Marshall Electronics



VS-NVR-900

User Manual

About this Manual

This user manual provides information on operating and managing the optimal network video recording software, VS-NVR. The manual includes instructions of installation, operation and configuration of VS-NVR as well as how to troubleshoot problems

This manual contains various applications based on network knowledge. User's basic network knowledge may be needed to fully understand this manual. This manual is designed to deliver the optimal ways to utilize various Network Video Recorder configurations.

Legal Notice

The legal conditions of camera surveillance vary depending on regions. Unauthorized and inappropriate use may cause you to have penalties. Users have the responsibilities of legal operation of surveillance product. Please make sure to check your local laws before using this product.

Safety notices

Do not proceed with improper operation beyond the instructions in this manual to avoid damages. Please read this manual before operation and follow instructions.

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1. Introduction

VS-NVR is a powerful IP video surveillance application providing rich features.

- Connect to a number of IP cameras (or video encoders) and monitor live video and audio from them in realtime.
- Record the streams from cameras into local storage and provide convenient search, playback and export to video clips of stored data.
- Monitor various events from camera and associate various actions to handle the events.
- Provide relaying service to remote clients.



2. Installation and Startup

Minimum system requirements

The following minimum requirements should be met for normal functioning of the NVR.

- Operating system: Windows XP Professional, Vista Business, Server 2003, Server 2008
- CPU: Intel Pentium 4 2.4GHz or higher
- RAM: 1GB or larger
- Network: Ethernet 100Mbps or higher
- Graphics:
 - Graphics memory: 128MB or larger
 - DirectX9.0c installed
 - Screen resolution: 1024x768 or larger

Note: Above minimum requirements are for normal functioning with a few cameras. The requirements to support more cameras vary a lot depending on the number of channels, video resolution, framerate, bitrate etc. Please contact Marshall technical support to get the recommendation for a specific configuration.

Installation

Installation of the NVR is started by double-clicking the installation package. Please follow the instructions for installation.

During the installation, the password for the administrator will be prompted. An administrator user of ID **admin** is created by default and the password is configured on the installation.

Startup and login

Login dialog comes on executing VS-NVR.



Correct user ID and password of a registered user should be entered. The dialog also provides a way to change the password of a user. The dialog for changing password will come only when User ID and Password are entered correctly.

When **Automatic login** is checked, the NVR doesn't ask login in the next startup. **Automatic login** setting can be changed in Security setup also.

3. Overview of Application Interface and Functions

Application interface

Application interface of VS-NVR consists of several parts as shown in the figure.



Tool bar

Tool bar provides the way to invoke frequently used functions or applications.



• Setup

Opens the dialog for setup the NVR. Individual dialog can be accessed also from corresponding menu.

• Live mode / Record mode

Changes the UI mode of the application.

• Search

Invokes True Search application for search and playback of recorded data.

• E-map

Invokes TMAP application which provides geographical management of camera locations etc.

• Event log

Opens a dialog for realtime monitoring of events and searching stored events.

Control pane

Control panes provides most of the controls for the NVR including camera connections management, PTZ control, audio control, color control. It also shows storage status briefly. Each pane can be hidden or shown using corresponding menu in **View** menu group.

Camera tree

Shows registered cameras and provides operations for connection and disconnection. Statuses of sensors and alarm devices attached to the camera are also shown. It provides a way to start record instantly.



Storage

Shows the storage status and recorded duration briefly. It collects the information from the disks which are selected for recording.

667.6GB (97.1%)
Storage Free User info luration (from ~ to): 1009/04/21 20:21:52
009/10/27 15:13:47

• PTZ

Provides PTZ control interface. Circular control provides full control for pan and tilt including the speed. Speed control the dialog applies to zoom and focus control. Preset also can be selected here. Further controls of PTZ cameras are available on PTZ control dialog.



• Audio

Provides controls for audio send on/off and mute for PC speaker. Volume also can be controlled. Audio file in wave format can be played toward the camera instead of live input.



Color

Provides controls	for	input	video	color	of	the		
selected camera.							O Brightness	<u>э</u> •
							🕕 Contrast	Э — —•
							🖕 Hue	

Video window

Video window is the area for display video from the cameras. It consists of display units(DU, hereafter). The toolbar above the video window provides ways to change the mode of video window to various configurations.

	=== ===	5x5	6x6 7x7	8x8	٢	11	•
Multi-screen mode							apshot
					Fu	ll scre	en

Timeline for recording status

Timeline shows the recording status of a selected camera. Detailed view can be obtained by changing the scale of the timeline using + button or – button. While it is updated periodically, it is possible to update manually by pressing the button or refresh.

4 7	24 Hrs) 😡	00:00	02:00	04:00	1 06:00	08:00	10:00	12:00	14:00	16:00	18:00	20:00	22:00
164														
Date	e: 27.10.2009,	Interval :	24 Hour(s)	(13), Dents :	12 F	First record: 00	:00:16,27	.10.2009	Last n	ecord: 15:26	:45, 27,10,20	109 for the d	ау	
<														>

Status bar

Status bar shows additional information such as login ID, the number of currently connected viewing clients, and statistics for serial TX/RX activity.

Showing/Hiding the user interface components

Visibility of each user interface component is controllable using corresponding menu in **View** menu. When some of the features are not used, corresponding components can be hidden. **Sensor/Alarm nodes** menu controls whether sensor and alarm nodes in the tree are to be shown or hidden. In case sensor/alarm devices are not used, more concise tree can be obtained by hiding the nodes.



Two modes of user interface: Live mode and Record mode

VS-NVR provides two modes of user interface, Live mode and Record mode, which can be selected according to the specific situation in the site. **Live mode** button and **Record mode** button in the toolbar are used for mode switching.

Live mode

Live mode is used where interactive monitoring of live video is required. As the decoding and display of video takes essential CPU load, the number of cameras to be viewed simultaneously can be limited according to the video encoding settings of cameras and PC's performance. In terms of functionality, Live mode is a super set of Record mode. That is, Live mode supports recording function.

Note: If the graphics mode of the PC is not configured to support video display in Live mode, "Display initialization error" comes on video area. The following essential condition for running Live mode should be checked:

- Minimum 128MB graphics memory
- DirectX9.0c installed and maximum H/W acceleration
- 32-bit color mode

Record mode

When live monitoring in the NVR PC is not essential, it is preferable to use Record mode. As it doesn't use CPU load for decoding and display, more cameras can be accommodated for recording and streaming. Another advantage of Record mode is that it can run in any display mode with any kinds of graphics cards.

		inager	Teel										
NVD	View Setup	D Events	1001	s <u>n</u> ei	p								
°Ø	0			2									
	2009-10-27 T		_	No	Camera n	Status	Recording m	Pre(s	Post(Resolu	Video(k,	Framerate	Audio reco
	15.57	.18		1	163	Recording	Continuous	10	20	720×480	1019	25	Off
	15.57	.10		2	162	🥥 Recording	Continuous	10	20	720×480	1105	26	On
	G1 G1		^	3	164	Recording	Continuous	10	20	720×480	1163	26	On
	😐 🚉 163			4	165	🥥 Recording	Continuous	10	20	720×480	1131	26	On
	🕀 🧰 162			5	166	Disconnected	Off	-	-	-	0	-	Off
	🕂 🥁 164			6	167	Disconnected	Off	-	-	-	0	-	Off
	🛨 🛋 165			7	168	Disconnected	Off	-	-	-	0	-	Off
				8	170	Disconnected	Off	-	-	-	0	-	Off
				9	112	Disconnected	Off	-	-	-	0	-	Off
	168			10	113	Disconnected	Off	-	-	-	0	-	Off
	110			11	114	Disconnected	Off	-	-	-	0	-	Off
	112			12	115	Disconnected	Off	-	-	-	0	-	Off
	114			13	131	Disconnected	Off	-	-	-	0	-	Off
	114			14	132	Disconnected	Off	-	-	-	0	-	Off
	131			15	134	Disconnected	Off	-	-	-	0	-	Off
	132			16	135	Disconnected	Off	-	-	-	0	-	Off
	194		~										
	666.9GB (97.0%)	I											
🔳 S	torage			<									>
Fi	ree Iser info			4	24 Hrs	00:00 02:00	04:00 06:00	08:00	10:00 12	:00 14:00	16:00	18:00 20:00	22:00
durat	tion (from ~ to);			164									
2009.	/04/21 20:21:52			Det		ten ral i 24 Hours (12)	Dente : 12 First -	aard: 00:00-14	27 10 2000	Ļ	t moond: 16-50	64 27 10 2000 4	ethe day
2009.	/10/27 15:57:15			< Date	. 27.10.2009, IN	tervar (24 Hour(s) (13),	Dents 12 First re	00101-00:00:10	7, 27, 10, 2009	Las	r record. 15:565	54, 27.10.2009 TC	> the day
Admir					Clients:	1		Seria	al TX				

Streaming to remote clients

VS-NVR internally equips with streaming function for the remote client viewers. Remote clients can connect to VS-NVR to get video, audio and event data. This way of indirect relaying reduces the streaming load of the camera as well as the network to the camera. Status of remote clients connected to the NVR can be viewing by **Relay status** sub menu of **View** menu.

H	🖷 Relay status 🛛 🔀												
-R	elay Lis	t											
	No	Camera Name	Camera Address	Relay Address	Status		Video RX(kbps)	Audio RX(kbps)	Video RX(fps)	Clients	Protocol	c	lose
	1	163	192.168.10.163:2222	0.0.0.0:2323	CONNECTED		796	59	24.83	1	UDP	<u> </u>	
	2	162	192.168.10.162:2222	0.0.0.0:2324	CONNECTED		977	60	24.61	1	UDP		
	3	164	192.168.10.164:2222	0.0.0.0:2325	CONNECTED		936	0	24.46	1	TCP		
	4	165	192.168.10.165:2222	0.0.0.0:2326	CONNECTED		1011	56	24.48	1	TCP		
	5	166	192.168.10.166:2222	0.0.0.0:2327	CONNECTED		779	64	25.22	1	TCP		
	6	167	192.168.10.167:2222	0.0.0.0:2328	CONNECTED		943	59	25.22	1	TCP		
	7	168	192.168.10.168.2222	0.0.0.0:2329	CONNECTED		887	59	25.22	1	TCP		
	8	170	192.168.10.170:2222	0.0.0.0:2330	CONNECTED		951	54	23.88	1	TCP		
	9	112	192.168.10.112:2222	0.0.0.0:2331	CONNECTED		4883	59	25.22	1	TCP		
	10	113	192.168.10.113:2222	0.0.0.0:2332	CONNECTED		4496	63	23.65	1	TCP		
	11	114	192.168.10.114:2222	0.0.0.0:2333	CONNECTED		970	64	30.04	1	TCP		
	12	115	192.168.10.115:2222	0.0.0.0:2334	CONNECTED		4904	59	25.22	1	TCP		
	13	131	192.168.10.131:2222	0.0.0.0:2335	CONNECTED		338	64	26.19	1	TCP		
	14	132	192.168.10.132:2222	0.0.0.0:2336	CONNECTED		341	61	24.61	1	TCP		
	15	134	192.168.10.134:2222	0.0.0.0:2337	CONNECTED		333	60	23.77	1	TCP		
	16	135	192.168.10.135:2222	0.0.0.0:2338	CONNECTED		336	60	24.61	1	TCP		
<u> </u>					1				1			1	
En	ion t I is	н											
	IGHIC EIS												
	🗹 Shr	w all clients											
	0110	in an onorito											
	Selecte	d Server: *											
[Relay	Client Address	Session Durat	ion Status		Video TX(kbps)	Audio TX(kbps)	Video TX(fps)	video TX Drop	Audio T>	× Drop	Protocol	
	1	127.0.0.1	1:30:19	CONNECTED		796	59	24.83)	0		TCP	
	2	127.0.0.1	1:59:33	CONNECTED		977	60	24.61)	0		TCP	
	3	127.0.0.1	1:30:21	CONNECTED		936	0	24.46)	0		TCP	
	4	127.0.0.1	1:44:50	CONNECTED		1011	59	24.48)	0		TCP	
	5	127.0.0.1	0:00:36	CONNECTED		819	61	25.22	5	0		TCP	
	6	127.0.0.1	0:00:41	CONNECTED		930	60	25.22	1	0		TCP	
	7	127.0.0.1	0:00:41	CONNECTED		845	60	25.22)	0		TCP	
	0	107.0.01	0.00.41	CONVECTED		051	50	22.00	-	0		100	

4. Live Monitoring

Adding cameras or video encoders

A camera or video encoder can be added on **Camera setup** dialog.

imera setup Camera								?
Name V 163 V 164 V 166 V 166 V 168 V 168 V 168 V 168 V 112 V 113 V 114 V 131 V 132 V 134 V 135	Group G1 G1 G1 G1 G1 G1 G1 G1 G1 G1 G1 G1 G1	Address 192, 168, 10, 163 192, 168, 10, 162 192, 168, 10, 165 camera ne Main di up Building ress 192, 166 nnel 1 2222 ocol TCP io ✓ Use n admin sword ××××	Channel 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	F 2 2 2 2 2	Port 222 222 222 222 222 Relay Relay Relay User in User in User in	Protocol UDP TCP TCP name None address port login nfo1 nfo2 nfo3 cel	Audio V V V V V	Login admin admin admin admin admin admin admin admin admin admin admin admin admin
Add Modify Remove IP Discovery << >>								

- Open Camera setup dialog.
 Click Add button to open Add camera dialog
- 3. Enter the information for the camera

Name: name of the camera
Group: name of the group to which the camera belongs. Once a group is entered, it can be
selected from the entry of the next camera.
Address: IP address or domain name of the camera
Channel: channel number if the video encoder has multiple channels (starting from 1)
Port: port number to connect
Protocol: protocol for streaming video/audio data
Audio: uncheck when audio will not be used
PTZ: check if PTZ control for the camera is to be used
Login/Password: login ID and password of the camera
Relay name: name of the streaming server when the NVR is connecting to the specified
camera by way of streaming server
Relay address: address of the streaming server
Relay port: port of the streaming server (default: 2222)

Relay login: login ID of the streaming server (default: admin) **Relay password**: password of the streaming server (default: 1234) **User info1~3**: additional information to be described for user's needs.

4. Click OK.

It is possible to detect the cameras, video encoders or video decoders in the same LAN using **IP Discovery** function.

- 1. Click IP Discovery button on Camera setup dialog
- 2. Select a device to add on IP Discovery dialog
- 3. Enter additional information on Add camera dialog

H	^o Discovery					×
						_
	IP address 🔻	MAC address	Base port	HTTP port	IP mode	~
	192, 168, 10, 110	00:1C:63:A6:02:6A	2222	80	Fixed IP	
	192, 168, 10, 111	00:1C:63:A7:00:8F	2222	80	Fixed IP	
	192, 168, 10, 112	00:1C:63:A6:00:B4	2222	80	Fixed IP	
	192, 168, 10, 113	00:1C:63:A7:00:AD	2222	80	Fixed IP	=
	192, 168, 10, 114	00:1C:63:A7:01:0A	2222	80	Fixed IP	
	192, 168, 10, 115	00:1C:63:A7:00:7C	2222	80	Fixed IP	
	192, 168, 10, 116	00:1C:63:A7:00:96	2222	80	Fixed IP	
	192, 168, 10, 117	00:1C:63:A7:02:14	2222	80	Fixed IP	
	192, 168, 10, 118	00:1C:63:A7:01:88	2222	80	Fixed IP	
	192, 168, 10, 120	00:1C:63:A7:00:B5	2222	80	Fixed IP	
	192, 168, 10, 121	00:1C:63:A7:01:63	2222	80	Fixed IP	
	192, 168, 10, 131	00:1C:63:A3:05:29	2222	80	Fixed IP	
	192, 168, 10, 132	00:1C:63:A3:00:76	2222	80	Fixed IP	
	192, 168, 10, 134	00:1C:63:A3:03:35	2222	80	Fixed IP	
	192, 168, 10, 135	00:1C:63:A3:08:88	2222	80	Fixed IP	
	192, 168, 10, 137	00:1C:63:A3:00:01	2222	80	Fixed IP	
	192, 168, 10, 138	00:1C:63:A8:00:AF	2222	80	Fixed IP	
	192, 168, 10, 141	00:1C:63:A5:00:D6	2222	80	Fixed IP	
	192, 168, 10, 142	00:1C:63:A5:00:9F	2223	81	Fixed IP	<u>×</u>
	47 Device(s)	found				
				_		
	Discover		Select	IP Cha	nge Close	

Quick viewing of added camera

Once a camera is added, it will come on the tree and connected if it is reachable. The camera node will be in grey color if it is connected. The video from the camera will not be displayed on video window until the camera is explicitly mapped to a DU(display unit). The simplest way of mapping a camera to a DU is to use automatic mapping function.

- 1. Click the right button of the mouse on any position of the video window.
- 2. Select Auto map menu
- 3. All cameras in the tree will be mapped to DUs sequentially(left-to-right, top-to-bottom). If there are more cameras than a page of the screen mode can accommodate, more pages will be created automatically.

2009-10-27 TUESDAY 16:55:38	Default page
E Guilding #1	Map camera ►
	Auto map

One automatic mapping operation applies only to current screen mode. The mapping needs to be done again in manually or automatically in another screen mode.

Note: Cameras are mapped to DUs automatically without explicit mapping operation in 1x1 screen mode. While user may prefer his/her own mapping for various configurations in multi-display modes, the mapping can be limited in1x1 mode. So only automatic mapping is supported in 1x1 mode.

Changing camera information

Pressing **Modify** button on Camera setup dialog invokes **Modify camera** dialog which is similar to **Add camera** dialog. Double clicking a camera entry in the table also invokes **Modify camera** dialog. It is possible to modify some entries of multiple cameras by selecting multiple entries before pressing **Modify** button.

Camera setup									? 🗙
Camera									
Name	Group	Address		Channel	Port	Protocol	Audio	PTZ	Login
🔽 Main gate	Building #1	192, 168, 10, 1	162	1	2222	TCP	Y	Y	admin
🔽 Waphouse	Building #1	192, 168, 10, 1	163	1	2222	TCP	Y	Y	admin
			Mod	lify multiple	e cameras				
Select mul	tiple entr	ies		ote					
to change	more the	n	Se Se	elected setting elected camer:	is will be applie: as,	i to all			
one came	as at one	;e		- P	loood				
				✓ Port	2233				
			F	Protocol	TCP	•	[
			ſ	Audio	💌 Use audio c	hannei			
			F	PTZ	🔽 Use PTZ				
			F	🔽 Login	admin				
			ſ	Password	XXXX		1		
			ſ	Relay	None	v	[
					K Can	cel			
									2
Add	Modify	Remove	P Dis	covery	<< >>>				
							OK	Cancel	Apply

Display management

Camera – DU mapping

A DU(Display Unit) is a rectangular region consisting the video window. For example, 2x2 mode consists of 4 DUs and 4x4 mode, 16 DUs. In order to view a camera, the camera should be mapped to one of the DUs.

A camera can be mapped to a DU in three ways.

- (1) Drag a camera from the tree and drop on a DU.
- (2) Use Map camera menu on a DU.

(3) Use Auto map function to map all cameras to DUs in a screen mode.



Automatic mapping is convenient for mapping all registered cameras to all screen modes at one click. It creates required pages in each screen mode and maps cameras to DUs in left-to-right, top-to-bottom order starting from the top-left DU.

Mapping done by automatic mapping can be modified by manual mappings later. It would be useful to do automatic mapping first, then modify the mapping partially according to specific needs. It is possible to map a camera to multiple pages in a screen mode.

The position of a camera in the video window can be changed instantly by dragging a DU and drop on a different DU. If the destination DU already has other camera, positions of two cameras are exchanged.



A DU can be freed from camera mapping by **Unmap** menu invoked by the right button of the mouse over the DU.

Page operations

A page is defined as a set of DUs which can be displayed simultaneously in a specific screen mode. For example, a page in 4x4 screen mode contains 16 DUs. When the number of cameras is larger than the number of DUs in a page, more than one pages are required. Automatic mapping creates required pages automatically.



More flexibility in mapping cameras to DUs can be achieved by allowing creation, renaming, repositioning of pages manually. Menu for page operation is invoked by clicking the right button of the mouse over the page title part.

Controlling video encoding of cameras to get effective multi-channel display

• Video encoding setting of individual camera

Video encoding tab of **Display setup** allows the setting of video encoding of a camera. As it modifies the setting of the camera, the effect will be propagated to all connected clients as well as recorded data by the NVR.

video encoding Automatic control Etc							
Get from camera: 🗖 Ge	et settings whe	never Display	setup is open	ed	🔽 Se	nd modified	settings only
Name	Stream	Preference	Resolution	Framerate	Quality	Bitrate	I-Frame
Main gate	Primary	Quality	720×480	25	Normal	N/A	77
Warehouse	Primary	Quality	720×480	25	Nermel I	N/A	76
Garage	Primary	Quality	720×480	30	Propogate to all	I/A	0
Right button click on a value							

It is useful to use **Propagate to all** function invoked by right mouse button click on a value to set the same value to all cameras.

Settings are retrieved, kept to local configuration file and set to the camera in the following way.

Initial settings when a camera is added

When a camera is added, settings are read from the camera on the first connection. These values are saved to the local configuration file. '-' is shown until it succeeds in the first connection.

Get from camera operation

Settings can be read from the camera by pressing **Get from cameras** button at any time. When there are a lot of cameras and/or the network is poor, it may take considerable time. If **Get settings** whenever **Display setup is opened** is checked, the NVR reads settings from cameras whenever the dialog is opened.

Applying the settings to camera and saving to the configuration file

If **Send modified settings only** is checked, only settings changed manually or by **Get from cameras** since opening the dialog are applied to the cameras and saved to the configuration file on clicking **OK** or **Apply**. Otherwise all settings in the table are applied unconditionally. It is recommended to check this setting in order to apply the settings only when necessary.

It is useful to use **Propagate to all** function invoked by right mouse button click on a value to set the same value to all cameras.

Note: When the display and recording are configured to use the same stream(primary or secondary), change of video encoding setting in one setup invalidates the settings in the other setup. It is preferable to configure in only one setup when the same stream is used for both.

• Automatic control of video encoding for various screen modes

Due to the load by video encoding, it is not possible to view many HD video simultaneously. On the other hand, it is not so meaningful to view HD video in a small display unit in NxN screen mode. As a compromise, VS-NVR provides a way to control video encoding setting automatically according to current screen mode.

۷	Video encoding Automatic control Etc								
	Modo	0p./0#	Droforonco	Becolution	Eromo roto	Quality	Bitroto	I-Eromo	_
	INIDUE	01/01	Fielelelice			Quality	Ditrate	1-i i airie	
	1×1	Off	Bitrate	720×480	30	N/A	1500	30	
	2 x 2	Off	Bitrate	720×480	30	N/A	1500	30	
	3 x 3	Off	Bitrate	720×480	30	N/A	1500	30	
	4 × 4	Off	Bitrate	720×480	30	N/A	1500	30	
	1 + 12	Off	Bitrate	720×480	30	N/A	1500	30	
	2+8	Off	Bitrate	720×480	30	N/A	1500	30	
	1+5	Off	Bitrate	720×480	30	N/A	1500	30	
	5 x 5	On	Bitrate	352×240	30	N/A	500	30	
	6 x 6	On	Bitrate	352×240	30	N/A	500	30	
	7 x 7	On	Bitrate	352×240	20	N/A	500	30	
	8 x 8	On	Bitrate	352×240	15	N/A	500	30	

This feature is more useful if the camera or encoder supports dual stream encoding. One stream can be configured with fixed setting to get consistent recording quality, while the other can be controlled dynamically according to the screen mode to get smooth display with affordable CPU load.

Note: Automatic control is useful only when **Decode visible channel** only setting is ON. If the setting is OFF, all channels are decoded regardless of the screen mode and CPU loads can be almost the same in any modes.

Video on/off control

Video streaming from a camera can be turned off using the menu on the camera node of the tree or DU. Event handler provides a way to turn video on automatically on selected events. Video on/off menu together with this feature allows event-based viewing of video.

in the basis second	
Main gate	Disconnect
Conord	Disconnect
- Sensu	Video off
	Camera setup
	Manual record 🔸

Additional settings for video display

Etc tab of **Display** setup contains additional settings related with video viewing.

- On/Off and position-	лау		✓ Video display ✓ Decode visible channels only
Channel name	⊙ Top □ Include	C Bottom e group name	Stop video display while Search application in running
🔲 Server time	💿 Top	C Bottom) Keep aspect ratio (Alt+F5)
Statistics (Alt+F1)	🔿 Тор	 Bottom 	Deinterlacing Vertical Filter
Motion icon	💿 Top	C Bottom	Display buffer
Recording icon	⊙ Тор	 Bottom 	0 30 Min latency Max _
_ Text color and size—			30 frames
Font color	Font siz	ze: 12 •	Sequencing

• Image for unassigned window

Normally DU displays black screen when no camera is mapped. Customized image can be displayed by this setting.



• Decode visible channels only

When set, the NVR don't decode invisible channels. For instance, max 4 channels are decoded in 2x2 screen mode. When the screen mode is changed to view channels which are not visible in current mode, it will take a few seconds to get video for the channels which are in invisible state in current mode. If the performance of the PC allows decoding of all channels simultaneously, quicker video display can be achieved by disabling this setting.

• Stop video display while Search application is running

When checked, the NVR stops displaying video if True Search application is running. This is to reduce CPU load for efficient running of search application.

• Keep aspect ratio (ALT+F5)

When checked, video display in a DU keeps the width-height ratio of the encoded stream instead of scaling to fit to the DU and remaining part comes in black.





• Deinterlacing

Select the deinterlacing method.

• Display buffer

Set the number of frames before decoding and display. Larger value results in more smooth display while the latency increases.

• Sequencing

When enabled, pages in a screen mode are displayed in turn in a specified interval.

Viewing on the secondary monitor

VS-NVR allows opening of another video window which can be moved to the secondary monitor if it is supported in the PC.

Live monitoring mode
 Recording mode

The extra video window is called **Secondary monitor view**. The secondary monitor view can be opened using **Secondary monitor** menu in **NVR** menu.

Secondary monitor Start Remote Search Server Exit

The secondary monitor view has the GUI similar to **Live** mode of main GUI, but items which have nothing to do with video display are omitted. A camera can be mapped to a DU of the secondary monitor using the menu on the DU. One camera can be mapped to both to the primary monitor(main GUI in Live mode) and to the secondary monitor view. Dragging a camera from the tree in main GUI to the secondary monitor is not allowed.

📜 NVR Manager			
Page 1	x5 6x6 7x7 8x8 💮 🗐 💽		
	Map camera P Building Auto map Unmap Building	g #1/Main.gate g #1/Garage g #1/Warehouse	
	Disconnect Video off On-screen PTZ Digital zoom		
	PTZ Aux ► Snapshot		
	Camera setup Ping camera		

Connection and disconnection of a camera

How to connect or disconnect

A camera can be connected or disconnected with one the following ways:

- (1) Menu on the camera node of the tree
- (2) Menu on the DU
- (3) Checkbox on Camera setup dialog

Name	Group	Address
🗹 Main gate	Building #1	192, 168, 10, 162
🗖 Warehouse	Building #1	192, 168, 10, 163

The menu on a group node can be used to change the connection states of all cameras in the group in a single operation.

Camera icons for connection states

Depending on the connection state of a camera, the icon in the tree comes in different color. A DU displays current state in text over black or blue window.



PTZ control

PTZ control for a camera is enabled only when **Use PTZ** setting is checked on adding a camera in **Camera** setup.

PTZ control on the control pane

PTZ tab on the control pane provides casual functions in camera PTZ control: pan/tilt/zoom/focus and preset selection. Full controls are available on the PTZ dialog invoked by PTZ button on the toolbar above the video window.

• Pan/tilt

Small button inside the circular plate can be dragged to move the camera to a desired location. The distance from the center or the circle determines the speed of pan and/or tilt operation. Another way is to click the specific



position in the circular plate. Then, the button will be moved to that position, which has the same effect of dragging the button.

• Zoom/focus

Zoom and focus are triggered by pressing (-) or (+) button. Focus provides auto-focus function by the button with car sign inside. The speed of zoom and focus operation is controlled by setting the **Speed** slider.

PTZ control dialog



PTZ control dialog is invoked by button in the toolbar above the video window. The button is enabled only when currently selected camera is configured as having PTZ capability.

In addition to the PTZ control tab available on the control pane, PTZ control dialog provide more

functionality. Some functions are effective only when the camera connected to the video encoder supports those features. For example, some cameras don't support power, wiper or light control.



• Preset configuration

Although the maximum number of preset entries is 256, actual number of preset entries varies depending on the models. Preset function can be used in the following way.

- 1. Control PTZ to make the camera view a wanted scene.
- 2. Select the preset number to assign to the view.
- 3. Press Set button.
- 4. Press Edit button to invoke a dialog where the preset name can be edited.

To make the camera view a selected preset location, select a preset entry and press **Go** button. **Clear** button releases the preset setting of an entry.

• Tour configuration and selection

A tour is the function to visit preset locations sequentially. Tour groups which are selected sets of preset entries can be configured in the dialog invoked by **Config** button.

Tour setup				X
Tour group	Preset I	ist		
No Name	No	Name	Dwell(sec)	
1 Day tour	1	Preset: 1	5	
	2	Preset: 2	10	1
	3	Preset: 3	10	
AddEditD	elete	OK	Cance	!

Multiple tour groups can be defined by selecting the entries from the preset lists arbitrarily. Add

button and Edit button invoke a dialog of the same shape where preset entries constituting a tour group can be selected. A preset entry can come multiple times in a tour group.

Tour	edit			×
Tour	Day tour		Default dwell: 5	
No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Name Preset: 1 Preset: 2 Preset: 3 Preset: 4 Preset: 5 Preset: 6 Preset: 8 Preset: 9 Preset: 10 Preset: 12 Preset: 12 Preset: 14 Preset: 15 Preset: 14 Preset: 15 Preset: 16	> 3 >> < <	Jo Name Preset: 1 Preset: 2 Preset: 3	
			OK Cancel	

Dwell time which is the time to view a specific preset location before moving to the next preset location is 5 seconds. Dwell time for each preset entry of a tour group can be configured on **Tour setup** dialog.

A tour is operated by selecting a combo entry in the PTZ control dialog. Tour can be turned off by selecting **none** entry.

Camera power/wiper/light control

Power, **Wiper**, **Light** buttons can be used for controlling camera power, wiper, and light respectively. These functions are mostly used when the cameras connected to a video encoder supports the functions.

• Setup of analog camera

Some analog cameras provide the configuration in terms of OSD menu. PTZ control dialog provides buttons and controls to configure the camera using the OSD menu.

Menu: to enable the OSD menu for camera setup **Enter**, **Esc**: menu operation Circular button on the plate: direction control menu browsing

On-screen PTZ control

When **On-screen control** mode is set to **PTZ control** in the menu of the DU, clicking left mouse button on the DU triggers the pan/tilt operation to move the direction.

Snapshot

The snapshot of a channel's video can be taken by clicking **Snapshot** button while or selecting **Snapshot** menu in the menu of a DU. Image format can be selected on saving the snapshot image. Bitmap and JPEG are supported. In case of JPEG format, JPEG compression parameter which determines the image quality can be configured by **JPEG compression** setting in **General** setup.



Snapshot dialog allows additional processing on the image before saving it as an image file.

• Inserting the title

Title of the image can be inserted.

• Privacy control

Parts of the image can be hidden for privacy using mosaic processing or drawing a rectangle in grey color.

• Watermarking

When the image is saved in JPEG format, watermark information can be inserted to the image data. A customized program called **JPEGViewer** is provided to check if a JPEG image was modified since it was saved using snapshot function.

SIGNED: the image contains watermark and it was not modified.

MODIFIED: the image contains watermark and it was modified.

NOT SIGNED: the image doesn't contain the watermark. That is, it is not created by the snapshot function of VS-NVR.



Audio control

Audio send mode and play mode

As the NVR connects to more than one camera generally, it is necessary to have the way to select cameras for audio communication. Audio setup provides settings for how to send and receive audio data.

Audio setup		? 🗙
Audio		
Talk(send) mode	Listen(play) mode	
 To selected only 	C Off	
 To all(Broadcast) 	 Selected 	
	 Visible 	
	C All	
└ Wave files to play(send) to camera—		
1. C:\Program Files\NVR Manager\Wa	rning to street.wav	
2.		
3.		
4.		
,		
	ОК	Cancel

• Talk(send) mode

Determine to which camera(s) the audio data from PC's audio input device or a wave is sent. **To selected only** mode will be used when audio stream is to be done to only one camera.

• Listen(play) mode

Off: audio is turned off.

Selected: audio data from currently selected camera are played. **Visible**: audio data from currently visible cameras are mixed and played. **All**: audio data from all connected cameras are mixed and played.

It is possible to send wave file to the camera instead of live input from audio device. Up to 4 wave files can be registered. Actual file to be sent is selected on **Audio** tab of the control pane.

Note: Listen(play) mode setting has no relationship with recording. Audio data are received regardless of this setting if audio recording is enabled and the camera is configured to send audio data.

Audio talk/output control

Audio tab of the control pane provides interactive control of audio talk mode and audio output to PC's output device. A wave file can be selected for playback to the server instead of live input.

• PC input

When the mic button is in OFF state, audio data sending stops.

• PC output

When the speaker button is in OFF state, audio data play stops.

• Audio source

The source of audio data to be sent to the camera is selected. If a wave file is selected, it is played repeatedly until audio source is changed to Live(Mic). Sending a wave file is also disabled if **PC input** control is turned off.

Video input color control

Color properties of input video of the selected camera are configured on **Video** tab of the control pane. Some cameras or encoders don't support control of some properties.

Settings changed using these controls are effective on the camera's web setup.

PC Input	
PC Output	- - +
Audio source	
Live(Mic)	•
Live(Mic) C:₩Warning to	street, wav
Storage PTZ A	Audio Video

O Brightness	
🕕 Contrast	
🖕 Hue	
Storage PTZ	Audio Video

Indentifying sensor state and control of alarm in the tree

When a sensor device connected to a camera changes its state, corresponding event is generated and it changes the icon in the tree to yellow color.

The menu Change On/Off state which comes by clicking the right button of the mouse over an alarm node allows the control of the alarm(relay) state.



Digital zoom

In order to use digital zoom function, mouse clicks on a DU should be mapped to **Digital zoom**. Another alternative use of mouse click on DU is On-screen PTZ control. These can be selected in the menu of a DU invoked by the right button of the mouse. Settings are saved for individual channels.

The region to zoom digitally can be selected by drag and drop of the mouse. Selected region come enlarged. It goes back to original state by clicking mouse' left button in zoomed state.



Channel information display

Information on the channel is displayed over the video. Visibility and position of each item are configured on Etc tab of Display setup. Motion icon



Statistics part shows operational statistics which are useful for diagnosing the reason when video doesn't come as expected.

• RX=1445

Receiving bitrate of video data in kbps unit. If it is much lower than the setting in the camera, the network or performance of the PC can be suspected. It can happen also when too many clients are connected to a camera.

• fps=24(0)

Video framerate in fps. The number inside the parenthesis is the number of frames skipped for display due to lack of display resources or too late delivery of frames caused. Small skipping can be avoided by increasing **Display buffer** setting at **Etc** tab of **Display** setup.

• Buf=3

Number of frames in the buffer. This value is approximately proportional to **Display buffer** setting.

• (0, 56)

Audio TX bitrate and RX bitrate in kbps. In case of G.711, the range of normal value is 50 ~ 70.

5. Recording

VS-NVR supports simultaneous recording of a lot of cameras to the storage consisting of storage files. Each storage file is optimally structures for supporting long pre-event and post-event recording and synchronized playback of multiple channels.

Storage setup

The storage needs to be configured first to make the recording work. The only thing to do is to select the drives to be used for recording.

Reco	rd setup							? 🔀		
Stora	age Record									
Di	isk allocation —							[
	Drive	Total(GB)	Used(GB)	Free(GB)	Reserved		Duration			
	c:	48,8	0,0	30, 7	0,5		no data			
	d:	195, 3	24,0	47,4	1,9	2009/04/21 20:21:	52 ~ 2009/09/18 1	3:09:38		
I I	🗸 e:	488, 3	477,1	10,5	4,9	2009/10/21 04:35:	06 ~ 2009/10/28 1	3:44:17		
	🖌 f:	97,7	95,0	2,6	1.0	2009/10/22 12:49:	07 ~ 2009/10/29 2	0:28:40		
	🗸 g:	39, 1	38,2	0,6	0,4	2009/10/27 02:11:	37 ~ 2009/10/29 2	0:03:33		
	🗸 h:	19,5	19,4	0, 1	0,2	2009/10/27 03:47:	51 ~ 2009/10/27 0	5:02:12		
	i	19,5	17,5	2,0	0,2	2009/10/22 11:28:	18 ~ 2009/10/27 0	3:47:50		
	j:	9,8	7,8	2,0	0, 1	2009/10/22 10:52:	23 ~ 2009/10/22 1	1:28:15		
	k:	13,5	11,6	1,8	0, 1	2009/10/22 11:46:	17~2009/10/221	2:40:07		
A	Advanced									
_0										
C	C Stop © Overwrite									
						OK	Cancel	Apply		

- 1. Open Storage tab of Record setup
- 2. Check the drive to be used for recording
- 3. Adjust **Reserved** size if necessary

Reserved size is the amount of space to be left without writing record data for other purposes like keeping backup data. If the drive will be fully used for recording, this setting need not be touched.

- 4. Click **Advanced** button to open Advanced setup dialog if necessary. Advanced setup dialog provides a way to change the interval and/or size of storage file generation. Generally it is not necessary to change the default setting. However, it may be necessary if the pattern of recorded data generation is unusual.
- 5. Configure **On disk full** action.
- 6. Click **OK** or **Apply**

Storage tab also shows full information on the disks and recorded duration for each disk.

Total

Total size of the drive

• Used

Amount of space contained recorded data

• Free

Space available for recording. If this size is smaller than the size of the storage file. NVR doesn't write data to the disk.

Reserved

Amount of space to be left without writing record data for other purposes.

Duration

Duration represented by the data in the disk.

Advanced

Advanced settings dialog is to configure the interval and the size of a storage file generation. **Bitrates** section of the dialog is just for easy calculation of total bitrates of all channels. When the total bitrate is calculated or configured manually by **Manual setting**, it recommends the size of a storage file in **Recommended file** size to the amount for 1 hour duration. This recommended value or any other value preferred by user can be set on **File Size to set** section. The NVR generates a new file when one of these two conditions, interval and size, is met.

Advanced settings	×				
Bitrates Bitrate per channel (khos)	500				
Number of channels	20				
Total bitrate (kbps)	10000 Im Manual setting				
File size & Interval					
Ģeņeration Interval	60				
Recommended file size	4394				
File Size to set (Mb)	10240 🗖 Automatic adjustmen				
OK Cancel					

• On disk full

Action when all selected drives become full. Generally **Overwrite** is selected to recycle the storage. Other actions such as sending E-mail can be configured by **Event handler**.

Recording mode and schedule

Three kinds of recording modes are supported: **Continuous**, **Event-based**, **Manual**. Event-based recording allows user-defined combination of various types of events. While Manual recording works independently from the schedule setting, Continuous recording and Event-based recording can be set to 1 hour unit on the schedule table of 1 week x 24 hour format.

Recording mode and schedule of a camera can be configured on **Record** tab of **Record** setup.

- 1. Click a camera to configure.
- 2. Select the recording mode in the combo at the bottom part of the dialog.
- 3. Fill the schedule table by dragging or click the mouse.
- 4. Click **OK** or **Apply**.

ecord setup												
Storage	Storage Record											
Get fro	Get from cameras 🛛 🦵 Get settings whenever Record setup is opened											
Record	i Name	Pre	Post	Stream	Preference	Resolution	Framer	Quality	Bitrate	I-Frame	Audio	-
V	Main gate		20 📰	Primary	Quality 💌	720×480 💌	25 💌	Norma 💌	N/A	77 🖃		
V	Warehouse	10	20	Primary	Quality	720×480	25	Normal	N/A	76		
~	Garage	10	20	Primary	Quality	720x480	30	Ultra fine	N/A	U		
Image Image <th< th=""></th<>												
							Γ	OK		ancel	Apply	

The last row, \mathbf{H} , in the schedule table is for holidays. Holidays can be configured in **General** setup.

- 1. Select a day.
- 2. Click Add at the bottom part of the dialog.
- 3. Edit the description to
- 4. Check **Annual** setting if the day is fixed every year.

Date	Description	2009.12
2009, 12, 25	X-mas	Su Ma Tublia Tau Er Sa
		6 7 8 9 10 11 12
		3456789
<		🔉 📔 Add 📕 Remove

Continuous recording

In **Continuous** recording mode, the NVR records the channel continuously. When a camera is newly added, the recording mode of the camera is set to **Continuous** by default.

Event-based recording

Event-based recording works only when specified event condition happens in the camera. Most frequently used events are sensor and motion detection. For these two types of event, NVR provides pre-defined event modes in the combo for recording mode selection.

Recoding mode selection for setting the sc	hedule
Off	Edit recording modes
Off Continuous	
Sensor(Any) Motion	

• Defining recording modes

User can define various recording modes by combining event types in extremely flexible ways. Recording modes are defined by arbitrary combinations of primitive events: sensor, alarm, video loss, motion and serial event. Recording modes are defined for individual camera. Thus different recording modes can be defined for different cameras depending on the situations in the sites.

- 1. Click Edit recording modes button to open the dialog.
- 2. Select event types to combine.
- 3. Click **Add** button. New recording mode is added **Recording modes** section with another color.
- 4. Change mode name if necessary to describe what the recording mode is for.
- 5. Edit the description of the event if necessary.
- 6. Click OK.
- 7. New recording mode will come on the recording mode combo on **Record** tab.

Edit recording modes		×
Edit recording modes Recording modes Off Continuous Sensor(Any) Motion Sensor1+Sensor2+Ser	Copy from Mode name: Sensor1 Sensor2 Sensor3 Sensor4 Alarm1 Alarm2 Alarm3	Add Modify Delete Sensor1+Sensor2+Sensor3+Sensor4+Motion Description < <description>> <<description>> <<description>></description></description></description></description></description></description></description></description></description></description></description></description></description>
	Alarm4	< <description>> <<description>> <<description>> <<description>> <<description>></description></description></description></description></description>

• Copying recording modes

When many cameras are to have the same recording modes, it is possible to copy the recording modes defined for a camera. In this way, repeated definition of recording modes to multiple cameras can be avoided, while allowing flexibility of defining different recording modes for different cameras.

Clicking **Copy from** button on **Edit recording modes** dialog invokes the dialog on which recordings modes defined for other cameras can be selected for copying.

Copy recording modes		×
⊟-Building #1 Main gate Garage	Recording mode Off Continuous Sensor(Any) Motion Sensor2+Sensor3+ Select all Clear	Events Sensor1; Sensor2; Sensor3; Sens Motion Sensor2; Sensor3; Motion

• Working with external events

It is possible to trigger the recording of a camera when some events from other camera happen. For example, recording of camera A can be started if camera B goes to video-loss state. Another example is to start recording of many cameras simultaneously when a sensor event is detected on a camera.

- 1. Click External events button to open Selecting external events dialog.
- 2. Select the external camera and the event types which will be used for recording of this camera on **Selecting external events** dialog
- 3. Click **OK**.
- 4. Selected external events appear on Edit recording modes dialog.
- 5. The external events can be selected to define recording modes.

Edit recording modes			
Call recording modes			2
Recording modes	Conv from	Add Modify Delete	1
Off			1
Continuous	Mode name: Motio	חס	
Sensor(Any)	Event	Description	Ĩ
Motion	Sensor4	< <description>></description>	
	🗖 Alarm 1	< <description>></description>	
	🗖 Alarm2	< <description>></description>	
	🗖 Alarm3	< <description>></description>	
	🗖 Alarm4	< <description>></description>	
	🗖 Video loss	< <description>></description>	
	Motion	< <description>></description>	
	🗖 Serial event	< <description>></description>	
	Garage:Sensor1	< <description>></description>	
External events from	Garage:Sensor2	Door sensor	
camera Garage	Garage:Sensor3	< <description>></description>	
	🗖 Garage:Sensor4	< <description>></description>	
	Garage:Motion	< <description>></description>	
	·····		l.
	External events	OK Cancel	
			a



Manual recording

Manual recording is to start recording of a camera instantly in a specific situation without setting recording mode and schedule. The menu for starting or stopping manual recording is available on the menu on the camera icon of the tree. Manual recording works independently from recording mode and schedule. When manual recording is turned off, the recording mode setting with the schedule becomes effective again.

Recording control: on/off

Recording of a channel can be turned on or off with keeping the recording mode and schedule untouched with the check box at the first column in **Record** tab. This setting doesn't affect manual recording which works unconditionally.

Checking how recording is going on

A number of ways are provided to check if the recording is going on.

Storage tab

Storage tab of the control pane shows storage status and recorded duration briefly. When the recording is going on the newest time of the duration is periodically updated. Information such as the amount and duration in the tab is obtained only from the drives selected on **Storage** setup. Data in deselected drives are not included.

Timeline

Timeline shows the recorded status of the selected channel. More detailed view of the status can be obtained by adjusting the scale of the time using and button. Although timeline is periodically update, it is possible to refresh any time using button

🍫 🞑 🛿 24 Hrs) 😡	00:00	02:00	1 04:00	1 06:00 I	1 D8:00	1 10:00	12:00	14:00	16:00	1 18:00	+ 20:00	1 22:00
Main gate													
Date : 30.10.2009,	Interval	: 24 Hour(s) (13	3), Dents : 12	First record: D	0:00:18, 30.10.20	09	Last record: 13	:14:55, 30.10.20	09 for the day				



Storage	necora	
Get fro	om cameras	
Reco	rd Name	
V	Main gate	
	Warehouse	
v	Garage	

676.9GB (98.5%)
Record Free User data
Drives: E, F, G, H, I, J, K
Duration
From : 2009/04/21_20:21:52
To : 2009/10/30 <mark>13:11:20</mark>
Storage PTZ Audio Video

Recording icon in Live mode and status in Record mode

If display of recording icon is checked in Display setup, the recording icon location comes on the DU in Live mode.

In Record mode, Status field shows the connection state as well as recording status.

No	Camera name	Status	Recording mode
1	Main gate	🥥 Recording	Continuous
2	Warehouse	🥥 Recording	Continuous
3	Garage	Disconnected	Off

Search and playback with True Search

Full operations of search and playback on all channels are possible by invoking **True Search** application with **Search** button on the toolbar.

Setting recording parameters

Record tab of **Record** setup contains various parameters which can affect the stream to be recorded. As it is not possible to change the properties of the video stream such as resolution and framerate once the stream is encoded, the settings on Record tab changes the settings in the cameras. As a result, the effect of settings in **Record** tab is propagated to all clients as well as the video display in Live mode.

Sto	orage	Record										
	Get from	n cameras 🗖 Ge	t setting	gs wher	never Record	setup is oper	^{ied} Chan	ges settin	ngs in the	e came	era	
	Record	Name	Pre	Post	Stream	Preference	Resolution	Framerate	Quality	Bitrate	I-Frame	Audio
	~	Main gate	10	20	Primary	Bitrate	720×480	25	N/A	1000	77	
	~	Warehouse	10	20	Primary	Bitrate	720×480	25	N/A	1000	76	v
	~	Garage	10	20	Primary	Quality	720×480	30	Ultra fine	N/A	30	

• Record

Check to turn on the recording. Manual recording works regardless of this setting.

• Pre

Pre-event recording duration in seconds.

Post

Post-event recording duration in seconds.

• Stream

Select the stream to record. Single stream camera shows Primary entry only.

• Preference ~ I-Frame

Video encoding parameters of the camera. Refer the user manual of the camera or the video encoder.

• Audio

Check to record audio stream together.

Parameters of all cameras in the grid can be changed at once using **Propagate to all** function invoked by right button click of the mouse over an entry.

Note: Allowing video encoding settings in the NVR is useful for convenient settings of multiple cameras without opening web-based setup pages. However, it should be used carefully as it modifies encoding setting of the camera. This means that the setting in Display setup can be invalidated by the setting in Record setup if both are using the same stream. In case of dual stream camera, it is ideal to use one stream for display and the other for recording. Then, settings in two setups don't affect each other.

Record mode interface

If viewing cameras continuously is not essential, running the NVR in **Record** mode is preferable. In **Record** mode CPU load is much lower as decoding and display are not performed. The mode also shows more detailed statistics on the recording status. Another advantage is that it can run on any kinds of graphics cards.

[📕 NVR Manager		
I	NVR <u>V</u> iew <u>S</u> etup Events Tools <u>H</u> elp		
4	°o 🖸 🚺 🕑 🌚 🛓		
	2009-10-30 FRIDAY No Camera name State	tus Recording mode Pre(sec) Post(sec	c) Resolution Video(kbps) Framerate Audio recording Audio(kbps)
	13.29.47 1 Main gate 🥥 F	Recording Continuous 10 20	720×480 1167 25 Off 0
l	2 Warehouse 🥥 F	Recording Continuous 10 20	720x480 1910 30 Off 0
	🖃 🛄 Building #1 🛛 🛛 3 Garage 🔤 🗐	Disconnected Off – –	- 0 - Off 0
	🕀 🛋 Main gate		
	🛨 🚘 Warehouse		
	Garage		

6. Search and Playback

Search and playback of recorded data are supported in a separate application: True Search. True Search is invoked by clicking Search button on the toolbar.



Timeline

Search by date and time

A scene of interest can be found by selecting date, camera and the time.

- 1. Click a day in the calendar. Days with recorded data are marked with red color. Month can be changed by clicking arrow buttons in the calendar. When a day is clicked, the tree is updated with the channel having data on the day. When there are a large number of cameras, loading the tree can take some time.
- 2. Select the channels to search. Up to 16 channels can be selected. Only one audio channel can be selected at a time.
- 3. When channels are selected, the timeline will be updated to show recorded status of the channels.
- 4. Move the current position bar in the timeline to a position to play.
- 5. Press Play button.

Instead of moving current time in playback using the position bar, it is possible to set a specific time in the dialog invoked by double clicking the current time display. The tooltip appears when the mouse is over the current time display.

Current time bar is moved dialog.



The scale of the timeline can be changed by 🖾 button and 🐱 button. Five different scales, 24hours, 12hours, 6hours, 3hours, and 1hour, are supported.

Search by event

One or more of	hannels	recorded	by a specific event can be searched in Event search dialog
invoked by	Event	search	button

Event Search		\mathbf{X}
Server ID Main gate	From First 2009 To Last 2009	Time(hh:mm:ss) 11 01 08 21 52 11 03 11 05 38
Event type: All Sensor Mo	otion 🗖 Video Loss	nt status: DN only
Site Main gate Main gate	Event Motion 1 ON Motion 1 ON	Date/Time 2009/11/01 12:44:48 2009/11/02 01:48:40
Play		Close

1. Select the camera to search. All camera can be included by selecting --For All Servers --.

- 2. Specify the duration to search.
- 3. Select the types of events.
- 4. Select event status: On, Off or All for both type.
- 5. Click Search button.
- 6. Play the channels recorded by the event either by double clicking the entry or by selecting an entry and click **Play** button.
- 7. Event search dialog will disappear and playback of the channels will be started from the

event time. Channel selection in the tree is also updated automatically with the channels recorded by the event.

Playback control

Buttons in the playback control group allows sophisticated control of the playback.



All playbacks in backward direction play only I frames. So, jumping effect comes. **Fast forward** in multi-screen mode also plays I frames only. In case of 1x1 mode, it is selectable to play all frames or I frames only using the setting **Decode only key frames in FF playback in 1x1 mode** in **Display** tab of the setup. Smooth playback can be obtained by this setting is not checked.

Playback of individual storage file

VS-NVR provides a way to play individual storage file or to play all storage files in a specific folder or a drive. This feature is useful to play storage files copied as a backup. **Open storage file** dialog is invoked through a menu on the root node(named **Local storage**) of the tree.

B- D3 L 0	cal storage 🖌	
+ V.	Refresh	
🛨 ··· 🗖 📻	Open storage file	
+ _	uaraye	

(Open storag	je file	
Γ	Drive	Folder	Change folder
	🗹 c:	_storage	
	🗹 d:	_storage	Choose file
	🗹 e:	_storage	
	🗹 f:	_storage	
	🗹 g:	_storage	
	🗹 h:	_storage	
	🗹 i:	_storage	
	I i:	_storage	
	⊡ k:	_storage	
	,	OK Cancel	

Remote search and playback

Data recorded in the NVR system can be searched and played through the network from a client PC. **True Search** should be installed in the client PC and configured to access the storage is remote system.

- 1. Open Setup dialog
- 2. Select Remote mode to access NVR system through the network
- Click Add to open the dialog for adding an NVR. Name and address of the NVR are specified. Port 2121 is used for TCP connection for remote search and playback. If port, login or password is modified, it should match the setting in Remote Search Server. More than one NVR can be added, but only one NVR system can be connected at a time.
- Other settings can be configured optionally.
 Buffering time: set the amount of data to be buffered before playback. In case the network bandwidth is lower than the encoding bitrate of the video, this value should be large enough to avoid frequent stopping and buffering.
 Command timeout: set the timeout in the interaction. It can be increased of the network is

Command timeout: set the timeout in the interaction. It can be increased of the network is poor.

Auto reconnect on backup: check to reconnect automatically when the connection is lost during long term backup

- 5. Click OK
- 6. It will connect to the specified NVR and get data from the NVR.

Setup				? 🗙
Connect Display General				
Storage access				
C Local				
 Remote 	Buffering time (sec): 5	Command time	eout (sec): 5
	🔽 Auto rec	connect on backup		
NVR Name Addres	s Port	Status	Login	
My NVR 192,168	10,43 2121	CONNECTED	admin	Add
	Add NVR			Modify
	Name:	My NVR		Remove
	Address:	192.168.10.43		
	Port:	2121		
	Login:	admin		
	Password:	****		
		OK Cancel		
		OK	Can	cel Apply

In order for remote search and playback to work, **Remote Search Server** application should be running the in the NVR system. It is automatically started by starting NVR. However it is possible to start manually using **Start Remote Search Server** menu.

NVR	<u>V</u> iew	<u>S</u> etup	Events	То		
🖌 Live	e monito	oring mo	de			
Red	Recording mode					
Sec	Secondary monitor					
Sta	Start Remote Search Server					
E <u>x</u> i	t					

is

Remote Search Server appears as a tray icon at the bottom part of the Windows. User interface of Remote Search Server can be opened by double clicking the tray icon. The user interface allows modification of default settings. It also shows currently connected clients.



Note: True Search may fail to connect to NVR system with the following reasons:

- NVR system is actually unreachable in the network
- NVR system is reachable but it is protected by the firewall. Port 2121 should be open.
- **Remote Search Server** application is not running in the NVR system, or it is configured with different setting: port, login, password

Backup

Backup provides a way to copy a duration of recorded data to a file. Two formats of backup files are

supported: AVI file and Native format. The same backup dialog invoked by Backup button used, and the format is selected in the dialog.

AVI format

AVI format is used to use casual media player such as Window Media Player, GOM Player, or VLC Player for playback of the backup file. As AVI doesn't allow multi-channel video streams, a backup for each channel needs to be taken separately.

- 1. Select a camera to make backup.
- 2. Select **Backup** setting to **AVI**.
- 3. Specify the duration.
- 4. Check Include audio if audio is to be included.
- 5. Click **Refresh** button to estimate the size of the backup file. This can take significant time if the duration of the backup is long. This step is optional.
- 6. In case of remote access to the NVR system, **Remote backup speed** can be additionally configured to limit the bitrate of backup to share the network bandwidth with others.
- 7. Configure the name of the backup file.
- 8. Click Start Backup button.
- 9. Progress will be shown.

When multiple channels are selected, the NVR makes the backup for each channel one by one. The names of the backup files are automatically generated in this case.

Server/camera list	Selected camera Backup	
E- Main gate	Multiple selection © AVI C Native	
	Duration Date(yyyy:mm:dd)Time(hh:mm:ss)	7
	From: First 2009 11 02 12 21 52	
	To: □ Last 2009 11 03 13 09 03	
	🖵 Include audio	1
	Real duration and estimated size	
	Real record duration: 10h:40m:52s Refresh	
	Estimated size: 12393 Mb	
	Output-	
	Backup file: c:\Main gate_091102122152.avi Browse,,,	
	Disk free size: c: 31726, 77 Mb	
	Silent mode (auto increment backup_1,,N,avi when resolution got changed)	
	Stop Backup] Remote backup speed: unlimited	-
	Progress	1
	370	
	Backup thread priority: Normal	
	Close dialog after completion of backup Close	

Native format

Native format means the format used for recording in the NVR. That is., it is the format of the storage files generated by NVR. Except that backup of multiple channels can be taken to a single file, the usage is basically the same as the backup in AVI format. Storage files created by the backup can be played only with **True Search**.

Snapshot

A snapshot can be taken while the playback is going on. Snapshot dialog which is invoked by

Snapshot button is basically the same as that in **Live** mode of the NVR. Please refer to **Snapshot** section of the chapter for Live monitoring.

7. Event Handling

Event monitoring and search

Events monitored in the NVR are classified into two categories: camera events and NVR(or local) events.

Camera events

Camera events come from cameras or video encoders when specific situations happen.

Camera event	Description
Sensor on/off	Delivered when the sensor device attached to sensor(DI) port of a
	camera changes its state.
Alarm on/off	Delivered when the alarm(DO) port of a camera changes its state.
Motion on/off	Delivered when a camera detects motion in the scene or the motion
	disappears.
Videoloss on/off	Delivered when a camera losses video input signal. Since video input
	module tightly assembled with other parts in IP camera, this event is
	rare in IP camera. On the other hand, this can happen due to
	disconnection of video cable or fault in analog camera in case of a
	video encoder.

NVR events

NVR events represent some situations in the NVR which need to be logged for interpretation of recorded status. NVR events are sometimes called as Local events.

NVR event	Description
NVR started	Startup and termination of the NVR generate the events. Forced
NVR terminated	killing of NVR process or accidental termination due to error doesn't
	generated NVR terminated. So these can be used to check whether
	the NVR was terminated due to error or not.
Camera connected	Generated when the connection to a camera is established or lost
Camera disconnected	respectively. These are useful to check if there have been failure in
	the network or the camera.
Config changed	Generated when the configuration of the NVR is changed.

How events are monitored

Camera events are monitors in more than one ways. Sensor event an Alarm events change the states of icons in the camera tree. Motion icon in a DU reflects the motion detection state of a camera. DU also display **Videoloss** message when the camera loses video signal.

Events are monitored in a dialog, which also provides search of stored events. **Event log** menu or **Event search** menu invokes the dialog with corresponding tab opened.

When specific actions need to be executed when an event happens, **Event handler** can be configured.

Event log and search

Event log menu invokes a dialog where both camera events and NVR events can be monitored in realtime. This dialog shows the events happened only after it is opened. Event types can be selected to include the events of interest only.

ents		
og Search Events types ☑ Sensor1 ☑ Alarm1 ☑ Sensor2 ☑ Alarm2 ☑ Sensor3 ☑ Alarm3 ☑ Sensor4 ☑ Alarm4	☑ Video loss ☑ Motion ☑ Serial event ☑ Local event	
Camera	Event	Date/Time
Garage	Motion Off	2009/11/09 17:51:42
170	Motion Off	2009/11/09 17:51:42
164	Motion Off	2009/11/09 17:51:42
167	Motion Off	2009/11/09 17:51:42
164	Motion On	2009/11/09 17:51:49
Garage	Motion Off	2009/11/09 17:51:50
Garage	Motion Off	2009/11/09 17:51:52
167	Motion Off	2009/11/09 17:51:52
167	Motion Off	2009/11/09 17:51:52
141	Motion On	2009/11/09 17:51:55
167	Motion On	2009/11/09 17:51:56
141	Motion Off	2009/11/09 17:51:56
164	Motion On	2009/11/09 17:51:58
167	Motion On	2009/11/09 17:51:58
167	Motion Off	2009/11/09 17:51:59
170	Motion Off	2009/11/09 17:51:59
Garage	Motion Off	2009/11/09 17:51:59
167	Motion Off	2009/11/09 17:51:59
164	Motion On	2009/11/09 17:52:01
164	Motion On	2009/11/09 17:52:06
Print Clear		Close

Event search menu invokes a dialog where events in the storage can be searched.

vents		
Log Search		
Camera name 163	From 🗖 First	2009-11-09 🔽 12:00:00
Enter '*' for all cameras	To 📃 Last	2009-11-09 🗸 5:51:37 🕂
Events type		
Sensor1 Alarm1	☐ Video loss	Select all
Sensor2 Alarm3	Serial event	Clear all
Sensor4 🗖 Alarm4	Local event	
		Search
Lamera	Event Separation	Date/Time
163	Sensor2 Off	2009/11/09 14:04:24
163	Sensor1 Off	2009/11/09 16:27:22
163	Sensor2 Off	2009/11/09 16:27:22
163	Sensor1 Off	2009/11/09 16:29:23
163	Sensor2 Off	2009/11/09 16:29:23
163	Sensor1 Off	2009/11/09 16:32:44
163	Sensor2 Off	2009/11/09 16:32:44
163	Sensori Off	2009/11/09 16:36:25
103	Sensor2 Uff	2009/11/09 16:36:25
163	Sensor Off	2003/11/03 17:51:12
105	36113012 011	2003/11/03 11/31/12
Print Clear		Close

Event handler

VS-NVR provides versatile event handler with which various actions for the events generated at the NVR as well as from the cameras can be associated in a very flexible way. Each action can have independent schedule which allows the control of action dispatch according to days and time.

An event handler is an association between a specific event from a camera or the NVR and a specific action.



A schedule which controls when to trigger the action is defined independently and associated to an event handler arbitrarily. As a result it is possible to use the same schedule for multiple event handlers.

Actions for events

Various a	ctions can b	be associated to	the events	from cameras	or the NVR itself.
1011000				nonn oannonao	

Action	Operation	Parameters			
Popup video window	A popup window to display the video from the	Duration of the popup			
	camera comes.				
Blink video channel	Blink the border of the DU in red color.	Duration of the blinking			
Change screen mode	The screen mode is changed to show the	-			
to 1x1	camera in 1x1 mode.				
Video on/off control	Control video-on/off mode of the camera.	-			
Play wave file	Play a specified wave file.	-Wave file to play			
		-Once or repeat			
Send wave file to	Send a specified wave file to the camera to	-Wave file to play			
camera	play to the camera's audio output port	-Once or repeat			
Audio mute on/off	Control audio playing on PC. It controls PC	Duration and on/off			
control	Output control on Audio tab of main UI.				
Camera alarm control	Turn on or off a specific alarm of the camera	Duration and on/off			
Goto PTZ preset	Control the camera to view a specified preset	Preset item			
	position				
Activate PTZ tour	Activate a specific PTZ tour configured at PTZ	Tour item			
	control dialog				
Send events to TMAP	Send event to trigger an action in TMAP				
	application				
Send E-mail	Send E-mail to the operator	E-mail title and text			

Event handler dialog

Event handler dialog is invoked by **Event handler** submenu of **Event** menu group. The dialog shows currently configured event handlers for each camera briefly. By clicking an event source, clicking a specific event handler for that event source, it is possible to view detailed relationship between the events and actions.

Event har	ndlers Event	handler sheduler			
Event so	urce				
Group	Name	Events		Actions	~
G1 G1 G1 G1 G1 G1 G1 G1	Garage 112 113 Guest room 163 164	sensor, motion		Popup video window, Camera alarm co	
G1 G1 <	131 170 132]	>
Event			Des	criptic	
 ✓ Hand ✓ Hand ✓ Hand 	ler 1 ler 2 ler 3		On Se Acti Po	events: ensor1 ons: opup video window	
Copy fro	m Add	Modify Delete			

Creating an event handler

An event handler for an event source is created in the dialog invoked by **Add** button on **Event** handler dialog.

- 1. Choose events for which actions are to be associated. Multiple events can be selected to trigger the action on any of selected events.
- 2. Choose one or more actions.
- 3. Edit the name of the event handler.
- 4. Configure the parameters for events. The state of an event(on or off) to trigger the action is selected. Mostly on is configured to make the action happen on the generation of the event.
- 5. Configure the parameters for actions. Parameters for actions are specific to each action. Most common parameter is the duration in which the action is to be continued. The following shows an example of the dialog for configuring action parameters. It configures whether audio mute of playing on PC is turned on/off and the duration. By selecting Continuous item in Dwell time, it is possible to make the mute on/off effective until user changes the setting on Audio tab of main UI manually.

Action settings Audio m	ute on/of 🔀
Set Audio mute on/off control:	Dwell time
OK	Cancel

- 6. Select the schedule to be used for this action. The action is triggered only when the schedule is configured to **On** state at the time when the event is generated. If **Use schedule** is not checked, the action happens without checking the schedule.
- 7. Click **OK** button.

Add event handler						
Choose events	Choose actions					
 ✓ Sensor1	 Popup video window Camera alarm control Sound effect E-mail send Goto PTZ preset Activate PTZ tour Video on/off control Audio mute on/off control Send events to TMAP 					
Event handler name: Handler 4						
On events <u>Sensor1(on), Sensor2(on), Sensor3(on), Sensor4(on)</u> Actions: <u>Popup video window, Sound effect(1 times)</u>						
	Click blue event/action to configure parameters					

Adding event handlers by copying one from other camera

If events from many cameras are going to be handled in the same way, it would be boring to define the same event handler for each camera. For example, all cameras can be configured to play an wave file when any of the sensors in the camera detect the change of the state. The NVR allows copying event handlers from those defined for other cameras.

Copy event handlers			×
⊡-G1 LGarage	Handler I Handler 1 Handler 2 I Handler 3	Description sensor sensor motion	
1	Select all	Clear all OK	Cancel

Defining schedules

The schedules to be associated with event handlers are created independently from event handlers. Then a schedule is selected when an event handler is created or modified. This allows flexible association between event handlers and schedules; One schedule can be shared among many event handlers or each event handler can have different schedules.



A schedule is created in the following steps.

- 1. Edit the name of the schedule to create.
- 2. Click Add button.
- 3. Configure the weekly(+ holiday) schedule table by dragging and/or clicking mouse.
- 4. Click **OK** or **Apply** button.

8. E-Map

E-Map(Electronic-Map) functions is supported in a separate application: **TMAP**. TMAP is invoked by clicking **TMAP** button on the toolbar.





TMAP provides the following functions.

- Displays image-based maps and allows placements of cameras on specific positions.
- Displays a camera's video manually or in a event-driven way.
- Provides various actions such as marking a camera on receiving events from a camera.
- Two-way audio communication with a camera.

Importing maps

The first step to use TMAP is to import map images. Maps of Bitmap or JPEG format can be imported in the dialog invoked by **Map->Add a map** menu.

- 1. Choose an image of Bitmap or JPEG format. It is recommended to use the image whose size is similar to that of map area of TMAP.
- 2. Enter the name for the map.
- 3. Click OK button.

Add a map		
Name Map image	Street #1 C:\Documents and Settings\kspark	Browse
	ОК	Cancel

Map List

Street #1

Street #2

Added maps appear on the Map list of TMAP. Map image display area of TMAP displays the map selected by clicking the mouse on the list. A large area can be divided into multiple regions(maps). Or it is also useful to import maps of different scale for macro view of the area as well as detailed view.

Connecting to NVR

TMAP is designed to operate with one or more NVRs. That is, it doesn't work alone. TMAP gets the camera list by connecting to an NVR.

- 1. Invoke Add NVR dialog using NVR->Add NVR menu.
- 2. Enter the information for the NVR to connect. Currently the port is fixed to 2020.
- 3. Click OK button.
- 4. More than one NVRs can be added for sharing TMAP among multiple NVRs.

Add NVR	
NVR Name:	NVR
NVR IP:	192 . 168 . 10 . 43
ÇMS	2020
User ID:	admin
Password:	****
	OK Cancel

Added NVRs and their cameras come on Camera List part. NVR node and camera node show connection state using the color:

• Grey

Connection to the NVR is disconnected by user. The menu on the NVR node provides menus for connection and disconnection.

Violet

It is in 'Trying connection' state to the NVR.

• Blue

TMAP is connected to the NVR.





Placing cameras onto a map

A camera can be placed on a map by dragging and dropping a camera node in the tree. The location of the name tag(yellow rectangle) can be adjusted after placing the camera.



A camera on the map can be deleted either with the context menu on the camera icon on the map or with the context menu on the camera node of the tree.

Pop-up video

Pop-up video for a camera on the map can be opened with **Show video** menu on the icon. Double clicking the camera icon has the same effect.

Pop-up video also can be opened due to event handling function.



Event handling

TMAP has its own event handler which maps an event to one or more actions. Sensor, motion and video loss events can be handled. The following dialog which is invoked by **Event->Event Setup** menu shows how events are mapped to actions and how the parameters for actions are specified.

Event setun							
Action	Sensor	Motion	Videoloss				
Highlight camera node(red circle)	✓						
Pop-up video window	✓						
Sound effect		✓	✓				
Event window display and logging		✓					
Automatic enabling of audio output							
Change active channel							
Popup Video Window Sound Effect • Normal Size • Wave file play • Windows Beep • Full Screen Size • Wave file • C:\\WINDOWS\system32\\ • Browse							
Action Duration Continuous Duration 5 sec 5 sec							
OK Cancel							

• Highlight camera node

Blinking red circle is displayed on the camera icon on the map. It disappears if user clicks the node or the action duration expires.



• Pop-up video window

Pop-up video is displayed on the map.



• Sound effect

Wave file or Windows beep sound is played.

• Event window display and logging

Events are displayed on Event Window at the bottom of TMAP GUI and logged to a file for searching later.

• Automatic enabling of audio output

If audio output (to PC) is turned off, the event turns on the audio output.

• Change active channel

Active channel is changed to the channel where the event happened.

Event search

Event log dialog is invoked by **Event->Event** Log menu. It allows searching of events with various conditions. TMAP stores events on its own way independently from VS-NVR's event logging.

Camera name From First 2010-02-08 ▼ 11:06:49 ↓ Remain blank for all cameras To Last 2010-02-09 ● 8:21:31 ↓ Event type ▲ All Sensor ♥ Motion ♥ Motion ♥ Motion Search Camera Event Date/Time ● 167 Motion 1 On (2010/02/09 19:28:34) 163 Motion 1 Off (2010/02/09 19:28:34) 164 Motion 1 Off (2010/02/09 19:28:35) 165 Motion 1 Off (2010/02/09 19:28:35) 166 Motion 1 Off (2010/02/09 19:28:35) 163 Motion 1 Off (2010/02/09 19:28:35) 164 Motion 1 Off (2010/02/09 19:28:35) 165 Motion 1 Off (2010/02/09 19:28:37) 163 Motion 1 Off (2010/02/09 19:28:37) 163 Motion 1 Off (2010/02/09 19:28:37) 164 Motion 1 Off (2010/02/09 19:28:37) 165 Motion 1 Off (2010/02/09 19	E	vent Log							
Event type Motion Motion Meteo loss Search Camera Event Date/Time Image: Comparison of the search Search 167 Motion 1 On (2010/02/09 19:28:34) Image: Comparison of the search Image: Comparison of the search Image: Comparison of the search 163 Motion 1 On (2010/02/09 19:28:35) Image: Comparison of the search Image: Comparison of the search		Camera name Remain blank cameras	for all	From To	🗌 First	2010-02-08	¥ ¥	11:06:49 8:21:31	*
Camera Event Date/Time 167 Motion 1 On (2010/02/09 19:28:34) 163 Motion 1 On (2010/02/09 19:28:34) 167 Motion 1 Off (2010/02/09 19:28:35) 163 Motion 1 Off (2010/02/09 19:28:35) 163 Motion 1 Off (2010/02/09 19:28:35) 163 Motion 1 On (2010/02/09 19:28:35) 163 Motion 1 On (2010/02/09 19:28:36) 163 Motion 1 Off (2010/02/09 19:28:37) 163 Motion 1 Off (2010/02/09 19:28:37) 163 Motion 1 Off (2010/02/09 19:28:37) 164 Motion 1 Off (2010/02/09 19:28:40) 134 Motion 1 Off (2010/02/09 19:28:40) 134 Motion 1 Off (2010/02/09 19:28:43) 134 Motion 1 Off (2010/02/09 19:28:43) 134 Motion 1 Off (2010/02/09 19:28:44) 167 Motion 1 On (2010/02/09 19:28:44) 167 Motion 1 On (2010/02/09 19:28:46) 163 Motion 1 On (2010/02/09 19:28:46) </td <td></td> <td>Event type</td> <td>Sensor</td> <td>🗹 Motio</td> <td>on 🗌</td> <td>Video loss</td> <td></td> <td>Sea</td> <td>arch</td>		Event type	Sensor	🗹 Motio	on 🗌	Video loss		Sea	arch
167 Motion 1 Off (2010/02/09 19:28:47) 163 Motion 1 Off (2010/02/09 19:28:47)		Camera 167 163 167 163 167 163 167 163 134 134 134 134 134 134 134 134 167 167 163 167 163		Event Motion 1 Motion 1	On On Off Off On Off On Off On Off On Off On Off On Off On Off		Date/Tin (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/ (2010/02/	ne (09 19:28:34) (09 19:28:35) (09 19:28:35) (09 19:28:35) (09 19:28:36) (09 19:28:36) (09 19:28:37) (09 19:28:40) (09 19:28:42) (09 19:28:43) (09 19:28:44) (09 19:28:46) (09 19:28:47) (19 19:28:47) (19 19:28:47)	

Configuring the object display

TMAP allows changing the way how objects are displayed on the map. Object Display Setup dialog invoked with **Map->Object display setup** provides such feature. User-defined camera icons for different states can be specified. The color of line connecting camera icon and pop-up video can be changed. Camera name tag also can be fully customized.

Object Display Setup		X
Camera icon on map		
Style		
My style	Connected:	A
Default My style		
	Disconnected:	×
	Videoloss:	3
		<u> </u>
Add Delete Modify	Background:	
Line for connecting camera and pop-u	ıp window:	
Camera name on map		
Text: Font Backgrou	und: 🔄 🗖 Trar	nsparent
Camera object text		
💿 Server name		
🔿 Camera name		
○ Server name + camera name		
	ок [Cancel

9. Additional Functions

Serial data pass-through

Serial data pass-through is a function use to deliver serial data transparently between the camera(or video encoder)'s serial port and PC's COM port. A typical usage is to control the PTZ camera using PTZ keyboard connected to the PC.



Serial data pass-through function neither modifies nor the data between PTZ keyboard and PTZ camera. It just delivers data bi-directionally.

Serial setup provides the settings for serial data pass-through operation.

Serial					
Send (PC to camera) C Off To selected camera only C To all cameras			Receive(camera to PC) C Off C From selected camera only C From all cameras		
Camera serial port			PC serial port		
Camera	Serial port		Port	COM1	•
Garage	RS-232 -	<u>^</u>			
112	HS-422/485		Bitrate	9600bps	-
113	RS-232		Data bit	8	-
Guest room	RS-232		Data Dit	10	<u> </u>
163	RS-232		Parity	None	-
164	RS-232				
166	RS-232		Stop bit	1	•
167	RS-232				
170	RS-232				
131	RS-232				
132	RS-232	~			
J					

• Send(PC to camera)

Send mode: to send to all connected cameras or currently selected camera only.

Camera serial port

Camera's serial port to which serial data from PC's COM port will be sent and from which serial data from external equipment will be read.

• Receive(camera to PC)

Receive mode: to receive from all connected cameras or currently selected camera only.

• PC serial port

Camera's COM port to which serial data from the camera will be sent and from which serial data from external equipment attached to the PC will be read.

Note: Some models of camera or video encoder have only one serial port typically RS-422/485, although the combo for serial port selection provides both RS-232 and RS-422/485. The serial port supported by the camera or video encoder should be selected appropriately.

When any of the modes(Send, Receive) is enabled, the status bar of the main GUI shows the bitrate of serial TX and RX through the PC's COM port.

Clients: 0

Serial TX=0 RX=0

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The information in this manual is deemed accurate as of the publishing date shown below and is subject to change without notice to improve quality.