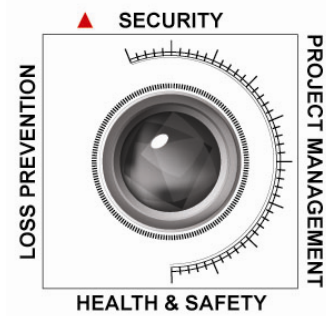


EXPAND YOUR CONCEPTS OF SECURITY



DETEXI Reliability System

ENSURE SURVEILLANCE SYSTEM HEALTH



IP-surveillance system reliability minimizing the risk of system failure and associated down-time.

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DETEXI Reliability System

The **DETEXI IP-Surveillance** is powered by the state-of-the-art software and the latest technology. There are many user manageable layers that the system has to rely upon. This makes the DETEXI system very scalable and easy to adjust for your own purposes, but on the other hand it exposes many potential network fail points if the system is not set up correctly.

In the default setup the DETEXI NVR Control Center is working in an unattended mode, this means it is up to the local administrator to check the status of the programs and related hardware manually.

However, in most cases a PC Server accommodating the DETEXI software is in a remote location with no local human interaction, therefore a designated person or persons should be aware of the DETEXI NVR status at any given time. You may not need the recorded video for weeks or even months, but if something happened (camera failure, power failure, network failure etc.) during that time it is possible that the NVR does not have some or any recorded video at all and the required evidence may be lost.

To address these issues we have embedded the **DETEXI Reliability System** into our Network Video Management software.

Fail Points

Basically there are two major areas where failures can occur:

- Hardware failure
- Software failure

Hardware components used by the DETEXI system include:

- DETEXI NVR computer by itself (or a group of child NVR computers in the case of a Domain Controller configuration)
- IP-Devices (network cameras/video servers)
- Network connections. We can classify all network connections by functionality:
 1. Camera network connections – connections between IP-cameras/video servers and DETEXI NVR computers
 2. User connections – connections between user's software: Remote DETEXI Client or DETEXI Archive Viewer and DETEXI NVR computer
 3. Domain Controller connections – connections between DETEXI NVR Domain Controller and child NVRs

The DETEXI NVR software consists of different modules/services; any of them could fail due to unforeseen events and therefore must be monitored and controlled:

- Monitor
- Camera Server
- Recorder
- FTP Server
- Check Drive
- Check Alive
- Check Alarm
- Tour
- Get Shots
- Port Mapper
- Port Listener
- Alarm Server
- Socket Server

There are several areas that should be checked to insure that you have a healthy and functioning system:

- Is the NVR running at all (power is OFF or ON)
- Are all selected NVR components running
- Are all cameras with an active schedule functioning and being recorded
- Is there enough space to make a recording
- Are there enough system resources to make a recording
- Is the NVR Domain Controller network and all it's child NVRs healthy and running

Task Execution Engine

DETEXI IP-Surveillance reliability checking is based on the **Task Execution Engine**. If something happens to the system, hardware or one of the DETEXI NVR components, certain task assigned to this event is executed.

What if something happens to the **Task Execution Engine** by itself? The obvious conclusion is: you will never have any task executed at all and you will never know that something is wrong with the DETEXI NVR. To solve this issue we have developed a special “**NVR Status Task**” which (if assigned) is executed once a day at a time you can pre-define by yourself. If this task HAS NOT BEEN executed at that time it means you have to check the system.

Tasks to be executed on check status/ health consist of predefined tasks:

- Network Client notification
- E-mail notification
- Phone notification
- Speak notification
- Execute program action

From our point of view it is most likely user will initiate the **e-mail notification task** or **execute program action**.

Before using the **e-mail notification task** all necessary settings for sending e-mail (SMTP settings and e-mail account settings must be setup in the NVR Alarm Listener).

The **Execute Program Action** allows you to execute any external program to do whatever you want to do and is limited only by your imagination and the resources required to develop it.

Setup System Health Monitoring

Software components

To monitor the health of the DETEXI software components you need to assign a **task** (action/notification that will be executed in a case of failure) to each component you wish to monitor. (See Fig.1)

1. In the **NVR Control Center** go to the **Monitor**.
2. Press **Health monitor On/Off** button in the bottom right corner — the system health monitor **No answer task** panel appears.
3. To assign a task to the component select previously created task from the drop-down list next to the component.
4. Assign a task to each system component.

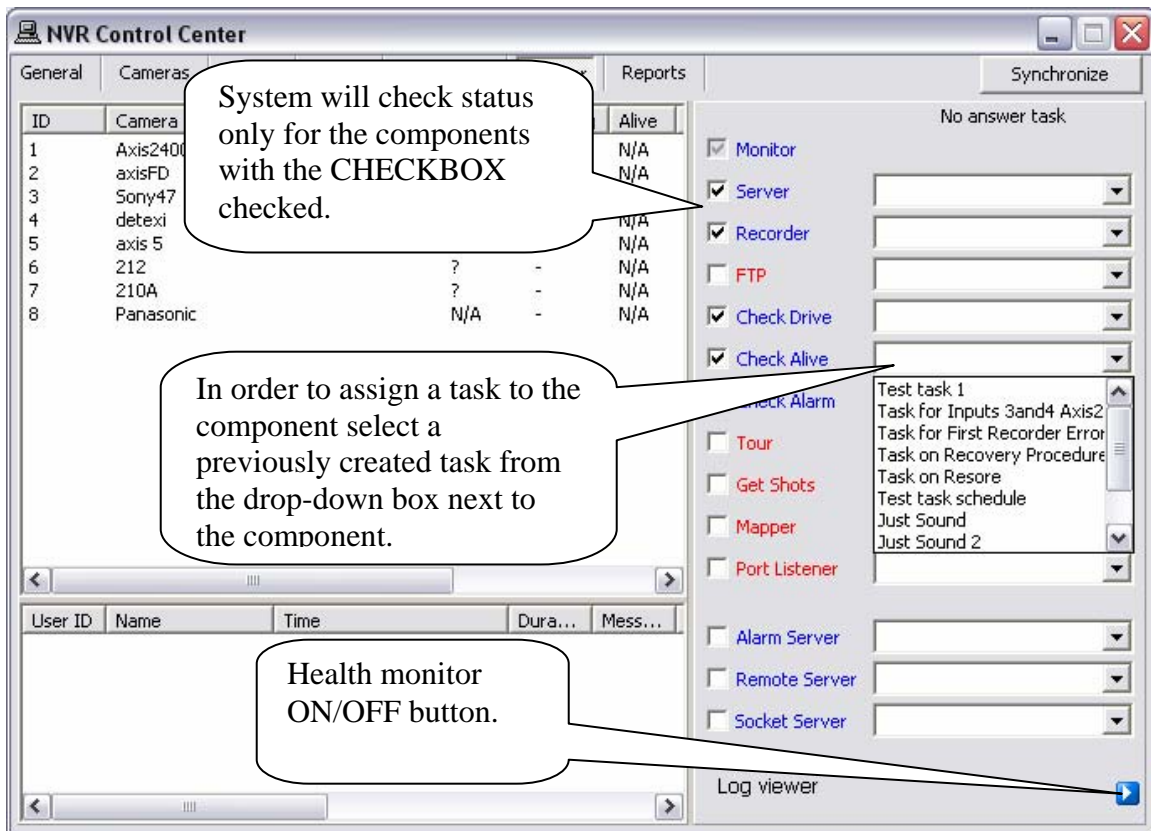


Fig1.

Component failure if any will be detected within 3 minutes and the assigned task will be executed.

System will check status only for the components with the CHECKBOX checked.

IP-Device Status

The DETEXI NVR streaming and records video information from the IP-cameras/video servers, which are complex devices by themselves and can often be the source of problems.

There are two methods to deal with IP-devices errors:

- Using the **Check Alive** program
- Using a **Recovery Procedure** in the IP-device **Recording Schedule**

The **Check Alive** service is relatively heavy on NVR resources and it should be used only in the case of recording on I/O ports when the recorder is off and starts to record when the signal from I/O port is received.

Setup Action on Alarm for the camera using Check Alive program

To setup **Action on alarm** for the camera using **Check Alive**: See Fig.2

1. In the **NVR Control Center — Cameras** select a camera from the Cameras List.
2. Switch to the **Security & Alarm**.
3. Under the **Actions on alarm** select an appropriate predefined task from the **Check status task** drop-down list. Task initiates if the IP-device fails to answer on **Check Alive** request.
4. Repeat steps 1-3 for any camera from the **Cameras List** to setup action on alarm.

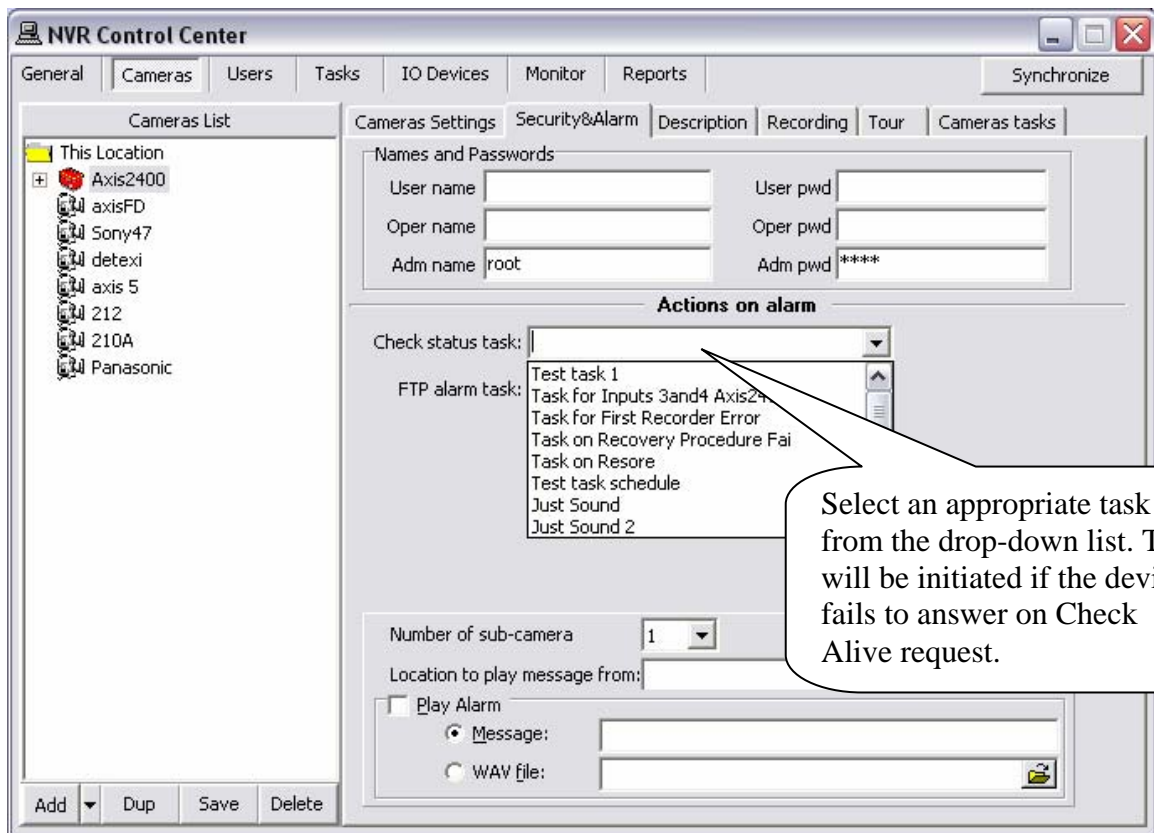


Fig.2.

Note: It must be clear that if a device fails to answer this does not necessarily mean that there is a physical device failure. It could be a connection (network) error. From the NVR reliability point of view it is irrelevant as to why there is no video stream but from the point of view of the technician (who has to fix the problem) there is a big difference.

Setup Recovery Procedure in a camera Recording Schedule

Another method to deal with IP-devices errors is to setup **Recovery Procedure** inside a camera **Recording Schedule**. The recovery procedure fully describes how the **Recorder** will deal with the faulty camera. See Fig3

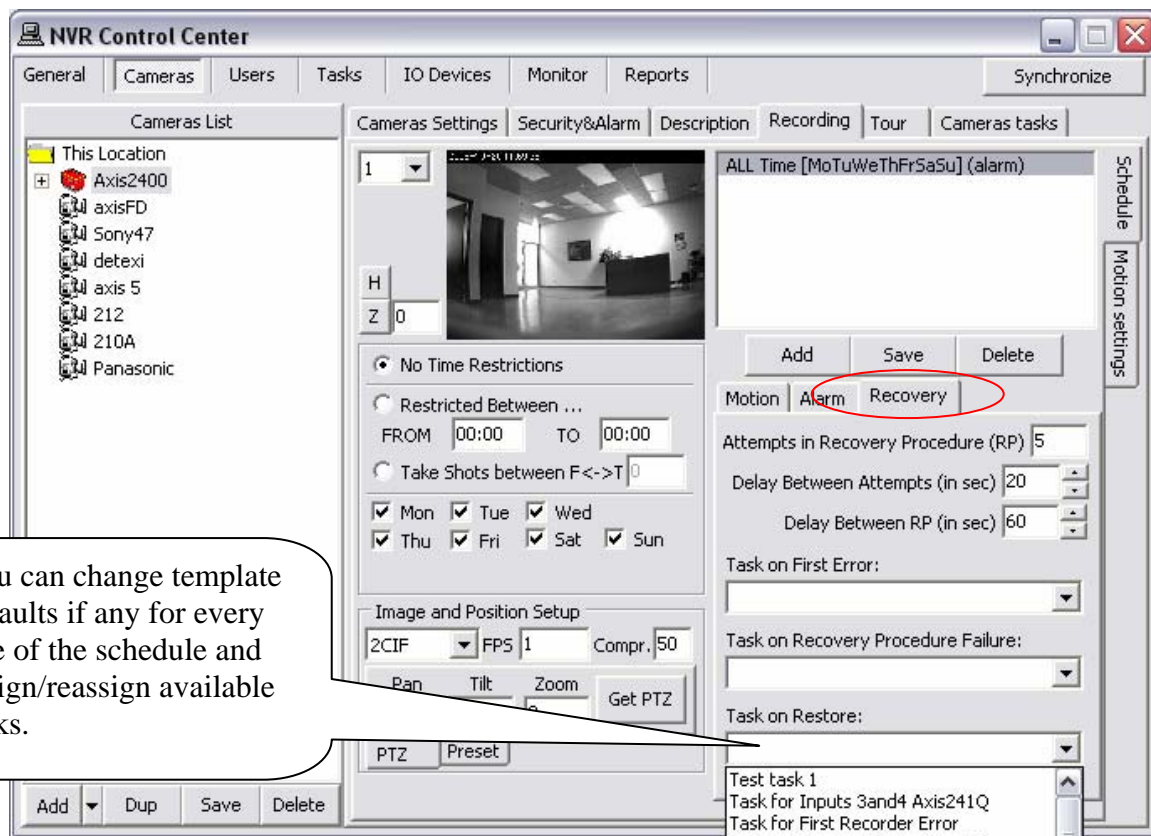


Fig.3

1. In the **NVR Control Center** — **Cameras** select a camera from the **Cameras List**.
2. Go to the **Recording** and switch to the **Schedule** side tab.
3. Select a schedule line from the list to update an existing item settings or press **Add** button below the **Schedule** panel to create a NEW schedule item.
4. Switch to the **Recovery** tab to setup a **Recovery Procedure** parameters (if the **Recovery Procedure Template** was created a newly created schedule item will use the template parameters as a default):
 - **Attempts in Recovery Procedure (RP)** - recommended 5;
 - **Delay Between Attempts (in sec)** - recommended 30;

- **Delay Between PR (in sec)** - recommended 60;
- 5. Select predefined tasks for events you are going to track (in any combination):
 - **Task on First Error** – if assigned, the **Recorder** initiates the corresponding task immediately on the video stream failure;
 - **Task on Recovery Procedure Failure** – if assigned, task initiates if all the attempts of **Recovery Procedure** have failed;
 - **Task on Restore** – if assigned, task initiates in case the IP-device comes back online
- 6. Press **Save** button below the **Schedule** panel.
- 7. Repeat steps 3 - 6 for the other schedules.

Setting up a **Recovery Procedure** for many cameras with complicated recording schedules could be time consuming. To make it easier - use the **Recorder Recovery Settings Template**.

The **Recovery Procedure** recommended settings are:

- Attempts on recovery → 5
- Delay between attempts → 30
- Delay between RP → 600
- Task on first error → ASSIGNED
- Task on restore → ASSIGNED

According to the recommended settings the **Recorder** initiates the **Task on First Error** when the video stream failure occurs. Then makes up to 5 attempts with 30s interval to recover the stream. If any of the attempts succeeds the **Task on Restore** notification/action will be initiated; if not — the next round of attempts to connect to the faulty camera starts in 10min (600s).

Create Template for Setting a Recovery Procedure

Setting up a **Recovery Procedure** for many cameras with complicated recording schedules could be time consuming. To make it easier a template enforcing particular settings in a newly created schedule can be created. (see Fig.4)

1. In the **NVR Control Center** go to the **General — Advanced**.
2. Under the **Recorder Recovery Settings Template** setup recovery settings:
 - **Attempts in Recovery Procedure (RP)** - recommended 5;
 - **Delay Between Attempts (in sec)** - recommended 30;
 - **Delay Between PR (in sec)** - recommended 60;
3. Select predefined tasks for events you are going to track (in any combination):
 - **Task on First Error** – if assigned the **Recorder** initiates the corresponding task immediately on the video stream failure;
 - **Task on Recovery Procedure Failure** – if assigned task initiates if all the attempts of **Recovery Procedure** have failed;
 - **Task on Restore** – if assigned task initiates if IP-device comes back online

The **Recovery Procedure** settings from this template will be forced in to each newly created schedule of cameras **Recording Schedule** and could be changed.

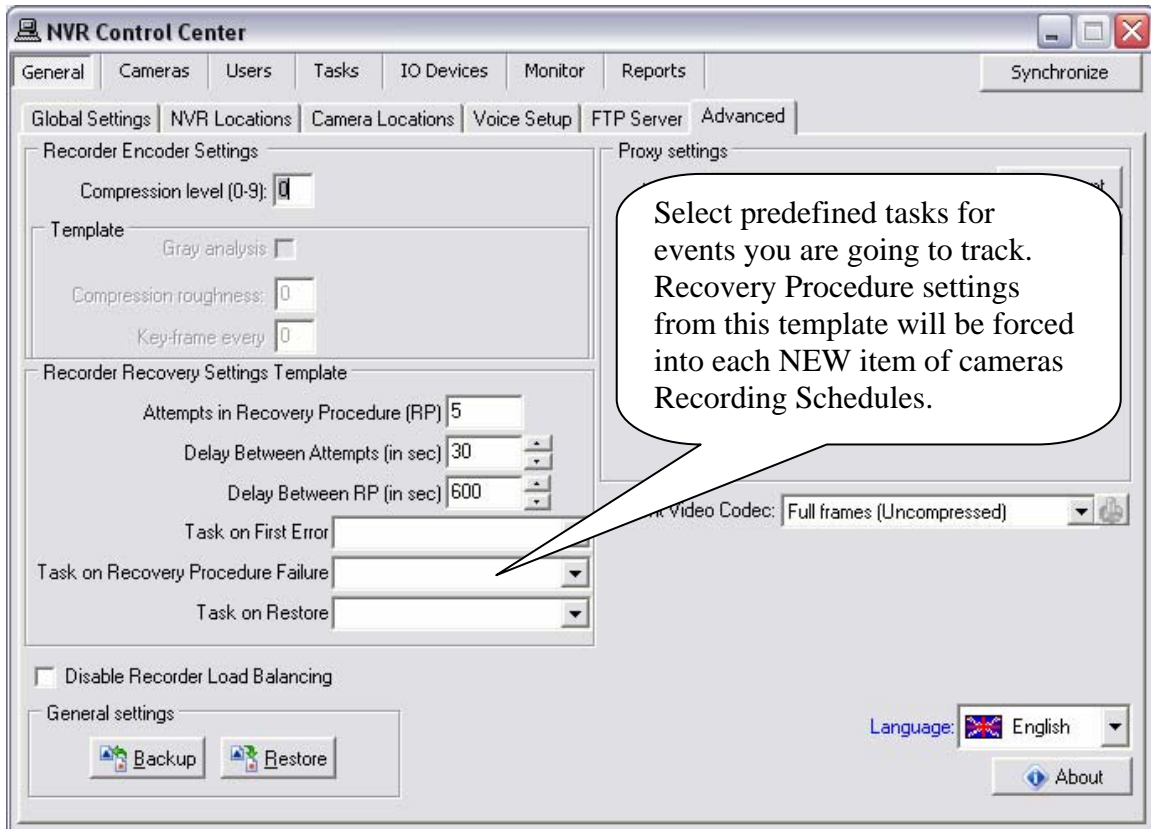


Fig.4

NVR Catastrophic Errors

There are some problems that should not be tolerated.

If the tasks associated with them are initiated you have to seriously reconsider your NVR settings and/or the hardware you are using.

The “**Writing error**” task initiates when the NVR **Recorder** fails to record streaming data on the Hard Drive. It could be because of a Hard Drive error, a Windows error or the **Recorder** could not do its job because of lack of resources (usually an underpowered CPU).

The “**Drive limit reached**” task initiates in case of free space for the system files or free space necessary for NVR functioning becomes too low. In some circumstances the **Recorder** service could even be stopped because the NVR cannot manage the given amount of information due to a lack of system resources. In this case you should reconsider your IP-devices **Recording Schedule** settings and /or “**Keep information for**” parameter and/or your hardware configuration.

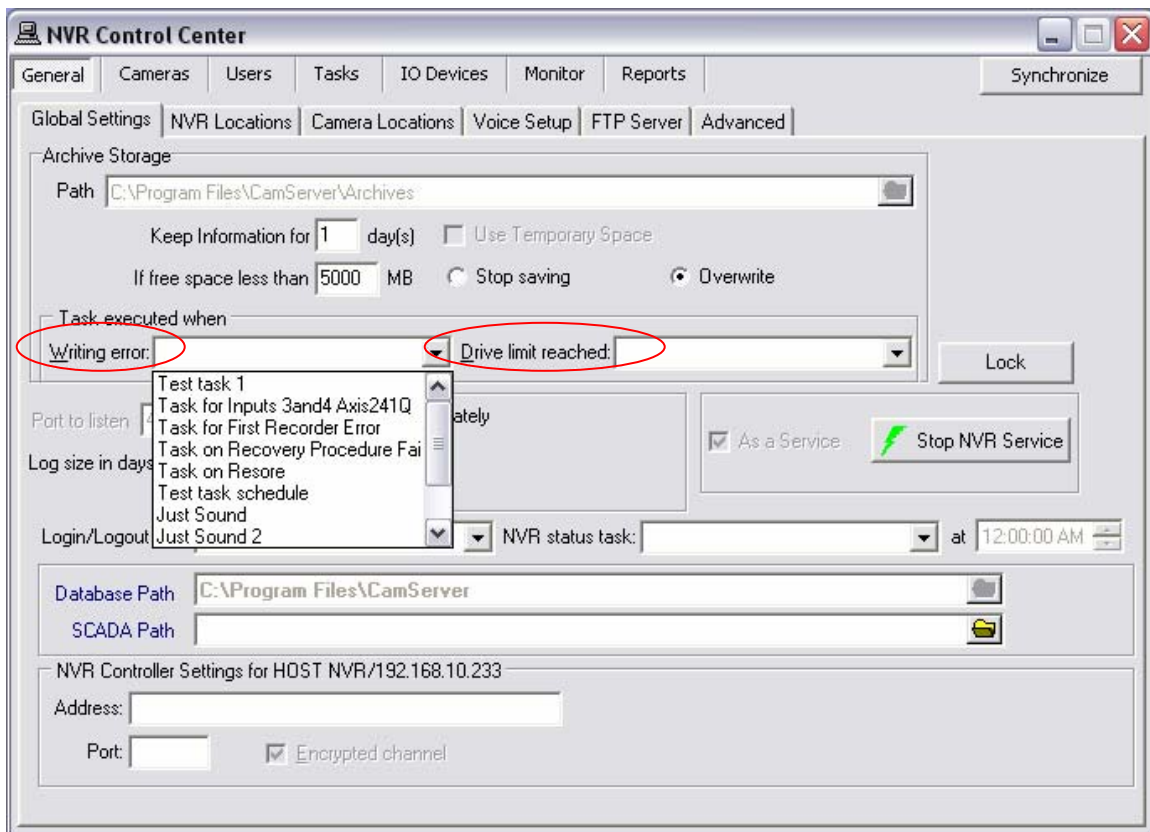


Fig.5.

In order to get advantage of getting notification/action in case of any of the catastrophic errors occurs you must setup the **Writing error** and **Drive limit reached** tasks: (Fig.5)

1. In the **NVR Control Center** go to the **General — Global Settings**.
2. Under the **Tasks executed when** select an appropriate predefined task from the **Writing error** drop-down list and the **Drive limit reached** drop-down list.

NVR Status Task

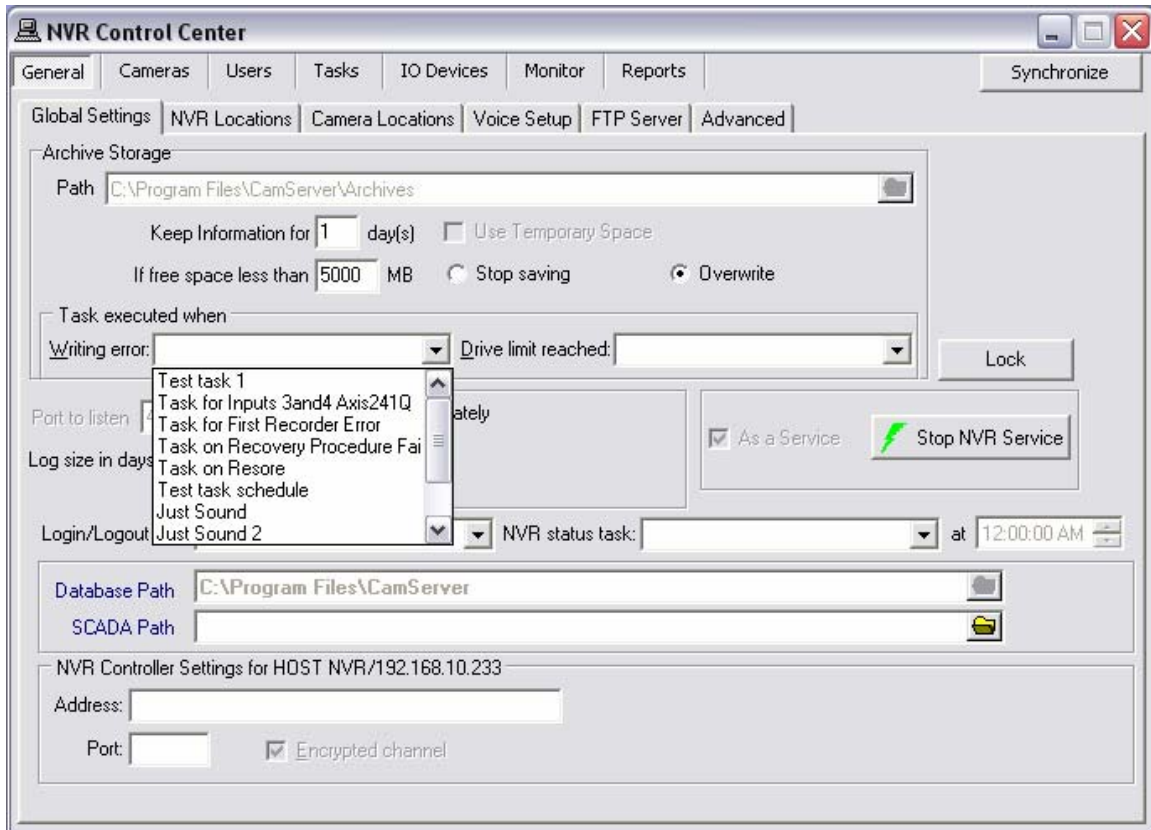
The purpose of the **NVR Status task** is to send out the current NVR status of the NVR components at predefined time.

The **NVR Status Task** is initiated once a day at a predefined time and provides the user a list of the NVR components being monitored and their status.

If you want to setup your own schedule with a different time interval (twice a day or once a week or whatever you want) to send out notification that the NVR is alive, you should create a **Scheduled Task** and use it for checking if the **Reliability System** is functioning properly.

To setup the **NVR Status Task**:

1. In the **NVR Control Center** go to the **General — Global Settings**.
2. Select an appropriate predefined task from the **NVR status task** drop-down list.
3. Set a desired time.



Child NVR Status

Although every NVR in the NVR Domain Controller configuration should have its own reliability settings there is a new intercommunication layer between the Domain Controller and a child NVR, which could also fail and therefore the system administrator must be able to check its status.

To be aware weather a child NVRs are alive and properly respond to the NVR Domain Controller you should setup the **Task when NVR does not respond** for each child NVR in the NVR network (domain). (see Fig.6.)

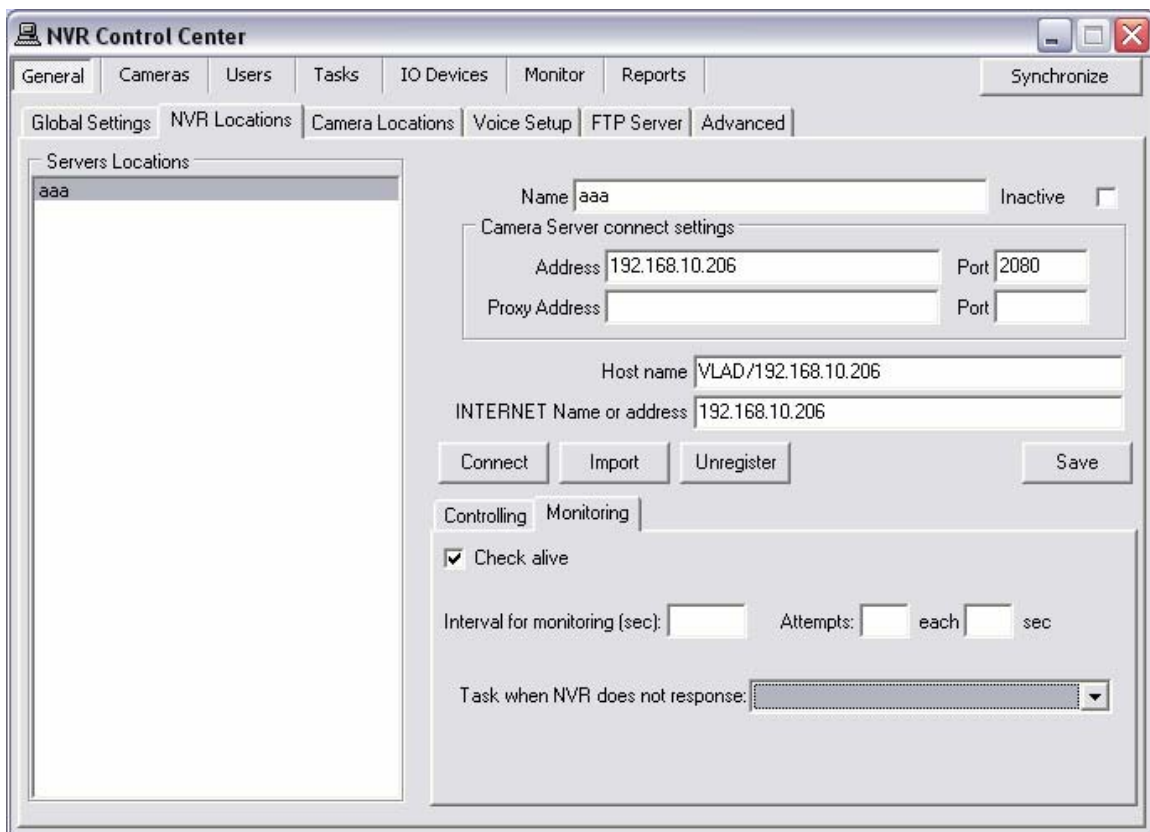


Fig.6

1. In the Domain Controller **NVR Control Center** go to the **General — NVR Locations**.
2. Select a child NVR from the **Servers Locations** list.
3. Switch to the **Monitoring** tab and input your setting to define an **Interval for monitoring (sec)**, number of **Attempts** and interval between them.
4. Select an appropriate predefined task from the **Task when NVR does not respond** list.

Recommended settings:

- Interval for monitoring → 600

- Attempts → 5
- Each → 60

Note:

If you know for a fact that the site is temporarily down for maintenance or other issues, simply uncheck the “Check Alive” check box (see Fig.6.).

In this case the system will not initiate unnecessary tasks for a known problem and will return to monitoring only after you check the box again.