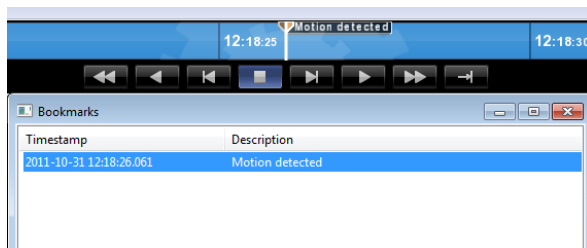
Select “All conditions are met”. This selection will require the Alarm system to be armed when the motion is detected.



Select the fourth rule (Rule 4) and add one condition and one action.

Select “Another Rule” and select the “Wrapper rule” and “True” and set the hold time to 10 seconds or more, so the rule will not make multiple bookmarks when during the same motion event.

Select “Place a bookmark” and type in the desired text.

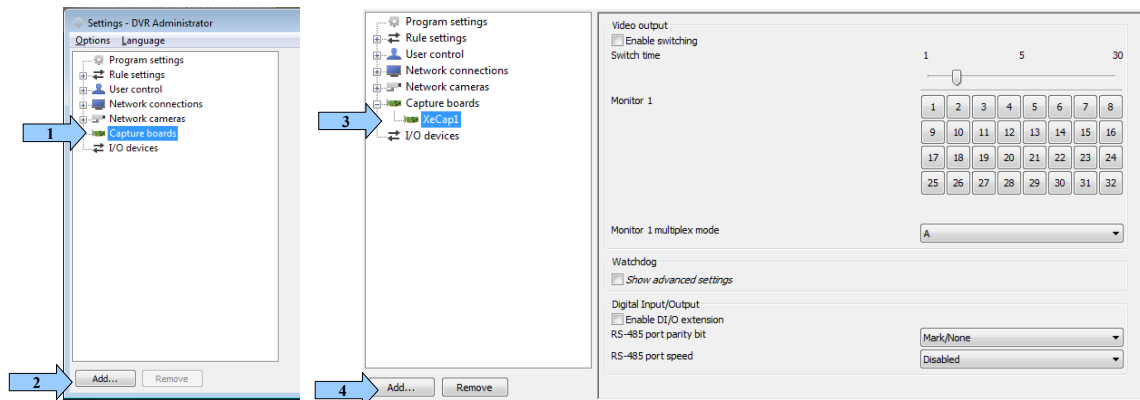


As a result there will be bookmarks on the timeline and they will be listed in the “Bookmarks” window if the “Place a bookmark” rule has been true.

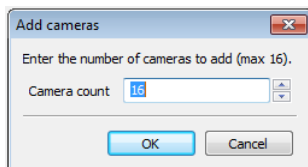
## 2.5 Capture boards

### Adding a capture board and analog signals

Ksenos supports Comart XeCap and Xed capturing boards for analog capture. On first run Ksenos adds connected capture devices to the settings. If the board has been added after the first run follow the steps below.



- 1) Select "Capture boards" from the tree
- 2) Click "Add..." to add a new capture board
- 3) Select "XeCap1"
- 4) Click "Add..." to add analog signals



Select the number of signals to be added. By default Ksenos suggests the maximum of available inputs.

## Analog camera settings

Analog camera settings can now be configured by selecting the added camera from the tree menu. Most important settings are:

- Frame rate - how many frames are captured in one second,
- Compression - Compression codec to be used for the recordings of the analog signal. Mpeg-4 is recommended.
- Resolution - Recording resolution (size) of the analog signal.

*Attention! When installing signals, input connectors must be filled in numeric order. If there are empty connectors in between, operation of recorder may become unstable.*

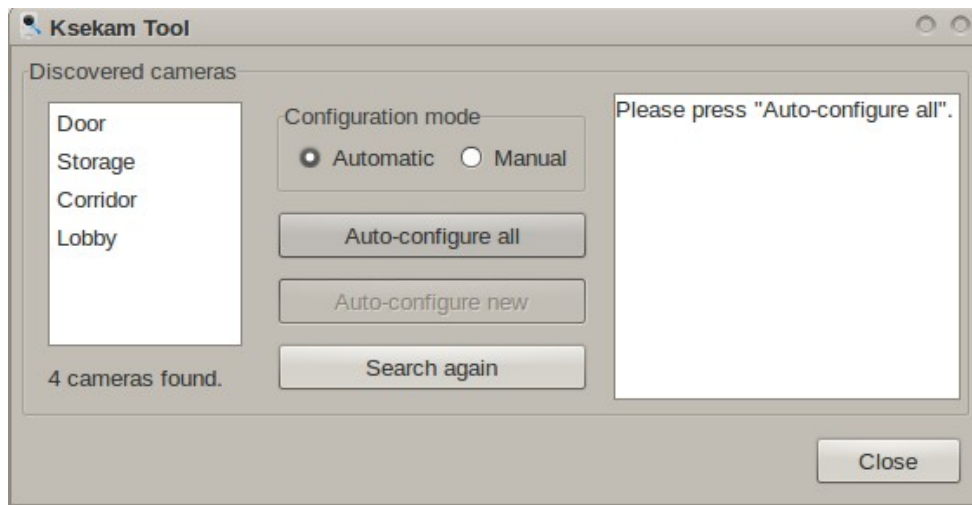
In a normal setup with a Comart Xed board it's possible to use these example settings in a 16-channel recorder.

**Frame rate: 25 fps (frames per second)**  
**Compression: MPEG-4**  
**Image size: 2CIF (704x288 pixels)**

Other settings are subject to lighting conditions of the location and personal preferences. Settings from one camera can be copied to all other by pressing the "..."-button in one camera's settings.

## 2.6 Ksekam and Hunt network cameras

Setting up Ksekam and Hunt network cameras is easy with a tool called "KsekamTool". On Linux environment KsekamTool can be run by pressing "Alt+F2" and typing "ksekamtool" in the dialog. On Windows, KsekamTool can be found in "Ksenos" -folder and it can be started by double-clicking its icon. Ksekamtool will list all Ksekam and Hunt cameras in the network by pressing the "Search" button. These can be configured by either pressing "Auto-configure all" or by setting wanted IP-addresses and names for each camera. Names for cameras can also be changed later from inside Ksenos.



KsekamTool has found four cameras

Example: Small retailer has four installed Ksekam or Hunt cameras. To utilize these, you can use KsekamTool. If the network is configured right (eg. The server's IP address is 192.168.38.5 to access the default subnet), you'll be able find all four using the "Search" button. Now you can use automatic setup or set IPs manually. When all wanted changes are applied, KsekamTool can be closed. Now all four cameras can be added and used from Ksenos's settings.

## 2.7 Other network cameras and servers

Most of modern cameras using RTSP protocol will work straight out of the box with Ksenos's "Generic RTSP" support. See the default paths for the camera's RTSP stream in section 2.9. Ksenos supports aswell most of the ONVIF enabled cameras. General settings for both of these cameras should be done from camera itself by accessing its own setup through a web browser. This can be achieved by pointing browser to the IP address of the camera and logging in. Most cameras have default user and passwords of admin:admin. You should always check camera's manual for correct default IP and user information.

Many video servers use the same RTSP protocol for transforming analog signals to digital. You can give IP addresses for each channel of this kind of server. Servers can be configured in same manner as normal RTSP cameras. Help for these situations can be found from device's manual.

*RTSP stands for "Real Time Streaming Protocol". Using RTSP gives larger support base for devices.*

## 2.8 Default ports for network cameras

**RTSP - 554**  
**HTTP - 80**

## 2.9 Default RTSP paths for most common vendors

4XEM	-	live.sdp
ACTi	-	
Acumen	-	mpeg4/rtsp.amp
Airlink101	-	mpeg4
Airlive	-	video.mp4
ALinking	-	cam1/mjpeg
	-	cam1/mpeg4
	-	cam1/h264
Alliede	-	0/1:1/main
Aviosys	-	mpeg4
AVS Uriel	-	mpeg4
Axis	-	axis-media/media.amp
	-	mpeg4/media.amp
Basler	-	h264
	-	mpeg4
BlueJay	-	mpeg4
Brickcom	-	channel1
CNB	-	
	-	mpeg4
Edimax	-	ipcam.sdp
Hunt Electr	-	video1+audio1
Infinova	-	1.AMP
IOimage	-	ioImage/1
IQinVision	-	now.mp4
Linksys	-	img/video.sav
Lorex	-	video.mp4
Lumenera	-	
Merit Li-Lin	-	rtsph264
Messoa	-	livestream/
Moxa	-	multicaststream
MultiPix	-	video1
Onix	-	cam0_0
Optelecom	-	mpeg4
Panasonic	-	nphMpeg4/g726-640x480
	-	MediaInput/mpeg4
	-	MediaInput/h264
Samsung	-	mpeg4unicast
Sanyo	-	VideoInput/1/h264/1
Sentry	-	mpeg4
Seyeon Tech	-	cam0_1
Shany	-	PSIA/Streaming/channels/2videoCodecType=H.264
Sharx	-	live_mpeg4.sdp
Siemens	-	img/video.asf
	-	livestream
Sony	-	media/video1
Sparklan	-	mpeg4
Speco	-	
Swann	-	mpeg4
TCLink	-	live.sdp
TP-Link	-	video.mp4
TRENDnet	-	mpeg4
Truen	-	video1
Videolarm	-	mpeg4/1/media.amp
Vivotek	-	live.sdp
Y-cam	-	live_mpeg4.sdp
Zavio	-	video.mp4

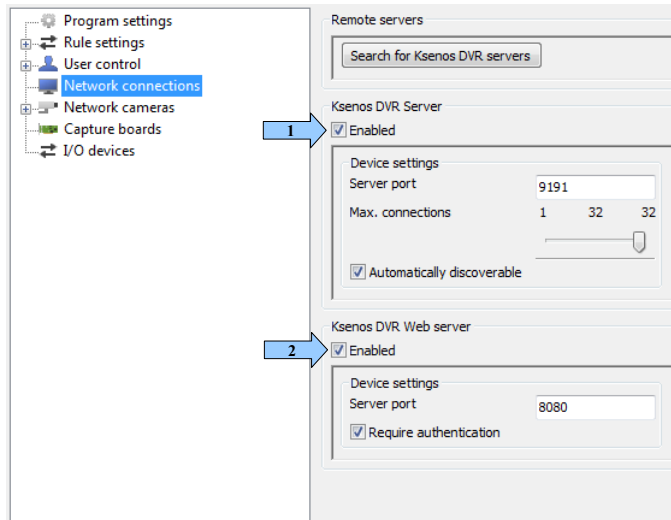
It is also possible to use “Search for network cameras” button in Ksenos's settings. This will automatically add all Hunt and Ksekam cameras on the same network to Ksenos's settings.

You can change settings of individual cameras from context menus of the camera windows. This is good practice to quickly test different settings. From settings it's possible copy camera settings from one camera to all existing cameras using the “...” button.

*It's good practice to name the cameras with descriptive names to make browsing recordings from them easier.*

## 2.10 Remote connections

Enable and disable Ksenos server and Ksenos web server from “Remote connections” section in the settings tree.



1) Enable Ksenos DVR Server from this checkbox

2) Enable Ksenos DVR Web server from this checkbox

### Ksenos DVR Server

By enabling this server it's possible to access the recorder from any other computer with Ksenos client installed. Make sure you have added at least one user for logging in remotely.

By default, server uses port 9191 for remote client's connection. It is mandatory to leave this port open from any possible firewall and do port-forwarding based on MAC addresses, if needed.

“Max. connections” limits the number of simultaneous connections to the server.

“Automatically discoverable” broadcasts the server to the local network to be discovered automatically by the Ksenos clients.

### Ksenos DVR Web Server

With this server it's possible to stream live images from recorder to any web browser with access to the recorder. Point the browser to recorder's IP-address and port used by HTTP server. By default the port is 8080. For example, with address 192.168.38.1:8080 you can view live images from recorder at that IP address. This server is limited to viewing live images from active cameras on recorder only. Testing that the server is running can be done on the recorder by pointing browser to the local host, address 127.0.0.1:8080.

There are few possible configurations on the client end of Ksenos Web

Server. For example, by pointing web browser to address:

```
http://ip_address:8080/index.html?view=3&width=1024&height=768
```

will result in 3x3 grid on 1024x768 pixel viewing area.

```
http://ip_address:8080/index.html?view=4
```

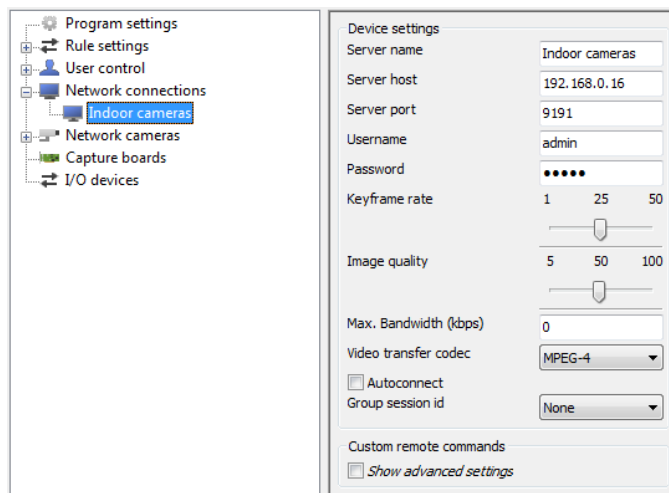
Will result in 4x4 grid. It's also possible to use 5x5 grid, simply giving address' view option value 5.

Width and height can be adjusted to fit the screen of computer used to view the images through web browser. Here's example address for a 5x5 grid for 1280x1024 resolution display:

```
http://ip_address:8080/index.html?view=5&width=1280&height=1024
```

The Ksenos Web Server can be made accessible to all user in network, although this is not recommended for larger networks. As mentioned earlier, this also needs ports to be open from any firewall in the network.

## Remote client settings



Remote usage requires user name and password. However the fields can be left blank and Ksenos will ask for them only when you opening the connection.

Connection can be set to establish itself automatically by ticking the "Autoconnect" checkbox.

## 2.11 Viewing settings for cameras

You can set overlay to display certain information over the images. This setting can be set for individual cameras as well as for all cameras. These overlays tell vital information about images being recorded. Enable them from the image controls window. Open the window by clicking on a camera image with the right mouse button and selecting “Image controls...”

- “Show state” — Shows encoded size, frame rate in seconds, average size, number of saved images, and image resolution in values that recorder gets from cameras.
- “Show movement” — Shows minor movement in transparent green over image. Transparent red represents major changes in images. With this function it's easy to follow changes in images.
- “Show mask” — You can draw mask over image, meaning the portion of the picture that you don't want to use for motion detection. Example of this kind of behavior in image would a be bush moving in the wind all the time. Mask can be drawn using mouse as a brush.

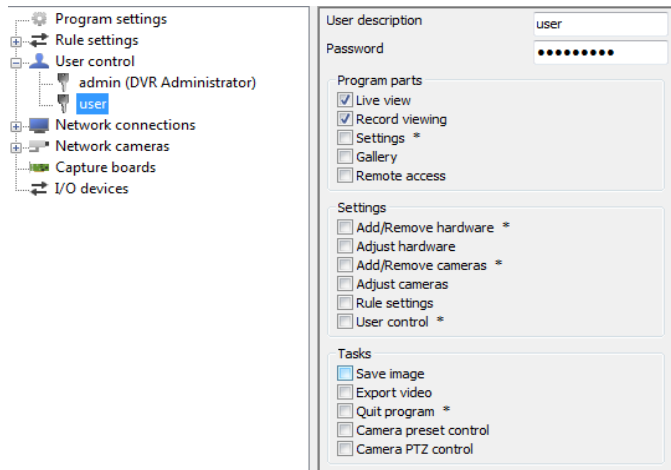
## 2.12 Operating system user information

On Linux systems, default username for the operating system is “ksenos”, with password “sonesk”. On Windows systems, username “ksenos” with password “KSENOS” are for the default account. These users and passwords are for the operating systems only. All usernames and passwords are case sensitive. Ksenos itself does not have default users, so please store Ksenos's passwords securely.

THE OPERATING SYSTEM MUST LOG IN AUTOMATICALLY. OTHERWISE THE RECORDING WON'T START! RESTRICT THE USE OF THE DVR FROM THE KSENOS USER CONTROL (see section 2.13).

## 2.13 User control

Users and groups can be added as needed. First user to be created must be administrator. This user can then create other users and set their privileges. Administrator has all privileges.



Privileges for users can be set as follows:

### Program Parts

- Live view – Viewing and arranging camera windows
- Record viewing – Usage of replay, timeline operation and search functions
- Settings – User's privilege to the Settings window (Ksenos will ask for another user account, if user has no privileges to access settings – Account will stay changed until changed user logs out)
- Gallery – User's privilege to access the gallery
- Remote access – User's privilege for using remote client

### Settings

- Add/Remove hardware – Right to add and remove devices from settings
- Adjust hardware – Right to change hardware's settings
- Add/Remove camera – Right to add and remove camera
- Adjust cameras – Right to adjust cameras viewing and recording settings (applies also to context menus in camera windows)
- Rule settings – Right to add/remove/modify rules
- User control – Right to change user's settings

### Tasks

- Save image – Right to save images to the gallery
- Export video – Right to save videos to the gallery
- Quit program – Right to shutdown Ksenos (Not recommended for

- others than administrator)
- Camera preset control - Right to switch PTZ-cameras to defined presets
- Camera PTZ control - Right to control PTZ-cameras with joystick or mouse

### Access groups

- Access group 1-4 - User can be set to group 1-4
- Deleted cameras - Determines if users have privileges to view recordings from previously deleted cameras

### Examples for creating users

Example 1: On the gate of a logistics terminal, guards need privileges to control PTZ cameras. We don't want to give them full rights, so we'll create user "gate", with password "Gu4rd5". We can give needed privileges by checking boxes in settings. We can leave "Remote access", "User control" and "Quit program" unchecked. Now guards have almost same privileges as administrative user, but they can't modify users or shut down Ksenos.

Example 2: Local market is using the Ksenos Web Server for streaming images to a cashier. The cashier is not meant to see images from loading platform. In this situation, we could set users like this; In addition to administrative user, we'll create user "cashier" with password "l0c4l5t0r3". We'll check boxes for "Live images" and "Remote access". Next we'll add this user to user group number 2. Now we can set groups for each camera, in manner that doesn't let this user see all cameras.

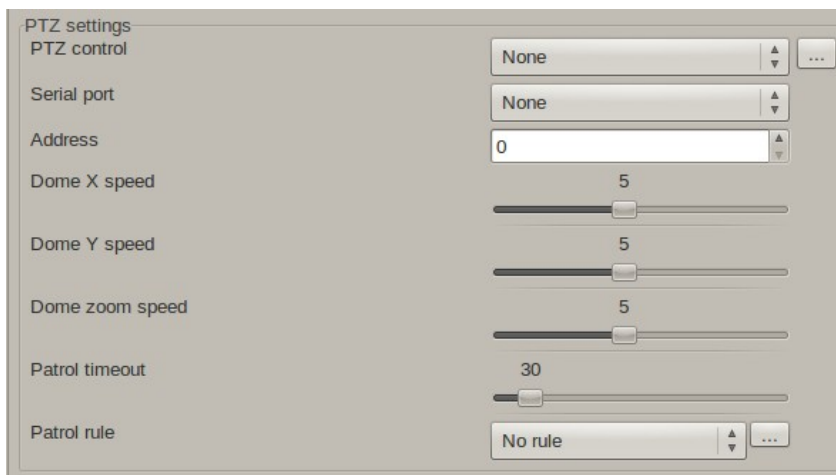
Now we can open web browser on cashier's machine and point its address and port of the recorder (for example 192.168.38.1:8080). Now all permitted cameras will be shown to cashier, after the browser asks for authentication.

*It's important to keep user names and passwords safe. User name "user" with password "1234" IS NOT a safe combination.*

## 2.14 PTZ-control and joysticks

### General settings

Ksenos supports Pelco-P, Pelco-D, and Sony's, Panasonic's and Axis' IP dome control protocols out-of-the-box. Control can be utilized from camera's settings by setting "PTZ-control" to wanted protocol. For analog control, also serial port information is needed. With these settings it's already possible to control pan, tilt and zoom by dragging images inside camera windows with the mouse. In settings we must identify dome cameras by address. By address, we mean address that can set from camera's DIP switch. With these addresses we can give control to different cameras or camera groups. Speed of the control can be set from sliders in Settings window.



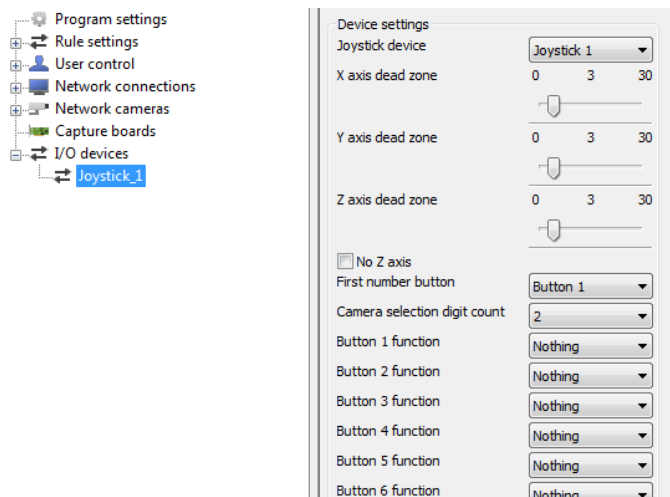
Default PTZ-settings for analog dome camera

### Patrol

We are able to program patrol rounds for dome cameras with graphical tools from camera window's context menus. Each dome camera can have its own patrol round. Patrol stops when camera is controlled manually. Time that it takes for camera to go back to patrol after manual control can be set from camera's settings.

### Joystick controllers

Joysticks can be used to control PTZ cameras or to use joystick's buttons to control digital inputs. Therefore buttons can be used to select cameras, control gates and electric locks as well.



Joystick controllers are added like any other devices. Select the I/O devices section and click “Add...”. When added, you can change its settings by selecting it in the tree view. It's possible to add several controllers to one recorder, so first we'll need to set controller's physical address. If recorder has only one controller, we can set that controller address to “automatic”. Current state of controller and its buttons are shown in the settings window.

*Some manufacturers don't use standard mapping of the buttons. This can be ignored by selecting first button's number from Ksenos' settings.*

## Joystick and rules

Controller in use can be seen in settings as digital input. This means that we can control any rule with the joystick's buttons. Let's take an example. We'll want to open gate from a control room, when a known vehicle is seen on the cameras. Now we can create a rule with digital input as condition. When input's state is defined, we can set digital output as action. Then we'll set this digital output to control a DIO extension which is connected to gate's opening and closing system. Closing of the gate can be timed within the rule, or another button can be used for closing the gate.

## 2.15 Troubleshooting

### Error notifications

Ksenos has a notification system of its own that displays errors as red triangle and blinking red timeline. This applies to errors that may happen inside Ksenos. Error messages about the system will be displayed as new windows. Next we'll go through few error messages and solutions for them.

### System's error notifications

"Another program instance is already running, aborting" - This error message presents itself when system has not shut down cleanly. For runtime security, Ksenos locks itself for one process ID for each session that it's used. This locking is removed when Ksenos shuts down normally. Usually this error goes away by restarting the recorder (i.e. the whole computer).

### Ksenos's error notifications

"The database file is missing! Nothing will be recorded!" - This error message presents itself when Ksenos is started without database. Shut down Ksenos and run DriveSetup.

"File open failed" - This error message presents itself if Ksenos can't write to recording folder. Check read/write permissions. If permissions are correct, check hard drive's state.

"Failed to open database" - This error message presents itself if database is corrupted or unwritable. If Ksenos is writing to database exactly at the same moment that power failure occurs, it can lead to writing corrupted data to database. If error doesn't go away after reboot, it's possible to remove corrupted database (capture/d/index.db) and create new one with DriveSetup. Attention! This will result in loss of current recordings! In situations where recordings can't be lost, it's possible to recreate database from recordings. In these situations, please contact your Ksenos support by phone or email.

### Network

Usually Ksenos will be set with two networks. One for cameras and other for possible remote connections. Problems within these networks can be traced with program called "Ping". Every device in network has it's own IP address that can be pinged from Linux terminal or command prompt from Windows to see if connection is possible. Command "ping 192.168.38.3" will tell if connection to that address is OK. If Ping shows times that it took for ping to travel between devices this device is in the same network and

working.

On a network with several recorders it's good to remember, that two devices can't have same host names or IP addresses. Recorders must be named differently in same network. For example we could use names like "Ksenos1" and "Ksenos2".

Many of the common network problems are due to network settings in local network. In these situations it's recommended to contact administrator of that network for solutions and more information.

## Remote access

Local network configuration needs to allow usage of ports using remote access. Firewalls must be set to allow traffic on port 8080 for HTTP server and port 9191 for remote client using TCP.

When configuring remote access from outside local network, it's recommended to take precautions when opening ports on firewalls.

Older versions of Intel graphics card drivers are known to behave slowly and erroneously. When running Ksenos on remote machine with Intel GPU, it's recommended to update graphics driver to the latest version provided by device manufacturer or Intel itself.

## 2.16 Technical information

<i>Image</i>	
Camera inputs	- 16 analog @ 400 fps* - 32 analog @ 200 fps* - 64 network cameras*
Analogic frame size	- Max. 4CIF (704x576)
Image compression method	- MPEG-4 - MJPEG - H.264
Video clip export	- MPEG1
Single image export	- JPEG - PNG
Remote client protocol	- TCP/IP with client - HTTP with browser
PTZ- and Dome-protocols	- Pelco-P - Pelco-D - Sony IP - Axis IP
<i>*Depending on license</i>	

