Intelligent Scene Analysis System (iSAS)
Version 3.20

User Guide
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Preface

This guide is for all users of the iSAS system. It describes how the system is set up and trained, and how alarms are handled.

This preface contains the following sections:

- Using This Book
- Related Documentation
- Support and Contact Information

Using This Book

This section briefly describes the organization of this book and the stylistic conventions it uses.

Version

The information in this book is current as of Intelligent Scene Analysis System version 3.20. The content was last modified 30 April 2007. Corrections or updates to this information may be available through the Virage Security and Surveillance Support site; see “Support and Contact Information” on page 10.
Organization of This Book

This book includes the following chapters:

- **Chapter 1, “Understanding iSAS”** describes iSAS and how to set up the system.
- **Chapter 2, “Using the Dialogs”** describes the iSAS user interface and how to use the different dialogs available.
- **Chapter 3, “Troubleshooting iSAS”** describes a few possible problems and their solutions.

Stylistic Conventions

The following stylistic conventions are used in this book.

<table>
<thead>
<tr>
<th>Convention</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plain</td>
<td>Narrative text.</td>
</tr>
<tr>
<td><strong>Bold</strong></td>
<td>User-interface elements in narrative text:</td>
</tr>
<tr>
<td></td>
<td>- Click <strong>Cancel</strong> to halt the operation.</td>
</tr>
<tr>
<td><strong>Italics</strong></td>
<td>Book titles and new terms:</td>
</tr>
<tr>
<td></td>
<td>- For more information, see the <em>IDOL Server Administrator Guide</em>.</td>
</tr>
<tr>
<td></td>
<td>- An <em>action command</em> is a request, such as a query or indexing</td>
</tr>
<tr>
<td></td>
<td>instruction, sent to IDOL Server.</td>
</tr>
<tr>
<td><strong>Monospace</strong></td>
<td>File names, paths, and code:</td>
</tr>
<tr>
<td></td>
<td>- The <em>name.ext</em> file is installed in:</td>
</tr>
<tr>
<td></td>
<td>*C:\Autonomy\Data*</td>
</tr>
<tr>
<td><strong>Monospace italic</strong></td>
<td>Replaceable strings in file paths and code:</td>
</tr>
<tr>
<td></td>
<td>- <em>user</em> <em>username</em></td>
</tr>
<tr>
<td><strong>Monospace bold</strong></td>
<td>Data types and required user input:</td>
</tr>
<tr>
<td></td>
<td>- <em>SrvConnect</em> A connection handle.</td>
</tr>
<tr>
<td></td>
<td>- In the <strong>User Interface</strong> text box, type <strong>user1</strong>.</td>
</tr>
</tbody>
</table>
The following command-line syntax conventions are used in this book.

<table>
<thead>
<tr>
<th>Convention</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ optional ]</td>
<td>Brackets describe optional syntax, as in [ -create ] to specify a non-required option.</td>
</tr>
<tr>
<td></td>
<td>Bars indicate “either</td>
</tr>
<tr>
<td></td>
<td>In this example, you must choose between option1 and option2.</td>
</tr>
<tr>
<td>{ required }</td>
<td>Braces describe required syntax in which you have a choice and that at least one choice is required, as in { [ option1 ]</td>
</tr>
<tr>
<td></td>
<td>In this example, you must choose option1, option2, or both options.</td>
</tr>
<tr>
<td>required</td>
<td>Absence of braces or brackets indicates required syntax in which there is no choice; you must enter the required syntax element.</td>
</tr>
<tr>
<td>metavariable</td>
<td>Italics specify items to be replaced by actual values, as in -merge filename1</td>
</tr>
<tr>
<td>&lt;metavariable&gt;</td>
<td>(In some documents, angle brackets are used to denote these items.)</td>
</tr>
<tr>
<td>...</td>
<td>Ellipses indicate repetition of the same pattern, as in -merge filename1, filename2 [, filename3 ... ]</td>
</tr>
<tr>
<td></td>
<td>where the ellipses specify, filename4, and so on.</td>
</tr>
</tbody>
</table>

Use of punctuation—such as single and double quotes, commas, periods—indicates actual syntax; it is not part of the syntax definition.

Related Documentation

The following documents provide more details on Virage Intelligent Scene Analysis System:

- Virage DVR Operator Guide
Support and Contact Information

Read this section if you want to contact Virage Security and Surveillance, request technical support, or obtain product documentation.

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You can retrieve the latest available product documentation from the Virage web site. To download the latest documentation, take the following steps:

1. Enter this URL in your web browser's Address field:
   
   http://www.virage.com/content/pathways/securityandsurveillance/

2. Click Please Register to access the download site.

3. Enter your information into the registration fields.

4. Click Submit. The documentation is now available for download.

The version number associated with a document (for example, version 4.1) is the product version that the document describes. If a document has a revision number (for example, Revision 5), the document has been revised since it was first released with the specified product version. The download site contains the latest available revision of any document.
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Help Desk:
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[Hours: 9:30 AM to 6:00 PM (GMT)]
(Monday through Friday)

Fax: +44 (0) 1223 488 541

Email: techsupport@virage.com

Contact Virage Security and Surveillance

Contact the location that is nearest to you for general information about Virage, an Autonomy company:

<table>
<thead>
<tr>
<th>Europe and Worldwide</th>
<th>The Americas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virage Security and Surveillance</td>
<td>Autonomy Inc.</td>
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<td>Autonomy Systems Ltd. Building</td>
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</tr>
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<td>Cambridge Business Park</td>
<td>Sunnyvale, California 94089</td>
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<tr>
<td>Cowley Road, Cambridge CB4 0WZ</td>
<td>Telephone: +1 408 541 1500</td>
</tr>
<tr>
<td>Telephone: +44 (0) 1223 448 000</td>
<td>Fax: +1 408 541 1600</td>
</tr>
<tr>
<td>Fax: +44 (0) 1223 448 001</td>
<td>General information email:</td>
</tr>
<tr>
<td>General information email:</td>
<td><a href="mailto:info@us.autonomy.com">info@us.autonomy.com</a></td>
</tr>
<tr>
<td><a href="mailto:autonomy@autonomy.com">autonomy@autonomy.com</a></td>
<td></td>
</tr>
</tbody>
</table>
Preface
Support and Contact Information
1

Understanding iSAS

This chapter describes Intelligent Scene Analysis System (iSAS) and how to set up a basic system.

- Introduction
- Installing iSAS
- Setting Up iSAS
- Logging On

Introduction

Use Virage iSAS (Intelligent Scene Analysis System) with your CCTV system to assist you with the detection of important activity. This activity might be a potential threat, an illegal action, or a situation where help is required. The system can be trained to detect whatever you require. Virage iSAS integrates with any new or existing CCTV installation and can also be used retrospectively. No expert tuition is required, with the actual system operators training the system to their particular requirements.

If used in conjunction with the Virage DVR (digital video recorder) or another iSAS, you can toggle between applications using the Page Up and Page Down keys.

Click F1 to access this document from the product.
Note  This is a class A product. In a domestic environment it might cause interference, in which case you might be required to take adequate measures.

## Installing iSAS

If you purchased the Virage hardware, iSAS is installed already. If you are installing iSAS on separate hardware, use the following installation procedure.

1. Double-click the `iSASsetup.exe` file.

   ![Welcome to IAS Setup]

   The program will install iSAS Setup on your computer.

   - It is strongly recommended that you exit all Windows programs before running the Setup Program.
   - Click Cancel to quit Setup and close any programs you have running. Click Next to continue with the Setup program.
   - WARNING: This program is protected by copyright law and international treaties. Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.

   ![Next button]

   ![Cancel button]

2. Click Next.
3. Select the installation destination and click **Next**.

4. Choose whether or not to have backup files. If you select **Yes**, choose the backup file location. Click **Next**.
5. Select the Program Manager group for the iSAS icons. You can also create a new group. Click **Next**.

6. Select the number of iSAS systems to install. You can also select from the following options:
   - Install COMMander on the machine
   - Add a batch file to the startup folder

   Click **Next**.
7. Click **Next** to start the installation.

During the installation, software licensing instructions display.
8. Read the instructions and click **OK**. The licensing form displays.

<table>
<thead>
<tr>
<th>Your Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Name:</td>
</tr>
<tr>
<td>Contact Name:</td>
</tr>
<tr>
<td>Address:</td>
</tr>
<tr>
<td>Postcode:</td>
</tr>
<tr>
<td>Telephone:</td>
</tr>
<tr>
<td>Fax:</td>
</tr>
<tr>
<td>E-mail:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>License Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>License Expiry Date:</td>
</tr>
<tr>
<td>Number of Users:</td>
</tr>
<tr>
<td>Hardware Key:</td>
</tr>
</tbody>
</table>

**Please Note:** These license details must be sent to Virage, who will then supply you with a license for the software. The key listed here is the hardware key for your system, not the license key for the software.

```
a2Pc5AmAbXWB3HndJXtc3HXd]
```

9. Fill out the information required in the Your Details section. Click **Mail** to send the license form to Virage.

10. Click **Save** to save the license form.

11. Click **Close** when done.
12. Click Finish.

Setting Up iSAS

The following procedure describes a basic setup for iSAS. See “Using the Dialogs” on page 23 for additional information about the dialog boxes.

1. Load in a configuration. If you are not already logged on, log on. See the Access Control dialog box for more details. The system is provided with a blank configuration. From the right-click menu, select Load Configuration followed by any configuration.

2. Reset iSAS. Click the ENGINEER button. If the lettering on this button is greyed, then your log on does not give you access to this dialog box. See your administrator. From the Engineer dialog, click the Reset iSAS button. For details on this procedure see “Set-up Section” on page 33.

3. Image. While still in the Engineer dialog box, select the camera to be used and set the brightness and contrast. If the default values give a poor image, you can use the Histogram to help set the brightness and contrast to give a well spread intensity histogram (shown on the image). Click OK to exit the engineer dialog.

4. Grab a fixed background. From the right-click menu select Grab Fixed Background. The grabbed background is displayed in the top history window. This is the starting background, used to determine objects within the scene. It is best to perform this when there is little or no
activity within the image. This background image evolves over time to account for changes in light and so on.

5. Analysis Settings. From the right-click menu select Object Track On. When moving something in front of the camera, the object should be highlighted. If this is not the case, from the same menu select 'Analysis Settings'. These settings can be adjusted from the default to suit the particular configuration. See "Analysis Settings" on page 30. When finished, select Object Track Off from the right-click menu.

6. Mask. By clicking the Mask button, you can specify areas of the image to ignore. See "Mask/Save" on page 26 for more details.

7. Set reference objects. Choose two fixed objects within the scene. Select the first in the background and the second in the foreground. Select Set Reference Points from the right-click menu. Name and draw boxes around the two reference objects. Setting these objects enables some camera movement to occur with limited impact upon the system's performance. See Set Reference Points in “Right-Click Menu” on page 24.

If using the traffic light option, select Set Traffic Light Region from the right-click menu and draw the location of the red and green lights.

8. Simulate interesting objects. iSAS needs examples of what it is to detect. This is done in two ways and is explained in “Training Section” on page 35. One way is to use the SIMULATE button to draw examples of objects to be spotted (see “Simulate/Back” on page 27).

9. Start iSAS. Click the START ISAS button to start iSAS looking for objects you specified. You see two colored squares in the bottom left corner of the main dialog. The upper of these changes from red to green when iSAS is started.
Logging On

The logon dialog box is displayed if you click a mouse button or a highlighted button on the main dialog when not logged on.

1. Type in a user name and password to access available features.
2. Click OK.

If you exit the log on dialog box without typing in a valid user name and password, you are returned to the main dialog but are not logged in.
1 Understanding iSAS
Logging On
This chapter describes the user interface for iSAS, and contains the following sections:

- Main Dialog
- Engineering Dialog
- Administrator Dialog

Main Dialog

Use the main dialog to access the general iSAS functionality. The following sections describe the user interface elements of the main dialog box.

Mouse Buttons

Use the mouse buttons to access some features in iSAS.

Left-Click Features

Left-click over objects in the main window to train the system (see “Training Section” on page 35). Left clicking over a suspicious image in one of the three right-hand images automatically displays the alarms dialog (see information on the Alarms button in “User Interface Buttons” on page 26).
Right-Click Menu

An example of the right-click menu is shown within the main dialog in Figure 2-1. This menu is only available if you are logged on and have access.

Figure 2-1  Right-click menu

The possible menu items are described in the following list.

- **Load Configuration.** A configuration must be loaded to run iSAS. If the isas.cfg file is present in the working directory it is loaded automatically and iSAS started (see the START ISAS button in “Start/Stop ISAS” on page 26).

- **Save As.** Saves the current configuration to a name of your choice. This name defaults to the last configuration loaded.

- **Run/Stop AVI file.** Begin or end an AVI file. The system uses images from an AVI instead of a camera (or the reverse). Use the transport controls that appear at the bottom of the
image to control AVI playback. (The controls disappear when AVI playback is stopped.)

These are the controls:

- **Play/Pause AVI.** Play or pause the AVI playback.
- **Rwd/Fwd AVI.** Rewind or fast-forward an AVI file.
- **Stop AVI.** Stop AVI playback and remove the playback controls.

- **Record to AVI File/Stop Recording to AVI.** Starts or stops generating an AVI file (using a name you define) if the system is using live images.
- **Pause/Resume.** Pauses the recording if the system is recording an AVI file.
- **Grab Fixed Background.** Grabs a fixed background from the current image. This is used by iSAS to detect objects.
- **View Background.** Draws the background image for this configuration into the top right-hand window.
- **Analysis Settings.** Displays the Analysis Settings dialog box.
- **Set Reference Points.** Sets reference points by having you choose two fixed objects in the scene. You are asked for a name for the upper of the two objects. Specify the position by holding a left click on the top left-hand corner of the object and dragging the cursor to the bottom right-hand corner, before releasing the left button. Repeat for the lower object. If for any reason the camera is moved, you need to select this option before running iSAS. You are asked to redefine the positions of the reference objects. After doing this, iSAS reconfigures the existing training to fit the new view.
- **View Reference Points.** You can view the existing reference points. This can be used to reset the position of the camera if it has been moved. A right click returns the view to live images.
- **Clear Reference Points.** Clears the existing reference points.
- **Object Track On/Off.** Displays object detection and tracking. This is achieved by comparing the current scene to the current background.
- **Set Traffic Light Regions.** If enabled, specifies regions where a red and green traffic light must be monitored. Define each region by holding a left click on the top left-hand corner of each light and dragging the cursor to the bottom right-hand corner before releasing the left button.
2 Using the Dialogs
Main Dialog

- **Alarm Count.** Can be enabled if running ISAS. A count is started for each alarm of each category. A tooltip on the Reset button indicates the last time the count was reset. You can close and reopen this dialog without resetting the numbers.

**User Interface Buttons**

The following buttons are displayed along the bottom of the main dialog box.

**Engineer**

The Engineer button displays the Engineering dialog box. This button is only active if you are logged on and have engineering access.

**Admin**

The Admin button displays the Access Control dialog box. This button is only active if you are logged on and have administrator access.

**Start/Stop ISAS**

The Start iSAS or Stop iSAS button starts and stops the analysis of images for suspicious behavior of objects. The Start ISAS button is automatically clicked if the isas.cfg file is present in the working directory. When iSAS is running, the upper of the two boxes at the bottom left of the screen is green. If suspicious objects are detected, a red border around the main screen appears. If running an AVI file, you are asked if you want to run iSAS at speed over the images. Select Yes to display alarm events. Select No to view the AVI file in real time. This button is only active if you are logged on and have access.

**Mask/Save**

Use the Mask or Save button to affect an image in iSAS. You can remove certain areas of the image. The mask can operate in one of the following methods.

- By default, all objects in masked areas are ignored.
- Select Mask Alarms in the Engineering dialog to mask only alarm objects within the specified area. Click the Mask button to specify uninteresting areas by left-clicking. Any mistakes can be undone by right-clicking over the masked area. The scale of each mask region can be chosen from the selection of brush sizes above the Mask button. The mask is associated to the current configuration. This ability to mask the image removes false
alarms generated in uninteresting areas of the image. The Mask button is only active if you are logged on and have access.

**Simulate/Back**

Use the Simulate or Back button to train the system with simulated objects. Figure 2-2 shows some simulated training.

**Figure 2-2** Simulating object behavior for training

Use left mouse clicks to define the position, size, and shape of the object. Click **Next** to proceed.

The next left mouse button click specifies the direction and speed the object is traveling in. The distance and position of the mouse cursor relative to the object center changes these two properties, where the length of the line denotes how far the object moves in one second and the arrowhead specifies the direction of motion. For a stationary object, click in the center of
the object. Finally if using color, select a color for the object from a palette. If the iSAS configuration being used does not state position or direction, the simulated object's position or direction is ignored.

The message “Are you simulating a live object?” appears. Select no to use this object as a training object (used to train the system); select yes to use it as a test object (used to help test the training).

If you have simulated an object for training, you can at any time reverse a stage by clicking the Back button. To add this to the training images, perform one more left click anywhere on the main window. The object appears in the top right-hand window unless the center of the simulated object is in a masked area. Click the Alarms button to train iSAS using this image.

If you have simulated a test object, the object will now remain in scene until it generates an alarm or the user selects Back.

Alarms

Clicking the Alarms button displays the most recent alarm if you are logged on and have access. The alarm image is displayed instead of live images. However, if an iSAS alarm is triggered while reviewing, the new alarm image appears in the top of the history windows to the right of the main dialog. The Alarms button displays the number of alarms stored and can only be accessed when at least one alarm is present. The dialog box can also be accessed by left clicking over a suspicious image in one of the three history windows.

The dialog box is shown in Figure 2-3. Each alarm displays the image with the suspicious object highlighted. If the object is highlighted red, this is an alarm. A score is displayed that is equal to or higher than the threshold score for the category. You are also informed of the color of the traffic light, is you are using the lights.

You are always informed of the camera name and category of alarm, and are also informed if a digital input was active and percentage of other objects in the scene if these parameters are being used. The most recent alarms are displayed first.

Select one of the suspicious categories or Unknown or Not Suspicious. Clicking the Set button sets the alarms as one to be used in training iSAS when you click the OK button, and also moves to the next alarm to review. The dialog box starts white and changes to red after an alarm is set. Clicking Unset returns the alarm to its original state. Selecting Unknown leaves the model unchanged. The detection of suspicious images can continue during this process if iSAS is running.
Stop the reviewing process at any time by clicking **OK** or **Cancel**. Clicking **Cancel** leaves the system in its original state. Clicking **OK** uses the **Set** alarms to update iSAS. These alarms are then deleted. If you have trained one alarm as suspicious and one as not suspicious for a category, the system might recommend changing the threshold score to a higher value.

To view the camera name, date, time, and time the object was in the scene, move the cursor over the **Set** button. This data is not used in the training (it is compared to the defined time of day and time in scene masks when iSAS is running). To enhance the image around the suspicious object, click the **Enhance** button. To return to the original image, click **Original**.

To delete all stored alarms, click the **Delete Alarms** button. This deletes all alarms whether or not they have been set.

The maximum number of alarms stored by the system defaults to 500. This can be changed by contacting Virage.

If the traffic light monitoring version of iSAS is being used, the color state of the specified traffic light (red or green) is displayed at the bottom of the alarms dialog box.
Log On/Log Off

Use the Log On or Log Off button to log on or off the main dialog box. If you are logged on, the button displays Log Off. See “Logging On” on page 21 for more information.

Analysis Settings

You can view the analysis settings by selecting Analysis Settings on the right-click menu. The analysis settings are used to optimize the object detection and tracking. Running with Object Tracking on shows the effect of any changes.

The following settings are available:

- **Luminance Threshold.** The intensity level above which the foreground becomes an object. The luminance level is inversely proportional to the number of objects detected (that is, the lower the value, the more objects are detected).

- **Background Update.** The time to elapse before foreground becomes background.

- **Minimum Object Size.** Objects of size below this level are ignored.
2 Using the Dialogs

Engineering Dialog

- **Tolerance.** Use in the tracking of objects. The likelihood of one object being another in the next scene must be below this value for two objects to be linked.

- **Reset Background.** Use when scene activity changes too drastically (such as large illumination changes or lens flare), distracting the scene analysis system from object detection. In this case, a new background image is grabbed. The activity level required before the background is updated is defined as a percentage of the viewable space. A low percentage can cause problems as objects might be grabbed into the background.

- **Remove Shadow/Highlight.** Use to stop shadow and highlight from being detected as objects.

- **Display Options:**
  - **Track Length.** Change this number to increase or decrease the historical trace of the object's path through the scene. Every increment of this value represents 1 second in the object's scene duration. For example, a track length of 4 represents the last 4 seconds of the object's trajectory through the scene. This number is dependant on the current frame-rate in an inversely proportional way, in that with low frame-rates longer track histories are possible (and vice versa for high frame-rates).
  
  - **Track Type.** Scroll through the track display methods to show tracked objects using different representations.

Additional buttons available on the Analysis Settings dialog box are:

- **OK.** Saves the current settings to this configuration.

- **Defaults.** Sets values back to defaults.

---

**Engineering Dialog**

Use the engineering dialog to access engineering functionality. The engineering dialog is shown in Figure 2-4. The following sections describe the features available.
The following features are available in the Image section of the Engineering dialog box.

- **Histogram.** Click this button to display the intensity histogram of each image. Use when setting the brightness and contrast. Click again to remove the histogram from live images.

- **Brightness.** Move this slide bar to set the brightness of a live image (not AVI files).

- **Contrast.** Move this slide bar to set the contrast of a live image (not AVI files).

- **Show FPS.** Check this box to display the current frame-processing rate.

- **Camera.** Click the appropriate option to set the camera input for live images.

- **Camera Name.** Type the camera name and click **Update** to add or change a camera name.
Set-up Section

The following features are available in the Set-up section of the Engineering dialog box.

- **Reset iSAS.** Starts a clean iSAS model. Specify how many categories of suspicious behavior should be identified. When training, categorize each alarm event according to the names given. When iSAS detects an alarm event, the category can be used to determine how this alarm is managed. The more categories specified, the longer it takes to train the system. For each category, specify:

  - The name of the category.
  - The object parameters to be considered. The parameters are described in the following table.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed/Direction</td>
<td>Use if the object to detect is an alarm because of its speed or direction. For example, if to trigger an alarm on all cars moving left but not right, select this parameter.</td>
</tr>
<tr>
<td>Size of other Objects</td>
<td>Use if the object to detect is an alarm because of the size of the other objects in the image. For example, if a person walking near to a platform edge triggers an alarm when there is no train in the station but not when there is, then select this parameter.</td>
</tr>
<tr>
<td>Digital Input</td>
<td>Use if the object to detect is an alarm because of an external trigger. There is a 25-way D female connector on the rear of your iSAS unit that has the systems 3 digital Inputs and 4 digital outputs (see “Alarms” on page 28 for details on digital outputs). These digital inputs are 24VDC differential, that is, the system looks for a change between 0v to 24v or the reverse. It is not polarity dependant. For wiring details see the following list. It is not important which input your 24V source is connected to as long as it is wired correctly and in a safe manner.</td>
</tr>
<tr>
<td></td>
<td>24v Digital input details: female D type pin numbers</td>
</tr>
<tr>
<td></td>
<td>■ Digital I/P 1: +ve 21; -ve 8</td>
</tr>
<tr>
<td></td>
<td>■ Digital I/P 2: +ve 20; -ve 7</td>
</tr>
<tr>
<td></td>
<td>■ Digital I/P 3: +ve 19; -ve 6</td>
</tr>
</tbody>
</table>
A time in scene mask for this category. This is a time in hours, minutes, and seconds before which an object cannot be classified as this category. Use of this mask removes false alarms from transient objects.

A time of day mask for this category. Specify a start and end time for the mask. If the start time is after the end time, then the mask covers the period from the start time to midnight and then midnight to the end time.

At each stage, you can return to the previous dialog box to change part of the setup. After each category has been defined, save the new configuration.

Categories. Click this button to add, delete, and edit categories.

- Click the Add button to specify a new category, such as when clicking Reset iSAS.
- Click Edit to edit the name, time in scene mask, and time of day mask of any category. At each stage, you can return to the previous dialog box to change a response.
- Click Delete to delete a category.

Mask Alarms. If this is selected, the mask set only masks alarm objects (objects are still detected in the mask area). If not selected, no object detection occurs within the mask area.
Training Section

Training requires images of highlighted real objects or simulated objects. These images can be generated either by you or automatically by iSAS. You can generate images by using the Simulate Object option, or by left clicking on the object to be classified. The image (with the object in question highlighted red) is stored for future review.

- **Threshold Score.** The Threshold Score button is available in the Training section of the Engineering dialog box. For each category, the system threshold ranges from 1 to 200. A higher number causes fewer false alarms. Scores are recommended by the system as you train from the alarms.

- **Use Limits.** Check this box to restrict the upper and lower positions of alarm objects to within those of the training data. Virage recommends that you do not use this option until a significant amount of training has occurred.

Alarms Section

The following features are available in the Alarms section of the Engineering dialog box.

- **Actions.** Click The Actions button to display the Category Actions dialog box (see Figure 2-5).
By default for each category, no action is taken when an alarm occurs. To specify desired actions, select the category of alarm and use **Add** or **Remove** to select the desired actions.

- **The Store Image** action is the default action for all categories and stores a single image on the DVR.

- If you select **Start DVR**, you must have an ISAS/DVR system. Set pre-event recording from the DVR.

- If you select **Play WAV File**, you hear a default WAV file played on an alarm if speakers are connected to the ISAS unit.

- **Screen to Front on Alarm**. If this is checked, the application comes into view when an alarm occurs. This is useful for systems combined with another application.

- **Settings**. Clicking this button displays the Action Configuration dialog box (see **Figure 2-6**).
To send email over a LAN connection, enter an email address into the **Email Alert Address** text box in the ISAS_ACTION_SEND_EMAIL section.

For email sent over a dedicated dial-out telephone line, enter the Internet Service Provider details as well as the email address. These details should be entered into the ISAS_ACTION_DIALOUT_SEND_EMAIL section. Enter the telephone number, user name, and password that have been provided by their preferred Internet Service Provider.

In both cases, specify valid SMTP server account details so that the email is relayed to the correct destination. This SMTP server might be the default provided by your preferred Internet Service Provider, or it might belong to your company.
2 Using the Dialogs
Administrator Dialog

Note Internet Service Provider accounts and SMTP server accounts must be maintained by you, and are not provided by Virage.

- When starting the DVR from iSAS, specify how many subsequent frames should be captured, and the interval between these frames (for pre-event recording, see the Virage DVR Operator Guide).

- **Audio duration (ms)**. Sets the duration of audio alarms. The minimum value is 100ms.

- **Digital out duration (ms)**. Sets the duration of digital output alarms. A digital output (1 of 4) can be selected as an alarm action. All iSAS units have 4 relay outputs. These outputs are found on 25-way female D-type connectors on the rear system panels.

<table>
<thead>
<tr>
<th>Description</th>
<th>Pin Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>O/P normally open 0</td>
<td>22</td>
</tr>
<tr>
<td>O/P common 0</td>
<td>10</td>
</tr>
<tr>
<td>O/P normally open 1</td>
<td>23</td>
</tr>
<tr>
<td>O/P common 1</td>
<td>11</td>
</tr>
<tr>
<td>O/P normally open 2</td>
<td>24</td>
</tr>
<tr>
<td>O/P common 2</td>
<td>12</td>
</tr>
<tr>
<td>O/P normally open 3</td>
<td>25</td>
</tr>
<tr>
<td>O/P common 3</td>
<td>13</td>
</tr>
</tbody>
</table>

Administrator Dialog

Use the Access Control dialog to control what each category of user is authorized to view. For each category of user (user, administrator, and engineer), a check box is available for the following functionality:

- Engineer

- Admin (access to this dialog is available only to the Administrator, and is not editable)

- Start ISAS
2. Using the Dialogs

Administrator Dialog

- Mask
- Alarms
- Right-click (mouse button) menu

**Figure 2-7** Administrator access dialog

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Engineer</th>
<th>Admin</th>
<th>Start ISAS</th>
<th>Mask</th>
<th>Alarms</th>
<th>R Click</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineer</td>
<td>✔</td>
<td>☐</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Administrator</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>User</td>
<td>✔</td>
<td>☐</td>
<td>✔</td>
<td>☐</td>
<td>✔</td>
<td>☐</td>
</tr>
</tbody>
</table>

1. Select the functionality for each user type to access.
2. Click **OK** to set the accessibility.

**Setting Passwords**

1. Click the **Passwords** button in the Access Control dialog box to display the Set Password dialog box. You can set the password access for users, administrators, and engineers.
2. Enter the old and new passwords.

3. Click **OK**.
3 Troubleshooting iSAS

As well as generating on screen messages, warnings, and errors, iSAS generates a log file. The log file can be found in the C: directory and is named ISASLog.txt. Use the log file to find events that have occurred during operation, as well as any generated warning and error messages.

The following list describes some possible problems and how to solve them.

- **Not detecting objects or bad detection of objects.**
  - Check that the background is correct (select View Background from the right-click menu).
  - Check in Analysis Settings to see if the Luminance Threshold is too high or low.
  - Check if the Background Update is too low (so stationary objects are not considered as objects).
  - Check if the Minimum Object Size is too high and objects are ignored.
  - Check if a mask is obscuring object detection.

- **Alarms are not being triggered.**
  - Check that iSAS is running. If the upper of the two boxes in the bottom left of the screen is red, then iSAS is not running. Click Start ISAS.
  - Check that the system has been trained. ISAS needs to have been shown some suspicious objects of each category. If the alarms are still not being triggered, try increasing the sensitivity value for the particular category.
3 Troubleshooting iSAS

- **Too many false alarms.**
  - When the system is trained, you might find an increasing level of false alarms. Increase the threshold score to compensate.
  - Remove false alarms generated by transient objects by using a time in scene mask (see Categories in “Set-up Section” on page 33).

- **Alarm events are not being sent to the Virage DVR.**
  Select **Send Alarms** in the Engineer dialog, and ensure that a connection was made. If the lower of the two boxes in the bottom left of the screen is red, then no connection has been made. The category should have an associated Store Image action.

- **Wrong traffic light color detected.**
  Ensure that the traffic light regions have been defined, and that the region boxes enclose as little of anything that is not part of the light as possible.
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