

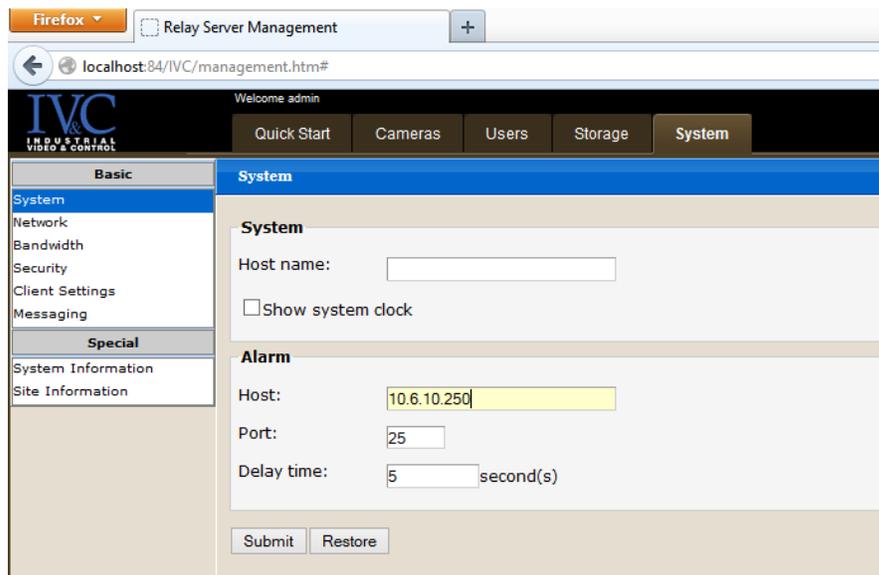
The IVC Relay Server can generate an alarm to the IVC Alarm Server based on the state of a camera. This document describes how to set up IVC software to generate alarms when camera video is down and communicate this alarm condition to an SNMP manager via an SNMP trap. It assumes the Relay Server, View Station, Tour Server, and Alarm Server software have been installed and are functional.

Although the alarm source described here is a Relay Server Video Down event notification, the SNMP Trap can be generated as a result of an event or alarm from any source compatible with the Alarm Server.

Relay Server Software

- I. First, ensure that the Relay Server can communicate with the Alarm Server. From a Relay Server web page, click the **Management** link to enter Management Mode. Click the **System** tab and then click **System** in the **Basic** menu. Under the **Alarm** heading enter the IP address of the Alarm Server in the **Host** text field. The Relay Server communicates event notifications via SMTP. Therefore, the default port for the Alarm Server is indicated as 25. If you must change this port number, ensure this change is also reflected in the Alarm Server configuration.

The **Delay** value stipulates the time the Relay Server will wait before sending the same event notification. Change this as required by the application.

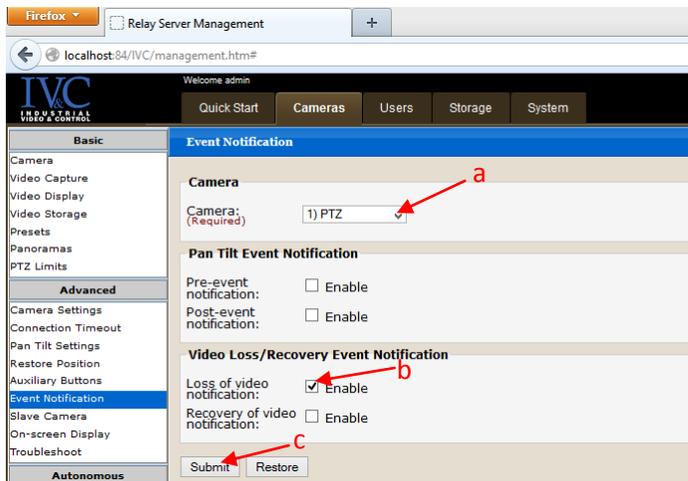


The screenshot shows a web browser window with the address bar displaying 'localhost:84/IVC/management.htm#'. The page title is 'Relay Server Management'. The main content area is titled 'System' and contains the following fields:

- System**
 - Host name: []
 - Show system clock
- Alarm**
 - Host: [10.6.10.250]
 - Port: [25]
 - Delay time: [5] second(s)

At the bottom of the form are two buttons: 'Submit' and 'Restore'.

- II. To enable a **Video Down** event for a camera, while still in Management Mode, click the **Cameras** tab and then click **Event Notification** in the **Advanced** menu. On this page:
 - a. Select the camera for which you wish to create the alarm by clicking on the **Camera** dropdown menu.
 - b. Click the **Loss of video notification** check box.
 - c. Click the **Submit** button and observe a confirmation message.

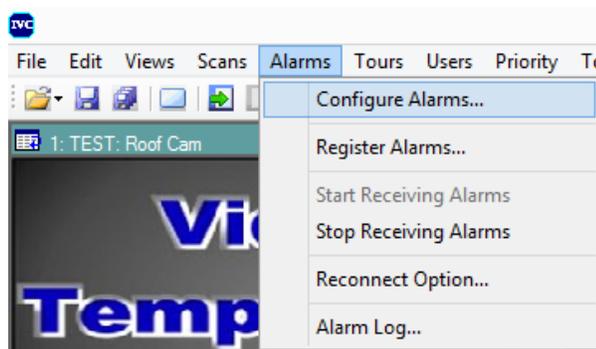
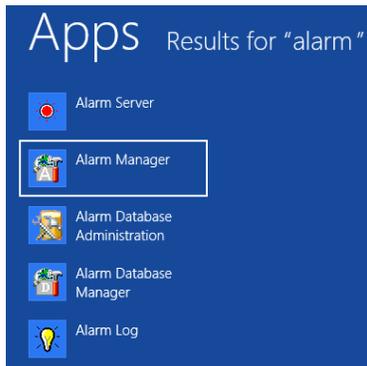


d. Repeat the operations described above for each camera for which you wish to generate a video down event.

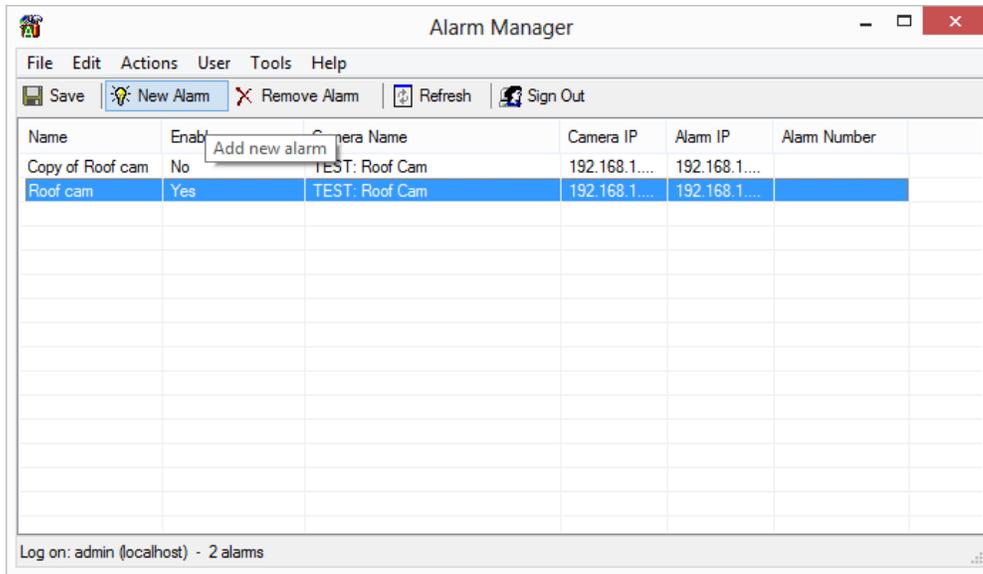
Alarm Manager Software

- III. The IVC Alarm Manager provides the facility to define an alarm for each camera. Each alarm definition includes one or more possible Response Actions, which may include Windows commands. The TrapGen utility can be the Windows commands executed in response to the Video Down alarm generated by the Relay Server resulting in an SNMP trap message to SNMP management software.

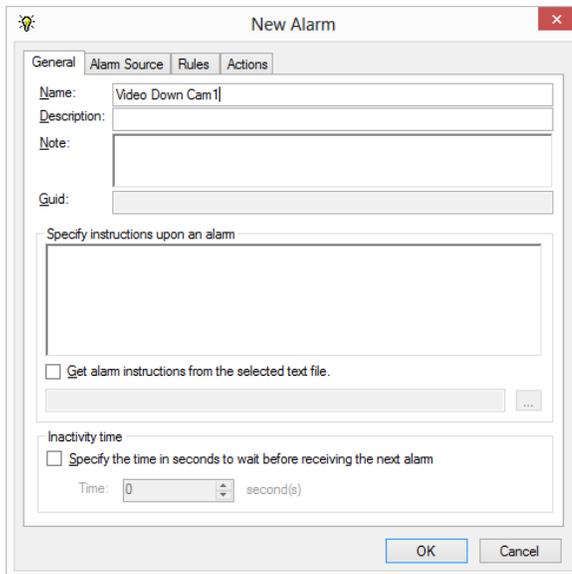
To define an alarm, invoke the Alarm Manager from the View Station desktop or from the Windows Start menu.



a. Click **New Alarm** in the resulting **Alarm Manager** desktop.



- b. In the **New Alarm** dialog **General** tab, type name the alarm definition for this camera in the **Name** text field. All other fields on this tab are optional.

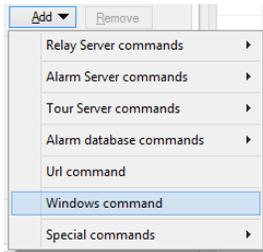


- c. Click the **Alarm Source** tab. From the **Camera** dropdown menu select the camera that is the potential source of this alarm. Also type in the IP address and port number of this camera in the **Camera IP** and **Port** fields respectively.
- d. Click the **This is an external alarm device** checkbox so it is checked.
- e. Type the IP address and port number of the Relay Server that will generate the event alarm in the **Alarm IP** and **Port** text fields respectively. The example shown in the screenshot below assumes a second NIC that is connected to the DeltaV network. NOTE: The Alarm Server must be on the same network; if running on the same server machine, this IP address will be the same as that for the Alarm Server.

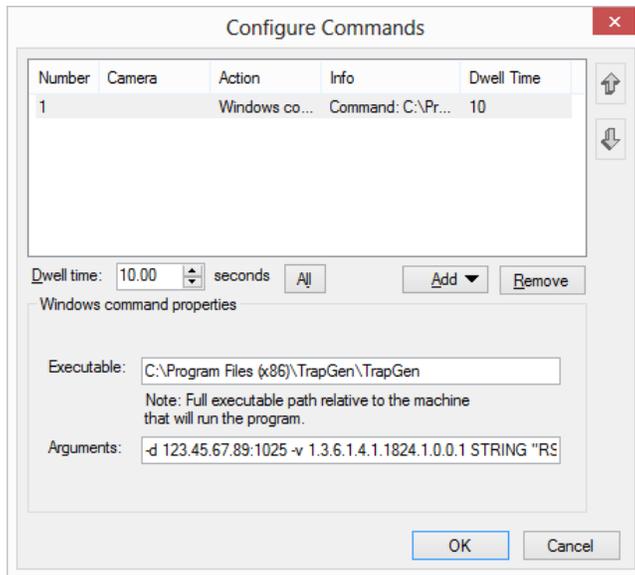
- f. Type the Relay Server camera ID of the camera generating the alarm in the **Alarm identifier** text field.
- g. Click the **Track event condition** check box so it is checked.
- h. From the **Type** dropdown menu, select **Video states** and then from the **Trigger** dropdown menu, select **Down**.

- i. Click the **Actions** tab. Check off the response actions that are appropriate to the application. To create an SNMP trap response action, click the **Execute commands** check box so it is checked. Then click the **Configure...** button that appears.

- j. In the resulting **Configure Commands** dialog, click the **Add** button and from the resulting menu select **Windows command**.

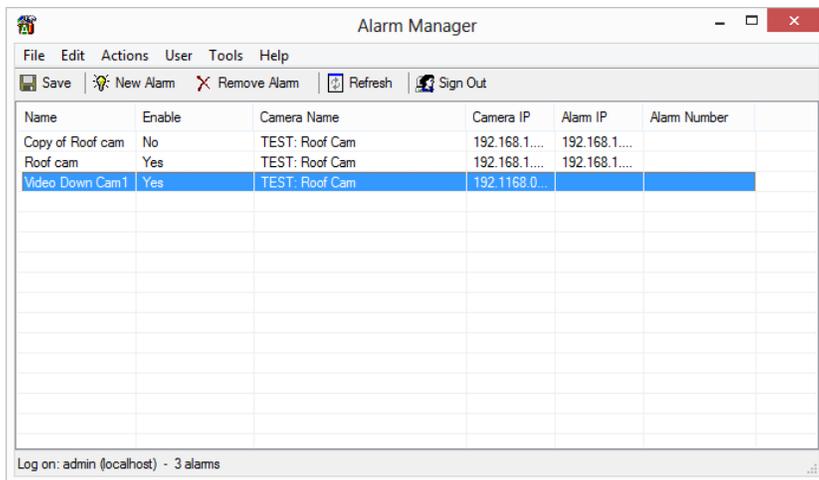
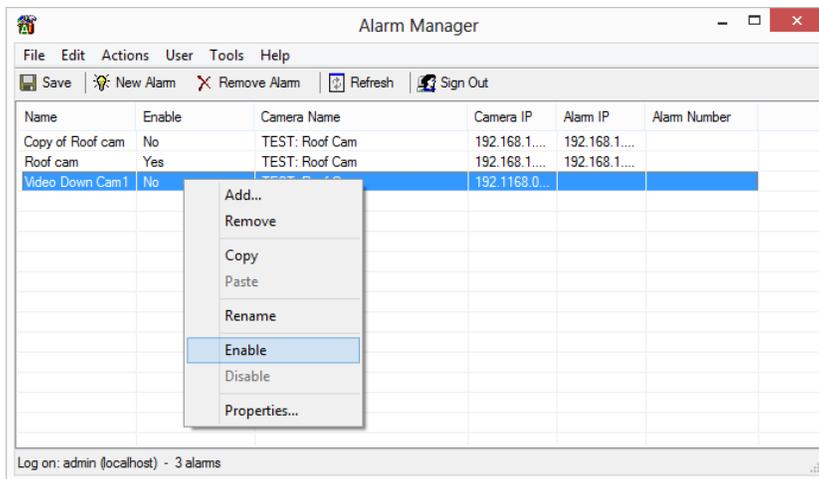


- k. In the **Executable** text field that appears type in the executable name and its full path. This document assumes the utility TrapGen will be used to generate the SNMP trap. Details on command line options for this utility can be found at the end of this document.
- l. In the **Arguments** text field, type in valid TrapGen arguments you wish to use. The STRING varbind option might be useful is specifying the Relay Server and Camera ID that is generating the alarm.

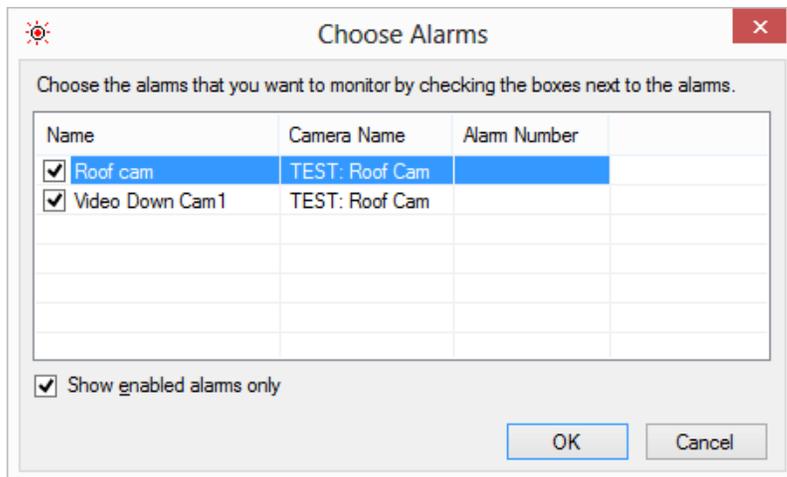


You can test the TrapGen with desired parameters prior to programming this action by invoking the command with the desired parameters in a Windows Command window.

- m. The **Dwell** time option specifies the time the Alarm Server will wait before executing the next response action command listed. Click the **OK** button when finished configuring commands.
- n. Click the **OK** button in the **New Alarm** dialog when satisfied with this alarm definition. The new alarm should now be listed in the Alarm Manager. Enable the alarm by pointing to it and clicking the right mouse button. From the resulting menu, select **Enable**. The alarm listing should now indicate that it is enabled.



- o. Click the **Save** button and dismiss the Alarm Manager.
- p. At this point, you must make the Alarm Server aware of the new alarm by clicking **Register Alarms..** in the View Station desktop **Alarms** menu. In the resulting dialog click the check box that corresponds to the new alarm so that it is checked. Click the **OK** button when finished registering new alarms.



q. Also verify that **Start Receiving Alarms** is selected in the **Alarms** menu (grayed out).



IV. At this point the IVC software system is set up to generate SNMP traps as a result of the Relay Server detecting no video from a camera. This can be tested by simply removing power from a camera for which a Video Down alarm has been created.

V. TrapGen Usage Information

TrapGen is a free SNMP trap generator. It is available for download at <http://trapgen.trapreceiver.com/>

Usage: trapgen -d <destination ip address>

When using the command in a Windows Command window, additional information is available using "trapgen -h". Note: Either the -d <destination ip address> pair or the -f <input file> pair (which must contain a -d <destination IP address> pair) is required.

Example: trapgen -d 192.168.2.3

The above example will generate a trap that looks like this:

| | |
|----------------|---|
| Community: | public |
| Sender IP: | current host IP |
| Sender OID: | 1.3.6.1.4.1.2854 |
| Trap Type: | 6 (enterprise specific) |
| Specific Type: | 1 |
| Timestamp: | Current time value from system (from time(0)) |

With an empty varbind list, this command sends a trap to IP address 192.168.2.3 on port 162. The above values are the defaults (except the destination ip address 192.168.2.3). Use the following command line options to override these defaults:

Other available command line parameters:

| | |
|------------------------------|---|
| -d destinationIpAddress:port | e.g., -d 123.45.67.89:1025 |
| -c communityName | e.g., -c private |
| -o senderOID | e.g., -o 1.3.6.1.4.1.2854 |
| -i senderIP | e.g., -i 199.8.7.6 |
| -g trapType | e.g., -g 5 |
| -s specificType | e.g., -s 23 |
| -t timestamp | e.g., -t 234445 |
| -r requestId | e.g., -r 42 |
| -m timeout | e.g., -m 10 |
| -x | - suppresses the addition of specific type sub-oid to enterprise oid (SNMPv2c only) |
| -p a | - dumps the trap in ascii format to the screen, does not send |
| -p h | - dumps the trap in hex format to the screen, does not send |
| -p b | - dumps the trap to the screen in both hex and ascii format (does not send) |

In addition, you can specify varbinds to be added with the -v switch:

-v oid TYPE value

where:

oid is the object id of the variable

TYPE is one of the following:

STRING

COUNTER

GAUGE

INTEGER

ADDRESS

OID

TIMETICK

HEX

and value is the value of the associated variable

For example:

```
-v 1.3.6.1.4.1.1824.1.0.0.1 STRING "Very High Temperature"
```

Note the use of quotes ("") to enclose the text which contains spaces.

Using the -f filename option:

You may store the parameter information in a text file. The text file should look like a series of command line options, with each option on a separate line. For example:

```
-d 123.45.67.89:1025
```

```
-c private
```

```
-o 1.3.6.1.4.1.1824
```

```
-i 199.8.7.6
```

```
-g 5
```

```
-s 23
```

```
-t 12445
```

```
-v 1.3.6.1.4.1.1824.1.0.0.1 STRING This is a string (you do not need quotes)
```

```
-v 1.3.6.1.4.1.1824.1.0.0.1 COUNTER 3345556
```

```
-v 1.3.6.1.4.1.1824.1.0.0.1 GAUGE 12343212
```

```
-v 1.3.6.1.4.1.1824.1.0.0.1 INTEGER 99
```

```
-v 1.3.6.1.4.1.1824.1.0.0.1 ADDRESS 100.200.123.111
```

```
-v 1.3.6.1.4.1.1824.1.0.0.1 OID 1.2.3.4.5.6.7.8.9
```

```
-v 1.3.6.1.4.1.1824.1.0.0.1 TIMETICK 2233121
```

In addition to the options listed in the file, the command line options will also be processed. The command line options will override the file specified options (except varbind info which will accumulate).