AirGoggle™ NVS 440R

Network Audio/Video Server/Recorder

User's Manual

Inscape Data Corporation

Directions

NVS440 is designed for indoor use only. When using NVS440R outdoors or in an environment that exceeds the limited range, you must separately use a water-resistant case.

Be careful not to cause any physical damage by dropping or throwing the NVS440R A/V Server. Especially keep the A/V server out of reach from children.

Do not disassemble NVS440R. You will be excluded from After Service when disassembled.

Use only the power adapter provided with the NVS440R.

If you would like to use the NVS440R A/V server for security, monitoring, please check the legal regulations within the country.

Note

This equipment has been manufactured and tested to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

- Reorient or relocate the receiving antenna.
- Increase the distance between the video equipment and receiver equipment in question.
- Connect the video equipment into a power outlet on a circuit different than the receiver equipment in question. Reorient or relocate the receiving antenna.
- Consult the dealer or an experienced radio/TV technician for help.

Caution

Any changes or modifications in construction of this device that are not expressly approved by Inscape Data could void the user's authority to operate the equipment.

Caution

None of the parameters in administrative page should be changed while NVS440R is recording video or while you are playing back recorded video from NVS440R.

Table of Contents

1. Introduction

1.1. Overview

The NVS440R is a state-of-the-art 4-channel network DVR and A/V server.   It is a culmination of standard A/V codec technologies such as MPEG4 and ADPCM, embedded web server, embedded streaming server, various network protocols and Hard Disk manipulation technology.   NVS440R offers premium grade DVR and A/V server. An example of such is simultaneous video recording, on-line streaming, and video playback which no other version of DVR has ever done before. The NVS440R can be connected, controlled and monitored from a remote location through an IP address. NVS440R can acquire various analog video data from CCTV cameras, DVD, or TV tuners. Based on Embedded Software Solution the NVS440R ensures high performance and stability and provides wide range of applications to the owners.   Another advance of NVS440R is dual streaming mode which provides an ideal environment when low speed network is used for connecting NVS440R. This feature assures high quality video recording on the HDD, while providing lower quality on-line streaming data to connected user.

1.2. Features of NVS440R

• 4-channel real time Video/Audio streaming based on **MPEG-4 video and ADPCM audio**.

• 4-channel real time Video/Audio recording onto the built-in High Capacity Hard Disk Drive.

• 1-channel Full Duplex Audio between NVS440R and Client PC for two-way communication

• Viewer assisted **recording and playback functions**.

• 4 Alarm sensor inputs and 2 relay control outputs

• Motion detection – Up to 3 motion detection regions per channel. Motion detection can initiate video recording, which has the option to be sent to the user through FTP and/or E-mail.

• Resolution :

• NTSC Video : 640x480(VGA) for one channel, 320x240(QVGA) for 4 channels.

• PAL/SECAM : 704x576 for one channel, 352x288(CIF) for 4 channels

• Remote Software Upgrade over Network

• Major features of DVR mode of operation

> ➢ Uninterrupted recording mode by overwriting when HDD is full
>
> ➢ Vast recording mode features (Manual, Scheduled, Event triggered)
>
> ➢ Fast and convenient video search mode (Calendar based, Search filters)
>
> ➢ System status display function including Date, Time, Storage mode, Remaining storage space.
>
> ➢ Alarm sensing (sensor and motion detection) and alarm recording.
>
> ➢ Powerful user interface program

➢ Compact size : World's smallest size 4 channel DVR

➢ Time-Search-Slider Control for moving to arbitrary time during playing back mode.

➢ High data compression ratio.

➢ Quadplex feature - Simultaneous operation of recording, playback, search, and on-line

➢ Download and store feature of recorded A/V data

➢ Dual simultaneous streaming video feature: To provide high quality video recording on local HDD while providing low speed on-line streaming video to users connected through low speed network.

➢ Network accessible Hard Disk to store user data

1.3. Applications of NVS440R

• Security surveillance (buildings, stores, factories, parking lots, banks, government facilities, military, etc.)

• Real time Internet broadcasting (resort areas, events, etc.)

• Remote monitoring (hospitals, kindergartens, traffic, public areas, etc.)

• Teleconference (Bi-directional video conference)

• Remote Learning

• Weather and environmental observation

2. Product Description

2.1. Contents

Open the package and check for the following items:

Contents	Description	Remarks
NVS440R	DVR and A/V server	Main Unit with HDD (120Gbytes)
AC Power Adapter	Input : 100~250V 50-60Hz Output : +12V, 2.0A	
AC Power Cable	AC 250V, 10A~16A	
LAN Cable	2m LAN cable – Crossover type	For direct connection between the server and PC.
CD-ROM	Product Software & User's Guide	
Quick Install Guide	Easy to follow quick install guide	
Alarm/Relay Connector	Adapter to connect external sensors and alarm devices	2 sets

2.2. Content Preview

NVS440R	IP-Installer	NVR100 Software
NVS440R Network DVR and A/V server	IP address management PC software	Full feature PC software to view and record A/V streaming data and control the mode operation.

2.3. Physical description
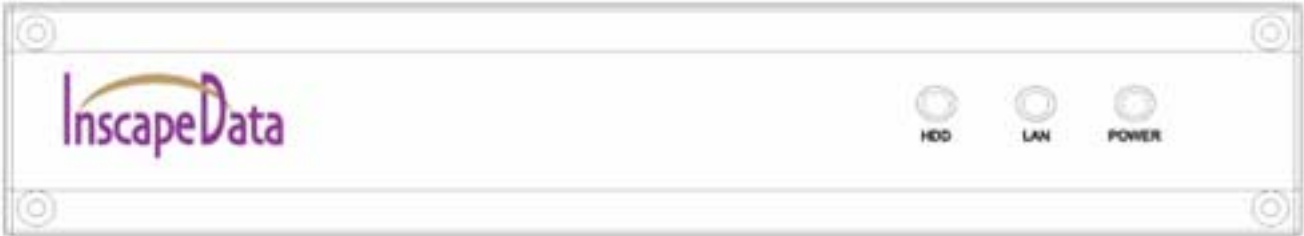
2.3.1. Front panel

Figure 2-1. Front panel of NVS440R

• **Status indicator**:

As shown in Figure 2-1, there are three status indicator LEDs. From left to right they are HDD, LAN and Power.

HDD : HDD access indicator, LED turn on when HDD is being busy.

LAN : Link indicator, continuous green light means that LAN is in normal state. When there is traffic on the LAN, orange light flickers.

Power : Status indicator shows the status of the NVS440R in three different colors.

① Green : The green light indicates that the NVS440R is operating properly. If the green light is continuously on, it means that the NVS440R is ready to transmit data via network. If the green light blinks, it means that there is traffic between LAN and NVS440R.

② Red : The red light indicates that the hardware of the NVS440R is not operating properly.

③ Orange : The orange light indicates that the software of the NVS440R is not operating properly.

> When applying power to NVS440R, power indicator temporarily lights on with red color and then returns to green. This is the normal condition.

2.3.2. Rear panel

Figure 2-2. Rear Panel of NVS440R

• **Ethernet** :   10/100 Mbps Ethernet connector (RJ-45).

• **Line/Mic In:**   They are used to connect external audio source or microphone to NVS440R. There are 4
Line/Mic. In connectors.

Use Standard stereo earphone jack for the connection.

• **Line Out** : It is used for connecting external speakers with built in amplifier. Audio from remote site is
output through Line out in bi-directional audio mode.

Use Standard stereo earphone jack for the connection.

Video1- Video4 : 4 Video input (composite NTSC, PAL, SECAM)

Terminator : Enable termination by 75 Ohm resister for each video input when switched on.

Leave the terminator to ON position when no other device is sharing the same
video line. If the NVS440R is not the last equipment on the shared video bus line then
disable termination, otherwise if the NVS440R is the last device in the video bus Enable
termination.

Reset Button : Used for resetting NVS440R to default factory parameters. The Button is a pin-hole
located between Video4 and RS-485 connector. Use a pointed tool to
press the button for 3 seconds and release.

RS-485 and RS-232 interface : Used for interfacing of Pan, Tilt, and Zoom (P/T/Z) devices.

The pin assignments for the shared interface are as follows:

Pin 2 – RS-232 In

Pin 3 – RS-232 Out

Pin 5 – RS-232 GND

Pin 8 – RS-485 Negative (-) input

Pin 9 – RS-485 Plus (+) input

(Either one type of RS-485 or RS-232 interface can be used at one time.)

• **Relay output** : Used for interfacing external alarm generators such as sirens, beacons, or alert
equipments.   When activated, the relay output interface provides a close circuit path which

shorts the two terminals providing a complete electrical path. Two Relay output interface, A and B, are provided.

- **Alarm Input** : The 4 port alarm sensor input connections provides external alarm sensors such as infrared, heat, or magnetic sensors.
- **Power Connector**: Accepts power of 12VDC and 3A

2.4. PC Requirements

Audio/Video monitoring and recording can be achieved with the use of NVR100 Software program running on a PC. The Minimum PC requirement follows:

	Minimum	Recommended
CPU	Pentium III 700	Pentium IV 1.8G above
Memory	128 MB	256MB or more
Operating system*	Windows 98 SE.	Windows 2000 or later
Web browser	Internet Explorer 5.0	Internet Explorer 5.0 or later
Video Resolution	1024 X 768	1600 X 1200
Network	10 Base-T Ethernet	10/100 Base-T Ethernet

* Operating Systems supported : Windows 98 Second edition,

Windows NT Workstation 4.0 (SP 5.0 OVER)

Windows 2000 Professional

Windows XP Professional / Windows XP Home Edition

2.5 Quick Installation Guide

Brief information for rapid installation is provided in this section. For more detailed information you are recommended to refer to pertinent documentations provided with the product or refer to Inscape Data's home page (**http://www.InscapeData.com**).

1. **Install "IP installer" and "NVR100 Software" on your PC.**
   Detailed information for installing these programs can be found in **[IP-Installer User's Guide]** and **[NVR100 Software User's Guide],** respectively.

2. **Assign an IP address to NVS440R via the IP installer software.**
   Identify the type of the network environment and set up an IP address accordingly. Detailed process of setting up the IP address can be found in **[IP-Installer User's Guide]**. If the network type is xDSL or

Cable modem you will need supplementary information provided by your ISP.

3. **Connect to NVS440R in Administrator Mode for initial parameter set-up.**

    All parameters are set to factory default state when NVS440R is delivered to you.   Detailed information of using administration mode can be found in section 5 [**5. Configuring the A/V Server in Administrative Mode]**. The parameters in the following table should be set-up with proper values. Detailed information for the parameters in Administrator Mode can also be found in section 5 [**5. Configuring the A/V Server in Administrative Mode]**

    NOTE: The set-up values are preserved even the power is turned off.

Reference	Parameter	Setup value	Factory default value
Section 5.2	Max Upload Bandwidth	Set this value lower than allowed upload bandwidth.	10Mbps
Section 5.2	Max Users	Number of users allowed to share video	10users
Section 5.4	Administrator name & password	For security reasons, you are recommended to change these values from factory default settings. Please note these new values in a secure place.	Username : root Password : dw2001
Section 5.4	Current Time	Input correct time in this field.	2001/1/1

4. **Connect audio/video sources and output devices to the NVS440R accordingly.**

    NOTE: NVS440R may not function properly if there is no video and audio input. Please reference to the following table for proper functional setup. You have to connect at least one Video source.

Connectors	Function	Signal description	Number
Video In	Input video connector	Analog video outputs from analog CCTV camera, DVD, TV etc., (NTSC/PAL/SECAM)	1 to 4
Line In/Mic	Audio in	Microphone or output from audio devices.	1 to 4
Line Out	Audio out for speaker	When in bi-directional audio mode, Audio signal from remote site is available from this connector. Use speaker with amplifier.	1

Alarm IN	Connecting Alarm Sensor	Example: IR sensor, Motion Sensor, Smoke Detector, and Many more type of sensor.	1 to 4
RLY Output	Connecting Alarm alerting device	Example: Siren, Beacon, External Relay.	1 to 2
RS485	PTZ device control	Output signal controlling an PTZ device	

5. Video connection to NVS440R

You can connect to NVS440R in video mode by running "NVR100 Software" program on your PC. Detailed information of using "NVR100 Software" can be found in [NVR100 Software User's Guide].

3. Connecting the NVS440R

NVS440R supports LAN, xDSL, and Cable modem. It also support shared IP network where single public IP address is shared by many internal network clients.   Refer to **[IP-Installer User's Guide]** for details of setting the IP address for the NVS440R.

3.1. Connection to a LAN

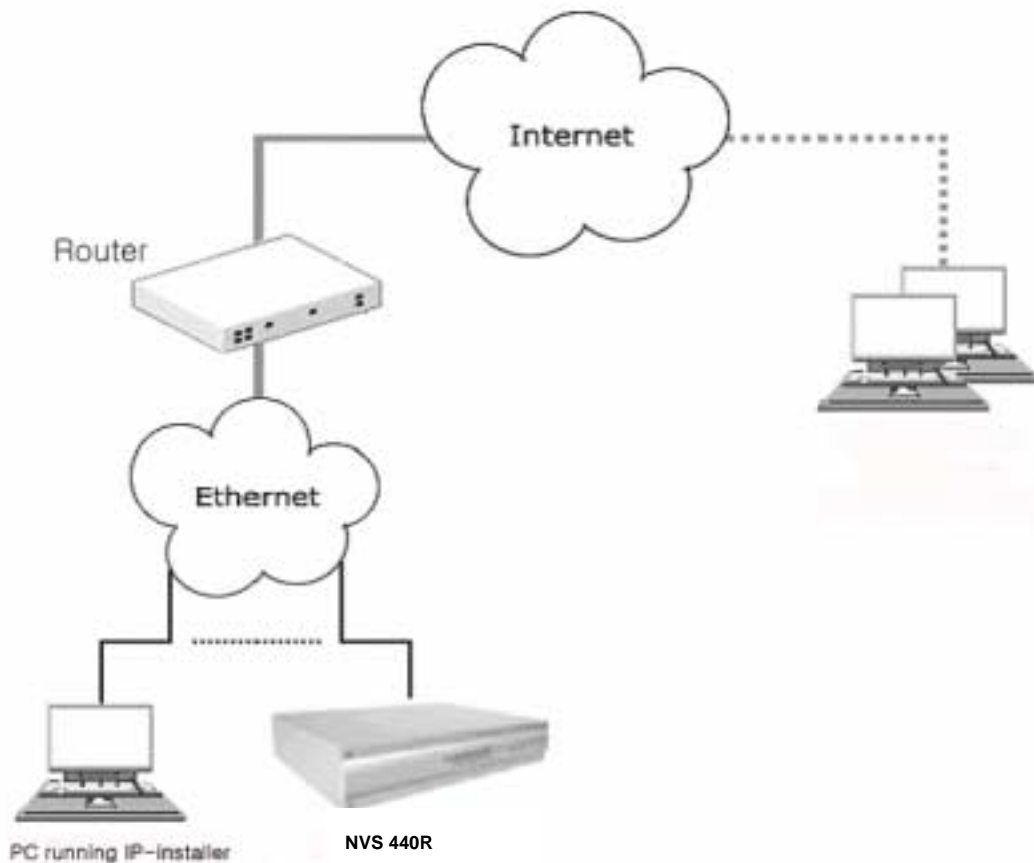Typically the NVS440R is connected to a LAN as follows:

Figure 3-1. Connecting the NVS440R to LAN

1. After power on, connect the NVS440R to a LAN.

2. Assign an IP address to the NVS440R by using the IP-Installer.   Make sure the PC running the IP-Installer is in the **same subnet** as NVS440R.

3. Check if video streams can be viewed with NVR100 software.

3.2. Connecting to xDSL Modem

1. After power on, connect the NVS440R to a PC or Notebook via a crossover CAT 5 network cable provided with the system.

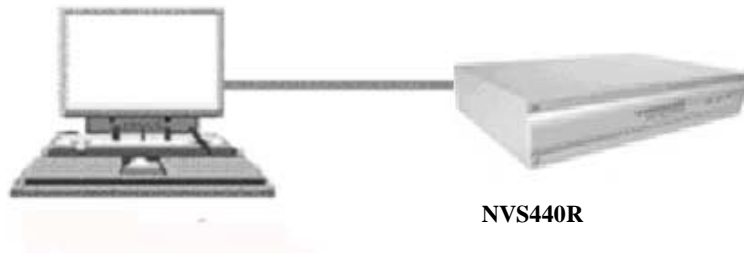2. Setup network parameters by running "IP-Installer."

NVS440R

Figure 3-2. Direct connection using crossover LAN cable
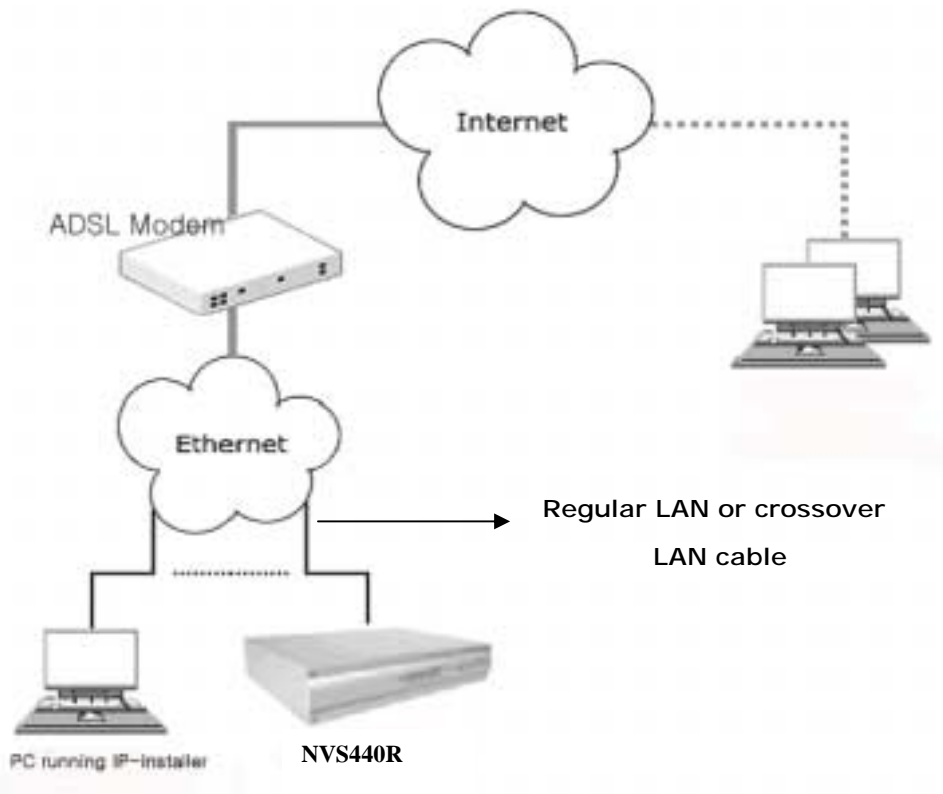

Figure 3-3. Connecting the NVS440R to xDSL

3. Remove the CAT 5 crossover network cable to the PC or Notebook and connect the NVS440R to the network using standard CAT 5 network cable. Verify the connection by using the NVR100 network video software to see if the video source is viewable.

> In most cases when connecting the NVS440R to a xDSL Modem, a standard Ethernet network cable is required. But since a few xDSL Modems uses crossover connections, please verify the interface with your Modem manufacturer.

3.3. Connecting to Cable Modem

1. Apply power and connect the PC and NVS440R together via the crossover cable provided with the system.

2. Setup network parameters by running "IP-Installer". (Refer to Figure 6).

NVS440R

Figure 3-4. Direct connection using crossover LAN

3. Remove the crossover cable and connect the NVS440R to the network using standard LAN cable as shown in Figure 3-5. Check if you can receive video data when connecting to NVS440R using the viewer program.
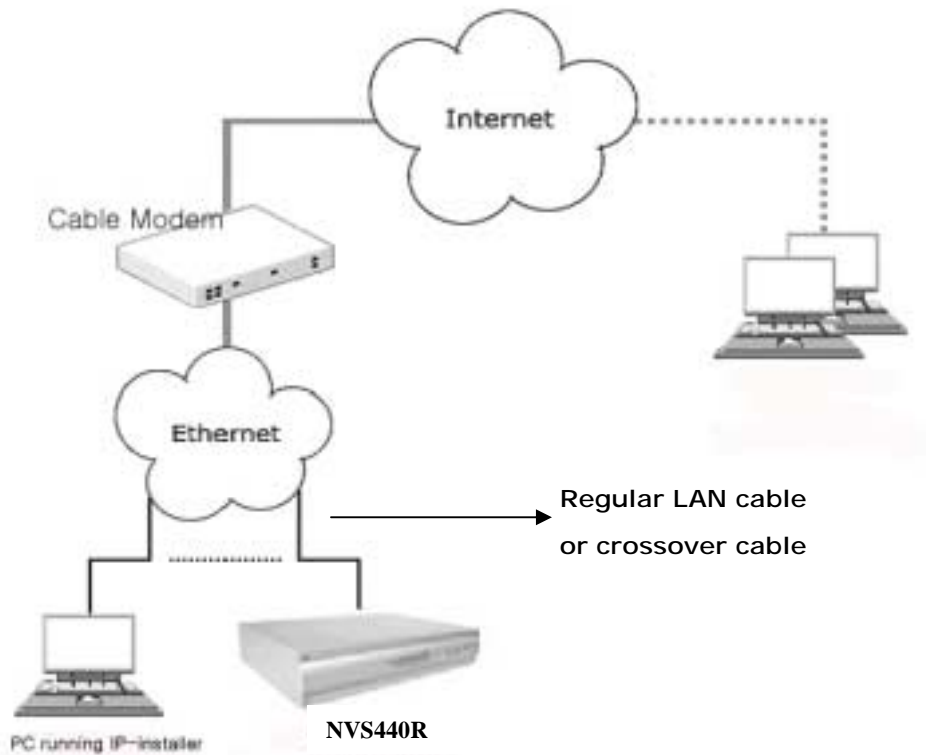
Figure 3-5 Connecting the NVS440R to a Cable Modem

In most cases when connecting the NVS440R to a Cable Modem, a standard Ethernet network cable is required. In some cases a crossover connection may be needed. Please verify the interface with your Cable Modem manufacturer.

4. IP-Installer

NVS440R is IP addressable therefore needs an IP address for connection to the network. Inscape Data's IP-Installer is a PC program developed to assign IP addresses and network parameters to digital video security network products such as Network Video Camera and Network Video Server from Inscape Data. IP-Installer is contained in the CD supplied with your product or it can be downloaded from **www.InscapeData.com**.

Detailed information of Installing and running IP-installer can be found in IP-installer user's guide included in this CD-ROM.

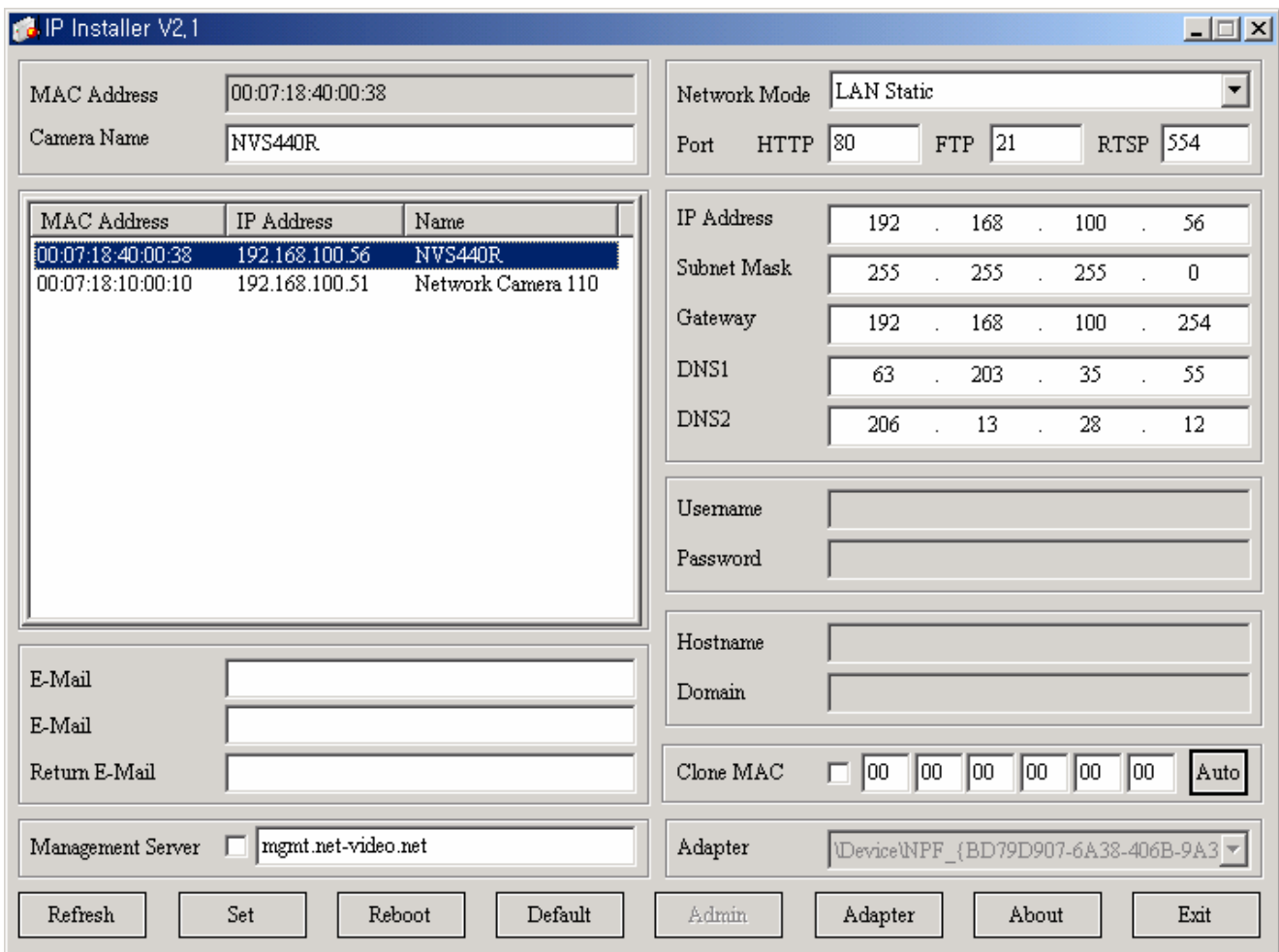## 4.1. Main window of IP-Installer

Figure 4-1. IP-Installer

5. Configuring the NVS440R in Administrative Mode

5.1. Log On

There are 2 methods of login into the NVS440R administrative console. One is through standard internet browser and the other is through "NVR100 Software" program.

5.1.1. Using Internet Explorer

You can log on to the server by clicking admin mode button or from your internet browser.

Type in the following URL in the address window of your favorite web browser.

http://[NVS440R IP address]/admin.htm

Example: **http://172.16.64.33/admin.htm**

If you changed the HTTP port from default value you can login by typing in:

http://[NVS440R IP address]:[port]/admin.htm

Example: **http://172.16.64.33:8080/admin.htm**

5.1.2. Log on from "NVR100 Software"

Select a video channel in the viewing window of "NVR100 Software" using your computer mouse. Selected video channel will be highlighted. Click ⊘ button on the right side of the display screen which is below shown circled in picture (A).

(A)   (B)

Figure 5-1. Main Screen (A) and DVR control Screen (B) of "NVR100 Software"

5.1.3. Controlling the DVR

When the NVS440R is connected through NVR100 Software or internet browser, it is connected as an A/V server.   In this mode, the NVS440R functions as a real-time A/V streaming server to the client. A user having the privilege of administrator can enter into DVR control mode by pressing [DVR CONTROL] button.   The DVR software will execute as shown in the previous picture, Fig.5.1(B).   The built in security feature only allow one user to be connected as a DVR administrator. Refer to NVR100 Software User's Guide Include in this CD-ROM for more detailed information on DVR control.

5.1.4. User ID and Password

When initial login to the NVS440R, a windows prompt for User Name and Password appears as shown below in Figure 5-2.

Figure 5-2. Log On Screen

Factory default User Name and Password are set as '**root**' and '**dw2001**', respectively. Click on "OK" button to enter into the Basic Setup page of Admin Mode. If you have changed the username and password of the Administrator, you must log on with the changed username and password.

5.2. Basic Setup

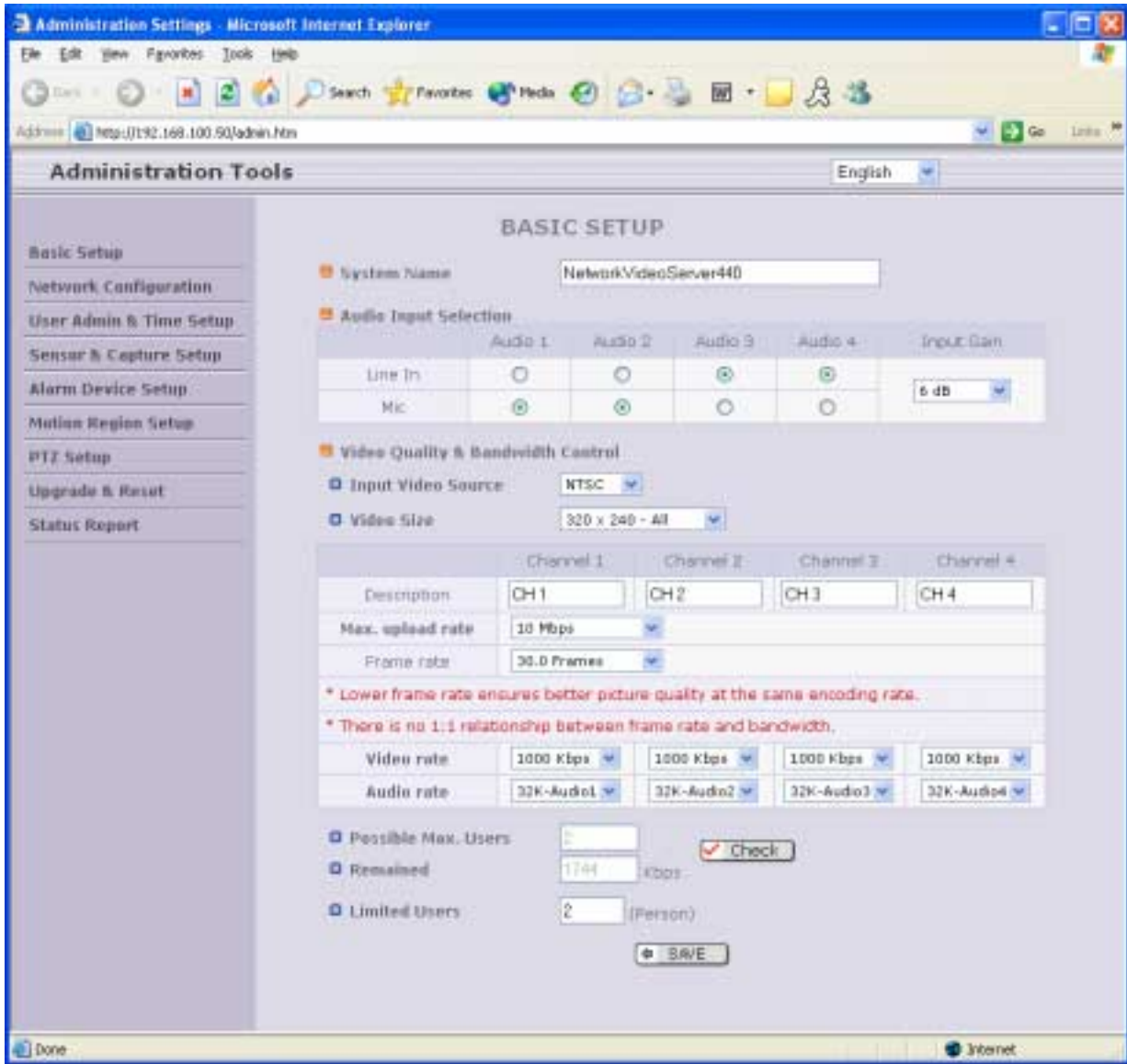Setup the basic parameters of the NVS440R.   The web interface is shown below in Figure 5-3.

Figure 5-3. Basic Setup

• **Language Selection**: You can select a language in the admin page.

  - Supported languages : English, Korean, Japanese, Chinese, Spanish

• **System Name**

It is the name of the NVS440R. It is same as the one set-up by IP-installer.

You can reassign the system name in admin mode.

- **Audio Input Selection**
    - Select the type of input audio for each channel. Line In is used for connecting audio output from audio devices. Mic is used for connecting the output of microphone.
    - Input Gain : Set the gain of the input audio.

- **Video Quality & Bandwidth Control**
    - Input Video Source : Select the analog video standard for input. Select one from NTSC, PAL, SECAM.

    - Video Size : Select a video size for transmission. Allowed video size are different for each video standard.
        - NTSC(30 frames/sec Max.) : 320x240 / 640x480.
        - PAL (25 frames/sec Max.) : 352x288 / 704x576.
        - SECAM (25 frames/sec Max.) : 352x288 / 704x576.

        - Description : Assign name for each channel. Assigned names are shown on corresponding view window of the viewer. The name consists of maximum 79 alphanumeric characters.
        - Max upload rate

          Assign maximum bandwidth of the uplink for the network connected to NVS440R.
        - Frame rate

          Assign number of video frames transmitted for each second. You can improve picture quality by lowering frame rate for the same bandwidth.
        - Video rate

          Assign bandwidth for transmitting video data for each channel.
        - Audio rate

          Assign bandwidth for transmitting audio data for each channel. Audio data is not transmitted if you select NA.
    - Enable High Quality Recording
        - Select this mode when your network is a low speed network that cannot assure enough bandwidth to send high quality video to users. When this mode is selected, dual mode streaming is enabled to provide high quality video recording on the HDD while providing lower quality on-line streaming video to connected users. Check the box at the left and select the recording type (Schedule, Manual, Sensor, and Motion) applicable to this feature. Alarm triggered video recording is always done at highest quality format. The final selection in this submenu is the recording bit rate. Typically, bit rate above 600Kbps is adequate and provides sufficient video quality to the users.

• **Check**

> After you finish set up of video and audio for all the channels, click on this button to obtain the possible maximum number of users (Possible Max Users) and network bandwidth margin (Remained) remaining. The Check tool will calculate the number of users able to view the video stream without any quality degradation or network congestion.

• **Possible Max Users**

> It shows the number of maximum simultaneous connections for the network connection set-up.

• **Remained**

> It shows the network bandwidth margin when Possible Max Users are connected.

• **Limited users**

> Useful network bandwidth varies according to the condition of the network. This parameter is used to limit the number of the simultaneous connections below the number shown in Possible Max Users.   In all cases, this value will be below Possible Max Users for optimal performance.

• **Save**

> Save the set-up parameters when the set-up parameters are done.

5.3. Network Configuration

Setup the network parameters appropriately in accordance with your network environment. Many of the parameters in this page is the same as those used by "IP-Installer".
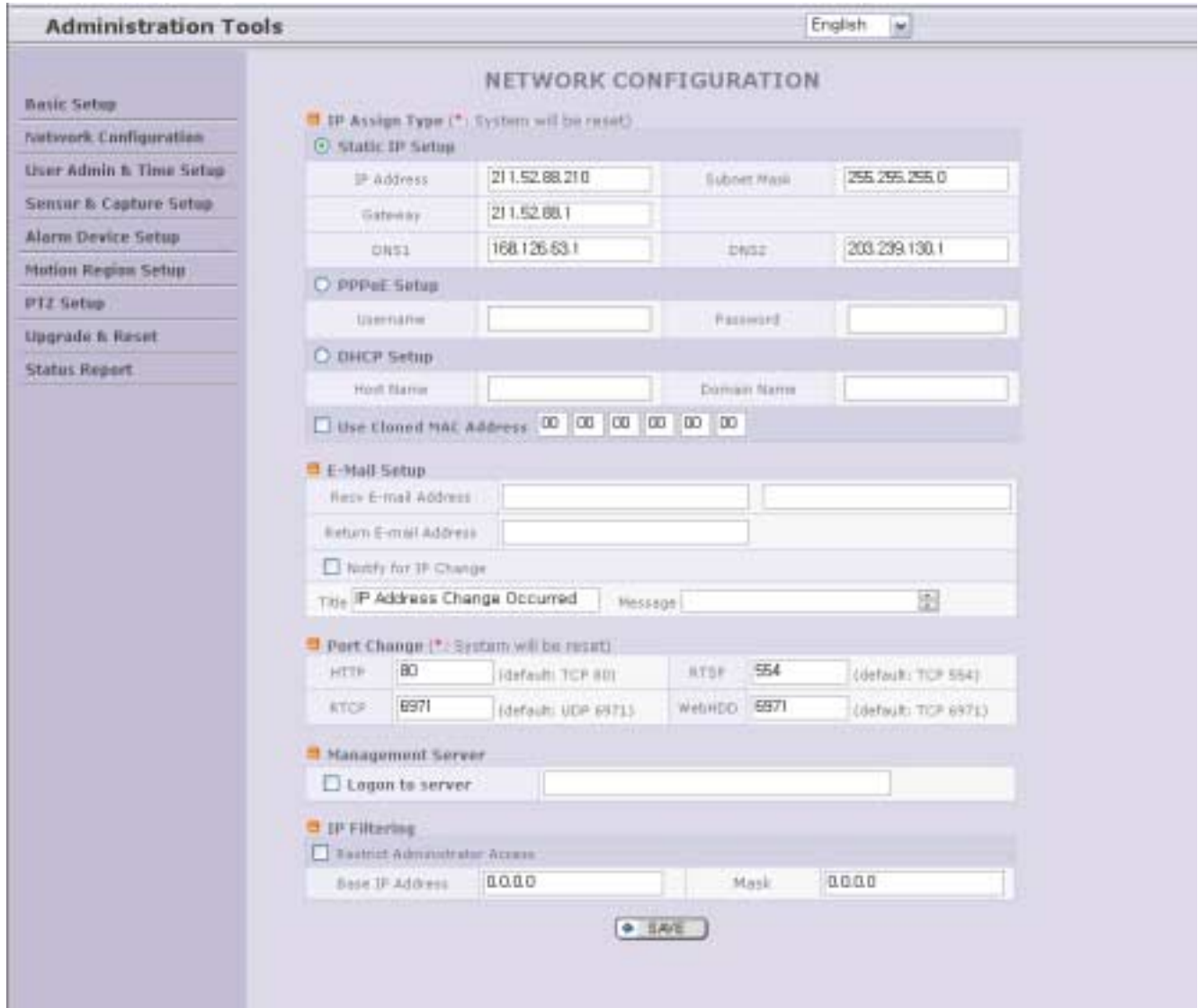

Figure 5-4. Network Configuration

- **IP Assign Type :** The network connection types supported by the NVS440R are Static, PPPoE, and DHCP.

  - Select 'Static IP Setup' for static IP address configuration and enter the IP address, Subnet Mask, Gateway, DNS1 and DNS2 into the appropriate field.   Typically these values will be assigned by the network administrator or ISP provider.   DNS2 is used when DNS1 is unreachable and is recommended.

  - Select 'PPPoE' in the network connection type if the NSV440R will be directly connected to a WAN.

Typically xDSL or broadband service providers will need this setting. Fill in the 'User Name' and 'Password' fields with the values assigned by the internet service provider.

- When the network connection type is "automatic IP allocation by DHCP", select 'DHCP' in the network type.

  Refer to [IP-installer user's guide] for "Clone MAC".

  Refer to [IP-installer user's guide] for "Host name and domain for Cable Modem".

● **E-Mail Setup**

- **Recv E-Mail Address**: Refer to [IP-installer user's guide] for "Recv E-Mail Address".

- **Return E-Mail Address**: Refer to [IP-installer user's guide] for "Return E-Mail Address".

- **Notify for IP Changed**: If you check this, the IP address will be sent via E-mail to this address whenever the IP address of the NVS440R changes.

- **Title**: It is the predefined subject of the e-mail message sent to user.

- **Message**: It is the pre-defined content of the e-mail message sent to user.

● **Port Change :** You can change the HTTP port, RTSP port, RTCP, and WebHdd port numbers. The RTSP port is used to connect the "Viewer" to the NVS440R. WebHdd is the port number to control access to the user data storage on the HDD of the NVS440R.

Each port should have a number below # 65535.

- **HTTP :** default "80"
- **RTSP :** default "554"
- **RTCP** : default "6971"
- **WebHdd** ：default "6971"

● **Management Server** : This feature enables the built-in dynamic DNS client to automatically update the IP address of the NVS440R to a remote management web server. Currently mgmt-net-video.net is a free Dynamic DNS registration server for the NVS440R. Simple web management interface keeps all your network cameras and servers in one easy to track interface. This is a great option if you have multiple cameras and are using Dynamic DNS.

• **IP Filtering** : You can restrict the access to the administrator page utilizing IP address filtering.

  - Restrict Administrator Access : Check this box to restrict administrative log on priviledges.

  - Base IP Address : Input an IP address of the PC which will be used for administrative access.

  - Mask : This is same as subnet mask. It is used to allow administrative log on only from PCs located in the same subnet as the base IP address. If only one PC is allowed to access the administrative mode, set this value to 255.255.255.255.

5.4. User Admin & Time Setup

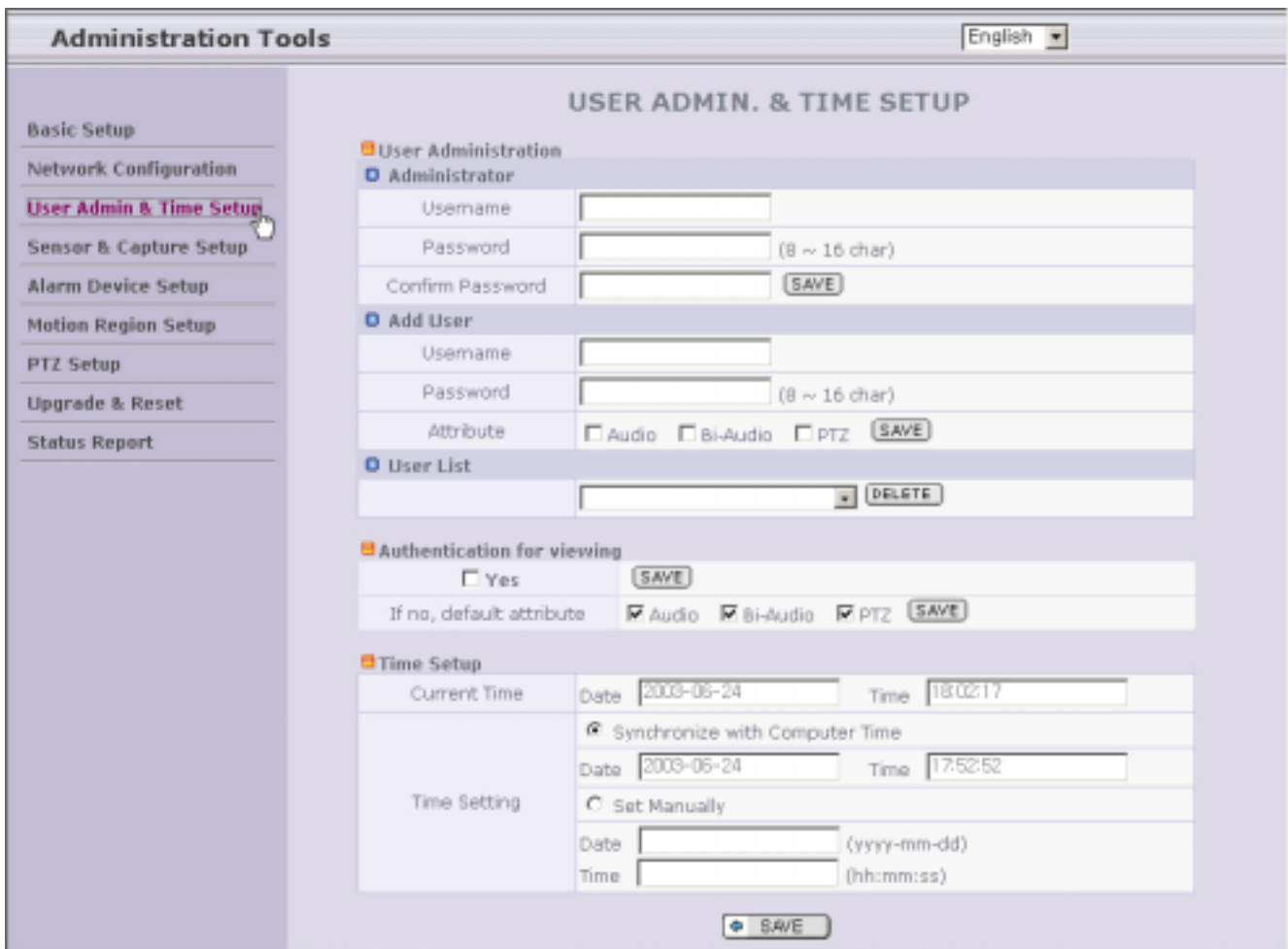You can change the ID and password of users and also assign different attributes for each user.

Figure 5-5. User Admin. & Time Setup

-**User Administration**

  - **Administrator**

      Username : Admin ID. Default ID is "root"

Password : Admin password. The default password is "dw2001".

Confirm Password : Enter the password once more to confirm the password.

> ⚠ If you have forgotten the Administrator's ID and password, the only means of recovery is to reset the settings to factory default. Doing so will lose your previous settings.

- **Add User**

  Username : Enter the user ID you want to add. Up to 100 users are supported by NVS440R.

  Password: Enter the user password.

  Attribute : You can set different system resource access capabilities for each of the user.

  Attributes are Audio, Bi-directional Audio and Pan/Tilt.

  For example, if you want a specified user to hear the audio from the NVS440R, check Audio in the check box.

- **User List** : You can list "user ids" and " their attributes" here.

  List format are as follows: user id[A, BA, P] : A – audio, BA – bi-directional audio, P – P/T/Z.

  you can delete specific user by selecting and clicking the "DELETE" button.

• **Authentication for Viewing** : If you want to restrict viewing access to the NVS440R,

  check "Yes" box and click "Save". Users will need to input User ID and password to connect to the NVS440R in viewing mode. (Figure 5-6.)

Figure 5-6. User Authentication in NVS440R

- **If No[default attribute] :** If you uncheck "**Yes**" in "Authentication for viewing", every user can access the NVS440R without restriction or with the same attributes. You can enable the common attributes by selecting each attribute and clicking the "**Save**" button.

> ✎ Please Note: By adding users for authentication does not automatically enable the authentication service for the NVS440R. It is a combination of adding user and selecting "YES" for Authentication will the authentication service be enabled.

• Time Setup

- **Current Time**: It displays the current time of NVS440R.

- **Time Settings** : Options for setting the time manually or synchronize to the PC.

Options	Description
"Synchronize With Computer Time"	Synchronize the time with the PC time.
"Set Manually"	You can manually set the time.

5.5. Sensor & Capture Setup

This is the setup page for conditions of video capture. The video capture can be triggered either by activated alarm sensor or motion detection as setup by this page. When the sensor is triggered the event is ported to the NVR100 Software. Captured video of the event can be stored on the HDD of the NVS440R.
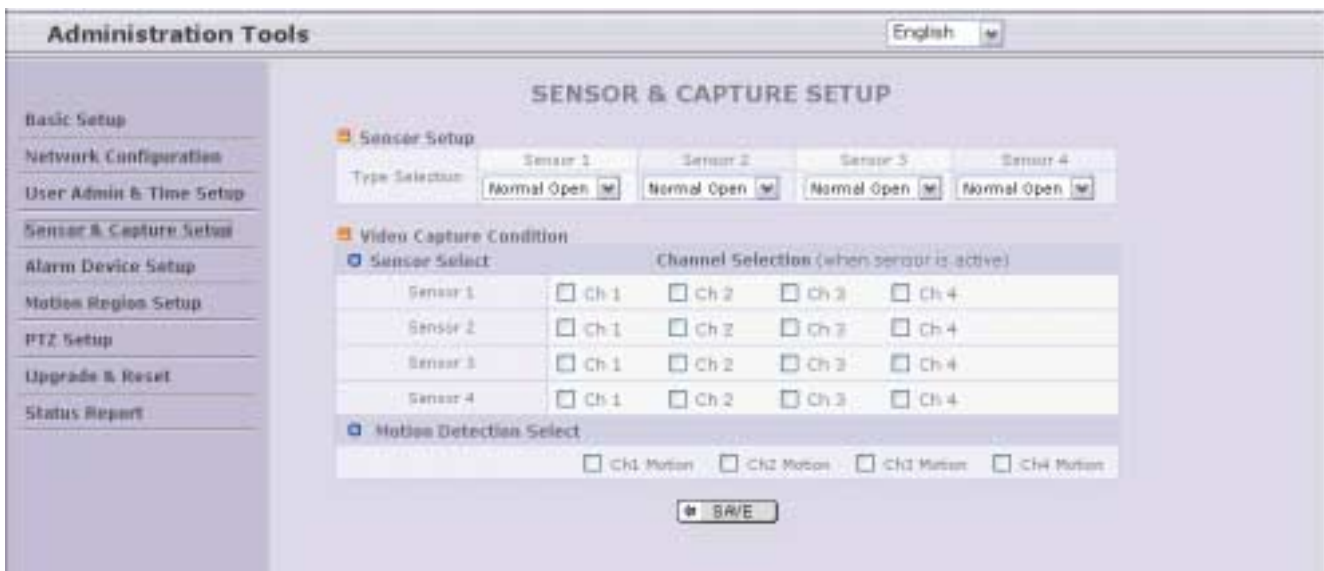

Figure 5-7. Sensor & Capture Setup

• Sensor Setup : Up to 4 external sensors can be connected to the NVS440R.

- **Type Selection** : Select sensor type. There are two sensor operating mode.

. **Normal Open** : Open circuit in normal operation.   Closed circuit indicates alarm triggered condition.

. **Normal Close** : Closed circuit in normal operation.   Open circuit indicates alarm triggered condition.

• Video Capture Condition : It sets which sensor will trigger video recording for channels 1-4. The NVS440R supports 2 types of sensor event trigger.

1. Sensor : when at least one of the sensor detects a trigger event.

2. Motion-detected : Motion triggered event from the video channel

NOTE: Both conditions are mutually independent in operation.

5.6. Alarm Device Setup

The configuration of alarm device output when triggered by an alarm device input(senor or motion detection) can be configured in this page, including output device port test and triggered condition.
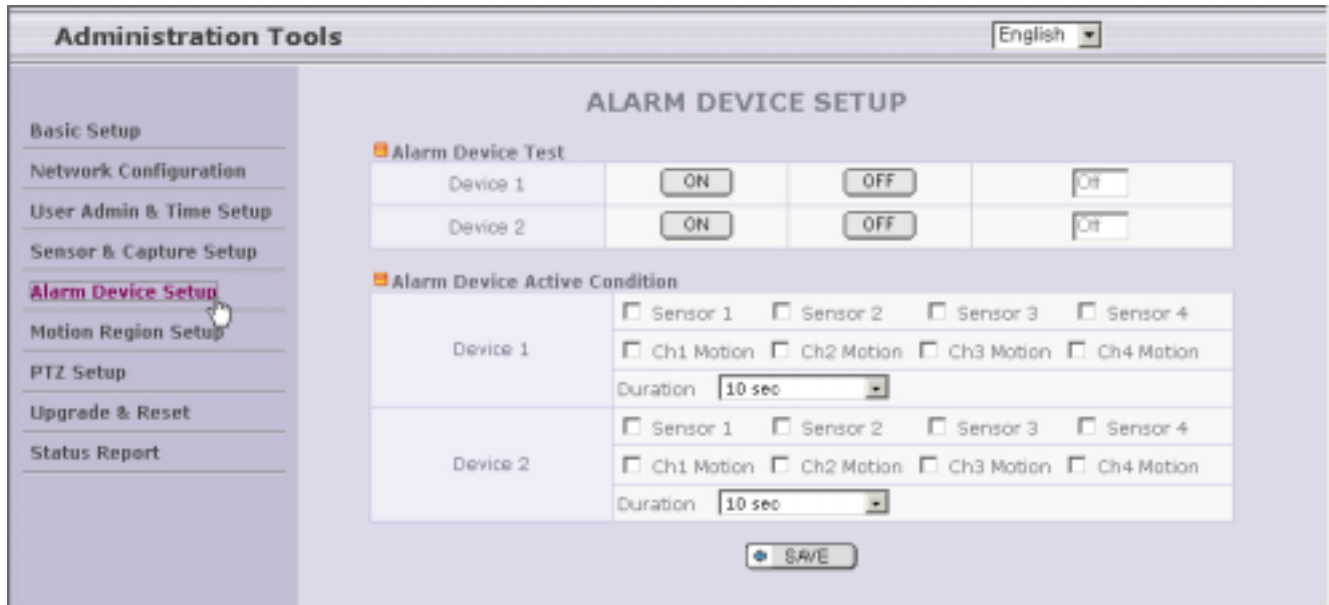

Figure 5-8. Alarm Output Setup

• **Alarm Device Test** : Test alarm devices. Press On/Off for testing.   This option will manually trigger the output device 1 and 2 to "ON" and "OFF" state.   It can be used in new setup or troubleshooting external devices.

• **Alarm Device Active Condition** : Setup the condition in which to trigger the output device 1 and 2.   A combination of input sensor and motion detection can trigger the output device to activate.

   - **Duration** : Set the active duration of Alarm out from the moment of the trigger.
              10 sec, 30 sec, 1 min, 2 min, 5 min, 10 min, 30 min, 1 hour.

5.7. Motion Region Setup

Set the motion detection regions. Up to 3 separate regions can be defined. After setup the motion detection region, the corresponding selection in "Sensor & Capture Setup" ->"Video Capture Condition" -> "Motion Detection Select" should be enabled, to activate the motion detection and generate the alarm condition.
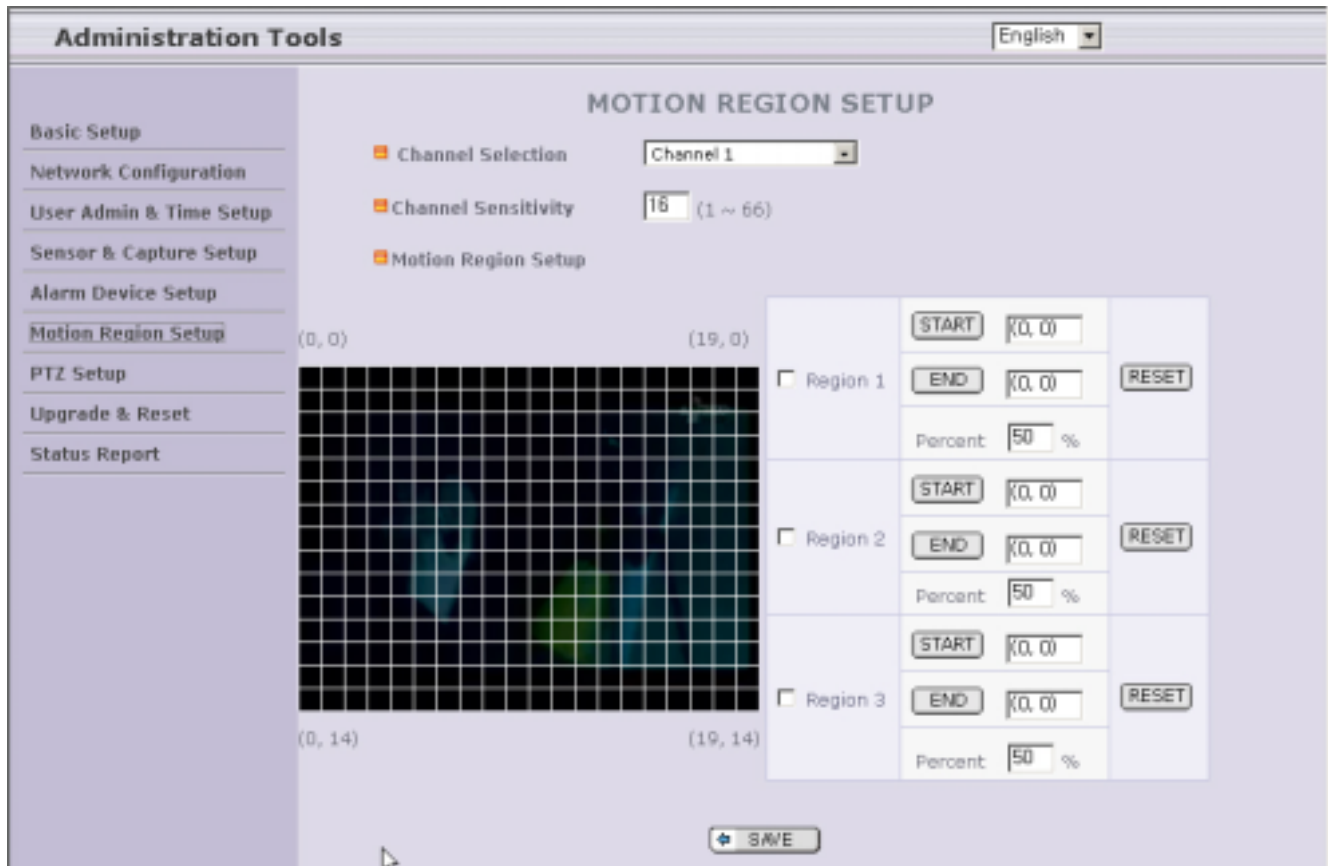

Figure 5-9. Motion Region Setup

• **Channel Selection** : Choose the channel you wish to enable the motion detection feature.

• **Channel Sensitivity** : Set the sensitivity in motion detection for each channel.
   - 1 is the least sensitive and 66 is the most sensitive.
   - Sensitivity values can be set to different values among different channels, but same sensitivity is applied for the regions within the same channel.

• **Motion Region Setup** : Set up to 3 motion detection region per each video channel
   - **Region 1, 2, or 3** : Motion detection is enabled for the channels by checking each box.

. You can set the region by pressing the "START" button, and click one corner of region in the left viewing. It will show the coordinate value automatically. Next you press the "END" button, and click the opposite diagonal corner.

Regions are shown in three different transparent colors for easy identification:
red(region 1), green(region 2), blue(region3)
"RESET" button clears the start & end point to (0,0) & (0,0)
. Percent : This value controls the sensitivity of each region.
1 is the most sensitive and 100 is the least sensitive.

5.8. PTZ Setup

Setup and test the P/T/Z(Pan, Tilt, Zoom) devices.
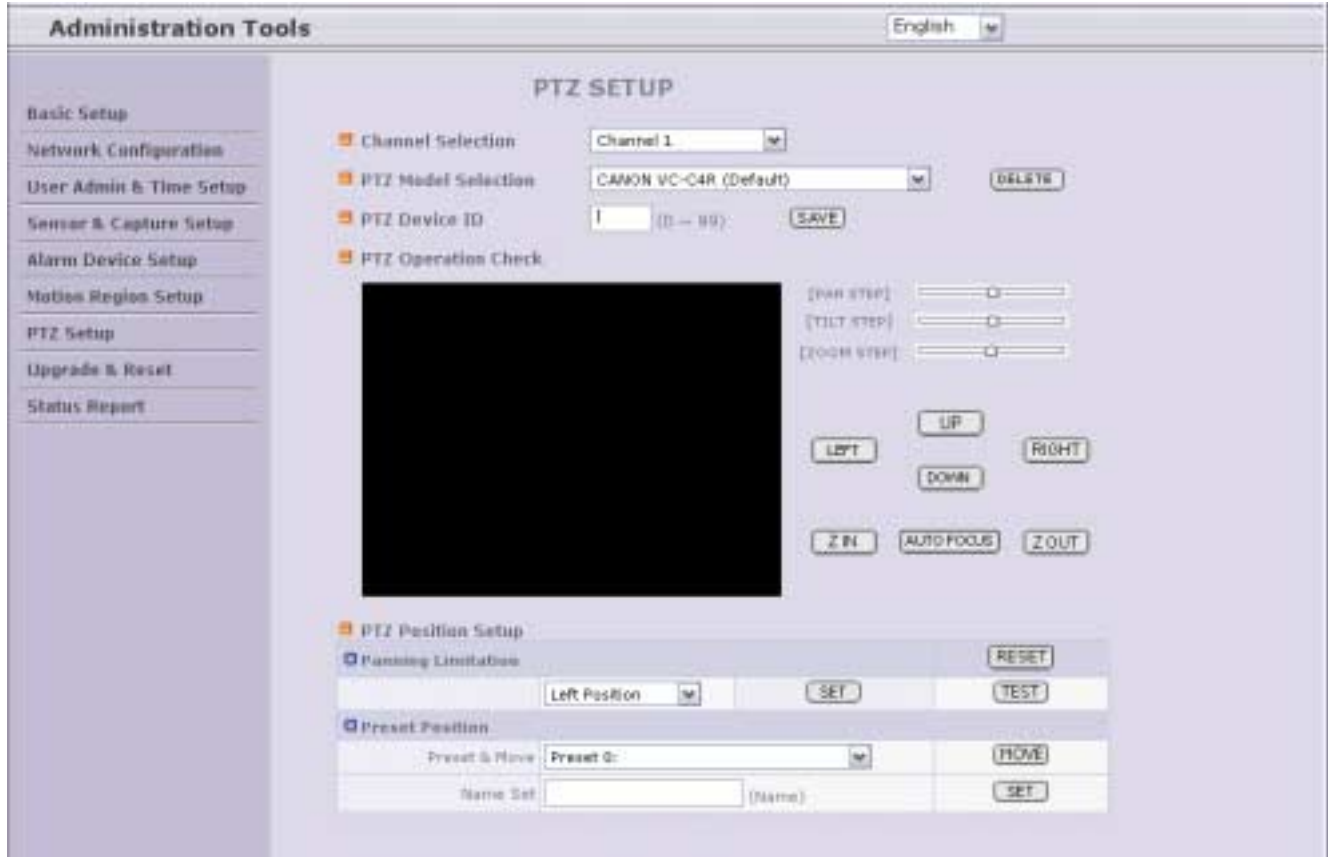

Figure 5-10. PTZ Setup

• **Channel Selection** : Choose the channel having PTZ device.

• **PTZ Model Selection** : Choose the PTZ model for each channel.

                     Different PTZ model can be applied for each channel.

   - **Delete Button : P**ress this button to delete the setup of PTZ.

• **PTZ Device ID**

> Refer to **[5.9 Upgrade & Reset]** for adding new PTZ device.

• **PTZ Operation Check** : You can check the various operation of the PTZ devices.

                               "LEFT"/"RIGHT"/"UP"/"DOWN" , "AUTO FOCUS"/"ZIN"/"ZOUT"

• **PTZ Position Setup** : You can set up the PTZ limitation & preset positions if the PTZ device supports it.

- **Panning Limitation :** set the left/right limitation and test.

- **Preset Position :** set the preset position and test.

<u>**NOTE**</u> : "PTZ Position Setup" feature is applicable only for the PTZ devices that support it.

5.9. Upgrade & Reset

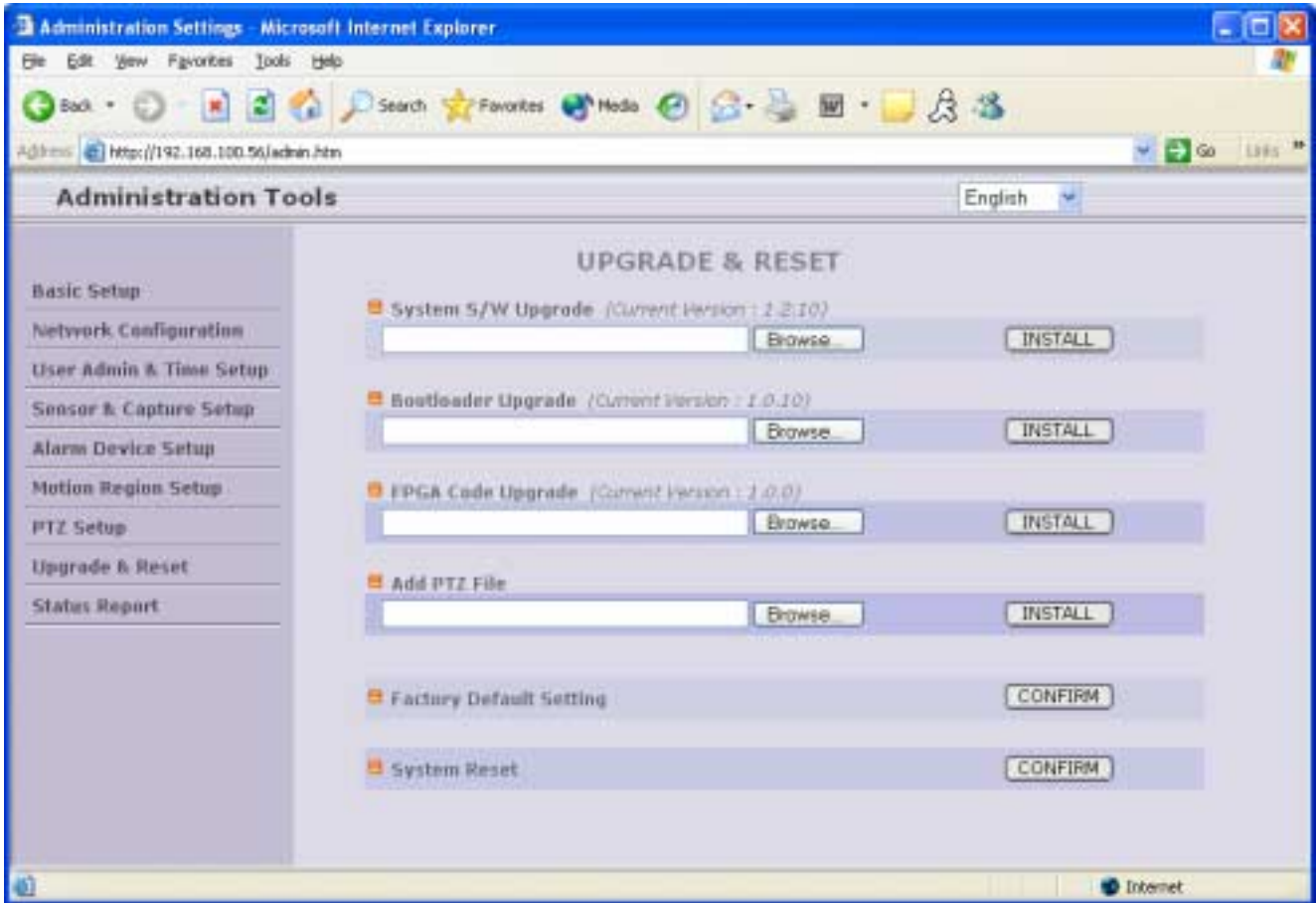You can upgrade the NVS440R via the network.

Figure 5-11. Upgrade & Reset

The upgrade software, after release, may be downloaded from Inscape Data's web site.

(Refer to **[6.3. How To Upgrade Your NVS440R System]**

• **System S/W Upgrade :** Upgrade the system software installed in the server via the network.

    NOTE: **To apply the upgraded S/W, you should reset the system after system S/W upgrade.**

• **Bootloader Upgrade**: Upgrade the bootloader installed in the server via the network.

• **FPGA Code Upgrade**: Upgrade the FPGA software in the server via the network.

• **Add PTZ File** : Add a new PTZ descriptor via the network.

• **Factory Default Setting** : Re-initialize NVS440R to factory default state.

• <u>**NOTE:**</u> **To apply Factory Default Setting, you should reset the system.**

> ⚠ Once the NVS440R is re-initialized to factory default state, it should be set-up again using IP-Installer.

• **System Reset** : Perform remote reset by clicking the "CONFIRM" button.

> ⚠ All users logged on to the NVS440R will be disconnected upon reset. NVS440R does not resume the connections automatically. The users must re-connect to the server manually.

• <u>**NOTE:**</u> **To apply the upgraded S/W, you should reset the system after system S/W upgrade.**

5.10. Status Report

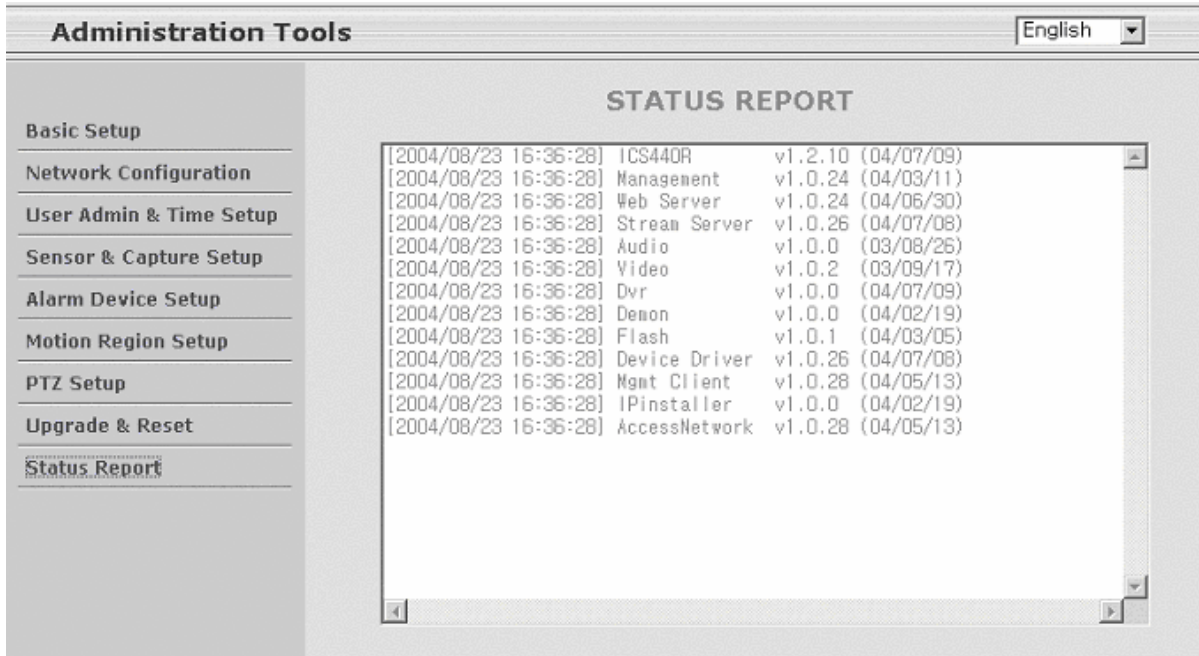It reports the system records since the system started.

Figure 5-12. Status Report

You can use the status report page to troubleshoot or diagnose the NVS440R or to monitor the software versions and event status of the whole system.

6. Tips for Using NVS440R

6.1. Alarm Input/Output

The Alarm In/RLY OUT Connector is used to connect the various sensing and alerting devices. Examples of sensing devices are infrared sensors, motion sensors, heat/smoke sensors, and magnetic sensor. Examples of alerting devices are Sirens or Beacons. It can also be used to lock doors or trigger a call to the police department. The options are limitless since the output can also be ported to an solid state relay to drive high voltage devices like garage door openers, motors, sprinkler systems and much more.
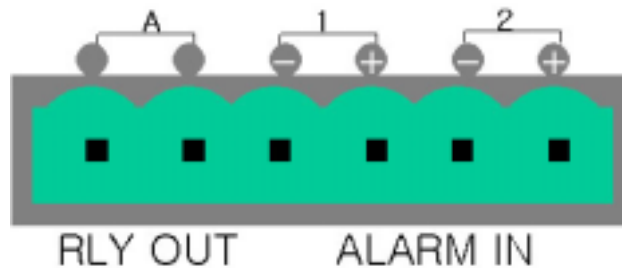

Figure 6-1. Alarm IN/RLY OUT Connector

No.	Name	Description
1	In -	Input signal from external sensor device (-)
2	In +	Input signal from external sensor device (+)
3	Out -	Output signal to external alerting device (-)
4	Out +	Output signal to external alerting device (+)

1. Alarm Input(ALARM IN)

Connect the two wires of the sensors. The sensor type can be set in Administrative Mode(Ref. 5.5 & 5.6). Output lines providing on-off switching are connected between "In-" and "In+" pins. Figure 6-2 shows the input circuit of "Alarm In".
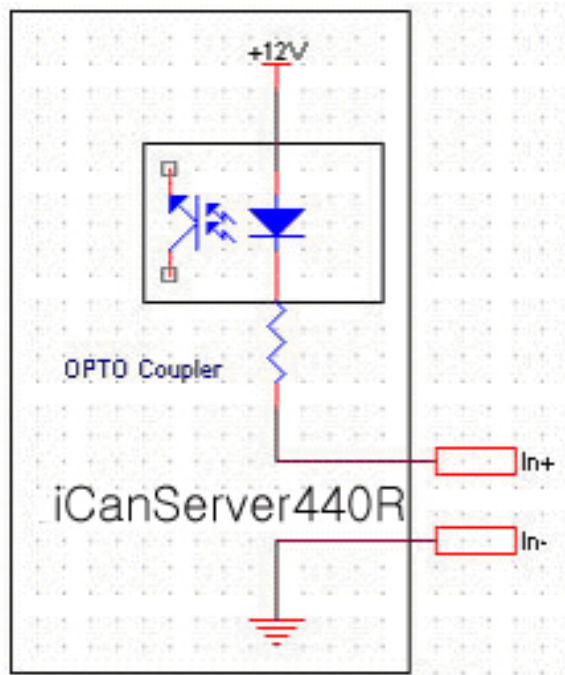
Figure 6-2. Alarm input circuit of NVS440R

2. Alarm Output(RLY OUT)

Alarm output is configured as a relay circuit. Relay circuit in normal operation is open and circuit is closed upon input trigger from motion or external sensor.   The relay is capable of switching 30V/2A electrical signal.
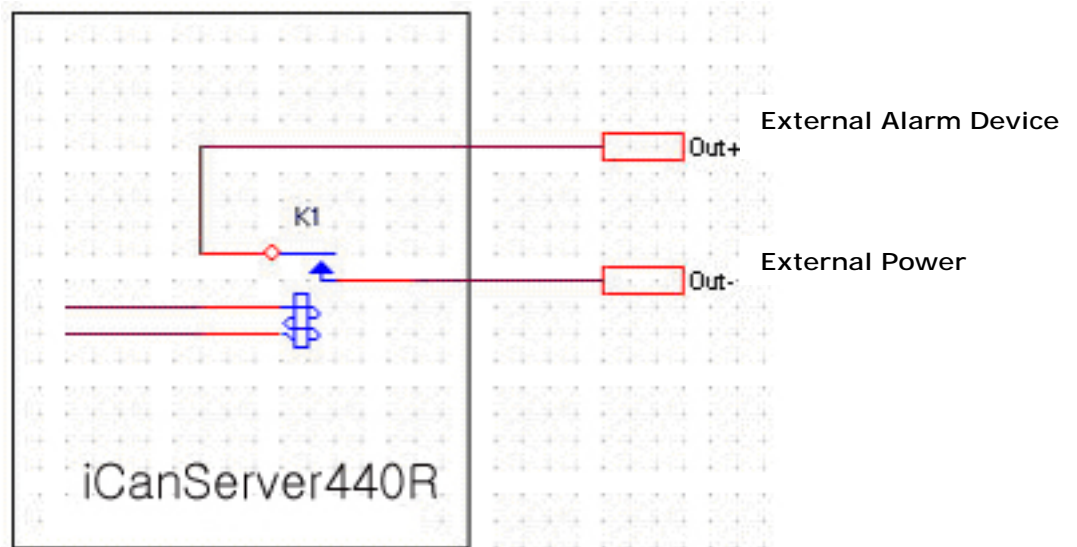

Figure 6-3. Alarm Output of NVS440R

6.2. Trouble Shooting

• **NVS440R in viewing mode, neither channel name nor video is display and eventually timeout message is shown up.**

Check the power and network connection of NVS440R.

To check if the network is properly operating, open the browser and try to connect to any server.

Example) http://www.InscapeData.com

Or open the MS-DOS Prompt and type the following.

ping www.InscapeData.com

Then press Enter. If you see the " Reply from …" message it means that the network is working properly. To check if the NVS440R is connected, open the MS-DOS Prompt and type the following.

ping [the IP of the server]

Example) ping 192.168.1.112

If you see the "Reply from …" message, it means that the server is properly connected.

If you do not see a Reply message, check if the network cable and power cable are properly connected.

• **Name of the channel on NVS440R is displayed but there is no video.**

Check if there is input video source to the channel. And check if there is a wall in the network. Check if the network is NAT type.

In case there is a firewall in the network:

Please refer to "Firewall" Application Note in the CD.

If the network is NAT type, you need port mapping.

Please refer to "IP sharing device" Application Note in the CD.

2. After Successfully Connecting to the NVS440R

• **Video movement is slow.**

● In Basic Setup of Admin Mode, lower the "Quality". High quality means more data. You can also set the "Max. Bandwidth" to higher value. But this value must be lower than the maximum upload speed of your network. For example, if the maximum uploading bandwidth of the network is

400Kbps, set the total "Max. Bandwidth" of the 4 channels to 384Kbps. If you set it higher, the video image can be corrupted with artifacts.

Ask your network manager or ISP for maximum uploading bandwidth of the network.

● Check whether dual streaming mode is enabled and NVS440R is recording video. Dual streaming mode is enabled by selecting "Enable High Quality Video Recording" in basic set-up page (Refer to Section 5.2). When dual streaming mode is enabled, NVS440R provides low speed video to connected user while recording high quality video into HDD.

● **The image is dull and I see green, pink dots.**

This could be caused by performance limitation of the PC. Do not run too many programs while running viewer program. The other reason could be missing data while transmission from NVS440R.

● **Mosaic phenomenon.**

Mosaic phenomenon occurs when not enough network bandwidth is available considering the resolution and frame rate of the video.

Example is 640x480 video with low Max. Bandwidth.

Users are recommended to adjust resolution and frame rates to lower values for lower bandwidth network.

3. How can I maintain high quality video recording when I'm using low speed network

NVS440R has Dual streaming mode that enables high quality video recording on the HDD, while providing lower quality video to on-line users. This feature is enabled by selecting "Enable High Quality Recording" in basic set-up mode. (Refer to 5.2 for more detailed information.)

6.3. How To Upgrade Your NVS440R System

1. Log on to administration mode and select "Update & Reset" menu.

2. Click "Browse..." to find the files you want to use for upgrade. This will open a "Choose file" dialogue window. The file extension is "ief".

3. When you've found the file, click "Open." This will select the file and close the "Choose file" dialogue window.

4. Click the "INSTALL" button. An alert message box will pop up. Click "OK" button then it will start uploading the file. This may take some time.

5. Upgrade completion message will appear after the system upgrade has been completed.

6. Reboot NVS440R by performing "System Reset".

7. After rebooting, log on to the administration mode again and click the "Status Report" in the left side.

8. Check the version and release date of the NVS440R ™.

> You can download NVS440R system software from
> Inscape Data's homepage.
> http://www.InscapeData.com/product/download.html

6.4. How to Replace Hard Disk on NVS440R

NVS440R has a hard disk that can be replaced when needed. To replace the hard disk follow the procedures described below.

1. Remove the 4 screws joining the front panel to the body of NVS440R.
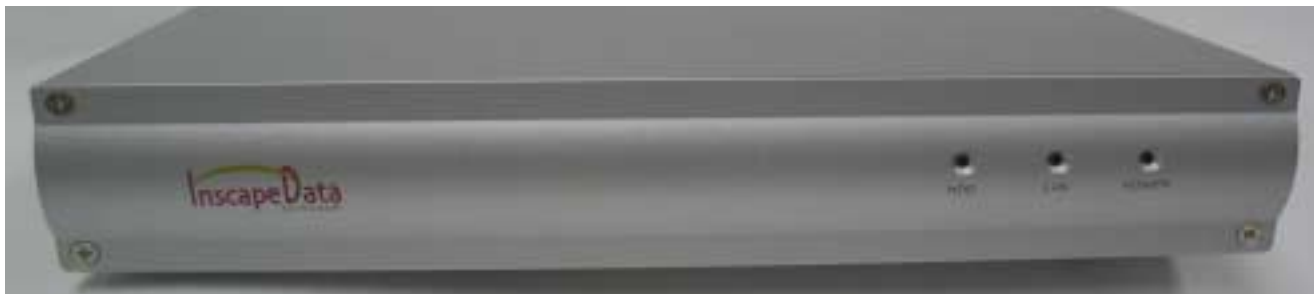
2. After removing the front panel you can find power cable and IDE flat cable connected to the hard disk at the center of the housing.

3. At the bottom of the housing, there are 4 screws. Remove the screws.

4. Carefully slide the Hard Disk Drive out from the chasis.

NOTE: Any shock induced to the Hard Drive may result in damage.

5. Unplug the IDE cable from the Hard Disk.

6. Install a new hard disk and follow the reverse procedure from step 5 back to step 1.

7. Format the New Hard drive by using the format command of NVR100 Software. If the Hard Drive has already been previously formatted by NVR100, then this is not necessary.