

Moxa SoftNVR-IA™ IP Surveillance Software

User's Manual

www.moxa.com/product

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MOXA®

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Moxa SoftNVR™ IP Surveillance Software Quick Installation Guide

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Product Information

Overview

SoftNVR-IA is a 32-channel IP surveillance software for industrial applications. The key feature of SoftNVR-IA is built-in OPC server, which can directly communicate with industrial automation systems, such as SCADA and HMI. The video recording and alarm handling functions are not only able to be triggered by SoftNVR-IA supported events (ex. Digital Input, Video Loss), but also by the events of the automation system to enhance system intelligence. Most importantly, SoftNVR-IA offers boundless potential for integrating IP surveillance systems with automation systems for industrial system integrators.

Features

OPC Communication

- Receive event tags sent from the automation system to trigger video recording and other actions
- Send event tags to the automation system including system information and the status of each channel

Live View

- Supports 1, 4, 6, 9, 10, 13, 16, 25, 32 live displays, as well as video rotate and full screen display
- Supports MJPEG, MPEG4, and H.264 video streams (with VPort models, excluding the VPort 2000 series and VPort 3310)
- Supports up to 32 channels in the camera list
- Easy-to-use with a drag and drop video display selection
- Provides snapshot images (in JPEG format)
- Supports image tuning, including brightness, saturation, contrast, and hue
- Supports 2-way audio for voice communication between field sites and the control center
- Supports dual monitor and full screen displays
- Supports display screen rotation
- Supports the PTZ control panel defined by VPort products

Video Record

- Video recording can be triggered by event or manually activated
- Video files are in AVI format and can be played back on all popular media players (requires FFDSHOW codec)
- Supports the FIFO recycle function for long-time video recording
- The number of days recorded video files are stored is user definable
- Supports up to 30 seconds of pre-event video recording
- Storage hard disk can be selected from the network hard drives

Playback and Search

- Plays back up to 4 recorded videos simultaneously
- Supports timeline selection when in video playback mode
- Supports stop, speed up, slow down, rewind frame-by-frame, and forward frame-by-frame
- Search video records by camera, time, or event
- Supports snapshot taking when in video playback mode

Schedule

- A weekday schedule can be set up
- Schedule settings can be based on the camera and events

Alarm Event

- Alarm events: Digital input and Video Loss
- Accepts events from the automation system via OPC communication
- Alarm triggered actions: popup display, go preset, play sound, trigger DO (relay)

System

- Automatic search or manual detection of a video device's IP address on the LAN
- Server name is user configurable
- Configure multiple email addresses for receiving alarm messages
- Folder and file names of snapshot images can be customized
- Language version: English, Traditional Chinese, and Simplified Chinese

Recommended System Requirements

- Intel Core 2 Duo QX6700 or above
- 2GB RAM or above
- Windows XP with SP3
- Motherboard: Intel 945 or 965 chip, Intel chipset recommended
- Display card: NVIDIA GeForce GT210 or above (dual monitoring requires 2 output)

Video Performance Reference

The video performance reference below is based on lab tests following Moxa's recommended system requirement. The total FPS displayed (frames per second) means the total FPS we tested in the given video channels, where each video channel is in 30FPS video stream, and monitor display. For the video recording, all the video streams are in 30FPS, but display capabilities may be influenced by the PC's resource.

Video Channels	Monitor Display	Total FPS displayed in Full D1 (720x480) resolution		Total FPS displayed in CIF (352x240) resolution	
		MPEG4	H.264	MPEG4	H.264
16 channels	Single Monitor	440	330	480	400
	Dual Monitors	440	300	460	400
20 channels	Single Monitor	525	325	600	515
	Dual Monitors	455	365	580	485
25 channels	Single Monitor	Not recommend	Not recommend	750	650
	Dual Monitors			715	635
32 channels	Single Monitor	Not recommend	Not recommend	885	800
	Dual Monitors			805	775

NOTE The system requirements listed above are the basic recommendation for running SoftNVR-IA. For advanced video performance when viewing and recording video images, you may choose to install a better video card, more memory, and better computing power.

NOTE It is not recommended to display 25 or 32 videos channels in full D1 (720x480 or 720x576) simultaneously. To simultaneously display 25 or 32 video channels in Full D1 resolution you must lower the FPS of each VPort, or the video will be abnormally displayed. For example, if 25 channels of videos need to be simultaneously displayed in Full D1 resolution, each video stream must lowered to $455 \div 25 \approx 18$ FPS or lower.

SoftNVR-IA Package Contents

- Software CD (includes user's manual)
- USB Key Pro

Release Notes

SoftNVR-IA

Version 1.0

Date 2010/2/28

Release Note

- Newly released

SoftNVR-IA™ Installation

Before Installing the Software

Make sure your PC has DirectX 9.0C or above installed.

Starting the Installation

Step 1: Insert the installation CD.

Step 2: Run SoftNVR-IA_Vxx.exe from the CD-ROM directory. A language selection table will pop up. Select the language of your choice.



ATTENTION

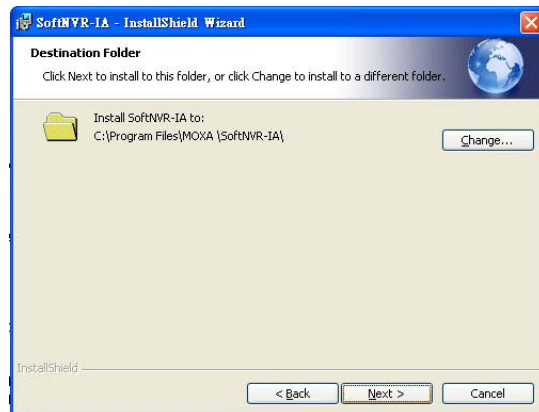
SoftNVR-IA V1.0 supports 3 languages: **English, Traditional Chinese, and Simplified Chinese.** If you require another language, contact Moxa's sales representative.

Step 3: Select "I accept the terms of the license agreement" and click **Next** to continue.

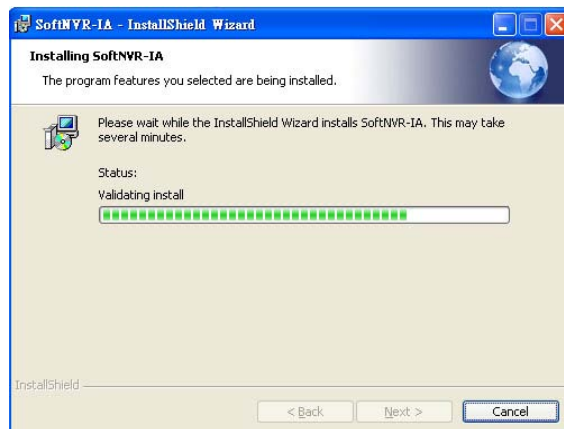
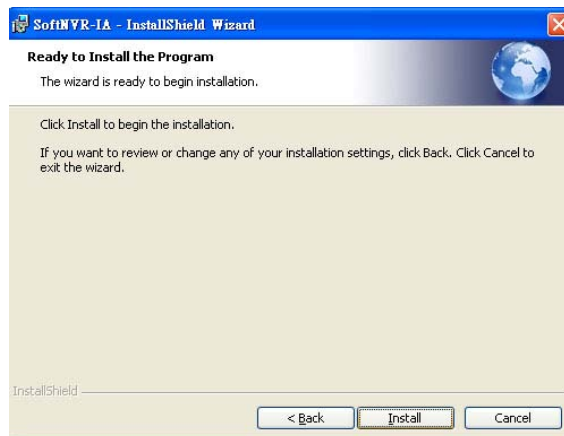


NOTE The NET 2.0 framework must be installed on this PC or server in order for SoftNVR-IA to work properly. If the NET 2.0 framework is not currently installed, please install it before continuing with the SoftNVR-IA installation.

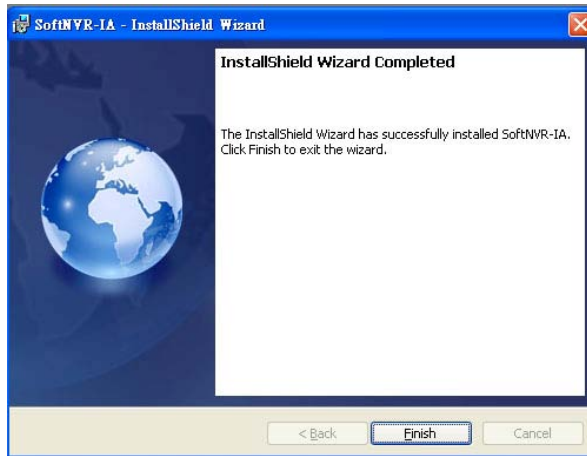
Step 4: Select the installation folder.



Step 5: Select **Install** to start the installation.



Step 6: Finish the installation process by selecting **Finish**.



Step 7: Verify the MOXA SoftNVR-IA folder is in the Program list. There are three programs: SoftNVR-IA Live Viewer, SoftNVR-IA Playback, and Uninstall SoftNVR-IA. If any of the three is missing, you will need to initiate the installation process again.



NOTE To uninstall SoftNVR-IA, run the Uninstall SoftNVR-IA, or the SoftNVR-IA_Vxx.exe again, and follow the instruction for the removal of SoftNVR-IA.

USB Key Pro

The “Key Pro” located in your CD box must be plugged into your computer’s USB port to enable proper SoftNVR-IA operations. The driver was automatically installed during the SoftNVR-IA installation.



NOTE The USB “Key Pro” protects the SoftNVR-IA license and does not influence normal PC or server functions.

NOTE Without the USB “Key Pro”, SoftNVR-IA will automatically close after three hours of use.

SoftNVR-IA Live Viewer

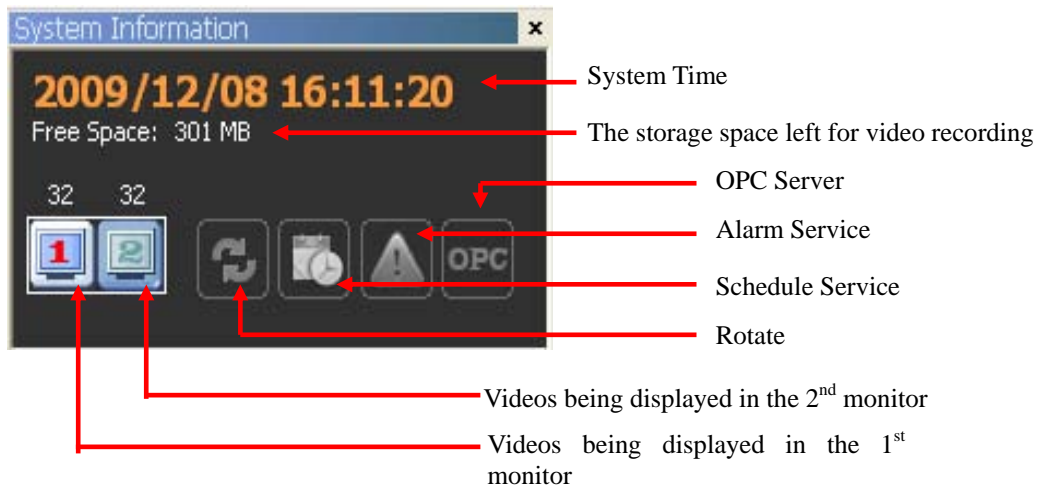


Tool Bar

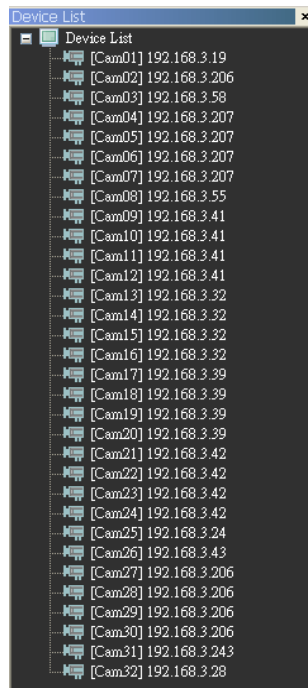
- Live video display control**
- Dual monitor control**
- Video record control**
- Take snapshot images**
- Open playback window**
- Start OPC server**
- Open E-map**
(V1.1 and up)
- Enable audio**
(V1.1 and up)

NOTE Here is an example to show how the Rotate function works:
When there is 7 videos,
1-screen display: 1→2→3→4→5→6→7→1→2→3....
4-screen display: 1+2+3+4→5+6+7→1+2+3+4→5+6+7→....
6-screen display: 1+2+3+4+5+6→7→1+2+3+4+5+6→7→....
9-screen display: 1+2+3+4+5+6+7→1+2+3+4+5+6+7→...

System Information

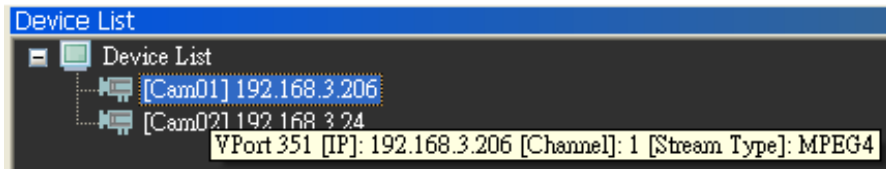


Camera List



A maximum of 32 cameras can be listed in the camera list.

Move the cursor to the selected camera, and then a tooltip will show the model name, IP address, channel number, and stream type. Double click on the selected VPort to open this VPort's web console.



PTZ Control Panel

SoftNVR-IA's PTZ control commands are identical to the VPort's PTZ control commands.

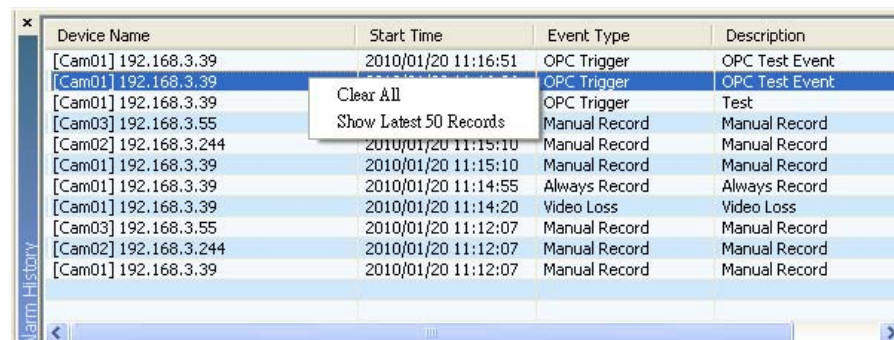
PTZ control with extra commands



PTZ control with custom commands



Alarm History

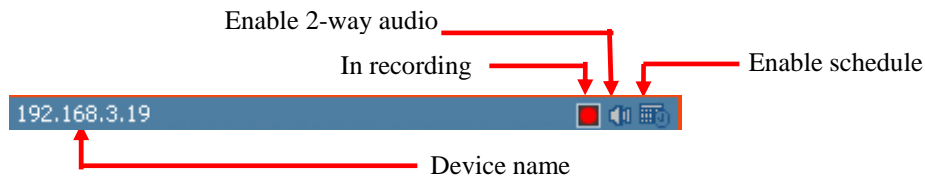


The alarm history shows SoftNVR-IA's events. The maximum number of events is 500. Click on the right button of mouse for a popup menu to clear all the alarms (**Clear All**) or show the 50 latest alarms (**Show Latest 50 Records**).

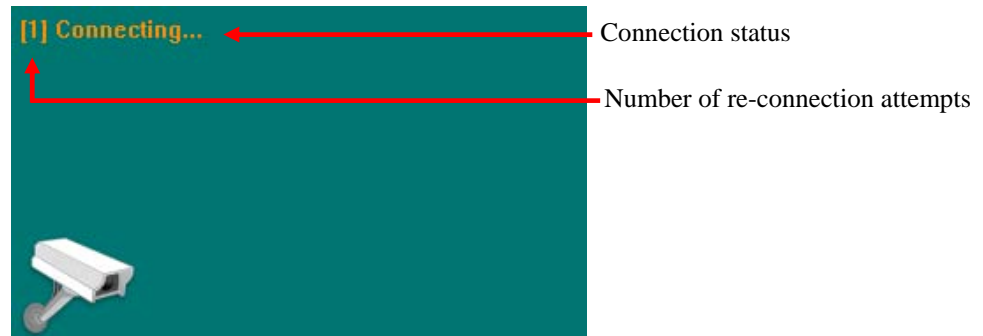
Live Video Display

To display video in the live video display area, just drag and drop the selected camera from the camera list to the Live Video Display area.

Image Caption



Device Connection



Popup Menu



Right click on the image for the popup menu:

- **Full Screen:** Change to full screen display
- **2-Way Audio:** enable the 2-way audio
- **Snapshot:** take snapshot image
- **Connect:** when the retry connection has failed 5 times, select this function to re-start the retry connection.
- **Manual Record:** manually enable or disable the video recording. If the schedule is enabled, then "Manual Record" will be greyed out.

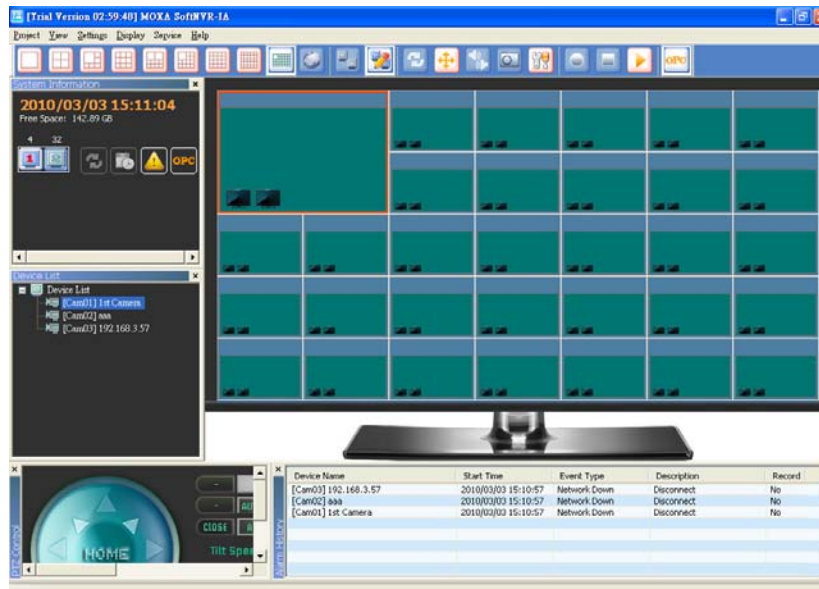
- **Alarm Confirmed:** In the event of an alarm, the image will be surrounded a continuously flashing red frame. Use “Alarm Confirmed” to manually stop the event alarm and the flashing red frame.

NOTE When SoftNVR-IA receives an alarm notification, it can only be disabled via Alarm Confirmed.

Double click on the video image to display the video image in full screen mode. You may use the cursor to drag the video image to view different parts of the image.

Dual Monitor Display

SoftNVR-IA supports dual monitor display to accommodate the needs of different video applications. Users can click on the “Dual Monitor Editor” button in the “Tool Bar” to edit the 2nd monitor’s video display. Use drag and drop to configure the video cameras being displayed on the 2nd monitor.



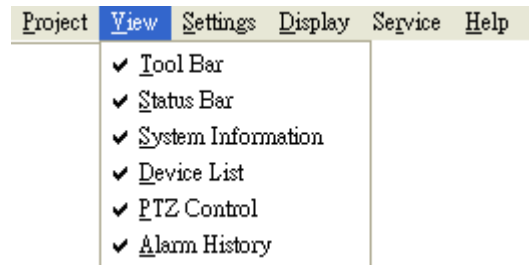
Menu

Project



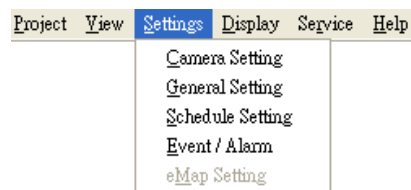
- Logout: log out of SoftNVR-IA (V1.1 and up)
- Exit: close SoftNVR-IA

View



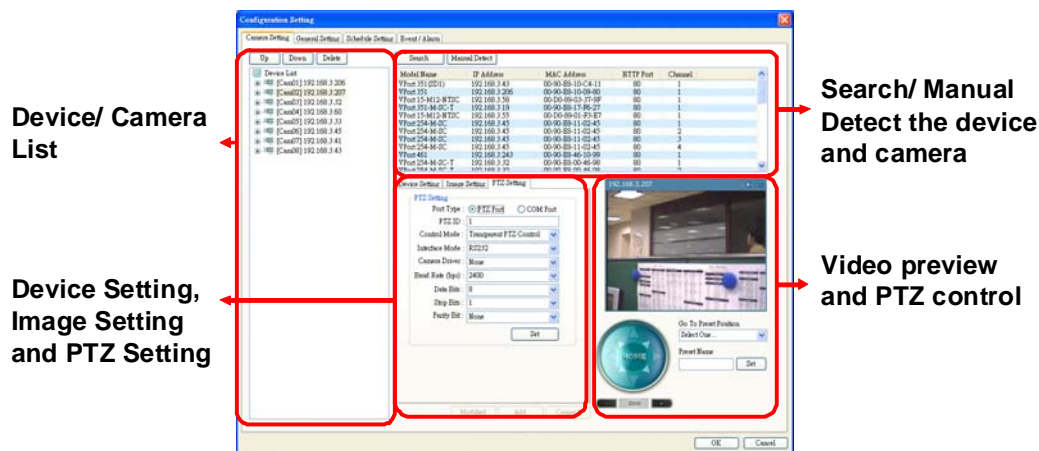
Show or hide the Tool Bar, Status Bar, System Information, Device List, PTZ Control, and Alarm History

Settings



Camera Setting


To add, delete, and edit the device list.



Search and Manual Detection of devices and cameras: to add a camera, use the “Search” or “Manual Detect” button to detect the VPort devices on the LAN.

NOTE SoftNVR-IA supports Moxa VPort series product **only** (except the VPort 2110, VPort 2310, VPort 2140, VPort 2141, and VPort 3310).

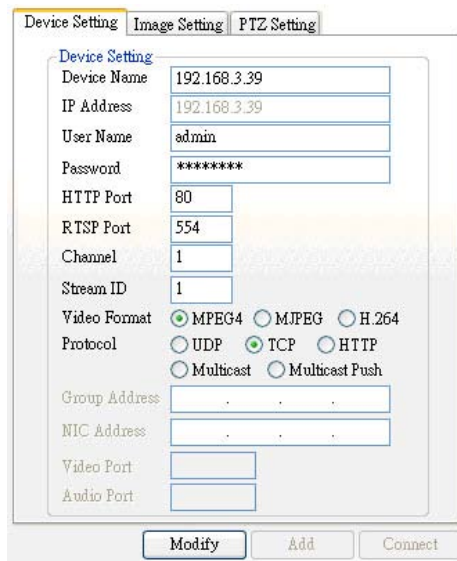
- **Video Preview and PTZ Control:** Select the VPort device from the device list or select the device you want to search or manually detect, and this will enable its video to be previewed here. In addition, you may try out the PTZ control function here.

- **Device/ Camera List:** This list shows the devices or cameras in the device list. Click on each camera's  to see the device's model name, IP address, channel number, and streaming type.



Device Setting, Image Setting, and PTZ Setting:

- **Device Setting:** These settings are identical to the VPort's settings, which means the VPort device's settings will also be updated when you make modifications here.



- **Image Setting:** These settings are identical to the VPort's settings, which means the VPort device's settings will also be updated when you make modifications here.

The screenshot shows the 'Image Setting' tab selected in a configuration window. The window has three tabs: 'Device Setting', 'Image Setting', and 'PTZ Setting'. The 'Image Setting' section includes the following controls:

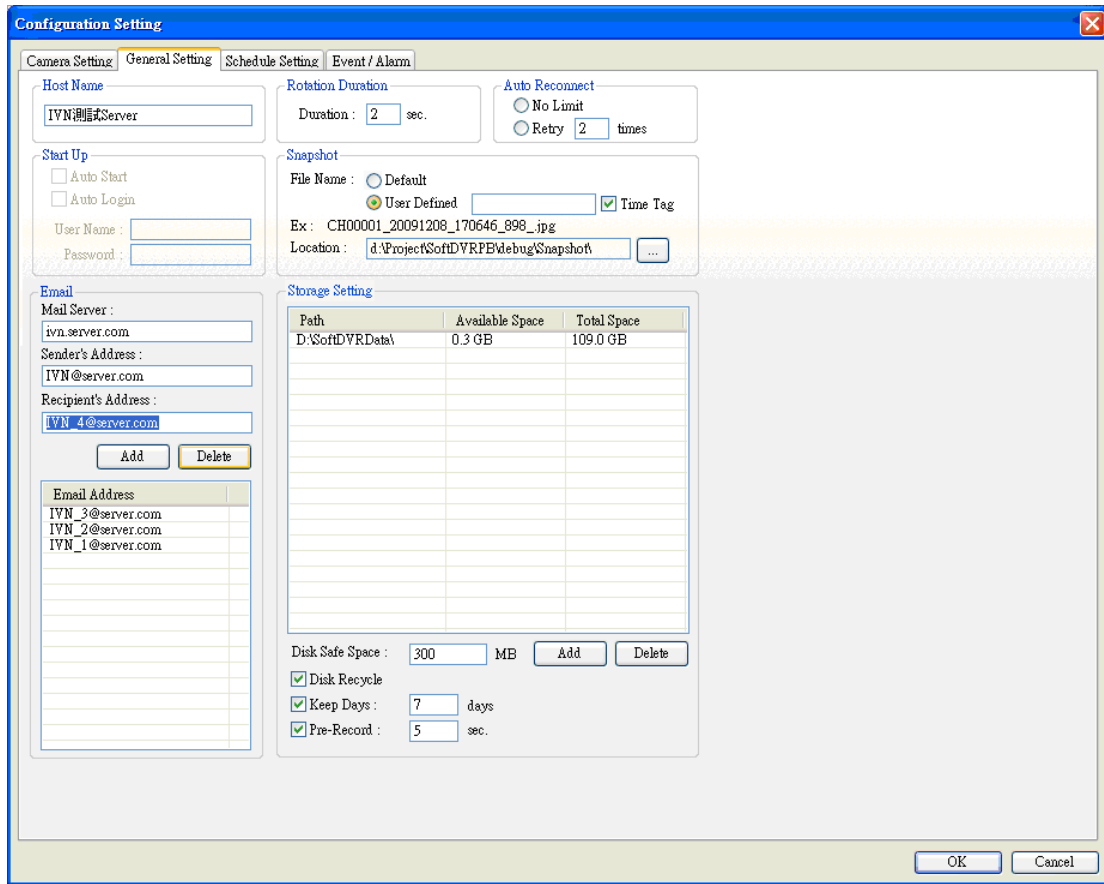
- Image Setting:**
 - Mode: Frame Rate Resolution
 - Camera Module: NTSC PAL
 - Resolution: 720*480 (dropdown)
 - Frame Rate: 30 (dropdown)
 - Fixed Bitrate: 600Kbps (dropdown)
 - Fixed Quality: Good (dropdown)
 - Set button
- Image Tuning:**
 - Brightness: 1 (slider)
 - Saturation: 0 (slider)
 - Contrast: 0 (slider)
 - Hue: 0 (slider)
 - Default button

- **PTZ Setting:** These settings are identical to the VPort's settings, which means the VPort device's settings will also be updated when you make modifications here.

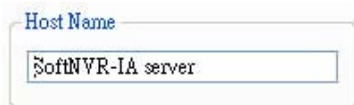
The screenshot shows the 'PTZ Setting' tab selected in a configuration window. The window has three tabs: 'Device Setting', 'Image Setting', and 'PTZ Setting'. The 'PTZ Setting' section includes the following controls:

- PTZ Setting:**
 - Port Type: PTZ Port COM Port
 - PTZ ID: 3 (text input)
 - Control Mode: Transparent PTZ Control (dropdown)
 - Interface Mode: RS232 (dropdown)
 - Camera Driver: Pelco D (dropdown)
 - Baud Rate (bps): 9600 (dropdown)
 - Data Bits: 8 (dropdown)
 - Stop Bits: 1 (dropdown)
 - Parity Bit: None (dropdown)
 - Set button

General Setting



- Host Name:** The server name of SoftNVR-IA will be shown on the caption of the main screen window.



- Startup:** System startup conditions

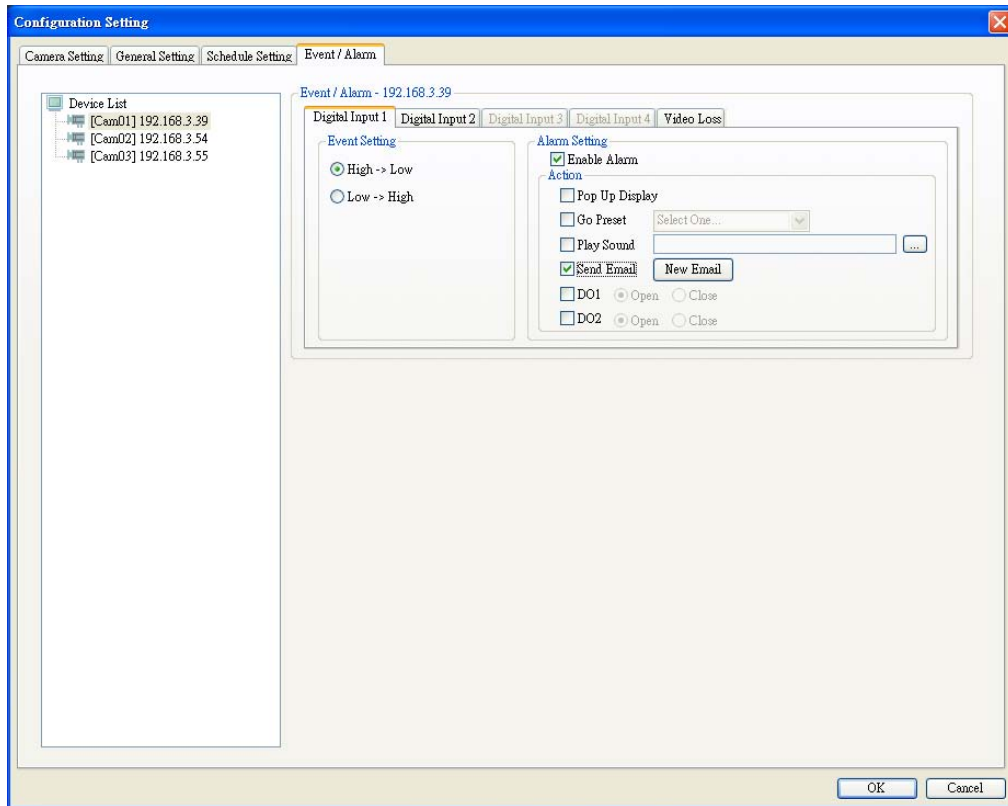


Auto Start: Once the server boots up, SoftNVR-IA will start automatically.

Auto Login: Once SoftNVR-IA executes, it will automatically log in with the provided user name and password.

Note: This function is available for V1.1 and up

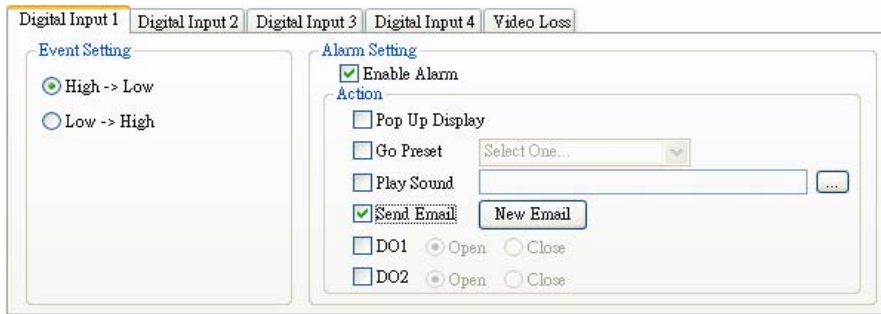
Event/ Alarm



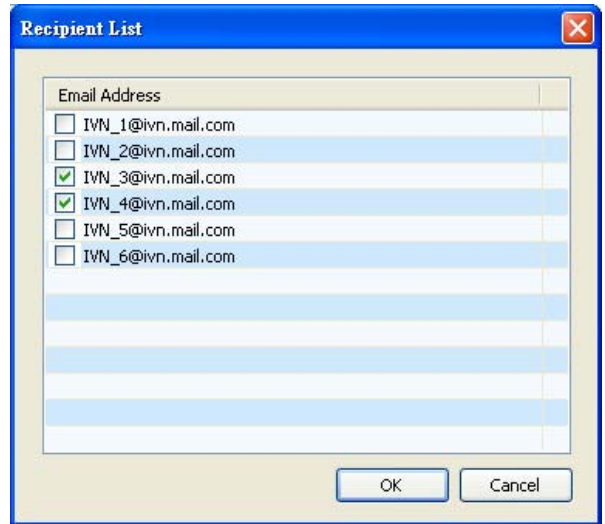
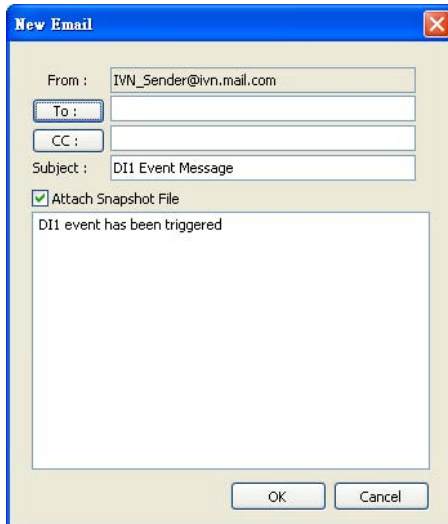
- Setup an Event/ Alarm

- Step 1: select a device/ camera from the device list
- Step 2: set the event/ alarm type
- Step 3: set the event/ alarm action
- Step 4: click on "OK" to save the event/ alarm

- Event Type and Action



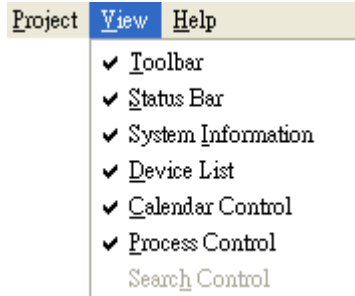
- Digital Input: Set the digital input trigger conditions
- Video Loss: Once the video signal is lost, a event notification is triggered
- Pop Up Display: The video of selected camera will pop up (full window screen) once an event is triggered
- Go to Preset: The camera will move to a preset position once an event is triggered.
- Play Sound: The PC or server will play a preselected sound once an event is triggered.
- Send Email: An email will be sent to the selected email address(es) from the recipients' email list once an event is triggered. The subject, attached snapshot images, and message can be edited



- DO1 & DO2: the DO (Relay Output) will be activated once an event is triggered.

Emap Setting (currently not available)

Display



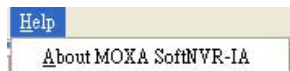
Show or hide the control or information window.

Service



- Start Alarm: enable or disable event/ alarm detections and actions.
- Start Schedule: enable or disable the schedule
- Start OPC Server: enable or disable OPC Server communications.

Help

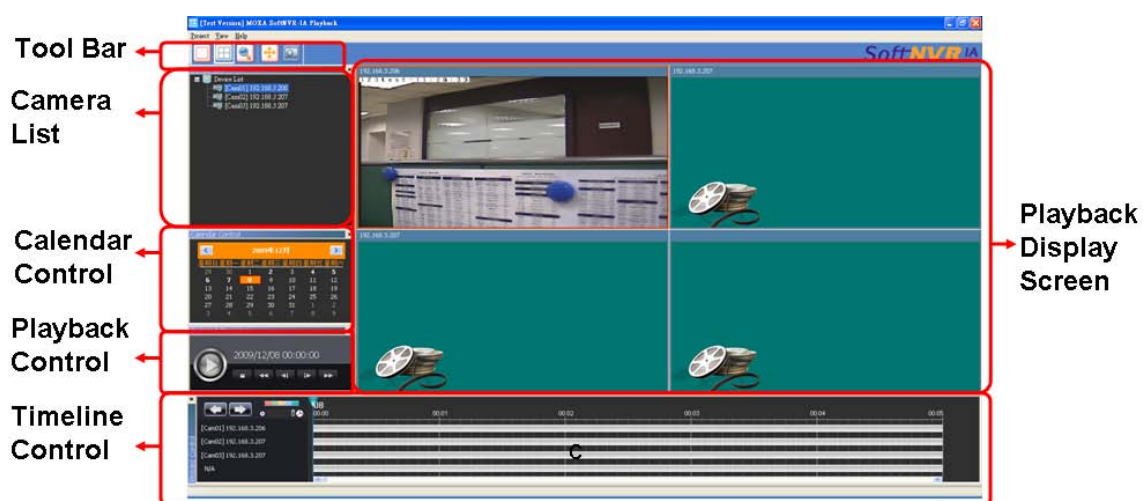


Shows the version number and company information







SoftNVR-IA™ Playback

SoftNVR-IA Playback

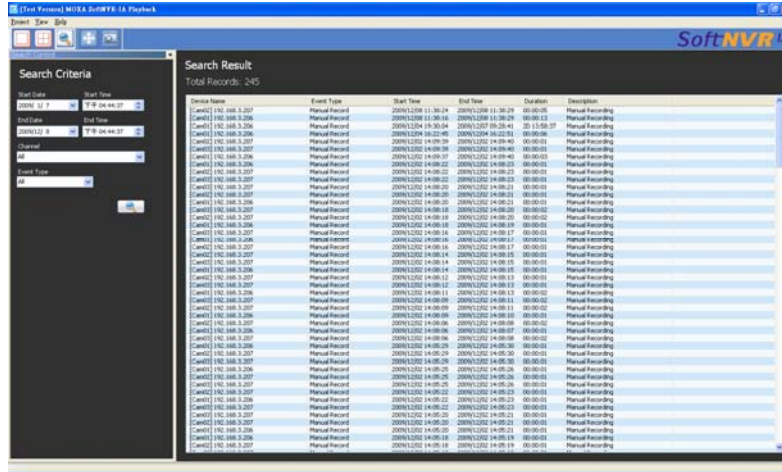


Tool bar

- Playback video display control 
- Event Search 
- Full Screen Display 
- Take snapshot image 

Search Recorded Videos

Click on the “Event Search” button, and the “Event Search” window will pop up.



Step 1: Set the **Start Date** and **Start Time**

Step 2: Set the **End Date** and **End Time**

Step 3: Select the **Channel** for searching the recorded videos based on the camera

Step 4: Select the **Event Type** for searching the recorded videos based on the event

Step 5: Click the **Event Search** button, and then the search results will be listed on the right

Step 6: Double click any one of the recorded video being searched, and the video will be displayed on the main playback screen

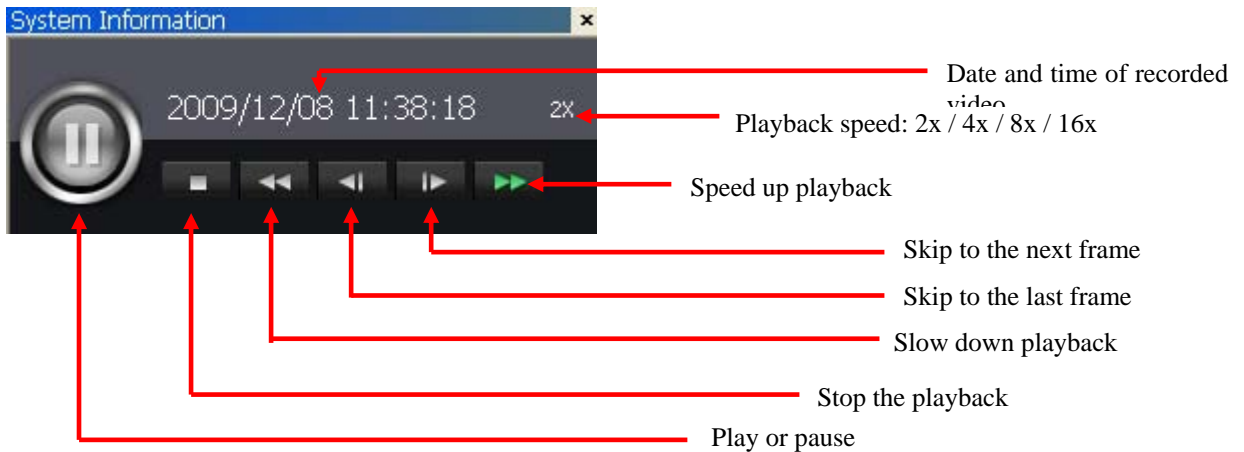
Calendar Control

The calendar function provides useful information about recorded videos. Users can select by day to display that day's recorded videos in the “Timeline Control” area. The bolded days mean there are recorded videos on this day, and a red frame around a day indicates the current date. For example, according to the calendar below, the 2nd, 4th, 5th, 6th, 7th and 8th of December have recorded videos, and the current date is the 8th of December.



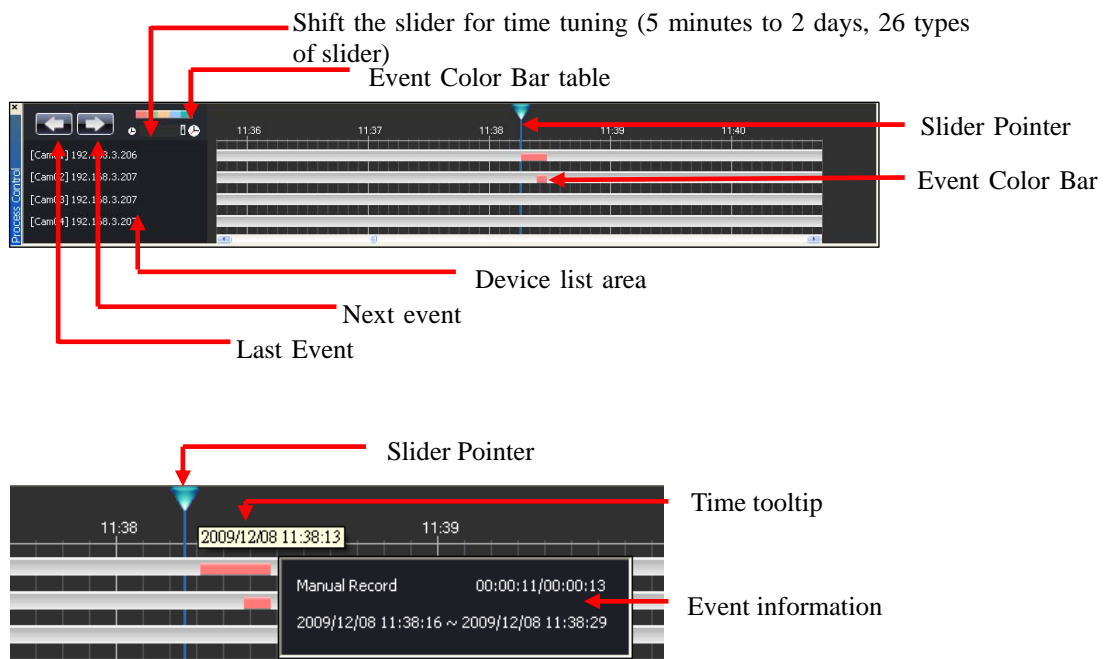
Playback Control

This playback control is for playing recorded videos.



Timeline Control

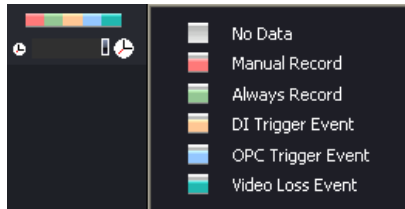
The timeline control is specifically for controlling video playback through a mouse.



Click the right button of mouse in the event color bar to show the event information.

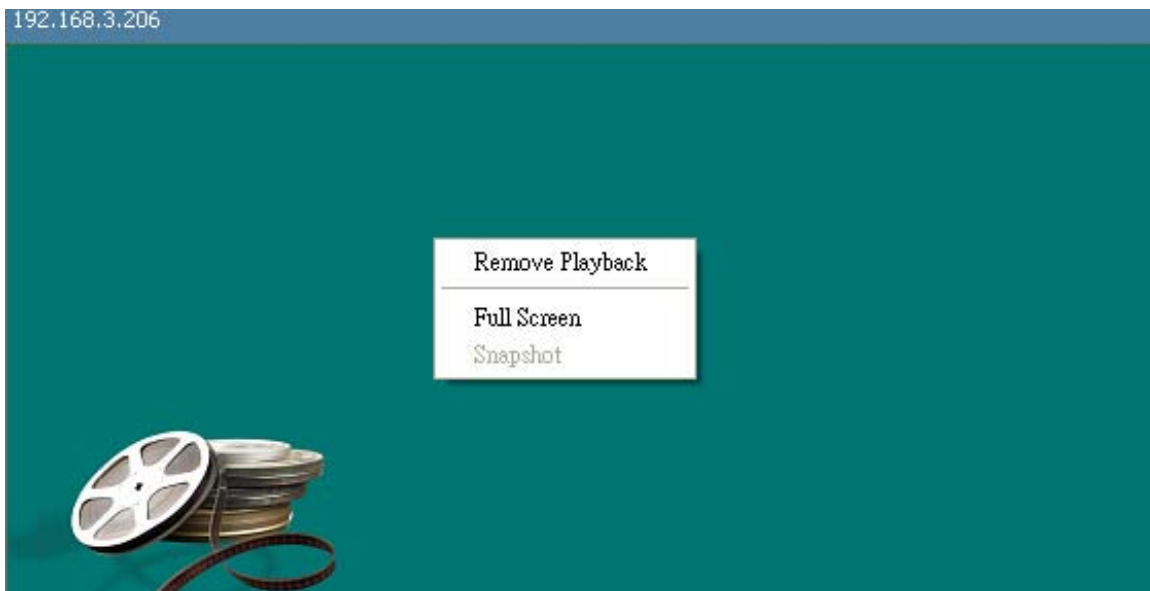
Drag the “Slider Pointer” in the time line to show the time of this point.

Scroll the mouse's scroller to tune the display ratio of the time line.



The different types of events on the time line will be displayed in different colors.

Playback Display Screen



Click on the mouse's right button, for the above menu to pop up.

- Remove Playback: remove the camera/ device in the playback
- Full Screen: 1 channel or 4 channels full screen display.
- Snapshot: capture the current video image in BMP format.

OPC Communications

SoftNVR-IA's built-in OPC server enables direct communication with automation systems for device status notifications and event handling.

OPC Tags

NVR Information

Status of SoftNVR-IA's main program (All Read-only)

Tag Name	Type	Internal Name	Description
NVR-IA.Name	String	eNVR_NAME	SoftNVR-IA host name
NVR-IA.IPAddress	String	eNVR_IPADDRESS	Host's IP address
NVR-IA.TotalCH	INT	eNVR_TOTALCHANNEL	Number of currently displayed channels
NVR-IA.IsSchedule	BOOL	eNVR_IsSCHEDULE	Schedule is enabled or disable
NVR-IA.IsAlarm	BOOL	eNVR_IsALARM	Alarm is enabled or disabled
NVR-IA.IsDualMonitor	BOOL	eNVR_IsDUALMONITOR	Dual monitor is enabled or disabled
NVR-IA.Version	String	eNVR_VERSION	Version number

Each Channel's Information

The status of each channel in the device list (All Read-only)

Tag Name	Type	Internal Name	Description
NVR-IA.CHxx .Index	INT	eCAM_CAMERAINDEX	Channel index
NVR-IA.CHxx .Device_Name	String	eCAM_DEVICENAME	Device name
NVR-IA.CHxx .Connect_Status	INT	eCAM_CONNECT_STATUS	connect status 0:connecting 1:connected 2:connect fail 3:disconnect
NVR-IA.CHxx. DI1_Status	INT	eCAM_DI1_STATUS	Di1 status
NVR-IA.CHxx. DI2_Status	INT	eCAM_DI2_STATUS	Di2 status
NVR-IA.CHxx. DI3_Status	INT	eCAM_DI3_STATUS	Di3 status

NVR-IA.CHxx. DI4_Status	INT	eCAM_DI4_STATUS	Di4 status
NVR-IA.CHxx. DI5_Status	INT	eCAM_DI5_STATUS	Di5 status
NVR-IA.CHxx. DI6_Status	INT	eCAM_DI6_STATUS	Di6 status
NVR-IA.CHxx. DI7_Status	INT	eCAM_DI7_STATUS	Di7 status
NVR-IA.CHxx. DI8_Status	INT	eCAM_DI8_STATUS	Di8 status
NVR-IA.CHxx. DO1_Status	INT	eCAM_DO1_STATUS	Do1 status
NVR-IA.CHxx. DO2_Status	INT	eCAM_DO2_STATUS	Do2 status
NVR-IA.CHxx. DO3_Status	INT	eCAM_DO3_STATUS	Do3 status
NVR-IA.CHxx. DO4_Status	INT	eCAM_DO4_STATUS	Do4 status
NVR-IA.CHxx. Video_Loss	INT	eCAM_VIDEO_LOSSs	Video loss
NVR-IA.CHxx.FPS	INT	eCAM_FPS	Frames per seconds
NVR-IA.CHxx. Stream_Type	INT	eCAM_STREAM_TYPE	The type of video stream (H.264, MJPEG or MPEG4)
NVR-IA.CHxx .Server_Channel	INT	eCAM_SERVER_CH_ID,	Video Encoder's Channel ID
NVR-IA.CHxx. IsAudioPost	BOOL	eCAM_IsAUDIOPOST,	Audio post is enabled or disabled
NVR-IA.CHxx. IsRecord	BOOL	eCAM_IsRECORD,	Video recording is enabled or disabled.
NVR-IA.CHxx. IPAddress	String	eCAM_IPADDRESS,	VPort's IP address
NVR-IA.CHxx. Username	String	eCAM_USERNAME,	VPort's connection's username
NVR-IA.CHxx. Password	String	eCAM_PASSWORD,	VPort's connection's password
NVR-IA.CHxx. Reserved1	String	eCAM_RESERVED1,	reserved
NVR-IA.CHxx. Reserved2	String	eCAM_RESERVED2,	reserved
NVR-IA.CHxx. Reserved3	String	eCAM_RESERVED3,	reserved
NVR-IA.CHxx. Reserved4	String	eCAM_RESERVED4,	reserved

Event Trigger Operation

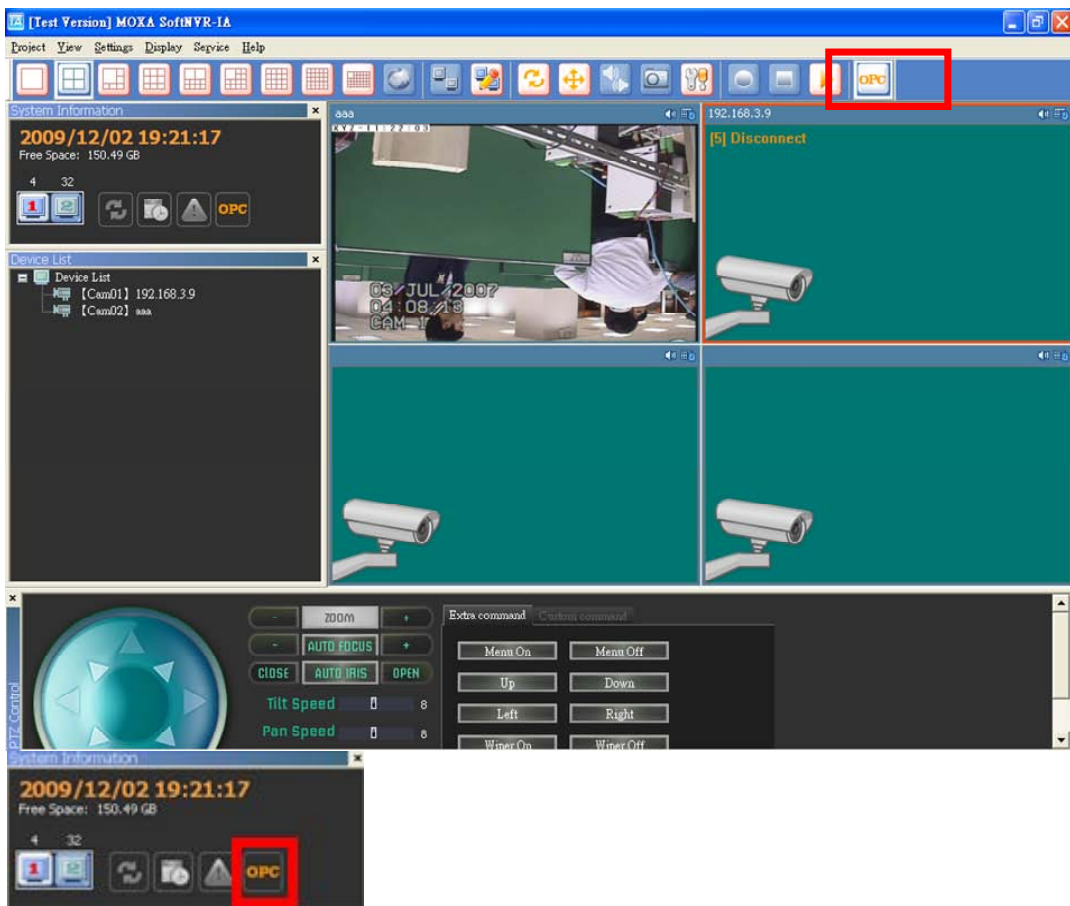
Trigger actions and messages of each channel from OPC client (Read/write)

Tag Name	Type	Internal Name	Description
NVR-IA.CHxx. Event.Trigger	INT	eEVENT_TYPE	Trigger video recording 0:stop 1:rec+pop up 2:rec 3:pop up
NVR-IA.CHxx Message	String	eEVENT_DESCRIPTION	description

OPC Trigger with Video Pop Up

Video popup trigger by OPC client Step by Step Instructions

Step 1: Enable built-in OPC Server

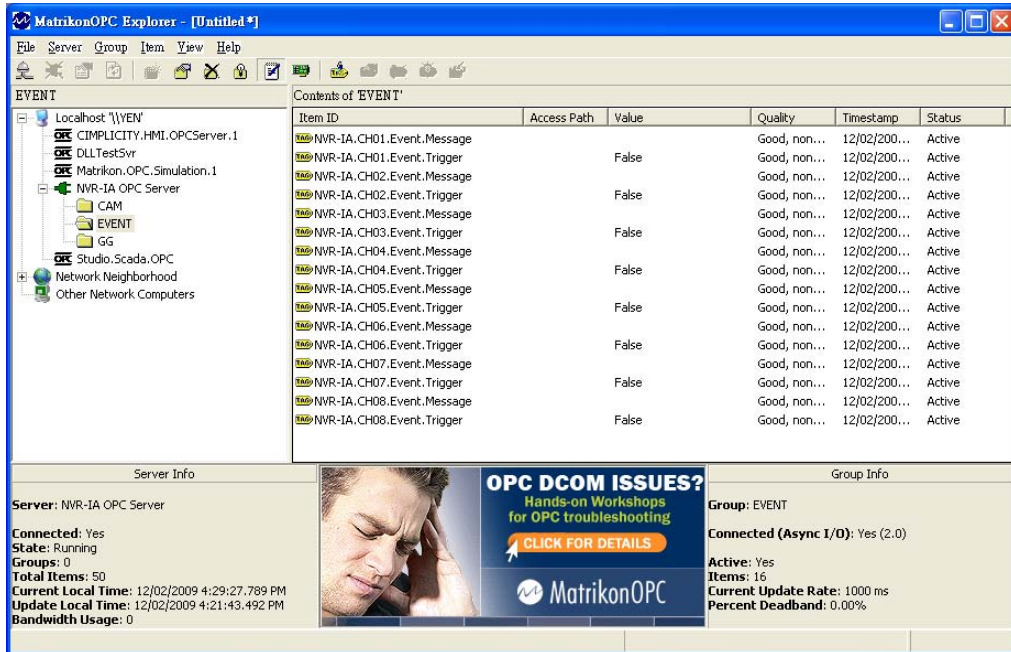


Once the OPC server is enabled, the OPC button in the system information will be highlighted.

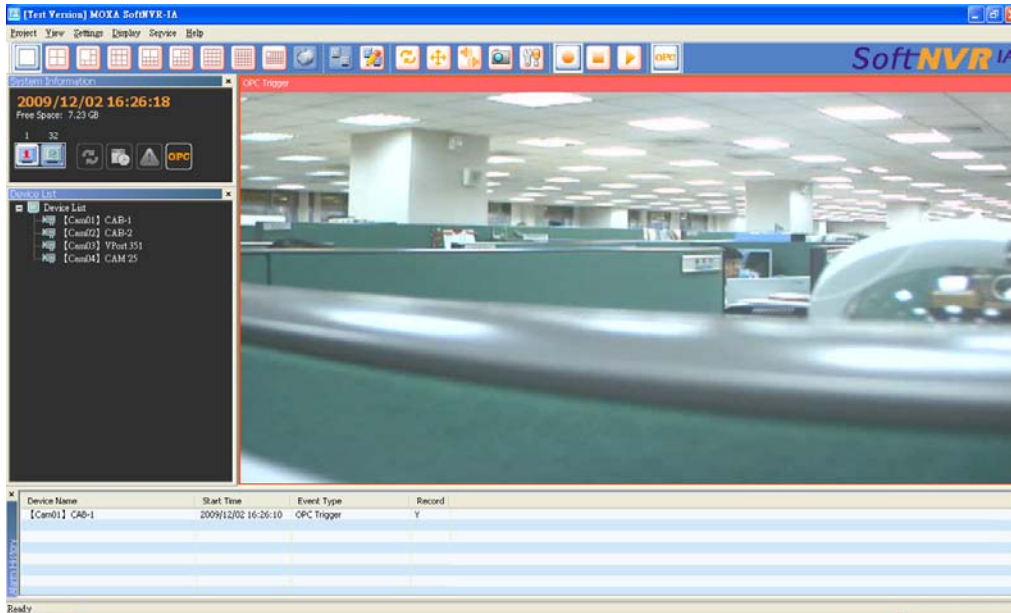
Step 2: OPC Client Tag Trigger

Set NVR-IA.CH01.Event.Message = "From OPC Tag Trigger test"

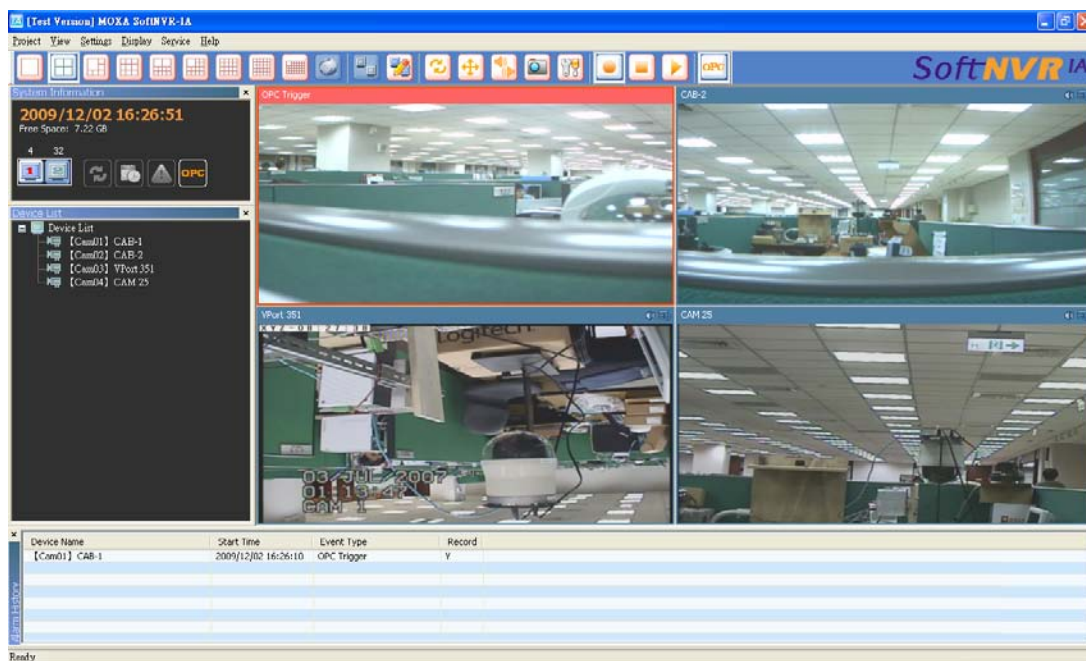
Set NVR-IA.CH01.Event.Trigger = 1



Step 3: Once SoftNVR-IA receives a trigger from the OPC Client, SoftNVR-IA will adjust to a single video screen and the target video will pop up. There will be a flashing red frame around the caption.



Step 4: In alarm history, this OPC event will be added to the list with the time, and the video recording action will also be enabled for the configured video channels.



Step 5: To disable this OPC trigger, click on the mouse's right button on the video image that you would like to disable, and then select the "Alarm Confirmed" in the menu.

Step 6: Video recording can also be stopped by unchecking "Manual Record".