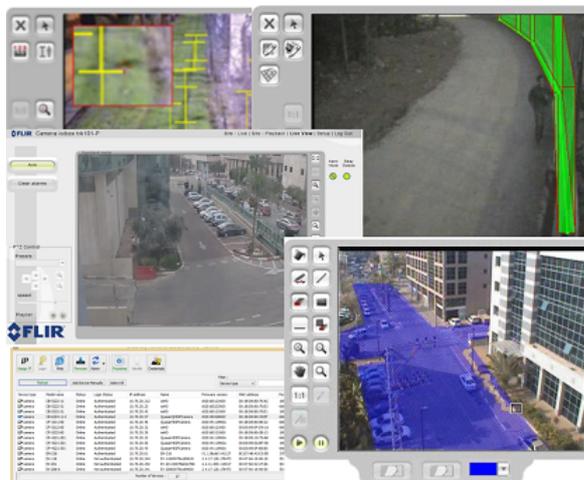


ioi

# User Guide

## HTML Edition Units



---

© 2016 FLIR Systems, Inc. All rights reserved worldwide. No parts of this manual, in whole or in part, may be copied, photocopied, translated, or transmitted to any electronic medium or machine readable form without the prior written permission of FLIR Systems, Inc.

Names and marks appearing on the products herein are either registered trademarks or trademarks of FLIR Systems, Inc. and/or its subsidiaries. All other trademarks, trade names, or company names referenced herein are used for identification only and are the property of their respective owners. This product is protected by patents, design patents, patents pending, or design patents pending. The contents of this document are subject to change.

FLIR Systems, Inc.  
6769 Hollister Avenue  
Goleta, California 93117  
USA  
Phone: 888.747.FLIR (888.747.3547)  
International: +1.805.964.9797

For technical assistance, please call us at +1.888.388.3577 or visit the Service & Support page at [www.flir.com/security](http://www.flir.com/security).

Important Instructions and Notices to the User:

Modification of this device without the express authorization of FLIR Commercial Systems, Inc. may void the user's authority under FCC rules to operate this device.

---

### Proper Disposal of Electrical and Electronic Equipment (EEE)



The European Union (EU) has enacted Waste Electrical and Electronic Equipment Directive 2012/19/EU (WEEE), which aims to prevent EEE waste from arising; to encourage reuse, recycling, and recovery of EEE waste; and to promote environmental responsibility.

In accordance with these regulations, all EEE products labeled with the “crossed out wheeled bin” either on the product itself or in the product literature must not be disposed of in regular rubbish bins, mixed with regular household or other commercial waste, or by other regular municipal waste collection means. Instead, and in order to prevent possible harm to the environment or human health, all EEE products (including any cables that came with the product) should be responsibly discarded or recycled.

To identify a responsible disposal method nearby, please contact the local waste collection or recycling service, the original place of purchase or product supplier, or the responsible government authority in the area. Business users should contact their supplier or refer to their purchase contract.

### Document History

Version	Date	Comment
Ver.1	November 7, 2016	Initial FLIR release



---

# Table of Contents

<b>1. Document Scope and Purpose</b> .....	<b>1</b>
<b>2. Introduction</b> .....	<b>3</b>
<b>3. Accessing the Unit</b> .....	<b>5</b>
<b>4. Quick Tour of the Web Interface</b> .....	<b>7</b>
4.1 Live View Workspace Overview .....	7
4.1.1 Command Buttons .....	9
4.1.2 PTZ Controller Panel .....	9
4.1.3 Viewing Toolbar .....	10
4.2 Setup Workspace Overview .....	10
<b>5. Configuring the Unit</b> .....	<b>13</b>
5.1 Configuring System Settings .....	13
5.1.1 Viewing Unit Information .....	14
5.1.2 Viewing Firmware Information and Upgrading the Unit .....	22
5.1.3 Updating the Unit Firmware .....	23
5.1.4 Configuring User Accounts .....	24
5.1.5 Configuring the Date and Time .....	28
5.1.6 Configuring Discrete Input/Output Resources .....	31
5.1.7 Copying Settings to Other Units .....	37
5.1.8 Backing Up and Restoring Unit Settings .....	39
5.2 Configuring Network Settings .....	43
5.2.1 Changing Unit's IP Addresses from the Web Interface .....	43
5.2.2 Using DNA for Initial IP Configuration of Connected Devices .....	46
5.2.3 Defining Multicast Settings .....	48
5.2.4 Defining SMTP Notifications .....	49
5.2.5 Setting the RTP Length (MTU) for Encrypted Networks .....	51
5.3 Configuring Camera Settings .....	51
5.3.1 Defining the Camera Type and Model .....	52
5.3.2 Configuring On-Screen Display Settings .....	74
5.3.3 Configuring Streaming Settings .....	79
5.3.4 Aligning the Camera Position .....	83
5.3.5 Using Storage on the Edge (SoE) .....	84
5.3.6 Tips for Camera Configuration .....	89
5.4 Configuring Analytics .....	94
5.4.1 Solo Setup .....	95
5.4.2 Manually Defining the Depth (Perspective) of the Monitored Scene .....	99

# Table of Contents

5.4.3	Automatic Depth Calibration .....	118
5.4.4	Configuring Detection Rules .....	122
5.5	Configuring Advanced Analytic Settings .....	159
5.6	Configuring the Event Engine .....	159
5.6.1	Defining Automatic Responses .....	161
5.6.2	Configuring Scheduled Actions .....	162
5.7	Operating with FLIR Cameras .....	171
5.7.1	Binding a FLIR Camera to the trk-101 .....	172
5.7.2	Binding a PTZ Camera to the trk-101-P .....	175
<b>6.</b>	<b>Monitoring Real-Time Video .....</b>	<b>179</b>
6.1	Monitoring Live Video .....	179
6.1.1	Viewing Alarm Notifications .....	181
6.1.2	Tracking Detected Objects .....	182
6.1.3	Using the PTZ Controls .....	183
6.1.4	Arming and Disarming a Camera .....	183
6.1.5	Clearing Camera Alarms .....	184
6.1.6	Capturing the Video Image .....	184
6.2	Monitoring Discrete Input/Output Resources .....	184
6.3	Accessing a Remote Unit over the Web (Port Forwarding) .....	186
6.4	Monitoring and Controlling Remote Sites with Site Viewer .....	187
6.4.1	Visual Alarm Indication on Site Viewer .....	188
6.4.2	To Log into Site Viewer .....	188
6.4.3	To Activate I/Os .....	191
6.4.4	To Control a PTZ Camera .....	192
6.4.5	To Playback a Clip .....	193
6.4.6	To Install the VLC Player .....	195
6.4.7	To Export a Clip .....	196
<b>7.</b>	<b>Appendix .....</b>	<b>197</b>
7.1	Network Settings .....	197
7.2	Enabling Cookie Settings .....	197
7.3	Configuring ActiveX Security Settings .....	201
7.4	Resolving ActiveX Version Conflicts .....	203
7.5	Using ioi Units with Windows Firewall Turned On .....	205

# 1 Document Scope and Purpose

The purpose of this document is to provide instructions for configuring:

- System, network, camera, analytic, and event settings for legacy ioi HTML Edition trk-101 and trk-101-P encoders
- Analytics and events on ioi HD cameras

This document contains the following notifications:



A **Note** is useful information to prevent problems, help with successful installation, or to provide additional understanding of the products and installation.

*Une **Remarque** est une information utile permettant d'éviter certains problèmes, d'effectuer une installation correcte ou de mieux comprendre les produits et l'installation.*



A **Tip** is information and best practices that are useful or provide some benefit for installation and use of FLIR products.

*Un **Conseil** correspond à une information et aux bonnes pratiques utiles ou apportant un avantage supplémentaire pour l'installation et l'utilisation des produits FLIR.*



A **Warning** is a precautionary message that indicates a procedure or condition where there are potential hazards of personal injury or death.

***Avertissement** est un message préventif indiquant qu'une procédure ou condition présente un risque potentiel de blessure ou de mort.*



A **Caution** is a precautionary message that indicates a procedure or condition where there are potential hazards of permanent damage to the equipment and or loss of data.

***Attention** est un message préventif indiquant qu'une procédure ou condition présente un risque potentiel de dommages permanents pour l'équipement et/ou de perte de données.*



## 2 Introduction

This User Guide explains how trk-101 and trk-101-P encoders add video analytics capabilities to standard stationary and PTZ (Pan/Tilt/Zoom) surveillance cameras, turning them into powerful real-time active detectors. It also provides detailed instructions how to configure analytics and events for ioi HD cameras. A detailed description ioi HD system, network, and camera configuration can be found in the User and Installation Guide for each ioi HD camera.

**Note:**

The user interface for the ioi HD cameras differs slightly from the HTML Edition units, although the functionality is the same. A detailed description of the ioi HD system, network, and camera configuration can be found in the User and Installation Guide for each ioi HD camera.

Support for ioi encoders to operate with FLIR cameras is being added on an ongoing basis. Check with your sales representative or FLIR support for the current listed of supported cameras. We recommend reviewing Release Notes as they are issued to see the latest features and functions.

### **Analytics**

Operators can define rules, perimeter lines, sterile zones and other criteria for intrusion detection. As the camera monitors a scene, it automatically detects the occurrence of specific events, such as region entrance, fence trespassing, and tripwire crossover which trigger an automatic notification. Users can define the events and location in the video of the image that can be detected with user-customizable rules and positioning criteria.

All ioi units analyze the connected or captured video input. The analysis enables alarms to be raised when a detection rule is met, for example, when people, vehicles and objects cross a perimeter or enter a pre-defined region. Objects left behind or removed from a scene can also be detected. You can define and customize the detection rules that trigger alarms.

For sites with PTZ cameras, once a moving object has been detected, the object can be tracked autonomously, since the encoder controls and moves the PTZ camera to track and zoom in on the threat.

### **IP streaming or analog video output**

In addition to their analytic capabilities, the encoders enable connectivity to a legacy CCTV network via an analog output or connectivity to an IP-based network via a standards-compliant, compressed H.264/MJPEG IP streaming video output. On-screen overlays indicate where the detection has occurred on the video output.

### **Web configuration**

All units can be configured via a standard web browser (32-bit Internet Explorer 9 or above), which takes less than five minutes to setup. Additional configuration options for multiple units on the network are offered using FLIR's Discovery Network Assistant (DNA) utility.

## Supported operating systems

ioi encoders support the Windows 7, 8, 8.1, and 10 operating systems.



**Note:**

The Windows 10 default browser is Edge, which the encoder does not support. When using Windows 10 with your encoder, you must select Internet Explorer as the browser.

## 3 Accessing the Unit

Each unit supports one video channel and has its own dedicated IP address and built-in HTTP web server.



### Note:

Use the Discovery Network Assistant (DNA) utility to find or change the unit's IP address.



### Tip:

The IP address is shown momentarily on the analog video output upon unit start-up. If you do not know the IP address you want to access, connect a video monitor to the analog video-out of the unit in order to display the IP address.

Before trying to access the unit, make sure the unit is turned on and properly connected to the network. See the unit's installation manual for details.

To view or configure a unit, enter the unit's IP address as a URL (for example, `http://198.160.123.115`) in the address bar of your browser (32-bit Internet Explorer 9 or above.) Then login according to the instructions below.

### To log into a unit

1. Open your web browser (IE 9 or higher).
2. Enter the IP address of the unit (for example, `http://198.160.123.115`) as the URL in the browser address bar.
3. Click **Go** or **Enter**. The **Login** dialog box is displayed:

*Login Dialog Box*

4. Enter your user name and password in the *Login name* and *Password* fields, respectively. The default user name is "admin" and the default password is "admin".
5. If you want the password to be automatically inserted when you login on this computer, select *Remember my password on this computer*.
6. From the *Language* drop-down list, select the language to be used for the user interface.

7. If you want to log in as a guest with minimum privileges, select the *Login as guest* checkbox. The login name and password are automatically entered in their respective fields.
8. Click **Login**. The unit's HTML interface opens.

The following is an example of the **Live View** screen that opens when you first login. If the unit is configured with a PTZ camera, the PTZ controls are shown at the bottom left of the screen. For a description of the PTZ controls, see [Live View Workspace Overview](#).



*Live View Screen*

If the unit is configured with a PTZ camera, the PTZ controls are shown at the bottom left of the screen. For a description of the PTZ controls, see [Live View Workspace Overview](#).

After logging in, from the Mode menu click **Site-Live**, **Site-Playback**, **Live View**, or **Setup**.



**Note:**

Depending on your user account privileges, certain features in the unit's web interface may not be enabled.

## 4 Quick Tour of the Web Interface

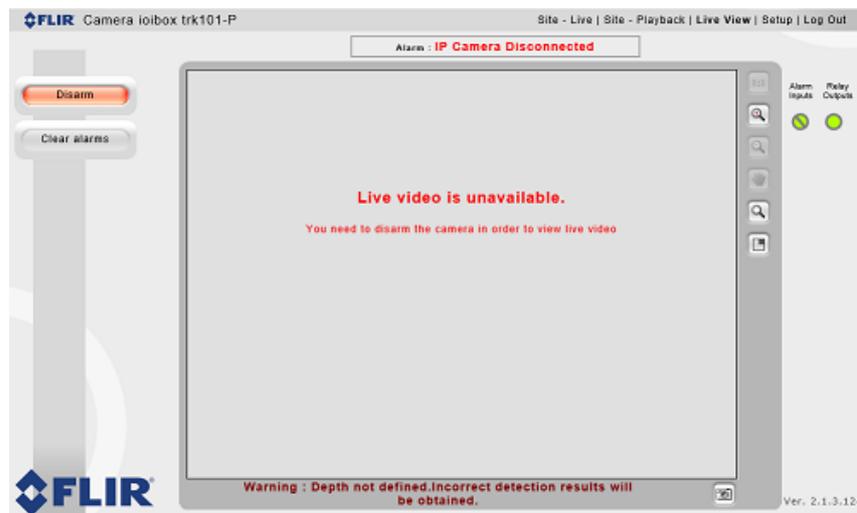
This chapter provides a quick tour of the unit's interface. The workspace is the HTML page that is displayed when you access the unit. There are four workspaces selectable from the Mode menu:

- The [Live View](#) workspace is used primarily for real-time monitoring functions.
- The [Setup](#) workspace is primarily used for configuring and maintaining the unit. The Setup workspace is only available if you are logged in as a user with adequate privileges. Users with permission to view live and recorded video are known as "privileged users".
- The [Site-Live](#) workspace is used for monitoring live video on a remote unit via Site Viewer. A User can view only the camera(s) for which he has privileges in the Site-Live workspace.
- The [Site-Playback](#) workspace is used for playing back clips recorded on a remote unit via Site Viewer. A User can view only the camera(s) for which he has privileges in the Site-Playback workspace.

### 4.1 Live View Workspace Overview

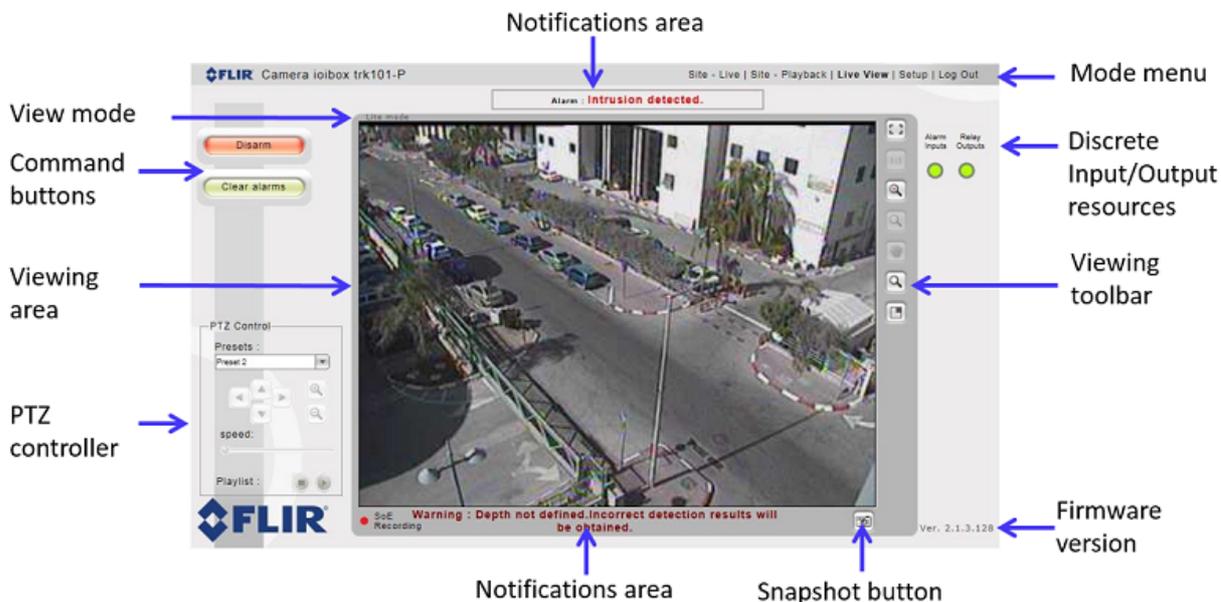
According to the user privileges, the **Live View** screen (workspace) enables you to perform real-time surveillance monitoring, such as viewing the real-time video image. The **Live View** screen also enables you to arm (enable the analysis of the video using active detection rules) and disarm (disable detection) the unit, to view and clear alarms, and to take a snapshot.

In order to view live video, you must disarm the camera by clicking the **Disarm** button.



*Armed Live View Screen*

The following is an example of the **Live View** screen (workspace) of an armed unit connected to a PTZ camera.



Live View Screen with Connected PTZ Camera

The following table describes the components of the **Live View** screen (workspace):

Label	Description
Notifications area	Message area in which current detection status (active alarm or video signal status) is displayed.
View mode	Displays the mode in which the Live Video is displayed: Standard mode (TCP/UDP/RTP) or Lite mode (HTTP). Lite mode is recommended for use if the video is blocked by anti-virus software or a firewall.
Command buttons	Enable you to arm and disarm the unit (turn video analytics on or off) and to clear alarms. See <a href="#">Command Buttons</a> .
Viewing Area	Video viewing area. Video is displayed only when the unit is set to NVR mode in the <a href="#">Unit Information</a> screen
PTZ controller	On PTZ cameras only, the buttons for controlling the PTZ camera. See <a href="#">PTZ Controller Panel</a> .
Mode menu	Tabs for selecting workspaces and for logging out.
Discrete Input/Output resources	Buttons that indicate the status of alarm inputs and relay outputs. The buttons also enable users with administrator privileges to arm/disarm alarm inputs and switch relay outputs on or off.
Viewing toolbar	Toolbar buttons that can be used while viewing video. See <a href="#">Viewing Toolbar</a> .
Firmware version	Displays the loaded firmware version.
Snapshot button	Enables you to take a snapshot.

### 4.1.1 Command Buttons

The command buttons include the following functions.

Button	Description
Arm/Disarm	Arms or disarms the active rules enabling or disabling video analysis and detection on the camera.
Clear alarms	Clears the detection or video signal alarm status on the camera.
	Snapshot icon enables saving the current video window as a jpeg image file.

### 4.1.2 PTZ Controller Panel

The PTZ controller panel is displayed only when a PTZ camera is configured as the camera type connected to the unit. It enables you to mechanically control the PTZ camera's movements. See [Defining a PTZ Camera on trk-101-P](#). The following table describes the settings and features of the PTZ controller panel:

Buttons	Description
	Presets: Lists for selecting an existing preset location ( <i>Preset</i> ) for display in the video viewing area.
	Pan Left: Rotates the PTZ camera to the left.
	Pan Right: Rotates the PTZ camera to the right.
	Tilt Up: Tilts the PTZ camera upwards.
	Tilt Down: Tilts the PTZ camera downwards.
	Zoom In: Increases the optical magnification in the <i>Viewing</i> area.
	Zoom Out: Decreases the optical magnification in the <i>Viewing</i> area.
	Speed: Determines the speed at which the camera controls move the camera when panning, tilting or zooming.
	Stop Playlist: Stops a running playlist of selected presets and marks it for returning to the first playlist preset when the playlist play button is selected.
	Play Playlist: Activates (runs) the playlist of selected presets.
	Pause Playlist: Pauses the playlist sequence and remains on the last playlist preset. When play is selected, the playlist continues from the last preset of the playlist visited.

### 4.1.3 Viewing Toolbar

The *Live View* toolbar enables you to control the digital magnification of the displayed video. The following table describes the buttons in the *Viewing* toolbar:

Icon	Description
	Full View tool. Returns the view from a magnified view to a non-magnified view.
	Zoom-in tool. Clicking the button magnifies the view in the <i>Viewing</i> area.
	Zoom-out tool. Clicking the button reduces the magnification in the <i>Viewing</i> area.
	Pan tool. Enables you to move the magnified view in the <i>Viewing</i> area. The <i>Viewing</i> area must be in a magnified state in order to use this tool.
	Magnifying glass tool. Selects an area to magnify and fit to the <i>Viewing</i> area (digital zoom).
	Close-up View button. Clicking the button opens a window that provides a close-up of a section of the view and moves as you move the mouse. Click the button to close the window.

## 4.2 Setup Workspace Overview

The **Setup** screen (workspace) is used to configure the unit. It is only available to authorized users. See [Configuring the Unit](#).

The **Setup** workspace enables you to configure, manage, and maintain the unit. Entering the **Setup** workspace automatically disarms the unit during configuration. You can rearm the unit from the **Live View** screen (workspace). Detection occurs only when the camera is rearmed.

Following is an example of the **Depth** screen, showing the tabs and buttons used for initial configuration of the camera:



Depth Screen with Callouts



**Note:**

The **Setup** screen may differ from the one shown above according to the functionality supported by your unit.

The following table describes the **Setup** screen (workspace):

Label	Description
Configuration area	Area in which you can view and change the configuration parameters according to the specific settings page.
Display toolbar	Tools buttons used during selected configuration processes. For example, defining the location and position of fences, defining tripwires and so on.
Display window	Viewing area used during some of the configuration processes. If video is not required during configuration, it becomes part of the Configuration area.
Mode menu	Tabs for selecting workspaces and for logging out.
Solo Setup keypad control buttons	Buttons that control the recording and storage of clips used for setting presets during setup.
Apply settings	Button for saving changes made to the configuration in the current displayed tab only.
Configuration menu	Enables you to access the configuration screens for defining the setup and viewing parameter or rule definitions.
Configuration tabs	Enables you to select the required configuration option.



**Caution:**

Before moving between configuration options, make sure that you save your changes by clicking the **Apply** button. Otherwise, your changes will be lost.

## 5 Configuring the Unit

This chapter deals primarily with how to configure the ioi HTML Edition encoder after you have successfully logged in to the unit. See [Accessing the Unit](#).

Configuration topics are selected by using the *Configuration* menu of the **Setup** screen (workspace). See Figure: [Depth Screen with Callouts](#).

The following buttons are provided for configuration:

- [System](#): Defines the system settings comprising the firmware, date and time, backup and restore, user accounts settings, discrete I/O resources and the remote setup option.
- [Network](#): Defines the network and streaming settings.
- [Camera](#): Defines the settings for the camera connected to a TRK encoder.
- [Analytics](#): Defines the monitored scene perspective (depth) and detection rules settings.
- [Events](#): Defines automatic responses to pre-defined events and/or scheduled actions.



### Note:

After completing the configuration in any screen, you must click the **Apply** button. Otherwise, your configuration changes for that screen will be lost.

### 5.1 Configuring System Settings

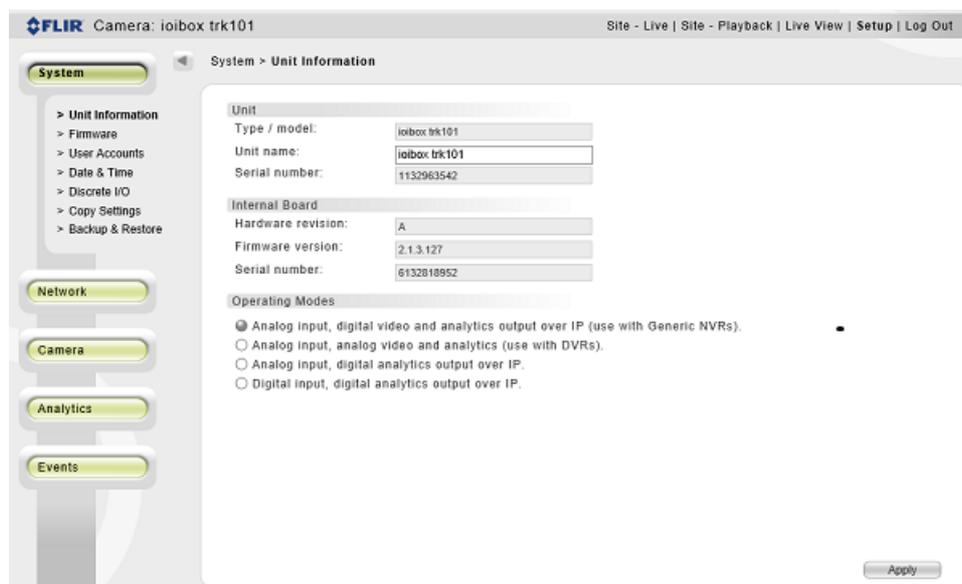
The *System* button on the sidebar includes the following tabs for system configuration:

- [Unit Information](#): Enables you to create a name for the unit and displays the unit type/model, name, serial number, hardware revision, firmware version and serial number. In addition, it enables you to select the Operating Mode. See [Setting Operating Modes](#).
- [Firmware](#): Displays the current firmware version and enables you to select and upgrade to a different firmware version.
- [User Accounts](#): Enables you to define users and their privileges.
- [Date & Time](#): Enables you to define the unit date and time, as well as the method by which you synchronize the date and time.
- [Discrete I/O](#): Enables you to configure the input and output resources to receive alarms from external devices (alarm input settings), as well as to provide a relay signal to control external devices (output control settings).
- [Copy Settings](#): Enables you to copy specific settings of the current unit to different units all at once.
- [Backup & Restore](#): Enables you to perform a backup or restore the settings.

## 5.1.1 Viewing Unit Information

The **Unit Information** screen displays the unit hardware and firmware information and enables you to select the unit's Operating Mode.

Following is an illustration of the **Unit Information** screen:



*Unit Information Screen*

The following fields and button are displayed in the *Unit* and *Internal Board* sections of the **Unit information** screen:

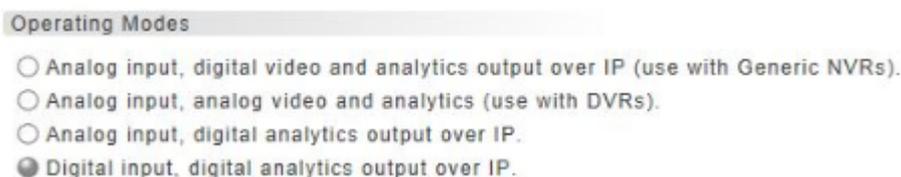
Field Name	Description
Type/model	ioi product family and model.
Unit name	Custom unit name as given by the user (editable).
Serial number	Serial number of the unit.
Hardware revision	Revision of the unit hardware.
Firmware version	Version of the ioi firmware that is installed on the unit.
Serial number	Serial number of the internal board.
Apply	Saves the new settings to the unit.

### To change the unit name

1. In the **Setup** workspace, select **System > Firmware**. The **Firmware** screen is displayed. See figure above.
2. Modify the *Name* field as required.
3. Click **Apply**. Your change is saved.

### 5.1.1.1 Setting Operating Modes

The *Operating Modes* section of the **Unit Information** screen enables you to configure the unit's operating mode according to the type of input connection (IP or analog).



Following is a summary of each mode:

Operating Mode	Input	Output	Comment
Analog video ( <a href="#">NVR mode</a> )	Analog video in.	Digital video stream with embedded digital analytics (metadata) over IP out.	For use with NVR (default mode)
Analog video ( <a href="#">DVR mode</a> )	Analog video in.	Analog video with embedded metadata out.	For use with DVR
Analog video ( <a href="#">HD Analytic Analog mode</a> )	Analog video in.	Digital analytics (metadata) out over IP.	For use with Latitude.
Digital video ( <a href="#">HD Analytic Decoder mode</a> )	Digital video in.	Digital analytics (metadata) out over IP	For use with Latitude. Works with Quasar and other cameras.

trk-101 and trk-101-P deliver metadata over IP when the unit is configured in HD Analytic Analog Mode and HD Analytic Decoder mode.

- HD Analytic Analog Mode — When the encoder is configured in HD Analytic Analog mode and is connected locally to a camera's analog video output, the encoder sends metadata over IP to Latitude, which embeds the metadata over the video which Latitude receives from the camera over IP.
- HD Analytic Decoder Mode — When the encoder is configured in HD Analytic Decoder mode and receives encoded video over IP from the secondary stream of selected cameras. The encoder then sends metadata over IP to Latitude, which it embeds over the primary video stream received over IP from the camera. Decoder mode supports selected cameras.

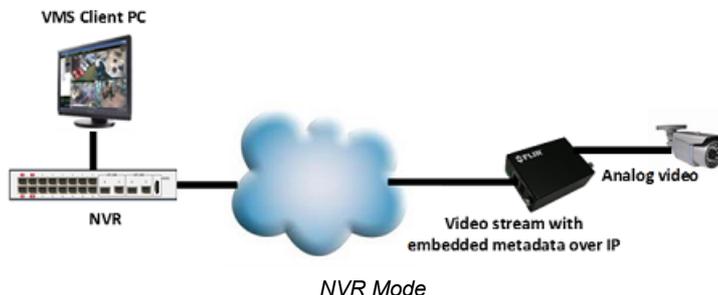
The following table summarizes the pros and cons of using the HD Analog and Decoder modes:

Operating Mode	Pros	Cons
HD Analytic Analog	<ul style="list-style-type: none"> <li>• For use with raw video</li> <li>• Offers better detection quality</li> <li>• View smaller objects at a greater distance</li> <li>• Supports all HD cameras with analog output (requires setting the same FOV on the camera's encoded video and on the camera's analog output)</li> </ul>	<ul style="list-style-type: none"> <li>• Requires physical cable connection</li> <li>• Cat 5 and RG-59/U coax cable distance is limited to 330' (100m) for HD video</li> <li>• Installation is more difficult and expensive</li> </ul>
HD Analytic Decoder	<ul style="list-style-type: none"> <li>• No cabling required</li> <li>• Easy, lower cost installation</li> </ul>	<ul style="list-style-type: none"> <li>• If there are network problems, decoded image quality decreases and there may be misdetections</li> <li>• Normal detection distance</li> </ul>

### 5.1.1.1.1 NVR Mode

#### Analog input, digital video and analytics output over IP (NVR mode)

The trk-101/101-P receives analog video from any camera that provides analog video. It sends a video stream with embedded metadata over IP to Latitude or any other VMS. This is the default mode.



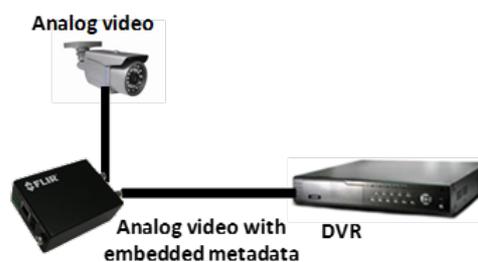
**Note:**

You must select NVR mode if you want to monitor live video when the unit is armed.

### 5.1.1.1.2 DVR Mode

#### Analog input, video and analytics output over analog (DVR mode)

The trk-101/101-P receives analog video from any camera that provides analog video. It outputs the video with embedded metadata on an analog connection that can be attached to a DVR.



*DVR Mode*



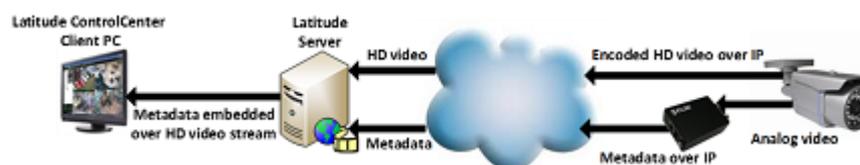
#### Note:

In this mode, encoding and video streaming are disabled if the unit is armed.

### 5.1.1.1.3 HD Analytic Analog Mode

#### Analog input, digital analytics output over IP (HD Analytic Analog mode)

In this mode, when working with Latitude, an IP camera connects via its analog port to trk-101/101-P, which sends metadata over IP to Latitude. The camera sends encoded video over IP to Latitude, which embeds the metadata over the video on the encoded video stream for use in Latitude.



*HD Analytic Analog Mode*

HD Analytic Analog mode is designed for use with raw video. It has the advantage of working with all HD cameras that have an analog output. It offers better detection quality and enables viewing smaller objects at a greater distance.

Disadvantages of this mode are that it requires physical cable connection, which can result in installation being more difficult and expensive. Furthermore, Ethernet and 75-ohm RG-59/U coax cable distance is limited to 330' (100m) for HD video.

This mode is configured on the trk-101/101-P from the Latitude GUI. It does not need to be configured from the unit's **Setup > System > Unit Information** page. Refer to the [HD Analytics Quick Configuration Guide](#) for information how to implement this setting on Latitude.



**Note:**

In HD Analytic Analog mode, encoding and video streaming on trk-101/101-P are disabled if the unit is armed.

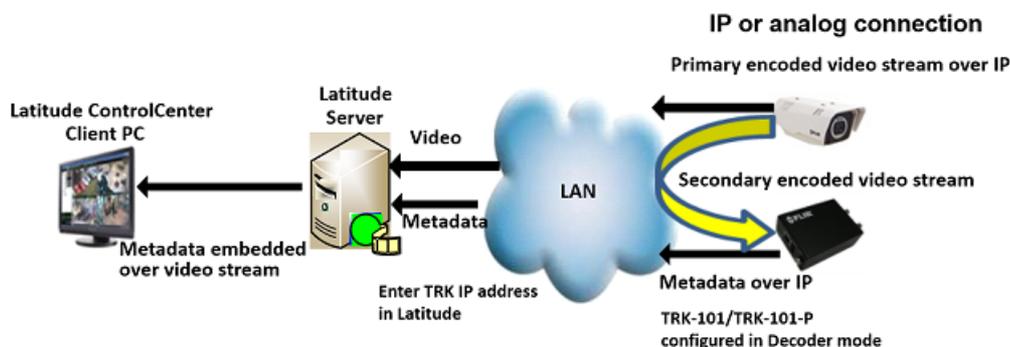
**5.1.1.1.4 HD Analytic Decoder Mode**

**Digital input, digital analytics output over IP (HD Analytic Decoder mode)**

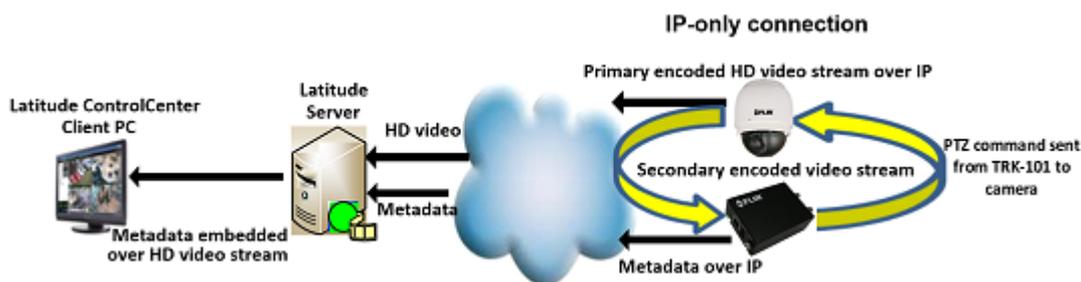
The trk-101/101-P acts as a decoder when armed and configured in this mode. Decoder mode supports the following cameras:

- FLIR F-Series, FC-Series, and TCX cameras
- Quasar CP-4221-30x, CF-3211, CM-3211, CF-4221, CM-4221, CM-4321, CF-4251, and CM-4251
- Axis
- Sony
- Bosch

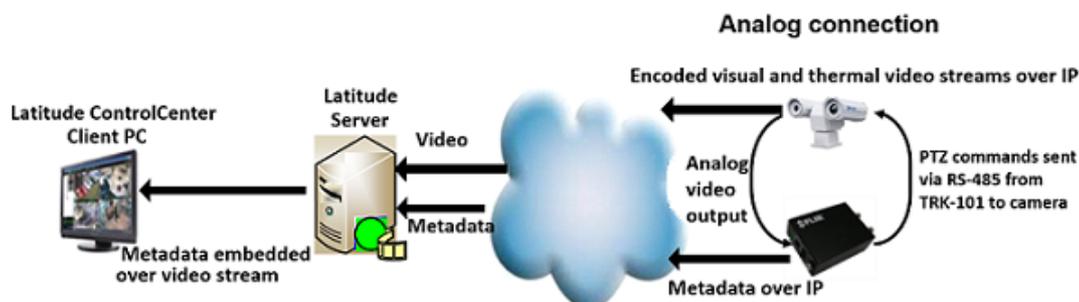
The camera sends encoded video via RTSP to Latitude and to the encoder, which receives encoded video from the camera's secondary stream. The encoder performs analytics on the stream and sends the metadata to Latitude, which embeds the metadata over the video it receives directly from the camera.



*HD Analytic Decoder Mode with Fixed Camera-IP or Analog Connection*



*HD Analytic Decoder Mode with PTZ Camera-IP Connection*



*HD Analytic Decoder Mode with PTZ Camera-Analog Connection*

HD Analytic Decoder mode has the advantage of not requiring any cabling, since all communication is over the Internet. The benefit is easy, lower cost installation.

Disadvantages of this mode are:

- If there are network problems, decoded image quality decreases and there may be misdetections
- This mode does not enable viewing small objects from a greater distance

HD Analytic Decoder mode is configured on the unit from the Latitude GUI. It does not need to be configured from **Setup > System > Unit Information** page. Refer to the [HD Analytics on Latitude Installation Guide](#) for information how to implement this setting on Latitude.



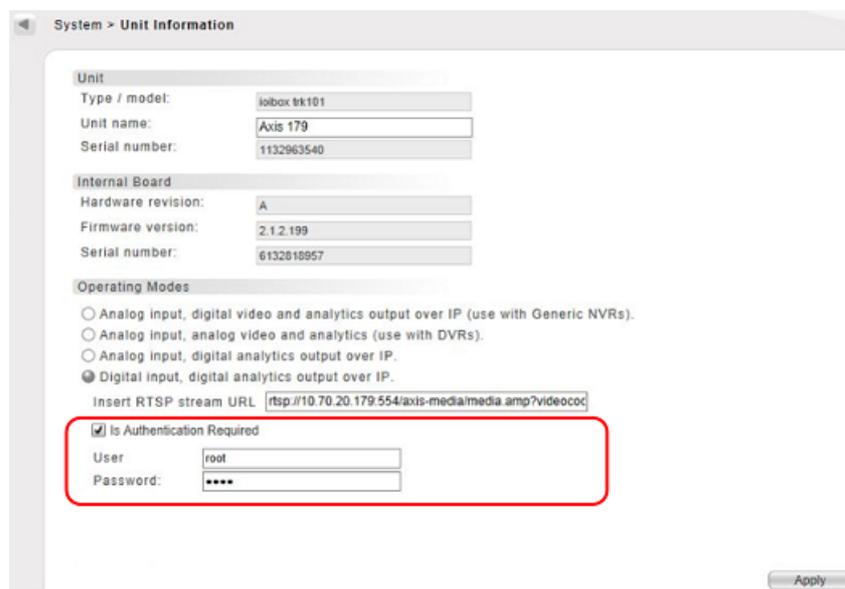
**Note:**

1. In HD Analytic Decoder mode, encoding and video streaming on the encoder are disabled if the unit is armed. If the unit is disarmed, the video stream from the camera passes through the trk-101/101-P directly to the client.
2. The only PTZ camera that supports HD Analytic Decoder mode is the Quasar CP-4221-30x.

#### 5.1.1.1.4.1 Support for RTSP Authentication

When selecting HD Analytic Decoder mode (digital input and digital analytics output over IP) from the **System > User Information** screen, it is possible to enable support for RTSP authentication in order to secure the access to a video on the device.

The video stream of the camera is viewed on the TRK unit via an RTSP connection. Each supported camera has its own syntax for the URL that attaches it to the RTSP server. The URL is entered in the trk-101/trk-101-P **System > Unit Information** screen.



System > Unit Information Screen

#### 5.1.1.1.4.2 RTSP URLs for Supported Cameras

Axis cameras are authenticated by default. Other cameras can be configured for authentication as well. FLIR will continue to support non-authenticated cameras while adding this support for authenticated cameras.

The syntax for each supported camera follows. For “<ip>”, enter the camera’s IP address.

#### FLIR F-Series and FC-Series (ID, R, and S)

rtsp://<ip>/ch0

#### FLIR TCX

rtsp://<ip>/cam/realmonitor?channel=1&subtype=1&proto=Onvif

#### Quasar

rtsp://<ip>/h264\_2



#### Note:

Quasar uses Stream 2 for RTSP streaming (“h264\_2”).

#### Axis

rtsp://<ip>:<rtsp\_port>/axis-media/media.amp?  
videocodec=h264&audio=0&camera=1&fps=<fps>&compression=50&resolution=640x480&videobitrate=<bitrate>&videobitratepriority=quality&videokeyframeinterval=<keyframe\_interval>

Where:

<rtsp\_port> – used rtsp port (default 554)

<fps> - frames per second required

<bitrate> - desirable bitrate (bit per second should be set to 1500 and 1000 for static rules)

<keyframe\_interval> - desirable interval between key frames (GOP) in frames

Note: Used VGA resolution (640x480)

Example:

```
rtsp://10.70.20.179:554/axis-media/media.amp?
```

```
videocodec=h264&audio=0&camera=1&fps=25&compression=50&resolution=640x480&videobitrate=1500&videobitratepriority=quality&videokeyframeinterval=50
```



**Note:**

The stream number is not defined as a parameter in the Axis syntax. The above parameters are configured directly in the *Insert RTSP stream URL* text box on the trk-101/trk-101-P **System > Unit Information** screen. No additional configuration is required in the camera.

### Sony

```
rtsp://<ip>/media/video2
```



**Note:**

Sony uses Stream 2 for RTSP streaming ("video2"). Before entering the URL, the video stream parameters must be configured on the camera's web page. The video stream parameters cannot be configured in the *Insert RTSP stream URL* text box on the trk-101/trk-101-P **System > Unit Information** screen.

### Bosch

```
rtsp://<ip>/video?inst=2
```



**Note:**

Bosch uses Stream 2 for RTSP streaming ("video?inst=2"). Before entering the URL, the video stream parameters must be configured on the camera's web page. The video stream parameters cannot be configured in the *Insert RTSP stream URL* text box on the trk-101/trk-101-P **System > Unit Information** screen.

#### 5.1.1.1.4.3 To Enable RTSP Authentication

##### To enable RTSP authentication

1. In the *Insert RTSP stream URL* text box, enter the URL of the RTSP stream for the connected device.
2. If needed, select the *Is Authentication Required* checkbox.
3. Enter the user name and password in the respective text box.
4. Click **Apply**.

#### 5.1.1.1.4.4 Support for H.264 Encoding on Quasar Cameras

The trk-101 and trk-101-P support decoding of an H.264 video stream on Quasar CP-4221-30x, CF-3211, CM-3211, CF-4221, CM-4221, CM-4321, CF-4251, and CM-4251 HD cameras when the trk-101 or trk-101-P is configured in Latitude in Decoder mode. The encoder receives a video stream over IP and outputs analytic metadata over IP.



**Note:**

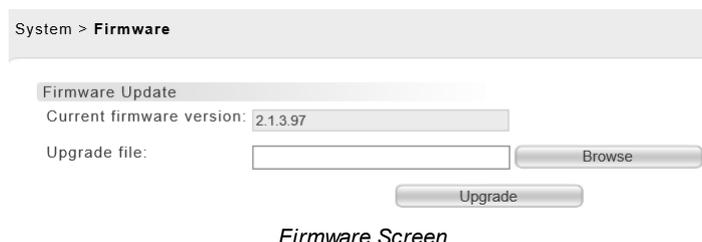
The following limitations apply to HD Analytic Decoder mode:

- Analog out is disabled
- Video encoding is disabled on the encoder
- Video streaming is disabled if the unit is armed

### 5.1.2 Viewing Firmware Information and Upgrading the Unit

The **Firmware** screen displays the unit hardware and firmware information and enables you to update the firmware.

Following is an illustration of the **Firmware** screen:



*Firmware Screen*

The following table shows all the available fields and buttons in the **Firmware** screen.

Field Name	Description
Current firmware version	Displays the loaded firmware version number.
Upgrade file	Displays the upgrade file (.utk) selected after clicking the <b>Browse</b> button.
	Clicking the button upgrades the firmware to the selected file.

### 5.1.3 Updating the Unit Firmware

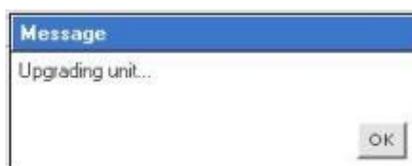
From time to time, FLIR releases a new version of firmware that may add additional functionality to the unit and/or corrects issues with existing firmware. This section describes how to perform a firmware upgrade on your unit.

**Tip:**

Instead of upgrading units one by one according to the procedure described below, it is recommended to use the DNA utility to upgrade several ioi units at once. Before performing the upgrade via DNA, make sure that in the **Events > Responses** screen, when selecting *Power On* from the **Triggering Event** tab, that the action associated with the Power On event is not set to *Arm Camera* on the **Action** tab.

**To upgrade the firmware**

1. Confirm that you have the correct upgrade file (with a **.uflk** extension) and copy it to your local computer.
2. Close any other open Internet Explorer browser applications, excluding the one used for upgrading the unit.
3. In the **Setup** workspace, select **System > Firmware**. The **Firmware** screen is displayed. See **Firmware** screen above.
4. Do one of the following:
  - In the *Firmware Update* area, enter the path and file name of the **\*.uflk** file to be used for the upgrade in the *File Path* field.
  - Click **Browse** and browse to the location of the **\*.uflk** file to be used for the upgrade.
5. Click **Update now**. The upgrade process starts and the following message is displayed.



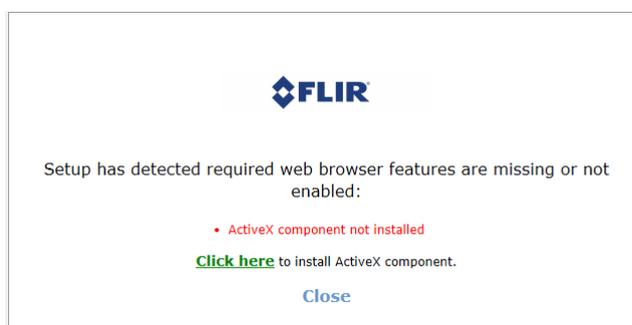
*Firmware Upgrading Unit Message*

**Caution:**

In order to avoid potential permanent damage to the equipment and/or loss of data, do not stop the update procedure before completion.

6. Wait until the upgrade finishes. The unit restarts.
7. Log into the unit.

8. If necessary, you might be prompted to update the ioi ActiveX component of your browser to match the new firmware version.



*Install ActiveX Component Dialog Box*

9. Install the ActiveX component. On the popup window, click **Install**. The ActiveX component is installed. You are asked to reset your computer.

 **Note:**

See [Configuring ActiveX Security Settings](#) for instructions how to configure ActiveX on your computer.

10. Login again after the browser reconnects with the unit. The video signal is displayed on the **Live View** window.
11. Navigate to **Setup > System > Firmware**. Confirm that the firmware version has changed and that the new firmware version number is displayed.

### 5.1.4 Configuring User Accounts

The **User Accounts** screen enables you to add, modify or delete user accounts. A unit is delivered with two pre-configured (default) users:

- *admin*: User who has full control (use or set) of the unit. The default user name and password are both “admin”. From a security standpoint, it is strongly recommended to change the default password for this user.
- *guest*: User who has limited privileges (view only). The default password is “1234”. This user can be deleted if no guests are allowed to view camera video signal.

 **Warning:**

If you restore your unit to the default factory settings, your user account settings are also restored to their default factory settings. If you have made changes to the user account settings, it is strongly recommended that you make a note of these settings before restoring your unit to the factory defaults. This enables you to easily recreate your user account settings after a restore of the default factory settings.

The **User Accounts** screen has following fields:

Field Name	Description
User Name	The name of the user.
Password and confirm password	The password for the user.
Type	The type of user account as described in the previous table.

The following user account types are available:

Type	Description
Admin	An Administrator has full control over the unit and can perform any unit functionality.
Supervisor	A Supervisor can perform any unit functionality excluding creation, editing, or deletion of user accounts.
Operator	An Operator can only monitor the video channel and perform basic functions such as clearing alarms, arming or disarming cameras, and so on.
Viewer	A Viewer can only monitor the video channel.

### Privileged Users

Users with Admin, Supervisor, and Operator privileges are known as having “administrative privileges”, which authorizes them to view live or recorded video. These users are referred to as “privileged users”.

#### 5.1.4.1 To Add a New User Account

##### To add a new user account

1. In the *Setup* workspace, select **System > User Accounts**. The **User Accounts** screen is displayed.

System > User Accounts

User Name	Type
admin	Admin
guest	Viewer

**Admin**

An Administrator has full control over the unit and can perform any system functionality.

**Account Details**

User name:  Password:

Type:  Confirm password:

External IP

**Privileged Units**

Selection	IP	Ch	Channel name	Model	External Port
<input type="checkbox"/>	10.70.20.124	1	ioibox trk101	trk101	<input type="text"/>

Add Manually

User Accounts Screen

2. Click **Add user**. A new user is added to the list of user accounts.
3. In the *Account Details* area, modify the *User Name*, *Password* and *Type* as required.
4. Click **Validate** to validate the new user details. The new user details are updated in the *User Accounts* list.



**Note:**

Although the new user account is displayed in the *User Accounts* list, it is not saved until you click **Apply**.

5. Click **Apply** to save the new user details.



**Note:**

The default password for a new user account is "1234". It is strongly recommended to change this password.

6. If the unit is located behind a firewall and privileged users have access to it, configure unit privileges in the Privileged Units area as indicated in [To Configure Unit Privileges](#).

### 5.1.4.1.1 To Configure Unit Privileges

#### To configure unit privileges

1. Select **Setup > System > User Accounts**. The **User Accounts** screen opens. A discovery process discovers all units on the same VLAN.

The screenshot shows the 'System > User Accounts' configuration page. At the top, there is a table with columns 'User Name' and 'Type'. Below this are 'Add User...' and 'Remove' buttons. The 'Account Details' section includes fields for 'User name', 'Password', 'Type', and 'Confirm password', along with a 'Validate' button. The 'Privileged Units' section contains a table with columns: Selection, IP, Ch, Channel name, Model, and External Port. Below the table are 'Select All', 'Refresh', 'Add Manually', and 'Add' buttons. An 'Apply' button is located at the bottom right.

User Name	Type
admin	Admin
guest	Viewer

**Admin**  
An Administrator has full control over the unit and can perform any system functionality.

Account Details  
User name: admin Password: \*\*\*\*\*  
Type: Admin Confirm password: \*\*\*\*\* Validate

External IP: [ ]

Selection	IP	Ch	Channel name	Model	External Port
<input checked="" type="checkbox"/>	172.17.12.102	1	ioibox trk100d	trk100d	[ ]
<input checked="" type="checkbox"/>	10.70.20.134	1	Humphrey	trk101	[ ]
<input checked="" type="checkbox"/>	10.70.20.129	1	Sarah Jane	trk101	[ ]
<input checked="" type="checkbox"/>	10.70.20.137	1	Miss Marple	trk101	[ ]
<input checked="" type="checkbox"/>	10.70.21.121	1	Sagan	trk101	[ ]

Select All Refresh

Add Manually [ ] Add Apply

System > User Accounts Screen

2. Select or add a user for configuration. Click **Add User**.
3. To add a unit that is not on the same VLAN, enter the unit's IP address in the **Add Manually** text box.
4. Click **Add**.
5. To add viewing and control privileges for a specific unit, select the checkbox in the left column of the *Privileged Units* area.



#### Note:

When using Site Viewer, all attached units on the site that have privileges are displayed. A privileged unit must be selected in order for it to be viewed remotely when using Site Viewer. See [Monitoring and Controlling Remote Sites with Site Viewer](#).

6. To enable a remote connection via Site Viewer across a firewall:
  - a. Enter the site's static IP address in the *External IP* text box.
  - b. For each unit, in the *External Port* text box, enter the port number. See [Accessing a Remote Unit over the Web \(Port Forwarding\)](#).
  - c. Click **Apply**.



**Note:**

1. The External IP address and External Port numbers should match those configured in the router.
2. It is not possible to configure units that are listed in the Privileged Units section over a firewall.

### 5.1.4.2 To Remove a User Account

#### To remove a user account

1. In the **Setup** workspace, select **System > User Accounts**. The **User Accounts** screen is displayed. See [Configuring User Accounts](#).
2. In the *User Accounts* list, select the user you want to delete.
3. Click **Remove**. The user is removed from the *User Accounts* list.
4. Click **Apply** to save the settings.



**Note:**

Although *guest* is a default user account, it can be removed if no *guest* login is allowed.

### 5.1.5 Configuring the Date and Time

The **Date and time** screen enables you to define the date and time for the unit, as well as the format and methodology of maintaining time on the unit. The unit has an internal clock that maintains time that can be set manually, synchronized with a PC or synchronized with a time server (NTP).



**Caution:**

Be sure to configure the correct time and date on the unit for recording when an event occurred and for identifying precisely when video was recorded.



**Tip:**

It is recommended that all units on the system be synchronized with an NTP server.

---

The **Date and time** screen has the following fields:

Field Name	Description
Unit clock	The current date and time on the unit.
PC clock	The current date and time on the computer running the browser.
Date format	The date format for the unit.
Time zone	The unit's time zone setting represented by GMT + or – x hours. For example, GMT-05:00 means Greenwich mean time minus 5 hours Eastern Time (USA and Canada).
Synchronize with PC	The unit's date and time settings are synchronized with date and time on the computer from which the unit is being configured once the <b>Apply</b> button is pressed.
Manual settings	The unit's date and time settings are set according to the date and time entered in this field.
Synchronize with NTP	The unit's date and time settings are continuously synchronized with the specified NTP time server. NTP is a protocol designed to synchronize the clocks of computers over a network at regular intervals.
NTP Server IP	The IP address of the NTP server on the network used to synchronize the date and time of the system components.
Sampling rate (min.)	The time interval for requesting information from the server when NTP synchronization takes place.

For more information on enabling a Windows computer to work as a time server, refer to [Windows Time Service](#).

### 5.1.5.1 To Configure the Date Format and Time Zone Settings

#### To configure the date format and time zone settings

1. In the **Setup** workspace, select **System > Date and time**. The **Date and time** screen is displayed.

*Date and Time Screen*

2. From the *Date format* drop-down list, select either *dd/Mm/yyyy* or *MM/dd/yyyy*.
3. From the *Time zone* drop-down list, select the time zone in which the unit is located. For example, *GMT-05:00*.
4. Click **Apply**. The date format and time zone are set.

## 5.1.5.2 To Define the Date and Time Settings

### To define the date and time settings

1. In the **Setup** workspace, select **System > Date and time**. The **Date and time** screen is displayed. See [Date and Time Screen](#).
2. If you want to synchronize the date and time with an NTP server, continue with step 8.
3. If you want to set the date and time manually, continue with step 11.
4. If you want to synchronize the date and time with the PC from which you are working, select *Synchronize with PC*.
5. Continue with step 11.
6. Enter the IP address of the time server in the *NTP Server IP* field.
7. Enter or select the time interval in minutes for synchronization updates to occur in the *Sampling Rate* field.
8. Continue with step 11.
9. Select *Manual settings*.
10. Enter the date and time according to the selected date format in the *Date and Time* field.
11. Click **Apply**. The date and time settings are defined.

## 5.1.6 Configuring Discrete Input/Output Resources

This section describes how to configure the unit to receive alarms from external devices and control external devices.

The **Discrete I/O** screen enables you to configure hardware resources in the ioi unit to:

- Receive alarm signals from dry contacts of external devices (alarm inputs on the ioi unit).
- Provide signals used to control external devices (relay outputs on the ioi unit).

The ability to receive alarms from external devices enables you to configure the ioi unit to respond to events generated on external devices such as doors, sensors, etc.

The external devices should be able to open or close a dry contact, indicating a change in their status. For example, if the specific alarm input is armed and an intruder opens a door, the ioi unit can be configured to move a PTZ camera to a specific preset.

Similarly, you can configure the unit to control an external device upon an event being triggered on the ioi unit. For example, if an intrusion is detected in a particular area, you can configure the unit to close all entrances to that area by activating a relay output.

The section [Configuring the Event Engine](#) describes the following:

- How to configure automatic responses once external alarms (from alarm inputs) occur.
- How to activate or deactivate the units' relay outputs following an event detected on the ioi unit.

Refer to [Monitoring Real-Time Video](#) for more information on using the **Live View** screen to monitor and control discrete inputs and outputs in real-time.



**Note:**

The icons (buttons) in the I/O Resources table indicate the number of alarm inputs or relays available on the unit being configured

The **Discrete I/O** screen has the following fields:

Label	Description
<b>I/O Resources</b>	
Alarm input (from external device dry contact)	Button indicating the current status of the alarm input as follows: <ul style="list-style-type: none"> <li>: Disabled.</li> <li>: Enabled, armed and there is no alarm indicated.</li> <li>: Enabled and disarmed.</li> <li>: Enabled and an alarm has been triggered (the external device is in a status considered as an alarm).</li> </ul>
Relay	Button indicating the current status of the relay as follows: <ul style="list-style-type: none"> <li>: Disabled.</li> <li>: Enabled and the relay has not been activated (<i>Off</i>).</li> <li>: Enabled and the relay has been activated (<i>On</i>).</li> </ul>
<b>Alarm Input Settings</b>	
Alarm input (dry contact)	Number of the alarm input in the unit.
Name	Name of the alarm input (can be edited by the user to reflect connected device).
Working mode	Working mode for the alarm as follows: <ul style="list-style-type: none"> <li>• <i>Alarm on closed</i>: Alarms (notifies) upon short circuiting of the external device dry contact terminals.</li> <li>• <i>Alarm on opened</i>: Alarms (notifies) upon disconnection of the external device dry contact terminals.</li> <li>• <i>Disabled</i>: Disables all specific alarm input functionality and ignores its status.</li> </ul>
Condition	Indicates if the alarm input is: <ul style="list-style-type: none"> <li>• <i>Armed</i>: Being monitored for alarms.</li> <li>• <i>Disarmed</i>: Not being monitored for alarms.</li> </ul>
Alarm status	Indicates the current status of the input ( <i>Alarm/No Alarm</i> ).
Clear	Clears the current alarm status.
<b>Output Control Settings</b>	
Relay	Number of the relay output in the unit.

Label	Description
Name	Name of the relay. Can be edited by the user to reflect a connected device.
Status	Indicates if the relay is: <ul style="list-style-type: none"> <li><i>Enabled</i>: Enables specific relay functionality and its activation to control external devices.</li> <li><i>Disabled</i>: Disables all specific relay functionality and its activation from the unit.</li> </ul>
Signal	Indicates the current status (signal) of the relay ( <i>On/Off</i> ).
Change	Changes the current signal status.

**Note:**

Refer to the unit's installation manual for information regarding alarm input wiring and connections to your specific unit.

### 5.1.6.1 To Configure the Settings for an Alarm Input

#### To configure the settings for an alarm input

- In the **Setup** workspace, select **System > Discrete I/O**. The **Discrete I/O** screen is displayed.

System > Discrete I/O

I/O Resources

	#1	#2	#3	#4	#5	#6	#7	#8
Alarm Input								
Relay								

Alarm Input Settings

Alarm input: #1

Name: Alarm Input - 1 \*

Working mode: Alarm on closed \*

Condition: Disarmed \*

Alarm status: No alarm

Output Control Settings

Relay: #1

Name: Relay - 1 \*

Status: Enabled \*

Signal: Off

Legend

\* Changes take effect after clicking "Apply"

Discrete I/O Screen

- In the *Alarm Input Settings* area, from the *Alarm input* drop-down list, select the number of the alarm input you want to configure.



**Note:**

The *Alarm input* drop-down list includes the numbers of all the alarm inputs whose alarm settings can be configured according to the unit type.

3. Enter a name for the alarm input in the *Name* field.
4. From the *Working mode* drop-down list, select the working mode for the alarm input:
  - Alarm on closed
  - Alarm on opened
  - Disabled
5. Click **Apply** to enable fields according to the updated working mode.
6. From the *Condition* drop-down list, select *Armed* or *Disarmed*.
7. The alarm status for the alarm input is indicated in the *Alarm status* field. Click **Clear** if you want to clear the alarm status for the alarm input.
8. To configure the alarm settings for additional alarm inputs, repeat steps [2](#) through [6](#) for each alarm input.
9. Click **Apply**. Your changes are saved.



**Note:**

The *Alarm input* drop-down list includes the numbers of all the alarm inputs whose alarm settings can be configured according to the unit type.

## 5.1.6.2 To Configure the Settings for a Relay Output

### To configure the settings for a relay output

1. In the **Setup** workspace, select **System > Discrete I/O**. The **Discrete I/O** screen is displayed. See figure above.
2. In the *Output Control Settings* area, select the number of the relay you want to configure from the *Relay* drop-down list

**Note:**

1. The *Relay* drop-down list includes the numbers of all the relays whose output control settings can be configured according to the unit type.
2. The units include a single relay output whose configuration is NORMALLY OPEN by default. To change relay configuration, see [Changing Relay Status from N/O to N/C](#).
3. Refer to the unit's installation manual for information regarding relay output wiring and connections to your specific unit model.

3. In the *Name* field, enter a name for the relay output.
4. From the *Status* drop-down list, select *Enabled* or *Disabled*.
5. The signal status for the relay output is indicated in the *Signal* field. Click **Change** if you want to change the signal status.
6. To configure the output control settings for additional relays, repeat steps [2](#) through [5](#) for each relay.
7. Click **Apply**. Your changes are saved.

**Note:**

Changes to the *Name* and *Status* fields only take effect after clicking **Apply**.

### 5.1.6.3 Changing Relay Status from N/O to N/C

The on-board relay in the unit provides a single contact (NORMALLY OPEN by default), which can be configured to CLOSED upon an alarm condition. This is usually configured with a momentary closure (for example, five seconds), followed by returning to the OPEN condition, to be ready for the next alarm event.

Should a NORMALLY CLOSED (N/C) condition be preferred, the relay may be configured by selecting one of the following two events in the Event Engine:

- Event 1: Triggering event = Power ON
  - Action = Activate relay contact – continuous ON
- Event 2: Triggering Event = Detection Alarm (according to your configuration)
  - Action 1 = Activate relay contact – continuous OFF – immediately
  - Action 2 = Activate relay contact – continuous ON – after five seconds

The above conditions will turn on the relay at Power ON. An alarm will open the relay for five seconds and close it again. The above conditions also will create an alarm indication in case of a loss of power.



**Note:**

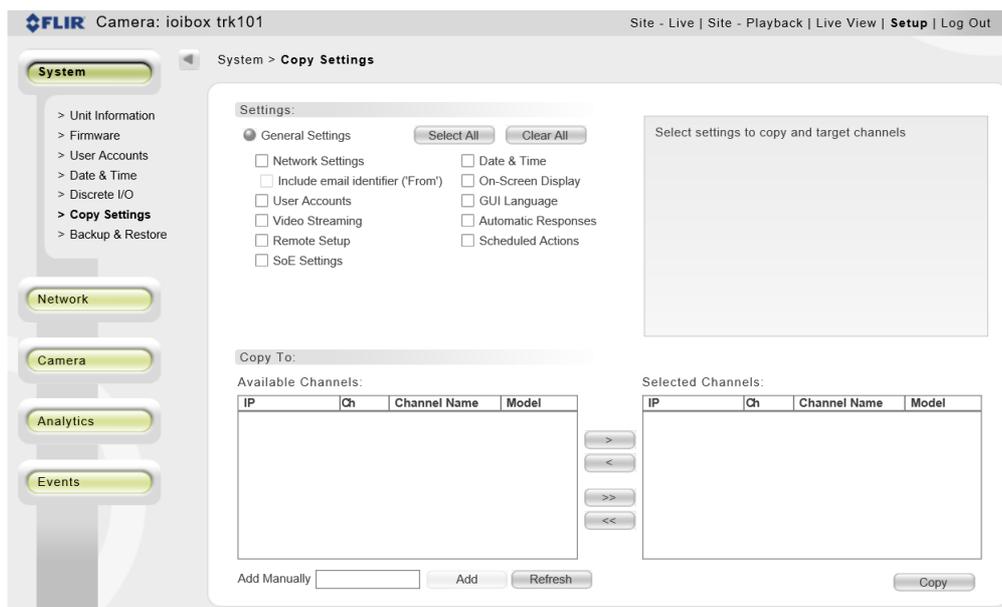
1. The unit must be rebooted after configuration in order for this setting to take effect.
2. Event 1 can also be replaced by Triggering Event = ARM. In this instance, the relay will be OPEN until the unit is armed, at which time it will behave as described above. This may be desirable in some deployments.

### 5.1.7 Copying Settings to Other Units

Once a unit has been configured, you can copy specific configuration settings to other units in the system simultaneously, thus avoiding redundant steps and reducing the time required for system configuration.

This function includes the ability to search for ioi units in the network and to select them as targets in order to copy the unit's configuration settings to them.

The following is an example of the **Copy Settings** screen:



Copy Settings Screen

The following settings are available for duplication to other units :

Configuration	Description
Network Settings	<p>If the local unit is in <i>DHCP</i> mode, target unit will be set to work in DHCP mode.</p> <p>If the local unit is in <i>Manual IP</i> mode, target unit's IP address definition will not be changed.</p> <p>The subnet mask, default gateway address and DNS server address will be copied.</p>
Include email identifier ("From")	<p>If checked, the target unit's email identifier is the same as the unit being configured. When enabling email notifications, all emails will have the same sender.</p> <p>If unchecked, the email identifier of each unit is configured separately, allowing different identifiers for each unit.</p>
User accounts	<p>All user accounts and their properties will be copied to the target units. Existing accounts will be overridden and deleted.</p>

Configuration	Description
Video Streaming	<p>All video streaming settings will be copied to the target units including Compression, Resolution, Max. Frame Rate, Streaming Mode and Bit Rate/Quality.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;">  <p><b>Note:</b></p> <p>This applies only when both the source and target unit support the same streaming features (CIF/4CIF, Single/Dual Stream).</p> </div>
Remote Setup	Remote Setup settings will be copied to the target units.
SoE Settings	<p>SoE pre- and post-settings, plus FTP backup settings, will be copied to the target unit. Verify that target unit video streaming settings comply with SoE recording requirements:</p> <ul style="list-style-type: none"> <li>• Compression: MPEG4/H.264</li> <li>• Streaming mode: CBR</li> <li>• Target bit rate: ≤ 1.5Mbps</li> </ul>
Date & Time	All date and time settings will be copied to the target units.
On Screen Display (OSD)	All On-Screen Display settings will be copied to the target units.
GUI Language	The language in the target unit will be the same as the language displayed in this unit's user interface.
Automatic Responses	<p>All automatic responses, <u>except</u> PTZ camera control-related responses (i.e., goto preset, playlist, etc.) and discrete I/O resource-related responses (i.e., relay output, external alarm inputs), will be copied to the target units.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;">  <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. If at least one automatic response related to PTZ control or discrete I/O is present on the unit, no Automatic Responses will be copied at all.</li> <li>2. Before copying this type of event to another unit, it is recommended to delete all PTZ control or Discrete I/O resources that are related to automatic responses.</li> </ol> </div>

Configuration	Description
Scheduled Actions	All Scheduled Actions, <u>except</u> PTZ camera control-related responses (i.e., goto preset, playlist, etc.) and discrete I/O resource-related responses (i.e., relay output, external alarm inputs), will be copied to the target units.



**Note:**

1. If at least one automatic response related to PTZ control or discrete I/O is present on the unit, no Automatic Responses will be copied at all.
2. Before copying this type of event to another unit, it is recommended to delete all PTZ control or Discrete I/O resources that are related to automatic responses.

#### To copy settings to other units in the network

1. In the **Setup** workspace, select **System > Copy Settings**. The **Copy Settings** screen is displayed. The unit searches for available units.
2. In the *Settings* section, mark the settings you want to copy to the other units.
3. In the *Copy To* section, select the target units.
4. Click **Copy**. The selected settings are copied to the target units.

### 5.1.8 Backing Up and Restoring Unit Settings

The **Backup & Restore** screen enables you to create backup files of the system and analytic settings on the unit.



*Backup & Restore Screen*



**Warning:**

1. Make sure to restore or duplicate the unit settings with a file taken from the same type of unit.
2. Before performing a restore, make a full backup of the unit. The unit automatically resets after performing a restore, which cannot be undone.



**Note:**

1. The backup can also be used to for replicating configurations to other units.
2. Disconnect the unit to avoid duplicated IP addresses.
3. After the settings are replicated, it is recommended that individual settings for each unit be updated. This particularly applies to the IP address of the unit, but refinements must also be made if the scenes parameters vary, such as depth, camera height, angle of view, terrain, etc.

The **Backup & Restore** screen has the followings fields and buttons:

Label	Description
<b>Backup</b>	
Backup	Creates the backup file.
<b>Restore</b>	
To factory defaults	Indicates that the restore must return all settings to their factory defaults including network and IP settings unless otherwise specified.
Keep current network settings	Indicates that the restore to factory defaults must not restore the network (IP configuration).
Full restore from file	Indicates that a full restore of all the saved settings is to be made from the file specified in the <i>File Path</i> field to the unit.

**Note:**  
A full backup file must be specified in the *File Path* field.

Label	Description
Analytics settings from file	Indicates that the analytics settings (depth and detection rules settings) will be restored from the file specified in the <i>File Path</i> field to the unit.
File Path	The path and filename of the backup file to be used for the restore.
Restore	Restores the settings according to the definitions made.

**Note:**

From the *File Path* text box, browse for and select the analytics settings backup file.

### 5.1.8.1 To Backup Unit Settings

#### To backup unit settings

1. In the **Setup** workspace, select **System > Backup & Restore**. The **Backup & Restore** screen is displayed.

*Backup & Restore Screen*

2. In the *Back up* area, click **Backup**. The **Save As** dialog box is displayed.
3. Browse to location where you want the file saved and enter the name of the file in the *File name* field.

**Note:**

Make sure that you use the correct file extension (.fbk) for your backup.

4. Click **Save**. The file is saved.



**Warning:**

If you restore your unit to the default factory settings, your user account settings are also restored to their default factory settings.

### 5.1.8.2 To Restore Unit Settings

#### To restore unit settings

1. In the **Setup** workspace, select **System > Backup & Restore**. The **Backup & Restore** screen is displayed. See Figure [Backup & Restore Screen](#).
2. Do one of the following in the *Restore* area:
  - If you want to restore the unit to factory defaults, do the following:
    - a. Select *To factory defaults*. A message is displayed asking you to confirm that you want to restore the unit to the factory default settings.
    - b. Select *Keep current network settings* if you want to keep the current network settings (IP address, Subnet mask, Default gateway, Unit name, and DHCP setting).
    - c. Click **Yes**. The unit is restored to its factory default settings. This concludes the restore process.
  - If you want to restore a full backup, do the following:
    - a. Select *Full restore from file*.
    - b. In the *File path* field, enter or browse for the required backup file including the extension (`.fbk`).



**Note:**

Be sure to use the correct file extension (`.fbk`) during the restore process.

- c. Click **Restore**. A message is displayed asking you to confirm your action.



**Note:**

Current settings will be lost by restoring settings.

- d. Click **Yes**. The unit's selected settings are restored.

- If you want to restore an analytics settings' backup, do the following:
  - a. Select *Analytics settings from file*.
  - b. In the *File path* field, enter or browse for the required backup file including the extension (.fbk).

**Note:**

Be sure to use the correct file extension (.fbk) during the restore process.

- c. Click **Restore**. A message is displayed asking you to confirm your action.

**Note:**

Current settings will be lost by restoring settings.

- d. Click **Yes**. The unit's selected settings are restored.

## 5.2 Configuring Network Settings

The **Network** section of the user interface includes the following screens:

- [IP Address](#): enables you to define the IP address used by the unit
- [Multicast](#): configure multicast support for video streaming
- [SMTP](#): configure settings for email
- [RTP Length](#): set the length of RTP packets for real-time video transmission for use with encrypted networks

The first step in configuring network settings is to set the IP address. Two methods are available for configuring the IP address of the unit:

- [Changing the Unit's IP Address from the Web Interface](#)
- [Initial IP Configuration with the DNA Utility](#)

### 5.2.1 Changing Unit's IP Addresses from the Web Interface

All units are delivered with the same IP address set during manufacture. This address must be changed before connecting to the network. The default IP address is 192.168.123.10.

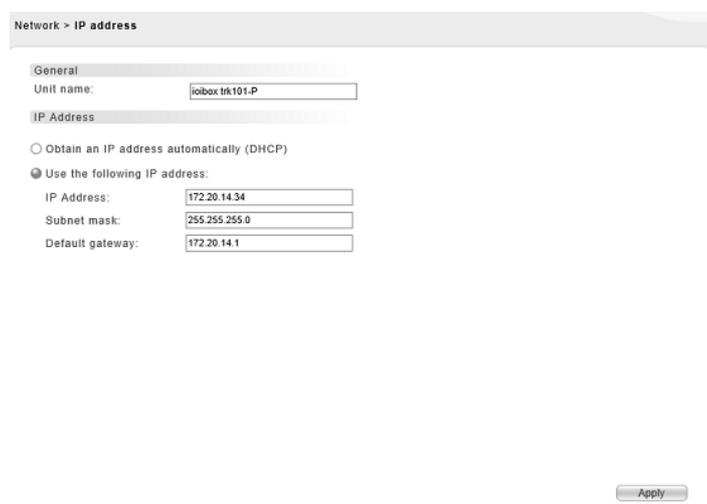
A unit can stream video in both multicast and unicast modes. The unicast mode is always enabled and need not be configured. The unit, however, must be configured to operate in multicast mode, which is disabled by default.

The **Network > IP Address** screen has following fields:

Field Name	Description
<b>General</b>	
Unit name	The name assigned to the unit.
<b>IP Address</b>	
Use the following IP address	Enables you to enter the address of the unit comprising the IP address, Subnet mask and default gateway address.
IP Address	The IP address used on the LAN/WAN in standard format.
Subnet mask	The mask that limits which network computers are allowed to access the encoder. This mask should be changed to match with your local network numbering convention.
Default gateway	Local IP address, usually a router, on the local network that serves to forward to another network beyond the local network. If your network uses a switch (gateway), this is the IP address of that switch. If your network uses a hub, this setting is not applicable.
Obtain an IP address automatically (DHCP)	Enables the unit to obtain an IP from a DHCP server on the network.

### To configure the unit's IP address

1. In the **Setup** workspace, select **Network > Settings**. The **Network Settings** screen is displayed.



Network Settings Screen

2. In the *Unit name* field, enter the name of the unit.

3. Select one of the following settings:
  - *Use the following IP address* to manually define the IP address
    - a. Enter the IP address to be used in the *IP Address* field.
    - b. Enter the network subnet mask in the *Subnet mask* field.
    - c. Enter the IP address of the default gateway in the *Default gateway* field.
  - *Obtain an IP address automatically* to use a DHCP server on the network
    - a. If using the automatic option (DHCP), continue with step 4.

**Note:**

Selecting the DHCP option when a DHCP server is not available will cause the following results:

- Remote Setup not enabled (default): The unit will be defined with the last static IP address used.
- Remote Setup enabled: The unit will be defined with the last static IP address used and will reset approximately every five minutes.

4. Click **Apply**. The IP address of the unit is configured.

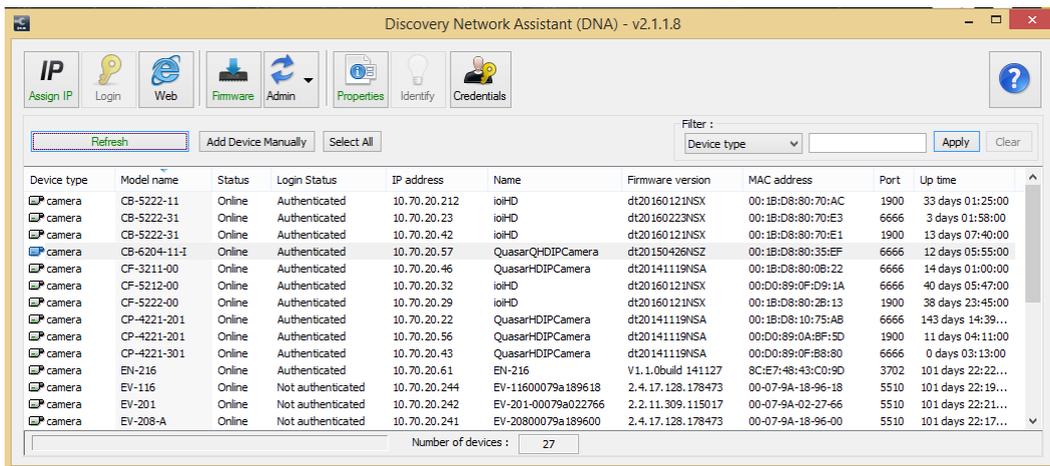
**Note:**

After applying the changes to the IP address, the unit resets itself. The browser reconnects to the unit at the updated URL reflecting the new IP address.

## 5.2.2 Using DNA for Initial IP Configuration of Connected Devices

The Discovery Network Assistant (DNA) application is the preferred method for initial configuration of the device's IP address.

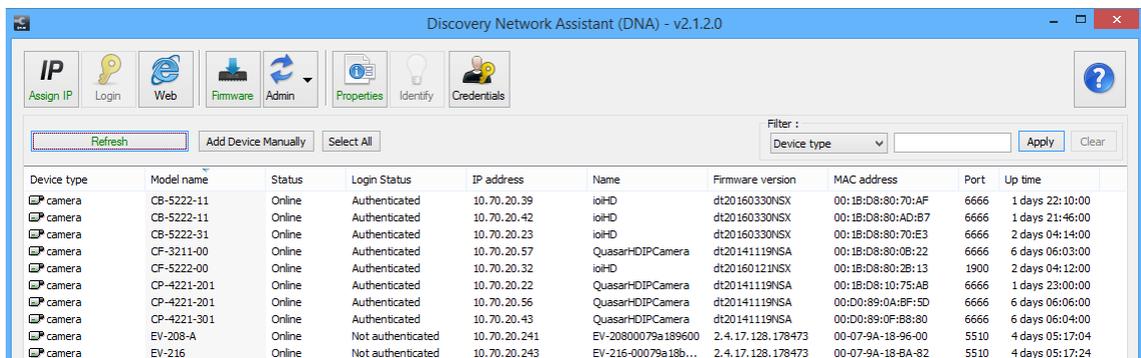
All ioi products use DNA for easy discovery and configuration in the video surveillance system. Once discovered, DNA lists and reports the status of all supported devices on the network. It provides a simple interface for required tasks such as setting IP addresses (manually or using DHCP), logging on to the Web interface of devices for changing settings, checking and updating firmware, and updating credentials. For more information about using DNA, click [here](#) to download the DNA User Manual from the *Tools* section.



DNA Main Screen

### To set the unit's IP address for the first time

1. Download DNA from the [FLIR Firmware & Software Downloads](#) page.
2. Click the DNA icon  and run the DNA utility (DNA.exe). DNA discovers all devices on the same VLAN and displays the device's current IP address.
3. Attach the unit to the same LAN segment as the computer that is managing the unit. DNA automatically discovers the unit on the network and displays it in the Discovery list. The unit status should be displayed as *Online* and *Authenticated*.



DNA Discovery List

## 4. Do one of the following:

- If the unit is managed by Horizon or Meridian configured as a DHCP server, or is on a network with a DHCP server, double-click the unit. If the unit's **Login** window opens, the unit has received a valid IP address.
- If the unit is managed by Latitude or is on a network without a DHCP server and requires a static IP configuration, open DNA's **Assign IP** dialog box. Do the following:
  - a. Uncheck *Use DHCP*.
  - b. Enter the IP, Mask and Gateway IP addresses.
  - c. Click **Update**. The device will be displayed in DNA's Discovery list.

Status	Model name	Name	Current IP	Previous IP
	CP-4221-201	QuasarHDIPCamera	10.70.20.56 (DHCP)	

DNA Assign IP Dialog Box

- If the device is located on a separate VLAN, it must be added manually to the network by clicking **Add Device Manually** from the toolbar and entering its IP address. The unit will be displayed in the Discover list.

DNA Add Device Manually Dialog Box

5. Click the unit in DNA's Discover List. The unit's **Login** window opens.
6. Enter the default user name ("admin") and password ("admin"). The device's web interface opens.
7. Click the on-screen message to install the FLIR plug-in.
8. Follow the on-screen instructions to install the plug-in.

### 5.2.3 Defining Multicast Settings

A unit can stream video or audio through the network in both multicast and unicast modes. The unicast mode is always enabled and need not be configured. However, the unit must be configured to operate in multicast mode, which is disabled by default.



**Note:**

Confirm with your Network Administrator that multicasting is enabled on the network equipment.

The **Network > Multicast** screen has following fields:

Field Name	Description
<b>Multicast</b>	
Enable video stream multicasting	Enables multicast video streaming.
Multicast address	IP multicast group address to which the unit sends the video stream. The default address is 224.1.1.1.
Port range	Enables you to select whether you want the unit to automatically assign a port range or if you want to manually assign a port range.
Time to live (TTL)	The number of transmissions (hops) that a packet can experience before it is discarded.

Network > Multicast

Multicast

Enable video stream multicasting

Multicast address:

Port range:  ( - 33341 )

Time to live (TTL):

Multicast Screen

#### To enable multicasting streaming

1. From the **Network > Multicast** screen, select *Enable video stream multicasting*.
2. In the *Multicast address* field, enter the multicast IP address.



**Note:**

Obtain the multicast IP address from your Network Administrator.

3. From the *Port range* drop-down list, select *Automatic* or *Manual*.

4. If you selected *Manual*, enter the start port range in the text box to the right of the drop-down list.
5. In the *Time to live* (TTL) field, enter the TTL value. This can be a value from 0-128.

**Note:**

The TTL value is the number of hops that a packet is permitted to travel before being discarded by a router. Zero restricts it to the same host, one to the same subnet, 32 to the same site, 64 to the same region, and 128 to the same continent.

6. Click **Apply**.

**To disable multicasting streaming**

1. Unselect *Enable video stream multicasting*.
2. Click **Apply**.

**5.2.4 Defining SMTP Notifications**

In addition to the default network notifications via HTTP, a unit can be configured to send an email through an SMTP server. The email can notify of the occurrence of events such as detection of any or a specific type or rule, tampering and/or operational events. Settings are configured on the **Network > SMTP** screen.

Network > SMTP

SMTP

Enable sending emails from this unit

SMTP Server Name / IP:

SMTP Port:

Sender ("From"):

Is Authentication Required

User name:

Password:

Is SSL Used

Apply

SMTP Screen

The **Network > SMTP** screen has following fields:

Enable sending emails from this unit	Enables to send emails through the organization SMTP server such as MS Exchange according to the rules defined in the unit event engine. See <a href="#">Configuring the Event Engine</a> .
SMTP Server Name/IP	Defines the SMTP server to be used for sending email notifications. A server name, e.g. <a href="#">mail@&lt;domain&gt;.com</a> , can be entered if the network uses a DHCP server. The SMTP server's IP address can be entered if there no DHCP server on the network.
SMTP Port	Defines the port used by the SMTP server.
Sender ("From")	Sets the sender email address as it will appear in the email itself ("From").
Is Authentication Required	If SMTP Authentication is used, this field should be checked. It is not checked when using MS Exchange for email notifications.
User name	The user name for the email account.
Password	The password for the email account.
Is SSL Used	If Secure Socket Layers (SSL) is used for encryption, select this checkbox.

#### To enable sending email notifications

1. From the **Network > SMTP** screen, select *Enable sending emails from this unit*.
2. In the *SMTP Server Name/IP* text box, enter the SMTP server name or IP address.
3. If necessary, change the default port used by the SMTP server.
4. In the *Sender ("From")* text box, enter the name of the sender.
5. Click **Apply**.
6. Go to **Events > Responses** or **Events > Sched. Actions** and define rules for sending emails as the action to be performed. See [Defining Automatic Responses](#) and [Configuring Scheduled Actions](#).



#### Note:

Confirm with the Network Administrator that sending email from ioi units is enabled on the SMTP server and that email notifications are not treated as spam (i.e. filtered).

#### To disable sending email notifications

1. Unselect *Enable sending emails from this unit*.
2. Click **Apply**.

### 5.2.4.1 Password and SSL Support for Email

Email notifications are sent via MS Exchange. It is possible and recommended to add a password and to use SSL to encrypt email for maximum security from the **Network > SMTP** screen.

Depending whether your network uses a DHCP server, select one of the following options:

- If the network uses a DHCP server, enter the SMTP server's name in the *SMTP Server Name/IP* text box.
- If the network does not use a DHCP server, enter the SMTP server's static IP address in the *SMTP Server Name/IP* text box.

After entering SMTP server details, do not select the *Is Authentication Required* checkbox.

The email can include a snapshot of the event and details of the camera on which the alarm occurs. In order to define rules for sending email as the action to be performed, open the **Events > Responses** or **Events > Sched. Actions** screen. For configuration instructions, see [Configuring the Event Engine](#).

### 5.2.5 Setting the RTP Length (MTU) for Encrypted Networks

When data is encrypted on a network, additional bytes are added to a data packet, which slows real-time transmission time. In order to improve real-time video performance, the MTU (Maximum Transmission Unit) size can be defined by setting the RTP packet size (in bytes).

The following settings are available on the **Network > RTP Length** screen:

- *Long* – Maximum value = 1472 (default setting)
- *Medium* – Value = 1312
- *Short* – Minimum value = 812
- *Custom* – Set a custom value between 812-1472

## 5.3 Configuring Camera Settings

The *Camera* tab enables you to define the type of camera that is connected to the encoder.

This section provides suggestions for how to configure the camera in different scenarios. It includes the following topics:

- [Defining the Camera Type Connected to a TRK Encoder](#)
- [Configuring On-Screen Display Settings](#)
- [Configuring Streaming Settings](#)
- [Aligning the Camera Position](#)
- [Using Storage on the Edge \(SoE\)](#)
- [Tips for Camera Configuration](#)

### 5.3.1 Defining the Camera Type and Model

When using a TRK encoder, from the **Type & Model** screen, select one of the following camera types being used:

- Stationary (fixed). See [Defining a Fixed Camera](#)
- Pan/Tilt/Zoom (PTZ). See [Defining a PTZ Camera on trk-101-P](#)



**Note:**

1. The trk-101 encoder supports only fixed cameras. This is because the trk-101 does not support an RS-485 connection and the **Type & Model** screen does not display fields and controls required for PTZ camera configuration.
2. The trk-101-P encoder supports PTZ cameras as well as fixed cameras. When a PTZ camera is attached to the trk-101-P PTZ Tracker, a fixed camera will automatically hand-off a tracked object from the fixed camera to a PTZ camera.

After configuring camera settings on the encoder, it is necessary to define the On-Screen Display Settings and Video Display Settings described in the following sections:

- [Configuring On-Screen Display Settings](#)
- [Configuring Steaming Settings](#)

After defining the connected camera type (fixed or PTZ), you can enhance the quality of the image in the display area for best detection results.

#### 5.3.1.1 Defining a Fixed Camera

This section describes how to define that the unit being configured receives the video signal from a fixed (stationary) camera.

The following table describes the buttons and fields in the **Type & Model** screen:

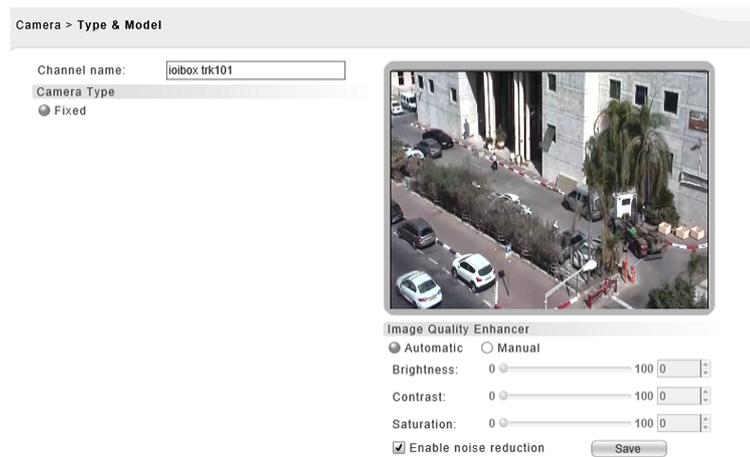
Setting	Description
Channel name	Name assigned to the camera.
<b>Camera Type</b>	
Fixed	Indicates that a stationary camera is connected to the unit.
<b>Image Quality Enhancer</b>	
Automatic/ Manual	Determines which image enhancement method is to be used ( <i>Automatic</i> or <i>Manual</i> ). <ul style="list-style-type: none"> <li>• Automatic enhancement enables the built-in image enhancer to determine the best settings for detection at any given time</li> <li>• Manual enhancement enables you to determine the image settings using the sliders described below</li> </ul>
Brightness	Sets for the amount of white added to the color of the image. From the drop-down list, select a number from 0-100. <ul style="list-style-type: none"> <li>• The higher the number, the more intense (whiter) the image</li> <li>• The lower the number, the less intense (less white) the image</li> </ul>

Setting	Description
Contrast	Sets the difference between colors (gray scale). From the drop-down list, select a number from 0-100. <ul style="list-style-type: none"> <li>The higher the number, the lighter the colors</li> <li>The lower the number, the darker (more gray) the colors</li> </ul>
Saturation	Sets the vividness of hue (the degree of difference from a gray of the same lightness or brightness). From the drop-down list, select a number from 0-100. <ul style="list-style-type: none"> <li>The higher the number, the sharper the colors</li> <li>The lower the number, the colors will be less sharp</li> </ul>
Enable noise reduction	Activates the 2D noise reduction filter.

### 5.3.1.2 To Define a Fixed Camera Source

#### To define a fixed camera source

- In the **Setup** workspace, select **Camera > Type & Model**. The **Type & Model** screen is displayed.



*trk-101 Camera Type & Model Screen*

- In the *Camera Type* area, select **Fixed**.
- Click **Apply**. The camera type is set as fixed.

#### To adjust image quality

- From the *Image Quality Enhancer* section, select either *Automatic* or *Manual*.



#### Tip:

Always use the automatic *Image Quality Enhancer* option.

2. If *Manual* is selected, use the sliders to change the following settings:
  - *Brightness*
  - *Contrast*
  - *Saturation*
3. If you want to enable 2D Noise Reduction, select the *Enable Noise Reduction* checkbox.
4. Click **Save**. The settings for enhancing the image are saved.

### 5.3.1.3 Defining a PTZ Camera on trk-101-P

This section describes how to define that the camera being configured by the TRK encoder receives the video signal from a Pan/Tilt/Zoom (PTZ) camera.



**Note:**

1. Only the trk-101-P encoder supports PTZ cameras.
2. When a fixed camera is connected to the trk-101-P, only the fields illustrated in the [trk-101 Camera Type & Model Screen](#) are displayed.

The following table describes the buttons and fields in the **Type & Model** screen:

Setting	Description
Channel name	Name assigned to the camera.
<b>Camera Type</b>	
Fixed	Indicates that a stationary camera is connected to the unit. If a fixed camera is connected to the unit, PTZ camera related fields are grayed out.
Pan/Tilt/Zoom (PTZ)	Indicates that a PTZ camera is connected to the unit.
<b>Camera Model</b>	
Manufacturer	The manufacturer of the PTZ camera.
Model	The PTZ camera model.
Max zoom	Maximum optical zoom setting of the camera.
<b>Communication</b>	
Port	The port and protocol of the physical connection on the encoder.
Protocol	The protocol of the physical connection on the encoder (RS-232 or RS-485).
Device ID	The camera ID number as set in the PTZ camera itself. For more information on this number, refer to the manufacturer's documentation of the PTZ camera.

Setting	Description
Baud Rate	Communication setting that specifies the number of bits transferred per second between the ioi unit and the camera on the specific port.
Parity	Communication setting that specifies whether the data (packets) contains a parity bit for error detection and whether that parity bit is Odd Parity or Even Parity. This setting should match manufacturer's PTZ model specifications.
Start bits	Communication setting that specifies the number of start bit(s) that signify the start of a new packet. This setting should match manufacturer's PTZ model specifications.
Stop bits	Communication setting that specifies the number of stop bit(s) that signify the end of a packet. This setting should match the manufacturer's PTZ model specifications.
IP	The camera's IP address.
Port	The network port used to access the camera via HTTP. Usually, this is port 80.
User	The user name assigned to the camera.
Password	The password for authorized users to access the camera.
<b>Image Quality Enhancer</b>	
Automatic/ Manual	Determines which image enhancement method is to be used ( <i>Automatic</i> or <i>Manual</i> ). <ul style="list-style-type: none"> <li>• <i>Automatic enhancement</i> enables the built-in image enhancer to determine the best settings for detection at any given time</li> <li>• <i>Manual enhancement</i> enables you to determine the image settings using the sliders described below</li> </ul>
Brightness	Sets for the amount of white added to the color of the image. From the drop-down list, select a number from 0-100. <ul style="list-style-type: none"> <li>• The higher the number, the more intense (whiter) the image</li> <li>• The lower the number, the less intense (less white) the image</li> </ul>
Contrast	Sets the difference between colors (gray scale). From the drop-down list, select a number from 0-100. <ul style="list-style-type: none"> <li>• The higher the number, the lighter the colors</li> <li>• The lower the number, the darker (more gray) the colors</li> </ul>
Saturation	Sets the vividness of hue (the degree of difference from a gray of the same lightness or brightness). From the drop-down list, select a number from 0-100. <ul style="list-style-type: none"> <li>• The higher the number, the sharper the colors</li> <li>• The lower the number, the colors will be less sharp</li> </ul>
Enable noise reduction	Activates the 2D noise reduction filter.

The PTZ controller located below the display window includes the following buttons:

Buttons	Description
	Pan Left: Rotates the PTZ camera to the left.
	Pan Right: Rotates the PTZ camera to the right.
	Tilt Up: Tilts the PTZ camera upwards.
	Tilt Down: Tilts the PTZ camera downwards.
	Zoom In: Increases the magnification in the Viewing area.
	Zoom Out: Decreases the magnification in the Viewing area.
Speed: 	Speed: Determines the speed at which the camera controls move the camera when panning, tilting or zooming.

After defining the camera model and control communication settings, you must run the PTZ Camera Definition Wizard to complete the configuration process. See [Using the PTZ Camera Definition Wizard](#).

### 5.3.1.3.1 Defining the PTZ Camera Model and Control Communication Settings

This section describes how to define the camera model and control communications settings for a PTZ camera.



**Note:**

1. When a PTZ camera is attached to the trk-101-P PTZ Tracker, a fixed camera will automatically hand-off a tracked object from the fixed camera to the PTZ camera. Depth and rules should be defined on the fixed camera before configuring the handoff settings on the PTZ camera as described in [Step 3: PTZ Synchronization with Fixed Cameras](#).
2. If you change the depth on the fixed camera, you must perform the binding process again.

### To configure the PTZ camera settings and activate the PTZ Camera Definition Wizard

1. Select **Camera > Type & Model**. The **Type & Model** screen is displayed.

*trk-101-P Camera Type & Model Screen*

2. In the *Camera Type* area, select *Pan/Tilt/Zoom (PTZ)*. The fields for configuring PTZ cameras are activated.
3. From the *Manufacturer* drop-down list, select the camera's manufacturer.
4. From the *Model* drop-down list, select the PTZ camera model. A description of the camera is displayed in the *Description* field. The default values for the remaining fields in the screen are automatically configured.
5. Do one of the following:
  - If the values do not need to be changed, proceed to step 18.
  - If the values need to be changed, change them as described in the following steps.
6. From the *Maximum Zoom* drop-down list, select the maximum zoom to use.
7. From the *Port* drop-down list, select *RS-485*, which is the standard physical connection used by the encoder for PTZ controller communication.



#### **Caution:**

Be sure that the two control wires from the PTZ camera are properly connected to the RS-485 port on the encoder. Refer to the encoder's installation manual for more information.

8. From the *Protocol* drop-down list, select the protocol of the physical connection on the unit being used for PTZ controller communication.
9. From the *Device ID* drop-down list, select the camera ID number.



**Note:**

The camera ID number is the camera's Pelco D address, which normally is set by dip switches on the camera. Refer to the camera's installation manual for more information.

10. From *Baud Rate* drop-down list, select the baud rate.
11. From the *Parity* drop-down list, select the parity to use (*Odd, Even* or *None*).
12. From the *Start Bits* drop-down list, select the start bits value.
13. From the *Stop Bits* drop-down list, select the stop bits value. Verify the settings are correct by trying to move the camera using the control buttons from the application.
14. In the *IP* field, enter the unit's IP address.
15. In the *Port* field, enter the network port used to access the camera via HTTP. Usually, this is port 80.
16. In the *User* field, enter the user name assigned to the camera.
17. In the *Password* field, enter the password for authorized users to access the camera.
18. Click **Apply**. The PTZ camera and its control settings are configured.
19. Use the PTZ control buttons located below the display area to move the camera and verify that the settings you have defined are correct.



**Note:**

Before proceeding to the next step, make sure that the settings on the PTZ camera match the detection requirements for an ioi unit. Refer to [Tips for Configuring Stationary Cameras and Third-Party PTZ Cameras](#).

20. Click **Start PTZ Setup** and follow the steps in the [PTZ Camera Definition Wizard](#).
21. After completing the above steps, configure the image quality settings in the *Image Quality Enhancer* section of the screen illustrated above. See following section.

### 5.3.1.3.1.1 Using the PTZ Camera Definition Wizard

The PTZ Camera Definition Wizard simplifies the process of setting up a PTZ camera. It includes the following steps:

- [Step 1: Detection & Tracking](#)
- [Step 2: Calibration](#)
- [Step 3: Preset & Playlist](#) or [Step 3: PTZ Synchronization](#)
- [Step 4: Tracking Parameters](#)

#### Step 1: Detection & Tracking

The first step of the PTZ camera wizard is to define the detection mode used on the unit being configured. The following is an example of the **Detection & Tracking** screen.



*Detection & Tracking Wizard Screen*

The **Detection & Tracking** screen includes the following fields:

Setting	Description
Detection from this camera	<p>Enables automatic detection from the PTZ camera presets as follows:</p> <ul style="list-style-type: none"> <li>Enables you to define camera presets and detection on each defined preset. Depth setting and detection rules must be defined on each preset doing detection.</li> <li>Supports PTZ tracking with autonomous tracking or no tracking settings depending on whether the <i>With automatic tracking</i> option is selected.</li> </ul> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;">  <p><b>Note:</b> Autonomous tracking is not available for generic PTZ cameras.</p> </div> <ul style="list-style-type: none"> <li>Supports playlist definitions for timed movement among the defined presets. At each preset its depth and detection settings are loaded and executed.</li> </ul>
With automatic tracking	<p>Enables and disables autonomous PTZ Tracking. Enables and disables the automatic control of the camera movement by the encoder for autonomous tracking of detected intruders. There is no need for user intervention or joystick use.</p> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;">  <p><b>Note:</b> Autonomous tracking is not available when "Generic Pan/Tilt/Zoom" is selected as the PTZ camera model.</p> </div>
Detection from another camera with Automatic PTZ tracking	<p>Detection is made on stationary cameras constantly monitoring the target field of view (FOV) and no detection is made on the PTZ camera (used only for tracking).</p> <p>Enables a handoff to be made from a stationary camera to a PTZ camera when an intrusion is detected by the stationary camera. The handoff enables the PTZ camera to automatically track the intruder.</p>
Manual detection with Automatic PTZ tracking	<p>Enables manual (user-initiated) detection as follows:</p> <ul style="list-style-type: none"> <li>Supports the definition of camera presets, but detection does not take place.</li> <li>Enables PTZ tracking of a suspect selected by the user in the unit's HTML interface Live View.</li> <li>Supports playlist definitions for timed movement among the defined presets when operating in NVR mode and there is live video.</li> </ul>

Setting	Description
	 <p><b>Note:</b> Video can be viewed in Live View only when the unit is operating in NVR mode. In other operating modes, it is not possible to use manual tracking.</p>

Select the required options and click **Next** to move to the next screen in the wizard. The **Calibration** screen opens.

### Step 2: Calibration

The calibration step is required for the TRK encoder to learn the parameters of the PTZ camera for automatic control and autonomous object tracking purposes.

The following is an illustration of the **Calibration** screen:



Calibration Wizard Screen

The **Calibration** screen includes the following fields:

Setting	Description
Unknown	Indicates that the camera installation height is not known and cannot be used for improving the detection settings.

Setting	Description
Set camera height	The height of the camera installation in relation to the detection plane. Note that the use of this parameter (accurate value) improves the detection results.
Calibrate button	Initiates the calibration process.
Calibration status	Provides information on the calibration results and indication whether the calibration was successful or not.

Select the required options and click **Next** to move to the next screen in the wizard. The **PTZ Synchronization** screen opens.

### To calibrate a PTZ camera

- In the *Camera Height* area, do one of the following:
  - If you do not know the installed camera's height measurements, select *Unknown*.
  - If you know the installed camera's height measurement, enter the camera height in the *Set Camera Height* text box.



**Note:**

- The camera height is the height of the camera lens relative to the Primary Ground plane where the intended tracking will take place.
- The camera height value greatly influences the detection and tracking accuracy. It is highly recommended to provide a precise camera height value when possible.

- Using the PTZ controller, set the zoom on the PTZ camera to the widest view (*Maximum Zoom Out*). Tilt and rotate it to a scene that is optimal, according the instructions on the **PTZ Camera Definition Wizard** screen.
- Set the optical zoom to full zoom out position for the calibration scene. This position is only needed during calibration and is used as the benchmark for zoom settings.
- Set the camera tilt to 30-50° below the horizontal line parallel to the ground.
- For calibration, the camera should be framed-up to a scene that contains many noticeable objects well distributed throughout the field of view. This position is only needed during calibration for optical checking.



**Note:**

There should be as many "hard-edges" as possible. Well defined edges (like cars, boxes, crates, etc.) will produce a more accurate result.

- Click **Calibrate**.

7. Review the *Calibration* status and *Results*. If the calibration failed or the results are significantly flawed, redo this procedure and refine the settings and scene as needed.
8. Click **Next** to move to the next step in the wizard.
9. Do one of the following:
  - If you selected *Detection from this camera* or *Manual detection with Automatic PTZ tracking* in [Step 1: Detection & Tracking](#), continue with [Step 3: Preset & Playlist](#).
  - If you selected *Detection from another camera with Automatic PTZ tracking* in [Step 1: Detection & Tracking](#), continue with [Step 3: PTZ Synchronization](#).

### Step 3: Presets & Playlist



#### Note:

This step is only available if you selected *Detection from this camera* or *Manual detection with Automatic PTZ tracking* in [Step 1: Detection & Tracking](#).

The **Presets & Playlist** screen enables you to define preset camera viewing positions and design a timed display sequence for running “step and stare” viewing known as a Playlist.

A Playlist enables you to organize configured presets into sequenced order presets. When a playlist runs, the Pan/Tilt/Zoom camera moves through each preset in the list for the defined duration enabling viewing and (if configured in step 2) detection as long as the camera is armed. When you create the Playlist you can define the duration of staying on each preset.

It is not necessary to include all the presets to be included in the playlist (timed sequence).



#### Note:

When detecting from the PTZ camera presets, make sure the playlist stop duration is enough for the detection rules and settings to load and enable detection.

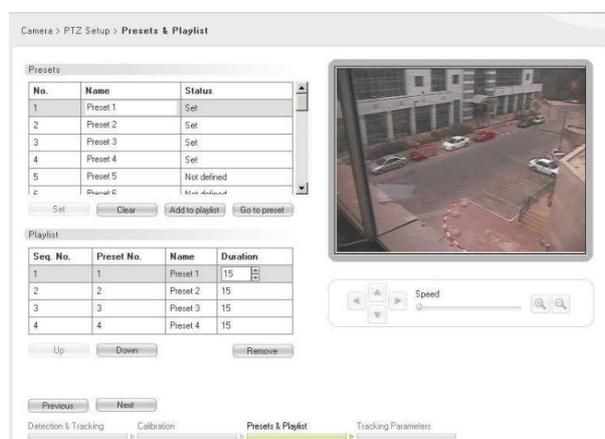
The duration should be sufficient for the type of detection required, so that an intruder has sufficient time to cover the minimal distance while the preset is on-screen. Short display durations can conflict with slow-moving intruders who do not cover the required distance. In scenarios such as these, consider adjustments to the minimum distance or extending the preset's duration. In addition, consider using a stationary camera for full-time surveillance of areas.



#### Caution:

All presets on a PTZ camera connected to a TRK encoder must be defined through the unit's HTML interface. Do not set presets directly on the PTZ camera.

The following is an example of the **Presets & Playlist** wizard step:



*Preset & Playlist Wizard Screen*

The **Presets & Playlist** Wizard screen includes the following columns and buttons.

Setting	Description
<b>Presets</b>	
No.	The number of the preset as assigned by the unit. The number of presets rows in the table according to the number of presets supported by the camera (maximum 32).
Name	The name assigned to the preset (can be edited).
Status	Shows whether or not the specific preset is set.
Set	Sets the selected preset to the current camera position.
Clear	Clears the preset from the Preset list.
Add to playlist	Adds the selected preset to the playlist. The same preset can be added several times to the playlist.
Go to preset	Moves the camera position to the selected preset.
<b>Playlist</b>	
Seq. No.	The sequence in which the preset is accessed by the playlist.
Preset No.	The number of the preset as assigned by the unit.
Name	The name of the Preset.
Duration	The period of time (in seconds) that the camera stays on the preset location until moving to the next preset in the playlist.
Up	Moves the selected preset one position up in the playlist. This is used for sorting the playlist into the desired sequential order.
Down	Moves the selected preset one position down in the playlist. This is used for sorting the playlist into the desired sequential order.
Remove	Removes the selected preset from the playlist.

**To configure presets and playlists**

1. Create presets by moving the camera position to a required scene and set each preset. See [To Create a Preset](#).
2. Create a playlist from the presets list. See [To Create a Playlist](#).
3. After creating your presets and playlist, click **Next** to go to the next step in the wizard. See [Step 4: Tracking Parameters](#).

**To create a preset**

1. In the *Preset* list, select the preset (row) you want to create.

**Note:**

1. When detecting from the PTZ camera presets, make sure the playlist stop duration is enough for the detection rules and settings to load and enable detection.
2. The table is populated automatically with rows according to the number of presets of the specific PTZ camera model (up to 32).

2. Using the PTZ controller, navigate as directly as possible to the scene to set as preset. In order to prevent poorly defined presets, take the following steps when defining presets:
  - Before beginning preset definition, get a clear idea of where you want the next preset to be positioned.
  - Navigate as directly as possible. Remember that any superfluous movements may reduce the preset accuracy.

**Note:**

1. All presets are referenced from the calibration scene, which is the camera position on which calibration was performed.
2. Be sure to navigate directly from one preset target position to the next, as every movement made with the PTZ controller is configured in the preset. Consequently, the more preset positions that are made, the greater is the possibility of errors occurring.

3. When the camera is at the position, click **Set**. The preset is set.



**Note:**

All presets are referenced from the calibration scene (the camera position on which calibration was performed). After setting a preset, the camera returns automatically to the calibration position, ready for an additional preset configuration.

4. Repeat steps 1 through 3 for all the presets you want to create.

**To remove a preset**

1. In the *Preset list*, select the preset that you want to remove.
2. Click **Clear**. The preset is removed.



**Caution:**

If you remove a preset that has already been configured for detection, playlists, and PTZ handoff, you will lose all configurations related to the removed preset.

**To create a playlist**

1. In the *Preset list*, select the prseset that you want to add to the playlist.
2. Click **Add to playlist**.
3. In the *Duration* drop-down list, enter the time in seconds that you want the camera to remain in the preset location until moving to the next preset in the sequence.
4. Change the order of the presets in the playlist using the **Up** and **Down** buttons.



**Note:**

A preset can be added more than once to the playlist.

### Step 3: PTZ Synchronization with Fixed Cameras



#### Note:

1. This step is only available if you selected *Detection from another camera with Automatic PTZ tracking* in step 1 of the PTZ wizard. See [Step 1: Detection & Tracking](#).
2. Depth and rules should be defined on the fixed camera before configuring the handoff settings on the PTZ camera.
3. If you change the depth on the fixed camera, you must perform the binding process again.

PTZ synchronization is required when detection is performed by a fixed camera which continuously monitors the target area and hands off the detection results to the PTZ camera, which then continues tracking the detected intruder.

The *PTZ Synchronization* step enables you to synchronize the field of view (FOV) in a preset with the image from a fixed camera monitoring a similar FOV.

Synchronizing the PTZ and fixed cameras requires two steps:

- Setting a preset for the PTZ camera that is the same or has a larger field of view as the fixed camera.
- Correlating 8 points in the field of view of both the fixed and PTZ cameras (i.e. marking the same point in the monitored area both in the PTZ preset scene and the fixed camera scene). See [To set correlation points in a preset](#).



#### Note:

Correlation points are two points representing the same physical location: one on the PTZ camera video image (preset) and the other on the stationary camera video image.

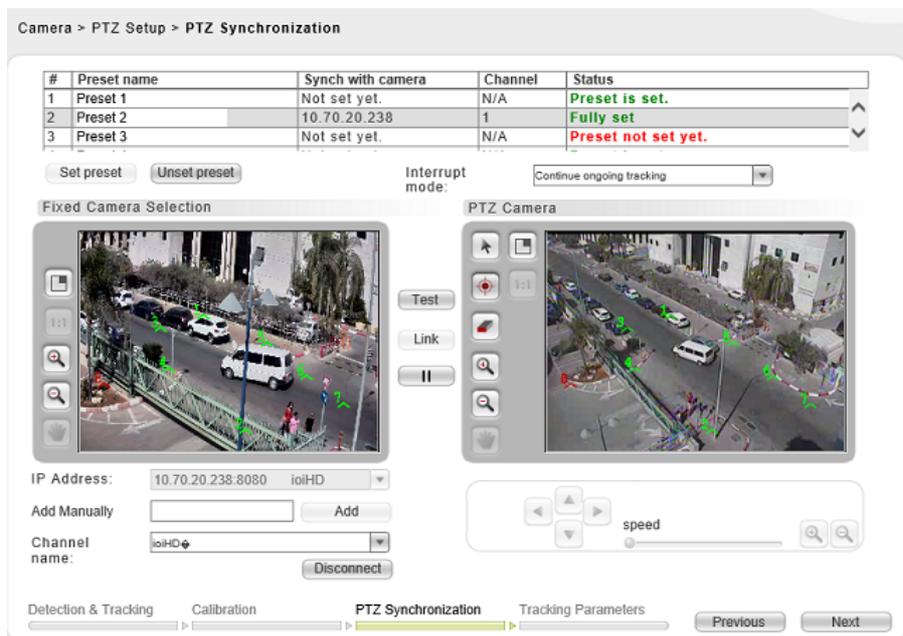


#### Caution:

Accurate placement of these points is absolutely critical to the correct operation of the handoff feature. The zoom tools should be used to ensure that the markers correspond exactly to the same item on both camera views. Markers are to reference items **ONLY** on the ground level. Any item elevated above the primary ground plane cannot be used as a reference.

As part of the synchronization definition, you can define priorities for situations with more than one single intruder (multiple detections). These priorities configure the PTZ camera to continue with its current tracking or stop the tracking and start tracking the newly detected object.

In the following example of the **PTZ Synchronization** screen, the correlation points for the fixed camera are displayed in the window on the left and the correlation points for Preset 2 of the PTZ camera are displayed in the window on the right. The numbers and locations of the presets are the same in both windows.



trk-101-P PTZ Synchronization Screen

The **PTZ Synchronization** screen has the following fields and buttons:

Field/Button	Description
#	Number assigned to the preset.
Preset name	Name of the preset (editable).
Synch with camera	The IP address of the stationary camera which will perform the detection and will handoff the intruder information to the PTZ camera for autonomous tracking.
Channel	N/A
Status	Current status for this preset (Preset is set/fully set/not set yet/not defined/synched with fixed camera, or More sync points needed).
Set preset	Sets the current camera position and zoom as the selected preset.
Unset preset	Clears the selected preset (camera position and zoom).
Interrupt mode	For situations with more than a single intruder (multiple detections simultaneously), this mode determines which of the following actions the PTZ camera will perform: <ul style="list-style-type: none"> <li>• Continue its current tracking (Continue ongoing tracking)</li> <li>• Stop the current tracking and track the new detection (Track last detected object)</li> </ul>
Test	Tests the synchronization settings between scenes. After correlating the FOV of the PTZ camera with the FOV of the fixed camera, moving the mouse around in the fixed camera video screen will show the related position in the PTZ scene.
Link	Starts the calculations for correlating the scenes after positioning the correlation points and links the PTZ preset with the fixed camera.

Field/Button	Description
	The <b>Pause</b> button freezes the image.
	The <b>Play</b> button displays the Live Video image.
IP address	IP address of a discovered stationary camera on the which will perform detection and handoff to the specific preset of the PTZ camera.
Add Manually	If the stationary is not discovered (i.e., it is located on another VLAN), enter the IP address in the text box. Then click Add. If it is successfully added, the camera's IP address is added to the IP Address drop-down list.
Add	Click this button to manually add a camera that was not discovered. The encoder searches for the camera and adds it if it is discovered. After the camera is added, select it from the IP Address drop-down list and click <b>Connect</b> .
Channel name	Displays the name of the selected fixed camera.
Connect/ Disconnect	Connects to the stationary camera at the address selected in the IP address field. Click <b>Disconnect</b> to disconnect the stationary camera.

The camera selection windows include the following buttons :

Buttons	Description
	<b>Select point:</b> Selects a correlation point in the PTZ camera view window. The Selected point can be moved and positioned by dragging them.
	<b>Add point:</b> Adds a correlation point to both the stationary and PTZ camera video windows.
	<b>Delete point:</b> Deletes a correlation point in both the stationary and PTZ camera video windows.
	<b>Zoom In:</b> Increases the optical magnification in the <i>Viewing</i> area.
	<b>Zoom Out:</b> Decreases the optical magnification in the <i>Viewing</i> area.
	<b>Pan:</b> Enables you to move the magnified view in the <i>Viewing</i> area. The <i>Viewing</i> area must be in a magnified state in order to use this tool.

### To configure PTZ synchronization

1. Set each preset position by moving the PTZ camera position to a required field of view (FOV) and set the preset.



#### Note:

Only one stationary camera can be synchronized to a preset. Set a preset for each stationary camera to be synchronized even if they have similar field of view.

2. Create correlation points for each preset to be synchronized with a fixed camera. See procedure below: [To set correlation points in a preset.](#)



**Note:**

Correlation points are two points representing the same location (physical place), one on the PTZ camera video image (preset) and the other on the stationary camera video image. See Figure: [trk-101-P PTZ Synchronization Screen.](#)

3. After synchronizing the fixed and PTZ cameras, click **Next** to go to the next step in the wizard. See [Step 4: Tracking Parameters.](#)

**To create a preset**

1. In the *Preset list*, select the preset you want to create.



**Caution:**

All presets on a PTZ camera connected to a TRK encoder must be defined through the web interface. Do not set presets directly on the PTZ camera.



**Note:**

1. The table is populated automatically with rows according to the number of presets of the specific PTZ camera model (up to 32).
2. Only one stationary camera can be synchronized to a single preset. Set a preset for each stationary camera to be synchronized, even if they have similar field of view.
3. All presets are referenced from the "Calibration" scene (the camera position on which calibration was performed).

2. Using the PTZ controller, navigate as directly as possible to the scene to set as preset. In order to prevent poorly defined presets, take the following steps when defining presets:
  - a. Before beginning preset definition, get a clear idea of where you want the next preset to be.
  - b. Navigate as directly as possible. Remember that any superfluous movements may reduce the preset accuracy.



**Note:**

You must navigate as directly as possible to the preset target scene, as every movement made with the PTZ controller is taken into account. Consequently, the more movements that are made, the greater the possibility of accumulating errors.

- c. When the camera is at the position, click **Set Preset**. The preset position is set.

**Note:**

After setting a preset the camera returns automatically to the calibration position, ready for an additional preset configuration.

3. Repeat steps 1 and 2 for all the presets that you want to set.

**To remove a preset**

1. In the *Preset* list, select the preset that you want to clear.
2. Click **Clear Preset**. The preset position is cleared.

**Caution:**

If you remove a preset that has already been configured for detection, playlists, or PTZ handoff, you lose all configurations related to the removed preset.

**To set correlation points in a preset**

1. In the PTZ Camera toolbar, select **Add Point** .
2. Move your mouse in the **PTZ Camera** window to the position where you want to place the correlation point and click. A correlation point is displayed .

**Note:**

1. Correlation points are numbered in sequence from 1 to 8. A corresponding numbered marker will appear on the fixed camera window. Use your mouse and the Select/Zoom/Hand tools to adjust the location of each marker in both windows so that the marker points exactly to the same location on both cameras.
2. Correlation points should only be placed on the ground level, i.e. the primary ground plane. Any points elevated off the ground level should not be used.
3. The two correlation markers should point exactly to the same physical location in both camera views. Any error here will result in poor hand-off performance.
4. Use the available viewing tools (Zoom-in, Zoom-Out, Pan, and Close-up) to enlarge the image and focus on the specific place to improve the placement accuracy of the correlation points.

3. Repeat step 2 for each correlation point you want to create. You must create 8 correlation points.

4. If you want to move any correlation point, click **Select point**  and move the correlation point as required.
5. To delete a correlation point, select it by using the **Select point** tool.
6. Click **Delete point** . The correlation point is deleted.
7. After defining all the correlation points, click **Test** to confirm that the correlation between the **Fixed Camera** and **PTZ Camera** windows is correct, by moving the mouse on the fixed camera video screen. A correlated (synchronized) movement is displayed on the PTZ camera window.
8. Correct the correlation points in either of the windows until the test is successful.
9. Click **Link**. The correlation points between the **Fixed Camera Selection** and **PTZ Camera** windows are linked and the PTZ preset is synchronized with the fixed camera.

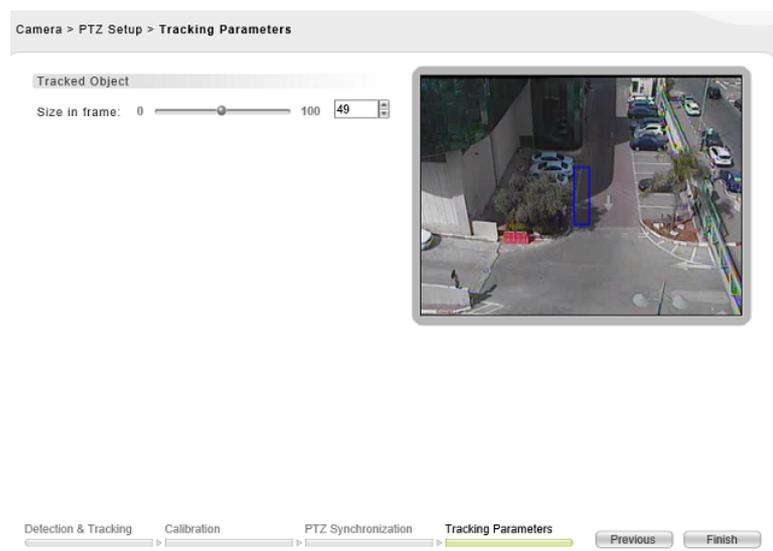
#### To set the Interrupt mode

1. From the *Interrupt mode* drop-down list, select the priority for the PTZ camera. Select from:
  - *Continue ongoing tracking*: The PTZ camera ignores additional detection handoffs while tracking.
  - *Track last detected object*: The PTZ camera stops its current tracking and starts tracking the new detection handoff.

#### Step 4: Tracking Parameters

The **Tracking Parameters** screen enables you to define the PTZ camera settings during Autonomous PTZ Tracking.

The following is an example of the *Tracking Parameters* screen:



*Tracking Parameters Screen*

The **Tracking Parameters** screen has the following fields:

Setting	Description
Size in frame	The size of an object in the display area during Autonomous PTZ Tracking, relative to the video screen.

#### To set tracking parameters

1. Move the slider to the required size or select the required value of ratio between the object dimension and the frame size.

#### 5.3.1.3.1.2 To Adjust Image Quality

The Image Quality Enhancer section includes the following settings:

Automatic/ Manual	<p>Determines which image enhancement method is to be used (<i>Automatic</i> or <i>Manual</i>).</p> <ul style="list-style-type: none"> <li>• Automatic enhancement enables the built-in image enhancer to determine the best settings for detection at any given time</li> <li>• Manual enhancement enables you to determine the image settings using the sliders described below</li> </ul>
Brightness	<p>Sets for the amount of white added to the color of the image. From the drop-down list, select a number from 0-100.</p> <ul style="list-style-type: none"> <li>• The higher the number, the more intense (whiter) the image</li> <li>• The lower the number, the less intense (less white) the image</li> </ul>
Contrast	<p>Sets the difference between colors (gray scale). From the drop-down list, select a number from 0-100.</p> <ul style="list-style-type: none"> <li>• The higher the number, the lighter the colors</li> <li>• The lower the number, the darker (more gray) the colors</li> </ul>
Saturation	<p>Sets the vividness of hue (the degree of difference from a gray of the same lightness or brightness). From the drop-down list, select a number from 0-100.</p> <ul style="list-style-type: none"> <li>• The higher the number, the sharper the colors</li> <li>• The lower the number, the colors will be less sharp</li> </ul>
Enable noise reduction	Activates the 2D noise reduction filter.

#### To adjust image quality

1. From the *Image Quality Enhancer* section, select either *Automatic* or *Manual*.



#### Tip:

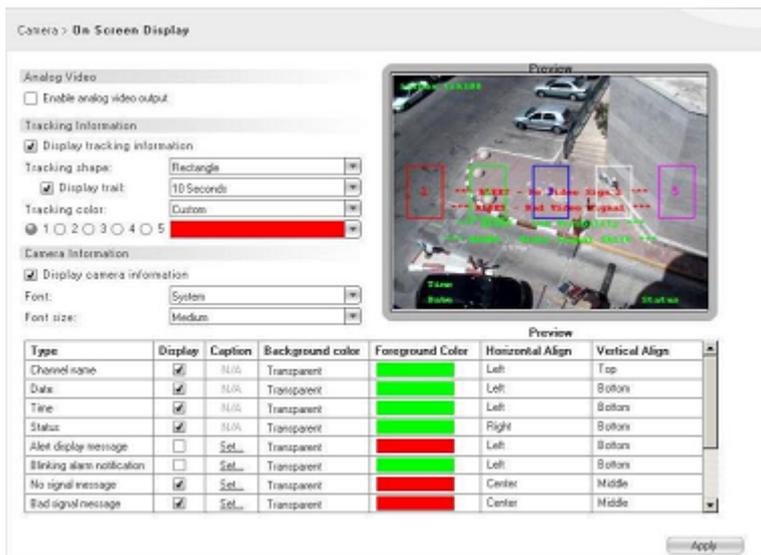
Always use the automatic *Image Quality Enhancer* option.

2. If *Manual* is selected, use the sliders to change the following settings:
  - *Brightness*
  - *Contrast*
  - *Saturation*

3. If you want to enable 2D Noise Reduction, select the *Enable Noise Reduction* checkbox.
4. Click **Save**. The settings for enhancing the image are saved.

### 5.3.2 Configuring On-Screen Display Settings

The **On-Screen Display** window determines the information to be displayed on the video screen as an overlay on top of the video. The settings on this window define the selection, alignment and color configuration of the various overlays that appear during normal monitoring, events and detection.



On-Screen Display Window



**Note:**

1. Analog output from the unit is disabled by default and must be enabled if necessary.
2. The settings under the *Tracking Information* section refer both to the IP streaming video and analog video output.
3. The settings under the *Camera Information* section refer only to the analog video output and do not affect the IP streaming video content.

The *On-Screen Display Window* includes the following fields:

Setting	Description
Enable analog video output	<p>Enables the output of processed analog video from the unit to analog devices such as monitors, DVR, and so on.</p> <div style="border: 1px solid orange; padding: 5px;"> <p><b>Note:</b> Analog output from the unit is disabled by default and must be enabled via the unit's web interface.</p> </div>

Setting	Description
Display tracking information	Enables and disables the display of tracking marks on top of the detected objects according to the defined tracking shape. When enabled, this setting refers both to the IP streaming video and analog video output.

*Rectangle*: Indicates a detected object is marked by a rectangle around the detected object.



Figure Rectangle Tracking Shape

*Crosshair*: Indicates a detected object is marked by a crosshair (+) overlay centered on the detected object.



CrosshairTracking Shape

Tracking shape	
Display trail	Enables and disables the OSD to show a trailing line where the moving vehicle or person has been. The drop-down list enables you to select how much trail history is displayed. Any trail information that has aged beyond this threshold time is subtracted from the trail's display length.
Tracking color	The color assigned to tracking shapes and trails for one or more detected threats. <ul style="list-style-type: none"> <li>• <i>Automatic</i>: The system to determine the next color for each of multiple intruders or threats.</li> <li>• <i>Custom</i>: Enables you to define the color to be used for the first five detected intruders and threats that are simultaneously viewed on an alarm video.</li> </ul>
1 – 5 (intruder colors)	This feature is only activated when the <i>Tracking Color</i> is set to <i>Custom</i> . Select up to five different colors for tracking sequential intrusions or threats.

Setting	Description
Display camera information	<p>Display camera-related OSD information on the display according to your selection in the <i>Display</i> column of the <i>Camera Information</i> list.</p> <div style="border: 1px solid orange; padding: 5px;">  <p><b>Note:</b> The settings under this section refer only to the analog video output. They do not affect the IP streaming video content.</p> </div>
Font	Enables you to select the font for the OSD.
Font size	<p>Enables you to select the font size for the OSD.</p> <ul style="list-style-type: none"> <li>• <i>Small</i></li> <li>• <i>Medium</i></li> <li>• <i>Large</i></li> </ul>

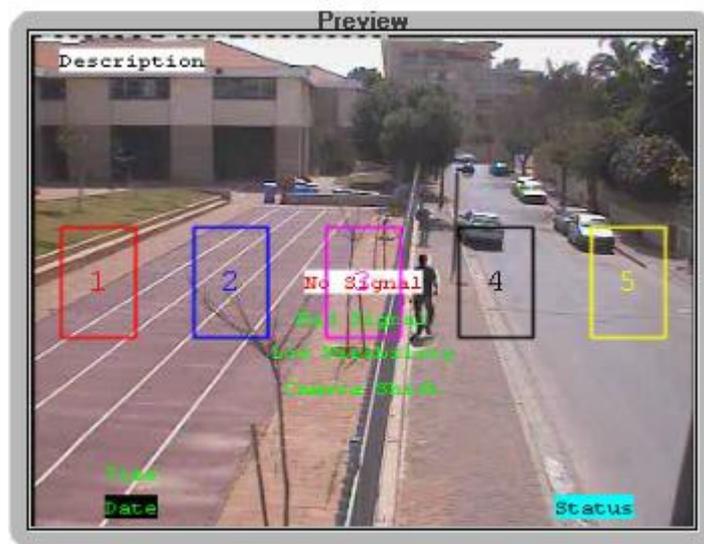
### 5.3.2.1 OSD Camera Information List

The following table describes the columns in the OSD Camera Information list:

Column	Description
Type	<p>Description of the following OSD types.</p> <div style="border: 1px solid orange; padding: 5px;">  <p><b>Note:</b> The settings under this section refer only to the analog video output. They do not affect the IP streaming video content.</p> </div>
Channel Name	Name of the channel as OSD text.
Date	Date stamp that is the current date on the unit.
Time	Time stamp that is the current time of the unit.
Status	<p>Status of a camera. The following are status texts are displayed:</p> <ul style="list-style-type: none"> <li>• <i>Armed</i>: The camera is armed for detection. Is not in an alarm state</li> <li>• <i>Live</i>: The camera is disarmed. Is not in an alarm state</li> <li>• <i>Alarm</i>: The camera has detected. Is in an alarm state</li> <li>• <i>Not Connected</i>: The camera is not connected to the network</li> </ul>
Alert display message	Displays a text alert and other custom text when a detection occurs.
Blinking alarm notification	Shows a blinking customized rectangle when an alarm notification occurs.

Column	Description
	Can be used for triggering DVR events recording using the low accuracy DVR Video Motion Detection (VMD) to monitor the blinking alarm.
No signal message	Displays <i>No Signal</i> or other configured text when the video input signal is lost.
Bad signal message	Displays <i>Bad Signal</i> or other configured text when the video Input signal is poor quality.
Low visibility message	Displays <i>Low Visibility</i> or other configured text when a low visibility alarm occurs (video with significantly low grayscale variance).
Camera shift message	Displays <i>Camera Shift</i> or other configured text when a Camera Shift alarm occurs (stationary camera is physically moved from its original view).
Good signal message	Displays <i>Signal OK</i> or other configured text when the video signal is good.
Video disabled message	Displays <i>Video Disabled</i> or other configured text when the video is disabled.
Display	Select if you want to display the OSD type.
Caption	Where applicable, this column enables you to define the caption to be displayed for the OSD type.
Background color	Select the background color that is displayed behind the overlay text. If <i>Transparent</i> is selected, no background color is applied.
Foreground color	Select the color for the OSD text.
Horizontal Align	Sets the text on-screen position. Select from: <ul style="list-style-type: none"> <li>• <i>Left</i></li> <li>• <i>Center</i></li> <li>• <i>Right alignment</i></li> </ul>
Vertical Align	Sets the text on-screen position. Select from: <ul style="list-style-type: none"> <li>• <i>Top</i></li> <li>• <i>Middle</i></li> <li>• <i>Bottom</i></li> </ul>

The following is an example of the **Preview** screen showing the OSD configuration.



**Preview**  
OSD Configurations in Preview Window

### 5.3.2.2 To Define the On-Screen Display Settings Tab

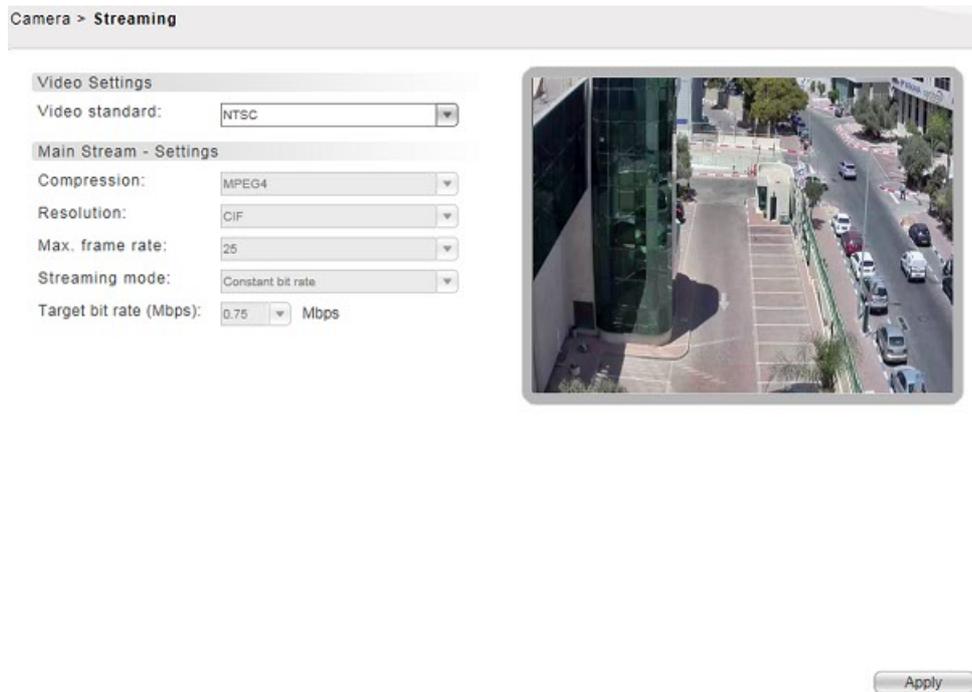
#### To define the On-Screen Display settings tab

1. In the **Setup** workspace, select **Camera > On Screen Display**. The **On-Screen Display** screen is displayed. See Figure: [On-Screen Window Display Screen](#).
2. In the *Analog Video* area, select *Enable analog video output* if you want to enable analog video.
3. In the *Tracking Information* area, select *Display tracking information* if you want to display tracking.
4. Configure the tracking shapes and colors as follows:
  - a. From the *Tracking Shape* drop-down list, select the required shape.
  - b. To display a tracking trail, select *Display trail*.
5. Select the time that you want the trail history shown in the display.
6. From the *Tracking color* drop-down list, select one of the following options to define the color:
  - a. *Automatic* if you want the system to automatically select the tracking color.
  - b. *Manual* if you want to manually define the color. If you choose *Manual*, you can define up to five tracking colors.
7. To display camera information on the analog video output, select *Display camera information*.
8. From the *Font size* drop-down list, select the required font size.
9. Define the information you want to display as explained in the [OSD Camera Information List](#).
10. Click **Apply**. Your settings are saved.

### 5.3.3 Configuring Streaming Settings

The **Streaming** screen enables you to define network video streaming settings, such as compression (MPEG4, MJPEG, or H.264), resolution, bit rate, etc.

The trk-101 and trk-101-P support one video stream. Following is an example of the trk-101 **Streaming** screen:



*Streaming Screen*

The **Streaming** screen includes the following fields:

Setting	Description	Setting
Video Settings		Shows the video settings for the unit.
	Video standard	Displays the TV standard of the camera (PAL or NTSC).
Main Stream - Settings		Enables you to define the settings for the main streaming set.
	Compression	Enables you to define the compression mode for the unit: <ul style="list-style-type: none"> <li>• <i>MPEG4</i></li> <li>• <i>H.264</i></li> <li>• <i>MJPEG</i></li> </ul>
	Resolution	Enables you to select from the following resolutions: <ul style="list-style-type: none"> <li>• <i>CIF</i></li> <li>• <i>VGA</i></li> <li>• <i>4CIF</i></li> <li>• <i>2CIF</i></li> <li>• <i>D1</i></li> </ul>
	Max. frame rate	Enables you to select the maximum frame rate (PAL: 25 fps/NTSC: 30 fps).
	Streaming mode	Enables you to select the streaming mode: <i>Constant bit rate (CBR)</i> or <i>Variable bit rate (VBR)</i> . <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;">  <p><b>Note:</b> Variable bit rate is not available with MJPEG compression.</p> </div>
	Target bit rate (Mbps)	Enables you to select the target bit rate when using H.264 and MPEG4 compression.
	Video Quality	Enables you to select the quality of the streamed video for all compression types with VBR streaming. Select a number from 5-100.

The following table summarizes the various settings for the main stream:

Compression	Resolution	Max. frame rate – fps (PAL/NTSC)	Streaming mode	Target bit rate (Mbps)	Video quality
MPEG4	CIF	25/30	CBR	0.125-1.5	-
MPEG4	CIF	25/30	VBR	-	5-100
MPEG4	VGA	25/30	CBR	0.5 -2.5	-
MPEG4	VGA	25/30	VBR	-	5-100
MPEG4	4CIF	25/30	CBR	1-4	-
MPEG4	4CIF	25/30	VBR	-	5-100
MPEG4	2CIF	25/30	CBR	PAL: 0.5-2.0 NTSC: 0.25-2.0	-
MPEG4	2CIF	25/30	VBR	-	5-100
MPEG4	D1	25/30	CBR	1-4	-
MPEG4	D1	25/30	VBR	-	5-100
H.264	CIF	25/30	CBR	0.125-1.5	-
H.264	CIF	25/30	VBR	-	5-100
H.264	VGA	18/22	CBR	0.5 -2.5	-
H.264	VGA	18/22	VBR	-	5-100
H.264	4CIF	12/15	CBR	0.75-3.0	-
H.264	4CIF	12/15	VBR	-	5-100
H.264	2CIF	25/30	CBR	0.25-2	-
H.264	2CIF	25/30	VBR	-	5-100
H.264	D1	12/15	CBR	0.75-3	-
H.264	D1	12/15	VBR	-	5-100
MJPEG	CIF	25/30	CBR	-	5-100
MJPEG	VGA	25/30	CBR	-	5-100
MJPEG	4CIF	25/30	CBR	-	5-100
MJPEG	2CIF	25/30	CBR	-	5-100

Compression	Resolution	Max. frame rate – fps (PAL/NTSC)	Streaming mode	Target bit rate (Mbps)	Video quality
MJPEG	D1	25/30	CBR	-	5-100

### 5.3.3.1 To Define the Main Stream Settings

#### To define the main stream settings

1. In the **Setup** workspace, select **Camera > Streaming**. The **Streaming** screen is displayed. See Figure: [Streaming Screen](#).
2. From the *Video standard* drop-down list, select the video standard for the camera (*PAL* or *NTSC*).



#### Note:

Make sure that the ioi unit and the external analog equipment support the same video standard (PAL or NTSC).

3. Confirm that other predefined settings will be deleted.
4. From the *Compression* drop-down list, select the compression mode for the camera:
  - *MPEG4*
  - *H.264*
  - *MJPEG*
5. From the *Resolution* drop-down list, select *CIF*.
6. From the *Max. Frame rate* drop-down list, select the maximum frame rate.
7. From the *Streaming mode* drop-down-list, select *Constant bit rate* (CBR) or *Variable bit rate* (VBR).
8. Set the Target bit rate (Mbps) or Max. bit rate (Mbps)
  - When defining MPEG4 or H.264 with CBR, select the *Target bit rate (Mbps)* from the drop-down list.
  - When defining MPEG4 or H.264 with VBR, select a value from the *Video Quality* drop-down list.
  - When defining MJPEG, select a value from the *Video Quality* drop-down list.
9. From the *Streaming mode* drop-down-list, select *Constant bit rate* (CBR) or *Variable bit rate* (VBR).
  - When defining MPEG4 and H.264: In the *Target bit rate (Mbps)* or *maximum bit rate (Mbps)* field, set the bit rate according to the selected streaming mode.
  - When defining MJPEG, select the required quality from the *Video Quality* drop-down list.
10. Click **Apply**. Your settings are saved.

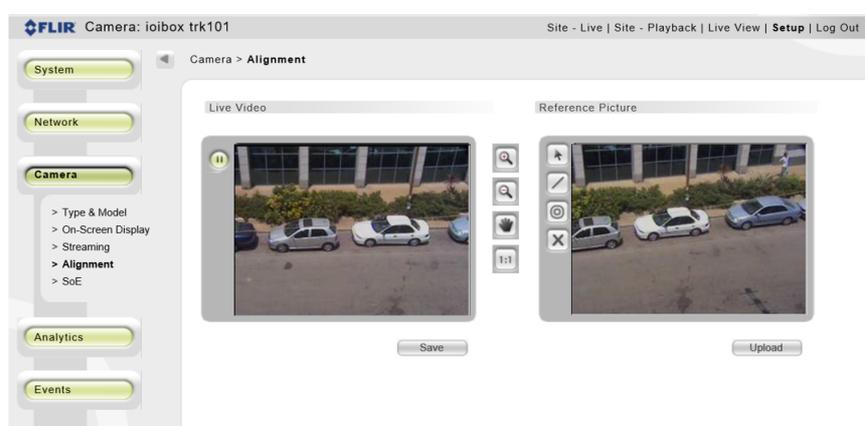
### 5.3.4 Aligning the Camera Position

Situations can occur where the camera is moved or shifted from its original position, thus changing its field of view or, in the case of a PTZ camera, changing its preset position.

In order to avoid the need to reconfigure the depth (perspective) settings, the camera alignment functionality uses a reference image (a snapshot of the camera FOV at the right position) for returning the camera, or preset in the case of a PTZ camera, to its original position.

The re-aligning method consists on drawing references (same lines or points) on both images simultaneously, comparing and correcting the camera or preset position accordingly.

The following is an example of the **Alignment** screen on a TRK unit, which shows the original position FOV and the shifted one on the live video image:

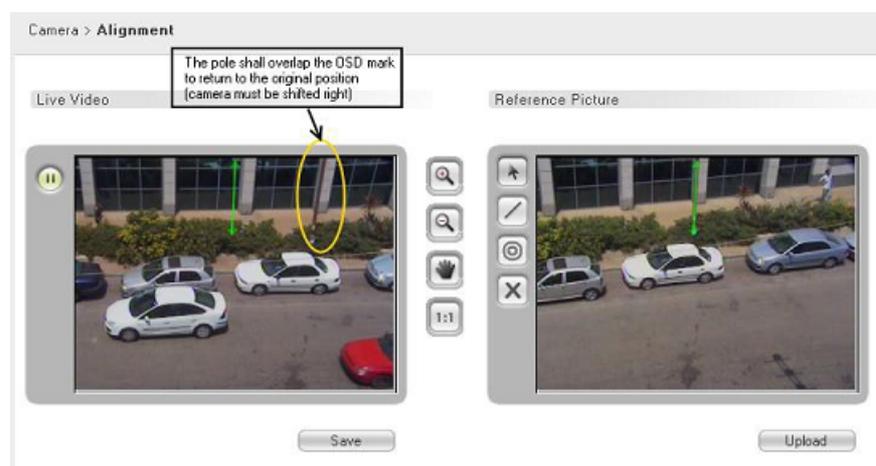


Camera > Alignment Screen

#### 5.3.4.1 To Realign a Camera or Preset Position

##### To realign a camera or preset position

1. In the **Setup** workspace, select **Camera > Alignment**. The **Alignment** screen is displayed. See figure above.
2. To upload a reference picture from a jpeg file, click **Upload**. The reference image is displayed in the right window.
3. On top of the **Reference Picture**, draw lines  and/or points  on reference (fixed) locations, such as columns, windows, borders, signs, etc. The same references appear simultaneously on the **Live Video** window.



Camera > Alignment Screen with References

4. Move the camera or preset position so that the OSD marks match the same position as in the original image (e.g. in the picture above the green line overlaps the pole).
5. Do one of the following:
  - For a fixed camera, fix the camera position.
  - For a PTZ camera, reset the preset position.

### 5.3.5 Using Storage on the Edge (SoE)

trk-101/101-P units can store approximately 3800Mb of video clips and recordings in the internal flash memory on units that are shipped with firmware version 2.1.1 and higher. The clips can be played back with the free VLC media player.



**Note:**

1. The remote unit must be operating in NVR mode in order to view video while armed.
2. The VLC player must be the 32-bit version.

The **Setup > Camera > SoE** screen displays how many events can be stored based on the range settings, configured video profile and recording profile. Use this screen to enable or disable the SoE function, to set the pre-event and post-event recording range, and to automatically backup SoE recordings by FTP.



**Note:**

1. This feature is enabled only on units that are shipped from the factory with firmware version 2.1.1.
2. This feature is NOT upgradeable on units that are already deployed in the field.
3. Storage is not on a microSD card.
4. It is recommended to set unit date and time before enabling SoE.

### 5.3.5.1 To Utilize Storage on the Edge

#### To utilize Storage on the Edge

1. Select **Setup > Camera > SoE**. The **SoE** screen is displayed.

Camera > SoE

**Storage On Edge**

Disabled

Enabled

Pre-event Range:

Post-event Range:

Number of supported events: 100

**FTP Backup**

Disabled

Enabled

FTP server Name / IP:

FTP server port:

FTP Username:

FTP Password:

Sub folder:

Video standard:	PAL
Video Compression:	H264
Resolution:	2CIF
Max. frame rate:	25
Streaming mode:	Constant bit rate
Target bit rate (Kbps):	1250

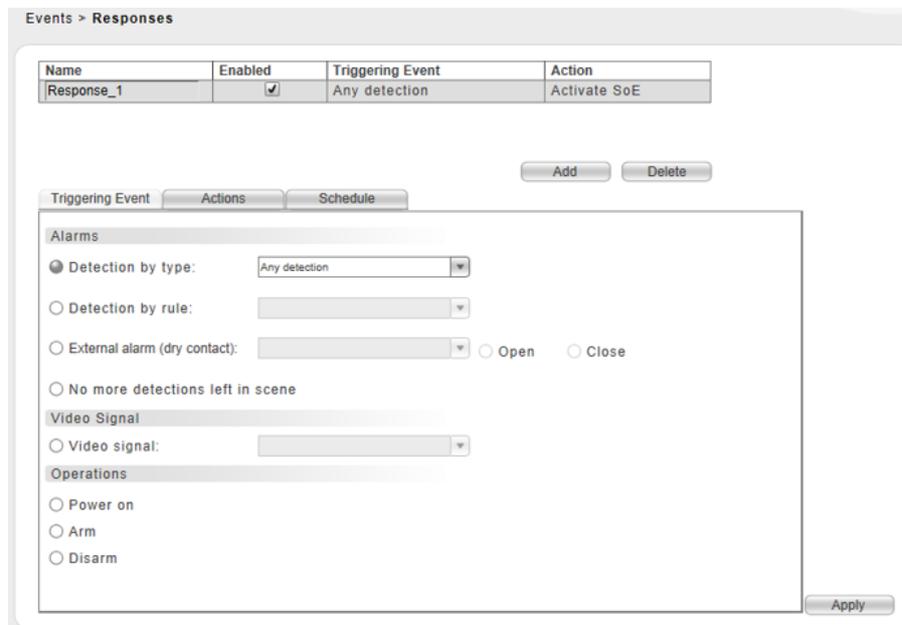
Setup > Camera > SoE Screen

2. In the *Storage on Edge* area, select *Enabled*.
3. From the *Pre-event Range* drop-down list, select the number of seconds (0-30) to record before the event.
4. From the *Post-event Range* drop-down list, select the number of seconds (10-270) to record after the event.
5. Click **Apply**.

### 5.3.5.2 To Record an SoE Event

#### To record an SoE event

1. After applying SoE settings, click **Events**. The **Events > Responses** screen opens on the *Triggering Event* tab.



*Events > Responses > Triggering Event Screen*

2. Click **Add**.
3. From the *Detection By Type* drop-down list, select *Any Detection* or any other triggering event from the drop-down list.



*Detection By Type Drop-Down List*

4. Select the *Actions* tab.

Events > Responses

Name	Enabled	Triggering Event	Action
Response_1	<input checked="" type="checkbox"/>	Any detection	Activate SoE
Response_2	<input checked="" type="checkbox"/>	Any detection	Activate SoE

Add Delete

Triggering Event Actions Schedule

Step	Action	Settings
1	Activate SoE	...

Up Down Add Delete

Action:  [Perform on this unit](#)

Settings

Activate SoE:  Immediately

Apply

*Events > Responses > Actions Screen*

5. From the *Action* drop-down list, select *Activate SoE*.
6. Repeat the above steps each event that you want to record if you do not want to record all detections.
7. Click **Apply**.



**Note:**

If you do not perform the above steps, the event will not be recorded.

### 5.3.5.3 To Backup a File Using FTP



**Note:**

If you do not perform the following steps, the event will not be recorded.

#### To backup a file using FTP

1. In *FTP Backup* area, select *Enabled*.
2. In the *FTP server IP* text box, enter the FTP server IP address.
3. In the *FTP server port* field, select the port number.
4. In the *FTP Username* text box, enter the FTP user name.
5. In the *FTP Password* text box, enter the FTP password.
6. In the *Sub folder* text box, enter the camera name.
7. Click **Apply**.



**Note:**

The following restrictions apply when using SoE:

1. Operates only in NVR mode.
2. Operates only when trk-101/101-P is configured to CBR (Constant Bit Rate) video profile, which is set on the **Setup > Camera > Streaming** screen.
3. Bit rate must be 1.5 Mbps or less.
4. Operates only on H.264 and MPEG4.
5. Recording is for events, which must be configured from the **Setup > Events** screens. This function is not used for constant recording.
6. Maximum clip size 300 Mbit (including pre-event and post-event recording).
7. A configured post-event time range stops the clip recording, even if more events were triggered. If additional events occur during the clip recording, a new clip is created with post-event duration.

## 5.3.6 Tips for Camera Configuration

This section provides suggestions for configuring stationary cameras and PTZ cameras.

### 5.3.6.1 Tips for Configuring Stationary Cameras and Third-Party PTZ Cameras

Following are suggestions for configuring stationary cameras and PTZ cameras:

- The encoders only support analog input signal. The video input of the encoder's white balance signal should be 1V p/p.
- Connected video should be live when the encoder is powered on.
- If the camera model supports On-Screen Displays, disable them.
- Enable the image stabilizer, if your camera model supports this functionality.
- If the camera has built-in motion detection, disable it.
- If the camera model has a shutter speed setting that is automatically reduced during night, disable it.
- Position the camera to avoid scenes that directly view the sun in the daylight.
- Extend the sunshield as far as possible. This increases the possibility of the sunshield protecting from effects of the sun and the lens from dust and weather.
- Adjust the camera for clarity of the objects, not necessarily for the best aesthetics.
- Adjust the sharpness, brightness, and gain on the camera for optimal settings.
- Adjust the focus as follows: Adjust the focus during the day to best view of the area of interest. Perform final focusing always during the night.

Following are tips for configuring PTZ cameras only:

- Analog PTZ cameras must have auto focus. Assure that auto focus (AF) is enabled and manual focus (MF) disabled.
- If the PTZ camera has automatic backlight compensation (BLC), disable it.
- If the PTZ camera supports privacy masking, disable all privacy masks.
- If the PTZ camera has proportional pan and tilt, disable it.



**Caution:**

To achieve good tracking results, proportional pan must be disabled.

- If the PTZ camera supports digital zoom, the digital zoom should be disabled or adjusted to full zoom out. Current support for zoom uses optical zoom commands.
- If the PTZ camera supports zoom speed settings, refer to the ioi datasheet for the optimal setting.
- Disconnect any attached keyboards or controllers, except for unit connection. Use of a splitter and dual controls may cause interference with unit operations.
- If the camera supports sync settings, change the synch setting to internal synchronization.

### 5.3.6.2 Tips for Configuring All Cameras

#### 5.3.6.2.1 Camera Height and Angle Adjustment

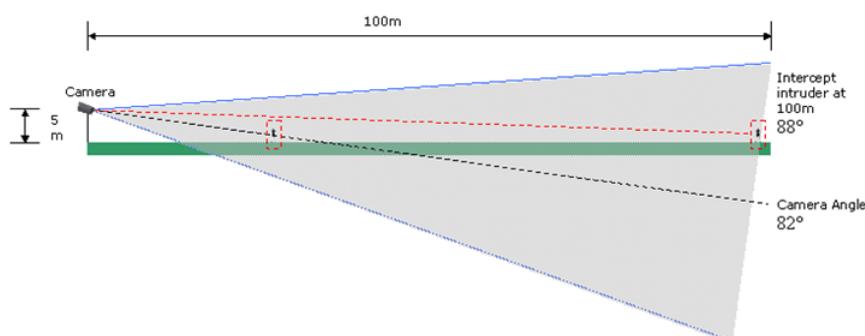
- When movement towards the camera is to be detected, the camera angle and height should be adjusted based on the Field of View depth, topology/detection plane, and angle of intersection.



**Tip:**

Recommended minimum camera height is 5m (15 feet) above the detection plane (6m/19 feet is advisable). This height should be increased as the detection distance increases.

- In case a unit is mounted on a fence, the fence height should be considered. Assuming fence height is 2.5m/8', the minimum installation height should be 7.5m (2.5m + 5m)/23 feet (8 feet + 15 feet).
- In general, greater heights with smaller inner (steeper) angles provide more pronounced visualization of movement on the detection plane towards or away from the camera.
- If you set a low camera height and a camera angle that is too large (tilt approaching parallel in relation to the detection plane), visualization of movement towards or away from the camera will be less pronounced. This may affect the speed of detection if an intruder makes a precise forward or backward movement (no significant horizon), because the pixel distance translations will be more difficult to gauge. A one-pixel change, in this situation, will be equivalent to a considerable distance traveled.
- Pole vibration should be up to 0.5° and up to 5% of the field of view.
- Pole should be capable of withstanding wind gusts of 80 mph (129 km/h) speed.
- The higher the camera is placed on the pole, the larger the Field of View.
- Camera installation should be parallel to the horizon without rotations.
- In order to avoid blind spots, it is recommended to use multi-camera installation that will cover all areas.
- Camera should not be facing straight down. It should be mounted at 30°– 40° angle from the object.
- An angle of 35° from the horizon is required for getting the right depth angle when setting up the algorithm.
- Wide-angle lenses provide less depth capabilities at distances, as the intruder will appear smaller at close to 90° (relation to the primary detection plane).
- The following image shows how, from the camera's point of view, the angle at which an intruder is viewed becomes greater at a distance. Thus, quality of visible progression away from the camera is less pronounced.



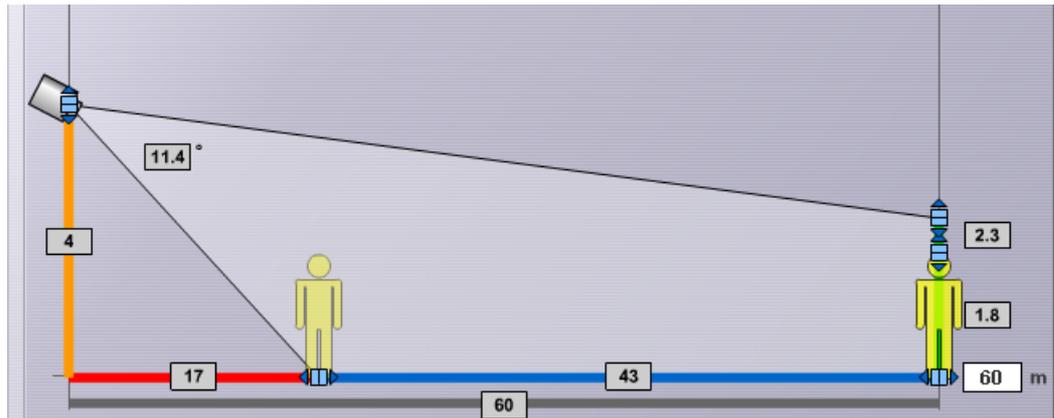
*Field of View at 100m*

- The view nearer the camera is at a steeper angle, the depth is more accurate in determining depth movements towards or away from the camera (more pixels per movement at a set distance). If a camera is mounted at 90° to the detection plane, an approaching object only grows in size, but does not show movement in reference to the detection plane.

- Poor camera placement can be compensated partially by increasing sensor Gain (sensitivity). This, however, may increase noise in the image.

The following illustration demonstrates the following conditions:

- Camera detection area of 60 meters (197 feet)
- Pole height is 4 meters (13 feet)
- Camera is mounted at a 35° angle
- Lens magnification of 18mm



### 5.3.6.2.2 Lighting Adjustment

- For scenes of depth, lighting should always be behind the camera and not in the front. If the lighting is in front of the camera, it may cause the auto iris to automatically adjust to close light. This will reduce visibility at depth where the light is not as strong.
- If the foreground is brightly lit, the auto iris may adjust and reduce visibility at depth where the light is not as strong.
- If using white or yellow lighting, use a Lux meter and measure the lighting by facing the meter down. The reading for areas that will support detection in white or yellow light cameras should read at 5 lux or greater.
- Lighting (including infrared) should not be directed at the ground in front of the camera. It is best to direct it nearly parallel to the ground. This will avoid auto iris malfunctioning and to avoid blurry spots on the surface, which could prevent detection.
- If using an infrared illuminator, check that the sensitivity of the camera chip matches the illuminator specifications.
- Illumination units should be installed at a distance, so that the illumination is constant and floods constantly along the Region of Interest.
- Infrared lights should be separate from the camera and directed away from camera lens in order to avoid attracting bugs.
- Illumination units should be located on a different pole than the cameras pole, in order to prevent false alarms caused by insects attracted to the heat source.
- Light poles should be at least 2m (79") higher than the camera poles.
- Moving object light can reduce the analytics performance.
- Blinking lights might cause detection issues.
- Avoid cameras facing the sunrise or sunset.
- Avoid shadows from buildings which can cause the camera Field of View to contain bright and dark areas.
- Thermal cameras do not require any lighting. They are recommended to use in cases where static and moving lights are expected to be in the scene.

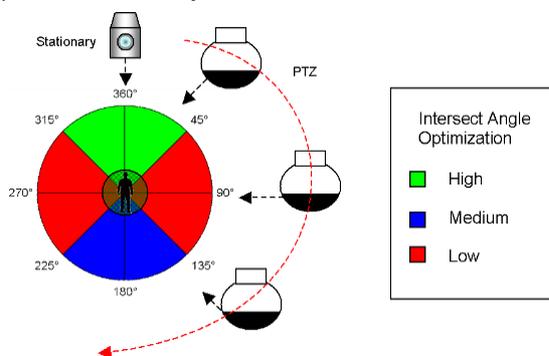
### 5.3.6.2.3 Camera Placement

- The tripwire functionality performs optimally when the camera is positioned to point down the tripwire line of separation.



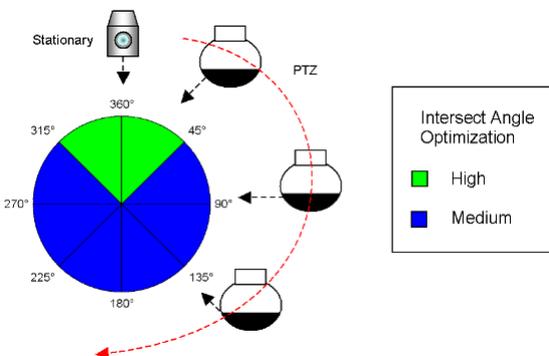
*Optimal Camera Tripwire Placement*

- When the PTZ synchronization is used, the PTZ camera must translate the stationary cameras' three-dimensional coordinates to its own preset scene coordinates.
- In a situation where the stationary camera sends a less than precise depth coordinates, most often synchronization can overcome errors using the other two coordinates. If, however, the PTZ camera is at a nearly 90° intersection with a stationary camera, the margin of error in distance coordinate becomes more pronounced, as individual pixels can translate into several meters on the horizontal pan of the PTZ camera.
- When planning the intersection angles of a PTZ and stationary camera, observe the following guidelines for understanding the level of accuracy on a PTZ handoff at the different PTZ-to-stationary camera intersect angles (horizontal) for different visual and camera angles (vertical).
- For a stationary camera with a low camera angle or visual angle (vertical), the following illustration shows the advantages and disadvantages of intersecting between a PTZ camera (📷) and a stationary camera:



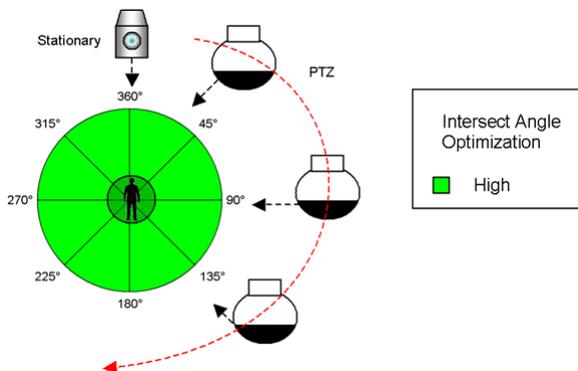
*Intersection of PTZ and Stationary Camera with Low Angles*

- For a stationary camera with medium camera angle or visual angle (vertical), the following illustration shows the various qualities at installation angles where the PTZ and stationary camera synch share a view of an intruder at horizontal intersect angles:



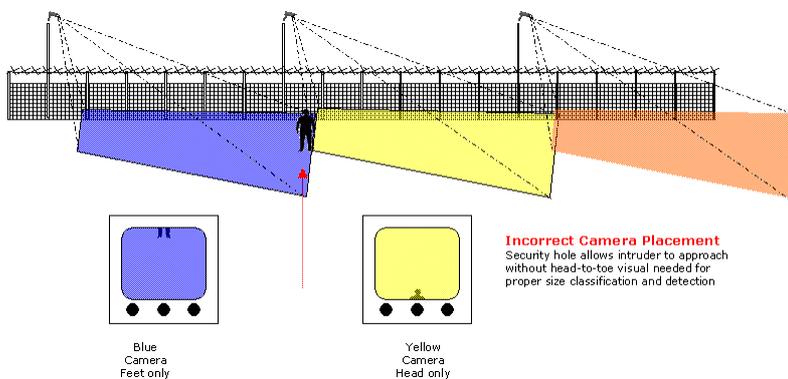
*Intersection of PTZ and Stationary Camera with Medium Angles*

- For a stationary camera with a steep camera angle or visual angle (vertical angle), the following illustration shows the qualities at installation angles where the PTZ and stationary camera sync share a view of an intruder (horizontal intersect angles at horizontal intersect angles):

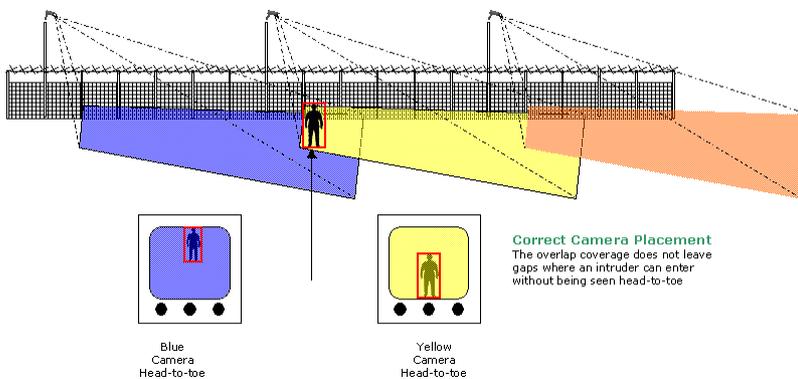


*Intersection of PTZ and Stationary Camera with Steep Angles*

- If an area is large and requires multiple cameras, place the cameras so that each camera's Field of View (FOV) overlaps sufficiently so that there are no dead zones between them. Factors of lens selection, camera height, depth, and width of view will determine the capabilities of the cameras to cover any given FOV area. The overlap should be such that the area of overlap provides the ability to view the full top-to-bottom height of an intruder by the camera covering the dead zone of another camera. Overlapping views also enable capturing an attempt to tamper or disable an adjacent camera.



*Incorrect Camera Placement with Overlapping FOV*



*Correct Camera Placement with Overlapping FOV*

- When determining camera height and installation area, consider accessing the camera for maintenance, camera security, lighting qualities, cabling requirements (factors signal degradation) and FOV coverage.
- After configuring a camera scene in the **Setup** workspace, be sure to use the Alignment function to record the camera's position. In this way, if the camera is shifted during cleaning or maintenance, it can be restored to the configured scene. See [Aligning a Camera Position](#).

### 5.3.6.2.4 Environmental Considerations

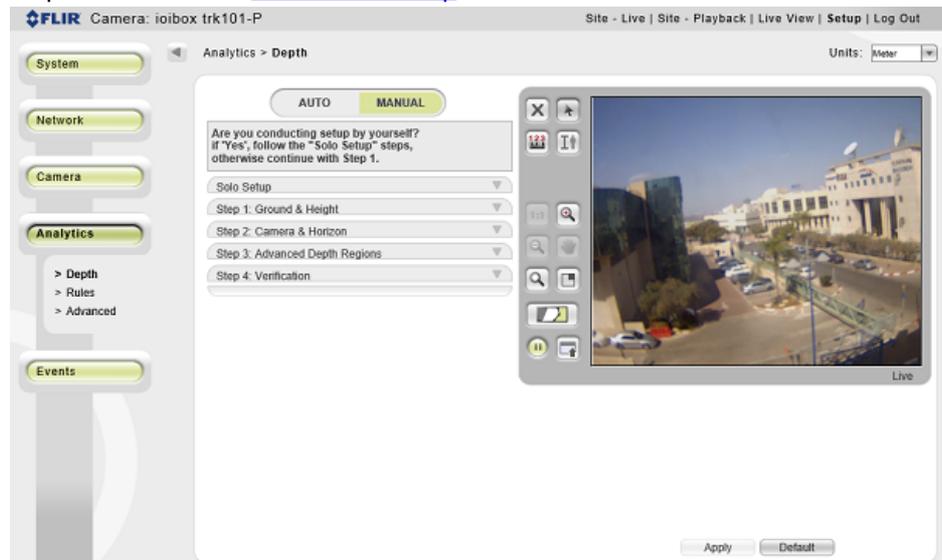
Environment (vegetation, weather, animals, etc.) has a vast influence on detections and should be taken into account when setting up a camera for detection. Considerations include:

- When PTZ synchronization is used, the PTZ camera must translate the stationary cameras' three-dimensional coordinates to its own preset scene coordinates.
- Vegetation can create shadows in certain regions.
- Consider variables such as parking vehicles.
- Typical animal types and their sizes should be taken into account.
- Cameras can be dazzled by headlight wash from passing vehicles.
- The relevant size of the far-end detected intruder should be not less than 10% of the frame size (unless otherwise approved for a specific camera model).
- Maximum object size should be less than 25% of the frame.

## 5.4 Configuring Analytics

The *Analytics* tab contains menus for defining the camera's depth, rules, and advanced settings.

- The *Depth* tab enables you define the perspective of the scene being monitored (3D view). Depth can be calibrated automatically or manually.
  - When selecting [Manual](#) depth calibration, it is possible for one person to single-handedly configure a unit's depth by using the [Solo Setup](#) function or to configure multiple units with the [Batch Solo Setup](#) function.



*Analytics > Depth > Manual Tab*

- When selecting [Auto](#) depth calibration, the camera automatically calculates the depth based on an advanced algorithm.

- The *Rules* tab enables you to define detection rules according to the type of detection you want to be notified about. When the conditions of a detection rule are met, an alarm is shown in which you can observe the detection and take the appropriate action. See [Configuring Detection Rules](#).
- The *Advanced* tab enables you to define scenes with large or many object and to enable/disable enhanced detection. See [Configuring Advanced Analytic Settings](#).

### 5.4.1 Solo Setup

The Solo Setup function enables you to install and setup a camera at the remote site without requiring another person's assistance. It is very useful and should be used even if you have another person's assistance. With this feature, you can:

- Move around within the camera's field of view.
- Use the camera to record a set of snapshots of the scene while the user is moving around the camera field of view. Creating the recording of the person in the FOV can be used to adjust settings without requiring another physical walk through the FOV.
- Use the recording of his movement to setup the depth by marking his height on the camera's field of view.

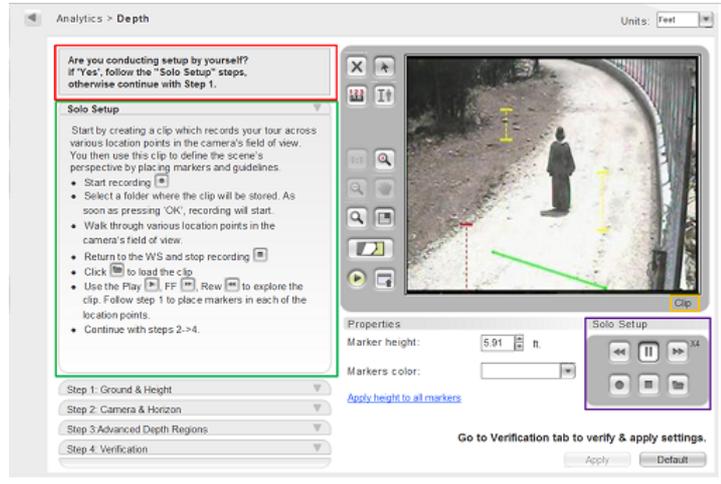
When selecting Solo Setup, a keypad is displayed with the following control icons:

Icon	Function	Notes
	Start Recording	Starts recording and browses to destination folder where the clip will be saved
	Stop Recording	Stops recording
	Browse	Browses to the destination folder where clip is stored and loads the clip
	Play/Pause	Speed X1/X0
	Fast Forward	Speed X2, X4, X8, X16. Click to increase or decrease speed.
	Rewind	Speed -X2, -X4, -X8, -X16. Click to increase or decrease speed.

### 5.4.1.1 To Perform a Solo Setup

#### To perform a Solo Setup

1. Open the **Setup > Analytics > Depth** window. The **Solo Setup** window is displayed:



Solo Setup Window

2. On the Solo Setup control keypad, click **Start Recording**  to record a view in the camera's field of view.
3. Create a separate folder for each camera or Preset to be configured. Recording starts when the folder is selected.
4. Walk through various locations across the vertical axis of the camera's field of view in order to place human height markers and ground guidelines in the clip.
5. Press **Stop Recording** .
6. Proceed to the tab for **Step 1: Ground & Height**.
7. Click **Browse**  to load the clip from the folder where it is saved.
8. Use the **Play** , **Pause** , **Fast Forward** , and **Rewind**  buttons on the Solo Setup keypad to explore the clip. The status of the view is displayed on the bottom left side of the screen.
9. Set the human markers and ground guidelines as defined in [Depth Setup Step 1: Ground & Height](#).

- Exit *Clip* mode and return to *Live* mode by pressing the round **Play** button  on the control panel located to the left of the monitor. The caption under the monitor changes from *Clip* to *Live*.



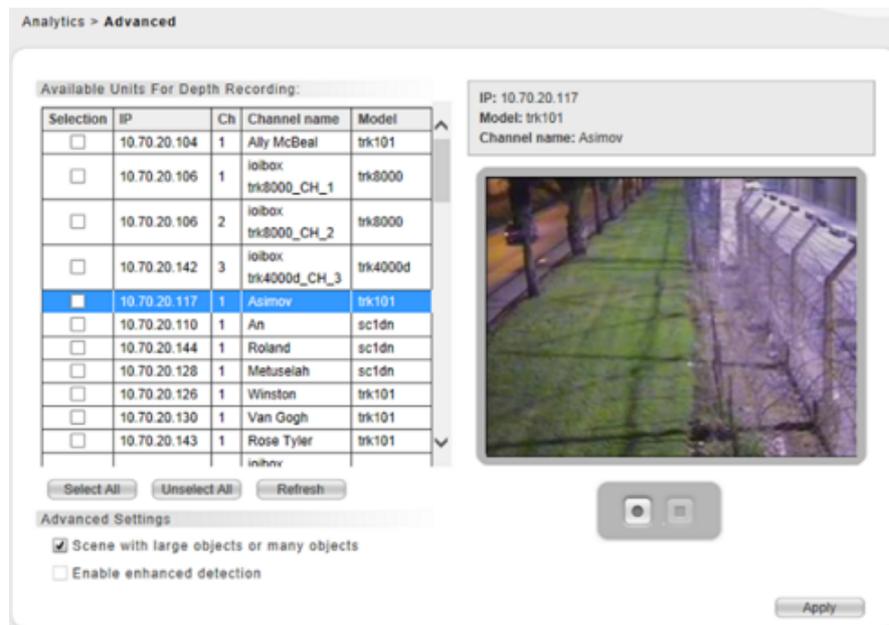
- Proceed to the tabs for Steps 2-4 of the Depth Setup to complete the setup and apply settings.

### 5.4.1.2 Batch Solo Setup

It is possible to configure Solo Setup (single person depth setup) of multiple trk-101 and trk-101-P units. This is known as batch solo setup.

#### To perform a batch Solo Setup

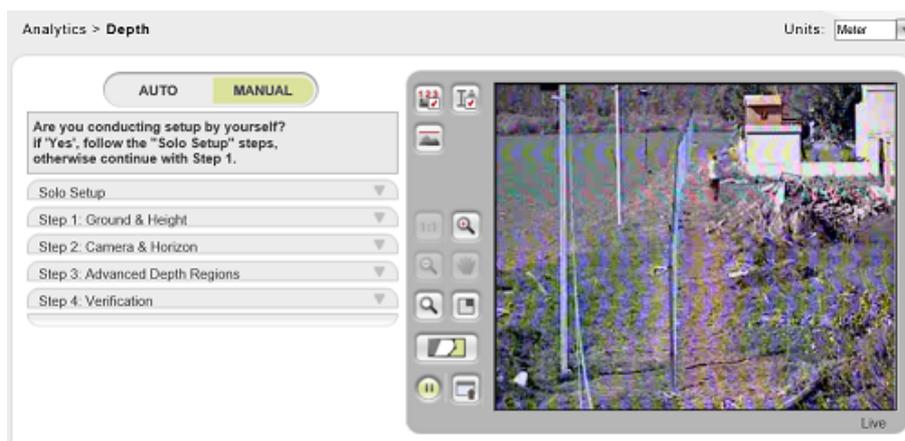
- Select the **Setup > Analytics > Advanced** screen, which displays all analytic units in the physical site (VLAN). The **Advanced** screen is displayed. The web page searches for the ioi units and adds them to the *Available Units* list. Units using firmware version 1.5.7.328 will also be discovered.



*Analytics > Advanced Screen*

- From the *Available Units* list, select the checkbox for the units to setup or click **Select All**.

3. Click the **Record** icon  to start recording. The **Browse for Folder** dialog box opens.
4. In the dialog box, enter the name of the directory in which you want to save the data. By default, the data for each camera is stored in a folder whose name is the camera's IP address.
5. Click the **Stop** icon  when finished recording.
6. For each camera, select **Setup > Analytics > Depth**. The **Depth** screen opens.



Setup > Analytics > Depth Screen

7. Click the **Step 1: Ground & Height** tab. The tab opens.



Step 1 Ground & Height Screen

8. Browse for the recorded data folder and follow steps 1-4 on the screen.

## 5.4.2 Manually Defining the Depth (Perspective) of the Monitored Scene

Depth setup is the configuration used to teach the ioi unit about the scene perspective as seen by the camera. It creates a virtual 3D model for measurement of distances and sizes from the perspective of the camera over the field of view. In other words, it compensates for the fact that objects visually appear larger when closer to the camera lens.

Depth settings are performed by teaching the unit how a human person looks in several positions around the scene as well as known reference distances.

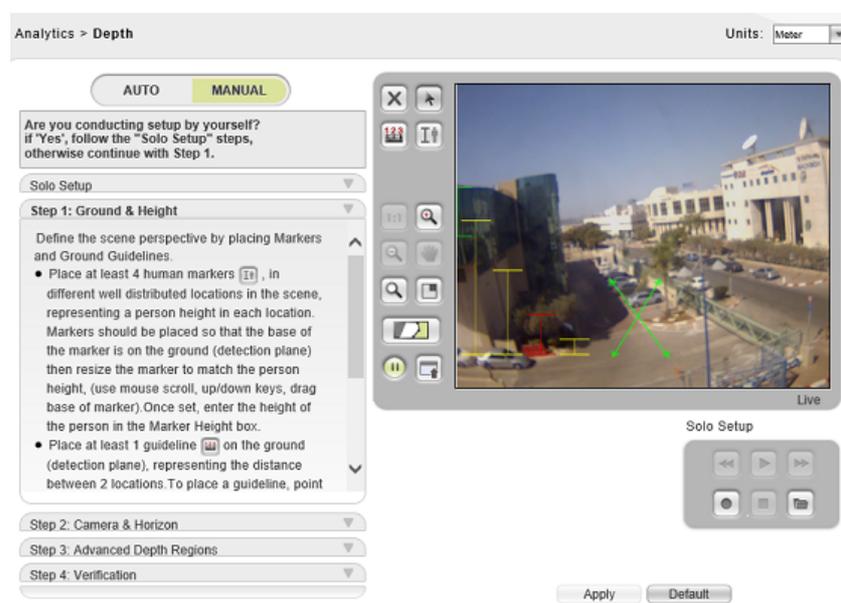
All units come with a default depth setting that must be modified and adapted to each scene.



### Note:

1. Depth settings are performed by teaching the unit how a person looks in several places throughout the scene and known distances (between reference points) is displayed on the ground (detection plane).
2. If you are using a PTZ camera, the depth (perspective) must be defined for each of the presets separately.

The following is an example of the *Depth* tab showing Step 1 of the depth configuration steps for a unit with a single FOV (camera or encoder connected to a fixed camera):



*Depth Setup Step 1: Ground & Height*



**Note:**

Presets with depth (perspective) or detection rules not defined are shown in orange in the drop-down list for clear identification.

### 5.4.2.1 Depth Tab Buttons

The *Depth* tab includes many toolbar icons. Each step of the configuration process has different icons. The following buttons are available during the depth configuration process.

Icon	Description
	Shows all human markers (height markers), ground guidelines and horizon markings in the display area.
	Hides all human markers, ground guidelines and horizon markings in the display area.
	Enables you to select items, such as human markers, ground guidelines, and advanced depth regions.
	Deletes the selected item.
	Enables the ground guideline tool for defining a reference distance in the display area.
	Positions the <b>PIP</b> window at the top right corner of the <i>Viewing</i> area.
	Enables the human marker tool for defining a person's height in the display area.
	Enables to upload a previously saved image of the scene (jpeg file).
	Returns the display area to normal size after it has been magnified.
	Magnifies the view in the display area.
	Reduces the magnification of the display area.

Icon	Description
	Enables you to move the magnified view in the display area. You can only use this tool if the display area is in a magnified state.
	Enables you to select an area in the display area and to magnify it to fit the display area.
	Displays the horizon skyline on scenes when needed.
	Enables the interactive ground guideline tool that displays the distance of a line drawn with this tool. Use this tool to compare the calculated depth and measurement values with objects in the scene whose size you know.
	Enables the interactive human marker tool that displays a marker that reflects the calculated person height in the specific position on the scene.
	Shows the configured horizon indicator.
	Draw fence tool.
	Draw multi-segment fence tool.
	Enables you to select items, such as human markers, ground guidelines, and advanced depth regions.

The following sequence of configuration must be followed to ensure proper detection on the specific scene or preset.

- Step 1: Ground & Height: Enables you to position and resize markers representing a person's height and guidelines, representing known reference distances as they appear in the detection plane (ground) in the video image. See [Step 1: Ground & Height](#).
- Step 2: Camera & Horizon: Enables you to define the camera's height and set the horizon if it is visible in the video image. See [Step 2: Camera & Horizon](#).
- Step 3: Advanced Depth Regions: This optional step enables you to define additional planes in cases where the video scene has areas that are not on the ground plane and where the change in perspective can affect the object's size (slopes, hills, walls, fences, etc.). See [Step 3: Advanced Depth Regions](#).
- Step 4: Verification: Enables you to verify and test the results of the configured scene depth (perspective). See [Step 4: Verification](#).



**Note:**

Detection is based mainly on a single detection plane at ground level. If detection is needed in areas that are elevated above the ground detection plane, *Advanced Regions* need to be specified.

If the intended detection for the scene includes Fence Intrusion, the definition of fence depth regions is required. This must be done to relate each fence to the detection rule configurations for Fence trespass. See [Step 3: Advanced Depth Regions](#).



**Note:**

If you are using a PTZ camera, depth settings must be defined for each of the camera presets field of view separately. You can only save the depth settings definitions in the *Verification* tab.

### 5.4.2.2 Depth Setup Step 1: Ground & Height



**Note:**

If you are using a PTZ camera, depth settings must be defined for each of the camera presets separately.

This step enables you to define the depth (scene perspective) in the video image by placing size markers (which represent a person's height) and guidelines (which represent known reference distances as they appear in the detection plane).



*Marker and Ground Guidelines*

### To define the ground and height settings

1. Select the *Depth > Manual* tab.
2. Select the *Step 1: Ground & Height* tab. The Ground & Height section is displayed. See Figure: [Depth Setup Step 1: Ground & Height](#).
3. Select the measurement units from the *Units* drop-down list. Set the units of measurement to *Meters* (metric standard) or *Feet* (English standard). See [Selecting Measurement Units](#).
4. Create and adjust markers representing persons. Align four or more head to toe markings (human markers) on people in the video who are standing on the ground (primary detection plane). See [Creating and Adjusting Human Markers](#).
5. Create and adjust ground guidelines. Align one or more line measurements (ground guidelines) on the ground and enter the equivalent distance value. See [Creating and Adjusting Ground Guidelines](#).

#### 5.4.2.2.1 Selecting Measurement Units

Before defining any settings and measurements, you must select the measurement unit.

##### To set the measurement units

1. In the **Setup** workspace, select **Analytics > Depth > Manual**. The **Depth > Manual** screen is displayed. See [Step 1: Ground & Height](#).
2. From the *Units* drop-down list, select *Feet* (American/English measurement standard) or *Meters* (metric standard).

#### 5.4.2.2.2 Creating and Adjusting Human Markers

In order to teach the ioi unit how a human looks in the scene, you will need an individual, whose approximate height is known, to walk into the field of view. At least four markers representing the person's height at specific locations are required. For best results, the markers should be well distributed throughout the field of view where detection is to take place.



##### Note:

By default, four markers are already placed in the display area. Use the default markers or create additional markers.

The markers should be adjusted and set while the individual is observed in the display area. The individual should be standing on the ground (primary depth detection plane) for this step.

After completing the depth setting process (including human markers and ground lines), you must select [Step 3: Advanced Depth Regions](#) to verify and save the markers or ground lines that you have defined.

#### 5.4.2.2.1 To Adjust Markers Representing Persons on the Scene

##### To adjust markers representing persons on the scene

1. In the *Setup* workspace, select **Analytics > Depth > Manual**. The **Depth > Manual** screen is displayed. See Figure: [Depth Setup Step 1: Ground & Height – Single FOV](#) or Figure: [Depth Setup Step 1: Ground & Height – Multiple FOV](#).
2. If the camera type is a PTZ camera, select a preset from the *Preset* drop-down list and select the *Step 1 Ground & Height* tab.
3. Place a person at the setting position:
  - If you are using an assistant, ask the assistant to stand still in the selected location.
  - If you are using passersby, freeze the video using the **Pause** button on the Solo Setup keypad.
4. Use the **Close-up**, **Zoom**, **Magnifying Glass** and **Pan** buttons to focus on the person as much as possible.
5. Click **Select**  in the *Depth* toolbar.
6. Select one of the existing markers (vertical lines) by clicking it. The selected marker turns red.
7. Place the marker over the person by pressing and holding the left mouse button while dragging the marker.
8. Using the mouse scroll wheel or Up/Down arrows on the keyboard to resize the marker to the individual's height.
9. Click to set the marker.



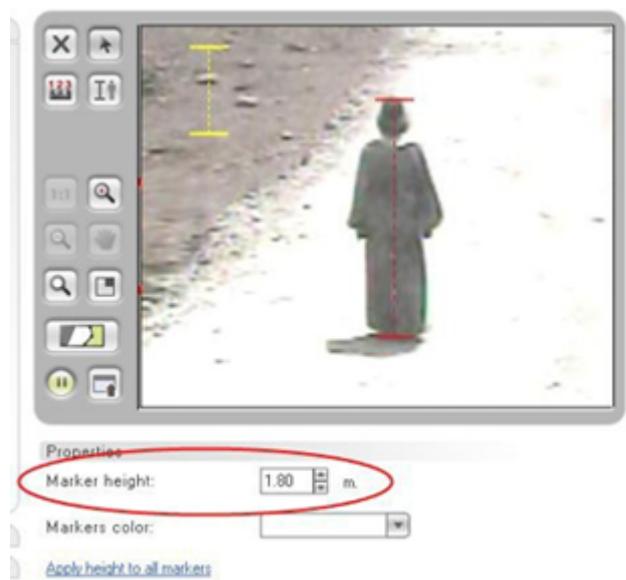
##### Tip:

Use the **Close-up**, **Zoom**, **Magnifying Glass**, **Close-up View** and **Pan** buttons to focus on the person and improve marker placement. Use the **1:1** button to return to original image size.



*Depth Setup Step 1: Ground & Height Tab – Zoomed In*

10. Enter the height of the individual in the *Marker height* properties text box.



*Depth Setup Step 1: Ground & Height Tab with Height Measurement*



**Note:**

Instead of entering the same height for each marker, you can enter it once and click *Apply height to all markers*.

11. If you are going to configure additional human markers, ask the individual to move to another position in the field of view.
12. Repeat steps 6 through 11 for each marker.



**Note:**

At least four markers are required. For best results, the markers should be well distributed throughout the field of view where detection is to take place.

13. Delete any unused markers as described below in *To delete markers*.

#### 5.4.2.2.2 To Create Additional Markers

##### To create additional markers

1. Click **Marker**  in the *Depth* toolbar. A marker is displayed at the end of the mouse pointer.
2. Position the marker in the display area and left-click the mouse, in order to leave the marker in the position.
3. Repeat steps 1 and 2 for each human marker you want to create.

#### 5.4.2.2.3 To Delete Markers

##### To delete markers

1. Click **Select**  in the *Depth* toolbar.
2. In the display area, click the human marker you want to delete.
3. Click  in the *Depth* toolbar. The marker is deleted.
4. Repeat steps 1 and 2 for each marker you want to delete.

#### 5.4.2.2.3 Creating and Adjusting Ground Guidelines

Ground guidelines enable you to define a known distance (the “reference”) as it is viewed by the camera on the video scene (e.g. distance between poles, trees, dedicated measurement, etc.).

Ground guidelines should be marked on the ground (the “detection plane”) and not at an elevation above, as the measurement points are always treated as being on the detection plane.

Ground guidelines are optimal if they are at an angle other than horizontal or vertical within the field of view (diagonal in the camera’s perspective), but both edges should be on the detection plane.



##### Note:

Accuracy for ground guidelines is essential. If ground guidelines are used, the measurement should be done with a tape measure. Endpoints should be placed by using the zoom tool to achieve as much accuracy as possible.

After completing the depth setting process (including human markers and ground guidelines) you must select [Step 4: Verification](#) to verify and save the markers or ground lines you have defined.

### 5.4.2.2.3.1 To Adjust a Ground Guideline

#### To adjust a ground guideline

1. In the *Setup* workspace, select **Analytics > Depth**. The **Depth** screen is displayed. See Figure: [Depth Setup Step 1: Ground & Height – Single FOV](#) or Figure: [Depth Setup Step 1: Ground & Height – Multiple FOV](#).



#### Note:

By default, two ground guidelines are already placed in the display area. You can use the default ground guidelines, delete them or create new ones.

2. If the camera type is a PTZ camera, select a preset from the *Preset* drop-down list.
3. Select the *Step 1: Ground & Height* tab.
4. Select a reference distance on the detection plane (ground), for example:
  - Two persons standing at a known distance holding a measuring tape at their feet.
  - A known distance between reference points, such as poles, columns, trees, etc.
5. Click **Select**  in the *Depth* toolbar.
6. In the video display area, select the ground guideline (green line) using the arrow selection tool.
7. From the *Guidelines* color drop-down list, select the color for the ground guideline markers for best visibility according to the scene background.
8. Click and drag each endpoint of the existing ground guideline to match the field measurement location on the ground plane of the scene.



#### Tip:

By default, two ground guidelines are already placed in the display area. You can use the default ground guidelines, delete them or create new ones.

9. Enter the length in the *Guideline distance* text box.
10. Delete any unused ground guidelines. See explanation below.

#### 5.4.2.2.3.2 To Create Ground Guidelines

##### To create ground guidelines

1. Click **Ground Guideline**  in the *Depth* toolbar.
2. Point to start position, click and drag the ground guideline so that it stops at the end measurement point. Then double-click the mouse.
3. Enter the length in the *Guideline distance* text box.
4. Repeat steps 1 through 3 for each guideline you want to create.

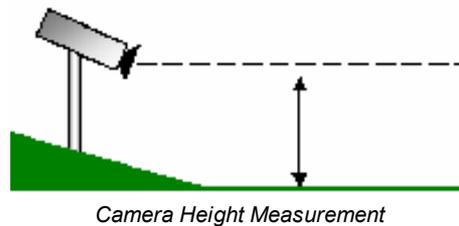
#### 5.4.2.2.3.3 To Delete Ground Guidelines

##### To delete ground guidelines

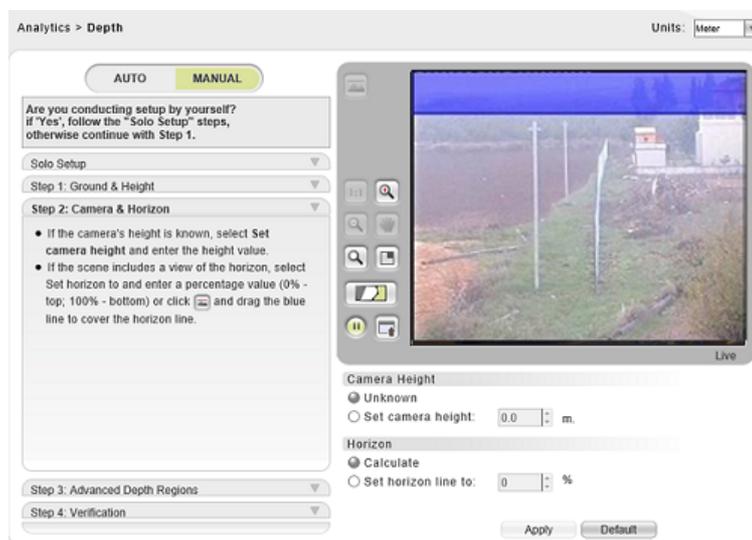
1. Click **Select**  in the *Depth* toolbar.
2. In the display area, click the ground guideline you want to delete.
3. Click  in the *Depth* toolbar. The ground guideline is deleted.
4. Repeat steps 2 and 3 for each ground guideline you want to delete.

### 5.4.2.3 Depth Setup Step 2: Camera & Horizon

The camera height from the ground (primary detection plane) should be entered to help optimize the depth (perspective) definition. This is the vertical measurement perpendicular to the ground to the height where the camera lens is. It is not necessarily the pole height of the camera.



The following is an example of the *Depth* tab showing Step 2 of the depth configuration steps:



*Depth Setup Step 2: Camera & Horizon*

Perform the following steps to configure the camera and horizon:

- Set *Camera Height*. If known, set the camera installation height from the detection plane (lens to detection plane measurement). See [Setting Camera Height](#).
- Set the *Horizon* line. If your scene has a detection horizon (skyline), use the horizon tool to teach the unit where the outer edge of ground plane detection reaches the horizon. See [Adjusting the Horizon Skyline](#).

After completing the definition of the camera height and the detection horizon, select [Step 4: Verification](#) to verify and save your settings.

#### 5.4.2.3.1 Setting Camera Height

This section describes how to enter the camera height. If the camera height is unknown, it is calculated by the unit and should be checked in the verification step.

##### To enter the camera height measurement

1. In the *Setup* workspace, select **Analytics > Depth**. The **Depth** screen is displayed. See Figure: [Depth Setup Step 1: Ground & Height – Single FOV](#) or Figure: [Depth Setup Step 1: Ground & Height – Multiple FOV](#).
2. Select the *Step 2: Camera & Horizon* tab. See Figure: [Depth Setup Step 2: Camera & Horizon](#).
3. If the camera type is a PTZ camera, select a preset from the *Preset* drop-down list.
4. If the camera height is not known, select *Unknown* in the *Camera Height* area of the window. The camera height is calculated and the result should be checked in the verification step.
5. If the camera height is known, enter the height in the *Set camera height* text box in the *Camera Height* area.

### 5.4.2.3.2 Adjusting the Horizon Skyline

The horizon marker enables the measurement model to identify items that are not located on the ground.



Scene With Horizon Marks



Scene Without Horizon Marks

#### To set the horizon

1. In the *Setup* workspace, select **Analytics > Depth**. The **Depth** screen is displayed. See Figure: [Depth Setup Step 1: Ground & Height – Single FOV](#) or Figure: [Depth Setup Step 1: Ground & Height – Multiple FOV](#).
2. Select the *Step 2: Camera & Horizon* tab. See Figure: [Depth Setup Step 2: Camera & Horizon](#).
3. If the camera type is a PTZ camera, select a preset from the *Preset* drop-down list.
4. Do one of the following:
  - If the horizon line is unknown, select *Calculate*.
  - If the horizon is known, select *Set horizon line to*.
5. Drag the blue line from the top video border and place it on top of the horizon line.

**Note:**

1. The horizon position is represented as a percentage measured from the video display top border: 0% representing the top border and 100% representing the bottom border.
2. Values below 0% or above 100% indicate that the horizon is below or above the scene's FOV.

#### 5.4.2.4 Depth Setup Step 3: Advanced Depth Regions

The *Advanced Depth Regions* tab is used to define zones that may affect the size of objects that are viewed in the scene. Advanced depth regions help determine the distance and size of threats for areas not on the detection plane.

**Note:**

1. Advanced depth regions should be defined in scenes that include additional surface levels (roofs, walls, slopes, ditches, etc.), besides the main ground (detection) level.
2. Every plane which affects the scene perspective (an object height) should be defined as a "Special Region".

The *Advanced Depth Regions* tab includes the following icons that are used for configuring advanced depth regions:

Icon	Description
	Draw fence tool
	Draw multi-segment fence tool
	Draw additional plane tool

### 5.4.2.4.1 To Set an Advanced Depth Region

#### To set an Advanced Depth Region

1. In the *Setup* workspace, select **Analytics > Depth**. The **Depth** screen is displayed. See Figure: [Depth Setup Step 1: Ground & Height – Single FOV](#) or Figure: [Depth Setup Step 1: Ground & Height – Multiple FOV](#).
2. Select the *Step 3: Advanced Depth Region* tab. The **Advanced Depth Region** tab opens.



Depth Setup Step 3: Advanced Depth Region

### 5.4.2.4.2 To Add a Straight Line, Single-Segment Fence

#### To add a straight-line, single-segment fence

1. In the *Setup* workspace, select **Analytics > Depth**. The **Depth** screen is displayed. In the *Setup* workspace, select **Analytics > Depth**. The **Depth** screen is displayed. See Figure: [Depth Setup Step 1: Ground & Height – Single FOV](#) or Figure: [Depth Setup Step 1: Ground & Height – Multiple FOV](#).
2. Select the *Advanced Depth Region* tab. The **Advanced Depth Region** tab opens. See figure above.
3. Click **Draw Fence**  in the *Depth* toolbar.
4. Point to the start position of the fence. Click and point the mouse to the end position of the fence. Click again.
5. Do one of the following:
  - Enter the properties of the fence in the *Fence Name*, *Fence Height*, and *Fence Width* fields.
  - Drag the fence borders in the video window to match the required size.

- Repeat steps 4 through 6 for each fence.

#### 5.4.2.4.3 To Add a Multi-Segment Fence

##### To add a multi-segment fence

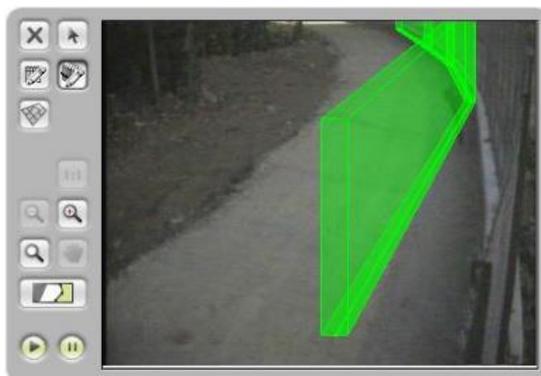
- In the *Setup* workspace, select **Analytics > Depth**. The **Depth** screen is displayed. See Figure: [Depth Setup Step 1: Ground & Height – Single FOV](#) or Figure: [Depth Setup Step 1: Ground & Height – Multiple FOV](#).
- Select the *Advanced Depth Region* tab. The **Advanced Depth Region** tab opens. See figure above.
- Click the **Draw multi-segment fence** button  in the *Depth* toolbar.
- Point to start position of the fence. Click and point to each location where there is a bend in the fence and click. Right-click after the last point.
- Do one of the following:
  - Enter the properties of the fence in the *Fence Name*, *Fence Height* and *Fence Width* fields.
  - Drag the fence borders in the video window to match the required size.
- Repeat steps 2 through 6 for each multi-segment fence.

#### 5.4.2.4.4 To Adjust an Existing Fence Line

##### To adjust an existing fence line

- In the *Setup* workspace, select **Analytics > Depth**. The **Depth** screen is displayed. See Figure: [Depth Setup Step 1: Ground & Height – Single FOV](#) or Figure: [Depth Setup Step 1: Ground & Height – Multiple FOV](#).
- Select the *Advanced Depth Region* tab. The **Advanced Depth Region** tab opens. See figure above.
- Click **Select**  in the *Depth* toolbar.
- Click on the base of the fence region so that a centerline is displayed.
- Place the cursor over a point or on the line. Drag the line to adjust or move the center fence line.

The following are examples showing a three dimensional fence moved to a new location:



*Adjustment of Three Dimensional Fence Region -1*



Adjustment of Three Dimensional Fence Region -2

#### 5.4.2.4.5 To Add an Additional Detection Plane

##### To add an additional detection plane

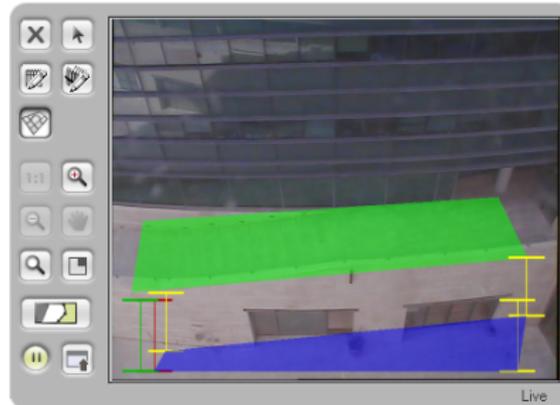
1. In the *Setup* workspace, select **Analytics > Depth**. The **Depth** screen is displayed. See Figure: [Depth Setup Step 1: Ground & Height – Single FOV](#) or Figure: [Depth Setup Step 1: Ground & Height – Multiple FOV](#).
2. Select the *Advanced Depth Region* tab. The **Advanced Depth Region** tab opens. See Figure: [Depth Setup Step 3: Advanced Depth Region](#).
3. Click **Draw Additional Plane**  in the *Depth* toolbar.



##### Note:

1. Additional plane areas can be set anywhere within the scene for providing adjusted measurements that are used instead of the primary detection plane (ground) measurement sizes.
2. Additional planes boundaries are determined by placing markers.
3. The lines connecting the bottom of the markers represent the plane boundaries.
4. Each marker height represents a human height (how a human looks) on the marker position.

4. Click and position the bottom of the marker at a perimeter point.
5. Scroll to resize according to a person's height on this position.
6. Click to set.
7. Repeat to define the outside boundary of the plane area. The following example shows a sloped detection plane placed over steps leading from the mezzanine of a building to the ground floor. On the ground floor is a flat detection plane.

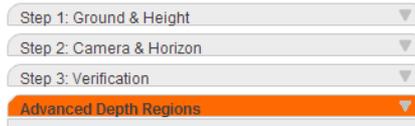


*Additional Detection Plane on Sloped Surface*



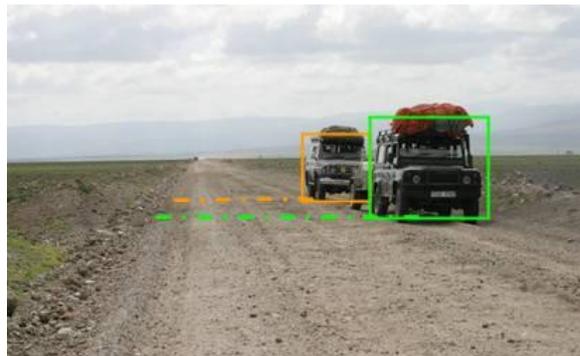
**Note:**

The *Advanced Depth Regions* tab turns orange after additional planes are created:



#### 5.4.2.4.6 Considerations for Configuring an Advanced Depth Region

In a typical scene where the camera is angled down towards the ground, the closer an object is, the larger it is displayed in the video image in number of pixels. In addition, as an object moves towards the camera, the closer its base is displayed to the bottom of the image.



*Primary Plane Straightforward Size Perspective*

An exception to this is when an object does not move closer or further to the camera on the ground plane. Instead, it ascends or descends away from the ground plane. This can occur with climbing a fence or in scenes that include additional surface levels (hills, valleys, buildings, and so on). In these situations, the system, which sees in two dimensions, needs to be taught that it should not measure these objects as if they were on the main ground plane.

The following graphically altered image shows the same man as seen in a video. This simulation shows how the single measurement model on a two dimensional image assumes that both are on the ground and standing side-by-side.

The single ground plane measurement model measures the man on the left correctly and at the correct distance. But it incorrectly assumes the man on the right is too large to be human, because of a mistake in gauging distance from the camera lens.

Optical illusion of a giant when climbing a fence is not considered in gauging size perspective.



*Simulation of an Object Not on the Ground Plane*



*Scene with Elevated Areas of Detection*

After completing the definitions in this section, select [Depth Setup Step 4: Verification](#) to verify and save your settings.

### 5.4.2.5 Depth Setup Step 4: Verification

The Verification step enables you to check if the configured depth settings match the scene perspective as viewed by the camera.

Check the following steps:

1. Review the *Camera Height* properties for inaccuracies in the calculated value.
2. Use the **Interactive Marker** tool  to check human heights throughout the field of view.
  - a. Place the Interactive Marker on a selected position in the scene.
  - b. Set the height the marker represents by using the keyboard Up/Down arrows or by entering the value on the Interactive Marker text box.
  - c. Move the Interactive Marker through the scene by clicking and dragging the marker bottom center point. The marker height changes according to how the height it represents is seen at the specific position.



#### Note:

The Interactive human marker must correctly represent the height of a human at any position in the scene. If there is an error in this representation, detection results will be incorrect. Adjustments should be made in the depth setup until this representation is correct.

3. Use the **Ground Guideline** tool  to check distances on the ground plane and advanced depth regions throughout scene. Measurement should be checked at the base where an object would make contact with the detection plane.
  - a. Click on the start point and while leaving the mouse left button pressed.
  - b. Drag the measuring to the end point. The dimension is shown on the video screen.
4. Use the **Show Horizon** tool  to check the height of the horizon in the scene.
5. If the results are unsatisfactory and negatively affect detection, repeat [Step 1 Ground & Height](#) and/or [Step 2 Camera & Horizon](#).
6. If you are satisfied with the results, click **Apply** to save the depth configuration and complete the verification process.



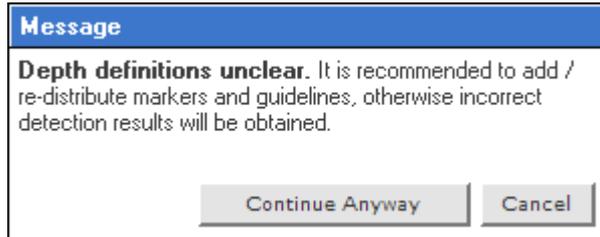
#### Note:

Depth (perspective) settings are not saved until you click **Apply** in the *Step 4: Verification* tab.



**Caution:**

1. When selecting the *Step 4: Verification* tab, the unit checks for inconsistencies in the depth definitions.
2. If the following message is displayed, depth definitions must be corrected.



3. Clicking **Continue Anyway** causes wrong detection results and should never be used for detection.

### 5.4.3 Automatic Depth Calibration

The Automatic Calibration function:

- Automatically configures scene depth
- Calculates camera height, focal length, and tilt angle according to the scene depth
- Discovers people in the scene and configures human markers automatically
- Eliminates the time and effort required to manually add human markers
- Requires a person walking in the scene while auto calibration is in progress



**Note:**

1. The Auto Calibration function does not support multiple PTZ presets.
2. If you use the Auto Calibration function, it is possible to configure additional settings manually and verify the Auto Calibration settings after the Auto Calibration process is completed. Click **MANUAL** in order to configure additional settings.
3. If you choose to not use this feature, click **MANUAL** and proceed with the manual depth configuration.



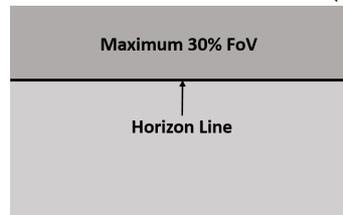
**Caution:**

1. Auto calibration can be performed only in scenes that contain a single plane (no differences in height), because it automatically configures depth settings for the entire field of view.
2. Auto calibration is not recommended when analytics are required only for certain areas.

### 5.4.3.1 To Configure Automatic Depth Calibration

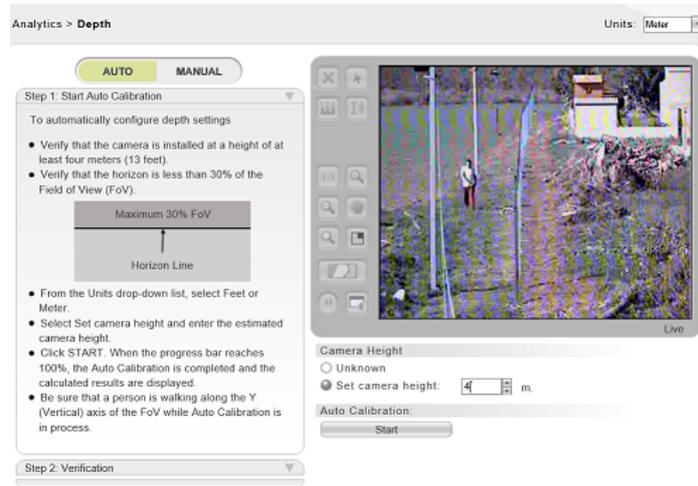
#### To configure automatic depth calibration

1. Verify that the camera is installed at a height of at least four meters (13 feet).
2. Verify that the horizon is less than 30% of the Field of View (FOV).



Horizon Line

3. From the **Settings** tab, select **Analytics > Depth**. The **Auto** depth screen opens.



Analytics > Auto Depth Screen-Step 1

4. From the *Units* drop-down list, select *Feet* or *Meter*.
5. Select *Set camera height*. See [Setting Camera Height](#).



#### Tip:

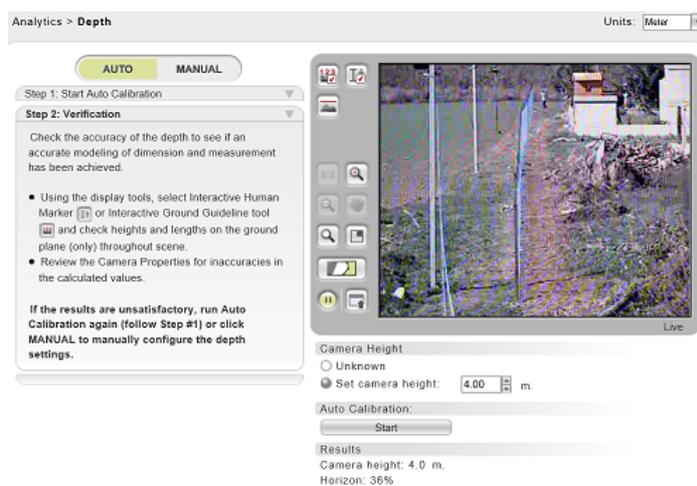
If you are using Auto calibration on a camera with a zoom lens, set the height as *Unknown*. If you do not see any progress in the progress bar, or if you do not see flickering over the detection box, enter the estimated camera height in the *Set Camera Height* textbox. If there is no flickering over the detection box, reduce the camera height setting by a few meters until you do see flickering over the detection box and the progress bar reaches 100%.

6. Enter the estimated camera height in the text box.
7. Click **Start**. The camera automatically calibrates the depth.



**Note:**

Be sure that a person is walking along the Y (vertical) axis of the FOV while Auto Calibration is in process. When the progress bar reaches 100%, the Auto Calibration is completed. The unit displays the **Step 2: Verification** tab.



Auto Depth Screen with Results



**Note:**

While Auto Calibration is in progress, you can proceed with the next steps in the analytic configuration if you are operating in NVR mode. In all other modes, the video is not displayed in the web interface during Auto Calibration. This is the normal behavior.



**Caution:**

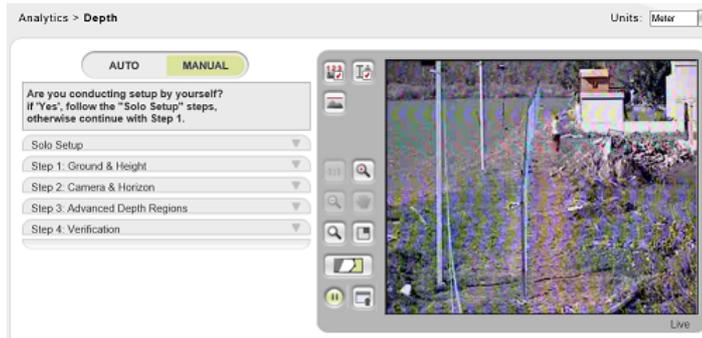
1. The Auto Calibration algorithm takes at least five minutes to run. If you stop the procedure before the progress bar reaches 100%, the analytic process will reset.
2. If you change from *Auto* to *Manual* mode, you must wait until the analytic process resets in order to use *Manual* mode.

8. Select the **Auto > Step 2: Verification** tab.
9. In the *Results* area, verify that the horizon and camera height are correct. Also check that the human marker settings are correct by selecting the buttons in the top left corner of the screen.

**Note:**

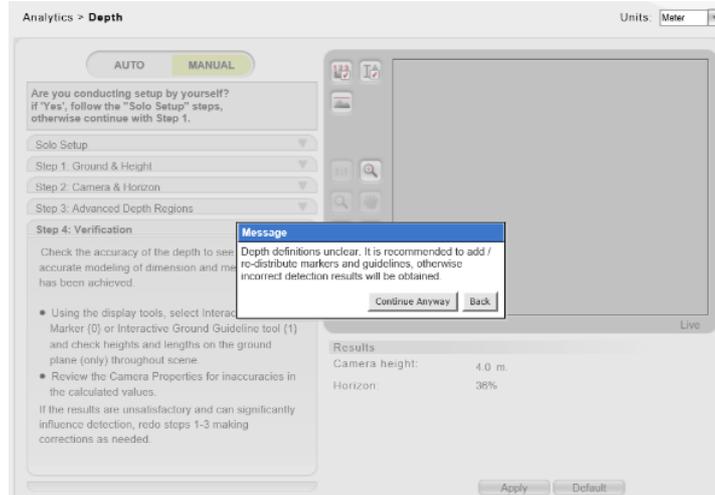
If the results are unsatisfactory, run Auto Calibration again (follow Step #1 on-screen) or click **MANUAL** to manually configure the depth settings.

- After finishing the Auto Calibration, click the **MANUAL** tab. The **MANUAL** Depth screen is displayed.



*Manual Depth Screen*

- Select the **Manual > Step 4: Verification** tab to complete the depth configuration.



*Analytics > Depth > Manual > Step 4 Screen*

- Add markers and guidelines as needed.
- To configure advanced settings, see [Defining the Depth \(Perspective\) of the Monitored Scene](#) and [Configuring Detection Rules](#).

#### 5.4.4 Configuring Detection Rules

The **Analytics > Rules** tab enables you to define and customize detection rules.

Detection rules are a combination of one or more conditions that must be met in order to register detection. Examples of detection rules in a defined region include:

- Region entrance
- Loitering
- Tripwire Crossover
- Fence Trespassing
- Unattended Baggage
- Stopped Vehicle
- Object Removal

For details about each type of detection rule, see [Rule Types](#).

Detection occurs when one or more detection rules are active, the camera is in *Arm* mode, and the scenario on the video (scene) fits the detection criterion specified.

##### To define a new rule

1. Create a new rule and select its type. See [Creating New Rules](#).
2. Draw a tripwire line or define the region of interest where events are monitored while other regions are ignored in the display window. See [Drawing Detection Areas](#).
3. Modify the detection attributes as needed. See [Modifying Rule Attributes](#).
4. Activate the rule. See [Enabling and Applying \(Saving\) Rules](#).

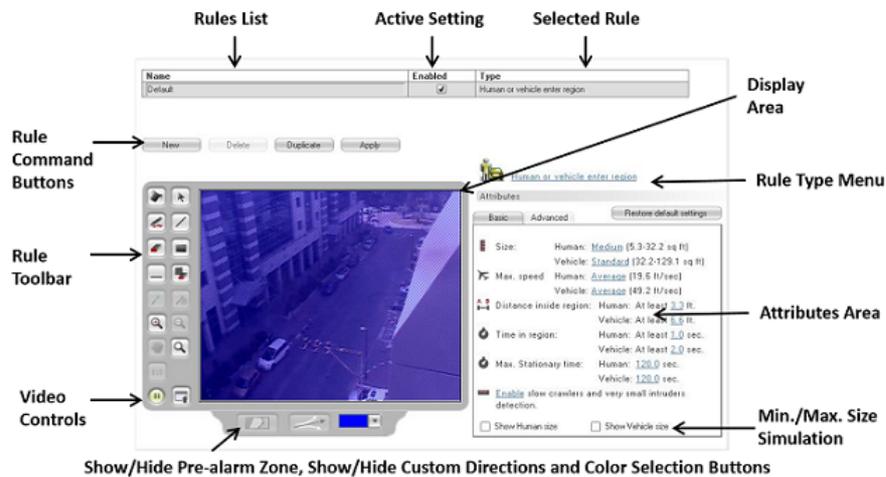
Existing rules can be modified and/or duplicated. See [Modifying and Duplicating Rules](#).



##### Note:

When using a PTZ camera, rules should be set for each preset.

Following is an illustration of the **Rules** screen:



Rules Screen

The **Rules** screen includes the following areas and buttons:

Label	Description
Active Setting	Indicates if the rule is currently active for use when the camera is armed for detection.
Rules List	List of the rule definitions for the defined region on the camera or preset as selected in the <i>Preset</i> menu.
Rule Command Buttons	Buttons apply to the selected rule in the <i>Rules</i> list. <ul style="list-style-type: none"> <li><b>New:</b> Creates a new rule based on the default template for drawing a region, defining detection, and setting attributes to detect.</li> <li><b>Delete:</b> Deletes the selected rule from the <i>Rules</i> list.</li> <li><b>Duplicate:</b> Creates a new rule based on the selected rule in the <i>Rules</i> list, using the identical settings, drawings and attributes.</li> <li><b>Apply:</b> Saves changes. All changes are lost if a Rule definition is not saved before leaving the <b>Rules</b> screen.</li> </ul>
Rule Toolbar	Tools for graphical definition of detection rules attributes, such as drawing detection areas, pre-alarm zones, defining specific directions, etc.
Display Area	Shows the camera or preset field of view (FOV). The actual detection area can be defined as the full FOV (default) or part of it.
Video Control	Enable to show a live or still image (pause) of the streaming video in the display area. In addition, a .jpeg picture file of a scene captured with the Snapshot tool on the <b>Live View</b> screen can be uploaded to ease the detection definitions on a clear image of the scene.
Show/Hide Pre-alarm Zone, Show/Hide Custom Directions and Color Selection Buttons	Buttons that show/hide the pre-alarm zone and the custom directions, and a button that enables you to select the color of a selected area in the display area.

Label	Description
Unit of Measure	Measurement unit used for the <i>Attribute</i> settings. Select from <i>Meters</i> (Metric Standard) or <i>Feet</i> (English Standard).
Selected Rule	Currently selected rule in the <i>Rules</i> list, whose parameter vales are shown in the <i>Attributes</i> area. A selected rule is indicated by a highlighted gray background.
Rule Type Menu	Menu for selecting the type of detection to be used. It opens a list of detection possibilities and lists them under the following groups. <ul style="list-style-type: none"> <li>For stationary camera types: Region entrance, Loitering, Tripwire crossover, Fence trespass, Unattended baggage, Stopped vehicle, and Object removal.</li> <li>For PTZ camera types: Region entrance, Loitering, Tripwire crossover, and Fence trespass.</li> </ul>
Attributes Area	Settings for the <i>Rule Type</i> detection selected.
Min./Max. Size Simulation	Enables you to simulate the boundaries of the minimum and maximum sizes of humans or vehicles according to the values defined in the <i>Attributes</i> area.

The following table describes the icons available for use in defining the *Pre-alarm* area, directions, and the color of a selected region.

Icon	Description
	No pre-alarm zone.
	Shows the pre-alarm zone (allows editing of the pre-alarm zone).
	Hides the pre-alarm zone (allows editing of the detection area).
	No custom directions configured (detection in all directions).
	Shows custom direction arrows.
	Hides custom direction arrows.
	Enables setting a color for the selected region (detection region and/or pre-alarm zone).

### 5.4.4.1 Rule Types

Rules can be set for the following rule types:

- [Region Entrance](#)
- [Loitering](#)
- [Tripwire Crossing](#)
- [Fence Trespass](#)
- [Unattended Baggage](#)
- [Stopped Vehicle](#)
- [Object Removal](#)

#### 5.4.4.1.1 Region Entrance

This rule detects humans or vehicles that either enter or move within the defined region. The movement can be qualified by user settings on direction, time, and distance traveled. Detection can be defined for human, vehicles or both.

Detection areas can be custom drawn and detection is determined on the location where the object is standing (lowest part of the object). If special regions (different perspective than the main detection plane/ground) are added, the measurement model of the special region takes priority over the detection plane.

Region Entrance includes the following rules:

Rule	Icon	Description
Human enters region		Detects prohibited human movement into or within a region. The rule identifies moving persons and can detect persons walking upright, piggyback, running, crawling or walking crouched. This detection enables the definition of directional movement settings for detecting human movement in any direction in the region.
Vehicle enters region		Detects prohibited vehicular movement into or within a region. The rule identifies moving vehicles. This detection enables the definition of directional movement settings for detecting vehicle movement in any direction in the region.
Human or vehicle enters region		Same as above for either persons or vehicles.

#### 5.4.4.1.2 Loitering

This rule detects humans that enter and remain in the specific region for a pre-defined period of time.

Loitering includes the following rule:

Rule	Icon	Description
Human loitering		Detects persons which remain inside the specified region for more than a pre-defined period of time.

### 5.4.4.1.3 Tripwire Crossing

This rule detects humans, vehicles or both crossing a tripwire detection line drawn in the detection plane. Detection is based on the first visible movement beyond the line. There are two basic types of tripwire lines: a single point-to-point line or multi-segment.

The detection on the tripwire line can be in a single direction or both directions. One-way detection allows people to cross in the opposite direction and is useful for exit control or flagging individuals moving against the flow of traffic.

The tripwire functionality performs optimally when the camera is positioned to point down the tripwire line of separation, as per the following illustration.



*Overhead Optimal Camera View of a Tripwire*

Tripwire Crossing includes the following rules:

Rule	Icon	Description
Human crosses tripwire		Detects if any part of a human crosses over a specified line. This detection enables the definition of directional movement settings for detecting human movement over the tripwire line.
Vehicle crosses tripwire		Detects if any part of a vehicle crosses over a specified line. This detection enables the definition of directional movement settings for detecting vehicle movement over the tripwire line.
Human or vehicle crosses tripwire		Detects if any part of a human or a vehicle crosses over a specified line. This detection enables the definition of directional movement settings for detecting human or vehicle movement over the tripwire line.
Human crosses multi-segment tripwire		Detects if a human crosses over a specified line. This detection enables the definition of directional movement settings for detecting human movement over the multi segment tripwire line.
Vehicle crosses multi-segment tripwire		Detects if any part of a vehicle crosses over a specified line. This detection enables the definition of directional movement settings for detecting vehicle movement over the multi-segment tripwire line.
Human or vehicle crosses multi-segment tripwire		Detects if any part of a human or a vehicle crosses over a specified line. This detection enables the definition of directional movement settings for detecting human or vehicle movement over the multi-segment tripwire line.

#### 5.4.4.1.4 Fence Trespass

This rule detects movement across a fence line drawn in the detection area. Detection is based on the first visible movement beyond the line. Its detection differs from tripwire, because it is designed to work with Advanced Region definitions that compensate the relative size of intruders for climbing (elevation) above the ground detection plane. See [Depth Setup Step 3: Advanced Depth Regions](#).



**Note:**

A fence compensates the relative size of intruders for climbing (elevation) above the ground detection plane.

Detection can be assigned a single direction of detection. This one-way detection allows people or vehicles to pass a fence in the opposite direction. It is useful for exit control or flagging individuals or vehicles moving against the flow of entrances and exits. Detection of human or vehicle crossing can also be configured to detect crossing in either direction, for example, over a perimeter fence.

In order to use Fence Trespass detection, a straight-line or multi-segment fence region must be defined in the depth setup. See *To add a straight line fence* or *To add a multi-segment fence* in [Depth Setup Step 3: Advanced Depth Regions](#).

Fence Trespass includes the following rules:

Rule	Icon	Description
Human crosses fence		Detects if a human breaches the specified fence line. This detection mode enables the definition of directional movement settings for detecting human movement over the fence line.
Vehicle crosses fence		Detects if any part of a vehicle breaches the specified fence line. This detection mode enables the definition of directional movement settings for detecting vehicle movement over the fence line.
Human or vehicle crosses fence		Detects if a human or vehicle breaches the specified fence line. This detection mode enables the definition of directional movement settings for detecting human or vehicle movement over the fence line.
Human crosses multi-segment fence		Detects if a human breaches the fence lines specified. This detection mode enables the definition of directional movement settings for detecting human movement over the fence line.
Vehicle crosses multi-segment fence		Detects if any part of a vehicle breaches the specified fence lines. This detection mode enables the definition of directional movement settings for detecting vehicle movement over the fence line.

Rule	Icon	Description
Human or vehicle crosses multi-segment fence		Detects if a person or vehicle breaches the specified fence lines. This detection mode enables the definition of directional movement settings for detecting human or vehicle movement over the fence line.

#### 5.4.4.1.5 Unattended Baggage

This rule detects when an item is displayed in a scene and remains unmoved and unattended for a period of time. It also detects objects that the user left in the scene that were not previously in the scene. This is helpful for identifying suspicious bags that may pose a terrorist threat, or even watching for debris, such as on railroad tracks or highways.

*Unattended Baggage* includes the following rule:

Rule	Icon	Description
Object left behind in region		Detects qualified objects left behind in a controlled area



**Note:**

*Unattended Baggage*, *Object Removal* and *Stopped Vehicle* are static rules that cannot be activated at the same time as any of the motion type rules above. Motion and static rules can be scheduled to operate at different times on the same unit. Static type rules cannot be used with PTZ cameras.

#### 5.4.4.1.6 Stopped Vehicle

This rule detects when a vehicle arrives and remains in an area of interest for a specified time. This detection can be used for many applications, for example:

- Traffic enforcement of no parking or standing rules.
- Notifying security of parking behavior which can alert security personnel to detect suspicious behavior, thefts, preplanning, and attacks.

Stopped Vehicle includes the following rule:

Rule	Icon	Description
Vehicle stops in region		Detects if a vehicle stops, parks or remains in an area for a period longer than the time threshold defined.

**Note:**

*Unattended Baggage*, *Object Removal* and *Stopped Vehicle* are static rules that cannot be activated at the same time as any of the motion type rules above. Motion and static rules can be scheduled to operate at different times on the same unit. Static type rules cannot be used with PTZ cameras.

#### 5.4.4.1.7 Object Removal

This rule detects when an item is stolen or removed from its given location. This rule can be designed to allow a grace period for restoring the item to its location and position. The rule can be used for safety and loss prevention, as well as for notification with images of who has moved items of interest.

Object Removal includes the following rule:

Rule	Icon	Description
Object removed from location		Detects if an object is removed from its location for a period longer than the time threshold defined.

**Note:**

*Unattended Baggage*, *Object Removal* and *Stopped Vehicle* are static rules that cannot be activated at the same time as any of the motion type rules above. Motion and static rules can be scheduled to operate at different times on the same unit. Static type rules cannot be used with PTZ cameras.

#### 5.4.4.2 Creating New Rules

This section describes how to create new rules and to modify existing saved rules.

After creating a basic rule and selecting the rule type, you must define the region to which the rule applies. See [Drawing Detection Areas](#).

New rules are automatically given default attributes that can be modified as required. See [Modifying Rule Attributes](#).

After creating and/or modifying a new rule it must be enabled and saved. See [Enabling and Applying \(Saving\) Rules](#).

**Note:**

A unit must be armed in order for it to start detecting according to the enabled rules.

#### 5.4.4.2.1 To Create a New Rule

##### To create a new rule

1. In the **Setup** workspace, select **Analytics > Rules**. The **Rules** screen is displayed. See Figure: [Rules Screen](#).
2. Do one of the following:
  - If the camera type is a PTZ camera, select a preset from the *Preset* drop-down list.
  - If the camera is not a PTZ camera, continue with the next step.
3. Click **New**. A new rule is created and is displayed in the *Rule* list.
4. Enter a name for the rule in the *Name* column of the *Rule* list.
5. Use the default or define the detection region as described in [Drawing Detection Areas](#).
6. Click the [\[blue hyperlink\]](#) *Rule Type* that is just above the *Attributes* area.
7. Select the required rule type from the drop-down list. See [Rule Types](#).
8. Modify the rule attributes. See [Modifying Rule Attributes](#).
9. Enable and save the rule. See [Enabling and Applying \(Saving\) Rules](#).

#### 5.4.4.3 Drawing Detection Areas

By default, the detection area of a new rule comprises the entire display area. The default detection area always has a fill color. If you plan to change the detection area, you must first clear (remove) the default region from the display area.

This section describes how use the icons in the *Rule* toolbar to draw detection areas in the display area used in the creation of rules. The icons that are displayed vary according to the rule type. The following table is a comprehensive list of all the icons that can appear in the *Rule* toolbar:

Icon	Name	Description
<b>Region Entrance and Human Loitering Toolbar</b>		
	Clear Region	Erases all the masks and markers drawn in the display area.
	Erase	Erases the selected mask or marker in the display area.
	Fill	Enables you to fill an area in the display area with a selected color. The selected area should have an external boundary. Otherwise, the entire display area is filled with the selected color.
	Line Width	Enables you to select a line width for any lines being drawn. Each click on the icon changes the line size as follows: 
	Magnifying Glass	Magnifies a selected area to fit to the display area.
	Pan	Enables you to move the image in the display area when it is magnified.
	Pencil	Enables you to draw freehand lines in the display area.
	Rectangle	Enables you to create a filled rectangular mask area in the display area.
	Line (Polygon)	Enables you to draw straight lines for creating enclosed polygon shapes.
	Add Direction	Enables you to add a direction and specify the direction in which movement must be detected by the rule.
	Delete Direction	Deletes the selected direction.
	Zoom In	Magnifies the view in the display area.
	Zoom Out	Reduces the magnification of the display area.
	Normal Size	Returns the view from a magnified view to a non-magnified view.

---

### Tripwire and Fence Toolbar

---

	Select	Enables you to select and move an existing tripwire or fence detection line.
	Right side	Enables you to draw a new single directional detection tripwire or fence line in the direction of the arrow. This icon can also be used to change the direction of an existing directional detection tripwire or fence line.
	Left side	Enables you to draw a new single directional detection tripwire or fence line in the direction of the arrow. This icon can also be used to change the direction of an existing directional detection tripwire or fence line.
	Both directions	Enables you to draw a new dual directional detection tripwire or fence line. This icon can also be used to change the direction of an existing single directional detection tripwire to a dual directional tripwire line.
	Clear tripwire/ fence	Deletes the selected tripwire line.
	Right side	Enables you to draw a new single directional detection multi-segment tripwire or fence line in the direction of the arrow. This icon can also be used to change the direction of an existing directional multi-segment detection tripwire or fence line.
	Left side	Enables you to draw a new single directional detection multi-segment tripwire or fence line in the direction of the arrow. This icon can also be used to change the direction of an existing directional multi-segment detection tripwire or fence line.
	Both directions	Enables you to draw a new dual directional detection multi-segment tripwire or fence line. This icon can also be used to change the direction of an existing single directional detection multi-segment tripwire to a dual directional multi-segment tripwire line.

---

### 5.4.4.3.1 To Remove the Default Detection Area

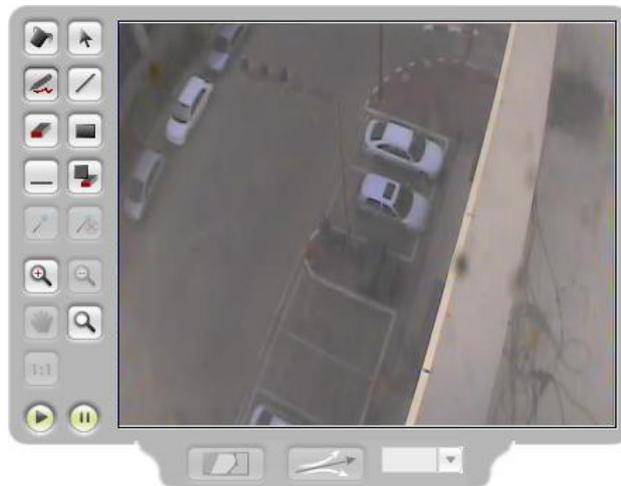
#### To remove the default detection area

1. The default detection area is displayed as follows:



*Default Detection Area*

2. From the *Rule* toolbar, select the **Clear Region** tool . The color is removed from the detection area.



*Default Detection Area – Color Removed*

#### 5.4.4.3.1.1 To Change the Color of a Detection Area

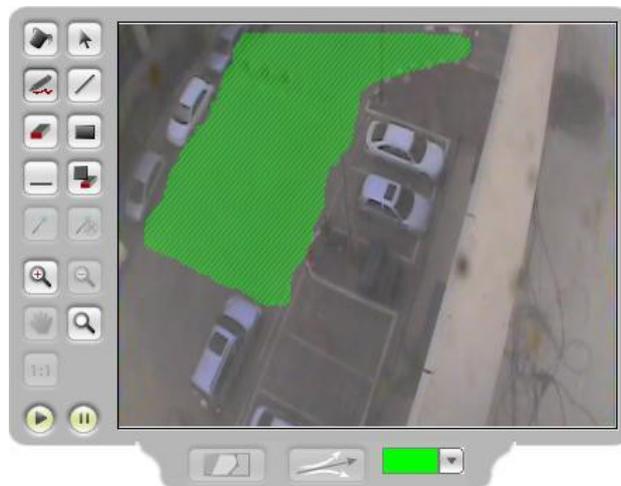
##### To change the color of a detection area

1. The following is an example of a defined detection area:



*Defined Detection Area*

2. From the *Color* drop-down list , select a new color. The following is an illustration of the defined detection area after the color was changed.



*Defined Detection Area After Changing Color*

#### 5.4.4.3.1.2 To Draw Freehand Lines Using the Pencil Tool

##### To draw freehand lines using the Pencil tool

1. From the *Rule* toolbar, select the **Pencil** tool . The cursor changes to a pencil shape.
2. Using the pencil cursor, point to the location on the image where you want to start drawing.



*Drawing a Freehand Line — Start*

3. Click and drag the cursor and draw the line.
4. Release the mouse button when finished. The freehand line is completed.



*Drawing a Freehand Line — Finish*

### 5.4.4.3.1.3 To Draw Straight Lines Using the Polygon Line Tool

#### To draw straight lines using the Polygon Line tool

1. From the *Rule* toolbar, select the **Line** tool . The cursor changes to a polygon shape.
2. Using the polygon cursor, point to the location on the image where you want to start the line.
3. Click to set each point of the outline of the polygon.



*Drawing a Straight Line*

4. Click on the first point to close the polygon. The polygon is completed.



*Completing the Polygon Shape*

#### 5.4.4.3.1.4 To Draw a Rectangle Using the Rectangle Tool

##### To draw a rectangle using the Rectangle tool

1. From the *Rule* toolbar, select the **Rectangle** tool . The cursor changes to a polygon shape.
2. Using the polygon cursor, point to the location in the image where you want to start the rectangle.



*Drawing Rectangle - Start*

3. Click and drag the mouse away from the start point to complete the rectangle.
4. Release the mouse button. The rectangle is completed.



*Completing the Rectangle*

#### 5.4.4.3.1.5 To Fill an Area Using the Fill Tool

##### To fill an area using the Fill tool

1. From the **Rule** toolbar, select the **Fill** tool . The mouse changes to fill shape.
2. Move the fill cursor over the area in the image that you want to fill and click the mouse. The color fills the selected area.



*Filling a Polygon Shape*



**Note:**

If the borders of the polygon shape are not complete, click **Fill** to fill the entire image.



**Caution:**

All enclosed regions must be filled or detection will not take place.

#### 5.4.4.3.1.6 To Erase an Area in a Color Mask Using the Eraser Tool

To erase an area in a color mask using the Eraser tool

1. From the **Rule** toolbar, select the **Eraser** tool . The mouse changes to a rectangular shape.
2. Using the mouse point to the location on the image where you to remove (erase) previously drawn color masking.



*Using the Eraser Tool – Start*

3. Click and drag the mouse over the area that you want to erase. The color masking is erased.



*Using the Eraser Tool – Finish*

### 5.4.4.3.1.7 To Clear All Masks from the Display Area

To clear all masks from the display area

1. From the *Rule* toolbar, select the **Clear Region** tool . A message is displayed asking you to confirm that you want to clear all masking from the display area.
2. Click **Yes**. All the masking in the display area is cleared.

### 5.4.4.3.1.8 To Change the Line Pencil and Eraser Tool Thickness

To change the Line Pencil and Eraser tool thickness (line style)

1. From the Rule toolbar, click the Line Width tool .
2. Continue clicking until the desired line width is displayed in the icon. Each click increments the line to the next width .

## 5.4.4.4 Modifying Rule Attributes

Rules have different attributes that must be defined for each rule type. Attributes are divided between two categories: basic and advanced. By default, the detection setting attributes are designed for the most common detection rules. These attributes can be changed to optimize detection for unique requirements of the camera or viewing scene.

The following table lists all the rule attributes. When you choose to define a rule type, only the attributes available for that rule are displayed in the *Attributes* area. See Figure: [Rules Screen](#).



**Tip:**

Avoid changing *Advanced* detection rule attributes unless you fully understand their necessity and the consequences of the change.

Icon	Setting Name	Description
<b>Basic Attributes</b>		
	Direction	Places directional criteria on detection, enabling detection only when the person/vehicle moves on a specific (custom) direction.  When setting the direction, you can define tolerances (variances) from the general direction. A person/vehicle moving in the general direction (including the tolerances) is detected. Persons/vehicles moving in a direction not specified are not detected. Up to four directions can be placed in a region.
	Pre-Alarm Zone	Enables an exterior buffer zone to be defined for pre-qualifying objects surrounding the region of interest for detection. This expedites detection if a person enters the detection zone (pre-alarm zone).

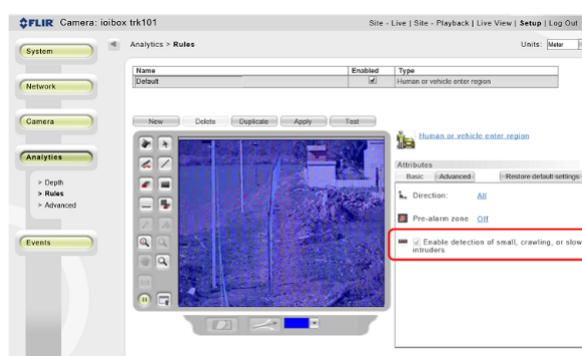
Icon	Setting Name	Description
	Scene Type	Defines the density of the scene. You can choose from: <ul style="list-style-type: none"> <li>• <i>Sterile</i></li> <li>• <i>Semi-crowded</i></li> <li>• <i>Crowded</i></li> </ul>
	Alerts	Defines the waiting time prior to raising an alarm according to the detection type.
<b>Advanced Attributes</b>		
	Size	Specifies the size range of moving persons or vehicles to be detected.
	Max. Speed	Defines the upper speed threshold for moving persons or vehicles. Objects moving faster than this speed are disqualified.
	Time in region	Defines the time-in-region and stationary time under the threshold that must be exceeded for a person or vehicle to be detected.
	Max. Stationary time	The maximum time allowed for an object before it becomes part of the scene.
	Distance inside region	Defines the movement threshold that must be exceeded for a person or vehicle to be detected.
	Slow crawlers/small animal detection	Enables or disables detection of very slow crawlers and small animals. Used mainly for military grade detection.

**Note:**

1. By default, the *Slow crawlers/small animal detection* option is disabled in the above rules, meaning that the system is identifying people standing or walking upright. Selecting *Enable* activates the identification of sophisticated intruders.
2. The *Slow crawlers/small animal detection* option is not supported for the following rules: *Object left behind in region*, *Vehicle stops in region*, and *Object removed from location*.
3. For all other rules, the default setting is *Enabled* (identifying sophisticated intruders), which cannot be changed.

### To enable the identification of people standing upright

1. Select **Setup > Rules**. The **RULES** screen opens. See Figure: [Rules Screen](#).
2. Click the *Basic* tab in the *Attributes* area.
3. Click the link displayed above the *Attributes* area and select one of the following rules:
  - Human enters region
  - Human loitering
  - Human crosses tripwire
  - Human crosses multi-segment tripwire
4. Select the checkbox for *Enable detection of small, crawling or slow intruders*.



*Enable Identification of Upright People*



#### Note:

It is possible that a person who is not standing upright might not be detected when:

- Crawling
- Walking on all four (like an animal)
- Camouflaged to look like an inanimate object (i.e., small tree)
- Running and viewed from the side
- Bent over and viewed from the side

In these cases, in order to enable the identification of upright people and reduce false alarms, the camera should not be facing straight where the camera does not have good low-light sensors or thermal sensors, detection might be reduced due to insufficient data.

The following sections describe how to modify rule attributes:

- [Modifying Region Entrance Rule Attributes](#)
- [Modifying Human Loitering Rule Attributes](#)
- [Modifying Tripwire Crossover Rule Attributes](#)
- [Modifying Fence Trespass Rule Attributes](#)
- [Modifying Unattended Baggage Rule Attributes](#)
- [Modifying Stopped Vehicle Rule Attributes](#)
- [Modifying Object Removal Rule Attributes](#)

#### 5.4.4.4.1 Modifying Region Entrance Rule Attributes

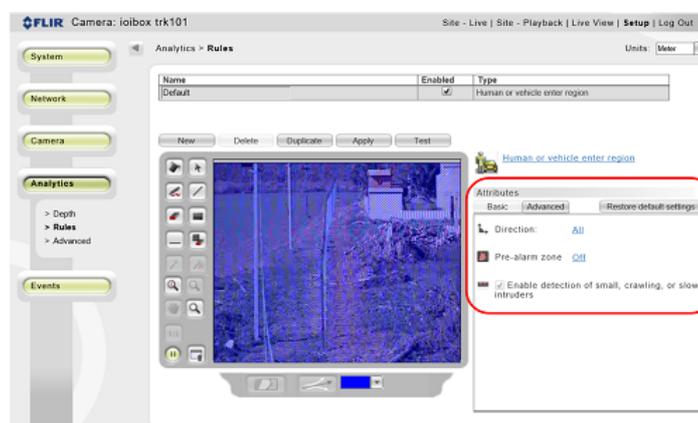
Region Entrance rules identify moving persons and/or vehicles entering a predefined region. In the case of humans, Region Entrance rules can detect persons walking upright, piggyback, running, crawling or crouching.



#### Note:

The rule attributes change according to the rule type and the object to be detected (human, vehicle or both).

The following illustration shows the **Rules** screen for defining the *Basic Region Entrance Rule* attributes. The rule attributes are highlighted in the red rectangle on the right of the screen.



*Basic Rule Attributes for Human or Vehicle Entering Region*

The following section describes how to modify a rule to detect when a human and/or vehicle enters a region.

##### 5.4.4.4.1.1 To Modify a Rule to Detect When a Human and/or Vehicle Enters a Region

#### To modify a rule to detect when a human and/or vehicle enters a region

1. In the **Setup** workspace, select **Analytics > Rules**. The **Rules** screen is displayed. See Figure: [Rules Screen](#).
2. From the *Rule* list, select the rule that you want to modify.
3. If you want to modify the Rule Type, click the [blue hyperlink] Rule Type located above the Attributes area from the list that is displayed.
4. Select the required rule type. See [Rule Types](#).
5. If you want to rename the rule, enter a new descriptive name for the rule in the Rule column of the Rule list.
6. Modify the region where detection will take place. By default, when a new rule is created, a companion region is created in the full field of view.

7. To change the region that is displayed in the display area, do the following:

- a. If you want to erase and redraw the selected region, click **Erase**  in the Rule toolbar.
- b. Select a drawing tool and redraw the detection region. For more information on how to use the *Rule* toolbar drawing tools, see [Drawing Detection Areas](#).

#### 5.4.4.4.1.2 To Modify Basic Attributes

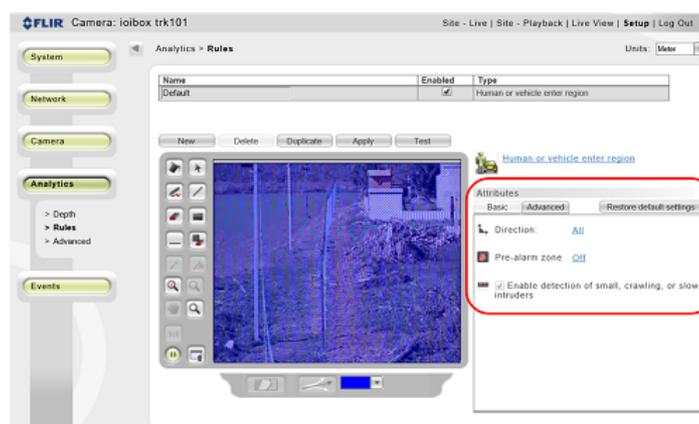
##### To modify Basic Attributes

1. Modify the *Direction* attribute(s) as described below in *To define directions*.
2. Modify the *Pre-alarm Zone* attribute(s) as described below in *To define the pre-alarm zone*.
3. Check *Enable detection of small, crawling or slow intruders* if you wish to identify sophisticated intruders.
4. Click **Apply**. The rule is modified.

#### 5.4.4.4.1.3 To Modify Advanced Rule Attributes

##### To modify Advanced Rule Attributes

In the following example for defining *Advanced Region Entrance* rule attributes, the advanced rule attributes are highlighted in the red rectangle on the right of the screen.



*Advanced Rule Attributes for Human or Vehicle Entering Region*

1. From the Rules window, click the *Advanced* tab in the *Attributes* section.
2. Modify the *Size* attribute(s). Do one of the following:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Size* label if you are modifying the detection rule attributes for humans or vehicles. Click **OK** when finished.
  - If you select *Custom*, set the values for the minimum and maximum sizes in the *Set Human Size* dialog box and/or *Set Vehicle Size* dialog box. Click **OK** when finished.

3. Modify the *Max. Speed* attribute(s). Do one of the following:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Max. Speed* label if you are modifying the detection rule attributes for humans or vehicles. Click **OK** when finished.
  - If you select *Custom*, set the values for the minimum and maximum sizes in the *Set Maximum Human Speed* dialog box and/or *Set Maximum Vehicle Speed* dialog box. Click **OK** when finished.
4. Modify the *Distance inside region* attribute(s). Do one of the following:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Distance* label if you are modifying the detection rule attributes for humans or vehicles. Click **OK** when finished.
  - If you select *Custom*, set the values for the minimum distance in the *Set Human Minimum Distance* dialog box and/or *Set Vehicle Minimum Distance* dialog box. Click **OK** when finished.
5. Modify the *Time in region* attribute(s). Do one of the following:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Time* label and within the phrase “At least [\[blue hyperlink\]](#) sec” for a time zone if you are modifying the detection rule attributes for humans or vehicles. Click **OK** when finished.
  - If you select *Custom*, set the values for the time in zone in the *Set Human Time In Zone* dialog box and/or *Set Vehicle Time In Zone* dialog box. Click **OK** when finished.
6. Modify the *Max. Stationary time* attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Time* label and within the phrase “Stationary no more than [\[blue hyperlink\]](#) sec” if you are modifying the detection rule attributes for humans or vehicles. Click **OK** when finished.
  - If you select *Custom*, set the values for the “stationary no more than” time in the *Set Human Time Static* dialog box and/or *Set Vehicle Time Static* dialog box. Click **OK** when finished.
7. Modify the *Slow crawlers/small animals* detection attribute(s) as follows:
  - Click the value to the left of the label in the [\[blue hyperlink\]](#).
  - Enable or disable it as required.

#### 5.4.4.4.1.4 To Define Directions

##### To define directions

1. By default, the *All* attribute is selected. Any object (human or vehicle) moving in any direction within the detection region will be detected.
2. To define custom directions, click the [\[blue hyperlink\]](#) value to the right of the *Direction* label.
3. Select *Custom*. A directional arrow  is displayed in the display area. The center vertical arrow defines the main detection direction. The horizontal arrows to the left and right of the center arrow determine the tolerance or deviation from the center that is allowed. Adjust the position of the tolerance arrows by dragging either of the arrowheads to the required tolerance. Both arrowheads move in synch.
4. Click the **Select** tool . Drag the arrow to a position in the detection area where you want to define the detection direction.
5. Set the custom direction by dragging the center arrow and turning it to point towards the required direction of movement detection. Select the tolerance arrows and turn them to set the allowed deviation from the main direction .

- To add a new direction, click the **New Direction** icon  in the *Rule* toolbar. The new direction is added.



**Note:**

A detection rule can have up to four directions.

- If necessary, modify the attributes of the new direction as described in the previous step.
- To delete a direction, do the following:
  - Select the direction you want to delete by using the **Select** tool .
  - Click the **Delete Direction** icon  in the *Rules* toolbar. The direction is deleted.
- Click the **Show/Hide Directions** button  to show or hide the direction arrows.

The following is an illustration of the display area with a single direction arrow.



*Direction Arrows in Detection Area*

#### 5.4.4.4.1.5 Pre-Alarm Zones

A pre-alarm zone is an area where the unit detects according to the detection rules, but does not trigger any alarm notifications in case of detection. It can be used in narrow detection areas where it is preferable to detect and track before an intruder enters the detection area for a short period of time.

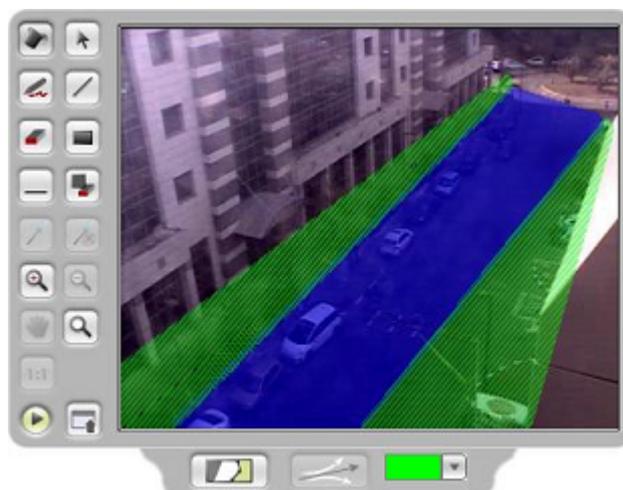
##### To define the pre-alarm zone

- Click the [\[blue hyperlink\]](#) value to the right of the *Pre-alarm Zone* label.
- Select **On**. The entire display area becomes a pre-alarm zone as shown below.



Default Pre-alarm Zone

3. From the *Rule* toolbar, click the **Clear Region** icon  to delete the default pre-alarm zone (full FOV).
4. Click the **Show/Hide Pre-alarm Zone** button . Using one of the drawing tools in the *Rules* toolbar, draw a new pre-alarm zone. The following is an example of custom pre-alarm zones.



Custom Pre-Alarm Zones



**Note:**

For more information on how to use the *Rule* toolbar drawing tools, see [Drawing Detection Areas](#).

5. To change the color of the pre-alarm zone, do the following:

- From the Rule toolbar, click the **Select** icon  to select the pre-alarm zone.
- Select a color from the *Color* drop-down list .

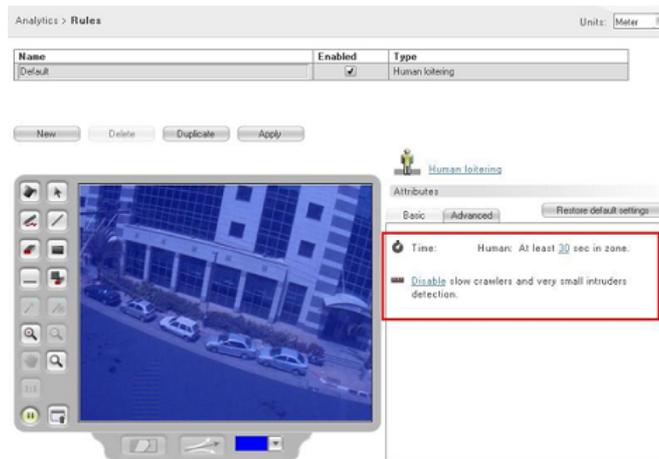
 **Note:**

Use the  icon to switch between detection and pre-alarm areas.

#### 5.4.4.4.2 Modifying Human Loitering Rule Attributes

Loitering rules detect persons that remain in a specific region for a pre-defined period of time.

In the following **Rules** screen for defining *Human Loitering* attributes, the rule attributes are highlighted in the red rectangle on the right of the screen.



Rule Attributes for Human Loitering

##### 5.4.4.4.2.1 To Modify a Rule to Detect Human Loitering

###### To modify a rule to detect human loitering

1. In the *Setup* workspace, select **Analytics > Rules**. The **Rules** screen is displayed. See Figure: [Rules Screen](#).
2. From the *Rule* list, select the rule that you want to modify.
3. To modify the *Rule Type*, click the [\[blue hyperlink\]](#) *Rule Type* located above the *Attributes* area.
4. Select *Human Loitering*.
5. To rename the rule, enter a name for the rule in the *Rule* column of the *Rule* list.
6. Modify the region where detection will take place as required. By default, when a new rule is created a companion region is created on the full field of view.
7. To erase and redraw the selected region, click Erase  in the Rule toolbar.

8. Select a drawing tool and redraw the detection region.

**Note:**

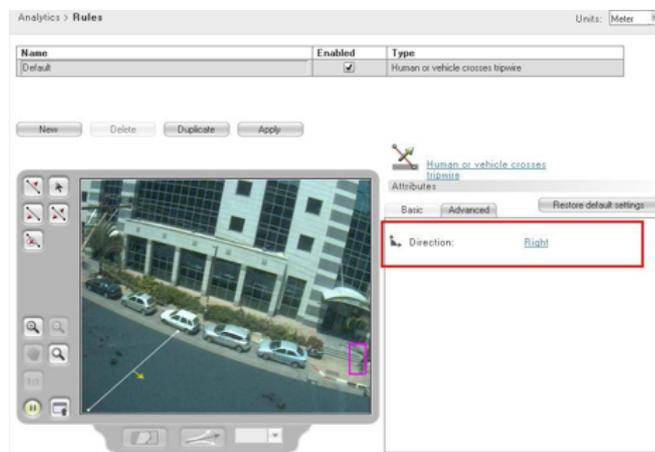
For more information on how to use the *Rule* toolbar drawing tools, see [Drawing Detection Areas](#).

9. Modify the *Time* attribute as follows:
  - Select a *[blue hyperlink]* value that is displayed to the right of the **Time** label and within the phrase “At least *[blue hyperlink]* sec. in zone”. Click **OK** when finished.
  - If **Custom** is selected, set the values for the minimum time in zone in the *Set Human Time in Zone* dialog box. Click **OK** when finished.
10. Modify the *Slow crawlers/small animals* detection attribute(s) as follows:
  - Click the *[blue hyperlink]* value to the left of the label and enable/disable as required.
  - Click **Apply**. The rule is modified.

#### 5.4.4.4.3 Modifying Tripwire Crossover Rule Attributes

Tripwire Crossover rules detect humans, vehicles or both when crossing a single or multi-segmented tripwire line. Detection is based on the first visible movement beyond the line.

Rule attributes are highlighted in the red rectangle on the right of the following **Rules** screen for defining *Human* or *Vehicle Crossing Tripwire* attributes.



Rule Attributes for Human or Vehicle Crossing Tripwire

#### To modify a rule to detect when a human and/or vehicle crosses a tripwire line

1. In the **Setup** workspace, select **Analytics > Rules**. The **Rules** screen is displayed. See Figure: [Rules Screen](#).
2. From the *Rule* list, select the rule that you want to modify.
3. To modify the *Rule Type*, click the *[blue hyperlink]* *Rule Type* located above the *Attributes* area.
4. Select the required rule type. See [Rule Types](#).
5. To rename the rule, enter a descriptive name for the rule in the *Rule* column of the *Rule* list.

6. Modify the direction by using either the direction icons or the selection [\[blue hyperlink\]](#) in the direction attribute area.
7. Click  to select the tripwire line.
8. Do one of the following:
  - Click ,  or  to change the directional detection as needed.
  - Click the [\[blue hyperlink\]](#) in the direction attribute area, and select a value from the list that is displayed.
9. Click **Apply**. The rule is modified.



**Note:**

The direction (left/right) is referenced as looking from the start point of the tripwire line to the end point.

#### 5.4.4.4 Modifying Fence Trespass Rule Attributes

Fence trespass rules detect movement across a fence line. Its detection differs from tripwire in that it is designed to work with Advanced Region definitions that compensate for the relative size of intruders for climbing (elevation) above the ground detection plane. The Advanced Region definitions must be defined before defining this rule type. See [Depth Setup Step 3: Advanced Depth Regions](#).

The following is an example of the **Rules** screen for defining Human or Vehicle Crossing Fence Basic attributes.



*Basic Rule Attributes for Human or Vehicle Crossing Fence*

#### 5.4.4.4.1 To Modify a Rule to Detect When a Human and/or Vehicle Crosses a Fence Line

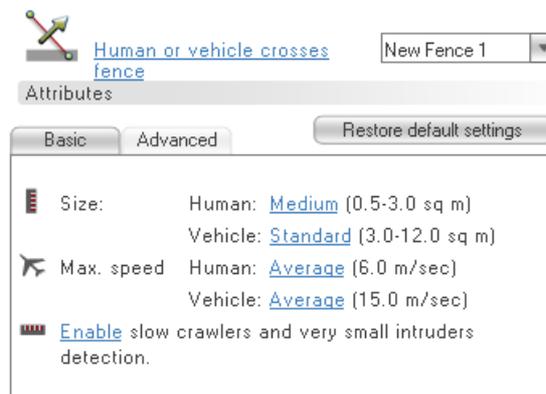
##### To modify a rule to detect when a human and/or vehicle crosses a fence line

1. In the *Setup* workspace, select **Analytics > Rules**. The **Rules** screen is displayed. See Figure: [Rules Screen](#).
2. From the *Rule* list, select the rule that you want to modify.
3. To modify the *Rule Type*, click the [\[blue hyperlink\] Rule Type](#) located above the *Attributes* area.
4. Select the required rule type. See [Rule Types](#).
5. To rename the rule, enter a name for the rule in the *Rule* column of the *Rule* list.
6. From the *Fence Region* drop-down list to the right of the selected detection rule [\[blue hyperlink\]](#), choose an existing straight line fence or multi-segmented fence.
7. To change the direction of the detection on the fence, do one of the following:
  - Click ,  or  to achieve the directional detection required
  - From the *Direction* attribute, click the [\[blue hyperlink\]](#) and select the required direction.
8. Click **Apply**. The rule is modified.

#### 5.4.4.4.2 To Modify Advanced Attributes

##### To modify advanced attributes

The following is an example of the **Rules** screen for defining Human or Vehicle Crossing Fence Basic Attributes.



*Advanced Rule Attributes for Human or Vehicle Crossing Fence*

1. Click the *Advanced* tab in the *Attributes* section.
2. Modify the *Size* attribute(s) as follows:
  - Select a [\[blue hyperlink\]](#) value to the right of the *Size* label if you are modifying the detection rule attributes for humans or vehicles.
  - If you select *Custom*, set the values for the minimum and maximum sizes in the *Set Human Size* dialog box and/or *Set Vehicle Size* dialog box. Click **OK**.

3. Modify the *Max. Speed* attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Max. Speed* label, and select a value from the list that is displayed. If you are modifying the detection rule attributes for humans or vehicles the *Max. Speed* values for both humans and vehicles are displayed.
  - If **Custom** is selected, set the values for the minimum and maximum sizes in the *Set Maximum Human Speed* and/or *Set Maximum Vehicle Speed* dialog box. Click **OK** when finished.
4. Modify the *Slow crawlers/small animals* detection attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the left of the label.
  - Enable or disable as required.
5. Click **Apply**. The rule is modified.



**Note:**

The fence height and width properties can be changed in the Advanced Depth Regions.

#### 5.4.4.4.5 Modifying Unattended Baggage Rule Attributes

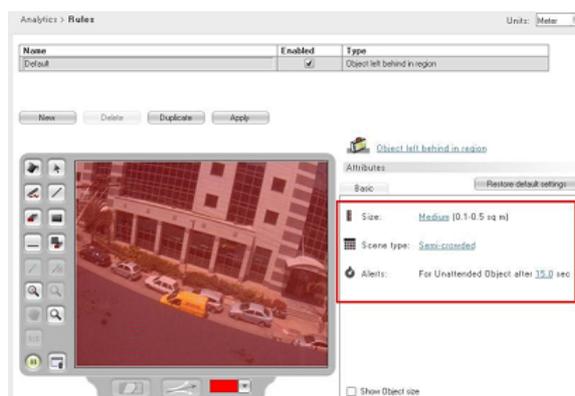
*Unattended Baggage* rules detect when an item is displayed in a scene and remains unmoved and unattended for a pre-defined period of time.



**Note:**

*Unattended Baggage* is a static rule that is not supported on PTZ cameras.

In the following example of the **Rules** screen for defining *Object Left Behind in Region* attributes, the rule attributes are highlighted in the red rectangle on the right of the screen.



*Rule Attributes for Object Left Behind in Region*

### To modify a rule to detect an object left behind in a region

1. In the **Setup** workspace, select **Analytics > Rules**. The **Rules** screen is displayed. See Figure: [Rules Screen](#).
2. From the *Rule* list, select the rule that you want to modify.
3. To modify the *Rule Type*, click the [\[blue hyperlink\]](#) *Rule Type* located above the *Attributes* area.
4. Select *Object left behind in region*. See [Rule Types](#).
5. To rename the rule, enter a name for the rule in the *Rule* column of the *Rule* list.
6. Modify the region where detection will occur as required. By default, when a new rule is created, a companion region is created on the full field of view.
  - To erase and redraw the selected region, click **Erase**  in the *Rule* toolbar.
  - Select a drawing tool and redraw the detection region.



**Note:**

For more information on how to use the *Rule* toolbar drawing tools, see [Drawing Detection Areas](#).

7. Modify the *Size* attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Size* label, and select a value from the list that is displayed.
  - If you select *Custom*, set the values for the minimum and maximum sizes in the *Set Baggage Size* dialog box. Click **OK** when finished.
8. Modify the *Scene type* attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Scene type* label, and select a value from the list that is displayed.
9. Modify the *Time until alert* attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Alerts* label, and select a value from the list that is displayed.
  - If you select *Custom*, set the values for the minimum and maximum period in the *Set Time to Alarm* dialog box. Click **OK** when finished.
10. Click **Apply**. The rule is modified.

#### 5.4.4.4.6 Modifying Stopped Vehicle Rule Attributes

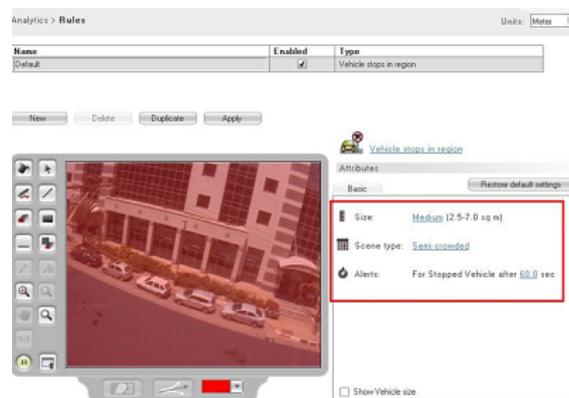
*Stopped Vehicle* rules detect when a vehicle has arrived and remains for a specified time in an area of interest.



**Note:**

*Stopped Vehicle* is a static rule that is not supported on PTZ cameras.

In the following example of the **Rules** screen for defining *Vehicle Stops in Region* attributes, the rule attributes are highlighted in the red rectangle on the right of the screen.



Rule Attributes for Vehicle Stops in Region

### To modify a rule that detects when a vehicle stops in a region

1. In the **Setup** workspace, select **Analytics > Rules**. The **Rules** screen is displayed. See Figure: [Rules Screen](#).
2. From the *Rule* list, select the rule that you want to modify.
3. To modify the **Rule Type**, click the [\[blue hyperlink\]](#) *Rule Type* located above the *Attributes* area.
4. Select *Vehicle stops in region*. See [Rule Types](#).
5. To rename the rule, enter a name for the rule in the *Rule* column of the *Rule* list.
6. Modify the region where detection will occur as required. By default, when a new rule is created, a companion region is created on the full field of view.
  - To erase and redraw the selected region, click **Erase**  in the *Rule* toolbar.
  - Select a drawing tool and redraw the detection region. For more information on how to use the *Rule* toolbar drawing tools, see [Drawing Detection Areas](#).
  - Modify the detection settings attributes, as required. By default, the detection setting attributes are designed for the most common detection rules. These attributes can be changed to optimize detection for unique requirements of the camera or preset scene.
7. Modify the *Size* attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Size* label, and select a value from the list that is displayed.
  - If you select *Custom*, set the values for the minimum and maximum sizes in the *Set Baggage Size* dialog box. Click **OK** when finished.
8. Modify the *Scene type* attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Scene type* label, and select a value from the list that is displayed.
9. Modify the *Time until alert* attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Alerts* label, and select a value from the list that is displayed.
  - If you select *Custom*, set the values for the minimum and maximum period in the *Set Time to Alarm* dialog box. Click **OK** when finished.

- Click **Apply**. The rule is modified.

#### 5.4.4.4.7 Modifying Object Removal Rule Attributes

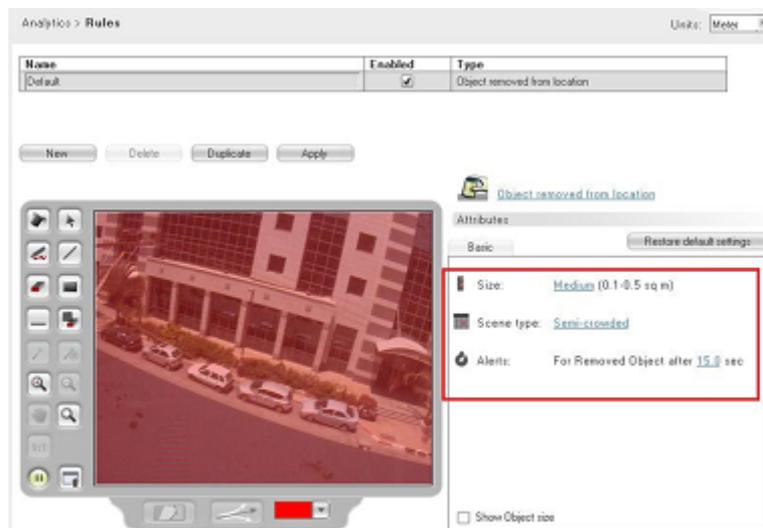
*Object Removal* rules detect when an item is stolen or removed from its given location.



#### Note:

*Object Removal* is a static rule that is not supported on PTZ cameras.

In the following example of the **Rules** screen for defining the Object Removed from Location attributes, the rule attributes are highlighted in the red rectangle on the right of the screen.



*Rule Attributes for Object Removed from Location*

#### To modify a rule to detect an object removed from a region

- In the **Setup** workspace, select **Analytics > Rules**. The **Rules** screen is displayed. See Figure: [Rules Screen](#).
- From the *Rule* list, select the rule that you want to modify.
- To modify the *Rule Type*, click the [\[blue hyperlink\]](#) *Rule Type* located above the *Attributes* area.
- Select *Object removed from location*. See [Rule Types](#).
- To rename the rule, enter a name for the rule in the *Rule* column of the *Rule* list.

6. Modify the region where detection will occur as required. By default, when a new rule is created, a companion region is created on the full field of view.
  - To erase and redraw the selected region, click **Erase**  in the *Rule* toolbar.
  - Select a drawing tool and redraw the detection region. For more information on how to use the *Rule* toolbar drawing tools, see [Drawing Detection Areas](#).
  - Modify the detection settings attributes, as required. By default the detection setting attributes are designed for the most common detection rules. These attributes can be changed to optimize detection for unique requirements of the camera or preset scene.
7. Modify the *Size* attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Size* label, and select a value from the list that is displayed.
  - If you select *Custom*, set the values for the minimum and maximum sizes in the *Set Baggage Size* dialog box. Click **OK** when finished.
8. Modify the *Scene type* attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Scene type* label, and select a value from the list that is displayed.
9. Modify the *Time until alert* attribute(s) as follows:
  - Click the [\[blue hyperlink\]](#) value to the right of the *Alerts* label, and select a value from the list that is displayed.
  - If you select *Custom*, set the values for the minimum and maximum period in the *Set Time to Alarm* dialog box. Click **OK** when finished.
10. Click **Apply**. The rule is modified.

#### 5.4.4.5 Simulating Maximum and Minimum Object Sizes

You can simulate the maximum and minimum size of objects to be detected (the persons, vehicles, or objects) on the video screen, in order to verify and confirm the size attributes defined in the detection rule.

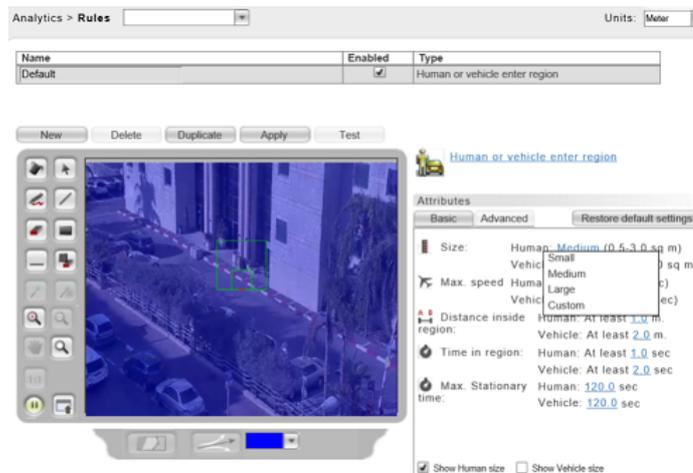


#### Note:

1. In order to be detected, an object must be between the minimum and maximum size of the simulated image. Move the OSD simulation around the scene and confirm it fits the required size of the persons, vehicles, or objects to be detected.
2. When moving the simulation, its size changes according to the calculated size values on the specific location based on the depth (perspective) settings defined for the scene.

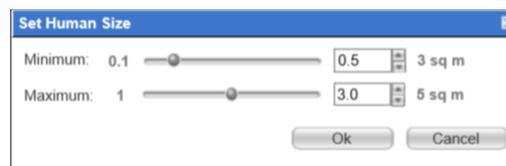
#### To simulate the Min./Max. object size

1. In the **Setup** workspace, select **Analytics > Rules**. The **Rules** screen is displayed. See Figure: [Rules Screen](#).
2. On detection rules with both *Basic* and *Advanced* attributes, select the *Advanced Attributes* tab.



*Advanced Attributes Tab Size Settings*

3. In the checkbox at the bottom of the *Attributes* area, select the type of object to simulate (Human or Vehicle). An On-Screen Display (OSD) simulation of the minimum (small box) and maximum (large box) object size is shown on the video screen.
4. Set the minimum and maximum size of the object.



*Set Human Size Dialog Box*

5. Click and drag the bottom (center) point of the OSD simulation to move the simulation inside the scene. The simulation size changes according to the size values calculated on the specific location.
6. Click and drag on the simulation borders to change the ratio of its height or width.
7. Click and drag the simulation corners to change the minimum or maximum object size or define them in the attributes section.
8. Confirm that a typical object to be detected is between the minimum and maximum simulated size.
9. If necessary, change the object size attributes accordingly.
10. Click **Apply** to save the changes.



**Note:**

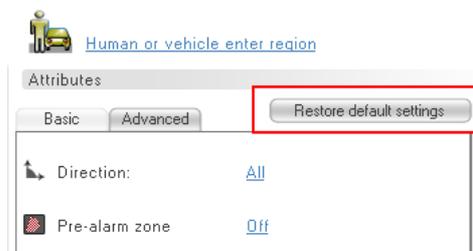
Use the **Zoom-in**, **Zoom-Out**, **Pan**, and **1:1** tools to enlarge and focus on the object to improve the simulation accuracy.

### 5.4.4.6 Restoring Rule Attributes to their Default Settings

You can restore a rule attributes to their default settings to cancel any changes performed by the user.

#### To restore the detection rules attributes to its default settings

1. Click **Restore default settings**.



*Basic Attributes Area*

2. Click **Apply**.

### 5.4.4.7 Enabling and Applying (Saving) Rules

You can enable and disable rule definitions in the *Rule* table. Only enabled definitions are used when a camera is armed.

#### To enable or disable a rule

1. In the **Setup** workspace, select **Analytics > Rules**. The **Rules** screen is displayed. See Figure: [Rules Screen](#).
2. In the *Active* column of the *Rule* list, select or clear the rules that you want to enable or disable.
3. Click **Apply**. The rules are enabled or disabled.

### 5.4.4.8 Modifying and Duplicating Rules

You can modify or duplicate an existing rule. The procedure for modifying existing rule is the same as for modifying new rules. See [Modifying Rule Attributes](#).

To modify the detection area for a rule, follow the procedures described in [Drawing Detection Areas](#).

#### To duplicate a rule

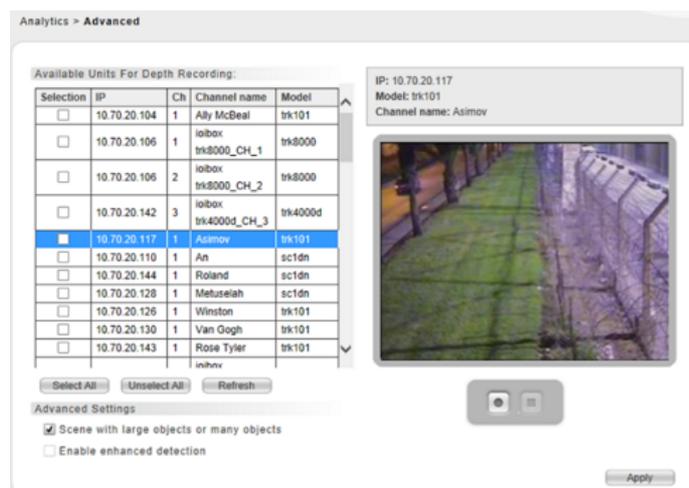
1. In the **Setup** workspace, select **Analytics > Rules**. The **Rules** screen is displayed. See Figure: [Rules Screen](#).
2. From the *Rule* list, select the rule you want to duplicate.
3. Click **Duplicate**. The rule is duplicated and is displayed in the *Rule* list.
4. Modify the detection area of the duplicated rule. See [Drawing Detection Areas](#).
5. Modify the rule attributes as described in [Modifying Rule Attributes](#).
6. In the *Active* column of the *Rule* list, select or clear the rules that you want to enable or disable.
7. Click **Apply**. The duplicated rule is saved.

## 5.5 Configuring Advanced Analytic Settings

Enhanced detection is possible in scenes where there is movement in up to 80% of the frame. This function is enabled by default. When the trk-101 and trk-101-P are operating in DVR and HD Analytic Analog modes, the distance from which smaller objects are detected is enhanced and enabled by default.

### To disable enhanced detection distance

- Uncheck the *Enable enhanced detection* checkbox in the *Advanced Settings* area of the **Setup > Analytics > Advanced** screen.



*Analytics > Advanced > Advanced Settings*

## 5.6 Configuring the Event Engine

The unit's embedded event engine enables you to define responses (automatic actions) for selected events and to perform actions at pre-defined times (scheduled actions).

Each automatic response definition includes the following three parameters:

- Triggering event – The event that will start the automatic response.
- Actions – The actions to perform in response to the occurrence of the triggering event.
- Schedule – When to monitor for the triggering event occurrence.

Each scheduled action includes the following two parameters:

- Actions – The actions to perform at the scheduled time.
- Schedule – When the actions must be performed.

Multiple events or scheduled actions can be defined per unit. Actions can be defined to be performed (a) locally on the configured unit, or (b) remotely on external units. For example, upon Intrusion detection *from this camera*, to move a PTZ camera on the second floor to preset 5.

The following is an illustration of the **Responses** screen:

The screenshot shows the 'Responses' screen with a table listing a response and configuration options for triggering events.

Name	Enabled	Triggering Event	Action
Response_1	<input checked="" type="checkbox"/>	Intrusion detection	Activate relay output

Buttons: Add, Delete

Triggering Event tab is active. Configuration options include:

- Alarms:
  - Detection by type: Intrusion detection
  - Detection by rule:
  - External alarm (dry contact): Open / Close
  - No more detections left in scene
- Video Signal:
  - Video signal:
- Operations:
  - Power on
  - Arm
  - Disarm

Apply button is at the bottom right.

Responses Screen

The following is an illustration of the **Sched. Actions** screen:

The screenshot shows the 'Sched. Actions' screen with a table listing a scheduled action and configuration options for its settings.

Name	Enabled	Action
Action_1	<input checked="" type="checkbox"/>	Activate relay output

Buttons: Add, Delete

Schedule tab is active. Configuration options include:

Step	Action	Settings
1	Activate relay output	...

Buttons: Up, Down, Add, Delete

Action: Activate relay output

Settings:

- Activate relay:
  - Immediately
  - After [ ] sec.
- Relay number:
  - #1
- Activation signal:
  - Continuous: On
  - Pulse activation: Pulse duration: [ ] Sec.

Apply button is at the bottom right.

Sched. Actions Screen

The **Responses** and **Sched. Actions** screens are similar, except that the **Responses** screen includes the *Triggering Event* tab. Both pages include a section where defined responses or scheduled events are listed, as well as tabs for their settings.

The *Events* list includes the following columns and buttons:

Setting	Description
Name	The automatic response or scheduled event custom name as given by the user.
Enabled	Enables and disables the specific automatic response or scheduled event.
Event	Description of the triggering event type (for Responses only).
Action	Description of the actions to perform.
Schedule	For an automatic response indicates when the triggering event will be monitored (always or scheduled). For a scheduled event indicates when the actions shall be performed.
Add	Adds a new event definition to the <i>Events</i> list.
Delete	Deletes the selected event in the <i>Events</i> list.

The **Responses** and **Sched. Events** screens include the following tabs:

- [Triggering Events](#): Responses screen only. Defines the type of event which will start the automatic response.
- [Actions](#): When configuring automatic responses, defines the actions to be performed on the occurrence of a triggering event. When configuring a scheduled event, defines the actions to be performed on the scheduled date or time.
- [Schedule](#): When configuring automatic responses, this tab enables you to define when to monitor for the triggering event occurrence. See [Configuring When to Perform Scheduled Actions](#). When configuring Scheduled actions, this tab enables you to define when the actions must be performed. See [Configuring Scheduled Actions](#).

### 5.6.1 Defining Automatic Responses

An automatic response is a set of actions to be taken upon the occurrence of the triggering event during a defined monitoring period (schedule).

#### To configure automatic responses in the unit

1. In the **Setup** workspace, select **Analytics > Responses**. The **Responses** screen opens. See Figure: [Responses Screen](#).
2. Click **Add**. A new event is added and is displayed in the *Events* list.
3. Configure the *Triggering Event* tab, as described in [Configuring a Triggering Event](#).
4. Configure the *Actions* tab, as described in [Configuring the Actions to Perform](#).
5. Configure the *Schedule* tab, as described in [Configuring the Monitoring Schedule for Automatic Responses](#).
6. Click **Apply**. The automatic responses settings are saved.
7. After configuring responses, you can perform the following functions:
  - [Sort Events](#)
  - [Delete Events](#)

## 5.6.2 Configuring Scheduled Actions

Scheduled actions perform an action on a specific date or time or on a recurring basis over a defined time period (schedule).

### To configure automatic responses in the unit

1. In the **Setup** workspace, select **Analytics > Sched. Actions**. The **Sched. Actions** screen is displayed. See Figure: [Scheduled Actions](#).
2. Click **Add**. A new event is added and is displayed in the list.
3. Configure the *Actions* tab, as described in [Configuring the Actions to Perform](#).
4. Configure the *Schedule* tab, as described in [Configuring When to Perform Scheduled Actions](#).
5. Click **Apply**. The scheduled actions settings are saved.
6. After configuring responses, you can perform the following functions:
  - [Sort Events](#)
  - [Delete Events](#)

### 5.6.2.1 Configuring a Triggering Event



**Note:**

Triggering events refer only to responses and are not applicable when configuring scheduled actions.

The *Triggering Event* tab enables you to define triggering events that initiate an automatic response. An automatic response is an action that is defined in the *Actions* Tab and executed during the monitoring period defined in the *Schedule* tab. See [Configuring the Monitoring Schedule for Automatic Responses](#).

The *Triggering Event* tab includes the following fields:

Setting	Description
Detection by type	Triggers an automatic response in case the unit detects according to a detection rule matching the selected type: <ul style="list-style-type: none"> <li>• <i>Intrusion detection</i></li> <li>• <i>Vehicle Stopped</i></li> <li>• <i>Unattended Object</i></li> <li>• <i>Object Removal</i></li> <li>• <i>Tripwire detection</i></li> <li>• <i>Fence detection</i></li> <li>• <i>Loitering detection</i></li> <li>• <i>Any detection</i></li> </ul>
Detection by rule	Triggers an automatic response according to a specific detection rule defined in the unit.
External alarm (dry contact)	Triggers an automatic response when the unit detects dry contact alarms received from connected alarm inputs.

Setting	Description
No more detections left in scene	Triggers an automatic response in case no detections are left in the scene.
Video signal	Triggers an automatic response in case one of the following video signal status notifications occur: <ul style="list-style-type: none"> <li>• <i>Video Signal OK</i></li> <li>• <i>No Video Signal</i></li> <li>• <i>Low Video Signal</i></li> <li>• <i>Bad Video Signal</i></li> <li>• <i>Camera Shift</i></li> </ul>
Power On	Triggers an automatic response when the unit's power is turned on.
Arm	Triggers an automatic response when the unit's status is changed to arm.
Disarm	Triggers an automatic response when the unit's status is changed to disarm.

### To configure a triggering event

1. In the **Setup** workspace, select **Events > Responses**. The **Responses** screen is displayed. See Figure: [Responses](#) screen.
2. Define the *Triggering Events* tab as follows:

Trigger Type	Action
Detection alarm type	Select detection alarm trigger from the <i>Detection by type</i> drop-down list.
Specific rule alarm	Select <i>Detection by rule</i> . Select the rule to use as a trigger from the <i>Detection rules</i> drop-down list.
External alarm (dry contacts)	Select <i>External alarm (dry contact)</i> . From the drop-down list, select the dry contact to monitor. Select whether to trigger an alarm when the selected dry contact state is <i>Open</i> or <i>Close</i> .
After all detected objects leave the scene	Select <i>No more detections left in scene</i> .
Following changes in the video signal state	Select <i>Video signal</i> . Select the type of video signal alarm to use as a trigger from the <i>Video signal</i> drop-down list: <ul style="list-style-type: none"> <li>• <i>Video Signal OK</i></li> <li>• <i>No Video Signal</i></li> <li>• <i>Low Video Signal</i></li> <li>• <i>Bad Video Signal</i></li> <li>• <i>Camera Shift</i></li> <li>• <i>Any tamper</i></li> </ul>

Trigger Type	Action
Following powering up the unit	Select <i>Power on</i> .
Following the arming of the unit or channel event	Select <i>Arm</i> .
Following the disarming of the unit or channel event	Select <i>Disarm</i> .

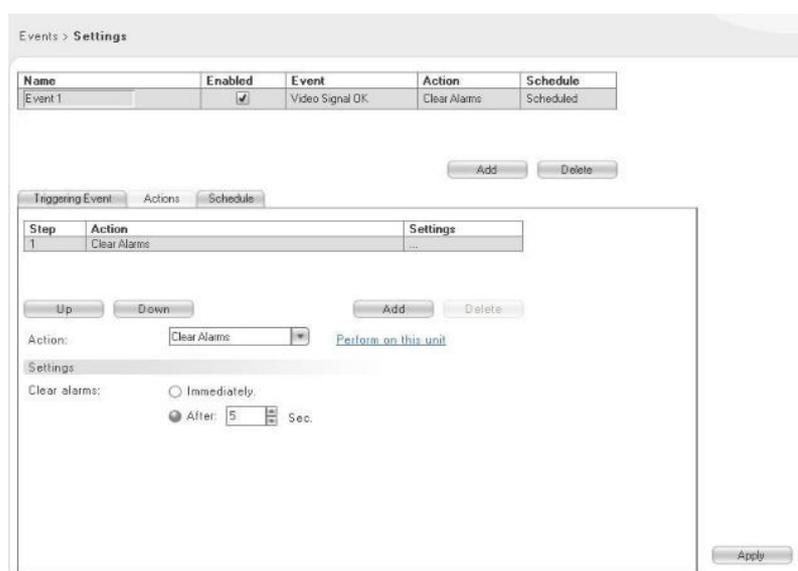
3. Click **Add** to add the event to the *Events* list at the top of the page. The event is enabled.
4. Assign a name to the event by entering a name in the *Response\_x* field, where x is the number of the response.
5. Uncheck the *Enable* checkbox to disable the response.
6. To modify an event setting, simply change the setting in the *Triggering Event* tab and click **Apply**.

### 5.6.2.2 Configuring the Actions to Perform

When defining automatic responses, the *Actions* tab enables you to define the actions to be performed when the triggering event occurs during the monitoring schedule.

When defining scheduled actions, the *Actions* tab enables you to define the actions to be performed at the scheduled time.

The following is an example of the *Actions* tab. The details shown on this tab vary according to the action chosen from the drop-down list:



Actions Tab

**Warning:**

The relay output can be used for automatic responses that are initiated without intervention from an outside user. Never use the relay output for automation that cannot be overridden or may cause damage, injury or loss of life.

Because an ioi unit can automatically change the relay output state (NORMALLY OPEN or NORMALLY CLOSED) of devices controlled by the system, safety measures should be taken as a precaution.

The *Actions* tab includes the following fields:

Setting	Options	Description
Action		Defines the actions to be performed when the triggering event configured in the <a href="#">Triggering Event tab</a> occurs during the monitoring schedule.
Perform on this/remote unit		Defines the unit to perform the selected actions: unit being configured (local) or remote unit according to IP address.
Settings		Settings according to the selected action to perform.

### 5.6.2.2.1 To Configure the Actions Tab

#### To configure the Actions tab

1. Select the *Actions* tab. The *Actions* tab is displayed.
2. From the *Actions* list, select the action to configure.
3. From the *Action* drop-down list, select the action to perform on event occurrence.
4. Define the unit to perform the specific action:
  - By default, the action is performed on the unit you are configuring.
  - To perform the action on another unit, click **Perform on this unit**.
5. Enter and verify the IP address of the unit on which you want the action performed.
6. Click **OK**. The IP address of the unit on which the action is to be performed is displayed in the *Actions* tab in place of the *Perform on this unit* link.
7. Define the *Settings* for the selected action:

#### Activate relay output

- In the Activate relay setting, select one of the two options for when to activate the relay:
  - Immediately
  - *After x seconds*, where x is the number of seconds to enter in the text box

- Select the Activation signal:
  - Continuous: Select *On* or *Off*
  - *Pulse activation*: In the *Pulse duration* field, enter the duration of the pulse in seconds

#### **Clear alarms**

- Select when you want to clear alarms:
  - *Immediately*
  - *After x seconds*, where x is the number of seconds to enter in the text box

#### **Arm/Disarm camera**

- Select when you want the camera armed:
  - *Immediately*
  - *After x seconds*, where x is the number of seconds to enter in the text box

#### **Arm/Disarm alarm input**

- Select when you want the alarm input armed or disarmed:
  - *Immediately*
  - *After x seconds*, where x is the number of seconds to enter in the text box
- From the *Alarm input* drop-down list, select the alarm input you want to arm or disarm.

#### **Clear external alarm input**

- Select if you want the dry contact alarm cleared:
  - *Immediately*
  - *After x seconds*, where x is the number of seconds to enter in the text box
- From the *Alarm input* drop-down list, select the alarm input you want to clear

#### **Send email**

- Select when you want to perform the action:
  - *Immediately*
  - *After x seconds*, where x is the number of seconds to enter in the text box
- Enter the email recipients ("To:" and "Cc:")
- Keep the default notification message or click **Edit** to customize the email content
- Check or uncheck the box to include an image of the event as an attached file

#### **Enable/Disable detection rule**

- Select when you want a detection rule enabled or disabled:
  - *Immediately*
  - *After x seconds*, where x is the number of seconds to enter in the text box
- From the *Rule name* drop-down list, select the rule to be enabled or disabled

#### **Control PTZ camera actions**

- Select when you want to perform the action:
  - *Immediately*
  - *After x seconds*, where x is the number of seconds to enter in the text box
- Select the action to perform from:
  - *Go To Preset* and then select the required preset from the drop-down list
  - *Start/Resume Playlist*
  - *Stop Playlist*
  - *Pause Playlist*

8. If you want to add additional actions for this triggering event, Click **Add**. A new action is added to the *Action* list.

9. Configure the new action as described in steps 3 through 5.
10. Repeat steps 6 and 7 for all new actions that you want to add to this triggering event.
11. To delete any of the actions for this triggering event, select the required action in the *Action* list and click **Delete**. The selected action is deleted.
12. Repeat step 9 for all actions you want deleted for this triggering event.
13. If required, change the order in which you want the actions performed using the **Up** and **Down** buttons.

### 5.6.2.3 Configuring the Monitoring Schedule for Automatic Responses

This section describes how to configure the *Schedule* tab in the context of an automatic response event.

The *Schedule* tab enables you to configure a time schedule when the occurrence of triggering events should be monitored. See [Configuring a Triggering Event](#).

If you want to configure a schedule for a scheduled action (when a scheduled action should take place), see [Configuring When to Perform Scheduled Actions](#).

The following is an illustration of the *Schedule* tab when defining an automatic response:

Name	Enabled	Triggering Event	Action
Response_1	<input checked="" type="checkbox"/>	Video Signal Ok	Activate relay output

Add    Delete

Triggering Event    Actions    **Schedule**

Always

Monitor event occurrences:

From:

No end date

Weekdays:  Sun  Mon  Tue  Wed  Thu  Fri  Sat

Between:  ? (Ex: 8:00-12:00 14:30-17:00...)

Apply

*Schedule Tab for Responses*

The *Schedule* tab for automatic responses to events has the following fields:

Setting	Options	Description
Always		Defines continuous monitoring of triggering events. occurrence.
Monitor event occurrence		Defines when a triggering event occurrence should be monitored.
	From	Selects the date on which the monitoring starts.
	To	Selects the date on which the monitoring ends.
	No end date	Used in conjunction with the <i>From</i> option, if the event monitoring is to run from the selected date with no end date.
	Week days	Select the days of the week on which the event monitoring is to take place.
	Between	Select the time of day during which the event monitoring is to take place.  Time periods are entered in the format <i>hh:mm-hh:mm</i> , where the first time entry is the starting time and the second time entry is the finishing time.  If multiple time ranges are required, the additional time ranges are separated by a space. For example, <i>hh:mm-hh:mm hh:mm-hh:mm</i> .

### 5.6.2.3.1 To Configure the Monitoring Schedule

#### To configure the monitoring schedule

1. Select the *Schedule* tab. The *Schedule* tab is displayed.
2. Select *Always* if you want the event to be continuously monitored.
3. If you selected *Always*, continue with step 5.
4. Select *Monitor event occurrences*.
5. Do one of the following:
  - In the *From* field, enter the date on which you want monitoring of the event to start.
  - Click in the field and select the date from the calendar that is displayed.
6. Do one of the following:
  - In the *To* field, enter the date on which you want monitoring of the event to end.
  - Click in the field and select the date from the calendar that is displayed.
7. If you want the event to be monitored with no end date, select *No end date*.
8. In the *Week days* field, select the day(s) on which you want the event monitored.
9. In the *Between* field, enter the time range during which you want the event monitored. Use the format *hh:mm-hh:mm*, where the first time entry is the starting time and the second time entry is the finishing time. If multiple time ranges are required, the additional time ranges are separated by a space. For example, *hh:mm-hh:mm hh:mm-hh:mm*.

**Note:**

Events that pass midnight and cross over into the next day must be configured twice: once for the time period till midnight and the other starting from midnight the next day.

### 5.6.2.4 Configuring When to Perform Scheduled Actions

This section describes how to define when to perform scheduled actions.

Scheduled actions are actions performed on a specific date or on a recurring basis over a defined time period; on specific days or over a range of days; and at a specific time or at multiple specific times.

The following is an example of the *Schedule* tab when configuring scheduled actions:

*Schedule Tab for Scheduled Actions*

The *Schedule* tab for scheduled actions includes the following fields:

Setting	Options	Description
Perform selected actions		Defines when the action should be performed.
	From	Selects the date on which the recurrent scheduled action period starts.
	To	Selects the date on which the recurrent scheduled action period ends.
	No end date	Used in conjunction with the <i>From</i> option, if the recurrent scheduled period is to run from the selected date with no end date.

Setting	Options	Description
	Weekdays	Select the days of the week on which the scheduled action is to take place.
	At	Select the time of day during which the scheduled action is to take place.  Times are entered in the format <i>hh:mm</i> . If the scheduled action is to be performed at various times during the day, each time is separated by a space. For example, <i>hh:mm hh:mm hh:mm hh:mm</i> .

#### 5.6.2.4.1 To Configure When to Perform a Scheduled Action

##### To configure when to perform a scheduled action

1. Select the *Schedule* tab.
2. Select *Perform selected actions on*.
3. Do one of the following:
  - In the *From* field, enter the date on which you want the scheduled action performed.
  - Click in the field and select the date from the calendar that is displayed.
4. Do one of the following:
  - In the *To* field, if the scheduled action is to be performed on a recurring basis over a period of time, enter the date on which you want the scheduled event to end.
  - Click in the field and select the date from the calendar that is displayed.
5. If you want the scheduled action to recur continuously, select *No end date*.
6. In the *Weekdays* field, select the day(s) on which you want the scheduled action performed.
7. In the *At* field, enter the time or times when the scheduled event is to be performed. Use the format *hh:mm*. If multiple times are required, the additional times are separated by a space. For example, *hh:mm hh:mm hh:mm hh:mm*.



##### Note:

Events that pass midnight and cross over into the next day must be configured twice: once for the time period till midnight and the other starting from midnight the next day.

8. Click **Apply**. The scheduled event is defined.

### 5.6.2.5 Sorting Automatic Responses and Scheduled Actions in the Events List

This section describes how to change the order of defined automatic responses and scheduled actions in the *Automatic responses* and *Scheduled actions* lists.

#### To sort automatic responses and scheduled actions

1. In the *Events* list, select an automatic response or scheduled action. The selection is highlighted.
2. Click **Up** or **Down** to move the selected automatic response or scheduled action to the desired position in the list.
3. Repeat steps [1](#) and [2](#) for each automatic response or scheduled action in the list.
4. Click **Apply**. The changes in the *Events* list are saved.

### 5.6.2.6 Deleting Automatic Responses and Scheduled Actions from the Events List

You can delete automatic responses and scheduled actions from the *Events* list.

#### To delete an automatic response or scheduled action

1. In the *Events* list, select an automatic response or scheduled action. The selection is highlighted.
2. Click **Delete**. The automatic response or scheduled action is deleted.
3. Click **Apply**. The changes in the *Events* list are saved.

## 5.7 Operating with FLIR Cameras

Support is being added on an ongoing basis for ioi encoders to operate with FLIR cameras. Check with your sales representative or FLIR support for the current listed of supported cameras. We recommend reviewing Release Notes as they are issued to see the latest features and functions.

The following FLIR cameras are supported as of the date of this document: F-Series, FC-Series (R, S, and ID models) and TCX Series.

For optimal performance, the following image settings are recommended on the F-Series and FC-Series camera's **Setup > IR** web page:

- AGC > Gain: 8-10
- AGC > Plateau: 110
- AGC > ITT :120
- Digital Detail Enhancement: Auto

The camera's streaming settings must be: (a) D1, 4CIF, VGA, or 640x512; (b) H.264 (Main Profile only); (c) a bit rate lower than 1500 bps.



#### Note:

You must change the camera's factory default settings upon configuring the camera.



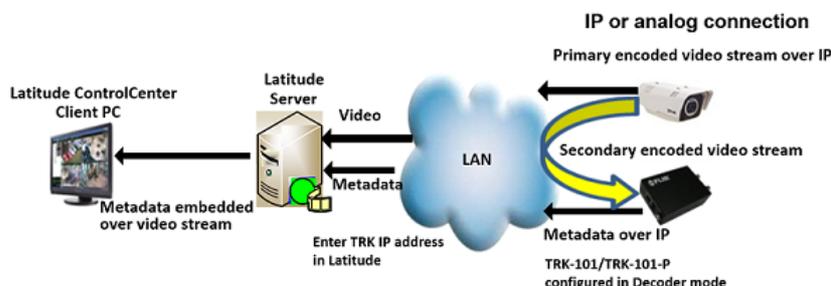
**Caution:**

Make sure that the camera is configured in the camera web page as PAL or NTSC according to the camera model type. The TRK unit must also be configured as PAL or NTSC according to the camera model type.

Thermal cameras are supported by binding them to the encoder via Latitude. See the following section for instructions how to bind the camera and encoder.

### 5.7.1 Binding a FLIR Camera to the trk-101

A FLIR fixed thermal camera and the trk-101 or trk-101-P are bound to each other from the Latitude AdminCenter. The following schematic illustrates the connection.



*Binding FLIR Camera to trk Encoder*

Each camera has its own syntax for the URL which connects it to the RTSP server and defines the video stream that will be sent via RTSP. The RTSP URL is entered in the TRK's **Setup > System > Unit Information** screen. It is necessary to select the fourth option (Digital input,digital analytics out) in the *Operating Modes* section.

**Operating Modes**

- Analog input, digital video and analytics output over IP (use with Generic NVRs).
- Analog input, analog video and analytics (use with DVRs).
- Analog input, digital analytics output over IP.
- Digital input, digital analytics output over IP.

Insert RTSP stream URL

Is Authentication Required

User

Password:

*Operating Modes*



**Note:**

If you are using Latitude to bind the camera and encoder, Latitude will automatically select the fourth option and set the URL.

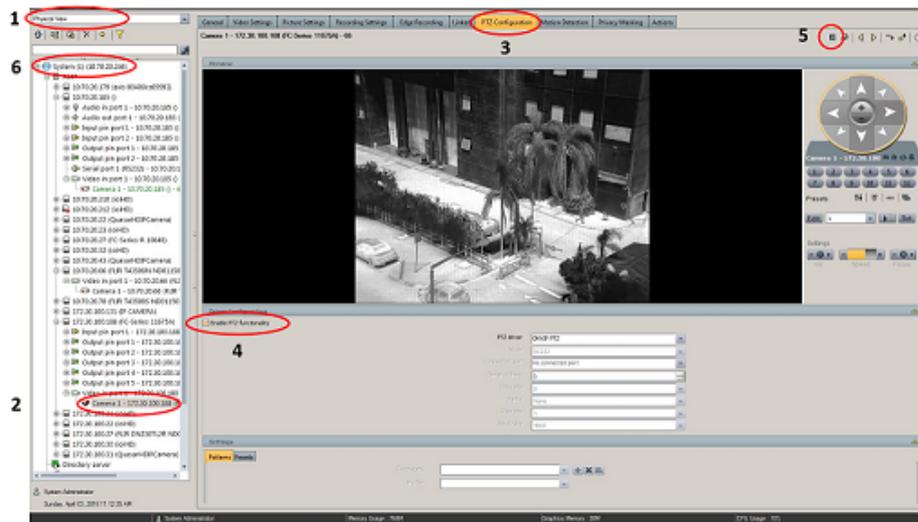
The syntax for each supported camera is:

Model	Syntax
F-Series and FC-Series (R, S, and ID models)	rtsp://<ip>/ch0
TCX Series T43xxBN	rtsp://<ip>/cam/realmonitor?channel=1&subtype=1&proto=Onvif

RTSP Authentication is not required for these units.

**To bind the trk-101 or trk-101-P to the camera**

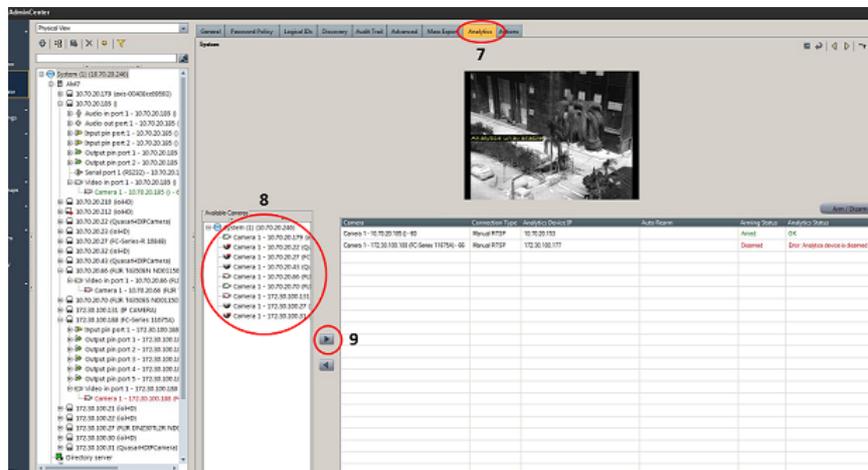
1. Open the Latitude AdminCenter in the *Physical View* tab for the desired.
2. Select the camera. Note that the camera icon is displayed as a PTZ camera.



PTZ Configuration Screen

3. Select the **PTZ Configuration** tab.
4. Uncheck the *Enable PTZ functionality* checkbox.
5. From the Toolbar at the top of the screen, click **Save**. Note that now the camera icon changes to a fixed camera icon.
6. Select the top-level System in the Camera Tree.

7. Select the *Analytics* tab.



Analytics Tab

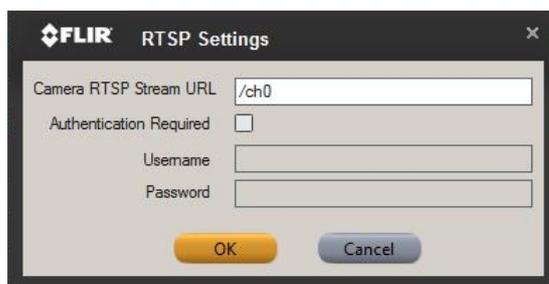
8. Select the camera that you want to bind from the *Available Camera* list.

9. Use the arrow button to add it to the *Camera* table.

 **Caution:**  
Make sure that the TRK unit is not attached to Latitude.

10. In the table, do the following:

- a. In the *Connection Type* column, from the drop-down list, select *Analog* or *Manual RTSP* (for IP cameras).
- b. In the *Analytic Device IP* column, enter the IP address of the TRK unit that you want to attach to the PTZ camera.
  - i. If you select *Manual RTSP*, click the **RTSP Setting** button. If the trk-101 is connected to a FLIR camera, the IP address is displayed automatically in the *Analytic Device IP* column. If the camera is not displayed automatically, enter the full RTSP address string after the camera’s IP address in the **RTSP Settings** dialog box. For example, if the FLIR camera’s RTSP URL is “rtsp://<ip>/ch0”, enter “/ch0” in the Camera RTSP Stream URL text box.



RTSP Settings Dialog Box

- ii. If authentication is required for the RTSP connection, select the *Authorization Required* checkbox. Then enter the User Name and Password in the respective text box. Click **OK**.

Camera	Connection Type	Analytics Device IP	Auto Rearm	Arming Status	Analytics Status
Camera 1 - 10.70.20.43 (QuasarHDIPCCamera) - 63	Manual RTSP	10.70.20.33	After 30 Seconds	Armed	OK
Camera 1 - 10.70.20.66 (FLIR T4350B...)	Manual RTSP	10.70.20.34		Armed	Error: Video format is not compatible
Camera 1 - 10.70.20.70 (FLIR T4350B...)	Manual RTSP	10.70.20.153		Armed	Error: Bad signal. Analytics is disabled
Camera 1 - 172.30.100.188 (FC-Series)	Manual RTSP	172.30.100.177		Disarmed	Error: Analytics device is disarmed

Camera Table

**Note:**

This feature is supported only on the Quasar CP-4221-30x.

11. Click **Save**.
12. Click **Arm/Disarm** or arm the unit from ControlCenter. The camera is displayed as *Armed* in the *Arming Status* column of the Camera table. The Analytics function starts to operate after the camera is armed and *OK* is displayed in the *Analytics Status* column.
13. From the **Setup > Depth** screen of the TRK unit's web interface, configure the analytic settings.

### 5.7.2 Binding a PTZ Camera to the trk-101-P

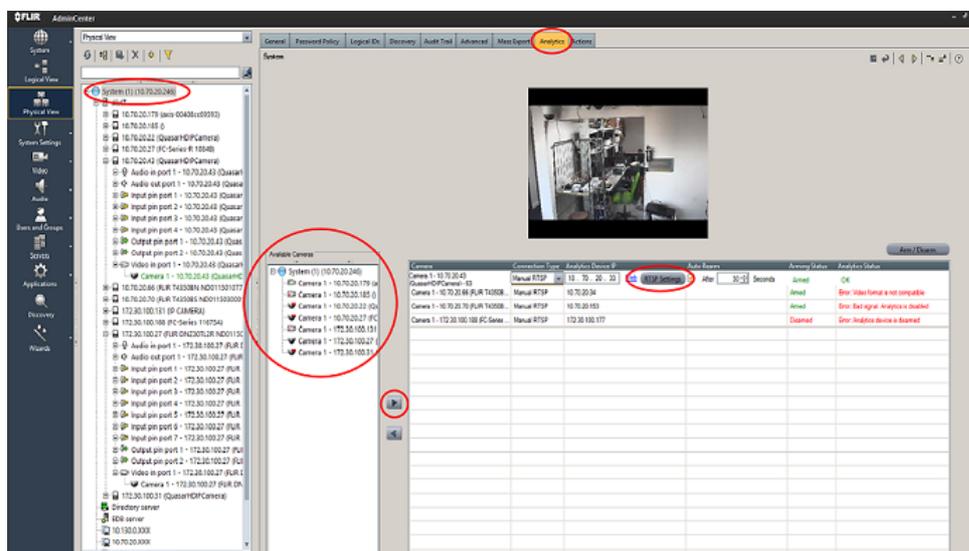
The PTZ camera and the trk-101-P are bound to each other from the Latitude AdminCenter.

**Note:**

The same procedure that follows can be used for PTZ cameras from other manufacturers that are supported by FLIR. You can request the *ioi Supported PTZ Cameras* list from your FLIR representative or FLIR Support. See [RTSP URLs for Supported Cameras](#) in this document for a list of the RTSP URL to use for each supported camera manufacturer.

**To bind the trk-101-P to the camera**

1. Open the Latitude AdminCenter on the desired site. Make sure that the PTZ Tracker is listed in the site.
2. Select the **Analytics** tab.



Latitude Analytics Tab

3. Select the camera that you want to bind from the *Available Cameras* list.
4. Use the arrow button to add it to the *Camera* table.

**Caution:**

Make sure that the TRK unit is not attached to Latitude.

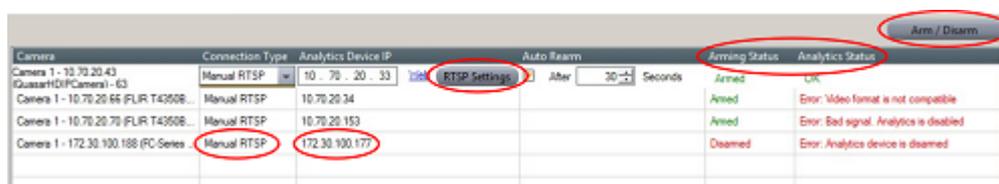
5. In the table, do the following:
  - a. In the *Connection Type* column, from the drop-down list, do one of the following:
    - i. Select *Decoder* for the CP-4221-30x PTZ camera
    - ii. Select *Manual RTSP* for all other PTZ cameras
  - b. In the *Analytic Device IP* column, enter the IP address of the TRK unit that you want to attach to the PTZ camera.
  - c. Click the **RTSP Setting** button. The **RTSP Settings** dialog box opens.



RTSP Settings Dialog Box

- d. Verify that the encoder's IP address is displayed in the *Camera RTSP Stream URL* text box.
  - If the camera's RTSP URL is not displayed automatically in the *Camera RTSP Stream URL* text box, enter the camera's RTSP URL manually. For example, if the Quasar camera's RTSP URL is "rtsp://<ip>/h264\_2", enter "/h264\_2" in the *Camera RTSP Stream URL* text box.
- e. Click **OK**.

 **Note:**  
In case the VGA stream is stream #1, the RTSP URL should be "/h264".



Camera	Connection Type	Analytics Device IP	Auto Rearm	Arming Status	Analytics Status
Camera 1 - 10.70.20.43 (QuasarHDIPCamera) - 63	Manual RTSP	10.70.20.33	Alter 30 Seconds	Armed	OK
Camera 1 - 10.70.20.66 (FLIR T4300E...)	Manual RTSP	10.70.20.34		Armed	Error: Video format is not compatible
Camera 1 - 10.70.20.70 (FLIR T4300E...)	Manual RTSP	10.70.20.153		Armed	Error: Bad signal. Analytics is disabled
Camera 1 - 172.30.100.188 (FC Series)	Manual RTSP	172.30.100.177		Disarmed	Error: Analytics device is disarmed

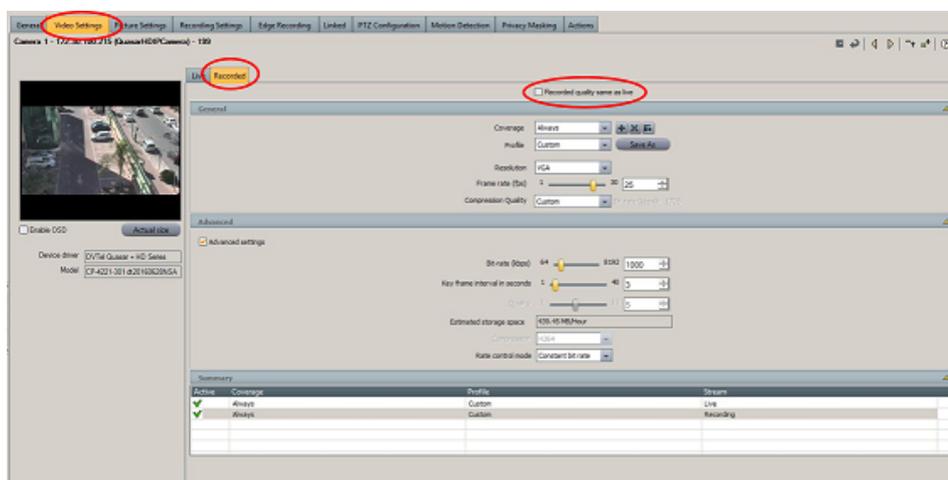
Camera Table

6. Set the Rearm Time in the *Auto Rearm* column. This is the number of seconds until the camera is rearmed after being automatically disarmed due to manual PTZ control. The Rearm countdown starts from the moment the camera tile is unselected in ControlCenter. The default is 30 seconds.

 **Note:**  
This feature is supported only on the Quasar CP-4221-30x.

7. Click **Save**.

8. In Latitude, on the **Video Settings** screen, do one of the following:
  - If operating in separate-stream mode, enter the settings for each stream on the *Live* and *Recorded* tabs.
    - a. On the *Recorded* tab, do not select the *Recorded quality same as live* checkbox.



Latitude Video Settings Screen

- b. Configure the following settings on one of the tabs (*Live* or *Recording*): VGA resolution (640x480), constant bit rate 1000 kbps, and 25 fps.
  - If the *Recorded quality same as live* checkbox is selected, the recorded stream will be the same as the live stream.
    - a. From the camera's web interface, configure the camera settings for the second stream.
    - b. On the **Streaming > Video Format** screen, set the Video Format for the second stream (*Format 2*) to VGA (640x480) and 25 fps.
    - c. On the **Streaming > Video Compression** screen, set the *H.264-2 Compression setting* for the second stream to 1000 kbps.
    - d. On the **Streaming > Video Compression** screen, select the *Enable H.264-2 CBR mode setting* checkbox.
9. On the PTZ Tracker, configure the TRK encoder presets. Then configure Depth and Rule settings for each preset on the PTZ Tracker.

## 6 Monitoring Real-Time Video

Real-time video monitoring on ioi products is performed by using the **Live View** screen of the unit's embedded HTML interface.

The **Live View** screen enables you to perform operational actions according to the privileges assigned to the login user, as well as to monitor detected objects according to the detection rules set in the unit.

The following is an example of the **Live View** screen:



*Live View (Workspace) Screen*

The fields and toolbar icons are described in [Live View Workspace Overview](#).

The **Live View** screen enables you to:

- View live video, as described in [Monitoring Live Video](#)
- View alarm notifications, as described in [Viewing Alarm Notifications](#)
- Track detected objects, as described in [Tracking Detected Objects](#)
- Control PTZ cameras, as described in [Using the PTZ Controls](#)
- Arm and disarm the video channel, as described in [Arming and Disarming a Camera](#)
- Clear alarms, as described in [Clearing Camera Alarms](#)
- Capture the video image, as described in [Capturing the Video Image](#)
- Enable and disable Audio, as described in [Enabling and Disabling Audio](#)
- Monitor the real-time status of the unit's Discrete I/O resources, as described in [Monitoring Discrete Input/Output Resources](#)

### 6.1 Monitoring Live Video

The **Live View** screen enables you to view and monitor the real-time video of the scene.

While viewing live video, you can use the unit's electronic magnification tools on the *Viewing* toolbar to zoom in and out of the image. Unlike the PTZ controls that enable you to use the optical zoom to move the camera lens when zooming in or out, the electronic zoom enlarges or reduces the image from the camera by enlarging pixel size. This may cause image quality degradation above a specific zoom level.



Click the **Zoom In** button  to electronically zoom in on an image. The following examples show the effect of using the **Zoom In** button. The *Viewing* area on the left shows the regular image, while the right one shows the enlarged image in the *Viewing* area after clicking the **Zoom In** button.



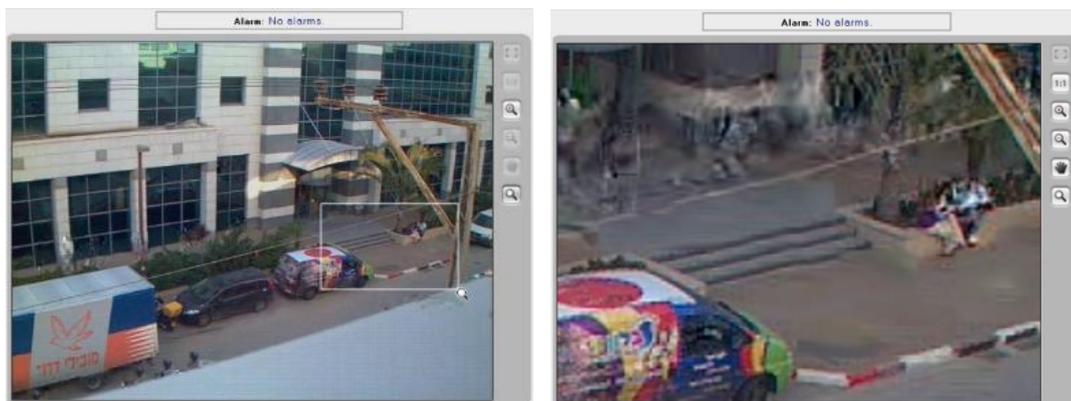
*Using the Electronic Zoom Tool*

While an image is magnified, you can use the **Change Pan** button  to select the portion of the image to be shown enlarged. Click the **Zoom Out** button  to electronically zoom out on an image or click the **1:1** button  to return the image to its original size.

**To magnify a selected zone of the *Viewing* area**

1. Click the **Magnifying Glass** button . The cursor changes to .
2. Drag your mouse to create a rectangle around the area you want to magnify.
3. Release the mouse button. The magnified image is displayed in the *Viewing* area.

The following examples show the *Viewing* area with an area marked for magnification (left) and the *Viewing* area with the magnified area of the image.



*Using the Magnifying Glass Tool*

Click the **Close-up view** button  to show a magnified view (x2) of the image around the current mouse position. The following example shows the effect of using the **Close-up view** button.



*Using the Close-up View Button*

### 6.1.1 Viewing Alarm Notifications

Alarm notifications are shown in the *Live* tab above the *Viewing* area. When detection occurs, the type of detection is indicated in the *Alarm Notification* area. It remains displayed until cleared by pressing the **Clear Alarms** button. See figure below.

The detection is also indicated as overlay mark appearing around the detected object. If the object is moving, a trail is marked for the path that the detected object has taken, according to the definitions set in the OSD setting of the channel.

The following image of a detection appearing in the **Live View** screen during real-time monitoring shows a detected object with a path trail and an alarm notification above the *Viewing* area.



*Real-Time Monitoring – Intrusion Detection*

## 6.1.2 Tracking Detected Objects

Detected objects are indicated in the **Live View** screen as defined in [Configuring On-Screen Display Settings](#). This indication may take the form of a rectangle around the detected object or a crosshair on the detected object. According to the detection rule type, you can also define if you want the path trail of the detected object to be shown. See Figure: [Direction Arrows in Detection Area](#) for an illustration of a detected object inside a rectangle with a trail showing its movement.

When using an encoder connected to a PTZ camera, use the **Manual tracking**  button to enable manual PTZ tracking. Click the PTZ control commands (up/down/left/right) or click the target to initiate autonomous tracking while the channel is armed. The unit automatically commands the pan, tilt and zoom of the camera to track and focus on the target.

Use the **Manual tracking**  button again, to disable manual tracking and enable automatic detection and tracking as defined in the unit.



### Note:

This feature works only when the camera is operating in NVR mode.

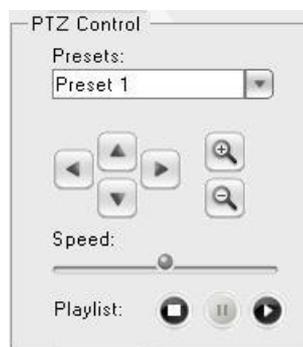
### 6.1.3 Using the PTZ Controls

When a unit is configured for a PTZ camera, the PTZ controls appear at the bottom left of the **Live View** screen.

The PTZ controls enable you to perform the following tasks:

- Manually move the PTZ camera
- Zoom in and out of an image (optical zoom)
- Change the speed at which the camera moves when panning, tilting or zooming
- Select presets
- Control playlist actions

The following image shows the PTZ control panel.



PTZ Controls

The *Presets* drop-down list enables you to select a preset location for display in the *Viewing* area. For a detailed explanation of the PTZ control panel, see [PTZ Controller Panel](#).

Use the **Play** , **Stop** , and **Pause**  buttons to control the playlist defined for the channel during setup. For more information on creating presets and playlists, see [Step 3: Presets and Playlist](#).

Use the **Pan Left** , **Pan Right** , **Tilt Up**  or **Tilt Down**  buttons to move the camera to the desired position.

Use the **Zoom In**  and **Zoom Out**  buttons to increase or decrease the optical magnification in the *Viewing* area.

Move the **Speed** slider left or right to decrease or increase the speed at which the camera moves when panning, tilting or zooming.

### 6.1.4 Arming and Disarming a Camera

Arming a camera engages the active rules to detect on the live video. It also enables the camera to send and receive alarms, generate and receive events as well as to perform automatic responses and scheduled actions.

Disarming changes the state of the camera to stop detecting live video and to stop sending alarms, events or perform automatic responses and scheduled actions.

Click the **Arm** button  to arm the camera. The **Disarm** button is enabled.

Click the **Disarm** button  to disarm the camera. The **Arm** button is enabled.



**Note:**

In order for a PTZ camera to detect and track an object, a channel must be armed with an active rule defined in the setup.

### 6.1.5 Clearing Camera Alarms

When there is a detection alarm on a channel, the alarm status can be cleared, which restores the channel to a non-alarm status. The **Clear Alarms** button is activated only when an alarm is indicated.

Click the **Clear Alarms** button  to clear all alarms in the unit.

### 6.1.6 Capturing the Video Image

It is possible to capture the current video image in the **Live View** window and save it as a .jpg image file.

Click the **Snapshot**  button to capture the current video image (including OSD if shown). The **Save As** dialog box opens for specifying the file name and location to save the image file.

It is recommended to save a proper snapshot of each camera or preset FOV in the system in order to use it as a reference for camera re-alignment, depth settings or detection rules re-definition if necessary.

## 6.2 Monitoring Discrete Input/Output Resources

You can monitor the real-time status of the unit's discrete I/O resources from the **Live View** screen. For more information on configuring a unit's Discrete I/O resources, see [Configuring Discrete Input/Output Resources](#).



**Note:**

Enabling alarm Inputs or relay outputs can be performed only by a user with administrative privileges.

The buttons located to the right of the *Viewing* area in the **Live View** screen enable you to see the status of the defined Discrete I/O resources. See Figure: [Live View \(Workspace\) Screen](#).

The following table describes the various statuses of the buttons:

Label	Description
Alarm Input (from external device dry contact)	Button indicating the current status of the alarm input as follows:  : Disabled  : Enabled, armed and there is no alarm indicated  : Enabled and disarmed

Label	Description
	 : Enabled and an alarm has been triggered (the external device is in a status considered as an alarm)
Relay	Button indicating the current status of the relay as follows: <ul style="list-style-type: none"> <li>: Disabled</li> <li>: Enabled and the relay has not been activated (Off)</li> <li>: Enabled and the relay has been activated (On)</li> </ul>

**Note:**

1. Alarm input icons are shown in the **Live View** window only if at least one alarm input is enabled in the unit.
2. Relay output icons are shown in the **Live View** window only if at least one relay output is enabled in the unit.
3. A tooltip displays the name of the alarm input/relay and its current status when you hold your mouse over a resource icon.

Users logged in with administrative privileges (Administrators, Supervisors and Operators) can perform the following tasks:

- *Arm/Disarm Dry contacts*
- *Turn Relay outputs On/Off* from the **Live View** window

**Note:**

If you are logged on as *guest*, changing I/O status as described below is not available (monitoring only). See [Accessing the Unit](#).

Clicking a specific alarm input button changes its status as follows:

- Clicking an alarm input whose status is *armed* changes its status to *disarmed* .
- Clicking an alarm input on which an alarm has been triggered  clears the alarm and changes the status to *disarmed* .

Clicking a specific relay button changes the relay status as follows:

- Clicking a relay whose status is *not activated (Off)*  changes the relay to *activated (On)* .
- Clicking a relay whose status is *activated (On)*  turns off the relay as *not activated (Off)* .

### 6.3 Accessing a Remote Unit over the Web (Port Forwarding)

It is possible to remotely access a unit that is located behind a firewall at a remote site by using port forwarding. Port forwarding enables two functions:

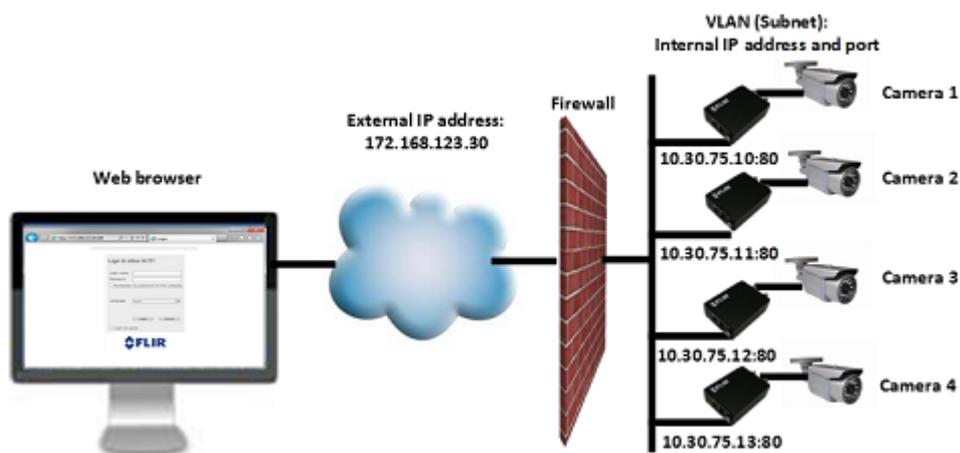
1. Transmitting MJPEG videos via HTTP over remote networks with low bandwidth.
2. Remote configuration of the unit over the web. The web setup supports login, all setup functions, and video display configuration.

Port forwarding maps and enables communication between an external IP address (accessible over the Internet) and an internal IP address (assigned to a unit on a private network located behind a firewall), which is not directly accessible over the Internet. In the case of trk-101 and trk-101-P, the encoder enables IP access to a camera that does not have built-in IP capability.



**Note:**

This function is available on units running firmware version 2.1.1 or higher.



*Remote Access System*

The following port forwarding table displays an example of the mapping between the external IP address/port and the internal IP address/port:

Camera #	External IP Address:Port Number	Internal IP Address:Port Number
Camera 1	172.168.123.30:180	10.30.75.10:80
Camera 2	172.168.123.30:280	10.30.75.11:80
Camera 3	172.168.123.30:380	10.30.75.12:80
Camera 4	172.168.123.30:480	10.30.75.13:80

If there are "privileged users" on the remote unit, you must enter the unit's External IP address on the **User Accounts** screen. See [To Configure Unit Privileges](#).

**To access a remote device**

1. On the client PC browser, enter “http://[NAT external IP]:[port 80 forwarded port]” For each unit. For example, http://172.168.123.30:180. The login window opens for the HTML interface of the trk-101 unit to which Camera 1 is attached.

*Login Window*

2. Log into the ioi unit.
3. Enter the unit's **Setup** screen.
4. Perform the required action.

## 6.4 Monitoring and Controlling Remote Sites with Site Viewer

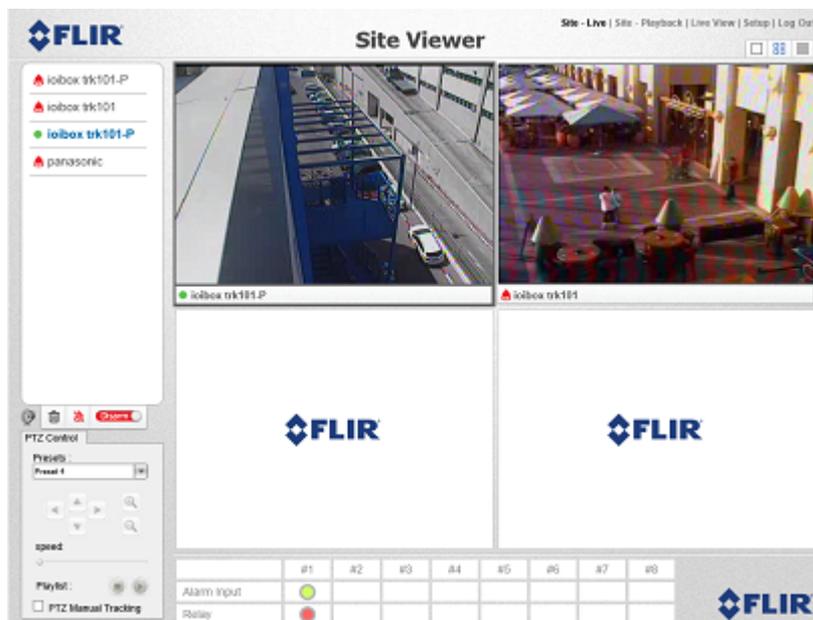
Site Viewer enables you to access any IOI unit connected on the network and to connect remotely to the unit. You can view live video, control PTZ, view and modify relay status, and download or query for recorded SoE clips to playback. Each user can have privileges for a number of cameras on-site.

**Note:**

1. The remote unit must be operating in NVR mode in order to view live video on a remote site when the camera is armed.
2. When set to one of the other operating modes, there is live video only when the camera is disarmed.

### 6.4.1 Visual Alarm Indication on Site Viewer

When an event occurs, it is possible to view a visual alarm indication on an armed unit in Site Viewer, as well as hear an audio alarm. The status icon changes from a green circle to a red bell for the camera on which an alarm occurs in the Site Viewer navigation tree and in the tile of the **Site-Live** screen.



*Alarm Indication on Site-Live Screen*

### 6.4.2 To Log into Site Viewer

#### To log into Site Viewer

There are two ways to login to Site Viewer:

- If you are on the same VLAN as the site, enter the IP address of any unit with privileges and enter the user credentials. For example, enter <http://10.30.75.11> to access Camera 2 from within the network in the example provided in [Accessing a Remote Unit over the Web](#).
- If you are outside the network (for example, when using port forwarding), enter the external IP address of the site and the external port number of a unit with privileges. For example, enter <http://172.168.123.30:280> to access Camera 2 from outside the network in the example provided in [Accessing a Remote Unit over the Web](#).

Once logged in through Site Viewer, all units with privileges are displayed.

#### To view live remote sites

1. Log into the trk-101 or trk-101-P. The unit's web interface opens on the [Live View](#) screen.
2. From the Navigation bar, click **Site-Live**. If you have already downloaded the VLC media player, an information bar opens, requesting you to allow the VLC ActiveX plug-in to run.

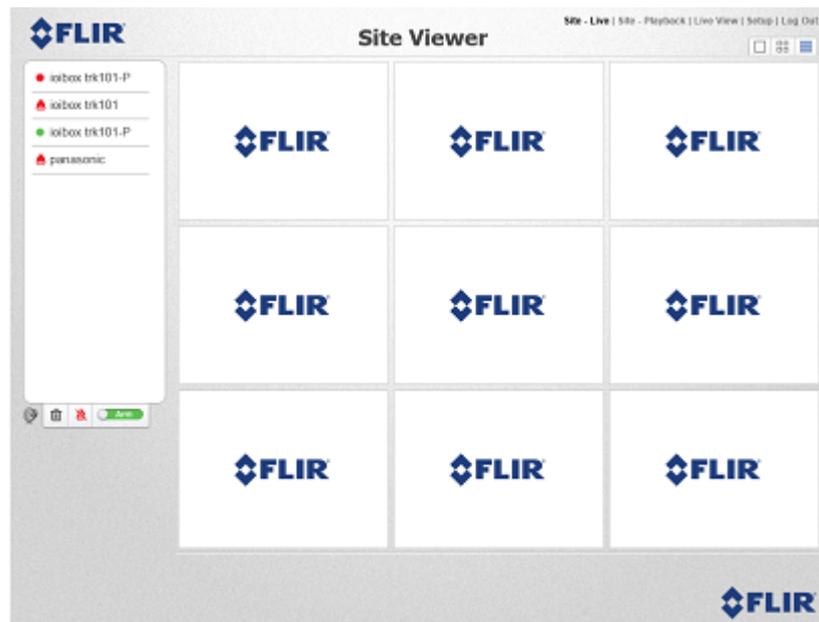


*ActiveX Plug-in Information Bar*

**Note:**

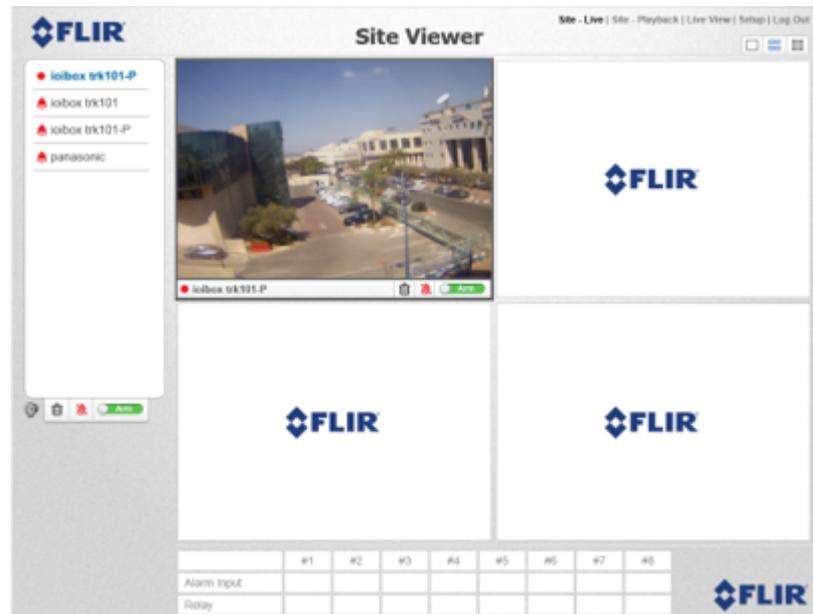
The VLC player must be the 32-bit version.

- Click **Allow**. The **Site Viewer** screen opens. A unit with red button is disarmed, a unit with a green button is armed, and a unit with a gray button does not have firmware that supports SoE and armed/disarmed status.



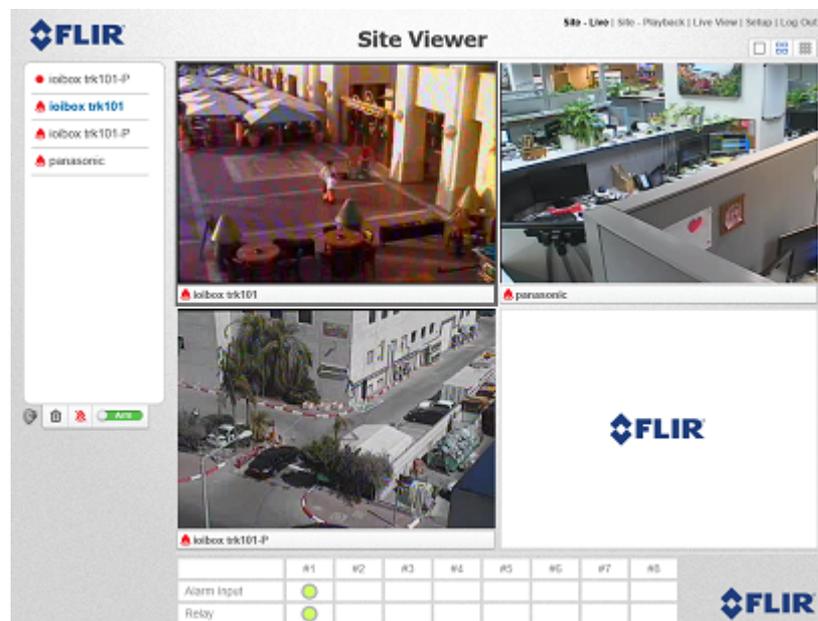
*Empty Site Viewer Screen*

- Select a tile layout (1 x 1, 2 x 2, or 3 x 3) from the layout icon . You can display up to 9 cameras.
- Double-click a unit from the device list or drag the camera to a tile. The first unit that is clicked is displayed in the upper left corner of the screen.



Site Viewer Screen with One Camera

6. Click additional units, which are displayed in the next tile to the right and below, or drag a unit into a tile.
7. Click a camera to select it. The active camera name is displayed in blue text in the device list and the camera tile is enclosed in a gray border.



Site Viewer Screen with Active Camera

8. To enlarge a tile in a multiple tile layout to 1 x 1 layout, double-click the tile. Double-click again to return to the previous layout.
9. Select the following icons to control the camera display:

Icon	Description
	Activate/Mute audio.
	Remove camera from tile
	Arm/Disarm camera
	Clear Alarm

### 6.4.3 To Activate I/Os

#### To activate I/Os

The active unit's alarm inputs and relays are displayed at the bottom of the screen.

	#1	#2	#3	#4	#5	#6	#7	#8
Alarm Input								
Relay								

*I/O Display per Tile*

Alarm inputs can trigger a notification action when an event occurs, such as crossing a tripwire or entering a region. Relays can trigger a remote action, such as locking a door or turning on a spotlight.

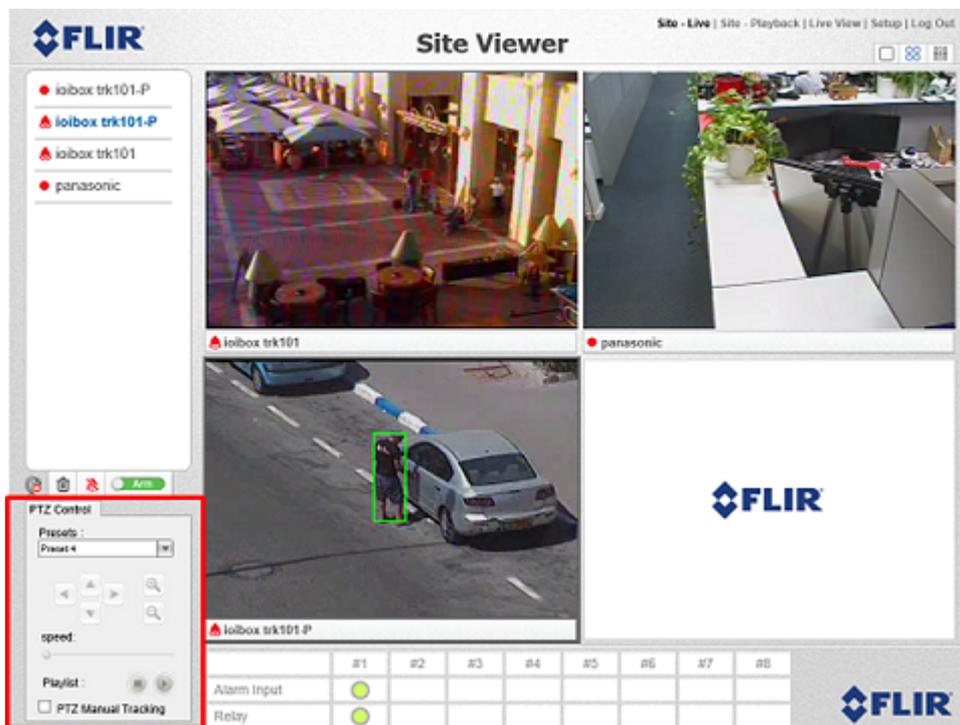
1. Select a tile. To change a unit's I/O status, click the displayed I/O.
  - a. Click  to disarm an alarm. Its status changes to  (disarmed).
  - b. Click  to activate a relay. Its status changes to  (relay activated).

Both audio and visual alarms indicate when an event occurs. For more information, see [Visual Alarm Indication on Site Viewer](#).

### 6.4.4 To Control a PTZ Camera

#### To control a PTZ camera

1. Select a PTZ camera from the device list. The camera name is displayed in blue text and the *PTZ Control* pane opens.



Site Viewer PTZ Control Pane

2. Select one of the following functions:
  - a. *Preset* – Select a preset number from the combo box in the PTZ panel.
  - b. *Playlist* – Select button from play, pause stop from the PTZ panel.
  - c. *Manual PTZ control* and *Click-and-Track*.
    - Click **PTZ Manual Tracking**. The PTZ directional icons are enabled.



PTZ Control Keypad

- Adjust the PTZ motor speed on the slider.
  - Select a directional button to control the camera movement.
  - Click on the target in the tile to track it.
3. To exit Manual Tracking mode, uncheck PTZ Manual Tracking and press the clear alarm icon



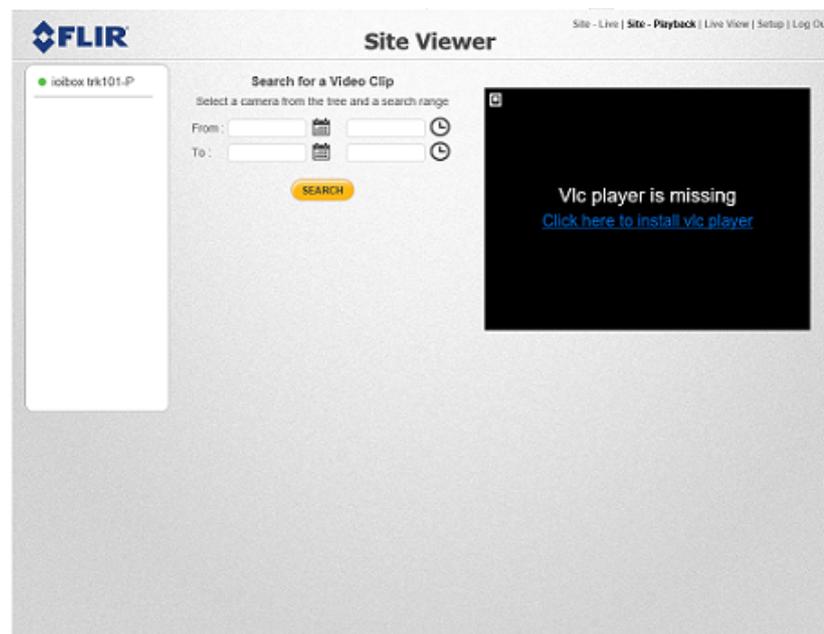
## 6.4.5 To Playback a Clip

**Note:**

The remote unit must be operating in NVR mode in order to create and view video clips.

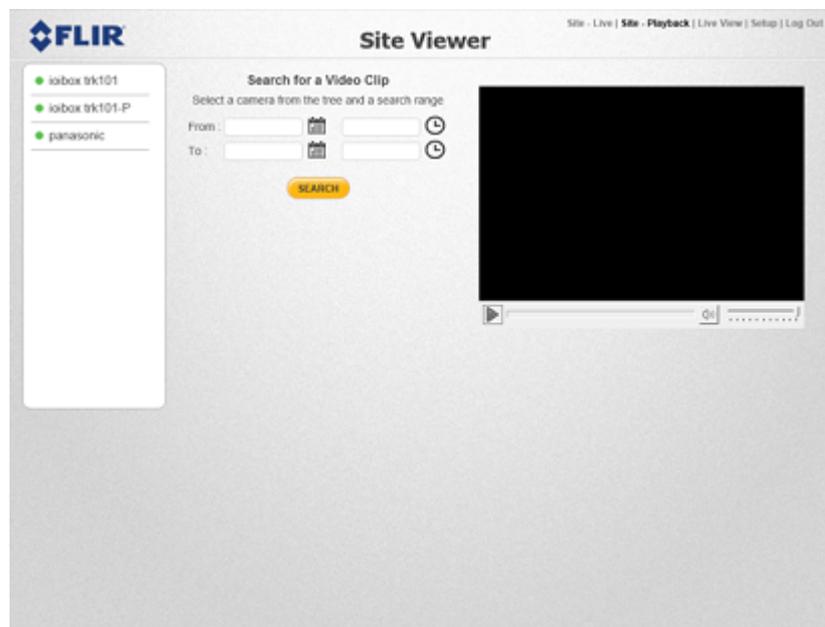
**To playback a clip**

1. After logging onto a camera in the site, select **Site – Playback** on the Navigation bar. If you have not already download the VLC media player, a popup message to install the player is displayed in the viewing window in the **Site – Playback** screen.



Site Viewer Site-Playback Screen

2. Select a camera from the device list. The camera name is displayed in crimson text and its IP address is displayed in the device list.



Site Viewer Search for Video Clip



**Note:**

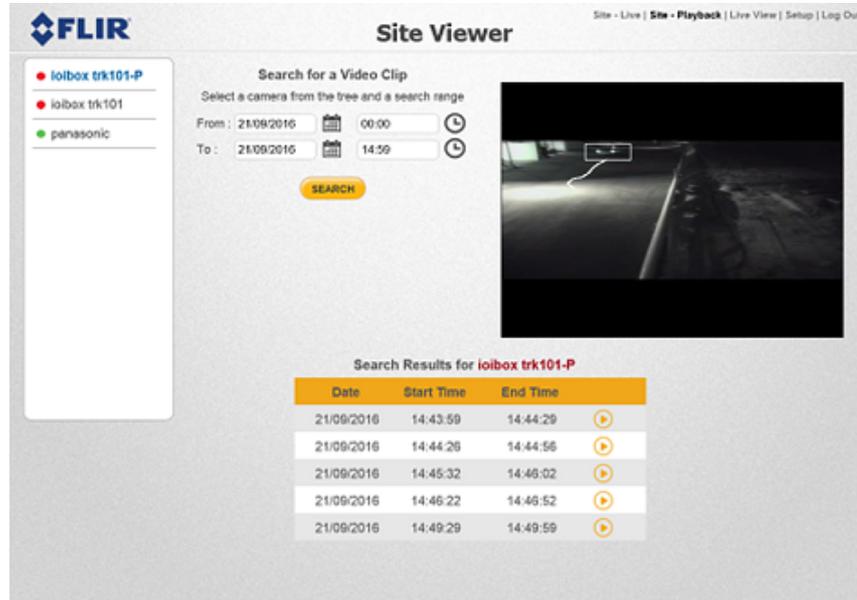
Only units with firmware that support Site Viewer are displayed in the device list.

3. In the *Search for a Video Clip* area, do the following:
  - a. Click the calendar icon  to enter the *From* and *To* dates.
  - b. Click the clock icon  to enter the *From* and *To* times.
4. Click **Search**. The results are displayed in the **Search Results** list.

Search Results for ioibox trk101-P			
Date	Start Time	End Time	
21/09/2016	14:43:59	14:44:29	
21/09/2016	14:44:26	14:44:56	
21/09/2016	14:45:32	14:46:02	
21/09/2016	14:46:22	14:46:52	
21/09/2016	14:49:29	14:49:59	

Site Viewer Search Results List

5. Select the clip, double-click, or click  to play the clip. The clip is displayed in the viewing window if you have downloaded the VLC media player.



*Site Viewer Clip Playback Window*

6. If you have not installed the VLC media player, do it now.



**Note:**

The VLC player must be the 32-bit version.

### 6.4.6 To Install the VLC Player

#### To install the VLC player

1. Click the link in the window (<http://www.videolan.org>). The download starts automatically. The following information bar is displayed:



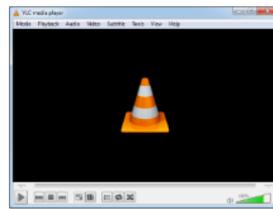
*VLC Installation Message*



**Note:**

The VLC player must be the 32-bit version.

2. Click **Run**. The VLC setup wizard opens.
3. Follow instructions in the wizard until the VLC Media Player window opens.



VLC Media Player Window

4. To open the player in the future, click the VLC icon .
5. Scroll over the playback window and select the following icons to control the clip:

Icon	Description
	Play/Pause the clip.
	Enlarge the image to full-screen size. Click the Escape key on your PC's keyboard to restore the image to window size.

 **Note:**

Site Viewer playback allows only play and pause options. To use Fast Forward, Fast Rewind, and Jump to Time functions, you must first download the AVI clip to the local disk and use an AVI player.

## 6.4.7 To Export a Clip

### To export a clip

1. Select the query result from the list. The **Export** button  is displayed.
2. Click **Export**. The following information bar opens.



Export Information Bar

3. Right-click **Save**.
4. Select **Save** as to set the path for saving the file.
5. Click **Save**.

## 7 Appendix

This appendix includes the following sections:

- [Network Settings](#)
- [Enabling Cookie Settings](#)
- [Configuring ActiveX Security Settings](#)
- [Resolving ActiveX Version Conflicts](#)
- [Using ioi Units with Windows Firewall Turned On](#)

### 7.1 Network Settings

The following are the network protocols, ports and usage of the encoders and cameras:

Protocol	Port	Usage
HTTP	80	Commands, requests, replies and notifications
NTP	123	Time synchronization with a network time server using SNTP
RTSP	554	RTP session setup
RTP	2000 to 65535	Multimedia streaming
Multicast UDP	9766	Unit self-publishing. Uses IP address 224.9.9.9
Multicast Streaming	As defined in the units	Video/streaming (multicast). Uses the IP address defined in the units.

### 7.2 Enabling Cookie Settings

This section describes procedures for adjusting your Internet Explorer settings to enable the ioi encoder to use cookies when browsing the Internet.

Your web browser must enable the use of cookies and allow downloading and activating ActiveX components.

ioi products use cookies when browsing through their HTML interface. The security and privacy cookies settings on your computer must therefore permit the use of first party cookies. This section describes how to change the cookie settings in your browser.

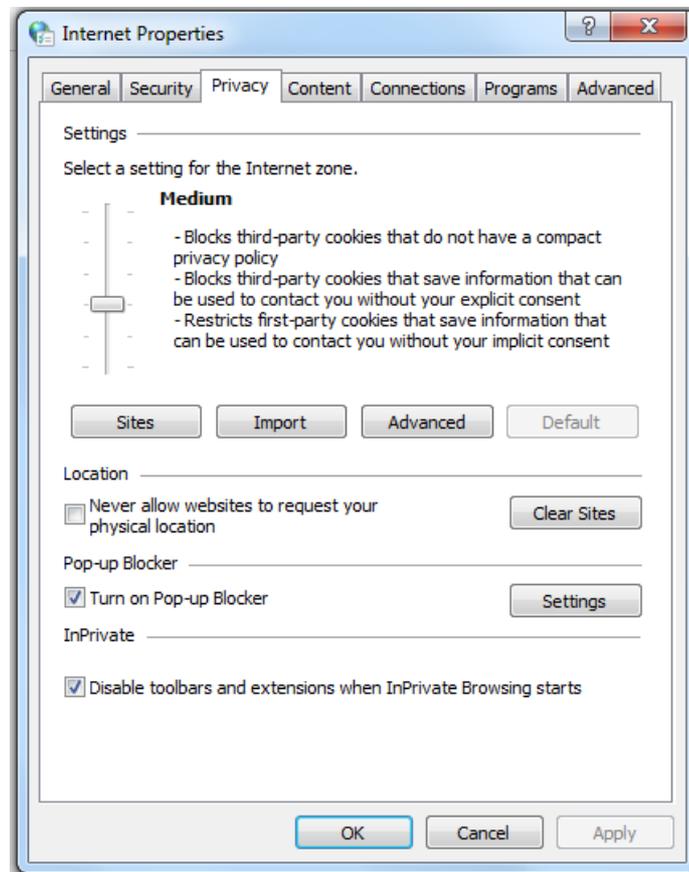


**Note:**

The browser must be 32-bit Internet Explorer 9, 10, or 11.

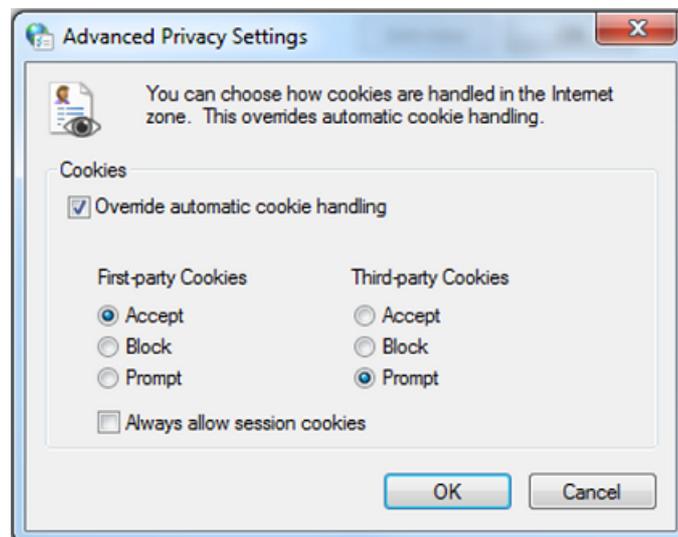
**To enable cookies in Internet Explorer 9**

1. In Internet Explorer, select **Tools > Options**.
2. Select the *Privacy* tab. The *Internet Options – Privacy* tab is displayed.



*Advanced Privacy Settings Dialog Box (IE 9)*

3. Click **Advanced**. The **Advanced Privacy Settings** dialog box is displayed.

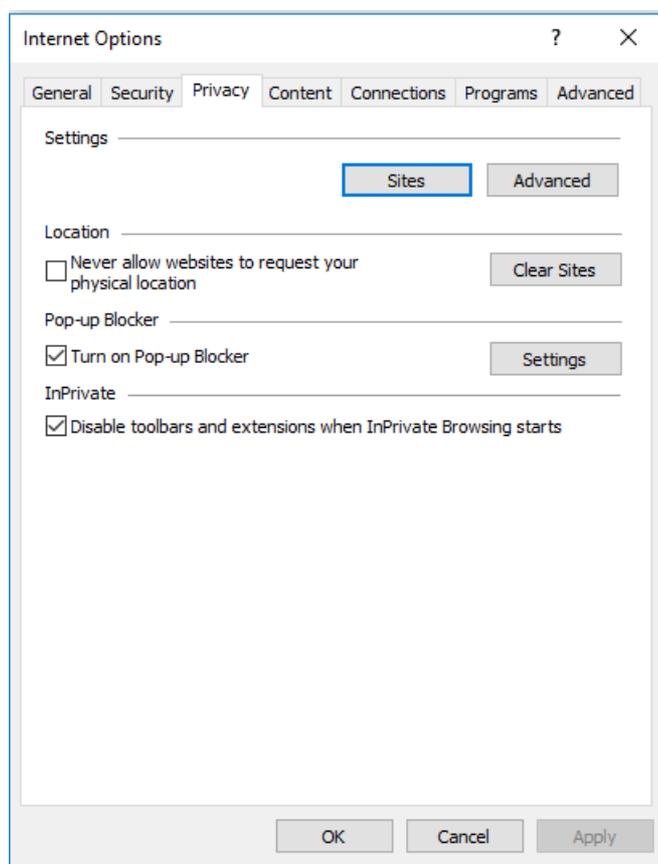


*Advanced Privacy Settings Dialog Box (IE 9)*

4. Select *Override automatic cookie handling*.
5. Select *Accept* in the *First-party Cookies* list.
6. Select *Prompt* in the *Third-party Cookies* list.
7. Click **OK**. The **Advanced Privacy Settings** dialog box closes.
8. Click **OK**. The **Internet Options** dialog box closes. The settings are saved.

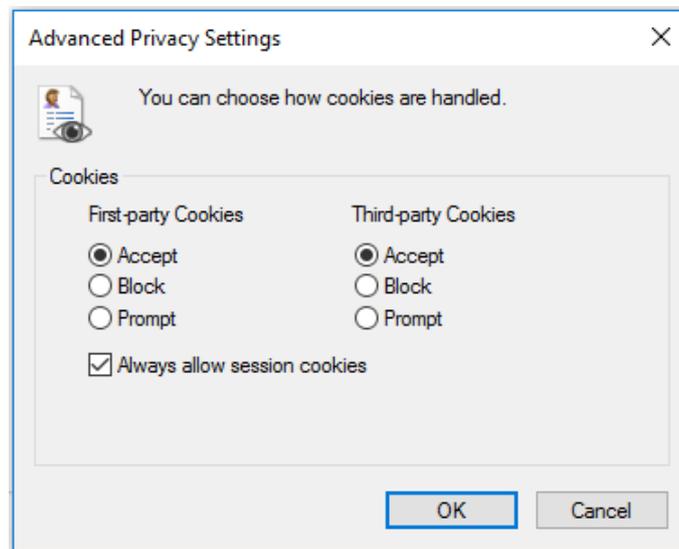
#### To enable cookies in Internet Explorer 10 or 11

1. In Internet Explorer, select **Tools > Options**.
2. Select the *Privacy* tab. The *Internet Options – Privacy* tab is displayed.



*Internet Options – Privacy Tab (IE 10/11)*

3. Click **Advanced**. The **Advanced Privacy Settings** dialog box is displayed.



*Advanced Privacy Settings Dialog Box (IE 10/11)*

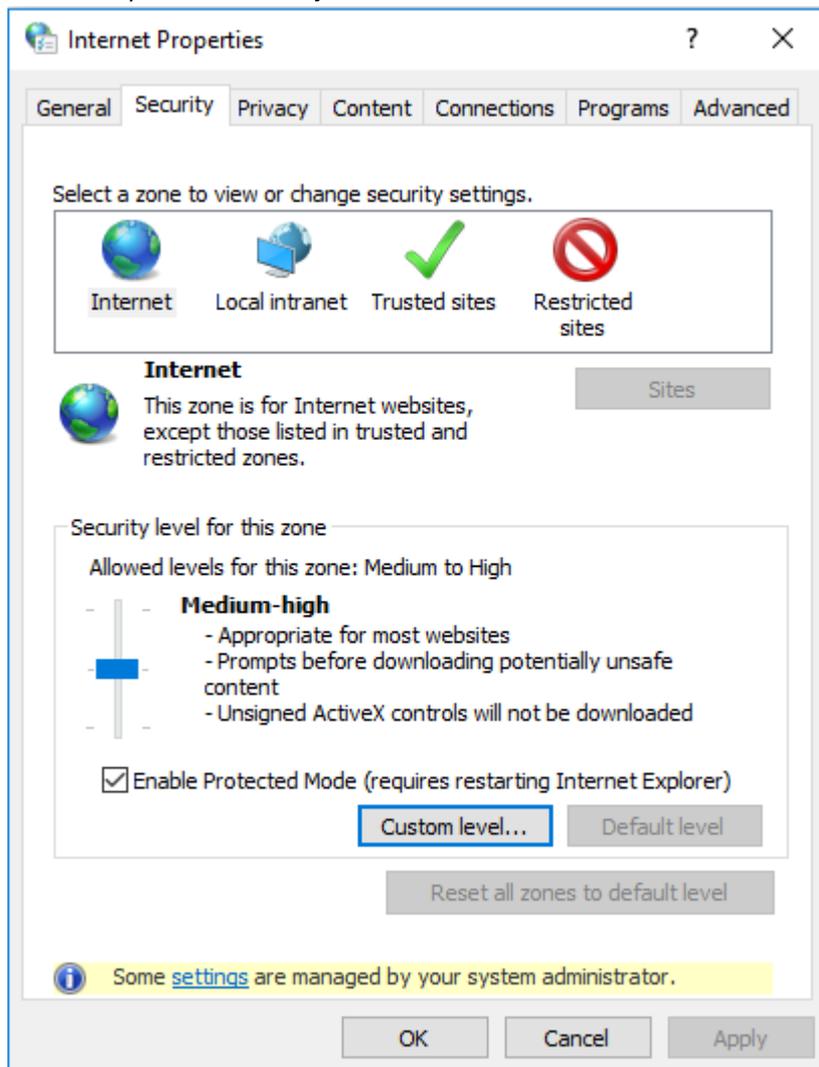
4. Select *Accept* in the *First-party Cookies* list.
5. Select *Prompt* in the *Third-party Cookies* list.
6. Click **OK**. The **Advanced Privacy Settings** dialog box closes.
7. Click **OK**. The **Internet Options** dialog box closes. The settings are saved.

## 7.3 Configuring ActiveX Security Settings

ioi products use ActiveX controls and plug-ins. This section describes procedures for enabling ActiveX in the Internet Explorer security settings, as well as in any firewall that is used.

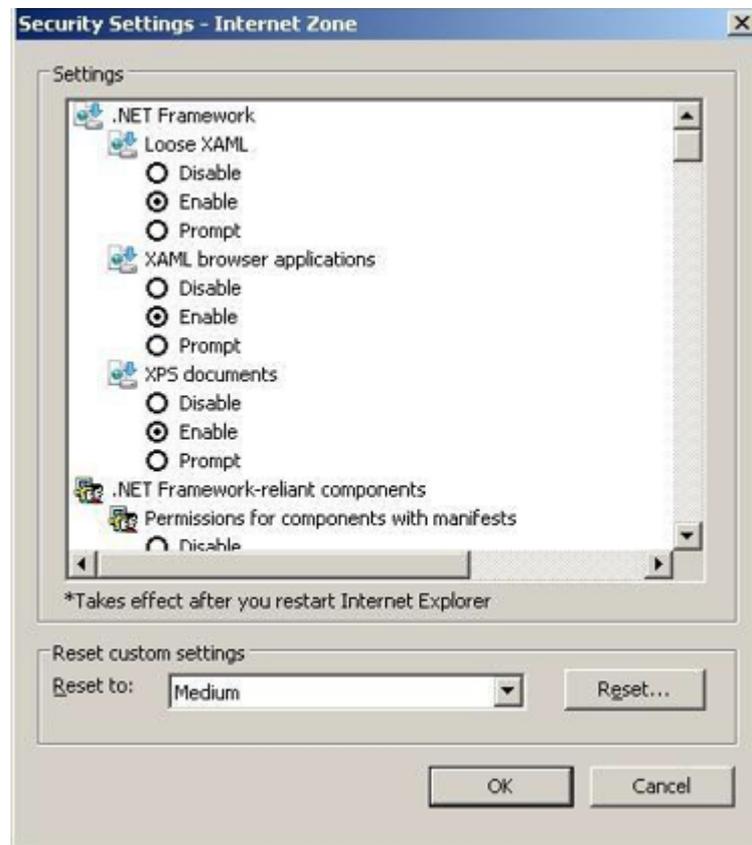
### To adjust security settings for ActiveX

1. Open the security settings screen:
  - a. With IE 9, from the Control Panel, select *Security Settings > Internet Zone*.
  - b. With IE 10 and IE 11, from the Control Panel or from the Tools  Command Bar, select the *Internet Options > Security* tab.



*Internet Options > Security Tab Dialog Box*

2. Click **Custom level**. The **Security Settings – Internet Zone** dialog box is displayed.



Security Settings Dialog Box

3. Under *ActiveX controls and plug-ins > Download signed ActiveX controls*, select *Enable*.



**Note:**

This setting is only needed on initial web browser connectivity after installing or upgrading. It can also be set to issue a prompt based on security requirements.

4. Under *ActiveX controls and plug-ins > Run ActiveX controls and plug-ins*, select *Enable*.
5. Under *ActiveX controls and plug-ins > Script ActiveX controls marked safe for scripting*, select *Enable*.
6. Under *Scripting > Active scripting*, select *Enable*.
7. Click **OK** to close the **Security Settings** dialog box.
8. Click **OK** to close the **Internet Options** dialog box. The settings are saved.

### To install or run the ActiveX plug-in on IE 9, 10, and 11

1. Close any other open Internet Explorer browser applications.
2. Upgrade the firmware. See [Updating the Unit Firmware](#).
3. Login to the unit after the firmware finishes.
4. On the popup message that opens, click on *Click here to install ActiveX component*.
5. Click the gold Information bar that appears on the top of the webpage.
6. Follow the prompts. The ActiveX component is installed. It is not necessary to reset the computer.

## 7.4 Resolving ActiveX Version Conflicts

This section describes how to delete and update the ioi ActiveX component in the event of ActiveX version conflicts.

Connecting to an ioi unit through its HTML interface requires the use of ActiveX components on the local computer running the web browser. The ioi ActiveX component version must match the unit's firmware version.

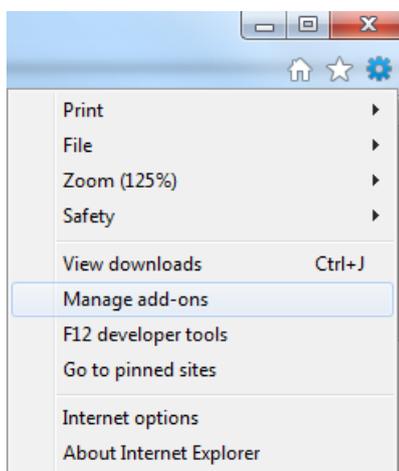
If it is the first time your workstation accesses any version of the ioi units, the ActiveX is automatically downloaded, provided that the browser security settings are correct. See [Configuring ActiveX Security Settings](#).

If you use an older version of the ActiveX component (RenderControlClass), this may result in a failure when accessing the unit through a web browser.

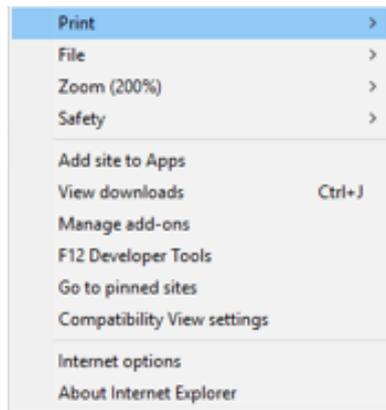
After upgrading or checking to make sure the proper ActiveX component version is used, it is recommended to delete previous versions of ActiveX components from the local computer.

### To delete the ActiveX component in IE 9, 10, and 11

1. Open Internet Explorer.
2. Click the **Tools** button. The *Tools* drop-down list opens.

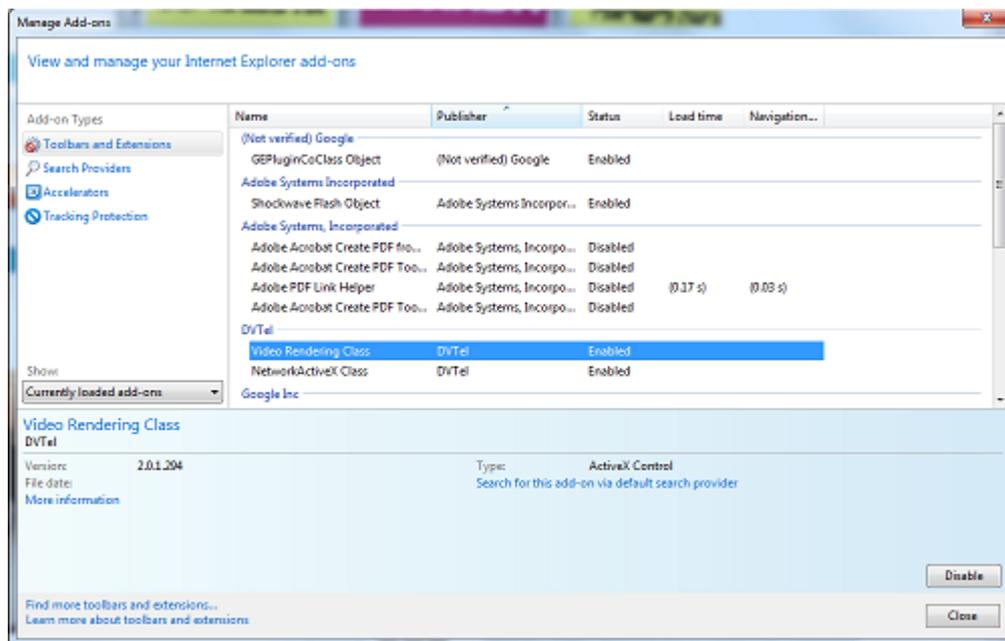


*Tools Drop-down List (IE 9)*



Tools Drop-down List (IE 10/11)

3. Select *Manage add-ons*. The **Manage Add-on** window opens.
4. Under *Show*, select *Currently loaded add-ons*. All ActiveX controls are displayed.



Manage Add-on Screen

5. Select the *VideoRenderingClass* add-on. The add-on is highlighted.
6. Click **Disable**. The add-on is disabled.
7. Repeat steps 4 and 5 if you wish to delete the *Network ActiveX Class* add-on.
8. Click **Close** when you are finished.

## 7.5 Using ioi Units with Windows Firewall Turned On

This section describes how to enable ioi client applications functionality without switching off the Windows Firewall on your computer. ioi client applications (Discovery Network Assistant and the unit's embedded HTML Setup) must not be blocked by the local Windows Firewall when switched on.

### To enable ioi functionality

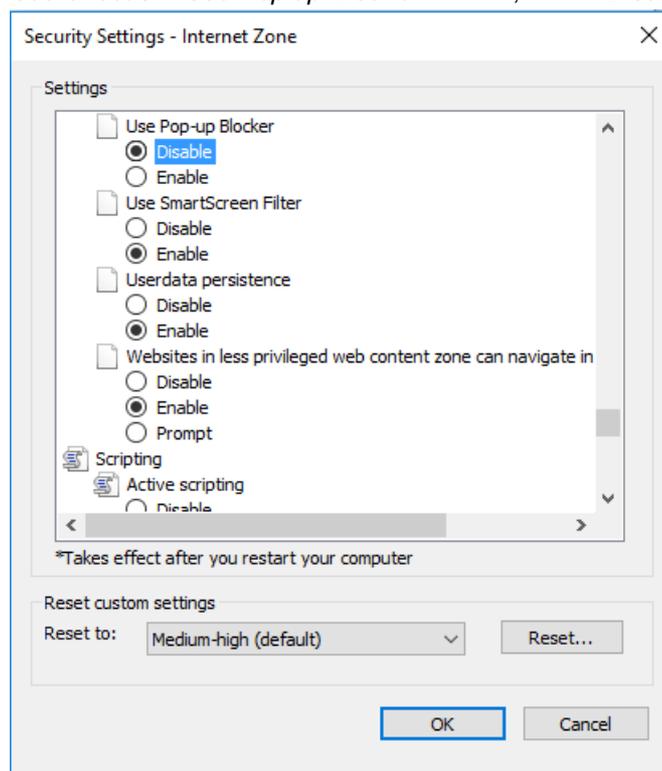
1. Make sure that your computer's Pop-up Blocker is turned off.

#### To turn the Pop-up Blocker off with Windows 7

- a. Open Internet Explorer.
- b. Click the Tools button, point to *Pop-up Blocker*.
- c. Click *Turn Off Pop-up Blocker*.

#### To turn the Pop-up Blocker off with Windows 8, 8.1, and 10

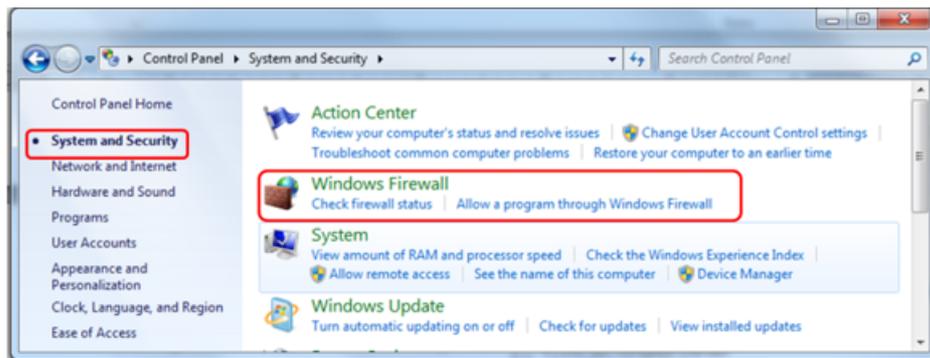
- a. Open Internet Explorer.
- b. Click the **Tools**  icon, select *Internet Options*.
- c. Open the *Security* tab.
- d. Click **Custom level**.
- e. In the *Miscellaneous > Use Pop-up Blocker* section, select *Disable*.



*Disable Pop-Up Blocker*

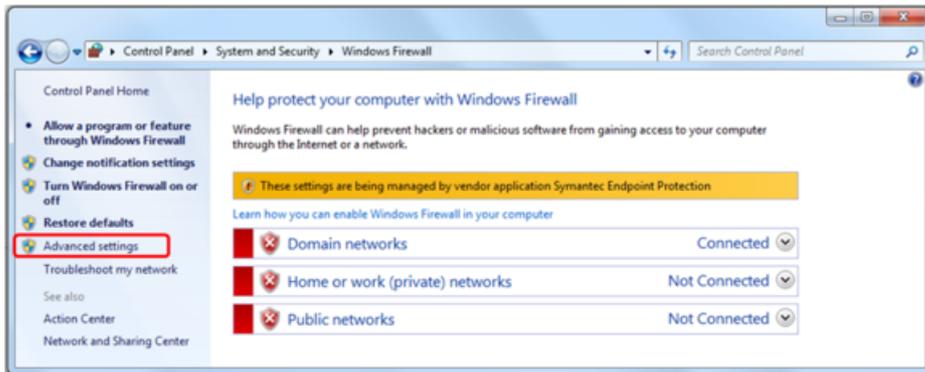
2. Open the Windows Firewall screen:

- On Windows 7, from the Windows Control Panel, select *System and Security*. The **System and Security** window is displayed.



*Windows 7 System and Security Window*

- Select *Windows Firewall*. The **Windows Firewall** dialog box is displayed.



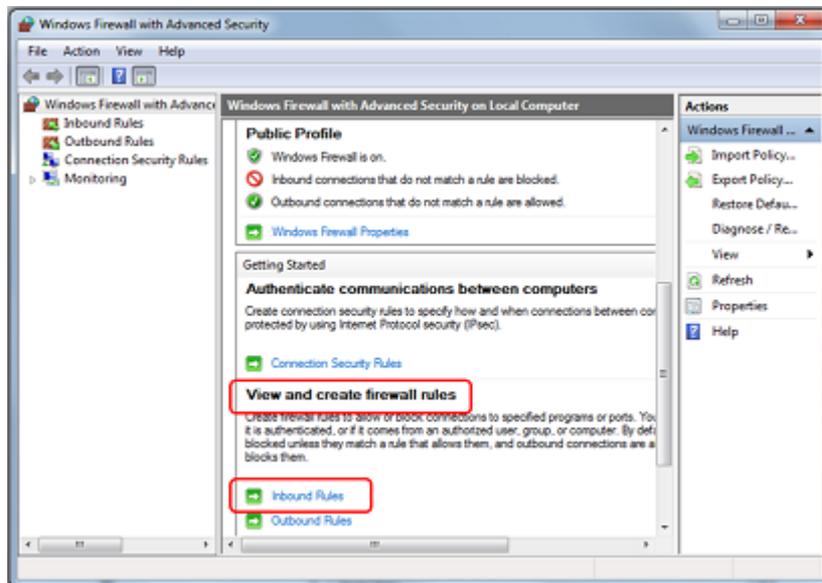
*Windows 7 Firewall Dialog Box*

- On Windows 8, 8.1, and 10, from the Windows Control Panel, select *Windows Firewall*. The **Windows Firewall** dialog box is displayed.

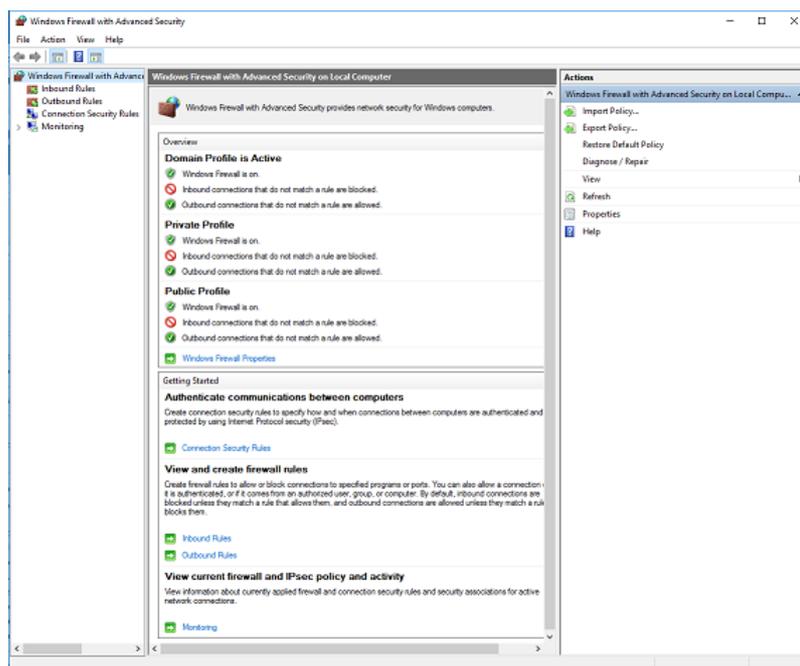


*Windows 8, 8.1, and 10 Firewall Dialog Box*

3. Select *Advanced Settings* from the sidebar. The **Advanced Security** window is displayed.

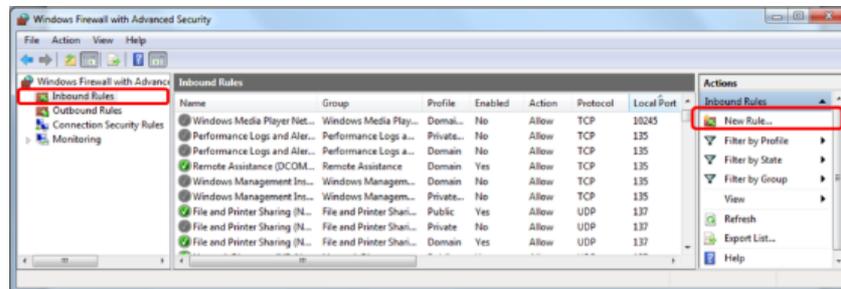


*Advanced Security Window (Win 7)*



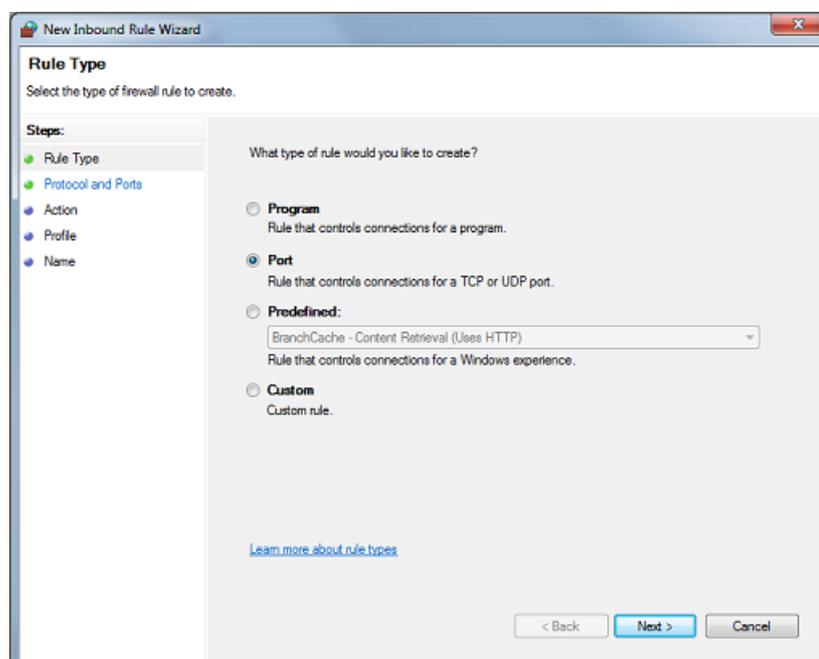
*Advanced Security Window (Win 8, 8.1, and 10)*

4. In the *Getting Started* area, select *View and create firewall rules > Inbound Rules*. The **Inbound Rules** screen is displayed.



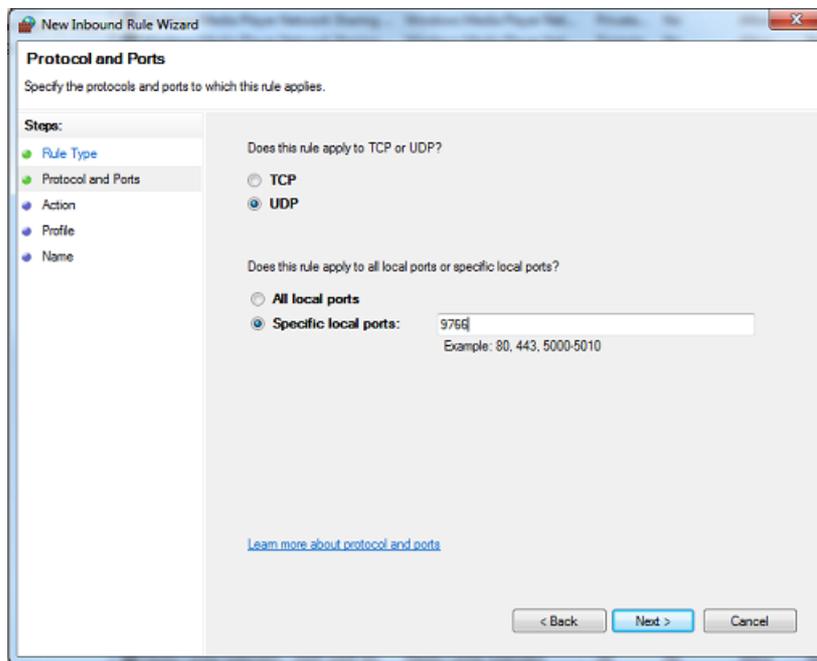
*Inbound Rules Screen*

5. From the Actions section, select *Inbound Rules > New Rule*. The New Inbound Rule Wizard opens on the **Rule Type** screen.



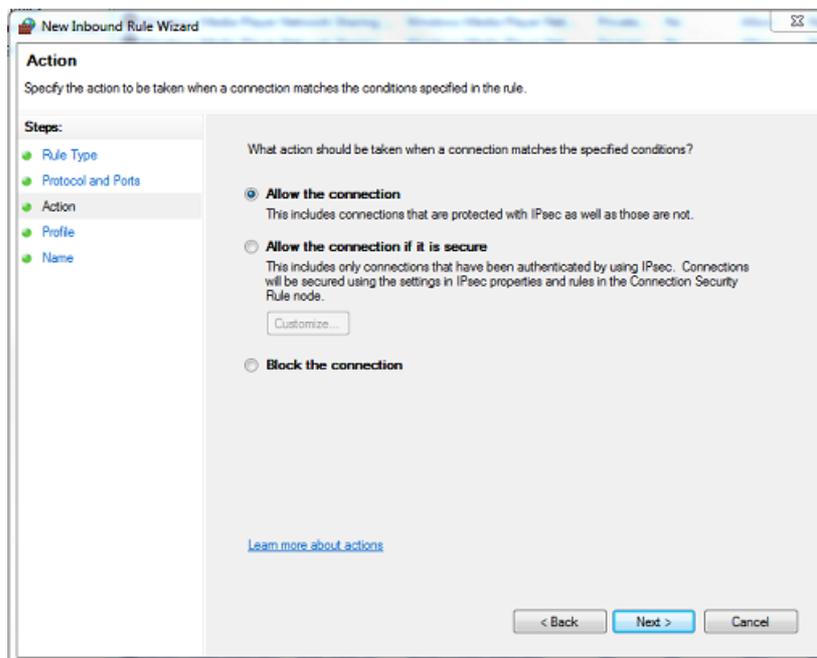
*Rule Type Screen*

6. Select *Port* and click **Next**. The **Protocol and Ports** window opens.



*Protocol and Ports Window*

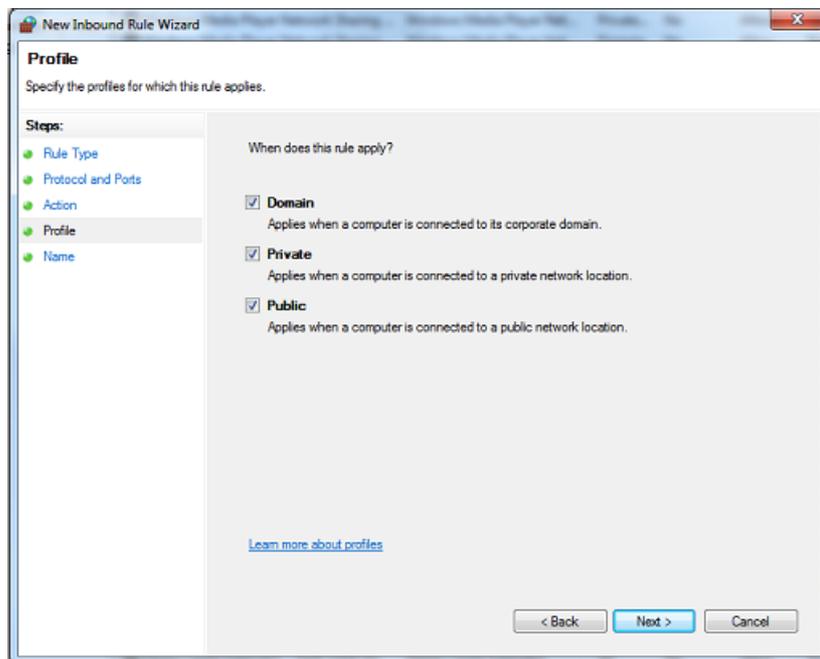
7. Select *UDP*.
8. Select *Specific local ports* and enter *9766* in the text box.
9. Click **Next**. The **Action** window opens.



*Action Window*

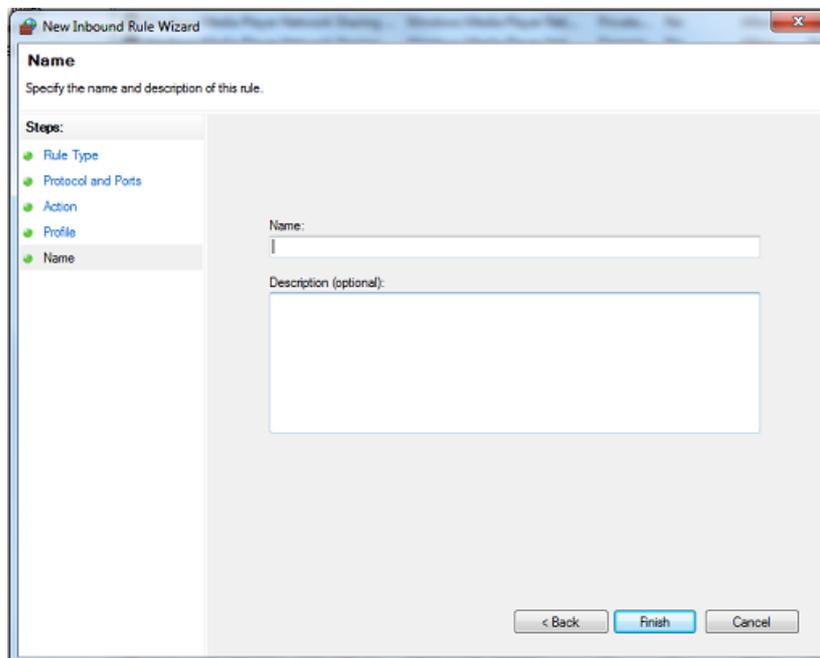
10. Select *Allow the connection*.

11. Click **Next**. The **Profile** window opens.



*Profile Window*

12. Select the profile according to the type of network to which you are connected. Consult your Network Administrator regarding this setting.
13. Click **Next**. The **Name** window opens.



*Name Window*

14. In the *Name* field, enter the name of the rule.
15. In the *Description* field, enter an optional description for the rule.

16. Click **Finish** to close the New Inbound Rule Wizard. Your settings are saved.
17. Run the Discovery Network Assistant (DNA) to verify that it discovers all ioi units on the network.



FLIR Systems, Inc.  
6769 Hollister Ave.  
Goleta, CA 93117  
USA  
PH: +1 805.964.9797  
PH: +1 877.773.3547 (Sales)  
PH: +1 888.747.3547 (Support)  
FX: +1 805.685.2711  
[www.flir.com/security](http://www.flir.com/security)

Corporate Headquarters  
FLIR Systems, Inc.  
27700 SW Parkway Ave.  
Wilsonville, OR 97070  
USA  
PH: +1 503.498.3547  
FX: +1 503.498.3153

Document:  
HTML Edition Units User Guide  
Version: Ver.1  
Date: November 7, 2016  
Language: en-US