

# **TRENDnetView**

# **EVO**

# **Administration**

# **Guide**

Friday, October 27, 2017

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# 1 Software Purpose and Use Cases

## About Software

TRENDnetView EVO is a free version of the new-generation TRENDnet video management software. Delivering an outstanding quality performance, this video management system is ideal for use at small installations with surveillance networks of sixteen cameras or fewer. The meticulously designed interface will allow any user to quickly understand the whole process of configuration and start using the software.

Free software version allows up to 16 video channels from TRENDnet brand cameras. Client application - TRENDnetView EVO Monitor - can only be connected to a single TRENDnetView EVO server, and streaming server (Web/mobile access), which is an integral part of the server, is limited to one connection at a time.

Additionally, an advanced feature of event and action management is offered with this software bundle. Free version upgrade is offered for TRENDnetView EVO.


## Prerequisites


There are a number of requirements for the TRENDnetView EVO host system:


- Microsoft Windows operating system (7 SP1, 8, 8.1, 10, Server 2008 R2, Server 2012 R2)
- both .NET Framework 3.5 SP1 and 4.5 (4.6) installed
- all Windows updates should be installed (especially, this is critical for Windows 8 and newer editions and for pending updates)
- ports for remote connections should be enabled through the firewalls (default ports are 60554 for TRENDnetView EVO Monitor and TRENDnetView EVO Console and 8080 for the TRENDnetView EVO Streaming Server and external services)
- installation and recording directories should be added to antivirus exception list so that they are not scanned or interfered with in any other manner
- indexing and defragmentation services must be disabled for the storage locations
- for TRENDnetView EVO Monitor application, DirectX 10+ is required along with the latest stable graphics card drivers

For recording, the following recommendations apply:

- for >20MB/s total recorded stream, RAID 5/6/10 with high speed hardware controller is strongly advisable
- defragmentation and indexing must be disabled for all storages
- every recording location, regardless of its type, must have 10-15% of free space, not used by TRENDnetView EVO or any other software
- recording to the system disk is strongly not recommended
- antivirus software or any other scanners should be disabled for the storage locations
- no third-party VMS should be recording to the same location as TRENDnetView EVO

 Virtualised environment is not supported for this software.

 Antivirus **scanning**, **defragmentation** and **indexing** being enabled for TRENDnetView EVO files may result in dramatically decreased write speed, recording disturbances and, occasionally, database corruption. We strongly recommend that you make sure that storage locations are not affected by these processes.

 TRENDnet is not responsible for software failures and/or footage loss caused by underlying OS and/or hardware issues. It is the responsibility of the systems administrator to configure the server and provide maintenance, unless otherwise agreed (e.g., if server hardware has been shipped by TRENDnet).

## 2 Hardware Requirements

The table below details the minimum recommended hardware sets for TRENDnet software. Please note that these specific processor models are given only as examples and are not compulsory: you can use different CPU provided that it has the same number of threads and its performance is analogous.

Calculations are given for two major configuration examples: all streams in D1 or FullHD resolution; of course, intermediate and mixed cases may also exist. Please contact TRENDnet representatives if you require help with choosing hardware.

| <b>HARDWARE RECOMMENDATION TABLE</b> |                          |                        |   |                             |                              |                             |
|--------------------------------------|--------------------------|------------------------|---|-----------------------------|------------------------------|-----------------------------|
| Installation specifications          |                          |                        | Recommended hardware per usage scenario |                             |                              |                             |
| <b>Video Stream</b>                  | <b>Number of cameras</b> | <b>Motion Detector</b> | <b>Server only</b>                      | <b>Monitor*** only</b>      | <b>Server + Monitor***</b>   |                             |
| <b>D1 30fps</b>                      | Up to 9                  | None or camera-side*   | CPU: Intel G1840; RAM 4GB               | CPU: Intel G4500; RAM 4GB   | CPU: Intel i3-6300; RAM 8GB  |                             |
|                                      |                          | Software HP**          |   |                             |                              |                             |
|                                      |                          | Software HA**          | CPU: Intel G4500; RAM 4GB               |                             |                              |                             |
|                                      | Up to 16                 | None or camera-side*   | CPU: Intel i3-6300; RAM 8GB             | CPU: Intel i3-6300; RAM 4GB | CPU: Intel i5-6600; RAM 8GB  |                             |
|                                      |                          | Software HP**          |   |                             |                              |                             |
|                                      |                          | Software HA**          |   |                             |                              |                             |
| <b>FullHD 30fps</b>                  | Up to 9                  | None or camera-side*   | CPU: Intel G1840; RAM 4GB               | CPU: Intel i5-6600; RAM 8GB |                              | CPU: Intel i7-6700; RAM 8GB |
|                                      |                          | Software HP**          | CPU: Intel G4500; RAM 4GB               |                             |                              |                             |
|                                      |                          | Software HA**          | CPU: Intel i5-6600; RAM 8GB             |                             |                              |                             |
|                                      | Up to 16                 | None or camera-side*   | CPU: Intel G4500; RAM 4GB               | CPU: Intel i7-6700; RAM 8GB | CPU: Intel i7-6700; RAM 16GB |                             |
|                                      |                          | Software HP**          | CPU: Intel i3-6300; RAM 8GB             |                             |                              |                             |
|                                      |                          | Software HA**          | CPU: Intel i7-6700; RAM 8GB             |                             |                              |                             |


Notes:


- DDR4 RAM is strongly recommended
- \*Please refer to the list of TRENDnet supported cameras for camera-side motion detector support
- \*\*High Performance/High Accuracy mode
- \*\*\*System must provide:
  - DirectX 10 support
  - Graphics card with at least 256MB memory
  - Latest graphics driver version

### 3 Getting Started

Before starting the installation, make sure that:

- you have downloaded the correct software package
- you have acquired the corresponding valid license key, see: [Free License](#)
- the host operating system is stable (functioning correctly) and has all the updates and drivers installed
- server hardware matches the project requirements, taking into account all used features and planned post-deployment modifications
- host system retains all the [features and configuration](#) required for software operation


 We strongly advise that you keep the software versions (e.g., 1.x.x) and subversions (e.g., 1.2.x) across your system match exactly. Software build numbers (e.g., 1.2.0.xxxxx) may differ slightly in case you are using 64-bit and 32-bit editions.

 If you are not sure about what server hardware to choose, do not hesitate to use TRENDnet provided hardware calculators and/or contact TRENDnet representative for an accurate estimation.

We advise installing and activating the software on the ultimate server assembly, as extensive subsequent hardware changes are likely to cause software license activation failure. If this happens, undo these changes, if possible, or contact product support to find a solution.

TRENDnetView EVO is installed as a Windows service so please make sure that the Windows user you are logged in as has sufficient privileges; otherwise, software may not be installed correctly. Note that there is no option to install and run the software in application mode.

The following topics will guide you through the installation process, as well as providing details on product configuration. If you are using a TRENDnet product for the first time, we strongly advise you to carefully read and follow the instructions in this Administration Guide and related documentation.


 TRENDnet is not responsible for software failures and/or footage loss caused by underlying OS and/or hardware issues. It is the responsibility of the systems administrator to configure the server and provide maintenance, unless otherwise agreed (e.g., if server hardware has been shipped by TRENDnet).


## 4 Free License

When you have installed and initialized the TRENDnetView EVO software, you will be given the chance to request a free license in order to activate the software and continue using it.

The features and conditions of a free license are as follows:

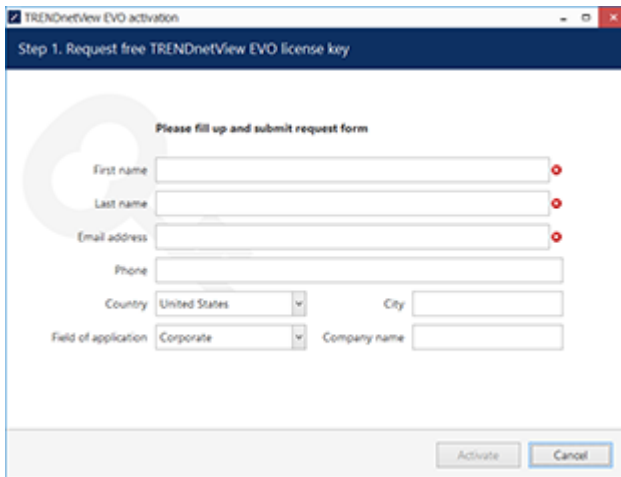
- free software updates
- maximum 32 cameras
- maximum 1 (one) connected TRENDnetView EVO Monitor at a time
- TRENDnetView EVO Monitor can connect to maximum 1 (one) server with free license

 Internet connection is required for the license request.

 Activation is not possible on virtual machines!

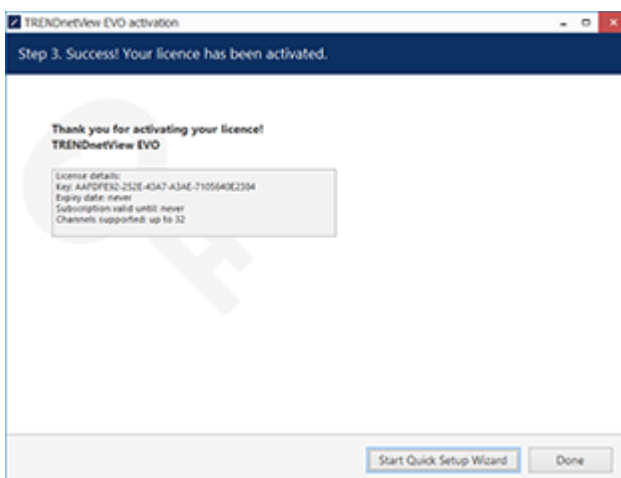
### Retrieve License

The Registration and Activation Wizard will pop up automatically after the software installation.



Free license request form

The wizard will automatically connect to TRENDnet activation server and retrieve the license details. If the request fails, check your Internet connection and try again.



License details retrieved

Congratulations! You are now ready to use TRENDnetView EVO. Click the *Start Quick Setup Wizard* button below to continue with server configuration.

## Manage License

When a server already has a license key installed, you can retrieve that information in two ways:

- right-click server icon in the system tray and select *About*. The dialog box will contain basic information about the product version and license type
- run the *TRENDnetView EVO Registration and Activation wizard* from the Start menu

Select *Remove License* if you wish to completely delete all the license information from the server.

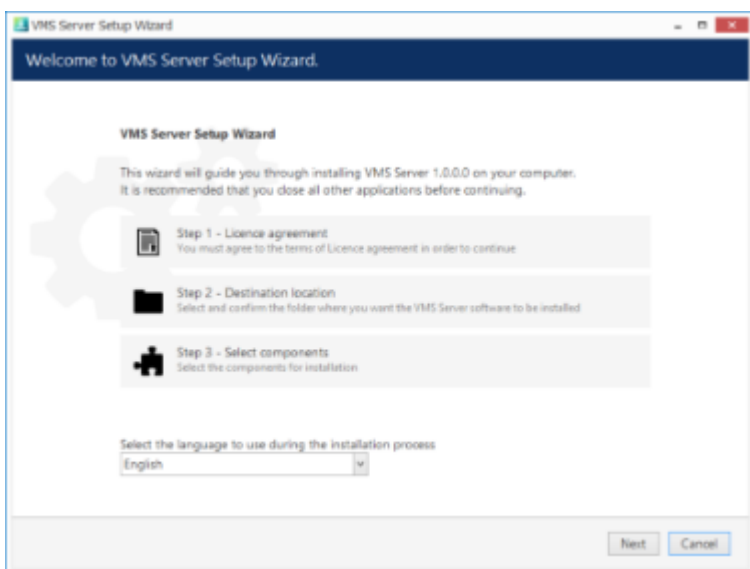


## 5 Installation of TRENDnetView EVO

Start the installation process by double-clicking on the TRENDnetView EVO executable package file. The TRENDnetView EVO Setup Wizard will guide you through the installation process, providing available installation-time options depending on the chosen software package. Note that, depending on your Windows UAC configuration, you may have to confirm and/or provide administrative credentials.

We strongly advise that you stop all running third-party applications, as well as stopping antivirus scanning and Windows (and any other) updates during this phase, as these may interfere with the process and result in corrupt installation, which may cause unexpected behaviour and hard-to-track issues during further software operation.

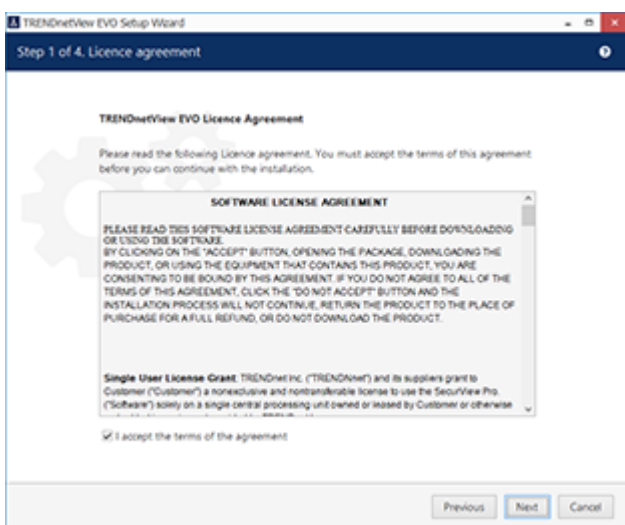
The TRENDnetView EVO Setup Wizard displays an overview of the process; also, you are able to select the installation language here. You will be prompted to select the TRENDnetView EVO interface language later.



TRENDnetView EVO Setup Wizard

### Step 1

Carefully read the TRENDnet license agreement: you must agree to all parts of the given document in order to proceed. If you agree, select *I agree...* in order to continue; otherwise, terminate software installation. If you have any questions regarding the contents of the present license agreement, please contact a TRENDnet representative at <http://www.trendnet.com/support>



License Agreement

## Step 2

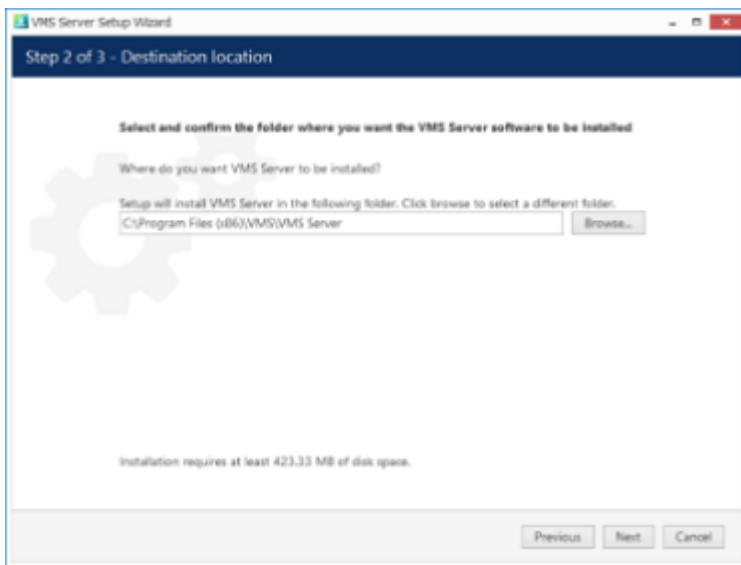
Select the destination folder you want the software to be installed in. By default, TRENDnetView EVO is installed in:

32-bit: *C:\Program Files (x86)\TRENDnetView EVO\TRENDnetView EVO*

64-bit: *C:\Program Files\TRENDnetView EVO\TRENDnetView EVO*

If you are re-installing TRENDnetView EVO and previously selected a non-default location, make sure to select the same destination directory, or, alternatively, completely uninstall previous TRENDnetView EVO version. If unsure about this, ask for TRENDnet technical support team assistance. A full description of the software upgrade procedure is available in the corresponding section of the TRENDnetView EVO administration manual.

The TRENDnetView EVO Setup Wizard estimates how much disk space will be required. Make sure you have enough free space on the target disk. Note that low system disk space will dramatically decrease system performance and affect overall system stability.

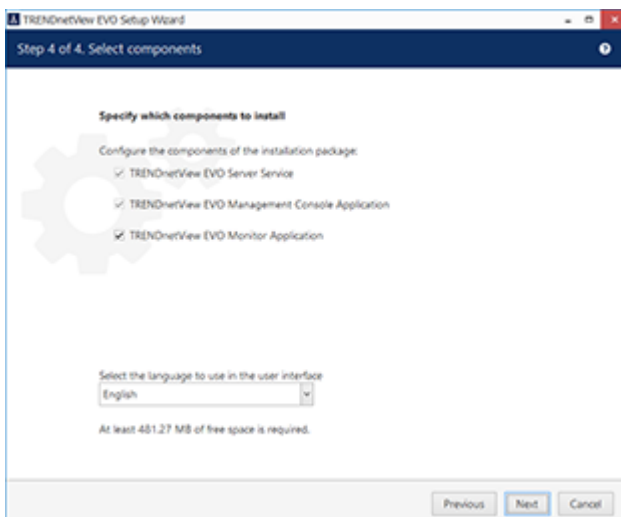


Installation Directory

## Step 3

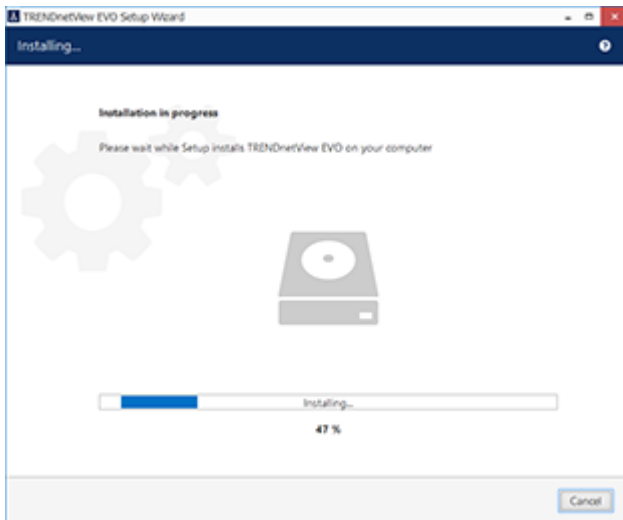
Some components are optional and so you can choose not to install them. The main TRENDnetView EVO parts are obligatory and cannot be deselected (by default, these options are selected and greyed out). You may also select the TRENDnetView EVO interface language here.

If not chosen at this stage, TRENDnetView EVO Monitor can be installed separately later.



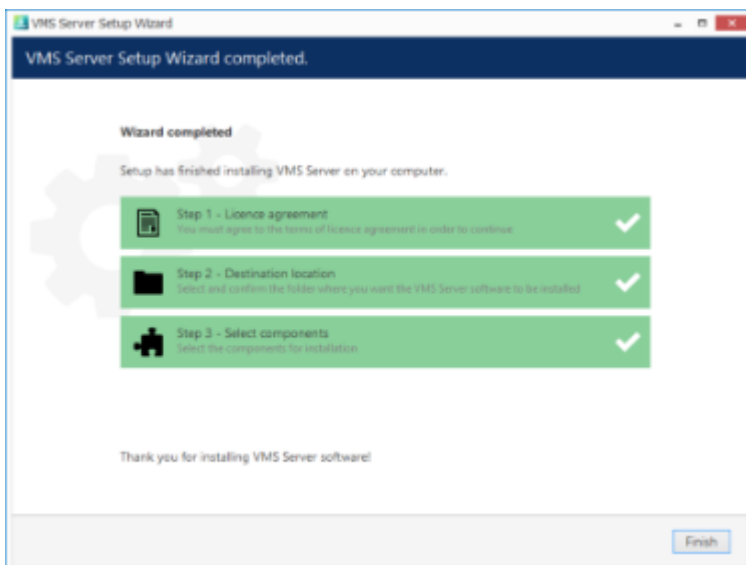
### Select Software Components

If you are ready to proceed, click *Next* to begin the installation. Depending on selected components and host system condition, the process may take some time to complete, so please be patient.



Installation Progress

Upon completion, the setup wizard will show you an installation summary. If all the steps have been fulfilled successfully, simply click *Finish* to close the wizard.



Installation Complete

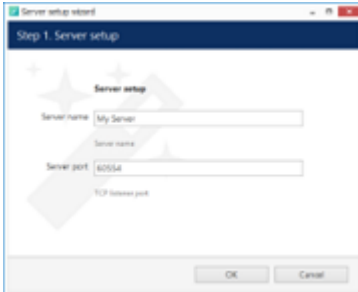
After the installation has been completed, there are a few more steps necessary for you to begin using the software:

- apply server initialization settings via *Server Setup Wizard* - it will pop up automatically after the installation in case you are doing a clean or a new installation
- activate the software - if it is not activated, the *Registration and Activation Wizard* will also pop up automatically
- after you run the console for the first time, you will be offered to complete the *Quick Setup Wizard* to start the deployment, following the recommended configuration steps

All of these steps are described in details in the full version of the TRENDnetView EVO management manual, which is available right after the installation via your Start menu.

## 6 Initialization of TRENDnetView EVO Server

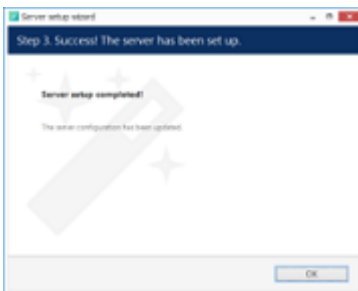
After completing the installation wizard, you will be offered to enter server setup. The settings selected during server setup can be changed later at any time via Server Setup Wizard, which will be available via your Start menu.



Choose Server Name and TCP port

| Setting     | Description                                     | Default Value                         |
|-------------|---|---------------------------------------|
| Server name | User defined server title                       | <i>Server Name</i> or last used title |
| Server port | TCP port for incoming remote Client connections | 60554                                 |

Note that the port defined here will be used to retrieve the server data via local TRENDnetView EVO Monitor and TRENDnetView EVO Console connections. You will need to define the external (Internet) port for your TRENDnetView EVO via TRENDnetView EVO Console in order to be able to receive video streams from remote TRENDnetView EVO Monitor connections.



Setup Completed

## 7 Server Setup Wizard

The server setup wizard is available as a separate tool for any type of product installation, and is reachable via Start menu: *Start -> All Apps -> TRENDnet -> Server Setup Wizard* (in Windows 7 and older versions, use *Start -> All Programs -> software installation folder -> Tools -> Server Setup Wizard*); alternatively, use Search to locate Server Setup Wizard in the programs menu. This wizard allows you to quickly change basic server settings initially defined at Initialization stage.

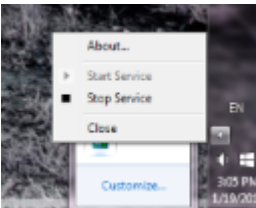
Make sure you stop the TRENDnetView EVO server process before launching the wizard: [this can be done](#) either via Windows Services or using the TRENDnetView EVO service tray icon.

## 8 Start & Stop Server Service

After software installation (except for the TRENDnetView EVO Console or TRENDnetView EVO Monitor only installations), two components are registered as **Windows services**: VMSServer (TRENDnetView EVO Server) and the accompanying VMSWatchdog (TRENDnetView EVO Server Watchdog) service. Both these services are set to automatic start meaning that they will be launched straight after Windows start-up regardless of whether any user is logged in or not.

By default, the server will run in silent service mode, i.e., without any status indication other than that in the Windows Services management console; from there, both services can be stopped, started and restarted.

Double-click the server shortcut on your desktop to launch the system tray shell for the server: the server icon will appear in the system tray, allowing you to start and stop the service by right-clicking it and selecting your desired option. TRENDnetView EVO Watchdog service runs silently in background as an auxiliary service and has no user interface except for the settings' dialog box in TRENDnetView EVO Console.



Start and stop the server service from the system tray

If the server service is stopped while TRENDnetView EVO Console connections are active, the wait-for-server-connection window will appear on top of TRENDnetView EVO Console, disabling any input. The same thing will happen if there are any problems with server connectivity. It will automatically disappear when the server is online again; alternatively, you can click *Close* to exit TRENDnetView EVO Console at this point and open it manually later.



Connection lost

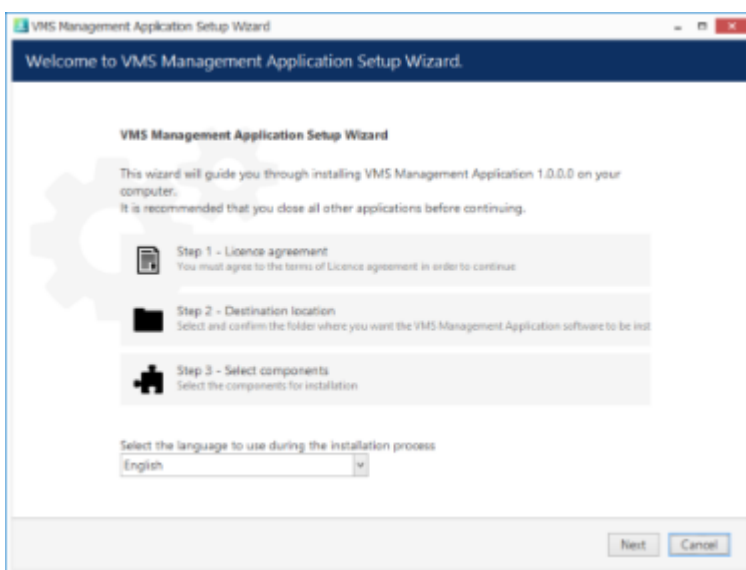
## 9 Management Application Installation

All server configuration is conducted through a dedicated interface - the TRENDnetView EVO Console management application. The management interface has been intentionally separated from the TRENDnetView EVO Monitor application in order to concentrate all administrative utilities in one place and also to conceal the unnecessary menus from the TRENDnetView EVO Monitor operator.

The TRENDnetView EVO Console central server management application can be installed **separately** - either locally on one of the servers, or remotely, on a dedicated server management machine.

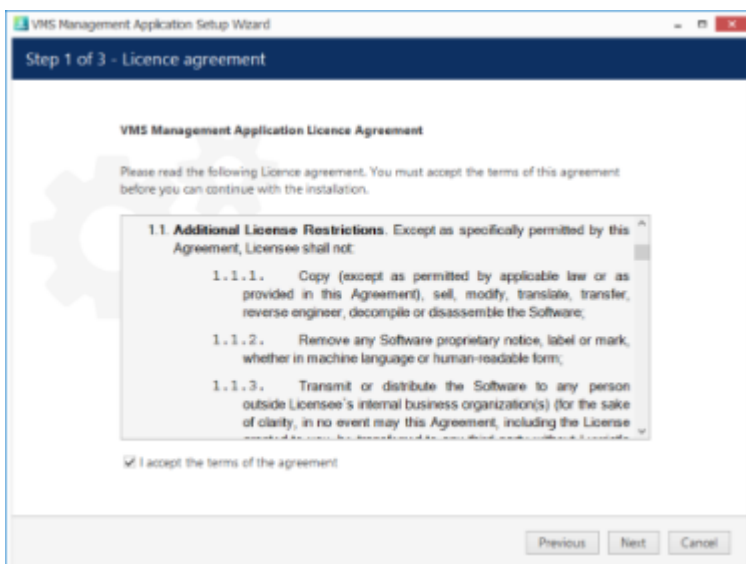
Start the installation by double-clicking on the TRENDnetView EVO Console executable package file. The TRENDnetView EVO Console Setup Wizard will guide you through the installation process, providing available installation-time options depending on the chosen software package.

The TRENDnetView EVO Console Setup Wizard shows you the process overview; also, you also have the opportunity to select the installation language here. You will be prompted to select TRENDnetView EVO interface language later.



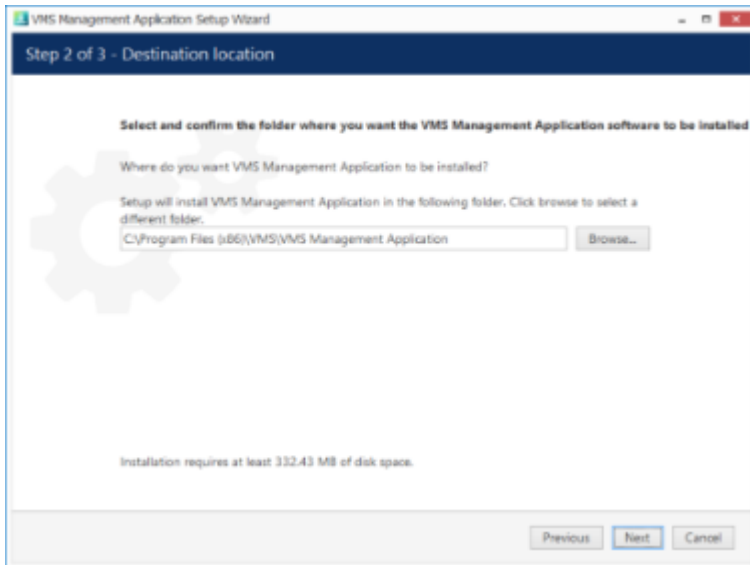
TRENDnetView EVO Console Setup Wizard

Carefully read the TRENDnet, Inc. license agreement: you must agree to all parts of the given document in order to proceed. Select *I agree...* in order to continue, if you do; otherwise, terminate software installation. If you have questions regarding the contents of this license agreement, you can contact a TRENDnet Representative at <http://www.trendnet.com/support>



## License agreement

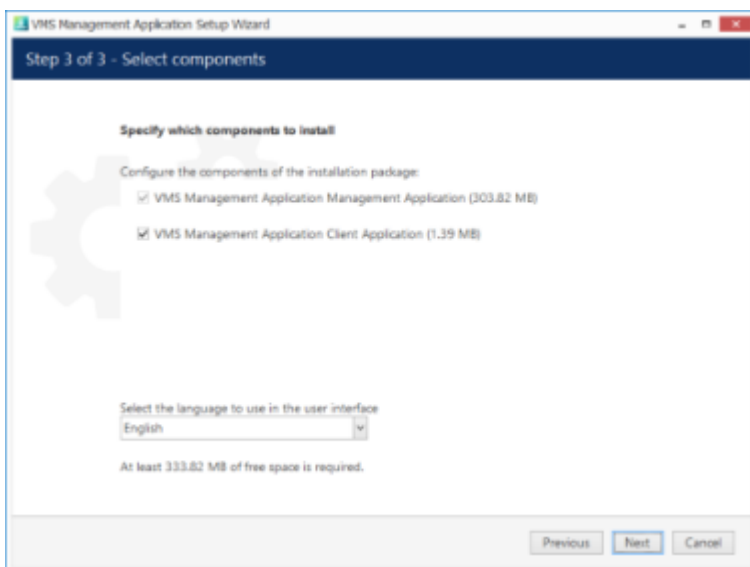
Select destination folder for TRENDnetView EVO Console to be installed in.



### Installation directory

The setup wizards will estimate the amount of disk space required for the installation. Make sure you have enough free space on the target disk. Note that low system disk space will dramatically decrease system performance and affect overall system stability.

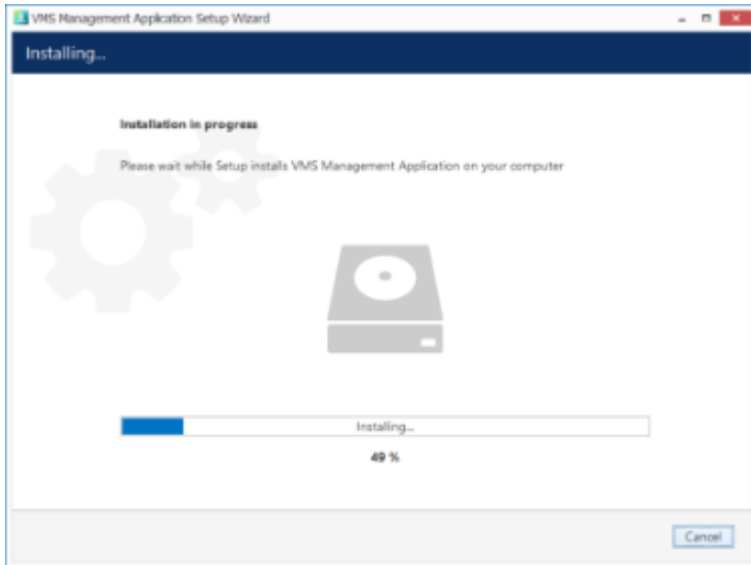
Along with TRENDnetView EVO Console, this installation package also allows you to have TRENDnetView EVO Monitor application installed at the same time. If you do not wish to install TRENDnetView EVO Monitor at the moment, simply uncheck it in the components list.



### Select software components

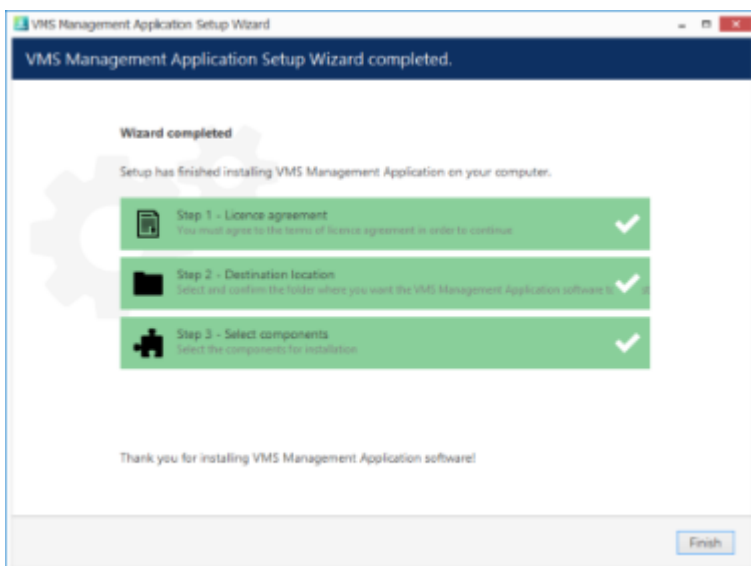
If you are ready to proceed, hit *Next* to begin the installation. Depending on selected components and host system condition, the process may take some time to complete, so please be patient.





Installation progress

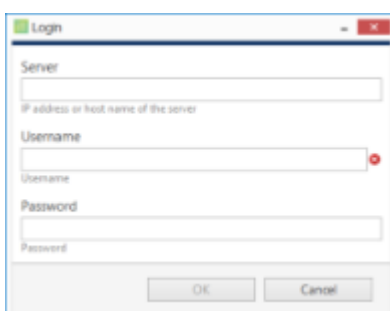
Upon completion, the setup wizard will show you an installation summary. If all the steps have been fulfilled successfully, simply hit Finish to close the wizard.



Installation complete

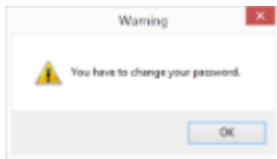
After completing the TRENDnetView EVO Console installation, you will be given the option to enter the settings of server you wish to connect to. You can skip this step if you wish to configure your Global server later; you will be asked for the same information next time you run TRENDnetView EVO Console.

To log in, simply enter your server's local or remote address (IP or host name) and user information. Note that users must have corresponding permissions in order to connect. Default username and password are **admin/[empty]**.



## TRENDnetView EVO Console login window

After logging in for the first time with the default username and password, you will be reminded to change your password. For security reasons, we strongly recommend that you do so.



Password change reminder


## 10 TRENDnetView EVO Console First Start

All server configuration is conducted through a dedicated interface - the TRENDnetView EVO Console management application. The management interface has been intentionally separated from the TRENDnetView EVO Monitor application in order to concentrate all administrative utilities in one place and also to conceal the unnecessary menus from the TRENDnetView EVO Monitor operator. Applications are totally independent from each other and can be or not be installed on the same machine. TRENDnetView EVO Console for a single installation management can be installed on one or more computers, depending on the system administrator's needs.

Run the TRENDnetView EVO Console application by double-clicking the TRENDnetView EVO Console shortcut from the desktop or Start menu.

To log in, simply enter your TRENDnetView EVO server's local or remote address (IP or host name), TCP port and user information. Note that, if you already have pre-configured user accounts, the user must have corresponding permissions in order to connect.

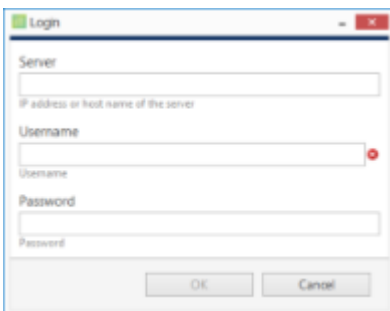
The **default** username and password for the new installation is **admin/[empty]**.

 If your server has default TCP port configured (which is 60554), you do not need to specify it when connecting: simply type the IP or hostname of the server to connect to. However, if the server TCP port has been altered, you need to specify the port explicitly, making the connection address look as follows:

<address>:<port>, e.g., *192.168.1.77:60555* or *localhost:60887*

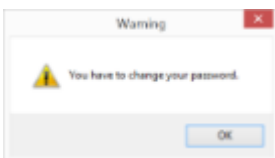
Server TCP port can be changed via *TRENDnetView EVO Server Setup Wizard*.

If you are refused by the connection, make sure that the server is running and accessible over the network. (For more detailed information about what to do, please refer to the [Troubleshooting](#) section of this document: it is constantly updated with most common cases).



TRENDnetView EVO Console login

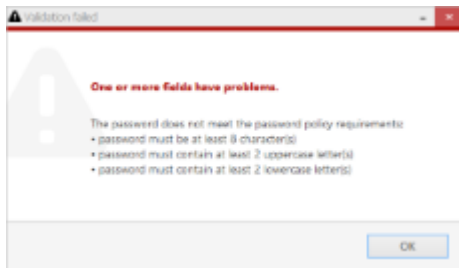
After logging in for the first time with default username and password, you will be reminded to change your password. For security reasons, we strongly recommend that you do so at once.



*Change Password* reminder

Immediately afterwards, you will be given the option to change the password using an additional dialog box. To change the password, enter your old password (initial, default password is empty so just leave the field empty), then enter your new administrative password for the current server, enter it for the second time to confirm, then click *OK to save*.

 The new password must **comply with server policies**, by default these are: minimum 8 characters total length, including at least 2 lowercase and 2 uppercase letters.



Password must meet the server policy requirements

After you are done with the password update, you will be given the opportunity to fill in the initial server settings using the *Quick Setup Wizard*. We recommend that for optimum configuration progression you follow the steps in the wizard.

## 11 Setup Wizard

The TRENDnetView EVO Console Setup Wizard is automatically started after product installation and activation is complete. You can skip the wizard at this point and launch it later anytime from the TRENDnetView EVO Console upper-right-hand corner menu:



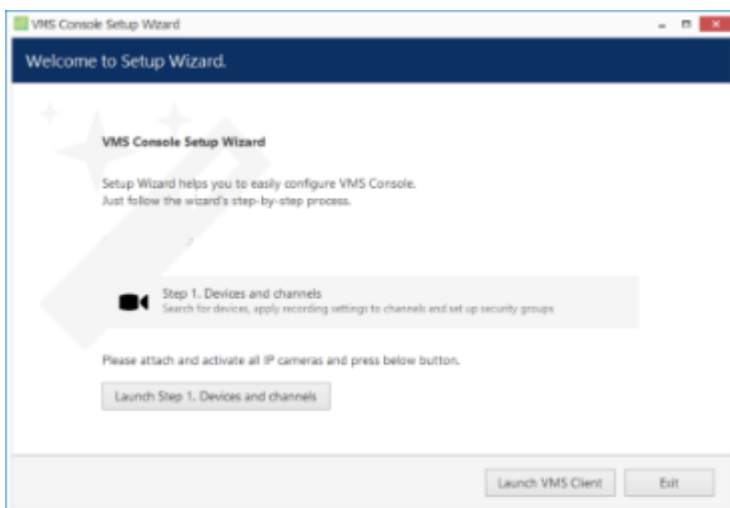
Run Setup Wizard from TRENDnetView EVO Console

Setup Wizard will show you the process summary and guide you through the steps to configure the installation. To proceed with each next step, simply click the button below the step list; to exit the wizard prematurely, press either *Exit* or *Launch TRENDnetView EVO Monitor* button in the bottom-left-hand corner.

Setup wizard for TRENDnetView EVO consists of just one step that covers devices and channels. Make sure you connect all devices (IP cameras and/or other video sources) before launching the wizard: it will automatically scan the network for available video sources.

### Step 1: Devices and Channels

This step will allow you to automatically search and add cameras and other video source devices into your server configuration. Press the *Launch Step 1* button to begin.



Setup Wizard

First, select scan mode; the following options are available:

- scan IP address range: specify a continuous LAN segment to be scanned
- scan network adapter address range: select one or more network interfaces to be fully scanned

Use the *Reset* button below to discard all changes and start entering scan parameters again. When you are ready, press *OK* button below to begin scanning.

After scanning has been completed, you will be taken to the Device Autodiscovery dialog box, which will allow you to review the found devices and their channels, and enter/modify related settings. Use the *Search* field in the upper-right-hand corner to find a specific device by model, IP, port or hardware ID (for IP devices, ID includes MAC address).

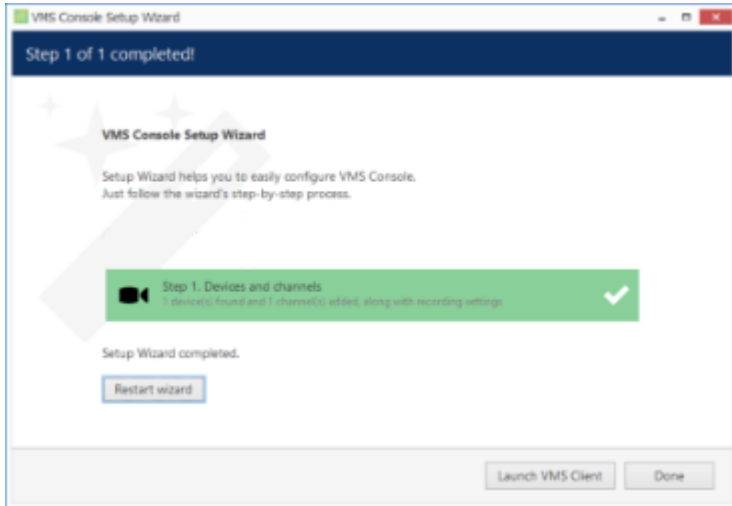
Make sure you select all the devices you wish to add by putting a checkmark next to them. Devices with missing configuration (model and/or IP) are unchecked by default and will not be added to active server configuration.

Switch to *Channels* tab to review the detected video channels of the discovered devices: this is particularly important if you are using multichannel devices, e.g., capture boards and encoders. Use the *Search* field in the upper-right-hand corner to find specific channels by name or device name.

Here you can edit the channel name and assign recording configuration. By default, recording is enabled for all

channels: click the *Change* button near *Recording settings* to [manage recording profiles](#) and [assign them](#) to your channels. To add a new recording profile, click the + *New recording configuration* button below; you can find more details about recording profiles in the [corresponding section](#). Click *OK* to save and return back to devices and channels; click *Apply* to save configuration changes.

When you have finished with configuration, click *Add selected devices and channels* to go back to the wizard.



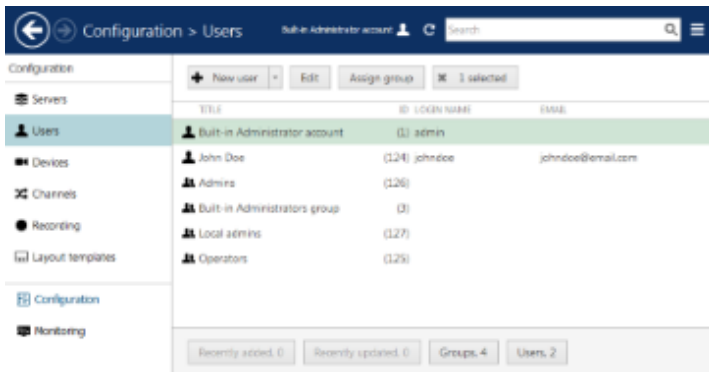
Wizard completed successfully

You can now either restart the wizard to cover the rest of your devices, or close it. Press the Launch TRENDnetView EVO Monitor button to switch to the monitoring mode at once. You will be able to run this Setup Wizard again at any time via your TRENDnetView EVO Console application menu in the upper right corner.

## 12 Interface Overview: Management Application

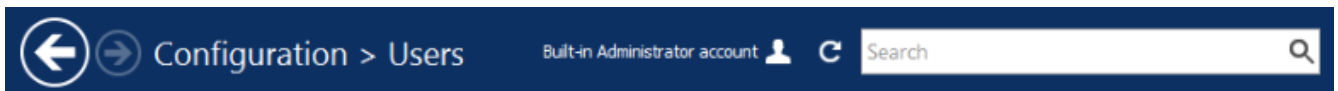
TRENDnetView EVO Console is a straightforward graphics user interface tool with access to all possible server settings. To ensure comfortable and easy navigation, it is important that you become acquainted with its structure before starting to use it.

Note that TRENDnetView EVO Console appearance depends on your software package and license limitations. Sections unavailable due to license restrictions will be greyed out but still listed to get you acquainted with all available features, and smaller functions will be simply hidden.



TRENDnetView EVO Console management application interface

### Navigation Panel



TRENDnetView EVO Console Navigation Panel

The blue panel on top serves as navigation bar and its usage is similar to that of Windows Explorer. Here are its main components (from left to right):

- *Left* and *Right* arrows enable navigation through your browsing history and allow you to switch between previous and next locations; you can also use Backspace on your keyboard to go back
- Your current directory is displayed right next to these arrows
- If you are in the Organizations view, an *Exit* button will appear
- Currently logged in *User account* button with options to view user profile or to log out
- *Refresh* button - reloads current item list
- *Search* field - only items matching the search criteria will be displayed in the list

### Application Menu



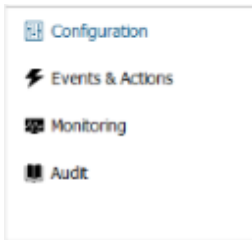
Application Menu, position: top right

Application menu button in the upper-right-hand corner gives you the following options:

- launch the Setup Wizard
- import the configuration from an XML file
- import the configuration from another TRENDnetView EVO server database
- change TRENDnetView EVO Console settings
- set up [automatic configuration backup](#)
- remotely upgrade system components

- open the About section

## Sections



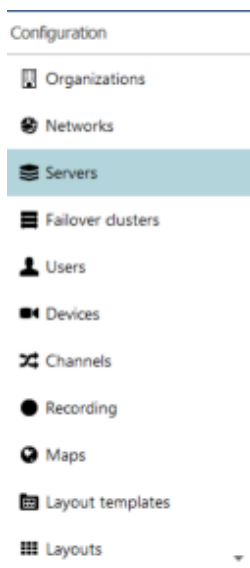
Sections panel, position: bottom left

The bottom left panel allows you to switch between the four main TRENDnetView EVO Console sections: Configuration, Events & Actions, Monitoring and Audit. The contents of the components panel on the left will change depending on the selected section. If the TRENDnetView EVO Console windows is resized, the sections will be reduced to icons.

## Components

The panel on the left will display the list of all available configuration components based on the selected section. As a result of license limitations, some of the items may be greyed out or unavailable. The list below shows maximum available items by category:

- Configuration
  - Organizations, Networks, Servers, External Services, Failover clusters, Users, Devices, Channels, Recording, Maps, Layout templates, Layouts, Video Walls, User Buttons, Visual groups, Live Podcasts, Data Sources
- Events & Actions
  - Rules, Events, Actions, Global Events, Conditions, Schedules, Mail servers
- Monitoring
  - Servers, Devices, Channels, Streams, Archive Statistics, Storages, User Sessions, Video Walls, External Services
- Audit
  - Servers, Users



Components panel, position: left

## Item List



| TITLE                          | ID    | LOGIN NAME | EMAIL             |
|--------------------------------|-------|------------|-------------------|
| Built-in Administrator account | (1)   | admin      |                   |
| John Doe                       | (124) | johndoe    | johndoe@email.com |
| Admins                         | (126) |            |                   |
| Built-in Administrators group  | (3)   |            |                   |
| Local admins                   | (127) |            |                   |
| Operators                      | (125) |            |                   |

Item list, position: centre

The main part of the TRENDnetView EVO Console window displays items in the selected category depending on the search and/or item filters. You can select one or more items at once using the *Shift* or *CTRL* button.

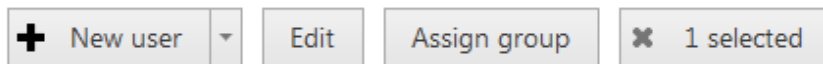
Click any column title to use it as a sorting basis for the whole item list; the little arrow near the column title indicates that it is currently being used for arrangement - either ▲ ascending or ▼ descending. Right-click item list header for sorting options and column fit settings.

| TITLE                          | LOGIN NAME    | ORGANISATION | ENABLED |
|--------------------------------|---------------|--------------|---------|
| Built-in Administrator account | admin         |              |         |
| James Bond                     | jamesbond     |              |         |
| Jimmy Neutron                  | jimmyneutron  |              |         |
| Johnny English                 | johnnyenglish |              |         |
| Built-in Administrators group  |               |              |         |
| Supervisors                    |               |              |         |

Right-click header for additional options

If you choose to remove a column from presentation of the item list, the settings will remain in effect until the TRENDnetView EVO Console restart.

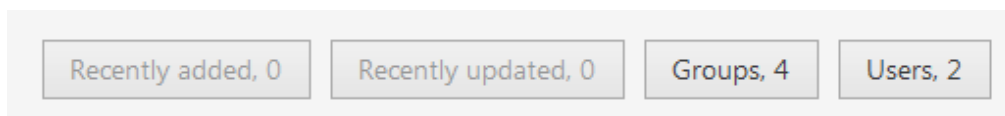
### Item Actions



Item actions panel, position: top right, under Navigation panel

The panel above the item list displays the available actions, if applicable. Usually, the buttons here will allow you to create a new item, edit or delete existing ones, create or edit contiguous items, etc.

### Item Filters

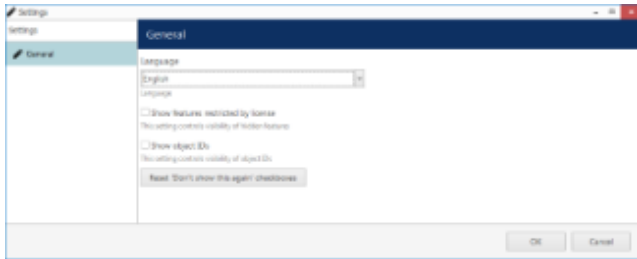


Item filters panel, position: bottom right

The bottom panel contains miscellaneous item filters, such as: recently added and updated, corresponding groups etc. Click any of the filters to apply them; use the *X* button to reset and display the full item list.

### Application Settings

To change TRENDnetView EVO Console settings, go to the main application menu in the upper-right-hand corner and choose *Settings*.



TRENDnetView EVO Console application settings

Here, it is possible to:

- change application language (by default, the language chosen during installation is used)
- show or hide software features restricted by license
- show or hide object identifiers
- reset all *Don't show this again* checkboxes, which have been set so far

## 13 Conventions and Keyboard Shortcuts

### Mouse Gestures

**Double-click** an item containing more entities (e.g., any group): opens item contents in the same window

**Double-click** a **non-expandable** item (e.g., server, user): opens entity configuration dialog box

**CTRL+click**: select multiple items in a list

**Shift+click**: select every item between previously selected item and item clicked

**Right-click** on a text field: standard text edit menu

**Right-click** on a text field when creating an action: standard text edit plus text macros



### Keyboard Shortcuts

**Backspace**: navigate to previous page in TRENDnetView EVO Console

**CTRL+A**: select all items


### Visual Elements


#### General

 New item (click  drop-down arrow to see available options)

 Remove item(s)

 Deselect item(s)


 Unacceptable filed value, hover mouse cursor for more information

 More information about the item, click to view the details


 Refresh item list

 Search

#### TRENDnetView EVO Console sections

 Configuration

 Events & Actions

 Health monitoring

 Audit log


#### Management

  Network (server connection), connection settings




























 Server

 Server group

 External service

 External service group

 Failover cluster


-  Software Watchdog
-  Storage
-  Resources (all or any type)
-  User account/session
-  User group
-  General details
-  Members of the current item
-  Current item membership in other groups
-  User and user group permissions for target item
-  Device
-  Device group
-  Channel
-  Channel group
-  Recording profile (core recording settings)
-  Recording schedule (recording itinerary based on core recording settings)
-  Recording configuration (recording interface assignable to channels)
-  Motion detector
-  Layout Template
-  Layout
-  Layout group
-  Map
-  Video wall
-  User button
-  Visual group
-  Shared channel
-  Audit Journal (software log)
-  Set (period etc.)

## Events & Actions

-  Rules
-  Events
-  Actions
-  Global events

 Conditions

 Event & Action schedules

 Mail servers

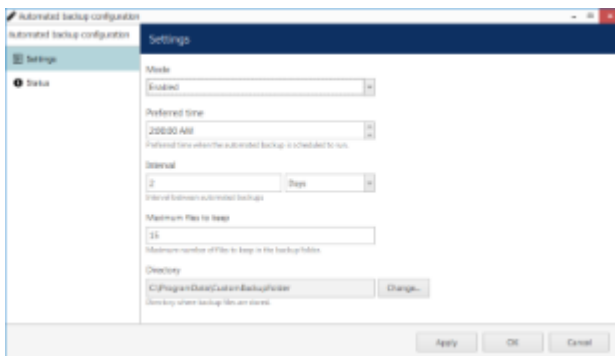
 Action delay timers

## 14 Configuration Backup

Server configuration is a time-consuming process and it is wise to save a copy of your TRENDnetView EVO database after certain changes so that you have something to start the server with in case the main database becomes corrupt because of a hard disk failure or some other reason. TRENDnetView EVO provides several options for database backup and we strongly recommend that you create configuration restore points to save the trouble of re-configuring the server from scratch.

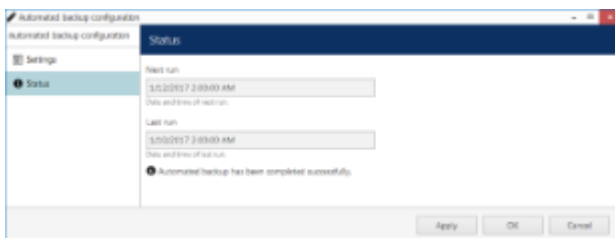
### Automatic Backup

Automated configuration backup allows you to save your TRENDnetView EVO database based on a schedule. To access the settings via TRENDnetView EVO Console, click the application menu button in the upper-right-hand corner and choose *Automated backup configuration*.



Set automatic database backup preferences

Automated backup is enabled by default with the following settings: a restore point is created every two days at 2AM, with a maximum of 15 files to be kept. You can either leave the default settings, including the default location, or define your own backup time and frequency in the *Settings* tab.



Backup status

In the *Status* tab, you can see the date of the last backup attempt and the next scheduled backup time.

### Backup and Restore Wizard

Additionally to the automated backup, it is possible to create a configuration restore point manually at any time. The *TRENDnetView EVO Server Backup and Restore Wizard* provides an opportunity to start the TRENDnetView EVO with an earlier database version.

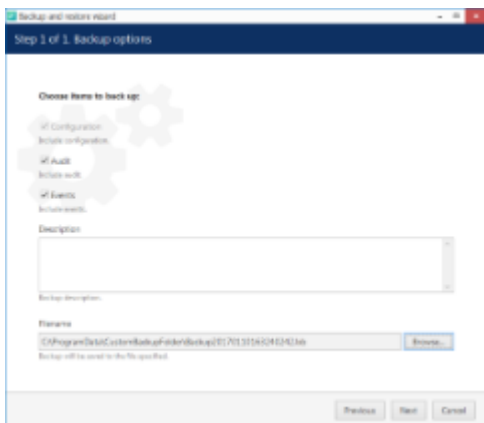
Run the *TRENDnetView EVO Server Backup and Restore Wizard* from your Windows Start menu: *Start -> All Apps -> TRENDnetView EVO -> TRENDnetView EVO Server Backup and Restore Wizard*. In Windows 7 and older versions, use *Start -> All Programs -> software installation folder -> Tools -> TRENDnet, Inc. Server Backup and Restore Wizard*; alternatively, use Cortana/Search to locate the wizard in the programs menu.



Choose whether you want to back up or restore the database

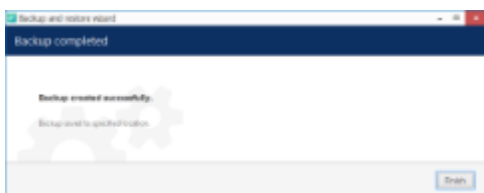
## Backup

Choose the first option to back up the database contents to serve as a restore point and click *Next*.



Choose items to back up

Here, you can choose the information to be saved and also add a custom description for your future reference. You can either use the default destination folder or choose a custom one, even located on a different disk or a network drive.

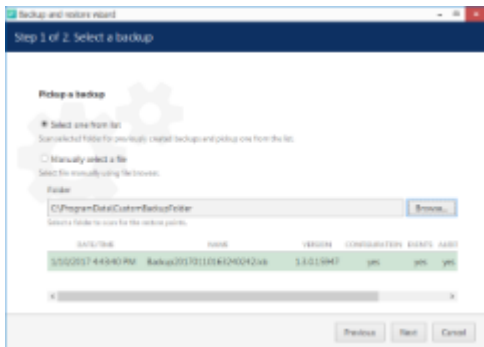


Restore point successfully created

The wizard will create the backup and display a success message. Click *Finish* to exit.

## Restore

Choose this option if you wish to start the TRENDnetView EVO server with a database from an earlier time instead of the current configuration.



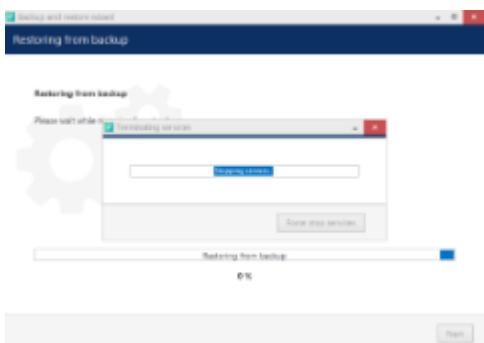
Choose a restore point

Here, you have two options: select a backup file from the list or manually locate the necessary \*.lxb file. In either case, make sure you have chosen the right backup to be used and then click *Next*.



Choose items to restore

Make sure you have chosen a suitable database to be restored by reviewing the items and using your earlier comments as a reference. Click *Next* when ready.



Restore in progress

The wizard will ask you to stop the TRENDnetView EVO services and start restoring the database after your confirmation.

**Caution!** This is an irreversible operation. Do not abort the process or shut down the server machine during the process.

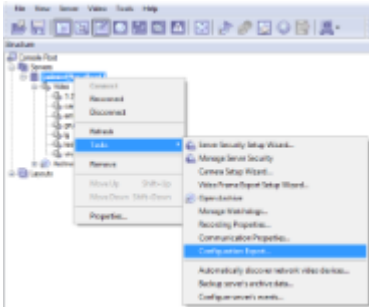
If nothing interferes with the restore process and the backup file is intact, you will receive a success message after the wizard finishes restoring your TRENDnetView EVO server configuration. Server service will be automatically started with the restored database.



## 15 Migration From Previous Product Versions

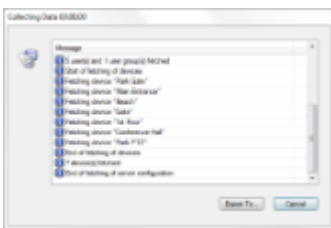
It is possible to migrate the basic configuration from the older TRENDnet software version, first generation TRENDnetVIEW Pro. All you have to do is export an XML file from first generation TRENDnetVIEW Pro and then import it via TRENDnetView EVO Console.

In your first generation TRENDnetVIEW Pro Client, right-click your desired server and choose *Tasks -> Configuration Export*.



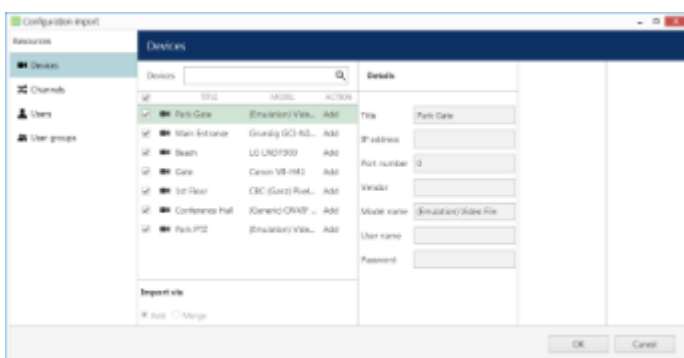
Run *Configuration Export* from the server right-click menu

Export wizard will display a summary of all the exported resources and give you an option to save the configuration in XML format. In order to do this, click the *Export to...* button and choose a location and enter the filename, then click *Save*.



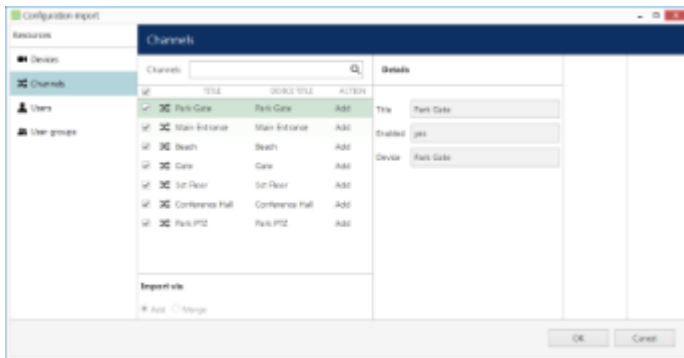
Export tool

Next, switch to your TRENDnetView EVO installation where you want to load the configuration: open TRENDnetView EVO Console and log into the target server. In TRENDnetView EVO Console, click the application menu button located in the upper-right-hand corner of the TRENDnetView EVO Console window and choose *Configuration import*. Locate your pre-saved XML file in the *Open file* dialog box and click *Open*: *Configuration import* dialog box will open, giving you the option to review the resources to be imported.



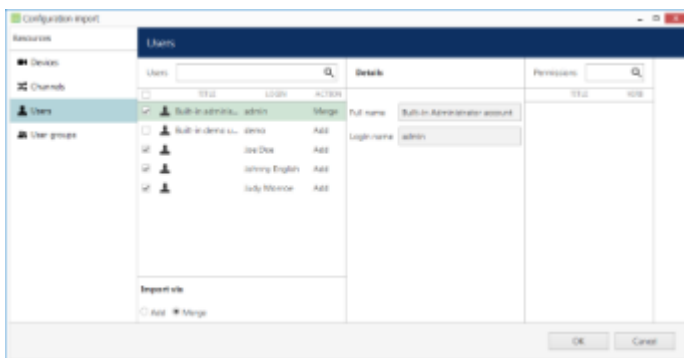
Choose devices to be imported

Review the list of devices to be imported from your pre-saved configuration; note that you can only view the settings but there is no option to change them. You will be able to alter device settings later, after you import the configuration. At this stage, you can choose whether or not the device will be imported: to do this, simply put a checkmark next to each device name. By default, all devices are selected for import.



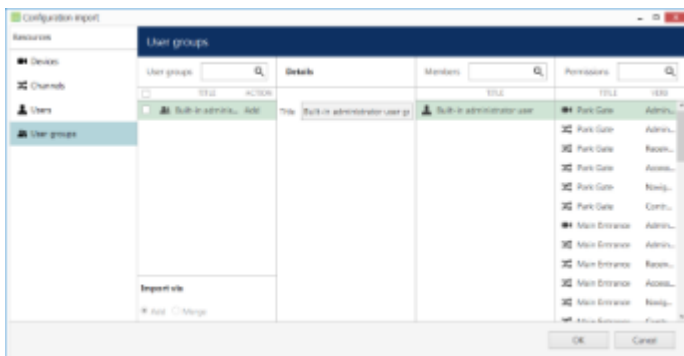
Choose channels to be imported

Next, switch to the *Channels* tab and review the channel list.



Choose users to be imported

When you have finished with devices and channels, review users and user groups to be imported.

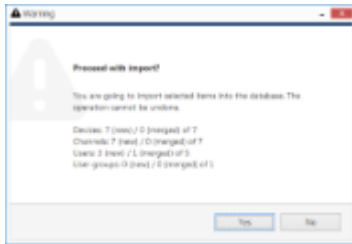


Choose user groups to be imported



If some resource is already present in TRENDnetView EVO configuration, the wizard will mark the imported copy to be **merged** to the existing one; you can change this by selecting the desired resource and choosing the import type below: *Import via* -> *Add/Merge*. Merging means that user permissions are extended and in case of any differences TRENDnetView EVO settings have priority. Otherwise, the import wizard will simply **add** the target resource to your configuration and action type choice will be grayed out.

When you are done, click OK to import the configuration. TRENDnetView EVO will show you a short summary and ask you to confirm the action.

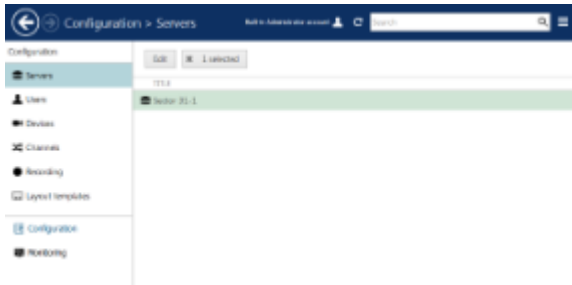


Confirm import

After the import, you will be able to edit the newly added resources as usual via corresponding menu sections.

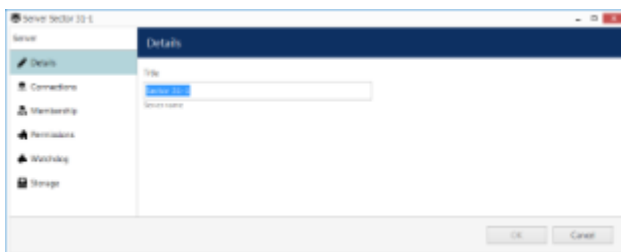
## 16 Server Settings

In order to access TRENDnetView EVO server settings via TRENDnetView EVO Console, select *Configuration* section and then choose *Servers* components from the menu on the left.



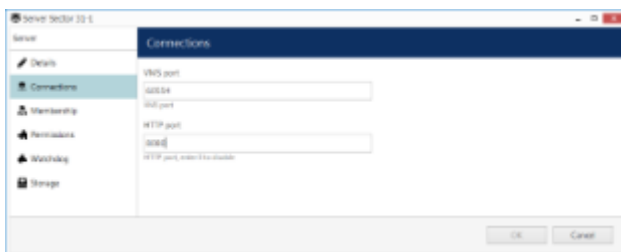
Configuration -> Servers

Double-click server or click the *Edit* button on the upper panel to access server configuration dialog box.



Server details

On the *Details* tab, you can change the server **name**: it will appear everywhere in TRENDnetView EVO Console and in the connected TRENDnetView EVO Monitor applications, including Web clients.



Connection properties

The *Connections* tab allows you to define **ports** for TRENDnetView EVO Monitor and TRENDnetView EVO Streaming Server connection; the default ports are **60554** for TRENDnetView EVO Monitor and **8080** for TRENDnetView EVO Streaming Server (HTTP). Note that, in case you plan to access your TRENDnetView EVO server from the Internet, the ports must be properly forwarded on your router according to your desired topology and allowed through the firewall. Details on the port forwarding setup can be found in your router operation guide.

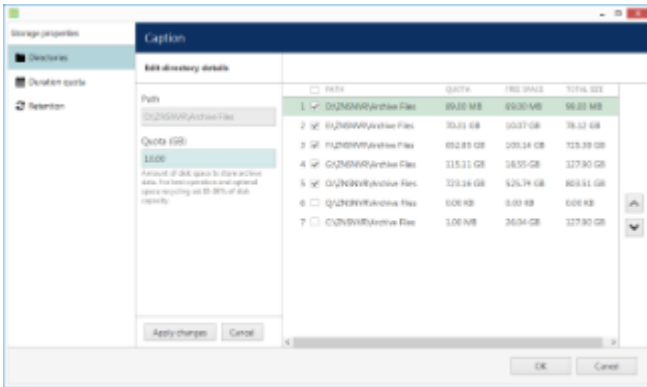
Also, if you are going to use SNMP traps in your [Event & Action](#) scenarios, here you can define server's **SNMP community** name and **SNMP port** for incoming and outgoing messages. Community will be used by the SNMP manager to send requests; SNMP port will serve for both incoming and outgoing messages. Leave both values zeroed to disable this functionality.

The next sections describe the remaining aspects of server settings in details.

## 17 Storage

Server storage configuration includes storage directories, size and duration quotas, cleanup time settings and storage differentiation by name for further flexible allocation of the recorded streams.

To access the storage settings for the server via TRENDnetView EVO Console, choose the *Configuration* section, then select *Servers* from the menu on the left, double-click your server and then click the *Storage* tab.



Access storage settings for selected server

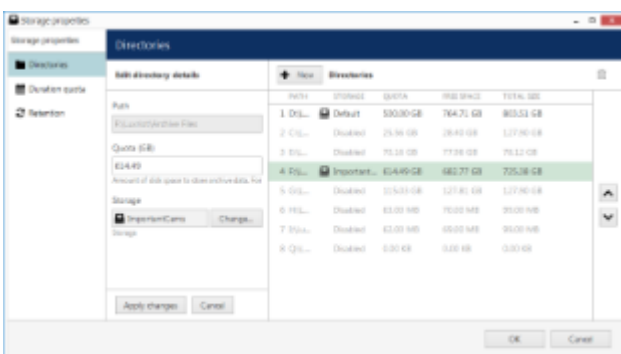
Click *Open storage properties* to open the configuration dialog box.

### Directories

All available **local disks** (also mapped network shares that appear as drives in Windows Explorer) will be automatically listed and checked for recording with default archive directories. You can also add network paths to remote storage locations. Use UP and DOWN arrows on the right to change the disk order (priority).

For each storage location, the following information will be displayed:


- storage priority: determined by the item position in the list
- storage profile (see description below)
- current quota size
- free space on disk
- total disk size



Configure storage directories

Each directly attached storage location will be automatically assigned a quota of 90%; each network storage will have a zero quota by default so you need to enter the quota size manually. We strongly advise that you review all the settings and make sure that all the storage locations have sufficient free space, and, if necessary, set a lower quota or free up some space. It is recommended that every recording location has 10-15% of free space: this helps avoid fragmentation effect and also allows highly loaded software to effectively enforce recording quotas.

**⚠ Minimum quota** per each storage location for any storage type is 20GB.

 We advise against recording to the system drive because it is often used by other processes like defragmentation and system backup, not to mention OS itself, and thus doing so may affect recording efficiency and stability. As a result, disk C: is not selected for recording by default.

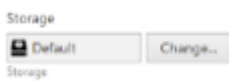
To change the disk quota, simply highlight the desired location for storage from the item list, then enter the quota size in GB and click *Apply changes*.

## Storages

You can either use the *Default* storage category for all locations, or create multiple different **storage** profiles (types, names). These can be used for manually distributed streaming between storage directories:

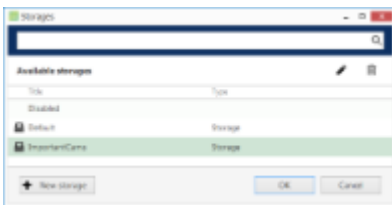
- storage directories are marked with corresponding storage tags
- each channel is assigned to a recording location

To choose a storage profile different from the *Default*, select the storage location from the *Directories* list and click the *Change* button.



Change storage

Select one of the built-in storage profiles or create and edit a new one.




Choose storage profile

The built-in storage types are:

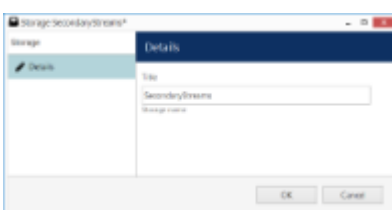
- **Disabled:** storage location will not be used
- **Default:** default storage tag
- **Fallback:** storage destination to be used if all the storage units with specified tags have failed
- **Readonly:** existing data will be available for reading and will not be erased; no new recordings will be appended to this location

These profiles cannot be edited or removed. Fallback storage settings are available in the corresponding tab of the *Storage properties*.

 Readonly storage type can be used, for example, in the following cases:

- it is necessary to view the old data from a different TRENDnetView EVO server when you need to insert the disks originating from another computer and you do not wish that these data are erased
- some storage unit contains important footage that has been requested to be kept for a longer time so that the recordings are not erased over time while still allowing access to the footage

Click + *New storage* button to create a new storage profile, or select an existing one and click the *Edit* button in the upper-right-hand corner to change its name.



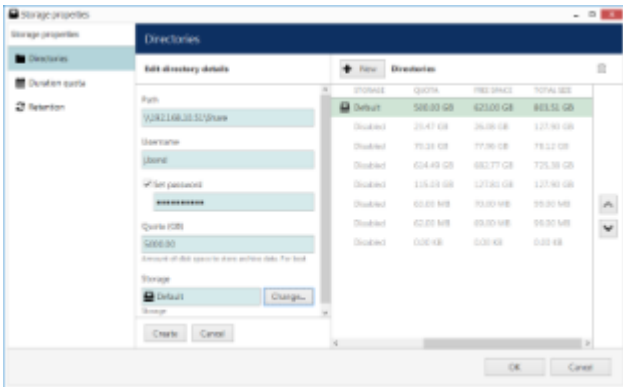
New storage profile

Enter the storage profile title and click *OK* to save and exit.

The storage tag you have selected or just created will appear as selected. Click the *Apply* button below to **confirm** storage configuration settings before proceeding.

**Remote storage locations**

In order to add a **network storage** (NAS, SAN, network share) that is not mapped as a drive in Windows, click + *New* button on the upper panel and enter the setup details.



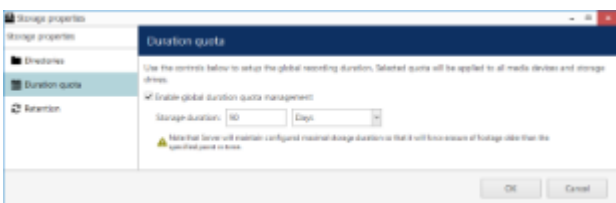
Add new storage directory

The table below details the available settings for network storage.

| Setting  | Description  | Default Value                         |
|----------|--|---------------------------------------|
| Path     | Full network path to the storage directory   | \\Server\Share\TRENDnet\Archive Files |
| Username | User name to connect to the storage  | [empty]                               |
| Password | Define storage access password, if applicable  | [empty]                               |
| Quota    | Maximum amount of storage in gigabytes to be used for recording; 85-90% is recommended | 20GB                                  |
| Storage  | Storage profile to be assigned to the target storage directory                         | Disabled                              |

**Duration Quota**

Set the global recording duration limit for your server here: enable quota management and then enter desired number of days. All recordings older than the number of days specified will be erased.

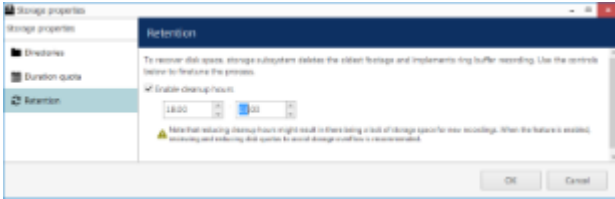


Global duration quota

Note that the global duration quota has priority over the individual (per-channel) duration quota that is set in the recording configurations.

**Retention**

You can set the software erasing mechanism so that it cleans up old recordings only during specific periods of time, e.g., when the recorder is less overloaded or when the quality of recordings are less important.



Set cleanup hours

To do this, enable the cleanup hours setting and specify the time period during which erasing is allowed.

**⚠** This control has priority over the storage quota. Setting insufficient cleanup time may lead to storage overflow and result in recordings being lost. We strongly recommend that you do not enable any cleanup hours' restrictions unless you absolutely know what you are doing.

**Fallback**

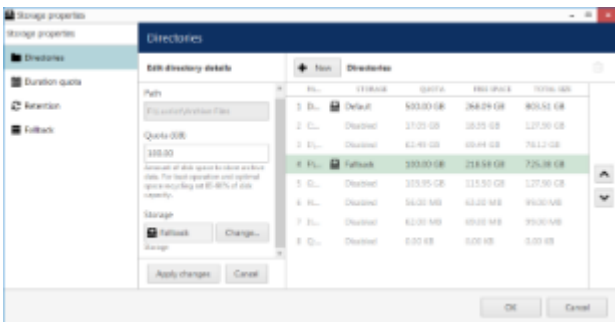
You can dedicate a specific recording location to serve as a failover storage, called **fallback storage**. Such storage location will be used for recording only if all specified target storages of the certain type have failed.

TRENDnetView EVO server automatically detects when a channel or channels cannot be written onto their normal destination storage and switches to the fallback storage after the specified timeout has been reached. Minimum and also default timeout is thirty seconds, and maximum is five minutes. A default [system event](#) is raised when fallback is activated.



Fallback storage settings

After setting the desired timeout, switch to the *Directories* tab and specify, which storage will serve as fallback.



Set fallback storage units

Usage example:

Consider a system where all main streams are recorded to the storage with the tag *Main* and all secondary streams are, in their turn, recorded to the *Substreams* storage. If either or both of these storages fail, recording will automatically proceed to the *Fallback* storage.

**⚠** The fallback storage must be able to handle the load and have enough free space to keep the recordings until the main storage gets back online.

Server checks if the main storage is available if one of the conditions has been fulfilled:

- server has finished and closed a data file (4GB)



- the data file has not reached 4GB in size but six hours have passed
- server was restarted

In other words, the recording function checks if the main storage is available every 6h OR every 4GB of recorded data OR after a restart (upon startup). If the main storage is OK, TRENDnetView EVO server continues to record onto it; the recordings made onto the fallback storage stay there and are not transferred anywhere.

## 18 Watchdog

### General

Server Watchdog is an integral part of the server core. It protects the software from certain types of failures by automatically attempting to restart the server.

Watchdog operates based on the software and system overall health monitoring; default trigger values have been selected on the grounds of our analysis of extensive tests run on systems of different configuration and stability level.

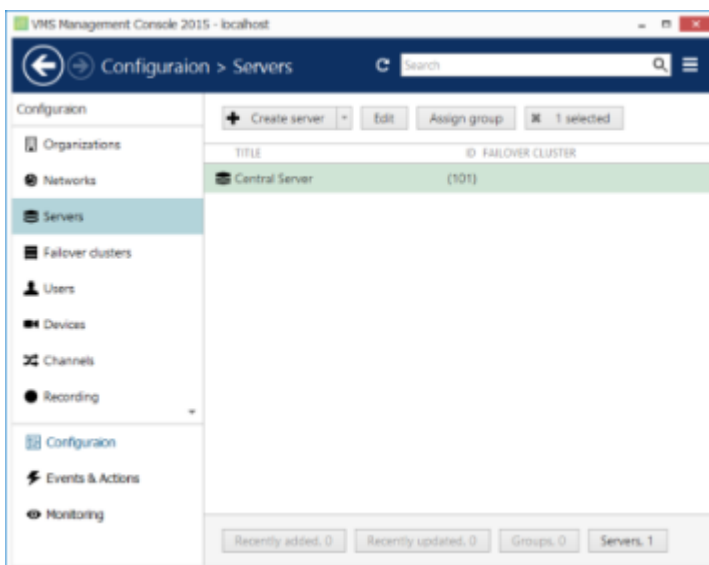
Although it is possible to disable the Server Watchdog service, we strongly advise against doing so, as the principal role of Watchdog is to keep the software operation as stable as possible in the given circumstances.

Watchdog operation can be tracked by messages in the Windows Application log. If you do experience frequent disturbances such as software restarts or server rebooting, this will be an indication of some serious issue related to the software, operating system and/or underlying hardware. In such a situation, the best course of action is to:

- carefully read the messages in the Windows Application Log, as these may already contain some indication of why Watchdog was triggered;
- refer to the [relevant topic in the Troubleshooting section](#) of this manual to read about typical causes of such cases;
- send a [Problem Report](#) from the faulty server, providing as much information as possible about the issue;
- consult the TRENDnet, Inc. technical support team directly at <http://www.trendnet.com/support>

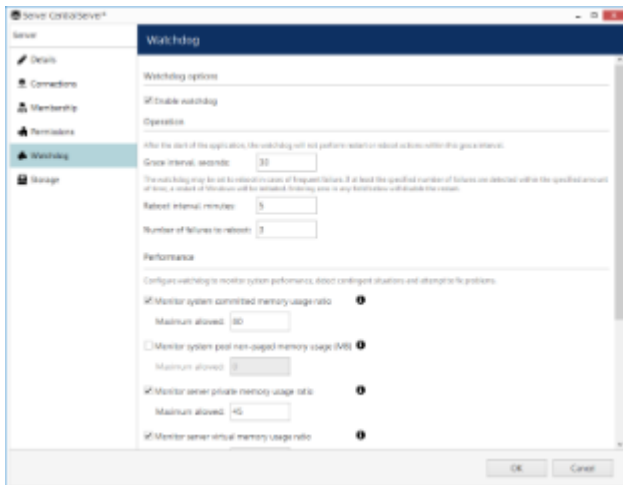
### Configuration

Watchdog operation can be configured for each server independently. To access Watchdog settings, in TRENDnetView EVO Console select *Configuration* in the bottom left menu and select *Servers* from the list on the left, then double-click the desired server or simply click *Edit* button on the top panel for the pre-selected server.



Locate server for Watchdog configuration

In the *Server* dialog box, select Watchdog from the left menu.



Watchdog configuration

The table below contains a detailed explanation of Watchdog settings. Please note that for most cases default and near-default settings are recommended; it is advisable that you consult with TRENDnet support if for some reason you plan to make extensive changes to these settings. Click the information icon next to each setting to read more about them.

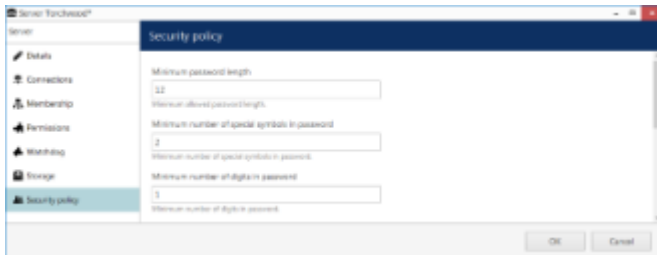
| Setting                                | Description   | Default Value |
|--|---|---------------|
| Enable Watchdog                        | Enables Watchdog operation for the target server  | Enabled       |
| Grace Interval, seconds                | Time interval in seconds, counting from server start, during which Watchdog will not attempt to restart the software  | 30            |
| Reboot Interval, minutes               | Watchdog will reboot Windows if there have been a certain number (N) of software restarts (N is specified below) in the given time interval; the default for rebooting is 3 restarts in 5 minutes; setting the specified number to 0 will disable rebooting | 5             |
| Number of Failures to Reboot           | Watchdog will reboot Windows in case there have been N software restarts in the time interval specified above; the default for rebooting is 3 restarts in 5 minutes; setting the specified number to 0 will disable rebooting                               | 3             |
| System Committed Memory Usage Ratio, % | Watchdog will restart the software if the ratio of total system committed memory exceeds the specified percentage; this value is shown under Memory section of Performance tab in the Windows Task Manager  | Enabled, 70%  |
| System Pool Nonpaged Memory Usage, MB  | Watchdog will restart software if the amount of system nonpaged pool memory exceeds the specified amount  | Disabled      |
| Private Memory Usage Ratio, %          | Watchdog will restart software if the amount of private memory used by server process exceeds the specified value   | Enabled, 45%  |
| Virtual Memory Usage Ratio             | Watchdog will restart software if the amount of virtual memory used by server process exceeds the specified ratio; ratio shows the amount of virtual memory used by server process versus maximum per-process virtual memory allowed by                     | Enabled, 90%  |

|                               | OS  |                 |
|-------------------------------|---|-----------------|
| Enable Periodic Restart       | Enables automatic software restart every N days or hours; use hours for troubleshooting purposes                                    | Enabled, 7 days |
| Enable Periodic Restart Hours | Limit periodic restart to specific hours, e.g. only restart at night; we recommend to leave at least a 1h interval for the restarts | Disabled        |

## 19 Security Policy

Security settings related to password management, connections etc. can be defined for each server. To access server security policy settings via TRENDnetView EVO Console, choose the *Configuration* section, select *Servers* from the menu on the left, double-click your target server and then click the *Security policy* tab.

It is recommended that, in order to enhance your system security, you do not leave the default policy settings but rather define your own, system-specific preferences.




Server security settings

The table below details the available settings.

| Setting   | Description  | Default Value |
|---|--|---------------|
| Minimum password length   | Minimal mandatory length of a user password  | 8             |
| Minimum number of special symbols                                   | Define how many (at least) special characters (#\$%&...) must be present in a user password  | 2             |
| Minimum number of digits  | Define how many (at least) digits must be present in a user password   | 2             |
| Minimum number of uppercase letters                                 | Define how many (at least) UPPERCASE letters must be present in a user password  | 2             |
| Minimum number of lowercase letters                                 | Define how many (at least) lowercase letters must be present in a user password  | 2             |
| Number of previous passwords to remember                            | Password history to be kept by the server to prevent the user from using the same password again when changing it  | 1             |
| Maximum number of days between password change                      | Define how frequently TRENDnetView EVO will ask users to change their password; this setting can be overridden in the user settings to make the password never expire for a specific user                    | 0 (unlimited) |
| Maximum number of simultaneous connections with the same login name | Allowed number of simultaneous incoming connections from the same user account via any port (TCP/HTTP) or client app, this setting can be overridden for the specific user in the user settings; 0=unlimited | 0 (unlimited) |

Password related policies are solely meant for TRENDnetView EVO internal users and they do not affect any other user account settings (e.g., Windows users etc.). All policies are in effect for **all user accounts**, including the built-in root *admin* user account.

 The **maximum number of simultaneous connections** from the same user account can be re-defined for any specific user via user settings dialog box. User-specific setting has priority over global connection quota and it may be either larger or smaller than the global quota.

**Example 1:** global policy is set to 0, which means no imposed limitations. However, user account *admin* has his max number of connections set to 3, which means that three incoming connections with this user account are allowed at a time so that the administrator can connect via TRENDnetView EVO Console, TRENDnetView EVO Monitor and TRENDnetView EVO Mobile at once for troubleshooting purposes.

**Example 2:** global policy is set to 1, which means only one connection from each user is allowed at a time. However, user *demo* has an allowance of 30 simultaneous connections so that this account can be used for demonstration purposes.

## 20 Overview of Devices and Channels

The idea of a camera as a surveillance software entity being commonplace has resulted in the concept of devices and channels. Devices and channels represent the separation of physical and data layers for reasons of security and ease of management.

**"Device"** refers to any piece of physical equipment that serves as a data provider; a hardware piece delivering video, audio and event streams to the server. IP cameras, video encoders, capture boards, USB web cameras - these are all examples of devices that can be added to TRENDnet software. Devices do not include any data streams.

**"Channel"** refers to any actual video stream (with corresponding audio/event stream, if applicable) delivered to the server from any of the configured devices. Software licensing mechanism counts channels and not devices.

In TRENDnetView EVO Console, devices hold camera TCP/IP and user settings, as well as actual hardware model. By contrast, channels do not possess these properties: this allows them to be handled as virtual entities, detaching and re-attaching them from/to devices. Channels feature video stream configuration settings - resolution, frame rate, bit rate and others - as well as all supplementary data streams, such as audio, motion and digital input/output events, PTZ control and camera-side analytics information.

As there are also some multichannel devices, e.g., capture boards and video encoders, each device can have one or more channels attached to it - these can either be assigned or detected automatically; maximum number of channels for each specific device is stipulated by the device model.


Devices only appear within TRENDnetView EVO Console, allowing the administrator to apply all necessary configurations. TRENDnetView EVO Monitor only displays the channels and does not provide any access to the devices' properties to the end users.

Both devices and channels can be grouped independently. For internal TRENDnetView EVO Console management, device groups and channel groups are available; for TRENDnetView EVO Monitor channel grouping, visual groups can be used.

## 21 Add Devices Manually

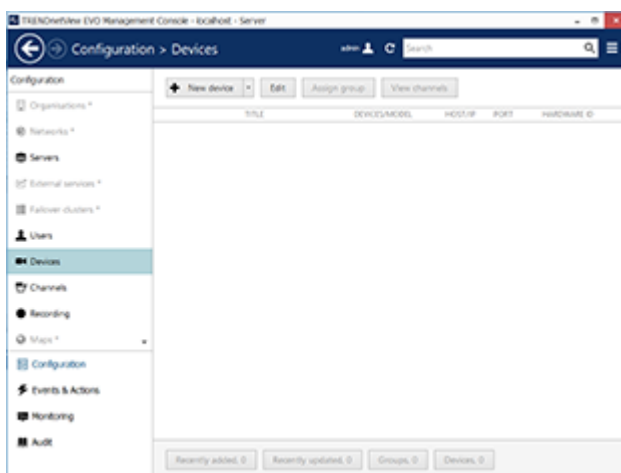
You can add devices manually instead of using autodiscovery in the following cases:

- actual devices have not been connected yet
- devices are not connected at the current stage but it is planned that they will be connected later
- the server needs to be configured while being away from its future position
- some devices in use cannot be automatically discovered

 Only IP devices can be added manually. Attached devices (e.g., capture boards) require [autodiscovery](#).

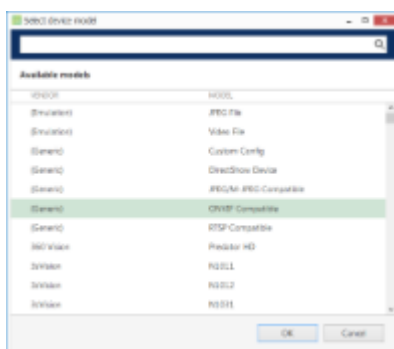
### Add single device

To access the configuration dialog box from TRENDnetView EVO Console, open the *Configuration* section and select *Devices* in the menu on the left; in the upper panel, then click the + *New device* button.



Add new device

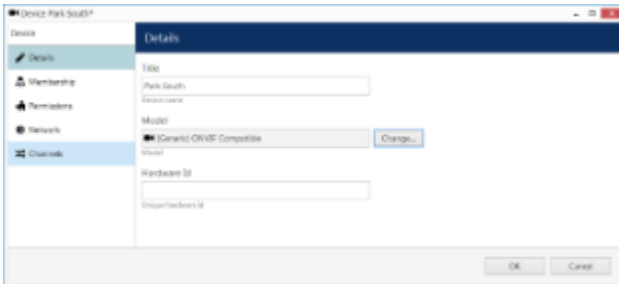
Enter a user-defined name for your new device and pick a model. If your camera model is not listed, select the closest similar model or choose a generic type.



Select device model

After you have chosen manufacturer and model, additional tabs will become available in the main configuration dialog box: *Network* and *Channels*. These tabs are described in details later in this section.





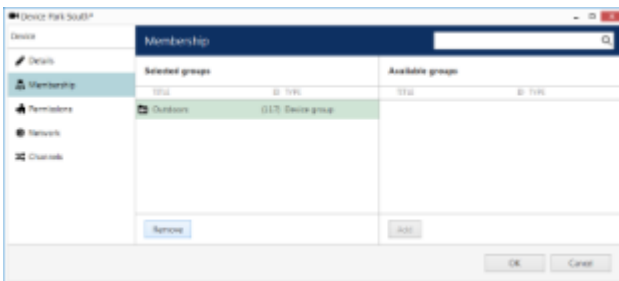
Network and Channels become available after device model has been chosen

**Details**

| Setting     | Description  | Default value |
|-------------|--|---------------|
| Title       | User-defined device name   | [empty]       |
| Model       | IP device manufacturer and model, or generic type  | [empty]       |
| Hardware ID | Unique hardware identifier containing a device hardware identifier; this field should be left empty, as it will be filled automatically later, when the device has been connected and identified | [empty]       |

**Membership**

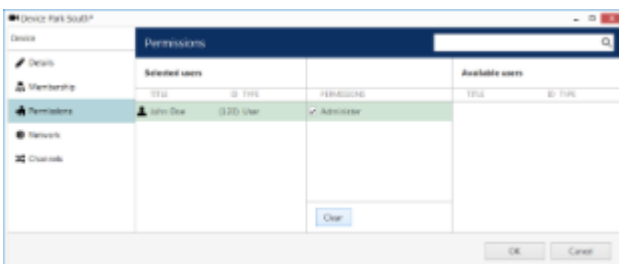
Choose groups for the current device to become a member of. Use *Add* and *Remove* buttons below or double-click to manipulate groups. One device may belong to several groups at once.



Define groups for the device being added

**Permissions**

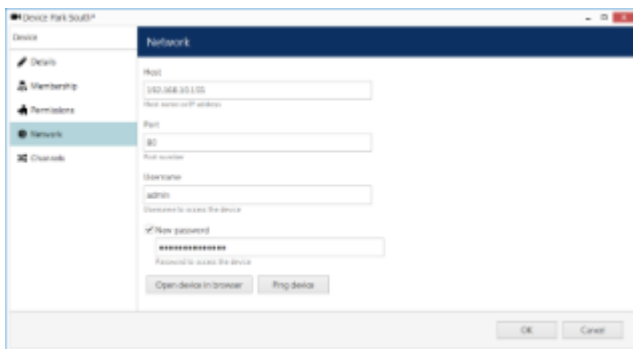
Add users and/or user groups simply by checking at least one permission for the target server; remove by clearing permissions - either by deselecting them or by clicking the *Clear* button below. You can also double-click users to remove them from the list of privileged users. Devices with an empty permission list will not be available to anyone except for the root (global) administrator.



Add user permissions for this device

## Network

Enter TCP/IP settings for device access here.



Enter TCP/IP settings for device access

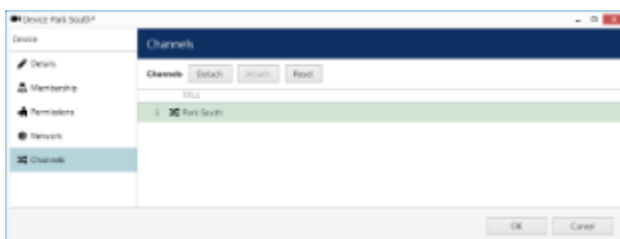
Before filling in the details, make sure the settings match those on the camera. If device has not been connected yet, ensure that the same settings are applied during the camera installation. You can use the *Ping Device* button to check camera availability and/or verify your settings; the *Open Device in Browser* button will try to reach your camera Web interface using you default browser.

| Setting  | Description  | Default value |
|----------|--|---------------|
| Host     | Device IP address  | [empty]       |
| Port     | Device HTTP port   | 80            |
| Username | Device user credentials; note that you need to provide a valid administrative user profile to be able to change device settings via software | [empty]       |
| Password | Password for camera access   | Enabled       |

## Channels

Here you can detach automatically detected channels from the device and replace them with one of the existing 'free' channels (not attached to any device). Use the *Reset* button to undo any changes made to the channels (this only works for current editing session, reset will not be available after you save the changes and reopen this dialog box).

If you wish the original camera channel(s) to stay attached to the device, just leave the channel list as it is.



Channels

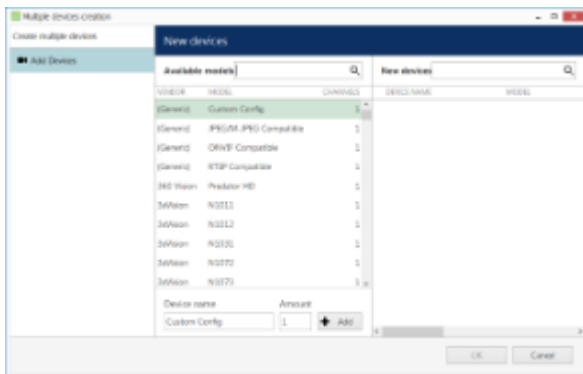
## Add multiple devices\*

*\*Feature is subject to license limitations and may be unavailable in some software editions.*

If you have a number of devices of the same type in your system, you can add them all at once to save time. This method is especially useful if you have multiple groups of devices of the same type.

Open the *Configuration* section and select *Devices* in the menu on the left; in the upper panel, click the little arrow next to the + *New device* button and select *Create multiple devices*.

## Add devices



Create multiple devices dialog box

You can add any number of different devices here (assuming this is permitted by license limitations). First, select the device model from the list, and then enter your desired number of existing devices of the same model.



Select the desired model and number of devices

When you are ready, click the + *Add* button below to attach the camera set to the new devices list. As soon as there is at least one device, additional tabs will become available: *Device Parameters* and *Channel settings*. Device list on the right will be available in all tabs.

To **remove** any of the listed items, select them with your left mouse button (use *CTRL+click* or *Shift+click* to select multiple devices at once) and hit the *Delete* button on the upper panel or on your keyboard. Select any device and use the + *Add* button on the upper panel to add a copy of that device.



Add several new devices

## Device parameters

For each added device, enter corresponding settings. Note that you can skip IP and port on this step if you wish to use automatic incremental IP assigning (see *IPs and Ports* tab description below).




Modify device parameters

Select a device by clicking on it in the item list: it will become highlighted green and related available settings will be displayed in the *Device parameters* window. You can select multiple devices by holding *CTRL* or *Shift* when clicking.

| Setting     | Description   | Default value        |
|-------------|---|----------------------|
| Device name | User-defined device name  | Device model         |
| Model       | Device manufacturer and model, or generic type; click Change to alter                                 | Loaded automatically |
| Host        | Device hostname or IP address   | [empty]              |
| Port        | Device HTTP port  | 80                   |
| Username    | Device user credentials; note that you need to provide a valid administrative user profile to be able | [empty]              |

|          |   |                |
|----------|---|----------------|
|          | to change device settings via software              |                |
| Password | Password for camera access                          | [empty]        |
| Server   | Target server, to which the device will be attached | Central Server |

When you have finished, click the *Apply* button below for the changes to take effect.

 If you do not apply the modifications, they will be discarded when you select a different device from the item list. Remember to always click the *Apply* button.

You will be asked to review the list of modified fields and confirm the changes.

  
Confirm changes

Click *OK* to accept the changes and go back to the configuration dialog box.

You can select multiple devices and assign IP addresses incrementally with the defined increment. Similarly, it is possible to change the HTTP port for all devices at once, if required (port value stays the same for all selected devices, with no increment). In order to do this, select desired devices by using *CTRL+click* or *Shift+click*, then start entering the IP address: the field will expand, giving you the option to enter the increment.

  
Assign IP addresses with increment

Click the *Apply* button below to save the changes, similarly to the previous step.

## Channel Settings

Here you can modify channel names and recording configuration. Note that channel name is not copied from the device name.

Unlike with automatic device discovery, default recording configuration here is [none], meaning that recording is not conducted. Select one or multiple devices and then click the *Change* button in order to choose an existing recording configuration for the target devices or create a new one.

Depending on the selected device model, the number of channels may coincide with or exceed the number of devices, e.g., when device is a 4-channel encoder.

  
Channel properties

Select one or multiple devices and click *Change*, then select appropriate recording profile or [create a new one](#).

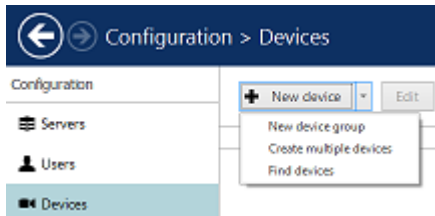
When you have finished, click *OK* to add all the new devices and their channels to your server configuration.

See Also

## 22 Add Devices Using Autodiscovery

Use automatic device discovery feature to find all available devices. This method is of great help when dealing with large amounts of cameras, and also when exact addresses of devices are not available.

To access the configuration dialog box from TRENDnetView EVO Console, open *Configuration* section and select *Devices* in the menu on the left; in the upper panel, click down arrow near *New device* button and then select *Find devices*.



Find devices

### Scan Parameters

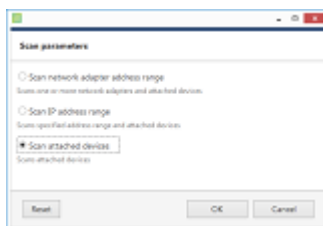
First, select scan mode; the following options are available:

- scan IP address range: specify a continuous LAN segment to be scanned
- scan network adapter address range: select one or more network interfaces to be fully scanned
- scan attached devices: the local hardware system will be scanned for capture boards and Direct Show video sources

If you have chosen to search for IP video sources, you should review additional connection settings and change or update them, if required:

- ports: HTTP ports, comma separated
- user credentials: pairs of comma-separated user names and passwords, one pair per line

Use the *Reset* button below to discard all changes and start entering scan parameters again. When you are ready, press *OK* button below to begin scanning.



Scan attached devices



Scan network adapter address range



Scan IP address range

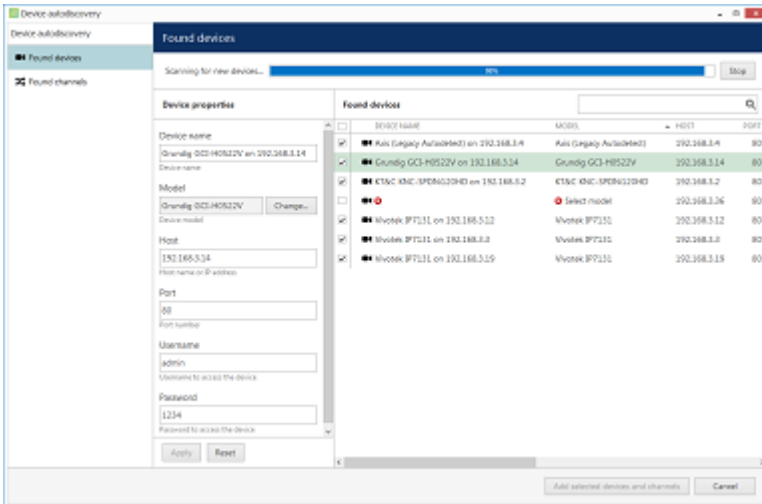
## Device Autodiscovery

After scanning has been completed, you will be taken to the Device Autodiscovery dialog box, which will allow you to review the found [devices and their channels](#), and enter/modify related settings. Use the *Search* field in the upper-right-hand corner to find a specific device by name, model, IP, port or hardware ID (for IP devices, ID includes MAC address).



There are two types of selection in the item list: checkboxes and colour highlight. **Checkboxes** are used to choose the items to be added to server configuration after you close the dialog box; **highlighted** items are subject to immediate properties changes. Use *CTRL+click* or *Shift+click* to select all or several items at once to change their settings.

Click a device in the item list to load its settings into the *Device Properties* window. Note that some settings may be missing for some of the automatically found devices; this depends mostly on device and whether user data was correctly provided. In such cases, simply fill in the missing data manually and click the *Apply* button below to save the configuration changes.



Set up discovered devices

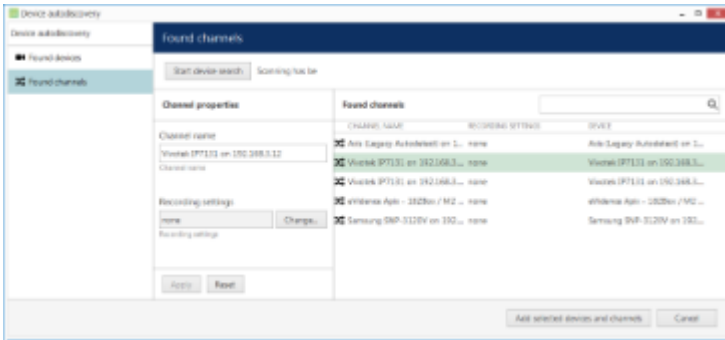
If device is not integrated with the software (native support), it may be detected as generic type (e.g., ONVIF). If you think some devices have not been discovered, check if they have different HTTP ports; also, try adding them [manually](#).

| Setting     | Description  | Default value   |
|-------------|--|---|
| Device name | User-defined video source name   | Autodetected model + IP, empty if not detected          |
| Model       | Device manufacturer and model, or generic type   | Autodetected vendor and model, empty if not detected    |
| Host        | Device IP address  | Autodetected  |
| Port        | Device HTTP port   | Autodetected  |
| Username    | Device user credentials; note that you have to provide administrative profile credentials in order to be able to change device settings via software interface | Appropriate username from provided list or autodetected |
| Password    | Device user password   | Appropriate password from provided list or autodetected |

Make sure you select all the devices you wish to add by putting a checkmark next to them. Devices with missing configuration (model and/or IP) are unchecked by default and will not be added to active server configuration.

Device models set on this step cannot be altered in future. In order to change the model further on, you will need to delete the channel attached to such a device, and then create a new channel with your desired model: see how to [replace a camera](#) for details.

Switch to *Channels* tab to review the detected video channels of the discovered devices: this is particularly important if you are using multichannel devices, e.g., capture boards and encoders. Use the *Search* field in the upper-right-hand corner to find specific channels by name or device name.

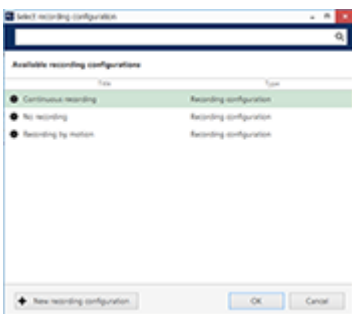


Set up discovered channels

Here you can edit the channel name and assign recording configuration. By default, recording is enabled for all channels: click the *Change* button near *Recording settings* to manage recording profiles and [assign them](#) to your channels. To add a new recording profile, click the + *New recording configuration* button below; you can find more details about recording profiles in the corresponding section. Click *OK* to save and return back to devices and channels; click *Apply* to save configuration changes.

**⚠** After changing the channel recording configuration, do not forget to click *Apply*, otherwise the changes will not take effect.

**💡** Recording configuration here is assigned to the **main streams** of the target channels. In order to set up substream recording, please go to channel configuration.

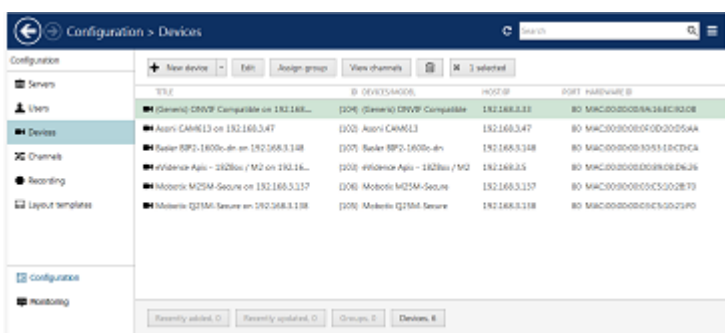


Select the recording configuration or create a new recording profile

Click the *Start device search* button above at any time to restart device discovery.

**⚠** All previously discovered devices and all configuration changes will be discarded if you restart camera autodiscovery.

When you are ready, click the *Add selected devices and channels* button below; all checked devices will be added with selected corresponding channels. Newly added devices and channels will be added to the item list.



Added devices will appear in the item list

Use the buttons on the upper panel to manage your devices. You can now add new devices and/or device groups,



launch autodiscovery again, assign devices to groups, as well as removing both devices and groups.



When deleting devices, remember that corresponding channels will **not** be **removed** at the same time and therefore your newly discovered devices may not be added due to license limitation. Go to the *Channels* tab to manage them separately.

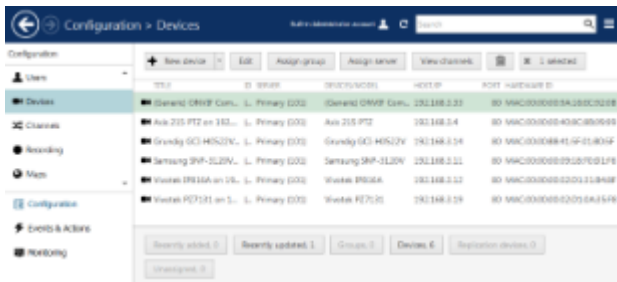
See Also

## 23 Manage Devices and Device Groups


This topic describes general device handling as well as common use cases in device management.

### Manage Devices

Device management is accessible via TRENDnetView EVO Console *Configuration* section, under *Devices* category in the menu on the left.



Configuration -> Devices

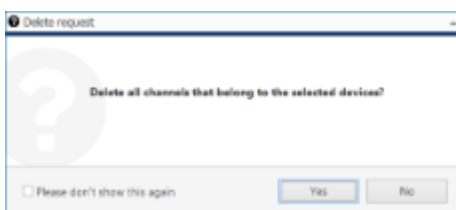
Upper panel items allow you to add devices [automatically](#) or [manually](#), edit, view and  remove them, as well as quickly assign groups and servers. Double-click any device to open it for editing; click *View channels* on the upper panel to open channel-specific controls in the same window. If device has multiple channels, all of them will be listed.

Please refer to the [Add Devices Manually](#) section of this document for detailed description of all available tabs and settings.

Use bottom panel buttons to quickly filter recently added/updated devices, choose groups only or solely devices not assigned to any of the servers.


### Remove Devices

To remove a device, select it in the item list and use the  *Recycle bin* button on the upper panel to delete the target device. Use *Shift+click* or *CTRL+click* to select multiple devices, or *CTRL+A* to select all.



You can choose to remove all associated channels together with the device(s)

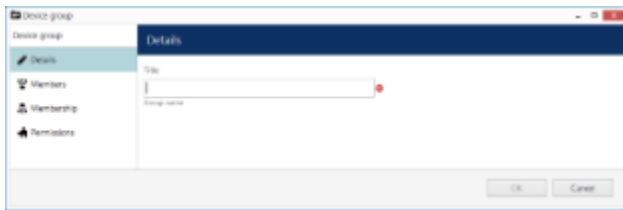
You will be offered to remove all the attached channels together with the device(s). Press *Yes* to delete the channels or choose *No* to leave the channels: they will appear as detached in the channel list then and you will be able to re-attach them to other devices, keeping the channel recording configuration. If you choose *Yes*, all existing shared channels based on the channels of the target device will be removed automatically as well.

 Channels that have any associated **rules** in the [Event and Action Configurator](#) **cannot be removed**. If you try deleting such a channel, you will get an error saying *The channel cannot be removed because it is in use*. In order to remove such a channel, you need to delete the rules related to it first. To do so, just go to the *Events & Actions* section, choose *Rules* in the menu on the left, select the target server and open the configurator, then remove the necessary rules from the central column by using the < and > buttons.

### Add Device Groups

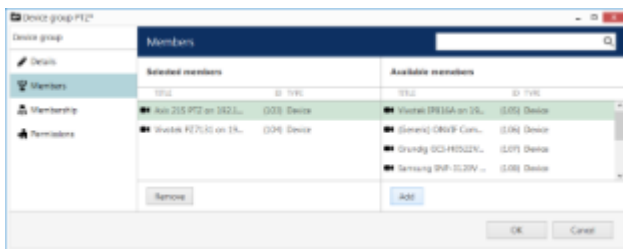
As with other resources, devices can be grouped together for easier management. Click the little arrow near + *New*

device button and select *New device group*.



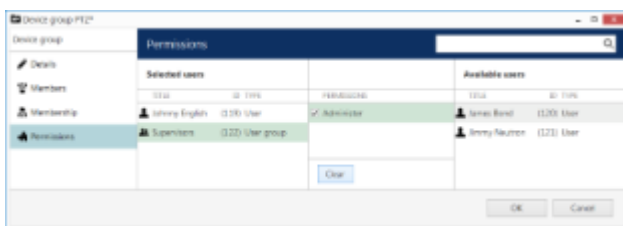
Device group details

Enter a name for the device group in the *Details* tab, then switch to the *Members* tab and choose devices to join this group. Double-click items or use the *Add/Remove* buttons below to select and deselect devices.



Device group members

In the *Membership* tab, you can select 'higher' level groups to contain this device group (nested architecture).



Device group permissions

Finally, open the *Permissions* tab to assign user privileges for this device groups: check at least one permission to select the user or user group, uncheck all or use the *Clear* button below to deselect. When you have finished, click *OK*; the newly created group will then appear in the item list.

Double-click any group to open its contents in the same window; use the buttons on the upper panel to edit/remove it. Click *Edit* to adjust group settings: procedure is similar to that of creating a new device group.

## Replace Camera

Consider the following common scenario: one of the installed cameras needs to be replaced by a device that is better/more suitable/backup/etc. while keeping the whole configuration effective. As long as the replacement device has the same model, the process is virtually unnoticed by the software. If the new camera model does differ from the original, some modifications are required to be made in TRENDnetView EVO Console.

The procedure in TRENDnetView EVO Console is the following:

- go to *Devices*
- open the *Device properties* of the target device, go to the *Channels* tab and detach all the channels, then close the *Device properties*
- delete old device from the *Devices* list
- create a new device with the necessary model
- open the new device's *Device Properties*, go to the *Channels* tab, detach its new channel(s) - meaning they will not be created - and attach old one(s)

As a result, the *device* part of the configuration will be replaced and all the *channel* configurations will stay untouched.



Note that video stream specific configurations - resolution, FPS, frame adjustments - are not saved when re-attaching the channel due to differences between device capabilities. However, the channel permissions, membership, recording configuration and motion detector settings are all preserved.



## 24 Configure Channels


Channels are video streams received from physical devices attached to the system. Several channels can originate from a single device - in the case of multichannel devices, i.e., capture boards, but single channel can only be attached to one device at a time, as it makes no sense for a video stream to come from two cameras at once. Channels are created automatically at the same time as the source device but can later be detached and attached to different devices.

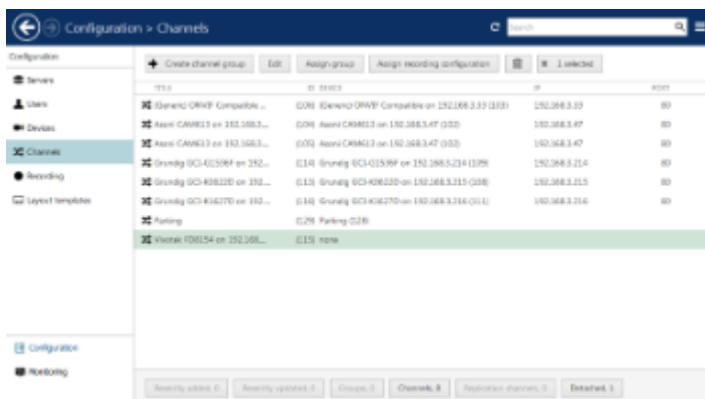
Channels include the video stream configuration settings - resolution, frame rate, bit rate and others - as well as all supplementary data streams, such as audio, motion and digital input/output events, PTZ control and camera-side analytics information. Recording configurations are assigned to channels and they are also displayed in TRENDnetView EVO Monitor.

To access the channel configuration dialog box in the TRENDnetView EVO Console, open the *Configuration* section and select *Channels* from the menu on the left side. Use the filters on the bottom panel to quickly access specific channel sets.

The upper panel buttons enable you to create new items in this category, as described below, and perform channel-specific actions, such as editing, assigning groups, assigning recording configuration and deleting selected channels. To select multiple items, hold *CTRL* or *Shift* and click items in the list.

 Channels currently **bound to devices** cannot be deleted: the recycle bin  button will only appear when detached channels are selected. To **remove a channel**, go to *Devices*, open properties of the target device and disengage the channel on the *Channels* tab by clicking the *Detach* button; also, you will be offered to delete all associated channels when you remove the device itself - this will also remove any existing shared channels.

 Channels that have any associated **rules** in the [Event and Action Configurator](#) **cannot be removed**. If you try deleting such a channel, you will get an error saying *The channel cannot be removed because it is in use*. In order to remove such a channel, you need to delete the rules related to it first. To do so, just go to the *Events & Actions* section, choose *Rules* in the menu on the left, select the target server and open the configurator, then remove the necessary rules from the central column by using the < and > buttons.



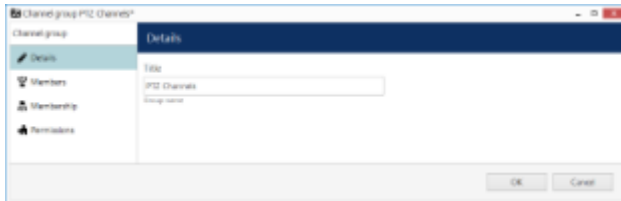
Configuration -> Channels

All available channels and channels groups will be listed here. The upper panel offers a range of configuration opportunities.

### Create Channel Group

Channel groups can be added for easier management in TRENDnetView EVO Console; by default, there are no built-in channel groups. Click "+ Create channel group" button to bring up the corresponding dialog box.

Enter the group title here, select channels to be group members and select higher level group(s) to contain target group as a member, if desired. Set user permissions for channels in this group.



Edit Channel group properties

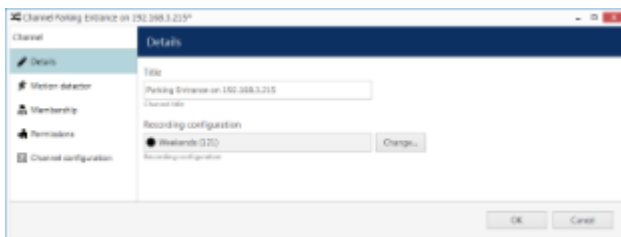
Click *OK* when you are ready: newly created group will appear in the item list.

## Edit Channel Group

Double-click any existing channel group in the list or use the *Edit* button in the upper panel to bring up the configuration dialog box. Available options are analogous to the ones displayed during group creation time.

## Edit Channel

Channels are automatically created together with each newly created device; it is not possible to create a channel separately. Click any channel in the list twice or use the *Edit* button on the upper panel to manage the channel properties.



Edit channel properties

The configuration dialog box enables the following changes:

- **Details tab:** change channel title and assign recording configuration
- **Motion detector tab:** choose between camera-side or software-side motion detection\*, default state is disabled
- **Membership tab:** select the target channel group to add this channel into
- **Permissions tab:** allow users and user groups to access and administer target channel
- **Channel configuration tab:** open an additional channel configuration dialog box to manage video stream settings, frame adjustments and Digital Input/Output

Please refer to the [Channel Settings](#) topic for detailed description for each of the tabs.

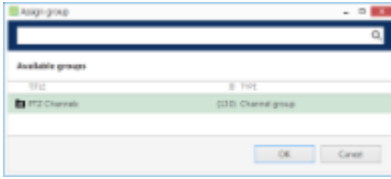
**Motion detector on the software side** has two options: high performance and high accuracy:

**High Performance mode:** this type of analysis is performed for only key frames whose frequency can vary from several frames per second to one frame every few seconds - this is less sensitive for picture quality, but greatly affects detector operation. CPU consumption is significantly lower due to this, and it can be additionally reduced by increasing time interval between two analyzed frames.

**High Accuracy mode:** this mode performs motion analysis for the whole video stream, so we recommend selecting this option when you want to achieve best detection results. The lower time interval means higher precision. Keep in mind that CPU and virtual memory usage is much greater if this mode is selected.

## Assign Group

Channel membership can be managed via the channel properties dialog box. To quickly assign group to any of existing channels, select desired channel(s) (use CTRL+click or Shift+click to select multiple items) and click *Assign group* button on the upper panel.



Assign channel group

Pick a group from the existing channel groups' list and click *OK* to save. If any of the channels already belonged to some group, it is not a problem: membership in multiple channel groups is allowed.

## Replace Camera

Consider the following common scenario: one of the installed cameras needs to be replaced by a device that is better/more suitable/backup/etc. while keeping the whole configuration effective. As long as the replacement device has the same model, the process is virtually unnoticed by the software. If the new camera model does differ from the original, some modifications are required to be made in TRENDnetView EVO Console.

The procedure in TRENDnetView EVO Console is the following:

- go to *Devices*
- open the *Device properties* of the target device, go to the *Channels* tab and detach all the channels, then close the *Device properties*
- delete old device from the *Devices* list
- create a new device with the necessary model
- open the new device's *Device Properties*, go to the *Channels* tab, detach its new channel(s) - meaning they will not be created - and attach old one(s)

As a result, the *device* part of the configuration will be replaced and all the *channel* configurations will stay untouched.

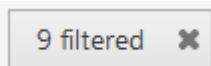


Note that video stream specific configurations - resolution, FPS, frame adjustments - are not saved when re-attaching the channel due to differences between device capabilities. However, the channel permissions, membership, recording configuration and motion detector settings are all preserved.

## Other

Select one or multiple channels/channel groups and click the *Disable* button on the upper panel to deactivate target items. **Disabled** channels will not be requested from actual physical devices, and, as a consequence, will not be recorded; neither will they be displayed in TRENDnetView EVO Monitor application(s).

The filter panel at the bottom enables you to view recently added/updated items, as well as other relevant filters. The filter that is currently active is highlighted blue: click the *N filtered* button to reset all filters and display all the available items again.



Filters

See Also

## 25 Channel Settings

The channel configuration dialog box has several setting categories; these are described in details in this topic.

### Details

Here you can change channel title and assign recording configuration.



Channel details

Click the *Change* button to choose the recording configuration: you can pick an existing configuration or create a new one, or a schedule on the spot from the same dialog box.

**⚠** Please choose *Continuous Recording* configuration for **edge** streams to ensure proper recording.

**💡** When you assign a **motion-based recording configuration** to a channel with a disabled motion detector, the software will automatically suggest enabling motion detection for the target channel. The camera-side detector is given priority; if it is not available, the software-side detector will be enabled and set to the high-performance mode. We recommend that you **review** the motion detector settings to make sure it operates as desired, especially if the camera-side detector is in use.

Note that if you leave motion detection OFF and assign motion-based recording configuration to the target channel, no data will be recorded.



Automatically enable motion detection

### Motion detector

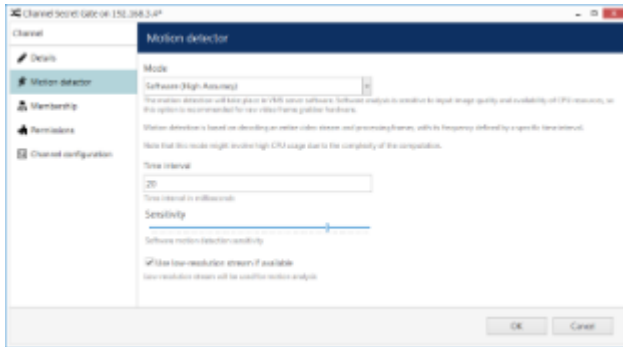
Choose between camera-side or software-side motion detectors; the default detector state is *disabled*.

**⚠** When selecting **camera-side motion detection**, make sure to go to device Web interface of the camera to enable and configure motion detection. Settings may vary depending on device manufacturer; also, check with TRENDnet to make sure hardware motion detection is supported for the target device.

Camera-side motion detection is recommended for two basic reasons:

- computational load is transferred from servers to devices, decreasing server load, and
- on most devices, hardware-side motion detection is performed on raw video stream, which means superior accuracy compared to software-side detector, as software only gets access to compressed stream.





Software-side motion detection settings


The **motion detector on the software side** has two options: high performance and high accuracy:

**High Performance mode:** this type of analysis is performed for only key frames whose frequency can vary from several frames per second to one frame every few seconds - this is less sensitive for picture quality, but greatly affects detector operation. CPU consumption is significantly lower due to this, and it can be additionally reduced by increasing time interval between two analyzed frames.

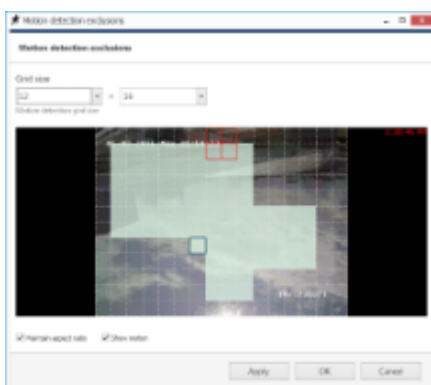
**High Accuracy mode:** this mode performs motion analysis for the whole video stream, so we recommend selecting this option when you want to achieve best detection results. The lower time interval means higher precision. Keep in mind that CPU and virtual memory usage is much greater if this mode is selected.

In both modes, the **level of sensitivity** can be adjusted, as can the time interval setting which defines the frequency of frame analysis.

Regardless of which mode you select, you can further decrease the amount of server-side calculations by using a **lower-resolution stream** (if available). For example, if your main stream is 3MP and your substream is D1, the motion detection engine will spend much less system resources on D1 analysis than it would spend on a 3MP image. Note that some cameras deliver lower-resolution streams as cropped high-resolution images (not resized, as it would be expected) - in such cases, using a substream for MD analysis will produce wrong results and therefore doing so is not advisable.

 Most cameras provide second stream as first stream image scaled to fit low resolution; however, some devices crop the centre of a high-resolution image to fit the small frame, and thus the substream picture appears as if it were zoomed in. Keep this in mind when you are using substream for live view and especially for software-side motion detector analysis.

Click the *Motion detection exclusions* button in order to set up **exclusion zones**. Note that these settings only cover the software-side motion detector; in order to configure the exclusions for the camera-side motion detector, go to the Web interface of the target device.



Set up exclusion zones for the motion detector

First, choose the **grid size** for the detector: this will define the size of the smallest detection region. Minimum grid size is 2x2 cells (resulting in four detection areas), and maximum size is 64x64 cells. Then, mark your desired exclusion area simply by clicking and dragging on the viewport; you can **draw** several rectangles to form a complex polygonal area. Exclusion area(s) will be highlighted light green. In order to cancel the selection, simply draw a

rectangle over it.

**Settings** in the bottom are here to ease the configuration process:

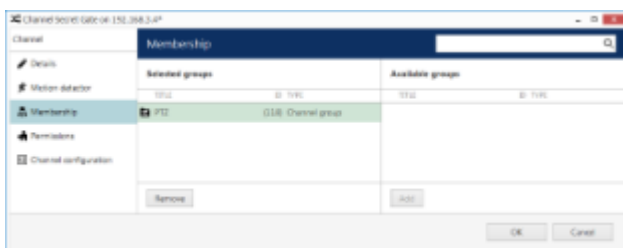
- Maintain aspect ratio: displays original picture proportions, if selected, or stretches the picture to fill the viewport
- Show motion: shows currently present motion, if selected

In order to test the behaviour of the selected grid size, enable the *Show motion* option, then click *Apply* and see how the detector works with your defined grid.

When you have finished, click *OK* to return to the main channel configuration dialog box.

## Membership

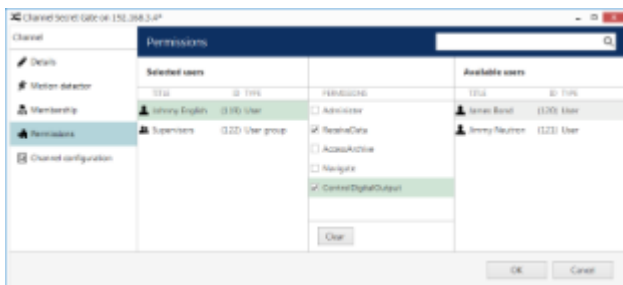
Choose the group(s) you want to contain the target channel as a member: double-click the relevant items or use the *Add/Remove* buttons below to select/deselect.



Choose channel membership

## Permissions

Allow users and user groups to access and administer target channel. To add a user or user group, simply select at least one permission, then remove all the users or user groups by clearing all permissions - either manually or by using the *Clear* button below.



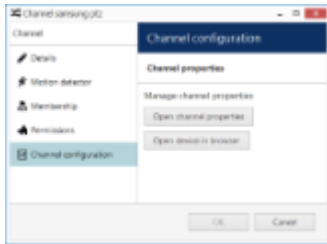
Change user privileges

## Data Source

Here, you can choose a data provider to embed some textual data with the video. Please refer to the [Data Sources](#) section of this document for setup guidelines.

## Channel Configuration

The *Channel Configuration* tab allows you to adjust advanced channel settings. Some of these can be changed via TRENDnetView EVO Console but sometimes software does not cover some of the device settings, so you are also given the option to go straight to the device Web interface - simply click the *Open device in browser* button to do this.



You can open the target device in browser or go to the software provided settings' dialog box

Click *Open channel properties* to access the additional channel configuration dialog box. The available tabs depend on the device model and capabilities: for some cameras, only basic configuration options are present, while for others, advanced settings are accessible. If you see that a camera has certain capabilities that are not configurable via TRENDnetView EVO Console configuration interface, go to the device's Web interface in order to change that specific setting.

- **Video Input tab:** set video transport (the available list of options depends on the device type and model; common types include HTTP, RTSP\* and native transport)
- **Video Adjustment tab:** fine-tune picture settings such as brightness and contrast level
- **Substream tab:** enable second (lower resolution) stream
- **Video Configuration tab:** choose streaming settings\*\*
- **Motion Detection tab:** with some devices, the camera-side motion detector must be explicitly enabled here
- **Events tab:** enable event generation from device digital inputs (DI)
- **External PTZ tab:** adjust external PTZ controller settings; communication port must match the communication port that the RS232/485 controller is connected to, and baud rate has to match the baud rate of your PTZ controller/analog PTZ camera
- **Digital Outputs tab:** enable control for camera digital (relay) outputs (DO)
- **RTSP tab:** appears if RTSP transport type has been chosen; set RTSP port and mode (TCP/UDP/multicast\*\*\*) here

\*You may have to specify the RTSP port on the corresponding tab if it differs from default (port 554 for most cameras). To do this, select the RTSP transport type and then click *Apply*: as a result, the RTSP tab will become available. For ONVIF devices, the RTSP port is set automatically.

\*\*Remember, the higher the resolution/bitrate/quality/frame rate you set, the more storage space and bandwidth it will use when recording. These settings also affect CPU/virtual memory resource consumption for live video and software-side motion detection.

\*\*\*Multicast mode availability depends on device integration.



Note that a valid administrative account login and password for the camera should be provided in *Device* settings in order to access and set the device configuration.

## Dewarp


Here, you can configure generic [dewarp settings](#) or enable dewarp engine for the Panomorph Enables® lens. For details, please see the subsequent topic on dewarp setup.

## 26 Audio

TRENDnetView EVO is capable of receiving audio streams from cameras, recording and playing them back, as well as sending audio back to the cameras from TRENDnetView EVO Monitor stations. It is also possible to bind an external audio source to a video channel.

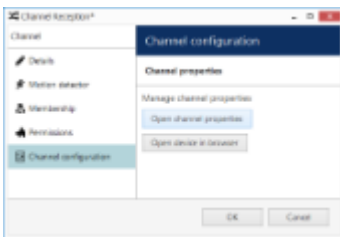
There are a few conditions stipulating audio feature availability:

- the target device should be capable of sending/receiving audio
- relevant additional equipment should be plugged into the device (microphone and/or speakers), if necessary (if these are not built in by design)
- one-way or two-way audio should be enabled and set up on the device side so that it is available via device Web interface
- selected audio codec should be G.711
- audio should be enabled in the channel settings via TRENDnetView EVO Console (see the description below)
- feature should be supported by TRENDnetView EVO for the target device (see the list of supported devices and features provided by TRENDnet)
- in order to send audio to the device, TRENDnetView EVO Monitor workstation must have a microphone connected to it - either a built-in or an external one
- if you plan to use an external audio source, relevant audio capturing equipment should be plugged into the server, to which the target device is connected, and enabled via Windows audio settings

 G.726 and AAC audio codecs, which are often implemented on the camera side, are not supported at this point, so please always select the **G.711** option. Setting other codecs on the device side may result in TRENDnetView EVO being unable to decode the incoming video stream.

### Enabling Audio

In order to **enable audio capabilities** for your desired device, open the *Configuration* section and choose *Channels* from the menu on the left, then open your target channel for editing - either by double-clicking it or by selecting it with a single click and clicking the *Edit* button on the upper panel. In the channel settings' dialog box, switch to the *Channel configuration* tab.

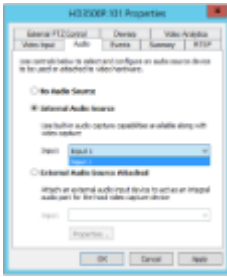


Go to the *Channel configuration* tab

If you plan to use camera-side audio and have not checked audio configuration on the camera side yet, click the *Open device in browser* button to go to the camera Web interface and adjust the settings, then make sure that audio is operable in the browser preview (you may need to install an ActiveX control in order to get it working; please check with your device's user guide for tips and browser requirements).

Press the *Open channel properties* button to bring up the dialog box and switch to the *Audio* tab. Here, you have three options:

- **No Audio Source:** disable audio functionality for the target channel (default)
- **Internal Audio Source:** enable audio reception from the device side and sending the reverse audio to the device
  - choose an audio input from the drop-down list, if the target device has multiple ones
- **External Audio Source Attached:** use an external audio source connected to the same server as the device, from which the target channel originates
  - choose an audio input device from the drop-down list, if the target server has multiple ones connected to it



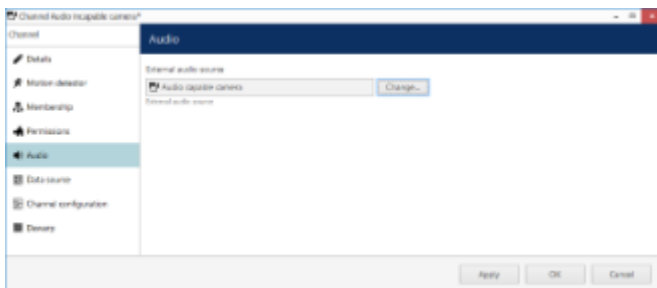
Choose the audio delivery option

When you have chosen your preferred option, click *OK* to save and exit, then close the *Channel settings* dialog box. You should now be able to listen to live audio, record it along with the video stream and talk back to your camera via TRENDnetView EVO Monitor and TRENDnetView EVO Mobile applications.

### Combining Video and Audio Sources

TRENDnetView EVO allows channels to use audio coming from a different channel in case the target channel does not have its own incoming audio or in case you wish to combine audio and video data from different channels. Such combinations are used for both live and recording.

In order to do this, double-click the target channel (the one without audio) in the channel list to open it for editing, then choose the *Audio* tab on the left.



Choose another channel as audio source


Click the *Change* button to see the list of channels and choose the one that you want audio to be coming from. Hit *Apply* or *OK* to save your changes.

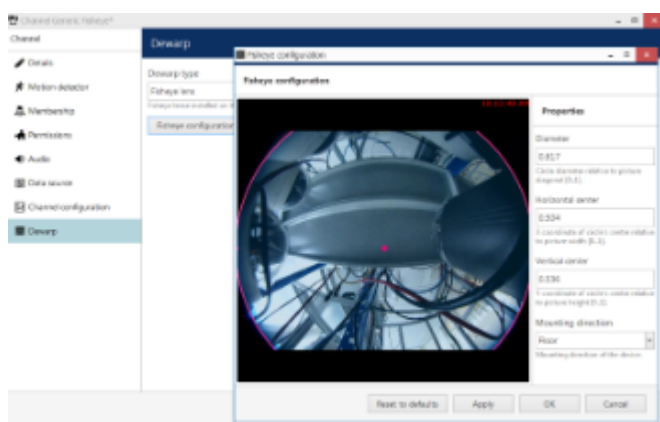
**⚠ Audio must be configured for the channel used as an external audio source via channel configuration as described earlier.**

## 27 Dewarp For Fisheye Cameras

Fisheye lens is an ultra-wide-angle lens that produces a wide panoramic image at the cost of strong visual distortion. Usually, devices with such lenses capture a 360-degree geometrically distorted image and projects it as a circle within the image frame. Fisheye lens can be either built-in by design or purchased separately and installed on your desired camera. TRENDnetView EVO dewarp feature allows to correct the perspective and obtain several "normal" views from a single distorted fisheye picture.

In order to access dewarp settings via TRENDnetView EVO Console, open the *Configuration* section and choose *Channels* from the menu on the left. Find the channel you wish to dewarp in the list (use *Search* or filters, if necessary) and double-click it in order to open it for editing (alternatively, use the *Edit* button on the upper panel to open the dialog box), then switch to the *Dewarp* tab.

 Please note that the location of dewarp settings has changed starting from the product version 1.5.0. For previous software versions, the corresponding settings can be found in the general *Channel Properties* dialog box.




Dewarp settings

You have the following options here:

- **Regular lens:** choose this option if you wish to disable the dewarp engine (selected by default)
- **Immervision Enables® lens:** choose this option if your camera has a Panomorph lens installed (you can check this in the camera specification)
- **Fisheye lens:** choose this option if your camera has a regular 360-degree view lens


For devices having a Panomorph lens, choose the lens model from the drop-down list - you can find this information in your camera specification or request it from the device manufacturer. You do not need to define any parameters manually in this case; rather, you only need to choose your camera mounting position, and the dewarp engine will automatically produce a correct dewarping result.

 Note that the dewarp engine will fail to operate if you choose a wrong Panomorph lens model. Check with your camera documentation and manufacturer for the precise lens model information.

For a regular fisheye lens, you are requested to define the fisheye sphere size and camera position by using the **overlay controls** and settings on the right side:

- Hemisphere **diameter:** click and drag any of the small pink circles on the overlay sphere to change its size and align it with the actual fisheye sphere in the picture
- **Horizontal** and **vertical** centre: automatically positioned in the picture centre, to change it click and drag the small pink circle inside the sphere
- **Mounting** direction: select camera mounting position from the drop-down list (wall/ceiling/floor)

For your convenience, the defined parameters are also displayed in the numeric form on the right side of the dialog box. Use the button below the preview to **reset** all dewarp settings to the default ones.

 In case you change the stream resolution at some point, its **aspect ratio** may also be changed and this will affect dewarp operation. Therefore, check the dewarp settings after changing the resolution and adjust the

parameters, if necessary.



Note that all dimensions are given not in pixels but in reference to the video stream size, therefore, relative values are used instead of absolute ones.

When finished, click *OK* to save the changes and close this dialog box and return to the general channel configuration. Dewarp results will immediately become available in the TRENDnetView EVO Monitor application; you can find the details on usage in the corresponding section of the TRENDnetView EVO Monitor documentation.

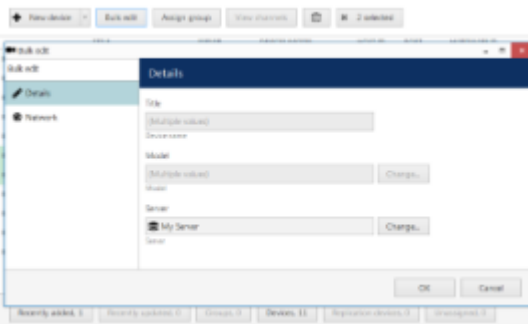
## 28 Bulk Edit for Devices and Channels

For easier resource management, it has been made possible to edit certain settings of devices and channels, e.g., recording settings and motion detection, for multiple items at once. To do so, simply select more than one device or channel in the item list using CTRL+click or Shift+click (use CTRL+A to mark all) and then click the *Bulk Edit* button on the top panel. Note that the button will not be there unless at least two items are selected.

- Some settings will be grayed out, indicating that these either cannot be changed at all or specifically via bulk edit
- *{Multiple values}* text in the setting field indicates that selected items have different options, e.g., have different recording configurations
  - leave such a field untouched if you wish to keep these settings different
  - change the value of such a field to something specific using the *Change* button to assign the same setting to all selected items
- Fields containing specific values or empty fields indicate that all selected items have the same setting (often default); change the value to assign the setting to all items at once

### Edit Multiple Devices

Select at least two devices in the list and click *Bulk Edit* on the top panel to bring up the corresponding dialog box. Some settings will be grayed out, indicating that these settings either cannot be changed at all or specifically via bulk edit.



Edit multiple devices using bulk edit

For devices, you will be able to modify the following settings:

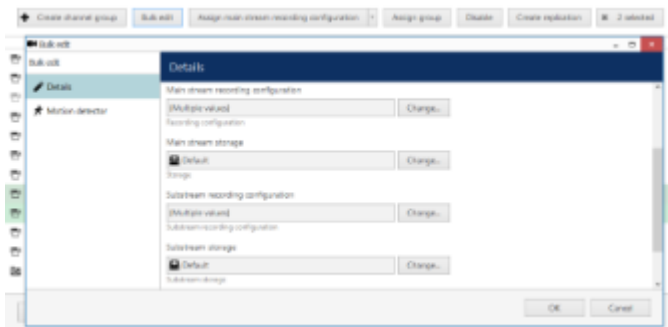
- *Details* tab:
  - **Server:** the server where the devices belong
- *Network* tab:
  - **Port:** HTTP port to connect to the device (for IP devices)
  - **Username and password:** user credentials to log in with

When done, click *OK* to save and close the dialog box: the settings will be applied to all the selected devices.

### Edit Multiple Channels

Select at least two channels in the list and click *Bulk Edit* on the top panel to bring up the corresponding dialog box. Some settings will be grayed out, indicating that they either cannot be changed at all or specifically via bulk edit: for instance, it is impossible to change the title field this way, as each channel normally has its own name, which therefore should be edited for each channel individually.





Edit multiple channels using bulk edit

For channels, the following settings can be changed via bulk edit:

- *Details* tab:
  - **Organisation\***: the organisation the channel belongs to
  - **Main stream recording configuration**: default recording setting for the main stream
  - **Main stream storage**: main stream recording destination
  - **Substream recording configuration**: default recording setting for the secondary stream, if available
  - **Substream storage**: secondary stream recording destination
  - **Edge\*\* recording configuration**: set *Continuous Recording* here for proper operation
  - **Edge\*\* storage**: recording destination for the footage fetched from the device
  - **Video lost time**: timeout for streams absence, after which the video stream is considered lost and the corresponding event is raised in the E&A engine
- *Motion detector* tab:
  - **Mode\*\*\***: choose between camera-side or software-side (high performance or high accuracy software modes available) motion detection

\*Global edition only

\*\*Only for channels coming from ONVIF devices

\*\*\*You will find more details on the motion detection modes in the *Channel Configuration* topic

When done, click *OK* to save and close the dialog box: the settings will be applied to all the selected channels.

## 29 Configure Recording Profiles


This topic describes how to create and configure stream recording profiles. For global server storage settings, please see the [Storage](#) section of this document.

To access recording configuration dialog boxes in TRENDnetView EVO Console, select the *Configuration* section and choose *Recording* in the menu on the left.

There are three types of resources in the *Recording* setup:

- **profile**: choose what data streams are recorded and in what mode (continuous/alert triggered)
- **schedule**: set a recording timetable based on profiles
- **configuration**: profile- or schedule-based recording configuration to be assigned to channels

Buttons on the upper panel give the option to create, edit and remove recording resources.

 Recording resource cannot be deleted if it is currently in use, i.e., when a recording profile is assigned to a recording configuration or a schedule, or when any of the recording resources are assigned to a channel.

### Create Recording Profile

Recording profiles allow users to set which data streams are recorded and how. Profiles cannot be assigned directly to devices; rather, these are used as components for recording schedules and recording configurations. For this reason, profiles do not include such settings as pre-recording interval: this setting is defined per-channel and, therefore, is set in the recording configuration.


To add a new recording profile, click the down arrow button near *+ New recording configuration* and select *+ New recording profile*. The profile creation dialog box will appear.



Recording profile properties

The dialog box has two sections: for continuous and event-driven recording. Note that you only can select one mode at a time: if continuous recording is selected, alert-based recording options will be greyed out.

To configure **motion-based recording**, enable *Video stream* in the *Alert recording* section and enable *Detected motion triggers alert* setting. If you wish to record still frames at low rate during non-motion period, keep the *Video stream* option in the *Continuous recording* section enabled and set your desired frame rate - e.g., 1FPS - then set high FPS or no limit in the *Alert recording* section. If you only wish to record while motion is present, deselect the *Video stream* option in the *Continuous recording* section.

 When you assign a **motion-based recording configuration** to a channel with a disabled motion detector, the software will automatically suggest enabling motion detection for the target channel. The camera-side detector is given priority; if it is not available, the software-side detector will be enabled and set to the high-performance mode. We recommend that you **review** the motion detector settings to make sure it operates as desired, especially if the camera-side detector is in use.

| Setting   | Description  | Default Value |
|---|--|---------------|
| Title   | User-defined recording profile name  | [empty]       |
| Video stream (continuous)                         | Select to enable continuous video recording  | Disabled      |
| Limit frame rate (for continuous video recording) | Set frame rate restriction for recorded video; note that for compressed video streams (e.g., H.264) actual frame rate may differ due to compression algorithms | 10 FPS        |
| Audio stream (continuous)                         | Select to enable continuous audio recording  | Disabled      |
| Data stream                                       | Select to enable data recording from the associated the data source  | Disabled      |
| VCA stream  | Select to enable continuous video analytics event  | Disabled      |

|  |  |            |
|--|--|------------|
|  | recording  |            |
| Video stream (alert)                         | Select to enable alert-driven video recording; video will only be recorded after alert generation, for the time period defined in the <i>Post-recording interval</i> | Disabled   |
| Limit frame rate (for alert video recording) | Set frame rate restriction for recorded video; note that for compressed video streams (e.g., H.264) actual frame rate may differ due to compression algorithms       | 10 FPS     |
| Post-recording interval                      | The time period during which alert-driven recording will be conducted after alert generation   | 10 seconds |
| Detected motion triggers alert               | Motion will act as a trigger for recording; enable this setting to set up motion-based recording   | Disabled   |

When done, click *OK* to save recording profile: it will appear in the item list of the *Recording* section. The profile is now ready for further configuration.

### Create Recording Schedule

Recording schedules are sets of recording profiles that define what recording profiles are used depending on the day and time of the week.

To add a new recording schedule, click the down arrow button near + *New recording configuration* and select + *New recording schedule*. The schedule creation dialog box will appear, allowing you to enter a user-defined name for the new schedule and add multiple profiles to define recording behaviour.



Click the *Add* button below to insert a new profile with defined start time.



Note that only begin time is set for each added profile: the end time is determined by the start time of the next profile. For example, if you require continuous recording during weekdays and motion-driven recording during weekends, your continuous recording profile should be scheduled to start on Monday at 12 a.m. and motion-driven one - on Saturday at 12 a.m..

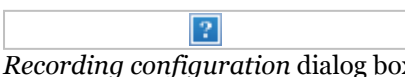
Click *OK* to save and add the profile to the schedule. Multiple profiles will be automatically sorted based on their start time.

Use the *Edit* and *Remove* buttons below to manage the profiles added. When you are finished, click *OK* to save; the newly created schedule will be added to the item list in the *Recording* section.

### Create Recording Configuration

Recording configurations are global recording arrangements that can be assigned to a per-channel recording setup. Recording configurations can be based on a single recording profile or on a pre-defined recording schedule.

To add a new configuration, click the down arrow button next to + *New recording configuration*.





The corresponding dialog box will then appear, allowing you to enter the configuration properties.

| Setting | Description                          | Default Value |
|---------|--------------------------------------|---------------|
| Title   | User-defined recording configuration | [empty]       |

|                        | name   |                  |
|------------------------|--|------------------|
| Controlled by          | Choose existing recording profile or schedule for current configuration or create a new one from the sub-dialog  | [none]           |
| Pre-recording interval | Set the pre-recording interval for alert-driven recording, if applicable; note that large pre-recording interval will increase virtual memory usage - if the used profile is not alert or motion driven, set 0 here to decrease memory usage | 10 seconds       |
| Amount quota           | Storage quota in GB: the maximum amount of space that can be taken up by recordings, if the maximum size is reached, the oldest footage will be deleted; set 0 to disable any limitations  | 0<br>(unlimited) |
| Duration quota         | Duration quota in days: the maximum number of days that recordings are kept in the archive; after this, recordings will be erased; set 0 to disable any limitations  | 0<br>(unlimited) |

Before setting recording limitations, make sure there is sufficient space in the server storage for all cameras. The quotas may be ignored if actual storage size is insufficient, and this will result in shorter footage durations.

 Note that quotas do **not** give priority to channels that are assigned configuration. For example, if you set the duration quota to ten days, it merely means that the maximum recording duration will be ten days for a channel with given configuration; this will **not** reduce recording duration for other channels.

 For security reasons, it has been made impossible to erase recordings from individual channels and/or time periods, so that archive integrity is preserved. Recordings are erased automatically when storage or duration quota is reached; if you need to erase footage from an existing channel, simply assign a recording configuration with an individual quota to it, wait until the footage is erased (actual timing depends on archive size) and assign a new recording configuration.

When you have finished, click *OK* to save and exit. Recording configuration will now be added to the item list and will become available in channel recording configuration.

## 30 Assign Recording Configurations

Recording configurations can be assigned to channels and channel groups to define how data streams are recorded. There are several ways to assign a recording configuration:

- when using device autodiscovery: via *Found channels* tab (automatically discovered channels are assigned the *Continuous recording* configuration by default)
- when creating multiple devices: from multiple channel creation dialog box, *Channel settings* tab (manually added devices are set not to be recorded by default)
- after adding a single device manually: via *Channels* section, *Edit channel* dialog box, *Details* tab (manually added devices are set not to be recorded by default)
- for existing channels, per channel: via *Edit channel* dialog box, *Details* tab
- for existing multiple channels: via *Channels* section, using *Assign recording configuration* button on the upper panel

Topic body below explains how to assign configurations via main TRENDnetView EVO Console window (latter option). All the rest alternatives are similar: you are offered configuration selection list at once from corresponding setup window.

### Enable Recording



Select the channels that are subject to recording configuration changes


In TRENDnetView EVO Console, choose *Configuration* section and select *Channels* from the menu on the left. Select one or multiple channels and/or channel groups (use *CTRL+click* or *Shift+click* to select several items at once) and then click the *Assign recording configuration* button on the upper panel. The list of available configurations will appear.



Choose a recording configuration for the channels selected

Note that you can only directly assign **configurations**, not profiles or schedules. Configurations are based on profiles or schedules (sets of profiles); please refer to the *Configure Recording Profiles* section of this document for details.

Click the + *New recording configuration* button below to create additional configurations from existing profiles/schedules at this point.

 When you assign a **motion-based recording configuration** to a channel with a disabled motion detector, the software will automatically suggest enabling motion detection for the target channel. The camera-side detector is given priority; if it is not available, the software-side detector will be enabled and set to the high-performance mode. We recommend that you **review** the motion detector settings to make sure it operates as desired, especially if the camera-side detector is in use.



Add new recording configuration


Press *OK* to save and go back to the channel list: newly created recording configuration will be automatically assigned to channels previously selected.

### Disable Recording

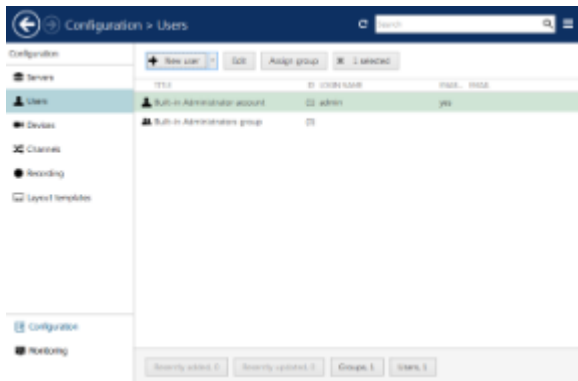
To disable recording for any channel(s), choose the *No recording* configuration, which is present in the list by default. If you have deleted it, simply create a new recording profile without any streams selected for recording and then create a recording configuration for this profile.

## 31 Add Users and User Groups

User management is accessible via the *Users* component of the *Configuration* section. By default, the system already features a built-in global Administrator account and built-in Administrators group.

 The built-in Administrator user account and built-in Administrators group are root users with access to absolutely all the available resources. As a result, resources choice is unavailable for the Administrators group, and it is also impossible to add Administrator user to any other group.

Any users added as members to the built-in Administrators group will have the same full authority as root users.



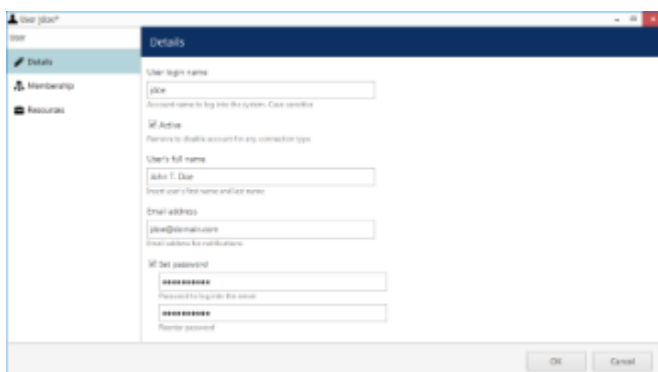
Configuration -> Users

### Add Users

Click the + *New user* button on the upper panel to bring up the configuration dialog box.

### Details

Enter user login information here.





Enter user details

The table below details the available settings.

| Setting         | Description  | Default Value |
|-----------------|--|---------------|
| User login name | Alphanumeric user name for login, <b>no spaces</b> allowed | empty         |
| Active          | Allow the user to log in via TRENDnetView EVO Console and  | Enabled       |

|  |  |                         |
|--|--|-------------------------|
|  | TRENDnetView EVO Monitor:<br>any users who have been disabled will not be able to use software   |                         |
| User full name                                     | User full name   | empty                   |
| Email address                                      | User email address used for notifications  | empty                   |
| Set/new password                                   | Enable to enter a password and re-enter it to make sure no typos were made; mandatory when creating a new user   | empty                   |
| Password never expires                             | User will not be prompted to change his password once in a while; enable this to ensure a permanent password for this user account (this setting can be overridden by the <i>User must change password..</i> setting in the same dialog box); otherwise, password will expire after the number of days specified in the <a href="#">server security policy</a> | Disabled (not selected) |
| User must change password at next logon            | User will be prompted to change his password upon his next logon attempt; enable this if you want to force user change the password even if his password is set to never expire  | Disabled (not selected) |
| User cannot change password                        | Enable this to prevent the user from changing his password; this option is not available if user password is not permanent or if you have selected to force user change their password at next logon using the settings above  | Disabled (not selected) |
| PTZ Priority                                       | 0 = lowest, 10 = highest   | 5                       |
| Override default limit of simultaneous connections | Maximum number of simultaneous connections allowed from this user account; the setting has priority over <a href="#">server-defined</a> limitations; 0=unlimited   | Disabled (not selected) |

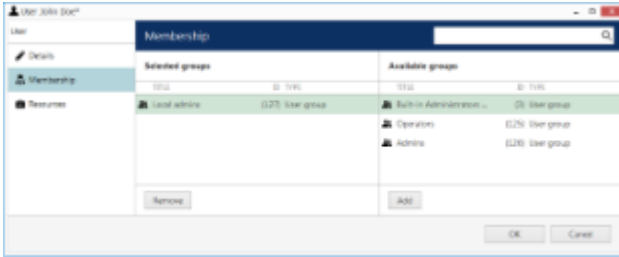
 Deleting a user also removes all the settings related to that user; restoring these may be time-consuming. Use the *Active* setting to enable/disable users and temporarily block access for those.

 If two or more users try using PTZ control of a device at the same time, **PTZ priority** is used to decide who gains access first: user with a lower priority is blocked for ten seconds to allow a higher-priority user to use PTZ. If two users with the same PTZ priority have an access conflict, they will be both granted PTZ access simultaneously.

Default PTZ priority for all users, including those built-in and imported, is equal to five (medium priority). You can assign any user a higher PTZ priority (six to ten) or a lower one (four to zero) by editing individual user properties.

## Membership

Choose which groups you want the selected user to be a member of. Every user can participate in one or multiple groups, depending on the system structure.

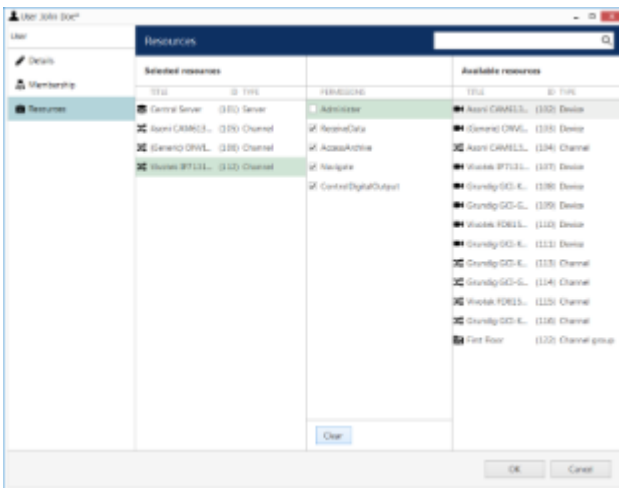


Add the groups you want the selected user to be a member of

Manipulate the groups by double-clicking a group or using the *Add/Remove* buttons below. Use the *Search* field in the upper-right-hand corner to filter the groups available.

**Resources**

Each user can be granted [permissions](#) for server and channel/channel group administration. Select resources by adding at least one permission; remove them by clearing permissions using the *Clear* button below, or simply by double-clicking them in the *Selected resources* list.



Add resources for the selected user

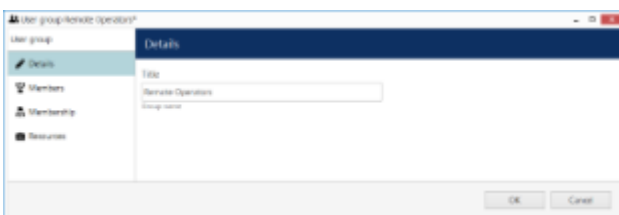
Click *OK* when you have finished to return to *Users*; the newly created account will be added to the item list. Use the buttons on the upper panel to edit user details at any time, to quickly assign groups and remove specified users (hold *CTRL* or *Shift* to select multiple items at once).

If there are a large number of user accounts, the *Search* field in the upper-right-hand corner and the content filters in the bottom panel can help you quickly find the accounts you are looking for.

**Add User Groups**

When the number of users is large, it may be more convenient to create multiple user groups and then distribute resources between user groups, rather than between individual users. One user can be a member of several groups.

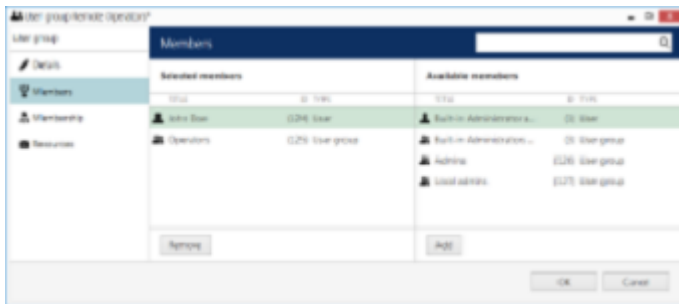
Click the down arrow near the + *Create new user* button and select *New user group* from the drop-down list to bring up the configuration dialog box.



New user group

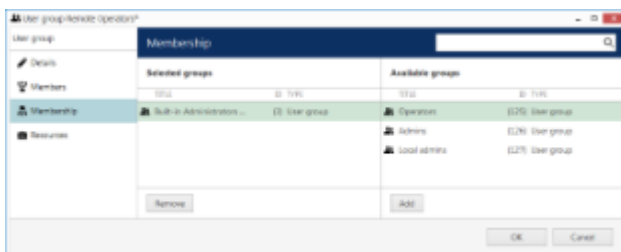


In the *Details* tab, enter group name.



Choose group members

In the *Membership* tab, choose which users and/or user groups will become members of the target group: manipulate items by double-clicking them or using the *Add/Remove* buttons below.



Choose group membership

In the *Membership* tab, select the group(s) you want to include the current group as a member: manipulate items by double-clicking them or use *Add/Remove* buttons below.

Finally, you can grant resources permissions using the *Resources* tab in a similar way to adding a single user. Select resources by adding at least one permission; remove them by clearing the permissions using the *Clear* button below, or simply by double-clicking them in the *Selected resources* list.

Click *OK* when you have finished to return to *Users*; the newly created group will be added to the item list. Use the buttons on the upper panel to edit the group details at any time. If there are a large number of user accounts, the *Search* field in the upper-right-hand corner and the contents filters in the bottom panel can help you to quickly find the accounts you are looking for.

## 32 Permissions and Membership

### Permissions

You can handle the user and user group permissions for channels, devices and servers via the *User* and *User group* configuration dialog box -> *Resources* tab, or via server/device/channel settings -> *Permissions* tab.

All the available resources are listed in the column on the right; double-click the items or use the *Add/Remove* buttons below to move items between columns. When you have finished, click *OK* to save and exit.

The following basic types of permissions are available:

- **Server**
  - Administer: access server configuration
  - Access archive: access to all playback modes for non channel-specific footage of the target server
- **Channel**
  - Administer: access channel configuration
  - Receive device data: live view
  - Access archive: channel availability in playback, instant playback, sequence and smart search
  - Navigate: pan, tilt and zoom a PTZ capable device, from which the target channel originates
  - Control digital output: send commands for DI control
  - ManageBookmarks: add new bookmarks to the target channel footage
- **Network**
  - Administer: access network configuration
- **External Service**
  - Administer: change external service settings via TRENDnetView EVO Console
- **External Service Group**
  - View: see and browse the data coming from the external service in TRENDnetView EVO Console
- **Layout**
  - View: see and use the layout in TRENDnetView EVO Monitor
  - Administer: delete or replace existing layouts via TRENDnetView EVO Monitor
- **Layout Groups**
  - View: see and use layouts from the target group in TRENDnetView EVO Monitor
  - Administer: add new shared layouts from TRENDnetView EVO Monitor and delete existing layouts
- **Visual Group**
  - View: see visual group contents in TRENDnetView EVO Monitor\*
  - Administer: edit visual group contents in TRENDnetView EVO Console
- **Map**
  - View: see and use the map in TRENDnetView EVO Monitor
  - Administer: change map settings in TRENDnetView EVO Console
- **Video Wall**
  - View: see and use the video wall in TRENDnetView EVO Monitor
  - Administer: change video wall settings in TRENDnetView EVO Console
- **User Button**
  - View: see, use and attach the target user button to viewports in TRENDnetView EVO Monitor
  - Administer: change user button settings in TRENDnetView EVO Console

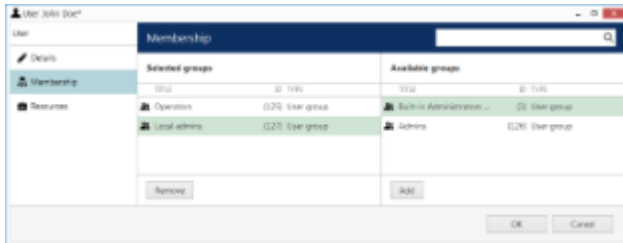
\*A visual group will only be displayed in TRENDnetView EVO Monitor if the user has permissions to see at least one visual group element.

### Membership

Users can be grouped logically to make permissions management easier. Groups can overlap, meaning that a single user can belong to multiple groups at once, and some groups can be nested - i.e., one group can contain one or more

other groups.

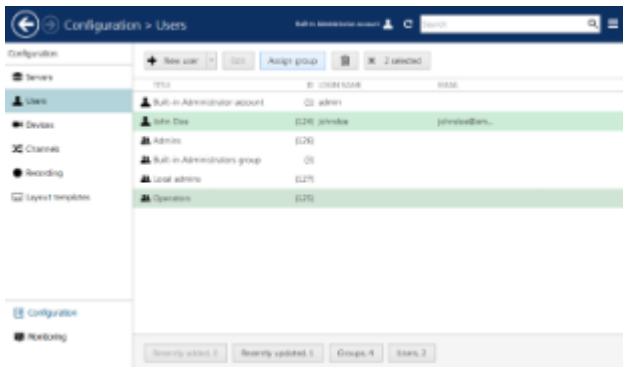
To manage user membership from the user configuration dialog box, double-click any user. This will open the properties window, where you can switch to *Membership* tab. Here you can pick which group - or groups - this user will be a member of.



User membership

Double-click on groups or use the *Add/Remove* buttons below to move groups between columns. When you have finished, click *OK* to save changes and exit.

Alternatively, you can select one or multiple users from the users list, then click the *Assign group* button on the upper panel: a list of available groups will appear, allowing you to select one of the existing groups. After this, click *OK* to add selected users to the target group.



Select multiple users and assign them to a group

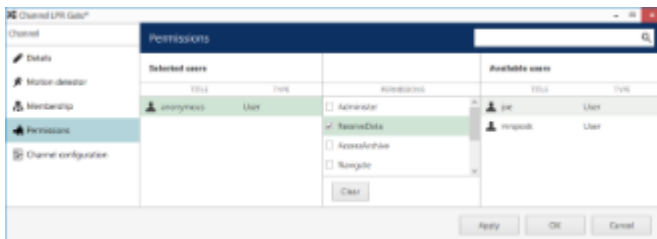
We strongly recommend grouping users and resources as it makes the permission management process much easier. Individual user permissions can be combined with permissions inherited from multiple groups at once.

### 33 Anonymous User

Anonymous user is a built-in user account, which has been designed for unauthorised access to video streams via HTTP API - a very basic example of TRENDnetView EVO API usage.

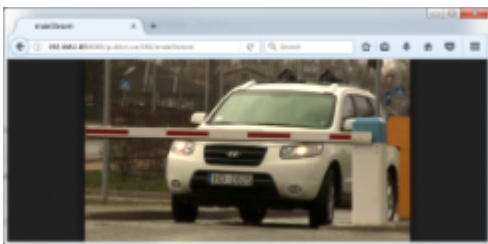
The anonymous user is disabled by default and does not have any permissions. In order to allow HTTP access:

- **enable** the anonymous user: double-click him in the user list, mark him as active, then save;
- **add** the *Receive Data permission* for this user in the properties of the target channel(s).



Add permission for the anonymous user to receive live view data

Now you can use a short link to receive live video feed over HTTP from your configured channels without authorisation.



Live stream received with anonymous URL

The link can be embedded into your own webpage to provide 'Live Cam' functionality.

**HTTP link** is built as follows:

*IP:PORT/publicLive/<channel\_id>/mainStream*

where

- *IP* is server IP address or hostname,
- *PORT* is server HTTP port (8080 by default),
- *<channel\_id>* is internal channel identifier, which can be looked up in TRENDnetView EVO Console when IDs are enabled in the application settings.

Example: *192.168.1.83:8080/publicLive/184/mainStream*

**⚠** This functionality requires that [Streaming Server](#) is enabled (HTTP port is not set to zero in the target server settings).


In order to see the channel identifiers in TRENDnetView EVO Console, go to the application settings via main menu button in the upper-right-hand corner and choose *Settings*. In the dialog box, enable the *Show object IDs* option and save.




Enable object identifiers in TRENDnetView EVO Console

### 34 Live Podcasts

TRENDnetView EVO channels can be shared by streaming over RTMP and thus be used for live casting - either with popular streaming services or with your own RTMP server. This manual covers examples of how to set up live streaming for Youtube and Wowza live casts - working with other RTMP servers is similar.

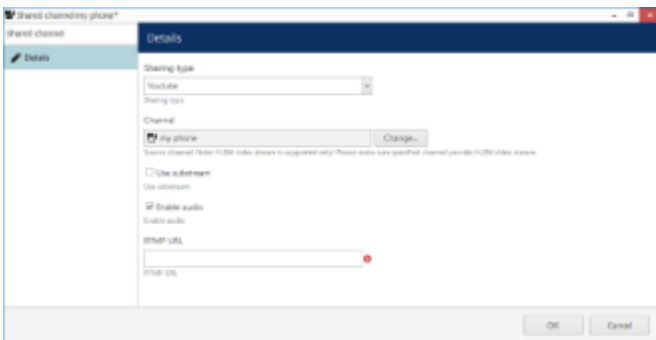
 Before sharing a channel, check its settings and make sure that:

- the channel is enabled in the configuration and video is available,
- stream codec is **H.264** (other codecs will not work!),
- if you want to use substream and/or audio, make sure you have enabled them in the channel properties.

 TRENDnetView EVO free edition only allows 1 (one) podcast per server.

To access **shared channel management** in TRENDnetView EVO Console, go to the *Configuration* section in the bottom left panel and select the *Live Podcasts* component in the menu on the left.

Click the + *New live podcast* button in the upper panel to bring up the shared channel creation dialog box.



Sharing a channel for Youtube live streaming

First, choose where you are going to stream the channel: it can be a specific public service or generic RTMP streaming to a service that is not listed, including your own RTMP server; depending on your choice, settings may vary to suit the specific service. Then, enter streaming configuration.

The table below explains the settings in details.

| Setting       | Description  | Default value |
|---------------|--|---------------|
| Sharing type  | Choose between Youtube, Wowza or generic RTMP streaming  | Generic RTMP  |
| Channel       | Target channel to be streamed  | [none]        |
| Use substream | When not enabled, main (higher resolution) stream will be used; enable this option if you want to cast the lower resolution stream | Disabled      |
| Enable audio  | Enable this option to include sound for the shared channel, works both for main and secondary streams                              | Enabled       |
| RTMP URL      | Full URL to be used for casting, the link is normally provided by the RTMP streaming engine  | [empty]       |

#### Youtube Live Streaming

Youtube live casting can use RTMP streams from your TRENDnetView EVO server for further streaming.

In order to set up live streaming with Youtube, log in to your account on youtube.com and go to [Creator Studio tools](#)

-> Live streaming -> Stream now. If you have never created any live casts before, you may have to verify your account - just follow the guidelines on the website.

 You need to have a valid Youtube (Google) account in order to be able to use this type of streaming, and comply with Youtube live streaming conditions. TRENDnet is not responsible for the third-party service operability and policies.


Scroll down to the *Encoder Setup* section: you will need the link and the secret stream key in order to build the RTMP link.

In TRENDnetView EVO Console, open the *Shared Channels* section and add a new shared channel, fill in the settings as follows:


- **Sharing type:** Youtube
- **Channel:** target channel from the list of existing channels
- **Use substream:** up to you
- **Enable audio:** up to you
- **RTMP URL:** *rtmp://<server\_URL>/<stream\_key>*, where
  - *rtmp://* indicates that RTMP protocol will be used for streaming
  - *<server\_URL>* is Server URL link provided by Youtube, e.g., *a.rtmp.youtube.com/live2/*
  - *<stream\_key>* is Stream Name/Key generated by Youtube in the form of xxx-xxxx-xxxx-xxxx

## Wowza Streaming

Alike Youtube, Wowza streaming engine can receive video feeds from TRENDnetView EVO server and stream them out to any device. You need to install Wowza Streaming Engine first and then configure live streaming as described below.

 TRENDnetView EVO does not include any installation files or licenses for Wowza Media Systems software. Wowza engine is used as a third-party agent capable of receiving RTMP streams; all installation, setup and management of this engine is to be handled by you or your Wowza administrator, and TRENDnet is not responsible for the third-party engine operability and policies.


First, go to your Wowza Streaming Engine Manager and create a **new application** of the *Live* type.

 Once you have created a new application, go to the *Source Security* settings of that application in your Wowza Streaming Engine Manager and set **RTMP Sources** security to **Open** (no authentication). This is required as TRENDnetView EVO currently does not support authentication for RTMP streaming.


Then, go to TRENDnetView EVO Console, open the *Shared Channels* section and add a new shared channel, then fill in the settings as follows:

- **Sharing type:** Wowza
- **Channel:** target channel from the list of existing channels
- **Use substream:** up to you
- **Enable audio:** up to you
- **RTMP URL:** *rtmp://<ip>:<port>/<app\_name>/<stream\_name>*, where
  - *rtmp://* indicates that RTMP protocol will be used for streaming
  - *<ip>* is Wowza Streaming Engine server address - either IP or domain name
  - *<port>* is target (remote) RTMP port, 1935 by default
  - *<app\_name>* is the name of the application you have created in Wowza
  - *<stream\_name>* is a custom name for the RTMP stream (can be any name, use underscores instead of spaces), will appear in Wowza automatically

When you have finished, click *OK* to save and exit; the newly created channel share will appear in the item list and TRENDnetView EVO server will attempt to stream the data to the target URL at once. If you wish to pause the streaming, use the *Disable* button on the top panel. After sharing the channel, you should be able to view the stream on the RTMP server side and start the casting, if it has not started automatically.

 If you have trouble receiving the stream on the RTMP server side, check the following:

- make sure all used software is allowed through the firewall(s),
- restart the RTMP server,
- refresh connection list on the RTMP server side or refresh the webpage;
- remove the shared channel in TRENDnetView EVO Console and try sharing the channel anew.

To edit any of the previously created channel shares, double-click it in the item list or select any with single mouse click and then hit the *Edit* button on the upper panel. Use the *Search* field in the upper-right-hand corner to quickly find the existing items, and the *Disable* button to **disable and enable** channel sharing. Use the  recycle bin button in the upper-right-hand corner to remove one or multiple shares: hold *CTRL* or *Shift* to select several items at once, or *CTRL+A* to select all (actual original channels will not be affected).



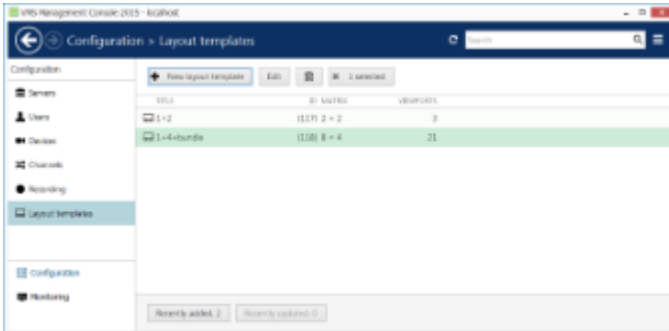
When you remove the original channel (with or without its originating device), all shared channels based on it are removed from the configuration automatically as well.

Filters in the bottom panel allow you to load recently added/modified items.

## 35 Layout Templates

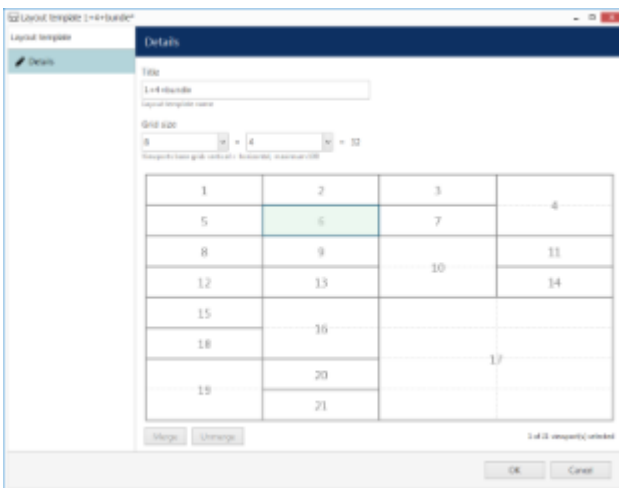
Custom layout templates can be created and then used in any TRENDnetView EVO Monitor applications connected to the target server.

To access layout templates via TRENDnetView EVO Console, go to the *Configuration* section in the bottom left panel and select the *Layout templates* component in the menu on the left. Use the *Search* field in the upper-right-hand corner to filter existing items; press *Refresh* button to reload the item list.



Layout templates

Click the + *New layout template* button on the upper panel to bring up the configuration dialog box.



Create new custom layout template

Enter the template name, choose grid size and then modify the grid, if desired: you can select multiple cells at once with your mouse and then use the *Merge* and *Unmerge* buttons below to create custom cell combinations. Note that you can only create rectangular regions, not just any polygonal areas.

When you have finished, click the *OK* button; the newly created layout template will appear in the item list and it will also appear in any connected TRENDnetView EVO Monitor applications after synchronization.

Use the *Edit* button to alter any template at any time: modifications will immediately be synchronised with TRENDnetView EVO Monitor after you save the changes and modified templates will be available for use. However, if the modified layout was already in use, its current output will not be altered, allowing you to save the old layout in TRENDnetView EVO Monitor. Drag and drop the new layout template to the TRENDnetView EVO Monitor live view display to load the updated template version.



## 36 Data Sources

This TRENDnetView EVO server functionality allows you to receive information from third-party textual data providers like Point of Sale (POS) systems, bank machines and a multitude of other serial data devices capable of delivering data strings over the following connection types:

- UDP port (remote connection)
- TCP port (remote connection)
- COM port (direct hardware connection to the server)

The procedure of configuring the data reception from these sources is briefly as follows:

- create a data source, then
- create a data source profile, then
- go back to the data source settings and use the data source profile as a basis for the data source, and then
- assign the data source to the desired channel(s).

Gathered data is then stored and displayed embedded with the video stream from the channel(s) you choose to associate with it.

### Add Data Source

First, go to the *Configuration* section of TRENDnetView EVO Console and choose the *Data Sources* component from the menu on the left. Then, click the + *New data source* button on the upper panel to open the data source creation dialog box.

Give your data source a comprehensive name. Then, choose the server that is going to be accepting the serial data. Leave the *Data source profile* field **empty** for now and select the desired transport for the data connection. You will need to return here and choose the profile after you create the profile itself.

There are three possible connection types: UDP port, TCP port and COM port.

### TCP/UDP Connection

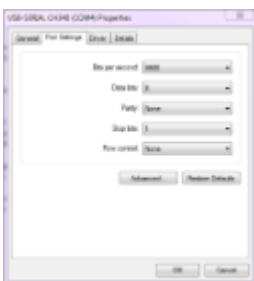
Choose this option if your data provider is configured to feed the textual data into a specific TCP or UDP port.

You simply need to specify the incoming port for the server to listen to in the settings here. Make sure the port is opened on all intermediate firewalls and not used by any other software on the server machine.

### COM Port Connection

Choose this connection type if your data provider is connected directly into the TRENDnetView EVO server's COM port.

For this configuration, you need to match the serial connection settings with those used from the device side. Normally, this can be checked via Windows Device Manager for your target COM port.



COM port settings in the Windows Device Manager properties

The following serial port settings should be specified:

- **Baud rate:** information transfer rate (9600 by default)
- **Data bits:** the number of bits transmitted over the serial interface (8 by default)
- **Parity:** how the parity is checked (no parity by default)

- **Stop bits:** the number of bits to specify the end of a byte; if you select data bits to be 6, 7, or 8, then the default value is 1 and the other available choice is 2; if you select data bits to be 5, then the only correct choice for the stop bits is 1.5
- **COM port:** serial port to read the data from, choose from the list of active ports

Other serial port parameters are not required for the TRENDnetView EVO server.

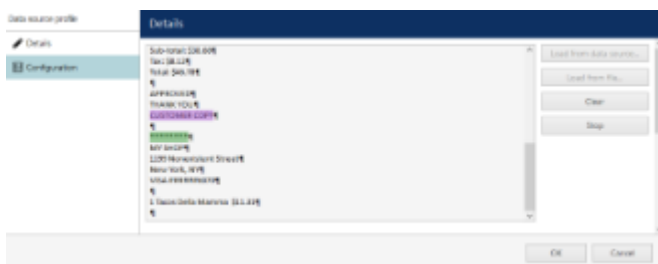
Click *OK* to save and close the data source creation dialog box. The next step is to create a data source profile to help the server determine how the textual data should be parsed.

## Add Data Source Profile

In the *Data Sources* section, click the little arrow next to the data source creation button and choose the + *New data source profile* from the list. In the *Details* tab, enter a custom name for your data source profile and switch to the *Configuration* tab.

It is now necessary to use an example of the data strings to set up the profile. This part of the setup is the same regardless of what type of data source you have.

You can either use the **actual data source** you have configured on the previous step, or use a **text file** that contains the lines of data in the expected format (note that the same encoding should be used). Use the buttons on the right side of the text field to load the sample from either source. Use the *Stop* button to finish displaying new text from the data source (do this if you see that the loaded data lines are sufficient to facilitate the configuration process); use the *Clear* button to erase whatever is in the preview window before loading a different file or strings from a data source.



Load a text sample to configure the data source profile

Based on the loaded sample, set the required parameters below:

- **Encoding:** pick the correct encoding to ensure your text is readable
- **Line ending:** choose what non-printable characters represent the end of the line, available options are:
  - CR - carriage return
  - LF - line feed
  - CR+LF - both together
- **Transaction start:** specify text that designates the beginning of the data block
- **Transaction end:** the very last data line of the expected data block

You can copy and paste the strings for transaction start and end directly from the sample preview field.



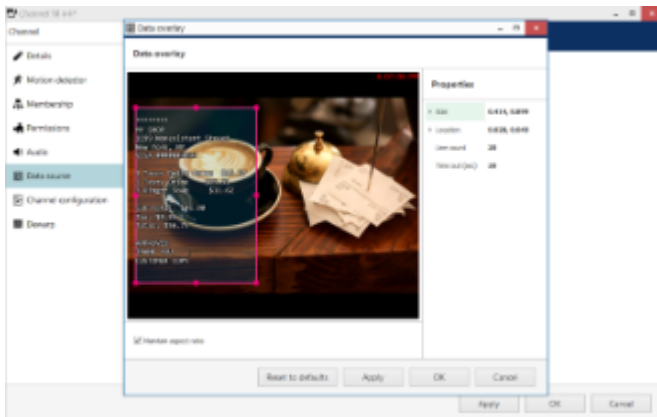
Data source profile configuration settings

Click *OK* to save and close the profile configuration dialog box. The next step you need to take is to **go back to your data source settings** and specify the newly created data source profile that was missing in the initial configuration. You can use a single data source profile for different data sources.

## Assign Data Sources to Channels

Finally, go to the *Channels* section and pick a channel that needs to be associated with the data source. Double-click the channel to open it for editing and switch to the *Data source* tab.

Click the *Change* button and pick your pre-created data source for this channel. Then, click the *Overlay configuration* button below to define where and how the text will appear on top of the video stream.



Set up overlay text alignment within the viewport

Use the visual control to specify the text output area within the video stream viewport. There are also numerical coordinates on the right side of the preview for your reference.

**⚠** Make sure the video from the target channel is available before setting up the text overlay in order to ensure correct text placement.

Additional settings are available here:

- **Line count:** set the desired number of text lines to be fitted into the overlay area (default value is 20)
- **Timeout:** the amount of time in seconds for every line of data to stay on the screen at maximum (older text will disappear and text will be shifted upwards)

When ready, click *OK* to save and close the data overlay dialog box, then click *OK* to save and close the channel configuration window.

Now your textual data from the data provider will be displayed overlaying the video stream in TRENDnetView EVO Monitor and both live view and in the instant/regular archive playback mode in case the corresponding option is enabled in the recording profile for the target channel; also, it will be possible to search through the recorded data.

**💡** If you wish the serial data to be available in the video playback mode in TRENDnetView EVO Monitor application, make sure to set the *Data stream* to be recorded in the corresponding recording profile.

Note that the overlay text will not be displayed in other views and will also be unavailable for video export (not supported at this point).

## 37 Streaming Server Configuration

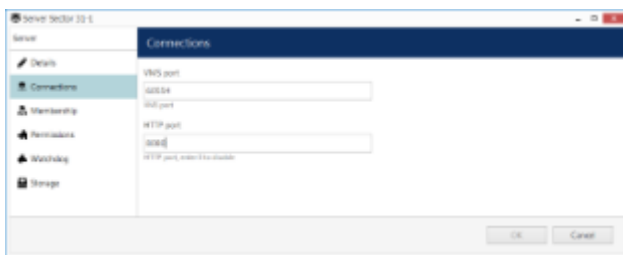
Get permanent access to live streaming and archive video, no matter where you are in the world. The TRENDnetView EVO Streaming Server allows quick and easy access to your cameras via web browser and/or native mobile applications.

TRENDnetView EVO Streaming Server is a part of TRENDnetView EVO software integrated into the TRENDnetView EVO Server core. It is designed for video streaming to multiple web-browsing platforms such as Mozilla Firefox and Google Chrome. Some major TRENDnetView EVO Streaming Server features are: video stream live view, archive playback, Pan-Tilt-Zoom control. The TRENDnetView EVO Streaming Server optimises video streaming for web or mobile clients, to a degree dependent on connection speed and device viewing capabilities.

At this point, the browsers recommended for clients are Google Chrome and Mozilla Firefox (under any operating system).


 Audio and event streaming are **not** supported by the TRENDnetView EVO Streaming Server.

TRENDnetView EVO Streaming Server configuration on the TRENDnetView EVO Console side is simple and only consists of HTTP port for streaming connections. To access the TRENDnetView EVO Streaming Server setup in TRENDnetView EVO Console, go to the *Configuration* section and then click *Servers* in the menu on the left; double-click the target server to bring up the configuration dialog box and switch to the *Connections* tab.



Server setup

You only need to define a HTTP port for TRENDnetView EVO Streaming Server; the default port is 8080. No other settings require modification.

 Please make sure that your chosen HTTP port:

- is opened on the target server firewall;
- is properly configured for port forwarding on all intermediate network equipment, if necessary;
- is not being used by any other application or service on the target server.

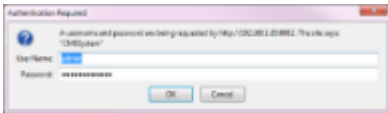
Once you are done with the settings, click *OK* to save and close the dialog box. Your TRENDnetView EVO Streaming Server will now be set up and accessible via a local - and, if used, external - IP. You can immediately check the connection at once: just open your browser and type: `<local IP>:<HTTP port>`; for example, server configuration for the snapshot above will require `192.168.1.82:8082`.

## 38 Streaming Server User Interface

When configured, TRENDnetView EVO Streaming Server is accessible via browser from the server itself and from computers on the local network, and, if system is not isolated, from the Internet. To access the TRENDnetView EVO Streaming Server, open your browser and type:

<Server IP>:<HTTP port>

then press *Enter*. Your browser will connect to TRENDnetView EVO Streaming Server, and user authentication will be requested: enter your user name and password to proceed.



Authentication required

After logging in, you will see TRENDnetView EVO Streaming Server user interface:

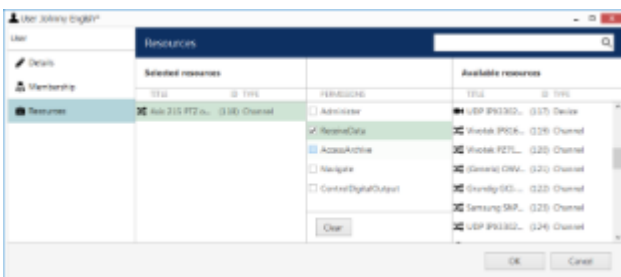
- **left menu:** channel list and setup tabs
- **main window:** live-streaming area
- **upper-right-hand corner:** layout templates and layouts
- **upper-left-hand corner:** the TRENDnetView EVO Streaming Server logo; click the logo to extend viewing area by minimising the menu on the left



The channel availability depends on the user permissions. The built-in administrator has access to all resources.

To allow channel access, go to *Configuration* section of TRENDnetView EVO Console, choose *Users*, then select the user or user group for editing and add privileges on the *Permissions* tab:

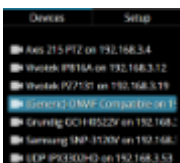
- *Receive Device Data:* enables live view
- *Access Archive:* enables access to recorded video
- *Navigate:* enables PTZ control



Set user permissions in order to see channels in TRENDnetView EVO Streaming Server

### Left Menu: Configuration

The menu on the left has two tabs: *devices*, which shows which channels are available, and *setup*, which contains streaming settings. Click on the titles to switch between them.



Devices

The video sources are loaded in a single list. To start streaming from a particular device, select layout template from the menu in the upper-right-hand corner, then click your desired viewport so that it is highlighted blue, and then

click a device from the list.



Setup

The *Setup* tab allows you to choose PTZ control behaviour and configure stream options:

- **PTZ controls:**
  - **Always:** if the camera supports Pan-Tilt-Zoom, virtual PTZ sphere will be always shown as overlay control
  - **When selected:** if the camera has PTZ capabilities, the virtual PTZ sphere will be shown when the corresponding stream is selected
  - **Never:** do not show PTZ controls at all, meaning that PTZ functionality will be disabled
- **Stream options:**
  - **Main:** only the first (main) stream, [usually] of a larger resolution will be used for all devices
  - **Secondary:** only the secondary stream (substream), [usually] of a smaller resolution will be used for all devices
  - **Auto:** the most appropriate stream will be selected automatically based on viewport size

### Upper Right Menu: Layouts

Layout templates allow you to choose viewport layout: 1x1, 2x1, 1x2 and 2x2 are currently available options.



Default layout templates

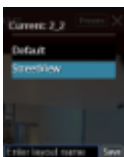
Click on any thumbnail at any time to immediately load the corresponding **layout template** on the screen. If there are any active streams, they will be discarded. If the target layout template has been already used in the same browser and cookies have not been cleared, previously used channels will be loaded; if not, an empty template will be displayed.

If you wish to **save the layout** currently being displayed, click on the 'portrait' button.



Layouts menu button

The layouts menu will appear, allowing you to save your layout under a user-defined name: enter the layout name and click the *Save* button. Note that, at this point, only Latin characters [A-Za-z] and Arabic digits [0-9] are supported for layout names; special symbols or characters from non-Latin alphabets are not allowed.



Layouts menu

From here, you can also load previously saved layouts simply by clicking them; if your layout list is longer than the menu window, use the mouse wheel to scroll down.

The layouts are saved in your browser **cookies**, so:

- TRENDnetView EVO Streaming Server layouts cannot be transferred to other browsers, user accounts or computers

- layouts are removed when browser cookie data is cleared

## Main Window: Streams

### Live

To start live-streaming, select a layout template from the upper-right-hand menu (1x1, 1x2, 2x1 or 2x2), then click your desired viewport so that a blue frame selection appears around it, and then choose the target stream from the *Devices* list on the left. To replace the existing live stream, either select it and choose a device 'on top' of it, or click the *X* button in the upper-right-hand corner of the viewport to close it and then assign a new stream to this viewport.

Notice that some images may appear with horizontal or vertical black stripes at the sides: this happens because image aspect ratio is maintained instead of it being stretched to fill the viewport. When the picture size is smaller than the target viewport, there will be a black background on either sides.



Live view with overlay PTZ controls

Each live view item contains the following information and controls:

- upper-left-hand corner: stream name (static info)
- upper-right-hand corner: archive playback (if applicable), presets button (click to load preset list), *X* button (press to close the live stream and free the viewport)
- bottom-right-hand corner: PTZ mode (if applicable), stream resolution, stream codec (MP4/JPEG/WEBM) (static info) and zoom mode ON (static info)
- centre: stream picture, virtual PTZ sphere (overlay control) (if applicable)

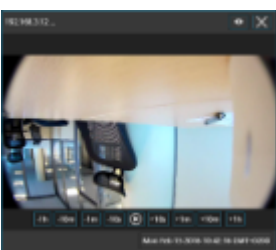
To **pan and tilt** the PTZ-capable cameras, use overlay PTZ controls: left-click and hold in the desired direction. By default, pan/tilt mode is enabled for PTZ cameras: notice the *PanTilt* label in the bottom-right-hand corner of live view.

In order to **zoom** IN and OUT: first, scroll your mouse wheel DOWN to enable zoom mode - in the bottom-right-hand corner, a *Zoom* label will appear. In this mode, virtual PTZ sphere works for zoom only: click and drag UP (upper hemisphere) to zoom IN, and DOWN (lower hemisphere) to zoom OUT. To release zoom mode and go back to the pan-tilt sphere, simply scroll your mouse wheel UP until the *Zoom* label disappears.

For some cameras, you may notice that the further you drag the cursor from the sphere centre, the faster the camera goes: in this way, PTZ speed is controlled; however, for other cameras, only the constant speed is supported either by software or device itself, and the pan/tilt speed will remain constant no matter what position your mouse cursor is in.

### Archive Playback

If recording is enabled for the target channel, the stream overlay controls will include an archive playback button in the upper-right-hand corner. Press the button to begin **playback**: the target stream will be displayed in single channel mode. To switch **back to live view**, press the 'eye' button in the upper-right-hand corner; this will restore your previous layout.



### Archive playback view

Playback view contains the following information and controls:

- upper-left-hand corner: stream name (static info)
- upper-right-hand corner: 'eye' icon to go back to live view, X button (press to close the live stream and free the viewport)
- bottom-right-hand corner: timestamp (current time and server time zone shift)
- centre: stream picture
- centre bottom: playback controls

**Overlay controls** allow you to start/pause playback and jump back/forward by ten seconds, one minute, ten minutes or an hour.



## 39 Mobile Application for Streaming Server

Install the TRENDnetView EVO Mobile application from Play Store (for Android users) or iTunes (for iOS users).

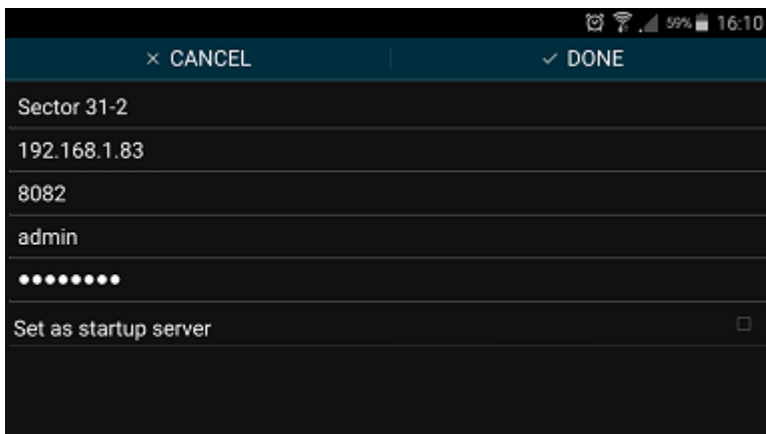
Supported OS:

- Android 4.4 and higher;
- iOS 8.2 and higher.

### Add Server

Tap the *Add Server* button on the bottom panel to create a new server connection. The following parameters should be filled in:

- **Name:** server friendly name.
- **Host:** server IP or domain name from your TRENDnetView EVO configuration.
- **Port:** HTTP port to use (must match the one configured on the server side), the default one is 8080.
- **Username and password:** user account credentials to connect to the TRENDnetView EVO server.
- **Startup Server:** select if you wish to automatically connect to the target server on starting the application. On startup, the app will load server list and try to connect to the selected server automatically.



Server settings

When you are ready, tap *Done* to save and exit the dialog box, or tap *Cancel* to discard the changes made and go back to the main menu. To edit the existing server settings, tap and hold the server name in the list, then release and then tap the *Edit* button that will appear in the upper-right-hand corner; existing server configurations can be removed in the same way.

### Settings

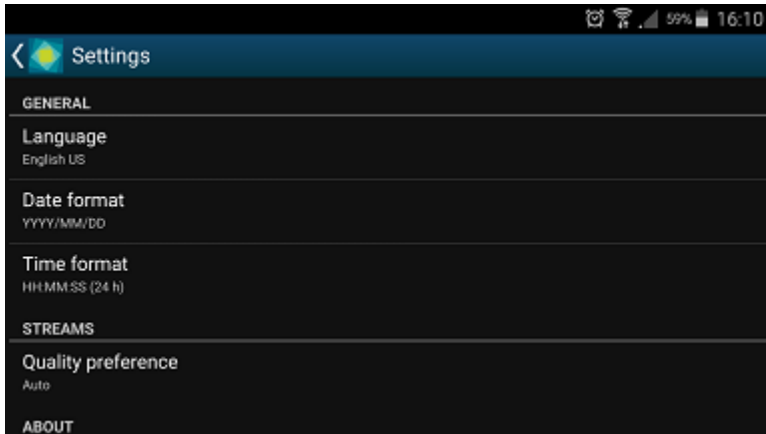
Note that these settings are global for all servers.

- **General**
  - **Language:** set application localisation here
  - **Date Format:** set the date presentation format you want the application to use, e.g., YYYY/MM/DD
  - **Time Format:** set the time presentation format you want the application to use, e.g., HH:MM:SS (24h)
  - **Timezone:** choose between your mobile client or connected server time zone
- **Streams**
  - **Quality preference**
    - **Main:** only the first (main) stream, [usually] of a larger resolution will be used for all devices
    - **Secondary:** only the secondary stream (substream), [usually] of a smaller resolution will be used for all devices

- **Auto:** the most appropriate stream will be selected automatically based on viewport size
- Display **video statistics**
  - **ON/OFF:** defines if video stream properties are shown for both incoming and outgoing streams
- **Decoder configuration:** choose how the incoming streams will be decoded
  - **Hardware only:** hardware decoding modules available on your phone will be used automatically (recommended for battery saving)
  - **Hardware and software:** software decoders will be used if required (**warning:** software decoding is battery intensive!)
  - **Per codec configuration:** choose decoding settings individually for each of the expected codecs
- **Icons**
  - **Show video stream event log icon:** the button will appear on top of video and allow you to view the decoder log
  - **Show battery intensive decoder icon:** the icon will appear in case a software decoder is in use
- **Camera**
  - **Camera** preferences for the reverse streaming
    - **Off:** choose this if you do not plan to stream device's video to the server
    - **Camera 1:** main mobile device camera (normally, back camera)
    - **Camera 2:** secondary camera (normally, front camera with less megapixels)
    - **Resolution** preference/**FPS** preference/**Microphone** ON/OFF
    - **Preview:** camera preview with the settings defined above
- **Widgets**
  - **Widget** update interval
    - automatically load new frame every 30 seconds, every 1, 2, 5, 10 or 15 minutes
- **Network**
  - Allow **app** to use
    - **WiFi** only, including VPN if configured
    - Both **WiFi and 3G/4G** mobile connection
  - Allow **widgets** to use
    - **WiFi** only, including VPN if configured
    - Both **WiFi and 3G/4G** mobile connection
- **About**
  - **Build version:** application version information
  - **Legal info:** tap to view



When enabling camera and sound, you may be asked to confirm permissions for the app to access your phone's camera(s) and microphone. Select YES to grant access to these components if you wish to be able to stream video and audio from your phone to the server and clients connected to it.



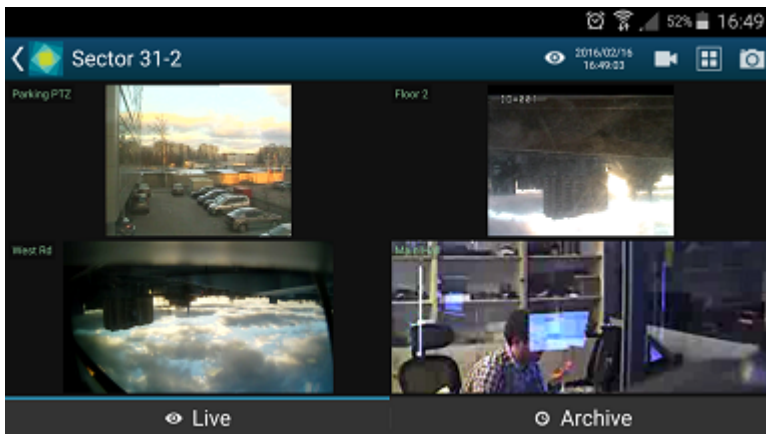
Application settings

In addition to the settings, this menu section contains legal info and information about the application version.

### Live View

When you connect to a server, the live view will be loaded by default. If you have already connected to the selected server previously, live view layout from the last time it was opened will be loaded. Each channel name will be displayed in the upper-left-hand corner of the picture, together with video stream properties - codec, bit rate, frame rate and resolution; stream statistics can be turned OFF via app settings (see above). Tap the camera live view video to switch to full screen; pinch to zoom IN/OUT (digital zoom).

Tap the "<" *Back* button in the upper-left-hand corner to return back; tap back once again to return to Home screen.



Live view

Swipe left/right to load the next set of channels on the same layout. Tap and hold channel live view to bring the available channel list (similarly to the channel selection menu, chosen item will replace the selected channel).



Single channel live view

Tap any channel to replace the currently displayed layout with a single channel view with extra controls. These are:

- Bottom left corner:
  - **Camera icon:** take a snapshot. Tap to save the currently displayed frame onto your device.
- Bottom right corner (icon set varies depending on channel capabilities):
  - **Speaker icon:** audio IN. Tap once to enable incoming audio (the icon will turn blue), tap once again to stop.
  - **Microphone icon:** audio OUT. Tap once to start sending audio back to the camera (the icon will turn blue), tap once again to stop. **Note:** you do **not** need to tap and hold the mic icon, like in the regular TRENDnetView EVO Monitor application, simply tap once to enable audio streaming
  - **Arrows:** PTZ control (for PTZ capable cameras). Tap to bring up the controls, tap once again to hide them. While having overlay PTZ controls ON:
    - swipe your finger or long tap *inside* the sphere to pan and tilt
    - long tap the ends of the zoom slider to zoom in and out



Audio IN, audio OUT and PTZ controls

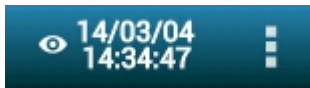
While in this mode, you can swipe left or right to load previous or next channel in the list. Long tap on the free space (where there is no stream) or on the stream itself (when PTZ controls are OFF) to bring up the list of all available channels: swipe down and up to browse the list, tap any channel to display it.

## Menu Controls

You can find the server control buttons in the upper-right-hand corner. For vertical screen orientation, all menu controls (except for the timer) collapse into a single button with drop-down list.

- **Eye icon/timer:** shows current server time. When you tap it, you are given the option to select the time (the app will automatically switch to Archive mode afterwards)
- **Cameras:** tap to select a channel from the list of available ones. Note that every channels can only be mapped once and attempts to map a channel for the second time will result in it being placed in the new position and removed from the old one
- **Views:** tap to open layout selection. The layouts currently available are: 1x1, 2x1, 2x2, 3x2. "Add Current" enables you to save current layout under a specified name. If a larger layout has been selected, existing channels will be mapped automatically and all the extra slots will appear blank. To add more channels, tap the "Cameras" button and pick one; all the slots will become marked with blue frames, tap any of them to place the new video channel there.
- **Make snapshot:** tap to save a snapshot to the gallery.
- **Cast:** stream to Chromecast
- **Stream camera:** send the video stream from your phone's camera back to the TRENDnetView EVO server

- **Camera to widget:** assign one of the channels to a widget (widget should be added to the phone's desktop beforehand, see below for details)
- **User buttons:** tap a user button to trigger the action assigned to it (see below for details)



### Stream Camera


It is possible to send the video captured by your phone's main or front camera back to the TRENDnetView EVO server for further live view on other connected clients and also for server-side recording. To do so, you need to add your mobile device to TRENDnetView EVO configuration and then confirm it in your app.


First, go to your server configuration via TRENDnetView EVO Console, go to the *Configuration* section and choose *Devices* from the menu on the left. On the upper panel, click the + *New device* button in order to create a new device; enter your desired name and set the *Model* to *(Generics) - External Source*, then save. Note the value appearing in the *Code* field: you will need to enter it into your app.

Next, go to your app -> server list -> tap *Settings* in the bottom, find *Camera* in the list and choose your video preferences; the contents of each item may vary depending on your mobile device capabilities:

- **Camera:** back/front (primary/secondary)
- **Resolution:** [the actual list depends on the mobile device capabilities]
- **FPS:** from 10 up to max allowed by device
- **Camera Microphone:** disable/enable sound


Below the settings, you will see the camera preview. Save your preferences and go back to the server list.

 For Android 6.0 and newer, you may need to go to your mobile device's system permissions and explicitly allow TRENDnetView EVO Mobile to use the camera in case you were not asked for this permission or if you have chosen to deny access to this components.

Then, connect to your TRENDnetView EVO server, tap the menu icon in the upper right corner and choose  *Stream camera*. You will see your camera preview and a message in the bottom saying *Click icon to stream*. Click the *Play* button in the bottom right corner to initiate streaming (the button will turn blue); when asked, enter the code from the TRENDnetView EVO Console in the *Registration token* dialog box. For example, if your device configuration in the TRENDnetView EVO Console says CODE:FZL3XT3L, you just need to enter the FZL3XT3L part in the *Registration token* field.

TRENDnetView EVO Mobile will automatically start streaming and you will see the contents of your mobile device stream in all other TRENDnetView EVO Mobile and/or TRENDnetView EVO Monitor applications. The message in the bottom line will change to *Streaming* and will show your video stream statistics. In order to stop streaming, tap the *Play* button once again.

You can now manage this stream as a usual channel in TRENDnetView EVO Console meaning that you can record both video and audio from it, analyze it for motion etc. To remove this entity, simply delete the device via TRENDnetView EVO Console.

 If you re-install the application on your mobile device, you will need to go to the TRENDnetView EVO Console and add your mobile device anew, basically, following the algorithm of adding a new device, or go to the device settings and click *Reset* near the *Code* field to generate a new code, then enter the new code in your app.

### Archive Playback

To switch to Archive mode, tap click the *Archive* tab on the bottom panel. Alternatively, tap the eye/timer icon to go to a specific time: choose a point in time to begin playback at, then tap *Set*. **Timer** can be manipulated in the following manner:

- use UP/DOWN arrows or swipe UP/DOWN to change the value of each position

- switch between the *Time* and *Date* tabs by tapping them
- press *Cancel* to go back to Live mode, or tap *Set* to proceed with playback

When switching to Archive mode from a multiple camera view: all viewports will be highlighted blue - tap a camera to select it. Note that this mode enables you to view one camera at a time: selecting a larger layout will result in an automatic switch to live view.

Archive timeline controls:

- **green** colour represents data, **maroon** means there is no recorded data for that period
- tap the **Next/Previous Frame** arrows on the sides to go to the next/previous available picture
- use the **Play** button in the centre to start/pause playback
- tap the +/- labels to jump back/forward by ten seconds, one minute, ten minutes or an hour
- tap the camera icon in the bottom-left-hand corner to save a **snapshot**



Archive view

Swipe left/right to switch between cameras within the current layout; tap and hold the image to bring up the available camera list (just as in the camera selection menu, this will exit the current layout and switch to single-camera layout). Use the timeline below to browse the recorded video and use the play/stop buttons to control the playback.

## Widgets

Widgets are information elements that can be placed on the home screen on Android devices and in the Today view on iOS devices. Individual channels that require frequent monitoring can be placed as TRENDnetView EVO Mobile widgets with moderate or low (from twice per minute down to four times per hour) refresh rate so that you do not have to open the whole app each time you need to check the channel. For channels accessible via Internet, this means you can monitor them even if you are in a remote location on 3G or 4G: relatively low frame refresh frequency does not use much bandwidth. You can also limit widgets to use WiFi connection only.

General steps to add and use a widget are the following:

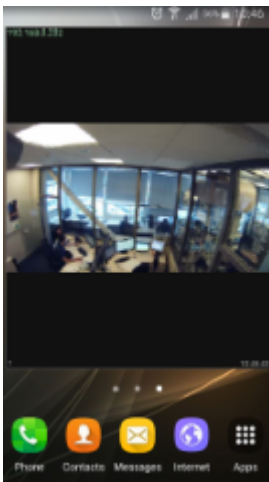
- add as many widgets as you need, one widget per channel,
- go to TRENDnetView EVO Mobile app settings and set widget update and network usage preferences (for details, see the *Settings* section above),
- assign channels to widgets.

To add a widget on an **Android device**:

- tap on a blank space on the home screen and hold for a couple of seconds until the menus appear,
- tap the *Widgets* menu at the bottom of the screen, locate TRENDnetView EVO Mobile widget and then drag to place it onto the desired place. Widget of default size (2x2 cells) will appear with a *Slot not configured* message inside:
  - drag the orange borders to adjust the widget size, then tap outside the widget to exit the adjustment mode (you can change the widget position and size at any time later by long tapping the widget and then moving it)
  - tap the widget once: TRENDnetView EVO Mobile application will open, allowing you to choose the channel,


- then, in the TRENDnetView EVO Mobile app:
  - go to the app settings before connecting to the server and choose how frequently the widgets will be refreshed, and also their network usage preference (see the *Settings* section above for details),
  - connect to a server of your choice, choose *Camera to widget* from the main menu, then tap a channel to choose it (all channels will be highlighted with blue frames, swipe left or right to load more channels to choose from), and then choose a widget slot from the list by tapping it, too (the slot may be empty or already contain a channel),
- go back to your home screen: the assigned channel should now be present in the widget, with the channel name in the top left corner, slot number in the bottom left corner, and last refresh time in the bottom right corner.

To replace the channel, follow the steps 3-4 above; to remove the widget, simply tap and hold it until the menus appear and then drag and drop it onto the Recycle bin icon. Tapping a widget will result in opening the corresponding app, as described above.

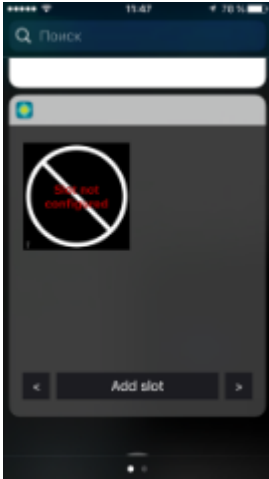


Configured widget on the Android home screen

To add a widget on an **iOS device**:

- swipe down over the Home screen, Lock screen or Notification centre to bring the Today view screen, scroll to the bottom to reach for the Edit menu, tap *Edit*,
- locate the TRENDnetView EVO Mobile app and tap (+) sign to the left of it: the app will be added to the list above,
- tap *Done* when you have finished; the widget will appear under Widgets, allowing you to add and resize the slots - tap any slot to open the TRENDnetView EVO Mobile app,
- then, in the TRENDnetView EVO Mobile app:
  - go to the app settings before connecting to the server and choose how frequently the widgets will be refreshed, and also their network usage preference (see the *Settings* section above for details),
  - connect to a server of your choice, choose *Camera to widget*  from the main menu, then tap a channel to choose it (all channels will be highlighted with blue frames, swipe left or right to load more channels to choose from), and then choose a widget slot from the list by tapping it, too (the slot may be empty or already contain a channel),
- go back to your Today view: the assigned channel should now be present in the widget, with the channel name in the top left corner, slot number in the bottom left corner, and last refresh time in the bottom right corner.






Empty widget slot in the iOS Today view

You can drag widgets to rearrange them in the Today view; tapping a widget will open the associated app. To remove a widget, go back to the widget list in the Today view, as described above, and tap the (-) sign next to the TRENDnetView EVO Mobile name, then tap the *Remove* button. If you remove the widget and then add it anew, it will retain its view (slots).

### User Buttons

User buttons are software buttons, controls used in TRENDnetView EVO Monitor and for manual event triggering: upon clicking or tapping a user button, the action associated with it is triggered. The action, the user button itself and the rule that makes the user button work are all pre-configured via TRENDnetView EVO Console; see corresponding sections of the server management manual for details.

If you are connected to a server that has configured user buttons and your user account has permissions to use them, the buttons will be available in the app. To access them, tap the main menu and choose *User buttons* (vertical view) or simply tap the corresponding button  on the top panel (horizontal screen orientation). Then, choose the button you want to use and tap it: the associated action will be triggered and you will receive a confirmation in the bottom of the screen.



## 40 Event and Action Overview

Event and action (**E&A**) management is a component of TRENDnetView EVO , which provides additional opportunities for handling surveillance system work under certain conditions. The main task is to assign flexible device/server reactions on a user-defined basis. These scenarios may work within a single server, as well as in distributed systems with Global where events originating from one server can trigger actions on one or more different servers.

**Events** are entities that arise when something happens in the system - namely, when system or system component states changes, for instance, a video stream has been lost, a recording or disk error has appeared etc. These changes can be set up to trigger certain **actions** so that system administrators and/or users are notified and can react to them in a timely fashion. Additionally, there are also extra controlling entities that allow a flexible and advanced setup of event-action rules: conditions, delay times and schedules.

Using event & action management, you can specify your desired outcome for your video surveillance system's operation and determine how software reacts to any event caught on any server and how it turns them into an automated process. Send emails, activate DI/DO, interact with any other software or just bring the attention of the operator to the device that requires their immediate action. The functionality can be used not just for a single event, but on a set of sequenced events to get rid of false alarms and improve the efficiency of the surveillance system.

Possible **E&A scenarios** may be:

- sending alerts through the server based on camera digital input events;
- starting or stopping video recording based on motion in specific regions during specific hours;
- switching to some camera PTZ preset if the door sensors go off at night;
- directing the camera to a specific PTZ preset if another camera registers the same movement;
- etc, etc.

Event & action management offers the following **functionalities**:

- event & action configurator rules
- standard (default) events (available for all servers)
- standard (default) actions (available for all servers)
- custom events of certain types (configurable)
- custom actions of certain types (configurable)
- global events (server-to-server data transmission)
- delay timers
- special conditions
- schedules
- mail server configuration

Each of these components is described in details in the corresponding sections of this document.

Actual setup of E&A depends greatly on your system configuration, E&A usage scenarios, required automation level and other things. However, we recommend that, regardless of system scale and architecture, you stick to the following **order of E&A configuration** steps for optimum results:

1. Preliminary actions
  - a. Create a plan of your E&A scenarios on paper or in any diagramming/smart draw software - this will ensure you always have a basis to check against
  - b. Set up the your TRENDnetView EVO system so that you have all the servers, devices, channels, users and optional elements pre-created
  - c. Pre-configure all the necessary hardware equipment (e.g., camera IO wires, external physical alarms, buttons) and connect it
  - d. Pre-configure all third-party programs/scripts/executable files, if necessary
2. Extra setup in TRENDnetView EVO Console
  - a. Create User Buttons, if you are going to use them
  - b. Create Maps, Layouts if necessary
3. E&A Management setup per server
  - a. Add mail servers if you are going to use e-mail notifications

- b. Add custom events
- c. Add conditions
- d. Add custom actions
- e. Create rules using all elements; add extra events/rules, if required
- f. Add timers, schedules and conditions to the rules
- g. Check your rule map against your initial plan from 1.a
- h. Test your rules

## 41 Rules

All rules defined via *Event & Action Configurator* are listed in the *Rules* section. Click the *Change* button near server name to select a different server from the list: for each server, only relevant rules are displayed. You can perform the following actions from the *Rules* section without opening the *E&A Configurator*:

- **view** the complete list of existing rules and their properties for each server.
- **disable** a specific rule or a set of rules by using the *Disable* button on the upper panel
- **enable** a specific rule or a set of rules by using the *Enable* button on the upper panel
- **test** a specific rule (the rule must be enabled)

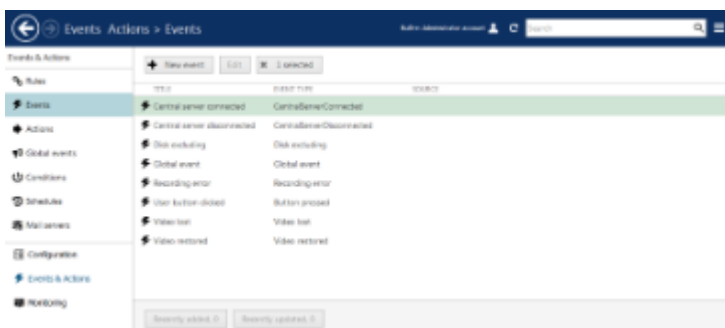
In order to **add**, **remove** and **modify** the rules, choose the target server and click the *Open Configurator* button on the top panel.

## 42 Default Events

**Events** are entities that appear when something happens in the surveillance system - namely, when the system or system component state changes. These changes can be set up to trigger certain actions so that system administrators and/or users can react to them in a timely fashion.

For each TRENDnetView EVO server, there are a set of default events, which behave in an identical way on all servers and cannot be altered or deleted. These are:

- **Central Server Connected:** the connection with central server has been restored; event is available for non-central servers
- **Central Server Disconnected:** the connection with central server marked as unavailable because the timeout defined in the server settings has been reached; event is available for non-central servers
- **Disk Excluding:** one of the storage locations has been marked as unusable and has been excluded from the recording configuration; event is available for every server
- **Fallback Activating:** main storage has failed, server has automatically switched to fallback storage; event is available for each server
- **Global Event:** global (system-wide) event from one of the servers has been fired; event is available for all defined [global events](#) and on all servers with Global
- **Motion:** motion has been detected; event is available for each channel
- **Motion Started:** some motion has been detected; event is available for each channel
- **Motion Stopped:** no more motion is being detected; event is available for each channel
- **Recording Error:** problem encountered while recording video data to the storage; event is available for each server
- **User Button Clicked:** user button was pressed; event is available for all created user buttons
- **Video Lost:** no video stream available for this specific channel for the defined amount of time, which is set in the channel settings; event is available for each channel
- **Video Restored:** video stream connection re-established; event is available for each channel



Default events

Default events are available in the *Event & Action Configurator* and can be used in the same way as user-defined events, except for they cannot be edited.

## 43 Add Events

Events are entities that appear when something happens in the system - namely, when system or system component state changes. These changes can be set up to trigger certain actions so that system administrators and/or users can react to them in a timely fashion.

In addition to the the [default set of events](#), certain types of events can be added manually.

To access event management in TRENDnetView EVO Console, select the *Events & Actions* section and then select *Events* from the menu on the left.

To create an event, click + *New event* button on the upper panel; event configuration dialog box will open. It is also possible to add events as you go, from the *Event & Action Configurator*.

In addition to default event types, it is possible to add custom events of the following types: **digital input (DI)** and edge (camera-side) video analytics (**VCA**).



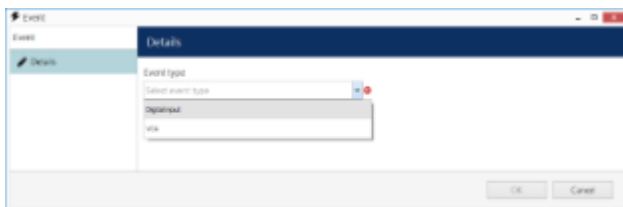
Before creating events from camera DI/VCA source, make sure to:

- enable alert generation in [channel settings](#) via TRENDnetView EVO Console for device digital inputs (DI);
- enable and set up rules via camera Web interface for edge VCA and set up rules via channel settings for software-side Open VCA;
- set up the External Service event generation logic for external services (license plate recognition, face recognition etc.)

Without these settings, the event source will be not available for the target device in the event settings.



Removing and adding event sources (e.g., deleting and creating edge VCA rule with the same name) again may render them unusable if they are already included in the *Event & Action* configuration. Make sure to check the event operability and then re-create and re-insert the event after modifying it, if necessary.



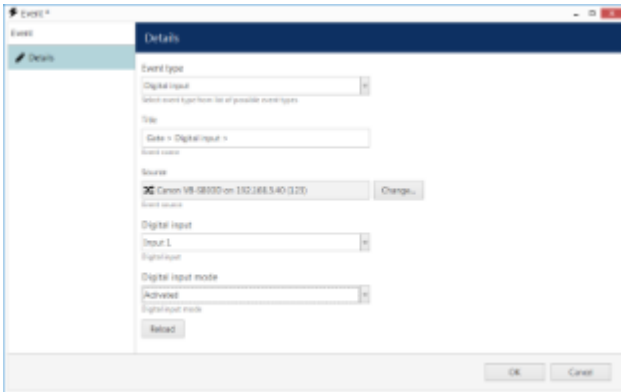
Choose event type

Choose type for the target event.

### Digital Input

The following settings are available for *Digital Input* event:

- **Title:** a user-defined event name; by default it is > *Digital Input* >, suggesting that before and after the >> arrows you can insert device name and DI signal source - or, alternatively, you can re-define the whole title according to your own naming convention
- **Source:** choose the device from which the DI event originates; event generation must be enabled in [channel settings](#)
- **Digital Input:** select one of the DIs of the target device to serve as event trigger; the number of inputs depends on the total available and configured inputs
- **Digital Input Mode:** the binary input state to trigger alert; must conform with the DI state set up in [channel settings](#)

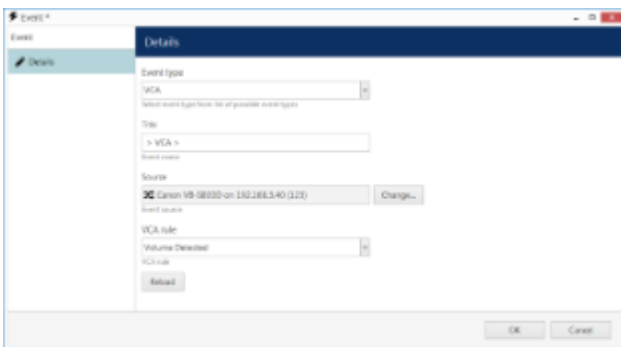


Settings for the *Digital Input* event type

## VCA

For camera-side and software-side VCA events, the available settings are:

- **Title:** user-defined event name; by default it is *> VCA <*, suggesting that before and after the *>>* arrows you can insert the device name and VCA event source - or, alternatively, re-define the whole title according to your own naming convention
- **Source:** choose device from which the video analytics event originates; analytics rules must be enabled via the camera Web interface (some cameras have basic VCA events enabled by default, e.g. volume detection) or pre-configured using the TRENDnetView EVO Console for the software-side VCA module (see corresponding documentation for configuration details)
- **VCA Rule:** video analytics rule to trigger event alert; available rules depend on device model, capabilities and configuration for edge VCA, and on VCA license type for software-side VCA



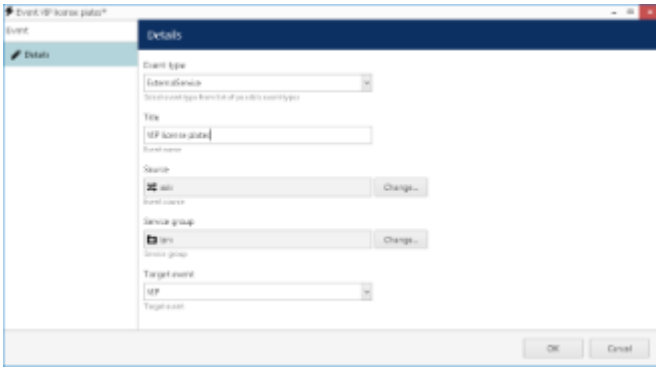
Settings for *VCA* event type

## External Service

External Service type events are messages from modules that are operating via TRENDnetView EVO HTTP API and are listed in TRENDnetView EVO Console as external services. By default, license plate recognition and face recognition services are integrated, and any other third-party integrations can be connected.

The following settings should be defined:

- **Title:** user-defined event name, by default it is *[channel] External Service*
- **Source:** the channel that is used by the target external service
- **Service group:** the group the external service belongs to in TRENDnetView EVO Console settings
- **Target event:** service-specific result type, e.g., recognition result
  - *Known:* recognition result has a match within the external service database (black/white list in LPR, subjects' database in FR), matching any tag
  - *Unknown:* recognition result has no matches within the external service database
  - *Tags:* recognition result was found in the external service database and it has a specific tag assigned to it

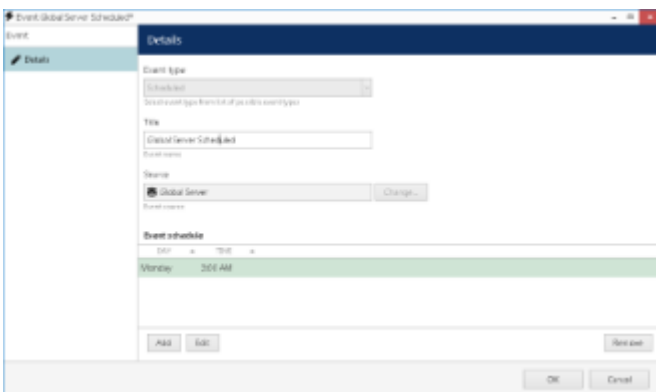


External Service event from the License Plate Recognition module

The example event here accepts events from the License Plate Recognition (LPR) module and will report plates recognised from the specified source channel if these results are present in the known plates' list with a *VIP* tag.

### Scheduled Event

You can schedule an event for it to happen on a daily or weekly basis. Such an event does not have any underlying source to originate from, it is simply generated by the system in the specified moment(s) of time. Note that the time defined here is server time.

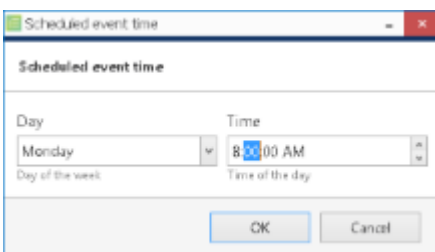


A scheduled event that occurs once a week

For the scheduled event, all you have to define is:

- **Title:** user-defined event name, by default it is *[server] Scheduled*
- **Source:** target server to generate the event on
- **Schedule:** event timetable

To add the schedule, simply click the *Add* button below and append as many items as you like. You can add multiple moments per day as well.



Add schedule element

Remember that you can enter the time either manually from the keyboard or by clicking the timestamp elements and then using your mouse wheel, while still hovering your mouse cursor over the element that is being adjusted.

To edit any of the items, select one and click *Edit*, or simply double-click an item; to remove, select one or many (use CTRL+click or Shift+click to select multiple items, or also CTRL+A to select all) and then click *Remove*.

When you are finished, click *OK* to save and close the dialog box. The newly created event will appear in the item list under *Events* and will be available for setup in the *Event & Action Configurator*.

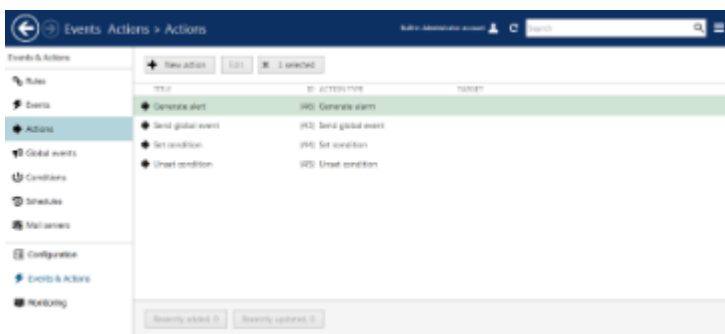
See Also



## 44 Defaults Actions

For each TRENDnetView EVO server, there exists a set of default actions that have identical behaviour on all servers and cannot be altered (edited) or deleted. These are:

- **Generate Alert:** generate an alarm that can be used as recording basis in recording profiles; this action is available for each channel
- **Generate Alert Substream:** generate an alarm that can be used as recording basis in recording profiles; this action is available for each channel substream
- **Send Global Event:** send a global event notification to all servers; this action is available for each defined global event
- **Pop-up On Screen:** display the object on all TRENDnetView EVO Monitor windows that accept pop-ups of the target object type; action is available for channels, maps and shared layouts
- **Set Condition:** change the target condition state to *ON*; this action is available for each [condition](#)
- **Unset Condition:** change the target condition state to *OFF*; this action is available for each [condition](#)



Default actions



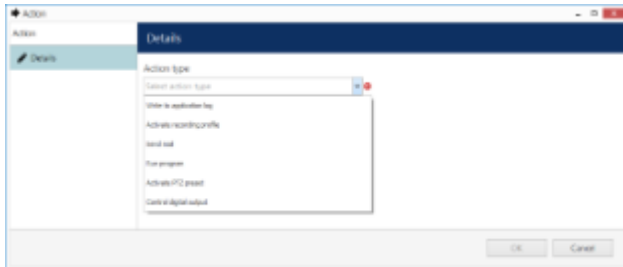
When you generate an **alert** for main stream or substream, all channels having alert-based recording enabled will start recording for the duration of time period defined in the profile as **post-recording time**; after that, the profile operation will be terminated and target channel will return to its normal recording configuration.

Default actions are available in the *Event & Action Configurator* and can be used in the same way as the user-defined actions.

## 45 Add Actions

To access action management in TRENDnetView EVO Console, choose the *Events & Actions* section and select *Actions* from the menu on the left.

In order to create an action, click the + *New action* button on the upper panel; an action configuration dialog box will open. It is also possible to add actions as you go using the *Event & Action Configurator*.



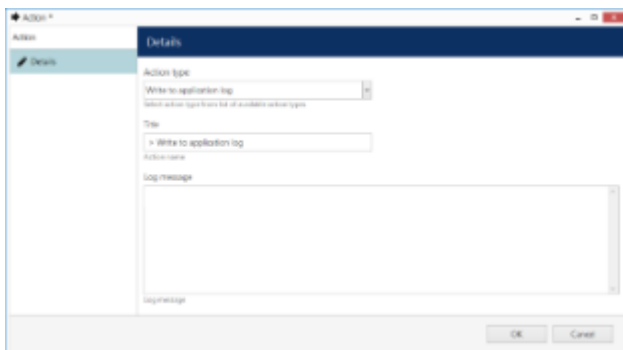
Choose action type

First, choose your desired action type from the drop-down menu to see action-specific settings.

### Write to Application Log

The *Application log* action type allows you to write a log entry into the Windows Application log, which will be accessible via Windows Event Viewer. The log entry level is *Information* and entry source is TRENDnetView EVO Server. You can define:

- **Title:** a use-defined action name inside the TRENDnetView EVO Console; by default it is *Write to Application log*
- **Log Message:** the message text to appear in Windows Application log



Action: write to application log

Use the *Insert Field* button on the right-hand side (it appears when you have clicked inside the text area) or right-click the text area and choose *Insert* to add a text macro (see *Action Parameters* further in this topic for details).

### Write to Audit Log

The *Audit log* action type is similar to that of *Application log*: it allows you to write a log entry into the TRENDnetView EVO own Audit log, which will be accessible via TRENDnetView EVO Console, in the *Audit* section. The log entry is added in the Server audio section and its event type will be *User defined*. You can set:

- **Title:** a use-defined action name inside to be used in E&A; by default it is *Write to Audit log*
- **Log Message:** the message text to appear in the Audit log

Use the *Insert Field* button on the right-hand side (it appears when you have clicked inside the text area) or right-click the text area and choose *Insert* to add a text macro (see *Action Parameters* further in this topic for details).

### Activate Recording Profile

Any of the existing recording profiles can be activated for the device of your choice as a result of a triggered event.

You can separately activate **main** stream and **substream** recording; use the *Activate Recording Profile* action for main stream and the *Activate Substream Recording Profile* action for secondary stream. Enter action details as follows:

- **Title:** the user-defined action name; by default it is *<channel> Activate <stream> recording profile <profile>*, you can re-define the whole title according to your own naming convention
- **Target:** the target device for which recording is to be activated
- **Recording profile:** the pre-configured recording profile to be activated as an action; you will find profile configuration tips further in this section of the manual

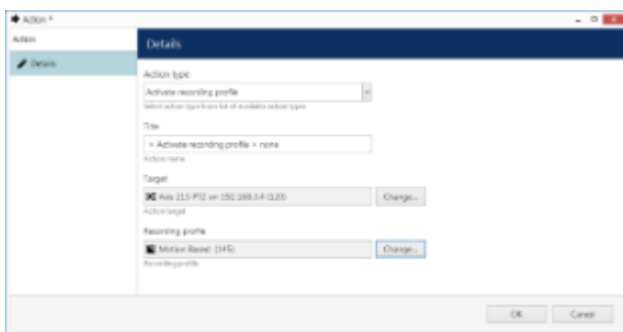


The recording profile is activated permanently; to switch to a different recording profile, use another action of the same type and different target profile.



Recording profile activation **cannot call off** the default recording configuration (the one currently assigned to the target channel); rather, **this action can only add more** recordings. Thus, channel default recording configuration must define the minimum required recording scheme (based on a single profile or on a schedule) and E&A scenarios will add to that.

**Example:** a channel is set to record based on motion. There are two user buttons: one of them sets the channel to *Constant recording*, and the other sets the *No recording* profile. Triggering the first button will activate constant recording, and triggering the second button will return channel recording to its default state (which is *Recording by motion*) instead of disabling the recording at all.



Action: activate recording profile

## Recording Triggering Examples

When channel recording profile includes **alert-based** recording, recording can be activated as a result of a *Generate Alert* type action and its engagement time is determined by the profile's *post-recording time* parameter. In this case, actual recording profile is not changed and the current recording profile is used (the one assigned to the channel through its recording configuration). The default (built-in) recording profiles have post-recording intervals of 10 seconds, which may be fine when conducting, e.g., motion-based recording (video is recorded for 10s after motion event), but may not be suitable for other types of events. In such case, you can pre-configure any number of different recording profiles and use them for action setup.

If a recording profile is triggered by an *Activate Recording Profile* type action, the recording profile used for the target channel is complemented with the profile triggered from E&A, and recording duration can be controlled using action delay timers.

**Scenario 1.** The camera's recording configuration is normally motion-based. The action is intended to be used for recording based on digital input events, which are triggered when someone opens main entrance door; starting from that point, the video and audio streams will be recorded continuously for one minute.

- channel base recording configuration: motion-based video recording
- actions triggering recording profiles:
  - action #1 triggers a recording profile with continuous video + audio (e.g., built-in Continuous Recording profile)
  - action #2 triggers the built-in *No Recording* profile: as a result, channel recording is returned to its default (configured) state

- action #2 is delayed for one minute using a [Delay Timer](#)

**Scenario 2.** The camera normally records continuous video with low FPS during the daytime, and does not record anything at night and during weekends. If camera VCA detects fire or smoke in the area, continuous recording at full frame rate will be conducted for 30 minutes.

- channel base recording configuration: based on schedule, continuous recording at restricted FPS + no recording
- action triggering recording profiles:
  - action #1 triggers continuous video recording without frame rate limitation
  - action #2 triggers the built-in *No Recording* profile: as a result, channel recording is returned to its default (configured) state
  - action #2 is delayed for thirty minutes using a [Delay Timer](#)



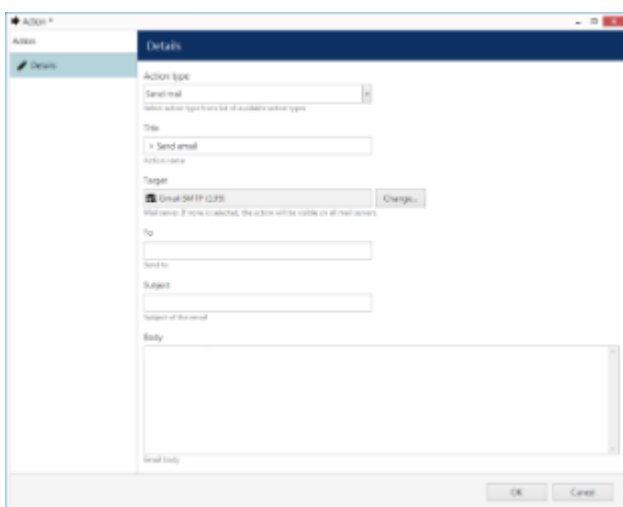
Set desired post-recording interval in the target profile

## Send Email

In order to send an email notification, you are requested to define the following values in the action settings:

- **Title:** a user-defined action name; by default it is *<mailserver> Send email*, you can insert the device name and target email address - or, alternatively, you can re-define the whole title according to your own naming convention
- **Target:** specify the SMTP server to be used for email sending; if none are selected, the action will be available for selection on any of the existing configured mail servers when creating a rule
- **To:** notification recipient email address
- **Subject:** email notification subject (use the *Insert field* button to add text macros)
- **Body:** email notification body text (use the *Insert field* button to add text macros)

 [Configure your SMTP server\(s\)](#) before creating email-related actions.



Action: send email

## Send Email with a Snapshot

This action is similar to the *Send Email* action described above, with all the settings being the same except for one: it

allows to attach a snapshot from a channel and send it together with the email. The channel is specified when creating a rule with this action.

Additional setting:

- **Attach snapshot:** choose if you want to take a snapshot of main stream or substream of a channel and deliver it together with the message



In the *Send Email with a Snapshot* action, you only need to define whether this specific action will take a snapshot from the main or from the secondary stream. Actual channel for the snapshot to be taken from will be defined when you create a rule involving this action:

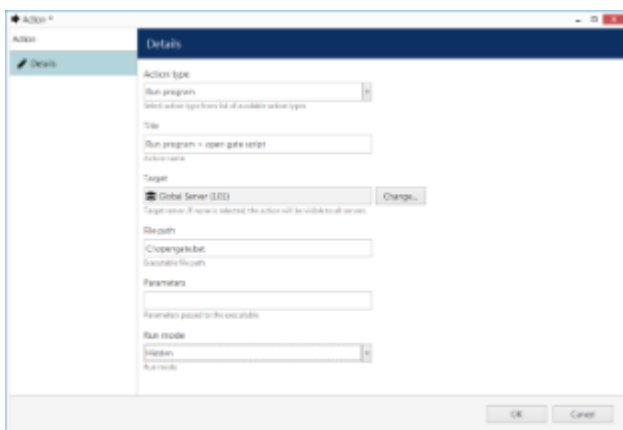
- if the source event originates from some channel, that channel will be automatically used as a snapshot source; you will be able to change the target channel using the *Snapshot source* button below the rule map in the E&A Configurator
- if the source event does not come from a channel (e.g., user button click event), you will have an option to define the target channel using the *Snapshot source* button below the rule map in the E&A Configurator

If you specify no snapshot source when creating the rule, a regular email will be sent. You will find more details on attaching the snapshot in the [Rules](#) section of this document.

## Run Program

The *Run program* option gives you the opportunity to define a third-party application (script, batch or a GUI application) that will be launched as a reaction to defined camera events. The following parameters should be specified:

- **Title:** a user-defined action name; by default it is *Run program >*, suggesting that after the > arrow you can insert the target program name - or, alternatively, you can re-define the whole title according to your own naming convention
- **Target:** target TRENDnetView EVO server to execute program on
- **File Path:** full path to the executable file
- **Parameters:** input parameters, if the program launched accepts any (e.g., a batch file) (use the *Insert field* button to add text macros)
- **Run Mode:** execution mode - hidden (silent, invisible to server user), minimised (minimised to taskbar) or normal (program will run in its default state)




Action: run third-party program

Use the *Insert Field* button on the right-hand side (it appears when you have clicked inside the text area) or right-click the text area and choose *Insert* to add a text macro (see *Action Parameters* further in this topic for details) into the *Parameters* field.

## Activate PTZ Preset

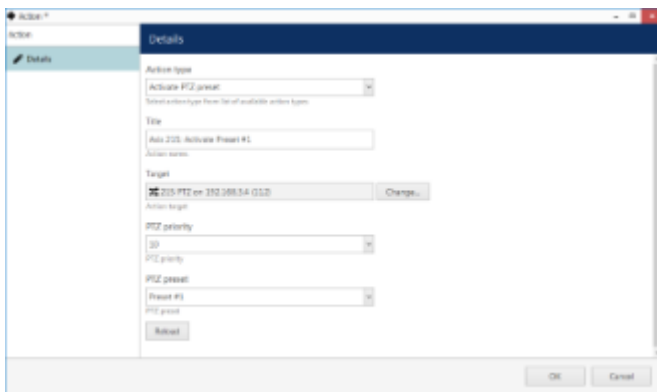
This action type allows you to make a PTZ camera go to a specific pre-configured preset. You just need to specify:

- **Title:** a user-defined action name, by default it is > *Activate PTZ preset* >, implying that before and after >> arrows you can insert the camera and preset names - or, alternatively, re-define the whole title according to your own naming convention
- **Target:** the target device which is to accept the PTZ command
- **PTZ priority:** priority to execute PTZ action with, 0 = lowest, 10 = highest
- **Preset:** pick one of the automatically loaded target device presets from the drop-down list

 PTZ priority parameter is used when two or more simultaneous PTZ command requests (either from action or from direct user input) are sent at the same time. When this happens, request with a higher priority is fulfilled while request with a lower priority is delayed for ten seconds.

Default PTZ priority for all actions is equal to five (medium priority), which also coincides with the default per-user PTZ priority. You can assign any action a higher PTZ priority (six to ten) or a lower one (four to zero) by editing the *Activate PTZ Preset* action properties.

Use the *Reload* button to refresh the list of presets: this will be useful if you have created new presets while keeping the action creation dialog box open.




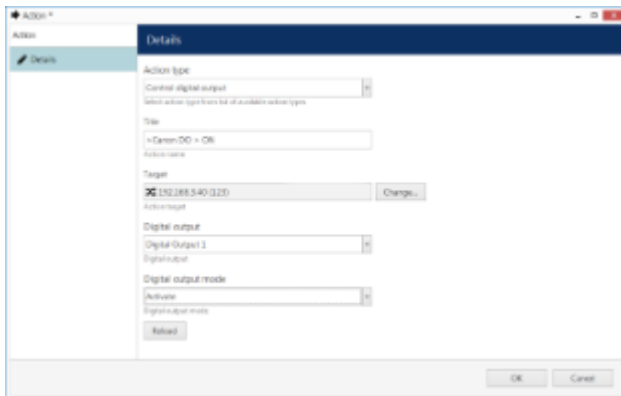
Action: activate PTZ preset

## Control Digital Output

Devices having relay (digital) outputs (DOs) can have them triggered as a result of the *Control digital output* action. You are asked to enter the following details for this action type:

- **Title:** user-defined action name, by default it is > *Activate PTZ preset* >, suggesting that before and after >> arrows you can insert the camera name and DO number/target - or, alternatively, re-define the whole title according to your own naming convention
- **Target:** the target device which is to accept the digital input control command
- **Digital Output:** pick one of the available DOs of the target device to be triggered
- **Digital Output Mode:** choose whether an activation or deactivation command is sent to the target relay output

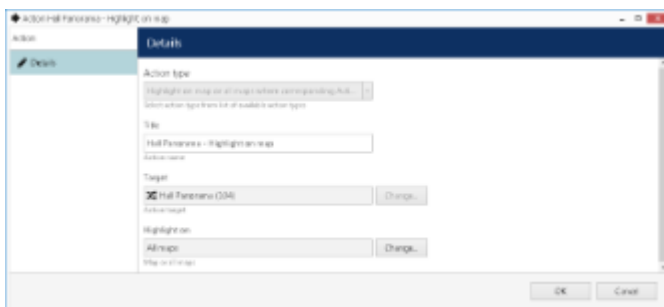
 Digital output(s) must be enabled in [channel settings](#) for the target camera; otherwise, you not will see any available DOs in the drop-down list after selecting the target device. Also, make sure that digital output operation has been allowed via device Web interface.



Action: control relay output

## Highlight On Map

If your target device appears on one or more maps, you can visually accent it on the map as a result of the triggered event. It is possible to define one particular map or make the device become highlighted on all maps where it has been placed.



Action: highlight target device on a map

## Pop Up On Screen

You can set up individual channels, maps and layouts to appear on a specific video wall display as a result of some triggered event, e.g. motion detected in certain regions. If you wish an object to pop up in all connected TRENDnetView EVO Monitor applications without using video walls, use the built-in (default) event of the *Pop up on screen* type.

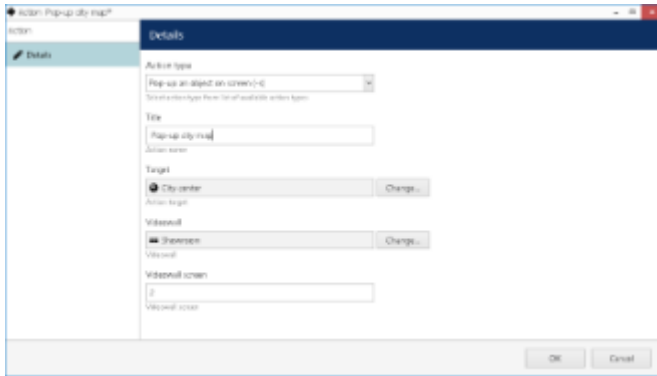


Additional setup is required from the TRENDnetView EVO Monitor application side:

- shared layouts should be pre-created in order to be used in action creation
- target TRENDnetView EVO Monitor window must be allowed to accept either channels/maps or layouts
- target TRENDnetView EVO Monitor window must be set to be a part of the target video wall

What you need to specify in the action properties is:

- **Title:** user-defined action name, by default it is *[channel] Pop up and object on screen [Video wall name]*
- **Target:** a channel, map or a pre-created shared layout to appear on the screen
- **Video wall:** target video wall for the object to appear on
- **Video wall screen:** a specific display in the video wall layout for your object to appear on

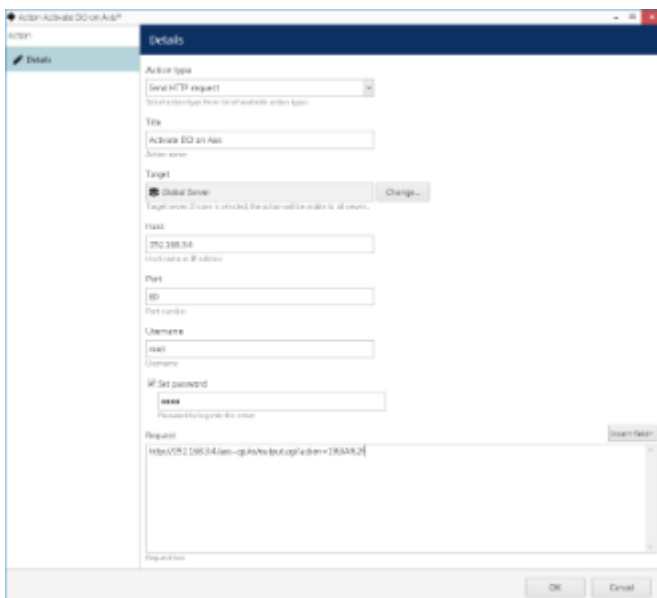


An action that will pop up a map on the specified video wall display

You can create new maps right from the object selection dialog in case you have not created them yet.

### Send HTTP Request

As a result of a triggered event, HTTP requests can be sent from TRENDnetView EVO servers to any third-party devices that can accept such commands. The target devices can be third-party software, Web servers, cameras or any access control hardware.



Send a HTTP request to open the digital output circuit on a camera

Things to be defined:

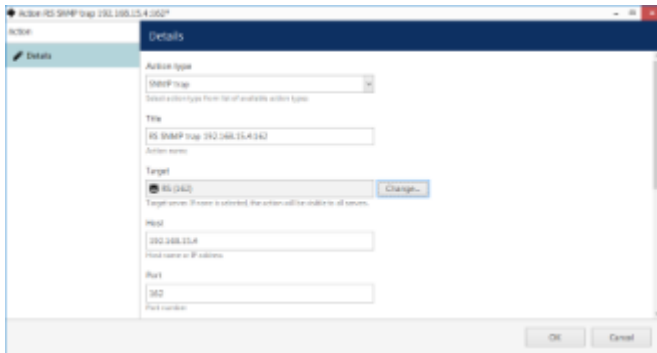
- **Title:** user-defined action name, by default it is *Send HTTP request [target host]*
- **Target server:** a server for the action to be available on; if no server is defined, the action will be available on all servers
- **Host:** an IP or hostname that will be accepting the HTTP request
- **Port:** port number to accept the request, port 80 is default
- **Username:** a username to log into the target host, if necessary
- **Password:** a password to log into the target host, if necessary; to change the password when editing the action, put a check mark on the *Set password* and define a password below
- **Request:** HTTP command string

Use the *Insert Field* button on the right-hand side (it appears when you have clicked inside the text area) or right-click the text area and choose *Insert* to add a text macro (see *Action Parameters* further in this topic for details) to be passed as a parameter in the HTTP request.

### SNMP Trap



This event allows TRENDnetView EVO server to act as an SNMP agent and generate and send trap messages to a third-party SNMP manager.



SNMP trap type action

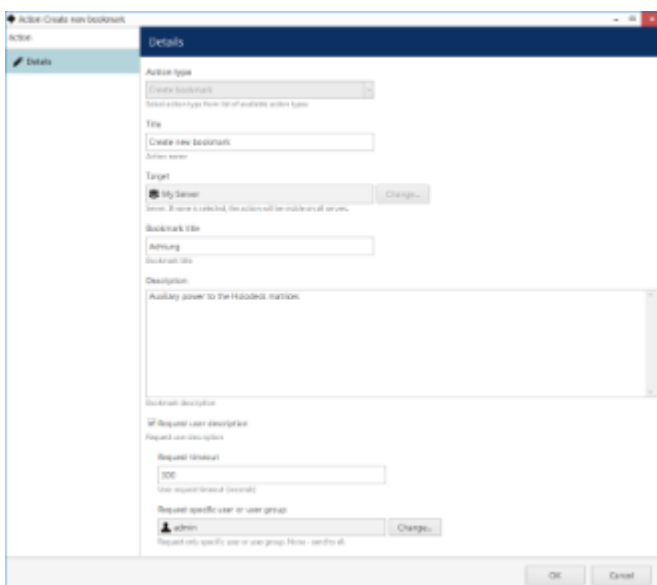
You need to define:

- **Title:** user-defined action name, by default it is `[server] SNMP trap [host] [port]`
- **Target:** TRENDnetView EVO server for the action to exist on; if none selected, the action will be visible on all servers
- **Host:** target SMTP manager address
- **Port:** target port
- **Community:** SMTP community expected by the SMTP manager
- **Trap ID:** automatically generated ID
- **Message:** text message to be sent

Use the *Insert Field* button on the right-hand side (it appears when you have clicked inside the text area) or right-click the text area and choose *Insert* to add a text macro (see *Action Parameters* further in this topic for details) to be passed as a parameter.

## Create Bookmark

Bookmarks can be created by the server, based on any available event. This can be done either completely automatically or complemented with user input - from the users who are connected via TRENDnetView EVO Monitor application.



Action: add a bookmark with user confirmed description

Available settings:

- **Title:** custom (user-defined) action name
- **Target:** server to add the bookmark on (select *none* to make the action visible on all servers in the system)
- **Bookmark title:** name that will appear in the archive and also displayed to users, if user description is requested (use the *Insert field* button to add text macros)
- **Description:** extra information to be stored with the bookmark (use the *Insert field* button to add text macros)
- **Request user description:** enable this if you want to obtain bookmark description from TRENDnetView EVO Monitor users - this comes useful when you require feedback from users and/or when the description may differ from time to time
  - **Request timeout:** defines for how long the description request will be displayed on the TRENDnetView EVO Monitor side
  - **Request specific user or user group:** display configuration dialog box only to the target user or user group; if not defined, the request will be sent to all connected users

Note that the target channel is not specified at this step: you will have an option to specify it using the *Target Channel* button when you create a rule with this particular *Add Bookmark* action. If the source event of such a rule is channel-specific (e.g., *Video Lost, Motion*), the channel will be set automatically. Please see the [Add Rules](#) section for examples.

#### Scenario 1: fully automated

In the *Add Bookmark* action settings, do not enable the *Request user description* option. Instead, specify desired bookmark title and description. Now, when you use this action in a rule, a bookmark will be added automatically with the pre-defined description.

#### Scenario 2: bookmark with user confirmation

Enable the *Request user description* option and specify the bookmark title: make sure to make the title comprehensible as it will be displayed to the TRENDnetView EVO Monitor user when prompting for the comment. Optionally, you can specify the description - it will be used when no user input is specified (users ignored or missed the description dialog box).

After you have added the action, you can go ahead and use it in the E&A Configurator: there, upon adding a rule, you will have an option to specify the **target channel** for the bookmark to be added to.

### Send Event to Client

This event allows to send a push notification to all or specific TRENDnetView EVO Monitor applications. This may be just a pop-up message, or an event in the channel notification area with a sound, or all of these combined.

Available settings:

- **Title:** user-defined (custom) action name that will appear in the E&A Configurator
- **Message:** notification body text (use the *Insert field* button to add text macros)
- **Display event in alerts:** mark this if you want a message to be appended to the TRENDnetView EVO Monitor log in the *Alerts* section
- **Display a warning message box:** mark this if you want a dialog box to pop up on the TRENDnetView EVO Monitor side (to be closed by the user)
- **Display event in notification panel:** the message will be shown in the notification panel of the live view of a specific channel (you will have to set the channel when creating the rule)
- **Play audio notification:** play a sound on the TRENDnetView EVO Monitor side; sounds themselves are defined in each TRENDnetView EVO Monitor application
  - **Audio notification:** sound notification number, from 1 to 10 (here, you just specify the number, actual sound is defined per client and may not coincide in different application instances)
- **Send event to specific user or user group:** show the notification only to a specific user or user group

### Action Parameters

Actions that handle text information (log messages, send emails and run third-party program) can accept macro commands. Currently, the available parameters are:

- {EVENT\_ID} - internal identifier of the triggered event

- {EVENT\_TITLE} - user-defined name of the triggered event
- {EVENT\_SOURCE\_ID} - internal identifier of the event source
- {EVENT\_SOURCE\_TITLE} - user-defined name of the event source
- {EVENT\_UTCIME} - event UTC time
- {EVENT\_UTCATE} - event UTC date
- {EVENT\_TIME} - event local time
- {EVENT\_DATE} - event local date
- {EVENT\_TIMESTAMP} - event UTC timestamp in a system-independent format YYYY-MM-DD hh:mm:ss.ms
- {ADDITION\_INFORMATION} - extra information for *Disk Excluding*, *Fallback activating* and *Recording Error* events

**Example** of a text string containing a macro: "{EVENT\_TITLE} event occurred on {EVENT\_UTCATE} at {EVENT\_UTCIME}".

Event sources are listed for every rule in the *Rules* section of *Events & Actions*; typically, these are servers, devices and other resources capable of generating events (e.g., user buttons).

When you have finished, click *OK* to save and close the dialog box. The newly created action will appear in the item list under *Actions* and will be available for configuration.

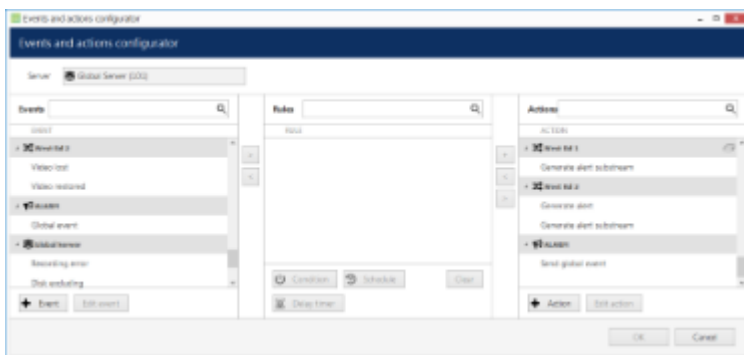
## 46 Add Rules

All existing and added entities of E&A can be combined to create **rules** (rule map) for each server, which will define server behaviour if events are triggered. This section will guide you through related features, explain the meaning and purpose of used items and provide usage examples.

The rule map is created via the **Event & Action Configurator**: to open it, go to the *Events & Actions* section in TRENDnetView EVO Console and then click *Rules* in the menu on the left, then select the target server for which you wish to add the E&A setup, and then click the *Open configurator* button on the upper panel. To change the target server, click the *Change* button next to the server name and then pick one from the available server list.



The *Event & Action Configurator* will open in a new window; by default, no rules are defined.




Event & Action Configurator

You can pre-create all events, actions, conditions and schedules beforehand using the relevant menu sections in TRENDnetView EVO Console, or create necessary items as you go from the configurator. Delay timers can only be created as you go for the specified rule and are not saved as independent entities.

### Add and Edit Events

Choose the target item from the Events list and then click the + *Event* button below: configuration dialog box will then open with the target device pre-selected. Here you can add alerts from device digital inputs and VCA (Video Content Analytics) notifications; see the detailed description of how to create events in the [Add Events](#) section.

 Built-in (default) types of events - lost/restored video, recording errors etc. - cannot be edited. This is also the case for all built-in actions.

### Add and Edit Actions

Choose a target item from the Actions list and then click the + *Action* button below: the configuration dialog box will then open with the target device pre-selected. Here you can add reactions to the following types of events:

- trigger device digital output
- write to OS Application log
- activate target device's PTZ preset
- activate main/secondary stream recording profile
- send an email notification
- run a third-party program

See the detailed description of how to create and configure actions in the [Add Actions](#) section.

### Manage Rules

To start combining events, actions and additional controls, simply follow this scheme:

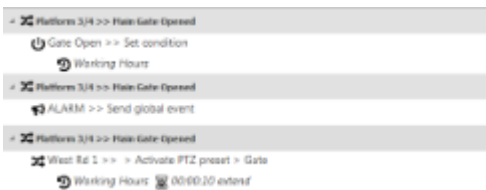
- find your desired **event** in the *Events* list - use search filter on the top panel, if required
- use the < and > arrows or double-click events to add/remove them to/from the *Rules* list
- click free space of the target rule in the *Rules* list (use CTRL or Shift to select multiple ones) - the selected rows will then become highlighted green
- find your desired **action** in the *Actions* list - use search filter on top, if required
- use the < and > arrows or double-click actions to add/remove them to/from the *Rules* list, and the + button to add more than one action for a single event
- select desired actions and add auxiliary controls by clicking buttons on the bottom panel (see description below for details)



#### Useful tips:

- double-click a device (highlighted grey) to add **all** its events to the rule map
- to **replace** an action, select the target action in the *Rules* list, then select a new action in the *Actions* list and click < button
- to **add** an action to an existing rule, use the + button instead of the < button: the original event will be duplicated and new action will be added to the copy
- use the + button between *Rules* and *Actions* lists to add **multiple actions** of the same type to the selected rule(s)
- to clear the *Rules* list, select all rules by pressing CTRL+A or selecting the first rule then SHIFT+click the final rule, then press < button on the left to remove all events

The rule header displays the event source and event itself; below, related actions are listed, each with its own set of special controls. Actions of the same type are listed under the same rule header; for all other cases, the events are duplicated, resulting in a separate rule. One condition, one schedule and one delay timer can be attached to **each action**.

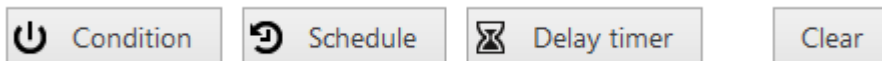


Example of a rule set for the same event source

Once the rule map has been created, click the *OK* button in the bottom right corner to **save and exit**. Note that simply **closing** the *Event & Action Configurator* is analogous to clicking *Cancel*: **no changes will be saved**.

## Conditions, Schedules and Delay Timers

For each event/action pair that is added to the rule map, additional options can be defined in the form of [conditions](#), [delays periods](#) and [schedules](#). Select one or multiple target events from the *Rules* list and then click desired control item in the bottom panel.

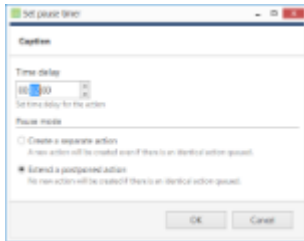


Additional options

To remove auxiliary controls from a rule, select it in the *Rules* list and click the *Clear* button on the bottom panel. Note that all defined conditions, timers and schedules will be removed from the target rule. It is not possible to detach them one by one.

## Delay Timers

To add a pause timer for specific actions, select one or more of the mapped rules (use CTRL+click or Shift+click to mark multiple items) subject to delay, and then click the *Delay Timer* button on the bottom panel of the central part of the *Event & Action Configurator*.



Delay timer properties

Set the delay period for the target timer. Time can be adjusted in the following ways:

- click either hours:minutes:seconds and then the UP and DOWN arrows on the right, or
- click either hours:minutes:seconds and use the mouse center scroll wheel while keeping the mouse cursor over the relevant time section, or
- enter the time manually using your keyboard.

Next, choose the pause mode:

- **Create a separate action:** new actions of the same type will be created regardless of the acting delay timer, and queued in the same way as the original delayed action
- **Extend a postponed action:** new events of the same type will restart the timer, postponing the resulting action for the specified amount of time

When you have finished, click *OK* to save and exit the dialog box. The newly created delay timer will be assigned to the pre-selected actions.



**Extending an action** allows you to postpone the action execution repeatedly if more events of the same type arrive within the chosen time period. For example, if incoming events are of a *Recording Error* type, there may come too much of them at once e.g. in case of a major storage issue, causing a lot of triggered actions of the same type, while only a single action may be desirable.

Say, if required action is *Write to application log*, setting a delay timer to *5 minutes + extended action* will postpone the email sending for 5 minutes every time a new recording error appears; when, at a certain point, more than 5 minutes have passed without new incoming events, a single log entry will be eventually created. The **separate action** option, on the contrary, will force logging for every single triggered event.

To remove a delay timer from rule configuration, click the *timer icon* button to highlight it within the rule, and then click the *Clear* button in the bottom panel. Note that, if there are schedules and/or conditions attached to the same rule, they will be removed as well.

## Schedules

Schedules are used when you wish a rule to be active based on a pre-defined itinerary. You can create any number of custom schedules via the *Conditions* section in the TRENDnetView EVO Console and then use them for rule control: see [Create Schedules](#) section in this document for a detailed explanation of this.

Select one or multiple target events from the *Rules* list and then click *Schedule* button in the bottom panel.

## Conditions

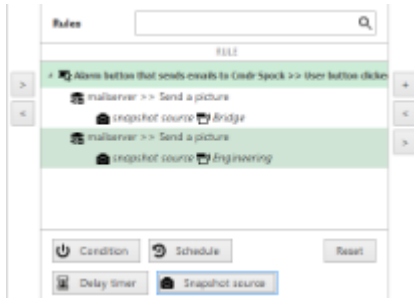
Conditions are supplementary variables that allow or prevent action execution without requiring the rule to be deleted. The decision is taken based on the condition state: if the condition is **ON**, the planned action will be executed; if the condition is **OFF**, the action will not be performed regardless of the frequency of the triggered event. The condition state can be changed as a result of some other event, so an additional rule should be added to perform this task; alternatively, you can manually set and unset conditions at your will.

To assign a condition to the rule, choose one or multiple target events from the *Rules* list and click the *Condition* button on the bottom panel, then either select the target condition from the list or create a new one.

Please read the [Conditions](#) topic of this document if this feature is new to you: it contains detailed description and usage examples.

## Source and Target Channels

Some actions participating in the rule creation need a related channel to be specified so that these rules can be properly executed. The source/target channel is specified when you create a rule involving such an action; corresponding additional buttons will appear on the rule map section of the bottom panel next to *Conditions*, *Schedules* and *Delay timer*. Each action allows exactly one related channel; if you need two snapshots to be sent via email, just add two actions of the same type and specify different source channels.



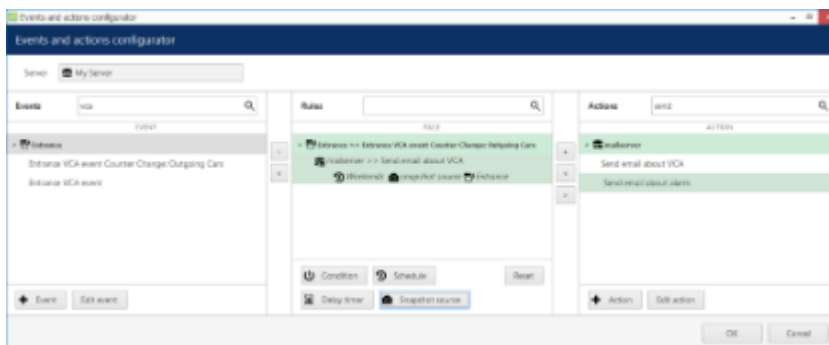
Use the *Snapshot source* button to attach different snapshots to several actions of the same type

When you combine such actions with events that already are related to a channel (e.g., *Video Lost*, *Motion*, *VCA*, *DI*), that channel is selected automatically for the resulting action. For the remaining events, the channel is not set by default and you need to use the *target/source channel* buttons on the panel below the rules. Also, you can set a different channel instead of the one selected automatically by using the same buttons.

## Attaching Snapshots

The [Send Email](#) action allows you to attach a snapshot from one channel and deliver it together with the email to the recipient. The snapshot can be taken either from the main stream or from the secondary stream (substream), if available. When creating the action, enable the snapshot from either the main or substream. You will then have an option to specify the source channel when creating the rule that involves such an action.

When creating the [Send Email](#) action, you may choose to attach a snapshot by selecting the necessary stream option (main/sub) from the drop-down list. The channel itself is not yet specified at this step which makes the action applicable to any target channel.



Specify a snapshot source for the target rule

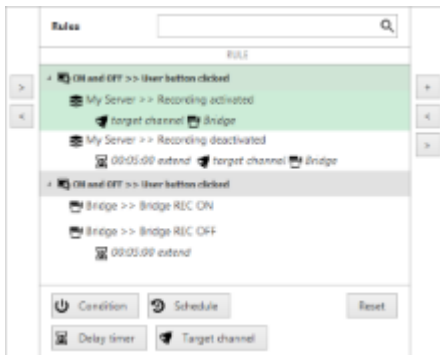
The source channel is specified when you attach the *Send Email* action to an event, i.e., create a rule in the *Event & Action Configurator*:

- if the event in the rule has some channel as a source (e.g., motion, VCA, DI), this channel is set automatically as a snapshot source
- for events having sources other than channels (e.g., user buttons, server events), you can specify the source channel by using the *Snapshot source* button on the panel below the rule map
- you can modify the source channel by using the same button, and also disable snapshot attachment by selecting *none* as the source

Rules created with the *Send Email* action can accept one of each of the extra modifiers - [delay timers](#), [conditions](#) and [schedules](#), as is the case for any and all rules.

## Adding Target Channels to Rules

Aside from *Send Email*, both *Create Bookmark* and *Send Event to Client* utilize channels as their action target.



Recording changes are logged in the notification area of the target channel

The *Create Bookmark* action requires a channel to add the bookmark to. To add bookmarks to multiple channels simultaneously, add several actions of the *Create Bookmark* type and specify different target channels for each.

The *Send Event to Client* action only needs a target channel to be specified if the action has the *Display event in notification panel* option enabled: as a result, the pre-defined message will appear in the notification area of the specified channel (overlay area in live view, the same place where the stream errors appear - see TRENDnetView EVO Monitor user manual for more information). Similarly to bookmarks, you may add more than one action of the same type and add different channels as targets in order to display the message in the notification areas of these channels.

## Example E&A Scenarios

Here are a few example usages of the *Event & Action Configurator* and a brief overview of the settings. You can find more examples and details in the following pages.

### Email Notification on Video Loss

Task: send an email notification when the video stream from certain channel(s) is not available for more than five minutes.

Preliminary setup:

- in the channel settings, set the video loss timeout to 300s (five minutes) for each target channel (select multiple channels and use the *Bulk Edit* button on the upper panel to modify several channels at once)
- configure a [mail server](#) with your desired parameters
- create an action: send email to the responsible person using the pre-configured SMTP server

Rules:

- the *Video lost* event from each of the target devices triggers the *Send email* action



Email Notification on Video Loss

Note that you do not need to create the *Video lost* event as it is already exists by default for each channel.

### Global Handling of Recording Errors

This example will cover a use case with a global event, showing how multiple servers within a single system can be involved in a more sophisticated chain of events and actions.

Task: if there are recording errors on Server A, log this event locally and also add corresponding entry to Windows Application log on the central server. The *Recording error* event is there by default and so there is no need to create it.

Preliminary setup:



- Server A: *Write to A Application log* action
- Central Server: *Write to CS Application log* action
- Global event *Recording Error on Server A*

Rules for Server A:

- *Recording error* event triggers local *Write to A Application log* action
- *Recording error* event triggers *Send global event* action for the *Recording Error on Server A* event

Central Server rules:

- *Recording Error on Server A* global event triggers its own *Write to CS Application log* action



Rules for the Server A

Server A generates a global alert and sends it to all servers in the system.



Rules for the Central Server

The Central Server is subscribed to the global alert and therefore reacts with the assigned action.

See Also

## 47 Understanding Conditions

Conditions are auxiliary controls for event/action rule operation: these are **condition variables**, 'locks' for the defined event/action mappings.

Each condition can only be in one of two states: **OFF** or **ON** (0 or 1, *false* or *true*, to put it in terms of formal logic). When applied to a rule, the condition serves as an additional clause for the action execution: the action will only be performed if attached condition is ON, and is never performed if condition is OFF - regardless of whether the event has been triggered. The condition **state** can be manipulated using the *Set condition* and *Unset condition actions* (these exist by default for each and every created condition), which, in their turn, can be set off by some other events.

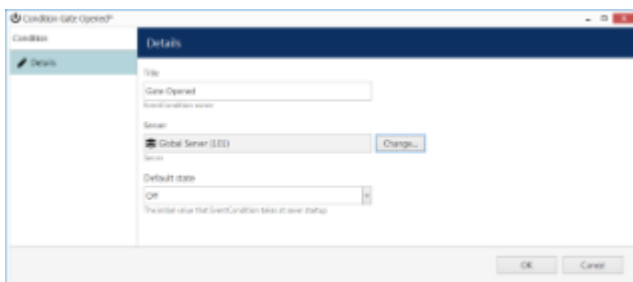
The conditions are available in the *Event & Action Configurator*: click the *Conditions* button in the bottom part of the *Rules* section to load the existing condition list or create a new one.

### Add Condition

To add, remove and manage the conditions in the TRENDnetView EVO Console, go to the *Events & Actions* section and choose *Conditions* from the menu on the left. Conditions can be also added as you go from the [Event & Action Configurator](#).

Click the + *New condition* button on the upper panel to bring up the condition configuration dialog box. Here you have to:

- enter an comprehensible **title** for the condition - usually, the best ones are those which express a state, e.g., camera offline, motion present, door opened etc.
- choose the **target server** - conditions, as non-global events, are local and operate within a single server
- set condition **default state**, i.e., the state it is in before it is set or unset for the first time; this can be either ON or OFF



*New Condition* dialog box

When you have finished, click *OK* to save and close the dialog box; the newly created condition will appear in the item list and will become available in the *Event & Action Configurator*.

Use the buttons on the upper panel to edit and remove the conditions; the filters on the bottom panel will help you load recently added or recently edited items.

### Condition Usage Examples

Consider a system that has three cameras installed: *Camera A* overlooking area A, *Camera B* overlooking area B that is just next to area A, and *Camera C*, which is a supplementary PTZ device and can be turned to view both areas and even more, and overlooks area C by default. If a person walks into area A, he/she will be detected by *Camera A*'s video analytics; if he moves on, he will enter area B and the security guard will see him on *Camera B*.

Now, imagine that *Camera B* suddenly goes offline. The security guard is OK with that, until there is someone in area B; he notices some motion in area A and takes control of *Camera C*, and makes it overlook area B, but the person of interest is long gone by that time, and there is no footage of him being present in area B. So, the task is to automate the process so that *Camera 3* serves as a backup while *Camera B* is offline; the configuration in such a case may look as follows:

- Event 1: *VCA*, source: *Camera A*
- Event 2: *Video Lost*, source: *Camera B*
- Condition: *Camera B Offline*, default state: *OFF*

- Action 1: make *Camera C* go to preset *Area B*
- Action 2: *Set Condition*, target: condition *Camera B Offline*

Rules:

- Event 2 triggers Action 2 (that switches the state of condition *Camera B Offline* to ON)
- Event 1 triggers Action 1 upon the condition *Camera B Offline*

Thus, Action 1 (go to the PTZ preset) is only actually triggered then and then only if *Camera B Offline* condition state is ON, which is not possible while *Camera B* is online.

Now, we need this to work both ways, i.e., we want to return *Camera C* to its home position and reset condition state back to *OFF* when *Camera B* comes online again. New configuration elements will be added:

- Event 3: *Video Restored*, source: *Camera B*
- Action 3: *Unset Condition*, target: condition *Camera B Offline*
- Action 4: make *Camera C* go to preset *Area C*

Rules:

- Event 3 triggers Action 3 (that switches condition state to OFF)
- Event 3 triggers Action 4

These new rules ensure that, once *Camera B* is streaming again, *Camera C* will go back to its original position, thus terminating it as a backup device; and the condition is *OFF*, meaning that the triggering of VCA rules in area A will not make *Camera C* move.


The whole setup in *Event & Action Configurator* is as follows:



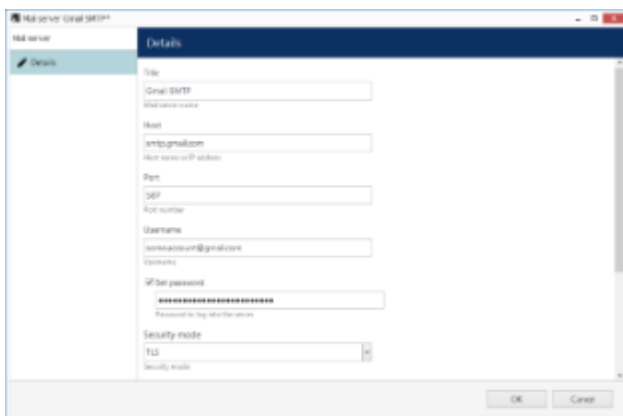
Sample rules

## 48 Manage Mail Servers

One or multiple different outgoing SMTP servers can be configured in order to send alert notifications emails through them. You can use/set up your own SMTP server, if your organisation already has one and/or it is affordable for your organisation; alternatively, free Internet services can be used for this purpose.

 SMTP servers provided by popular free services and/or ISPs usually have limitations on the number/frequency of emails going through them daily. Make sure you check with SMTP service provider to learn about this.


To access mail server setup via TRENDnetView EVO Console, open the *Events & Actions* section and select *Mail servers* from the menu on the left. Click the + *New mail* server button on the upper panel or double-click an existing mail server from the item list to open the configuration dialog box. Note that there are not any default (pre-configured) mail servers in TRENDnetView EVO Console.



SMTP server settings

Setup here is similar to configuring an email client. The table below contains detailed information on the available settings.

| Setting            | Description   | Default Setting |
|--------------------|---|-----------------|
| Title              | User-defined mail server name   | [empty]         |
| Host               | Outgoing SMTP server IP address or hostname   | [empty]         |
| Port               | Outgoing SMTP server port; default is 25, common ports for encrypted connection are 465 and 587           | [empty]         |
| Username           | Enter valid user account details to log onto the target SMTP server                                       | [empty]         |
| Password           | Enter valid user account details to log onto the target SMTP server                                       | [empty]         |
| Security Mode      | Logon authentication type according to the SMTP server configuration requirements                         | none            |
| Sender             | Email address on whose behalf emails will be sent   | [empty]         |
| Aggregation* Count | Max number of notifications to be aggregated into a single email  | 10              |
| Aggregation* Time  | Max time period in seconds during which notifications are collected together to be sent in a single email | 10              |

 \*Email aggregation can be used to accumulate alert notifications and send them in bunches rather than one at a time. This decreases SMTP server load and does not 'spam' your notification inbox, making it easier to search and analyze alerts, and is thus especially useful if the number or frequency of events is high.

Click *OK* to save mail server settings; newly created configuration will appear in the item list. Your mail server is

now ready to be used for sending notifications.



Some mail servers require additional settings to be changed on the server side to allow third-party applications to send emails through their SMTP service. For example, Google security requires that you log into your account via a browser using the server that will be utilising the SMTP service in order to enable account access from that computer.

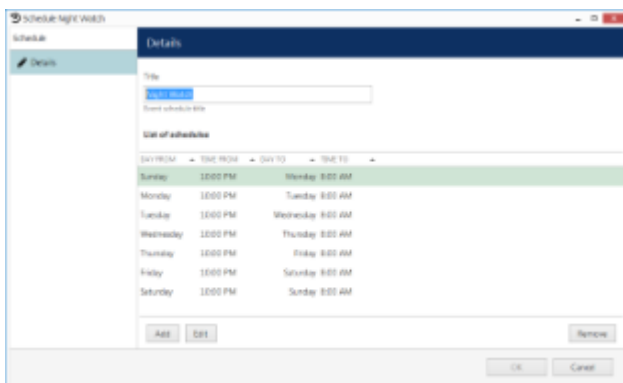
If you can successfully use SMTP settings to send emails from the same computer, TRENDnetView EVO will also have no trouble sending your notifications.

## 49 Create Schedules

Apart from [conditions](#) and [delay timers](#), there are **schedule** elements that determine if a rule has been executed based on a pre-defined itinerary.

To add, remove and manage event and action schedules in TRENDnetView EVO Console, go to *Events & Actions* section and choose *Schedules* from the menu on the left. Schedules can be also added as you go from the [Event & Action Configurator](#).

Click the + *New schedule* button on the upper panel to bring up schedule configuration dialog box.

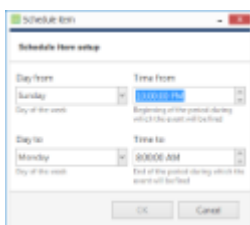


Add new schedule

Enter a user-friendly **title** for the new schedule and then add one or multiple time intervals to form the timetable. Manipulate **schedule items** with the button in the bottom panel.

For each time interval, you can define its starting point (day and time) and ending point (day and time).

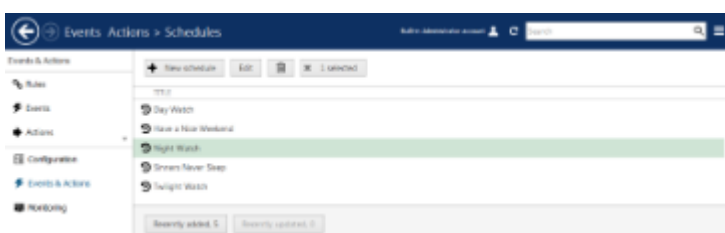
Days can be selected from the drop-down list; time can be entered manually or adjusted using the arrows on the right; you can also manipulate time by selecting (highlighting) the hours/minutes/seconds and scrolling your mouse wheel up/down, while still hovering your mouse cursor over the relevant highlighted value.



New schedule item

Click *OK* when you have finished to save and close the dialog box. The newly created schedule will appear in the item list and will become available for selecting in the *Event & Action Configurator*.

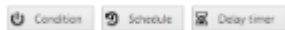
Use the buttons on the upper panel to edit and remove the existing schedules; the filters on the bottom panel will help you load recently added or recently edited items.



Multiple schedules

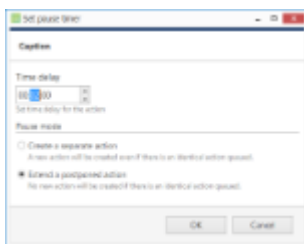
## 50 Delay Timers

**Delay timers** are supplementary entities for controlling action launching. Unlike conditions and schedules, timers cannot be pre-created in the main TRENDnetView EVO Console *Events & Actions* section, but rather are defined as you go for each rule with the *Event & Action Configurator*, which is available via the *Rules* section.



*Delay Timer* button in the *Event & Action Configurator*

To add a pause timer for specific actions, select one or more of the mapped rules (use *CTRL+click* or *Shift+click* to mark multiple items) subject to delay, and then click the *Delay Timer* button on the bottom panel of the central part of the *Event & Action Configurator*.



Delay timer properties

Set the delay period for the target timer. Time can be adjusted in the following ways:

- click hours/minutes/seconds and then use the UP and DOWN arrows on the right, or
- click hours/minutes/seconds and use the mouse scroll, while still holding mouse cursor over the relevant timestamp section, or
- enter the time manually using the keyboard numpad.

Next, choose the pause mode:

- **Create a separate action:** new actions of the same type will be created regardless of the acting delay timer, and queued in the same way as the original delayed action
- **Extend a postponed action:** new events of the same type will restart the timer, postponing the resulting action for the specified amount of time

When you have finished, click *OK* to save and exit the dialog box. The newly created delay timer will be assigned to the pre-selected actions.

**Extending an action** allows you to postpone the action execution repeatedly if more events of the same type arrive within the chosen time period. For example, if incoming events are of a *Recording Error* type, there may come too much of them at once e.g. in case of a major storage issue, causing a lot of triggered actions of the same type, while only a single action may be desirable.

Say, if required action is *Write to application log*, setting a delay timer to *5 minutes + extended action* will postpone the email sending for 5 minutes every time a new recording error appears; when, at a certain point, more than 5 minutes have passed without new incoming events, a single log entry will be eventually created. The **separate action** option, on the contrary, will force logging for every single triggered event.

To remove a delay timer from rule configuration, click the timer to highlight it within the rule, and then click the *Clear* button in the bottom panel. Note that, if there are schedules and/or conditions attached to the same rule, they will be removed as well.

## 51 Health Monitoring

TRENDnetView EVO provides health monitoring data for servers, devices and channels, as well as live status of connected user sessions and other resource information.

To access live reports in TRENDnetView EVO Console, choose the *Monitoring* section in the bottom-left-hand panel and switch between components using the menu on the left. Use the *Search* field in the upper-right-hand menu to filter the records; press the *Refresh* button to reload the item list.

### Servers

The server status includes information about connection and synchronisation: both have numeric status code and corresponding textual status.

| TITLE          | ID    | CONNECTED | SYNCHRONISED | STATUS  | CONNECTION | CONNECTION TEST                        | SYNCHRONIZED | SYNCHRONIZATION TEST                   |
|----------------|-------|-----------|--------------|---------|------------|--|--------------|--|
| Central Server | (001) | yes       | yes          | Success |            | 0 The operation completed successfully |              | 0 The operation completed successfully |

*Servers* live monitoring

### Devices

The device summary provides configuration update status and the time of the last communication between the server and device.

| TITLE                        | ID    | DEVICE               | DEVICE MODEL     | TIME        | CONNECTION | CONFIGURATION UPDATE RESULTS TEST      | STATUS  |
|------------------------------|-------|----------------------|------------------|-------------|------------|--|---------|
| Camera CM907 Compatible...   | (003) | Central Server (001) | CM907 Compatible | 11:07:44 AM |            | 0 The operation completed successfully | Success |
| Asus (CAM92) on 192.168.1... | (003) | Central Server (001) | CAM92            | 11:07:44 AM |            | 0 The operation completed successfully | Success |

*Devices* live monitoring

### Channels

Along with configuration update results, channel monitoring contains information about:

- video loss
- stream bit rate
- stream frame rate (FPS)
- recording status

Recording status has the following denotation: 0=current not recording, 1=recording is active. Note that 'not recording' may both mean either that recording is not configured (disabled) or that recording has not been activated according to the schedule.



| Title                        | ID  | Device              | Status  | Time        | Configuration | Configuration Update Result          | Error Code |
|------------------------------|-----|---------------------|---------|-------------|---------------|--------------------------------------|------------|
| Channel: ONVIF Composite...  | 008 | Central Server (SD) | Success | 12:23:30 PM | 0             | The operation completed successfully | 000000     |
| Asyn: CAW623 on 192.168.1... | 009 | Central Server (SD) | Success | 12:23:30 PM | 0             | The operation completed successfully | yes        |
| Asyn: CAW623 on 192.168.1... | 009 | Central Server (SD) | Success | 12:23:30 PM | 0             | The operation completed successfully | yes        |

Channels live monitoring

## Streams

This section displays only recorded streams and their properties: originating device, target storage and directory, stream type and status messages.

## Storages

Statistics, properties and status for each storage unit are displayed here.

## User Sessions

This monitoring area displays currently active incoming TRENDnetView EVO Monitor connections via both TCP and HTTP ports with the following details:

- user account
- remote address
- remote (outgoing) port
- session start time
- type (TRENDnetView EVO Console/TRENDnetView EVO Monitor)

Disconnected sessions will automatically disappear from the list.

| ID | Remote Address | Start Time  |
|----|----------------|-------------|
| 1  | 192.168.1.80   | 12:23:30 PM |

User Sessions live monitoring

## External Services

If License Plate Recognition, Face Recognition and/or other external services are connected, their session properties will be displayed here: service name, remote address and used user account.

## 52 Audit

To access the global audit log in TRENDnetView EVO Console, choose *Audit* section in the bottom-left-hand panel.

The audit log contains detailed information about the most important user activities and server events. Events are organised in a way similar to the Windows Event log, and can be filtered and sorted by any field just by clicking on the relevant field. By default, entries are sorted by time, with latest on top. Use *Search* field in the upper-right-hand menu to filter the records; press *Refresh* button to reload the item list.

The log has two sections: *Servers* and *Users*; these can be accessed by clicking the corresponding items in the menu on the left, when in *Audit* section.

### Servers

Each event contains the following values (internal ID fields omitted):

- **Time:** event timestamp in system locale-specific format
- **Server:** name of the server from which the event originates
- **Event:** a brief description of the event; there are the following types:
  - *Configuration loaded:* configuration has been successfully loaded from the database and applied to the target server
  - *Central server connected:* central server has successfully connected to the target recording server
  - *Central server disconnected:* central server has disconnected from the target recording server because the target server is offline, unreachable, has been removed from the central server configuration or has invalid configuration
  - *Synchronisation completed:* central server has successfully synchronised configuration data with the target recording server
- **Information:** additional information relevant to the event, e.g., session ID for the central server connections

| Time                    | Server                 | Event                       | Information                          |
|-------------------------|------------------------|-----------------------------|--------------------------------------|
| 05: 4/5/2018 5:01:08 PM | Global Server (112)    | Configuration loaded        | The operation completed successfully |
| 06: 4/5/2018 5:01:08 PM | Global Server (112)    | Configuration loaded        | The operation completed successfully |
| 03: 4/5/2018 5:02:04 PM | Global Server (112)    | Configuration loaded        | The operation completed successfully |
| 03: 4/5/2018 5:08:03 PM | Global Server (112)    | Configuration loaded        | The operation completed successfully |
| 04: 4/5/2018 5:08:09 PM | Global Server (112)    | Configuration loaded        | The operation completed successfully |
| 05: 4/5/2018 6:00:04 PM | Global Server (112)    | Configuration loaded        | The operation completed successfully |
| 06: 4/5/2018 6:00:08 PM | Unknown resource (112) | Central server disconnected | 1                                    |
| 06: 4/5/2018 6:00:08 PM | Unknown resource (112) | Configuration loaded        | The operation completed successfully |
| 07: 4/5/2018 6:00:09 PM | Unknown resource (112) | Central server connected    | 2                                    |
| 07: 4/5/2018 6:00:09 PM | Global Server (112)    | Configuration loaded        | The operation completed successfully |
| 07: 4/5/2018 6:00:09 PM | Unknown resource (112) | Synchronisation completed   |                                      |
| 07: 4/5/2018 6:00:09 PM | Unknown resource (112) | Configuration loaded        | The operation completed successfully |
| 07: 4/5/2018 6:00:09 PM | Global Server (112)    | Configuration loaded        | The operation completed successfully |

Audit log, *Servers* section

Double-click any event to open it in a separate dialog box with additional information about source server, such as event classification and IP address.

| Event details  |                          |
|----------------|--------------------------|
| ID             | 070                      |
| Time           | 4/5/2018 6:00:08 PM      |
| Class          | Server                   |
| Subclass       | Server activity          |
| Event          | Central server connected |
| Server         | Unknown resource (112)   |
| Remote address | 192.168.1.8395074        |
| Resource       | 2                        |

Event example for the *Servers* audit log

### Users

Each event contains the following values (internal ID fields omitted):

- **Time:** event timestamp in system locale-specific format
- **User login name:** user login information, if available
- **User's full name:** full name of the user, as specified in TRENDnetView EVO Console settings
- **Connection address:** remote IP and outgoing port used for connection
- **Connection type:** shows whether the user was logged in from TRENDnetView EVO Console, TRENDnetView EVO Monitor, mobile/browser client or via HTTP connection as an external service
- **Event:** event type
  - *Log in:* the specified user has logged in to the target server
  - *Log out:* the specified user has logged out
  - *Unsuccessful log in:* an attempt to log in was made but it failed because either username or password was incorrect
  - *Receive Data:* user has requested device data via TRENDnetView EVO Monitor; target device can be found under *Information*
  - *Navigate:* user has activated device PTZ control via TRENDnetView EVO Monitor; target device can be found under *Information*
- **Server:** name of the server from which the event originates
- **Information:** additional information related to the event, e.g., the device name

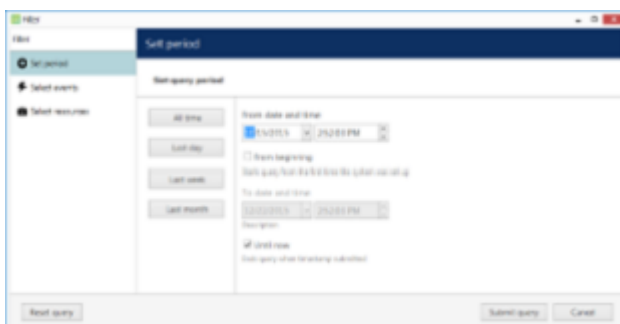
| ID   | Time                 | User  | Connection Address                             | Connection Type | Action              | Server              |
|------|----------------------|-------|--|-----------------|---------------------|---------------------|
| (24) | 3/23/2014 2:27:25 PM | admin | SubIn Administrator account ID: 127.0.0.16/254 | Monitor         | Logout              | Global Server (127) |
| (23) | 3/23/2014 2:18:41 PM | admin | SubIn Administrator account ID: 127.0.0.16/254 | Monitor         | Receive Data        | Global Server (127) |
| (22) | 3/23/2014 2:18:37 PM | admin | SubIn Administrator account ID: 127.0.0.16/254 | Monitor         | Receive Data        | Global Server (127) |
| (21) | 3/23/2014 2:18:27 PM | admin | SubIn Administrator account ID: 127.0.0.16/254 | Monitor         | Receive Data        | Global Server (127) |
| (20) | 3/23/2014 2:18:25 PM | admin | SubIn Administrator account ID: 127.0.0.16/254 | Monitor         | Receive Data        | Global Server (127) |
| (19) | 3/23/2014 1:53:43 PM | admin | SubIn Administrator account ID: 127.0.0.16/254 | Monitor         | Receive Data        | Global Server (127) |
| (18) | 3/23/2014 1:53:41 PM | admin | SubIn Administrator account ID: 127.0.0.16/254 | Monitor         | Login               | Global Server (127) |
| (17) | 3/23/2014 1:53:35 PM | admin | none   | none            | Unsuccessful log in | Global Server (127) |
| (16) | 3/23/2014 1:53:30 PM | admin | none   | none            | Unsuccessful log in | Global Server (127) |
| (15) | 3/23/2014 1:53:27 PM | admin | none   | none            | Unsuccessful log in | Global Server (127) |
| (14) | 3/23/2014 1:53:24 PM | admin | none   | none            | Unsuccessful log in | Global Server (127) |
| (13) | 3/23/2014 1:54:54 PM | admin | SubIn Administrator account ID: 127.0.0.16/254 | Console         | Login               | Global Server (127) |
| (12) | 3/23/2014 1:54:51 PM | admin | none   | none            | Unsuccessful log in | Global Server (127) |

Audit log, *Users* section

## Define Filter

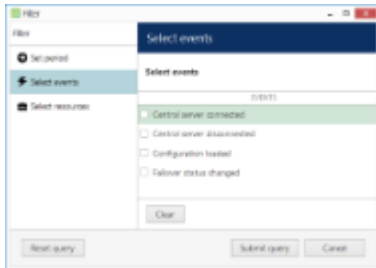
Audit logs can be filtered for easier analysis. Click the *Define filter* button on the upper panel to bring up the dialog box.

In the *Set period* tab, specify the time limits for log output. You can set the date and time manually or use automated controls for preset time boundaries: last day/week/month, the whole time, and also set start/end boundaries equal to the log beginning/end.

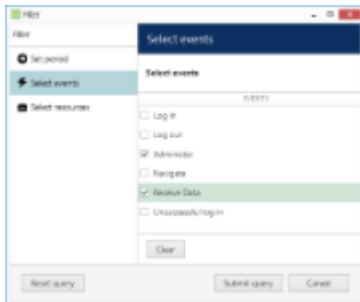


Set the time boundaries for audit log output

In the *Select events* tab, choose specific event types to narrow down the search. Note how the choice differs for the *Servers* and *Users* log filters.

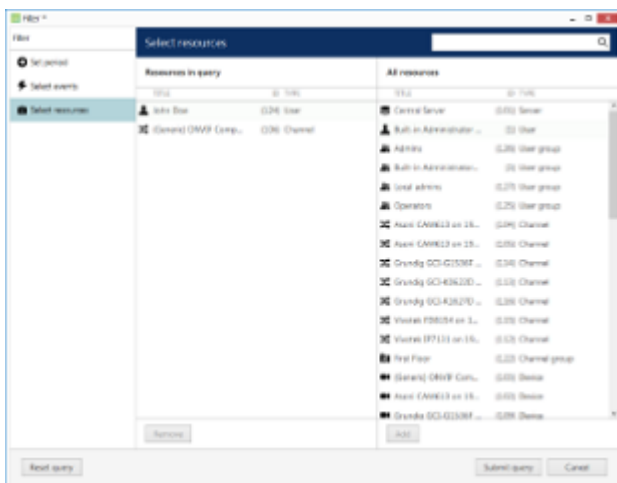


Specify event types for the *Servers* audit log output



Specify event types for the *Users* audit log output

In the *Select resources* tab, you can choose which resources will be mentioned in the log entries. Note that if multiple resources are chosen, the filter will apply *OR* logic, meaning that output log will only be displayed if it contains log entries for **at least one** specified resource, and not for the combination of all specified resources.




Narrow down your search by specifying resources

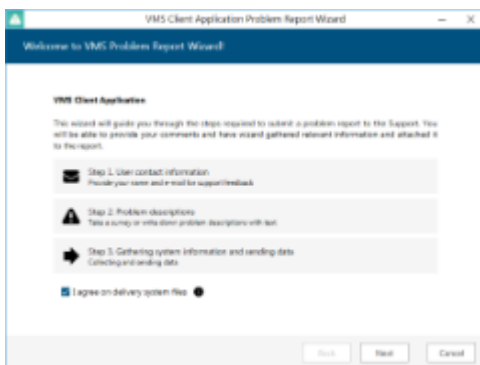
Use the *Search* field to filter the resource list; both the list of *Resources in query* and general *All resources* will be affected by the *Search* filter. Press the *Reset query* button in the bottom left corner at any time to restart filter configuration; when you have finished, click *Submit query* to view the results. To discard filtering, simply switch to a different section in the menu on the left and then switch back to your desired section.

## 53 Problem Report Wizard

TRENDnet software offers a comprehensive wizard-like tool for structured and detailed problem reporting. The tool is automatically installed at the same time as the the product and is thus available on any machine on which TRENDnet software is installed.

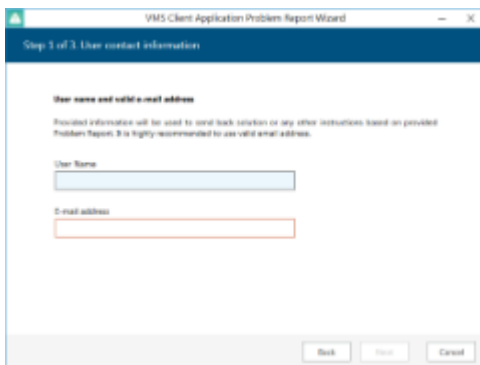
Access Problem Report Wizard via *Start* -> Scroll down in the Applications until you reach *TRENDnetView EVO* -> *TRENDnetView EVO Problem Report Wizard* (in Windows 7 and older versions, use *Start* -> *All Programs* -> *TRENDnetView EVO* -> *TRENDnetView EVO Problem Report Wizard*); alternatively, use Windows Start Menu *Search* to locate the Problem Report Wizard in the programs menu.

 Make sure you run the Problem Report Wizard on the right computer: it gathers information from the machine it has been launched on, and **not** from any of the servers connected via TRENDnetView EVO Console or TRENDnetView EVO Monitor.



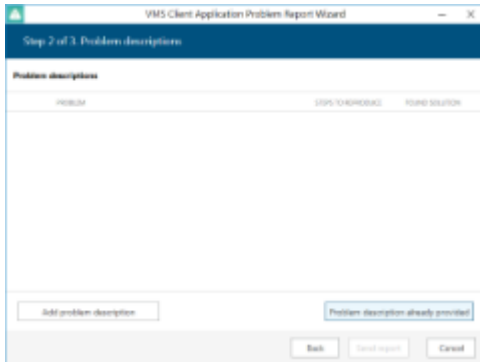
Run Problem Report Wizard from Windows Start menu

Agree to deliver system files to TRENDnet support and hit *Next*. You can check which files are being taken from your system by clicking on the information button next to the agreement checkbox. Note that TRENDnet will not transfer your data to any third-party companies; all the information gathered is required to help TRENDnet efficiently resolve the reported problems.



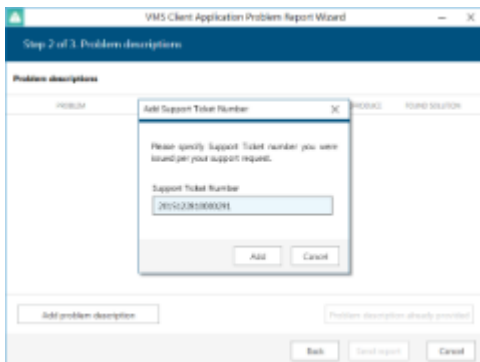
Enter your contact information

Enter your name and your email address so that the TRENDnet support team can contact you. Click *Next* to proceed.



Problem description

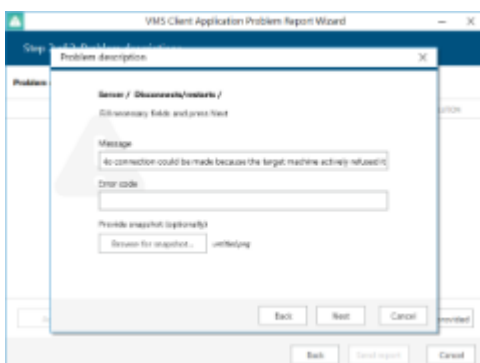
If you were asked by support team to generate a problem report, copy the **ticket ID** from the email communication and add it to the report by clicking the *Problem description already provided* button. This will help the support team to classify your report faster, and it will also guarantee that your report will go directly to the team member responsible for the thread.



Insert ticket number

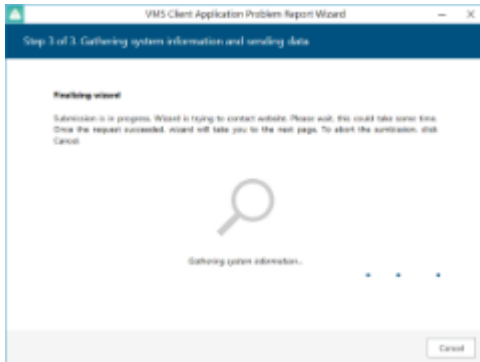
If you are applying a new, unreferenced problem report, click the *Add problem description* button.

A short comprehensive wizard will guide you through the main issue categories, allowing you to choose the ones that are most applicable to your situation. You will be given the chance to enter error messages/codes, if there are any, and to attach snapshot(s). Make sure you provide the maximum amount of relevant information about the issue you are experiencing; always include **snapshots** (screenshots) if they are available.



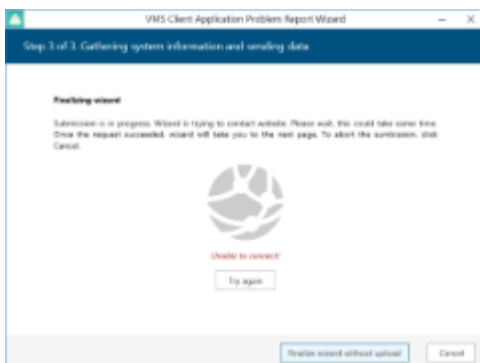
Enter problem classification and relevant details

You can add **multiple** descriptions to a single report. When you are ready, press the *Send report* button; the wizard will then try to send the report automatically.



Submitting report

If the server is offline, wizard will not be able to submit the report to TRENDnet; instead, you will be invited to save the generated report locally. Press the *Finalize wizard without upload* button to finish.



Retry report submission or finish the wizard

Click *Save report as file* to save the compressed report on your computer; you are welcome to send it manually from any other computer by navigating to "<http://www.trendnet.com/support>". Click *Exit* to close the wizard.