

Aimetis Symphony™

Version 6.7

Administration and Analytics Guide

September 27, 2011



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Document History

Sym-6.7-P-203

Table 1. Changes to this manual

Date	Description
September 26, 2011	<p>Removed: Instructions for “VE410 - License Plate Recognition” on page 176. All content now in <i>Aimetis Symphony Automatic License Plate Recognition Guide: Field Planning and Installation, Software Installation, Analytics Configuration</i>. See https://www.aimetis.com/xnet/Support/documentation.aspx</p>
September 7, 2011	<p>Added: Video and logs should be stored in separate folders... in “Customizing Storage Settings” on page 55.</p>
September 6, 2011	<p>Release 6.7.1 Added:</p> <ul style="list-style-type: none"> • Table 2, “Conditions under which audio is recorded,” on page 17 - Rule Broken option • Figure 54 on page 98 - Log on as Local System account option • “Using trackerapp to Adjust Settings” on page 161 for VE 180
August 18, 2011	<p>Corrigendum Not in release 6.7 “How To Calibrate Your PTZ Camera” on page 23 Clarification ADAM devices only for Digital I/O on maps, see “Adding Digital Input and Output to Maps (ADAM hardware devices only)” on page 49</p>
August 2011	<p>Release 6.7 Added: “How To Calibrate Your PTZ Camera” on page 23 “Control PTZ Camera Auxiliary Outputs” on page 22 “Using Maps” on page 40</p> <ul style="list-style-type: none"> • “Icons on Map” on page 45 • “Adding Rules to Maps” on page 47 • “Adding Digital Input and Output to Maps (ADAM hardware devices only)” on page 49 <ul style="list-style-type: none"> • “VE180 (beta) - Indoor/Outdoor People Tracking” on page 141 <ul style="list-style-type: none"> • “Assisted Mode Versus Expert Mode” on page 147 • “Direction Line Subtab” on page 156 <p>Revised:</p> <ul style="list-style-type: none"> • “VE180 (beta) - Indoor/Outdoor People Tracking” on page 141 <ul style="list-style-type: none"> • “Environment subtab” on page 149 • “Advanced Subtab” on page 157

Table 1. Changes to this manual (Continued)

Date	Description
Sym-6.6-P-200.5	
July 8, 2011	<p>Corrigendum</p> <p>Removed: “Symphony runs its own internal SMTP server, so you do not need to configure Symphony with another external mail server” from Email definition in Table 18, "Rules Wizard Action Section tabs," on page 181.</p> <p>In progress:</p> <ul style="list-style-type: none"> • Revisions to Table 16, "PT090 Analytics Configuration Settings," on page 172. • Clarification of interface terms in “Overview subtab” on page 143 section for “VE180 (beta) - Indoor/Outdoor People Tracking” on page 141.
June 14, 2011	<p>Removed: May 18, 2011 content in “VE410 - License Plate Recognition” on page 176. Now in new manual, Aimetis Automatic License Plate Recognition (ALPR) Field Installation & Planning Guide.</p> <p>Added:</p> <ul style="list-style-type: none"> • New options in “Figure 26. Analytics Configuration tab” on page 178 for “VE410 - License Plate Recognition” on page 176. • Suggestions for using VE180 Analytic- “Table 4. Ideal Camera Setup” on page 141. • Link to external reference “HTTPS for AXIS” on page 100. <p>Revised: Icon change for Notes and Examples. “Conventions” on page vi. Font change - highly readable for both online and print documents.</p>
May 26, 2011	<p>Added: More information in “Actions” on page 180 to “Rules Wizard Action Section tabs” on page 181 for Run Program tab.</p>
May 18, 2011	<p>In “VE410 - License Plate Recognition” on page 176</p> <p>Updated: Table 10 “Poor image quality issues,” on page 158</p> <p>Added: Examples of Good Images” on page 159</p> <p>Now in new manual Aimetis Automatic License Plate Recognition (ALPR) Field Installation & Planning Guide.</p>
May 16, 2011	<p>Release 6.6</p> <p>“VE410 - License Plate Recognition” on page 176</p> <p>Revised: “Operation Mode: Overhead People Counting” on page 138</p>
Sym-6.5-P-200.7	
February 16 and 28, 2011	<p>Added: Show XML View - Table 1, "Buttons beside Analytic Engines selection," on page 109. “VE180 (beta) - Indoor/Outdoor People Tracking” on page 141 - Beta specified for clarity.</p>
December 16, 2010	<p>Revised: “Enabling SNMP” on page 91.</p>

Table 1. Changes to this manual (Continued)

Date	Description
November 29, 2010	Added: Note to “Hardware Acceleration” on page 137 regarding minor differences between Static and Static OpenCL, and Dynamic and Dynamic OpenCL.
November 26, 2010	Added: “Hardware Acceleration” on page 137
November 10, 2010	Revised: <ul style="list-style-type: none"> • Note in “Device - Analog Cameras” on page 19 • “Configuring and Managing a Video Wall” on page 74 Removed: <ul style="list-style-type: none"> • Server Sets information Added: <ul style="list-style-type: none"> • “User Authentication” on page 25 • “Symphony Security Authentication Mode” on page 25 • “Active Directory Authentication Mode” on page 25 • “Associating Groups with Active Directory” on page 32 • “Advanced Information - Active Directory Associations” on page 35 • “Authentication Mode Set to Active Directory (in Installation Setup Wizard)” on page 35 • “Synchronizing with Active Directory” on page 35 • “Periodic Synchronization” on page 36 • “Logging on to Symphony if your user does not exist in Symphony” on page 35 • “Groups Associated with Active Directory” on page 35 • “When a user joins another Active Directory group:” on page 37 • “Farm Setup” on page 56 • “Creating a Farm from Multiple Existing Farms” on page 56 • “Buddy System” on page 60 • “Redundancy Configuration Settings” on page 61
October 6, 2010	First version of this document. Symphony v6.5.3

Preface

Conventions

Table 1. Symbols and formatting used in this manual

Icon	Caption/Format	Description
	Note	Additional information.
	Example	Example scenario.
	Important	Vital additional instructions or links.
	Caution	You could lose recording footage or you must pay close attention to setting changes.
	Bold, Arial Font	Graphic User Interface term (button, menu, window, option) or keyboard item.
	<i>Italic, Arial</i>	Emphasis, new term, or an external reference.

Document Suite

Table 2. AIMETIS documents and videos

Document Name	Links
Symphony 6.7 What's New & Release Notes	https://www.aimetis.com/Xnet/downloads/documentation.aspx
Symphony 6.7 Installation Guide	https://www.aimetis.com/Xnet/downloads/documentation.aspx
Symphony 6.7 Admin and Analytics Guide	https://www.aimetis.com/Xnet/downloads/documentation.aspx
Symphony 6.7 Client User Guide	https://www.aimetis.com/Xnet/downloads/documentation.aspx
Knowledge Base Articles	http://www.aimetis.com/Support/knowledgebase.aspx
Case Studies	http://www.aimetis.com/Solutions/customers-case-studies.aspx
White Papers	http://www.aimetis.com/Solutions/whitepapers.aspx
Application Video Samples	https://www.aimetis.com/Xnet/Marketing/collateral-library.aspx
Recorded Webinars	http://www.aimetis.com/Events/webinars.aspx
Product Tour	https://www.aimetis.com/Xnet/Marketing/collateral-library.aspx
Supported Video Devices List	http://www.aimetis.com/Support/supported-video-devices.aspx
Licensing	http://www.aimetis.com/Symphony/default--licensing.aspx
FAQ	https://www.aimetis.com/Xnet/Support/faqs.aspx

AIMETIS Xnet Portal

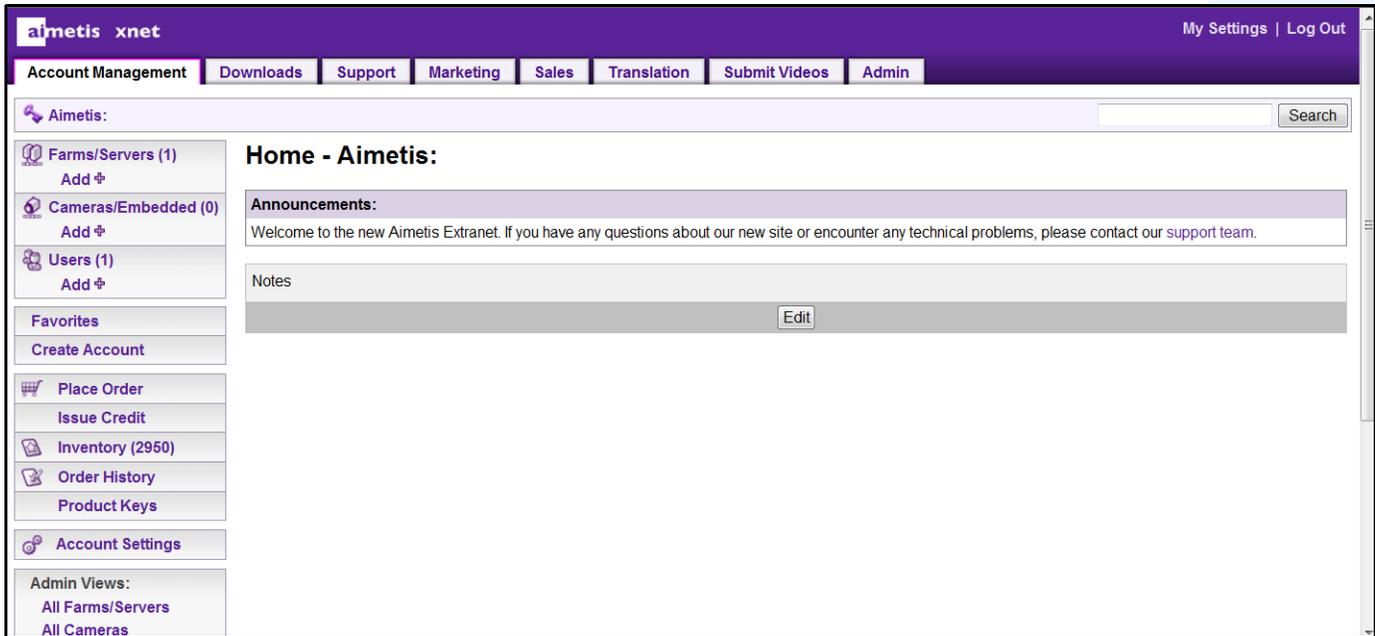


Figure 1. Aimetis Xnet home page

Xnet is the Aimetis Online Portal: www.aimetis.com/Xnet

You can :

- Order Licenses
- Manage Sub-Partner Accounts
- Access Technical Support & Downloads
- Access Sales & Marketing Tools
- Access Aimetis Software Translation



Note: Access to tools depends on account type, for example, Distributor, Certified Partner, Authorized Partner, End-User. For instructions, see [Table 3 on page viii](#).

Table 3. Instructions for using the Xnet

XnetXnet Instructions	Links
XnetXnet Training Manual - Resellers	https://www.aimetis.com/Xnet/Marketing/collateral-library.aspx
Recorded Webinar - Xnet Training - Distributors	https://www.aimetis.com/Xnet/Marketing/collateral-library.aspx

Table 3. Instructions for using the Xnet

XnetXnet Instructions	Links
Recorded Webinar - Xnet Training - Channel Partners	https://www.aimetis.com/Xnet/Marketing/collateral-library.aspx
Xnet Training Manual - Distributors	https://www.aimetis.com/Xnet/Marketing/collateral-library.aspx
Aimetis Symphony Architectural and Engineering Specification	https://www.aimetis.com/Xnet/Marketing/collateral-library.aspx
Hardware Benchmarks guidelines for 10, 20, 40 and 200 camera systems.	https://www.aimetis.com/Xnet/Marketing/collateral-library.aspx

Contact Us

Table 4. Contact links, addresses, phone numbers

Contact Type	Description
About AIMETIS	http://www.aimetis.com/Company/default.aspx
Contact link	http://www.aimetis.com/Company/contact.aspx
Support link	http://www.aimetis.com/Support/default.aspx
Americas	Aimetis Headquarters 500 Weber Street North Waterloo, Ontario, Canada N2L 4E9 Phone: +1866-544-2804 or +1 519-746-8888 Fax: +1 519-746-6444
EMEA	Aimetis GmbH Am Prime Parc 7 65479 Raunheim Germany Telefon: +49 (0) 6142 207 98 60 Fax: +49 (0) 6142 207 98 89 www.aimetis.de
Asia - Pacific	Aimetis China 5/F Standard Chartered Tower 201 Shiji Avenue Pudong Shanghai China 200120 Phone: 86-21-6182-6916 Fax: 86-21-6182-6777

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Getting Started

Navigate the following sections:
"Overview and Prerequisites" on page 2
"Administration" on page 13
"Video Analytics and Rules" on page 106

Overview and Prerequisites

Learn about...
"Software Overview" on page 3
"Symphony Server Licensing" on page 4
"Prerequisites" on page 5
"Server" on page 5
"Client" on page 5
"Operating Systems, Database, and Browsers" on page 5
"Client Prerequisites Installed Automatically" on page 8
"Server Prerequisites Installed Automatically" on page 8
"Symphony Installation and Data Folders" on page 10

Software Overview

An installation of Aimetis Symphony™ has two components: server software and client software. The Server and Client installer will set up both components on a single computer. One computer and one camera is all you need to get started.

The server software handles all video recording and analytics and can be used with analog or IP cameras. The client software provides the user interface for all tasks including monitoring, searching, reporting and configuration. A typical site would have many desktop computers with the client software connecting to a dedicated server computer running the server software. At larger sites, the server software may be run on multiple computers linked together to form a Server Farm.

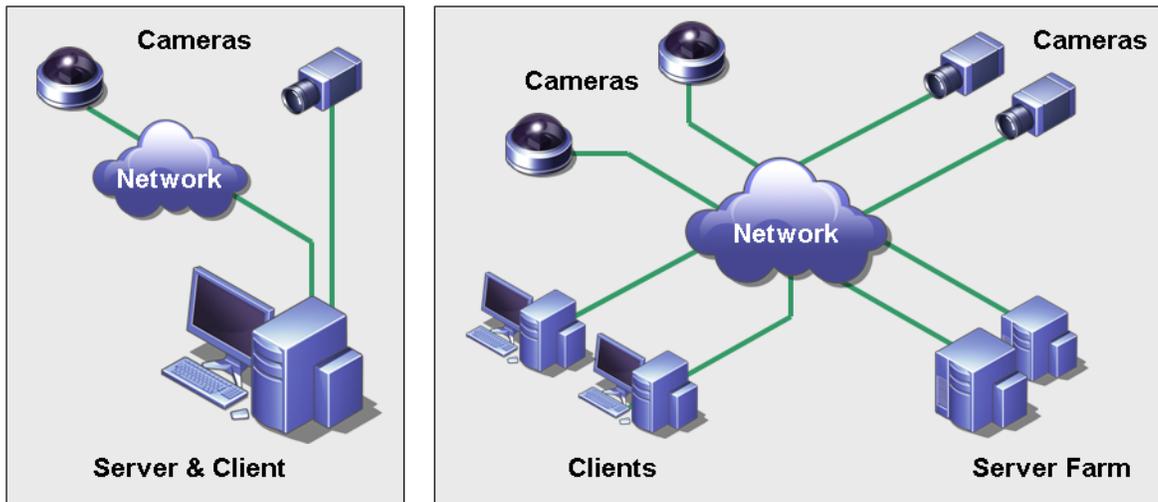


Figure 1. Typical and Larger Sites

Symphony Server Licensing

If you are upgrading an existing installation, ensure that your licenses are eligible for the software version you are installing. If not, contact your Aimetis distributor for an upgrade.

Aimetis Symphony is licensed on a per camera basis. Each physical computer can have multiple Symphony software licenses. The license types are: Standard, Professional and Enterprise. No server or client license fees apply.

License Type	Description
Symphony Server Standard License	Contains all the core video management features such as video recording from network and analog devices, video playback, search, and an integrated camera tree or site map for easy navigation.
Symphony Server Professional License	Contains all the core features of the Standard License plus advanced functionality such as server farms, access control integration and video walls. This license type is used in large deployments.
Symphony Server Enterprise License	Building on the functionality found in Professional, video analytics can be added on a per camera basis which augments the accuracy of alarm monitoring and includes business intelligence reporting such as people counting.

Licenses can be mixed per physical server, allowing Standard, Pro, and Enterprise to be used per single server. However, there is no advantage of having Standard and Professional licenses mixed on the same server since advanced VMS features will be available only if all licenses are Professional or higher.

Prerequisites

Server

- Any Intel CPU or any AMD CPU that supports SSE2 (for example, Opteron)
- 500 Megabytes of free disk space
- At least 1 Gigabyte of RAM

Client

- 200 Megabytes of free disk space
- 2 GHz or faster processor is recommended
- At least 1 Gigabyte of RAM

Operating Systems, Database, and Browsers

- **S** = Supported
- **R** = Recommended
- **G** = Recommended for a deployment of greater than 20 cameras

Table 1. SERVER Operating Systems - Windows

Symphony Product Version	Windows 2000	Windows XP SP3 ^a	Windows Server 2003	Windows Vista ^a	Windows Server 2008 R2 ^b	Windows 7
5.4	S	S	S			
6.1		S	S			
6.2		S	S	S	S,R,G	
6.5		S	S	S	S,R,G	S,R
6.6		S	S	S	S,R,G	S,R
6.7		S	S	S	S,R,G	S,R

a. See Windows Vista and XP Microsoft End of Support Solution Center

<http://windows.microsoft.com/en-us/windows/help/end-support-windows-xp-sp2-windows-vista-without-service-packs?os=other>

b. Windows 2008 R2 does not install sound components by default. You must install the Desktop Experience Windows component.

Table 2. CLIENT Operating Systems - Windows

Symphony Product Version	Windows 2000	Windows XP SP3 ^a	Windows Server 2003	Windows Vista ^a	Windows Server 2008 R2 ^b	Windows 7
5.4	S	S	S			
6.1	S	S	S			
6.2	S	S	S	S	S	
6.5	S	S	S	S	S	S,R,G
6.6	S	S	S	S	S	S,R,G
6.7	S	S	S	S	S	S,R,G

a. See Windows Vista and XP Microsoft End of Support Solution Center

<http://windows.microsoft.com/en-us/windows/help/end-support-windows-xp-sp2-windows-vista-without-service-packs?os=other>

b. Windows 2008 R2 does not install sound components by default. You must install the Desktop Experience Windows component.

Table 3. Database (SQL Server)

Symphony Product Version	SQL Server 2000	SQL Server 2005	SQL Server 2008
5.4	R		
6.1	S	R	
6.2		R	S
6.5		S	R
6.6		S	R
6.7		S	R

Ensure that the SQL Server database is on a local network (100 Mbps or greater) connected to the servers in the farm.

Table 4. Browsers

Symphony Product Version	IE6 ^a	IE7 ^a	IE8 ^a	Firefox 3.x	Safari 5	Chrome 5
5.4	R					
6.1	R					
6.2	S	R				
6.5			R	*	*	*
6.6			R	*	*	*
6.7			R	*	*	*

a. Limited support for 64-bit version of IE.

*Limited support (reports, alarms, timeline, JPGs). No live or historical video.

Table 5. Virtualization Platforms

Symphony Product Version	Microsoft Virtual PC	VMware Server
5.4		
6.1		
6.2		
6.5	S	R
6.6	S	R
6.7	S	R

Client Prerequisites Installed Automatically

The following prerequisites are required by Symphony and (if necessary) will be installed automatically.

Table 6. Client Prerequisites

Item	Version	commandline install
XML 6.0 SP1 (x86)	6.10.1129.0	msxml6_x86.msi /qn
XML 6.0 SP1 (x64)	6.10.1129.0	msxml6_x64.msi /qn
Visual C++ 2008 Redistributable Package (x86)	9.0	(components installed by merge modules in installer)
Microsoft .NET Framework 2.0 SP2 (32 bit, exe install)	2.0 SP2 32bit	NetFx20SP2_x86.exe /q /norestart
Microsoft .NET Framework 2.0 SP2 (64bit where applicable, exe install)	2.0 SP2 64bit	NetFx20SP2_x64.exe /q /norestart (only on 64-bit machines)
Visual C++ 8.0 Redistributable (exe install)	8.0 (Service Pack 1 with ATL Security Update, 8.0.50727.4053)	Vcredist_x86_ATLUpdate.exe /q
Microsoft Data Access Components (MDAC) 2.8	N/A	Setup.exe
Aimetis Core	6.5.7	Msiexec /i AimetisCoreInstall.msi /q

Server Prerequisites Installed Automatically

The following prerequisites are required by Symphony and (if necessary) will be installed automatically.

Table 7. Server Prerequisite

Item	Version	commandline install
XML 6.0 SP1 (x86)	6.10.1129.0	msxml6_x86.msi /qn
XML 6.0 SP1 (x64)	6.10.1129.0	msxml6_x64.msi /qn
Visual C++ 2008 Redistributable Package (x86)	9.0	(components installed by merge modules in installer)
Microsoft .NET Framework 2.0 SP2 (32 bit, exe install)	2.0 SP2 32bit	NetFx20SP2_x86.exe /q /norestart
Microsoft .NET Framework 2.0 SP2 (64bit where applicable, exe install)	2.0 SP2 64bit	NetFx20SP2_x64.exe /q /norestart (only on 64-bit machines)

Table 7. Server Prerequisite (Continued)

Item	Version	commandline install
Visual C++ 8.0 Redistributable (exe install)	8.0 (Service Pack 1 with ATL Security Update, 8.0.50727.4053)	Vcredist_x86_ATLUpdate.exe /q
Microsoft Data Access Components (MDAC) 2.8	N/A	Setup.exe
Aimetis Core	6.5.7	Msiexec /i AimetisCoreInstall.msi /q
Aimetis SNMP	6.5.7	SNMPInstallLauncher.exe "INSTALLDIR=[INSTALLDIR]" (Required files, SNMPInstallLauncher.exe, SNMPSetup.exe, SNMPSetup64.exe)
Microsoft SQL Server Express 2005 Service Pack 2(Optional)	9.00.3042.00	SQLEXPR.exe /qn ADDLOCAL=ALL INSTANCENAME=AIMETIS SECURITYMODE=SQL SAPWD=[SQL_SA_PASSWORD]
OPC Core Components 2.00 Redistributable	2.00.2.20	N/A

Symphony Installation and Data Folders

Symphony Server

Symphony server stores three kinds of data to your hard disk.

- Binary application files
- Video data
- Configuration information stored in a SQL Server Database.

Symphony is installed by default in

```
C:\Program Files\Aimetis\Symphony\
```

The default path for all data (log files, video, etc.) is

```
C:\Program Files\Aimetis\Symphony\data\
```

You can change the:

- default installation path during installation of **Aimetis Symphony v6.6**.
- default data path during the Setup Wizard.

[Table 8](#) provides a summary of key folders

- <AppRoot> denotes installation path
- <DataRoot> denotes data path)

Table 8. Key Folders

Path	Description
<AppRoot>_bin	Binaries for all Aimetis Symphony v6.6 executables and DLLs
<AppRoot>_docs	Small .txt files storing alarm instructions and Aimetis.com's IP address
<AppRoot>_tools	Tools and utilities that Aimetis Support Specialists use to diagnose system problems
<AppRoot>_Scripts	Scripts for configuring Symphony. For example, a database schema creation script for manually creating the Symphony database
<AppRoot>\WebRoot	Web files & binaries
<DataRoot>_footagearchive	Video data recorded from all cameras
<DataRoot>_images	A cache of JPEG images generated from the footage
<DataRoot>_logs2	All server log files useful for debugging and diagnosing problems.
<DataRoot>_searches	Stored searches. These files will not be automatically cleaned and searches must be manually deleted by user
<DataRoot>_signals	Timeline data (green, yellow, red)

Table 8. Key Folders (Continued)

Path	Description
<DataRoot>_signals2	XML metadata for searches and reports
\windows\temp\config_backup\	Location for automatic backups of server configuration

In addition to the folders listed in [Table 8](#), Symphony Server adds the following registry keys:

HKLM\Software\Aimetis

Some configuration data for the server is stored here, such as the database connection string.



Caution: It is highly recommended that the <DataRoot> folders are not on the same physical Hard Disk as Windows and <AppRoot>. This is to limit the amount of disk read and writes to the OS disk to prevent catastrophic failure.

Symphony Client

Aimetis Symphony Client is installed by default in

`C:\Program Files\Aimetis\Symphony Client\`

Key Folders

Table 9. Key Folders for Client

Folder	Description
<code>C:\Documents and Settings\%WINUSER%\Application Data\Aimetis\</code>	All client configuration, such as window layouts, general configuration, logs
<code>C:\Documents and Settings\All Users\Application Data\Aimetis\</code>	This folder contains <code>RegisteredFarms.xml</code> and <code>FarmList.xml</code>



Note: These paths may be slightly different on different operating system versions.

These files define the farms that have been registered. The default is whatever the client configuration path is set to but you can override this. The paths in [Table 9](#) can be configured via the Aimetis Symphony Client **Settings** dialog box.

- From the **View** menu, select **Settings**.

Two (optional) variables can be used in the path names:

- **%WINUSER%** represents the Windows username of the current user. This is used in the default path so Symphony can store the configuration in the current user's application data folder.
- **%SYMPHONYUSER%** represents the Symphony username. This is valid only if credentials are required for login to Symphony.

If a customer prefers to keep these settings global, do not use either of these variables when specifying the paths.

In addition to the folders in [Table 9](#), Aimetis Symphony Client adds the following registry keys:

`HKLM\Software\Aimetis\AiraExplorer`

Administration

Administrative User Tasks

Tasks
"Setting Up Devices" on page 14
"Managing Security Profiles" on page 23
"User Authentication" on page 25
"Configuring User Access" on page 26
"Using the Camera Tree" on page 38
"Using Maps" on page 40
"Customizing Storage Settings" on page 55
"Managing Server Farms" on page 56
"Configuring a Camera Tour" on page 63
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"Setting Up Notifications" on page 71
"Integrating 3rd Party Systems with Symphony" on page 73
"Configuring and Managing a Video Wall" on page 74
"Viewing Detailed Logs" on page 87
"Viewing Logins" on page 88
"Viewing Detailed Events" on page 89
"Health Monitoring" on page 90
"Enabling SNMP" on page 91
"Using the DOS killall Utility with Symphony Services" on page 95
"Receiving Full Diagnostic Information" on page 96
"Managing Symphony Services" on page 97

Setting Up Devices

Three kinds of device types can be added to Symphony Server.

- Network IP cameras or video servers - [page 15](#)
- Analog cameras - [page 19](#)
- I/O devices - [page 20](#)



Important: For a list of supported devices, see <http://aimetis.com/Support/supported-video-devices.aspx>

Procedure

To view devices:

- From the **Server** menu, select **Configuration**. The **Configuration** dialog box appears with **Devices** displayed in the right pane.

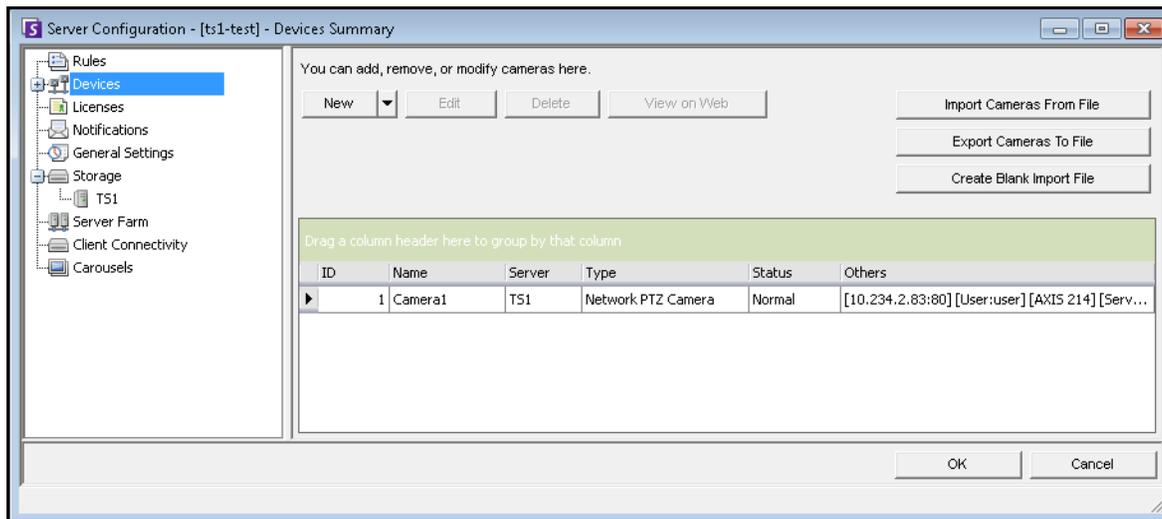


Figure 1. Server Configuration dialog box showing Devices

Device - Network (IP) Cameras or Video Servers

For network cameras or video servers, you can:

- Add a network camera
- Configure advanced features, for example, recording schedule
- Configure analytics engines (Enterprise license only)

Procedure

To add a new network camera or video server:

1. From the **Server** menu, select **Configuration**. The **Configuration** dialog box appears with **Devices** displayed in the right pane.
2. In the right pane, click **New**. The **Network** tab appears.

The screenshot shows a 'Server Configuration' dialog box with the 'Network' tab selected. The 'Server' dropdown is set to 'WIN-K6T44FG29EK'. The 'Network' tab is circled in red. The dialog contains the following fields and options:

- Name:** Camera1
- Description:** (empty)
- ID/Code:** (empty)
- URL:** 10.234.2.207:80
e.g. 10.1.2.3 (port 80)
10.1.2.3:120
rtsp://10.1.2.3/mpeg4/1/media.amp (port 554)
rtsp://user:password@10.1.2.3:1666/capture
- Manufacturer:** 4XEM, 6G Video NVC Series, 6G Video NVE Series, ACTI (dropdown menu)
- Model:** IQD30S IQ
- Username:** root
- Password:** (masked with asterisks)
- Camera Type:** Fixed (selected), PTZ, Video Server
- Resolution:** 704 x 480
- FPS:** 5
- Video Format:** MJPG
- Failover Movability:** Movable

Buttons: Discover Devices, View on Web, Supported Features, Connect to Camera, OK, Cancel.

Figure 2. Server Configuration for a network camera

Procedure:

Network Tab - Identify a New Network Camera

Task 1: Name a new network camera:

1. In the **Name** field, enter an appropriate and easily identifiable name for the camera.
2. In the **Description** field, enter an easily identifiable description. For example, "Camera near front door."
3. (Optional) In the **ID/Code** field, enter the code or identification you are using to classify and easily identify your cameras.

Task 2: Locate the camera on the network

1. Enter an IP address in the **URL** field or click **Discover Devices** to locate devices (the IP address) on the network. The **Discover Devices** dialog box opens displaying a device tree.
2. Expand the brand name to see a list of devices.
3. Right-click on a device and select **Connect to Symphony**. The IP address of the device is now displayed in the **URL** field.
4. Enter a **Username** and **Password** for the device. (This may be automatically displayed.)

Task 3: Automatically or Manually determine the device specifications:

Automatically:

1. Click **Connect to Camera**. The **Camera Type** and values for **Resolution**, **FPS** and **Video Format** are automatically detected and displayed.

Manually:

1. From the **Manufacturer** list, select the brand or manufacturer of the camera.
2. Select the **Camera Type**, and set the **Resolution**, **FPS** and **Video Format** appropriately.

Task 4: Specify Failover Movability

1. From the **Failover Movability** drop-down list, specify whether the device will automatically move to a redundant server under a failover condition.
 - If set to **Movable**, then this device can move to another server in the farm during failover.
 - If set to **Unmovable**, then the device cannot be moved. Any device that requires access to resources available only on a single server (for example, COM port, special SDK or drivers) is unmovable. All others are typically movable.

Procedure:

Video Tab - Configure Advanced Features

To configure advanced features:

1. Click the **Video** tab.
2. From the **Record Video** and **Record Audio** lists, select a condition or schedule when Symphony should record video and audio on a specific camera. For options, see [Table 1](#) and [Table 2](#)
3. If your network camera records only MJPEG video and Symphony must recompress the video as MPEG-4, select the Symphony **Codec** check box.

Table 1. Conditions under which video is recorded

Option	Symphony records video...
Always	For this specific camera
Schedule	On the schedule you specify
Schedule and Tracked Motion	On motion but only during the time period you specify
Pixel Changes	Whenever pixel changes are detected. Note: A tree moving in a heavy wind could cause pixel changes and therefore cause Symphony to record video
Tracked Motion	If objects are tracked through the scene (for example, a person or vehicle moving through the scene is tracked as motion, but moving tree branches should not be tracked and therefore video would not be recorded)
Motion on Camera	Using motion detection capabilities inside the network camera itself, and not using a video analytic engine from Symphony (quality of motion detection similar to Pixel Changes)
Schedule & Motion on Camera	Same as Motion on Camera option; however, records if motion detected during a specific time interval as defined by user
Never	Never records video unless specified to be recorded in a Rule

Table 2. Conditions under which audio is recorded

Option	Symphony records audio...
Never	Never records audio unless specified to be recorded in a Rule
Same as video	Records audio based on the video record settings in Table 1
Rule Broken	Records audio only when an alarm is triggered

Misc group box:

- To add another video stream for the current network device, click **Add a new Stream**.
 - If the network device allows additional network video streams, the streams can be added from the same physical device. Useful when one video is defined for recording and another for live video.

The video recording options available are the same as defined by the default stream (Table 1 on page 17). Video resolution can also be defined independently for the additional stream(s).

- To rotate the picture, select a value from the **Rotate Degrees** field.
- If you are using a PTZ camera, select a value in the **Maximum Locked Minutes** field to specify how long a PTZ camera should remain in its current position before it returns to its preset (Home Position).

Panoramic Settings group box:

- To de-warp 360-degree video, select the **Enable panoramic technology** check box.
 - Only for 360-degree camera lenses. Currently Immervision 360-degree camera lens technology is supported.
- Click **Apply** to save your settings and move onto the **Analytics Configuration** tab, or click **OK** to save settings and close the dialog without configuring the selected video analytics engines (default configuration settings will be used).

Procedure:

Analytics Engines and Analytics Configuration Tabs - Add Video Engines

By selecting the **Analytics Engines** tab, individual video analytics engines can be added to each camera. An **Enterprise license** is required to enable video engines in the **Analytics Engines** tab. This step is necessary only if video analytics are to be configured on this camera.

- For information on how to configure and select the video analytic engines, see [“About Video Analytics” on page 106](#)
- For information on licensing, see [“Symphony Server Licensing” on page 4](#)

Device - Analog Cameras

Analog cameras can be connected to Symphony in two ways:

- Easy method: Use a video server (a network device that converts analog video to digital video). In this scenario, Symphony connects to the video server the same way it connects to a network camera; therefore, follow the steps in [“Network Tab - Identify a New Network Camera” on page 16.](#)
- Connect an analog camera directly to Symphony. Follow steps in [“To add an Analog Camera directory to the server:”](#)
A video capture card must be installed in the server itself. (Ensure that the video capture card is supported by Symphony. See <http://www.aimetis.com/Support/supported-video-devices.aspx>).



Note: Connected using either Winnov Videum 4400 VO or HikVision DS-42xx compression cards.

Procedure

To add an Analog Camera directory to the server:

1. Ensure that a capture card is installed in the server.
2. From the **Server** menu, select **Configuration**. The **Configuration** dialog box appears with **Devices** displayed in the right pane.
3. In the right pane, click the arrow beside the **New** button. Select **Add an Analog Camera**. The **Analog** tab appears.
4. On the **Analog** tab, you can modify basic configuration for the camera. See [Table 3.](#)

Table 3. Basic configuration for analog camera

Field	Task
Device	Select the available channel on the capture card
Name	Enter the name of the camera (for example, Lobby Camera)
Resolution	Configure the resolution of the input
FPS	Configure the frames per second to record video
Video Format	Configure the video format, such as MJPEG or MPEG-4
PTZ Camera	Select this option if the channel in the Device field is connected to an analog PTZ camera. You must also configure additional information such as: <ul style="list-style-type: none"> • Type (denotes the type of analog PTZ camera) • Camera Address (denotes which address the PTZ camera is configured), • Control Port (denotes which COM port the serial adapter used to send and receive control signals to camera is connected)

5. Configure the **Video** tab as per instructions in [“Video Tab - Configure Advanced Features” on page 17.](#) And configure the **Analytics** tab as per instructions in [“Analytics Engines and Analytics Configuration Tabs - Add Video Engines” on page 18.](#)

Device - I/O

Input/output, or I/O, refers to the communication between an information processing system (such as a computer running Symphony), and the outside world (possibly a human, or another information processing system such as an access control system).

Inputs are the signals or data received by Symphony, and outputs are the signals or data sent from it. For a list of supported I/O devices, visit <http://aimetis.com/Support/supported-video-devices.aspx>

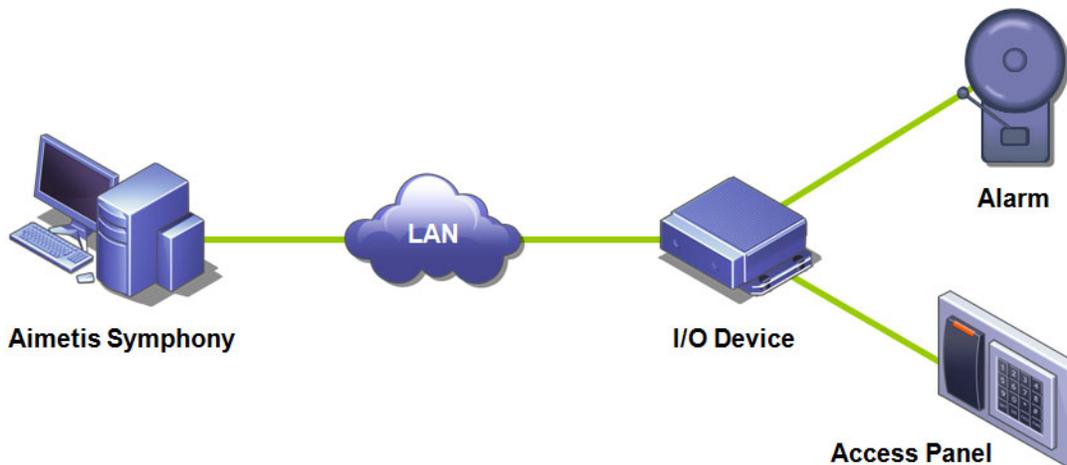


Figure 3. PC sends a signal through the LAN. The I/O device on the LAN receives the signal and then is wired to an alarm in one input or an alarm panel in another input.

Procedure

To add and configure an I/O device:

1. From the **Server** menu, select **Configuration**. The **Configuration** dialog box appears with **Devices** displayed in the right pane by default.
2. In the right pane, click the arrow beside the **New** button. Select **Add a Hardware Device** and then one of **Phoenix Contact**, **Advantech**, or **QKit**. (The recommended device is the **Advantech (Adam) 6060**.) The **HardwareDevice** tab appears for the device type selected.
3. In the **Name** field, enter a name you want to use for this device.
4. Depending on the I/O device type selected, various fields are displayed:
 - **IP address** - If an IP-based I/O device is configured, enter the **IP Address** of the device.
 - **Module** - Select an Advantech model (6050, 6060, 6066) from the drop-down list.
 - **Registry Entry/Control Number** - For Phoenix. Field populated by default.
 - **COM Port** and **Baud Rate** - If an I/O device is connected to the serial connection of the server, you must configure the **COM Port** address and **Baud Rate** properly.
5. From the **Movability** drop-down list, specify whether the device will automatically move to a redundant server under a failover condition.
 - If set to **Movable** then this device can move to another server in the farm during failover.

- If set to **Unmovable** then the device cannot be moved. Any device that requires access to resources available only on a single server (for example, COM port, special SDK or drivers) is unmovable. All others are typically movable. For more information, see Server Farm.



Note: For more information on how to configure IO Devices, refer to the Technical Article - Using External IO Devices with Aimetis Symphony.

Control PTZ Camera Auxiliary Outputs

Symphony Client includes two buttons (**Aux on**) and (**Aux off**) on the **PTZ Controls** interface. You can use these buttons to activate and deactivate auxiliary functions on the device, such as a wiper. The first button (**Aux on**) can start the wiper. The second button (**Aux off**) can stop the wiper.

Enabling Control Buttons

By default, the control buttons are hidden in the **PTZ Control** interface.

Procedure

To enable **Aux on** and **Aux off** buttons in the **PTZ Controls** interface:

1. Edit the %appdata%\aimetis\acc.ini
2. Add the following parameter under [Main]:
`EnablePTZAuxButtons=True`
3. Save the acc.ini file and restart Symphony Client for the changes to take effect.

Reconfiguring Control Buttons

The commands for the buttons can be reconfigured using the **Manual Configuration Editor**.

Procedure

How to reconfigure the **Aux on** and **Aux off** buttons:

1. Start Symphony Client.
2. From the **Server** menu, select **Manual Configuration Editor**.
3. Click **Add a new setting...** in the first row to activate the cells.
4. For the **Aux on** button, enter the following in the first row: **Type**=Camera, **Section**=PTZ, **ID**=<your camera id>, **Key**=StartWiper, **Value**= ff01000900010b (example value).
5. For **Aux off** button, enter the following in the another row: **Type**=Camera, **Section**=PTZ, **ID**=<your camera id>, **Key**=StopWiper, **Value**= ff01000b00010d (example value).
6. To confirm your entry, click the **Action** cell.
7. Click **OK**.

You can modify these settings any time. Simply find the Camera **ID** and look for the StartWiper or StopWiper values under the **Key** column.

Managing Security Profiles

All user-access rights are defined in **Groups** in **User Configuration**.

- Each **Group** can have more than one **Security Profile**. Security profiles allow administrators to change security privileges quickly depending on the situation.
- By default, only one **Security Profile** (called **Default**) is used. In most cases this will be sufficient.
- In some cases it may be useful to define additional security profiles and modify access rights of the **Group** per profile. This allows you to quickly change permissions to resources (such as cameras) in cases of an emergency. For example, under normal conditions a group of users may have access to all cameras, but in an emergency situation access may be temporarily suspended with one security group but given to another.



When the **Security Profiles** for a **Farm** is changed, all servers in the farm are notified, as well as all clients connected to those servers. The farm will remain in that security profile until the active security profile is changed again.

Procedure

To view Security Profiles:

- From the **Server** menu, select **Security Profiles**. The **Security Profiles** dialog box appears.

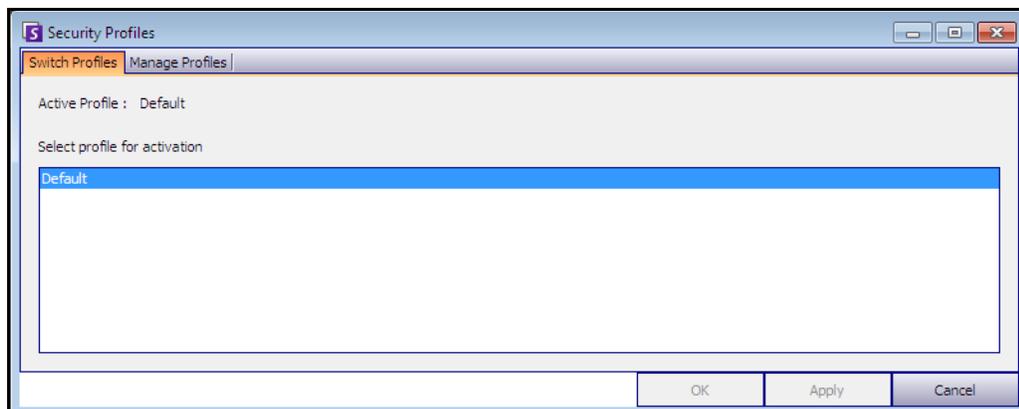


Figure 4. Security Profiles dialog box

Adding and Activating Security Profiles

Procedure

To add a Security Profile:

1. From the **Server** menu, select **Security Profiles**. The **Security Profiles** dialog box appears
2. Click the **Manage Profiles** tab.
3. In the right pane, click **Add**.
4. Click the new field under the **Name** column and enter a name for the new profile.
5. Click the new field under the **Description** column and enter a description of the new profile.
6. Click **Apply** to save changes and then **Close**.

To activate a Security Profile:

This will immediately affect user access rights.

1. From the **Server** menu, select **Security Profiles**. The **Security Profiles** dialog box appears
2. In the **Switch Profiles** tab, select the profile for activation.
3. Click **Apply** to save changes. A message appears indicating that the profile is active. Click **Close**.



Caution: Access rights are not defined in the **Security Profiles** dialog box. To modify user permissions per Security Profile, configure the appropriate **Group** in **User Configuration**.



Note: If the Security Profile is changed, remember to change the Profile back in order to restore users to their default permissions.

User Authentication

To connect to a server farm from Symphony Client, a user must be authenticated. Symphony supports two modes of authentication:

- Symphony Security (which is the stand-alone method)
- Active Directory integrated method

Although the authentication mode can be changed, it is generally configured during the initial setup of the farm.

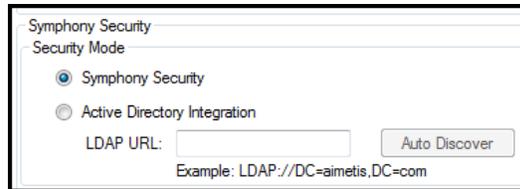


Figure 5. Defining Security Mode during Setup Wizard



To review the Security Mode in the Setup Wizard, from the **Start Menu**, select **Aimetis**, and then **Setup Wizard**. For details, see the **Installation Guide**.

Symphony Security Authentication Mode

When the authentication mode is set to Symphony **Security**, the credentials (user name and password) are stored in the Symphony database. The password is encrypted for security. When a user attempts to log in, the credentials are compared to the credentials in the Symphony database, and a successful match allows the user to log in. This is the default method and requires no additional configuration.

Active Directory Authentication Mode

Active Directory integrated mode uses Windows user passwords and as a result, users are not required to remember and maintain different passwords, even if the Windows password changes. Additionally, IT managers do not carry the additional burden of managing users in different applications. If a Windows user account is disabled, that user will not be allowed to log on to Symphony.

When the authentication mode is set to **Active Directory**, the user name is stored in the Symphony database, but not the password. Additionally, a mapping to the Active Directory user is stored (the Security Identifier, or SID). When a user attempts to log on, the credentials are checked against Active Directory. If Active Directory accepts the credentials, the user is allowed to log on.



For Active Directory integrated mode to be used, Professional & Enterprise licenses must be used. A Standard license will restrict access to this feature.

Configuring User Access

Groups and **Users** are managed in the **User Configuration** dialog box.

Users can be created, modified, and deleted from the **User Configuration** dialog box in Symphony Client. Several properties for a user that can be changed, including user name, password, and description.

Procedure

To view User Configuration:

- From the **Server** menu, select **User Configuration**. The **User Configuration** dialog box opens.

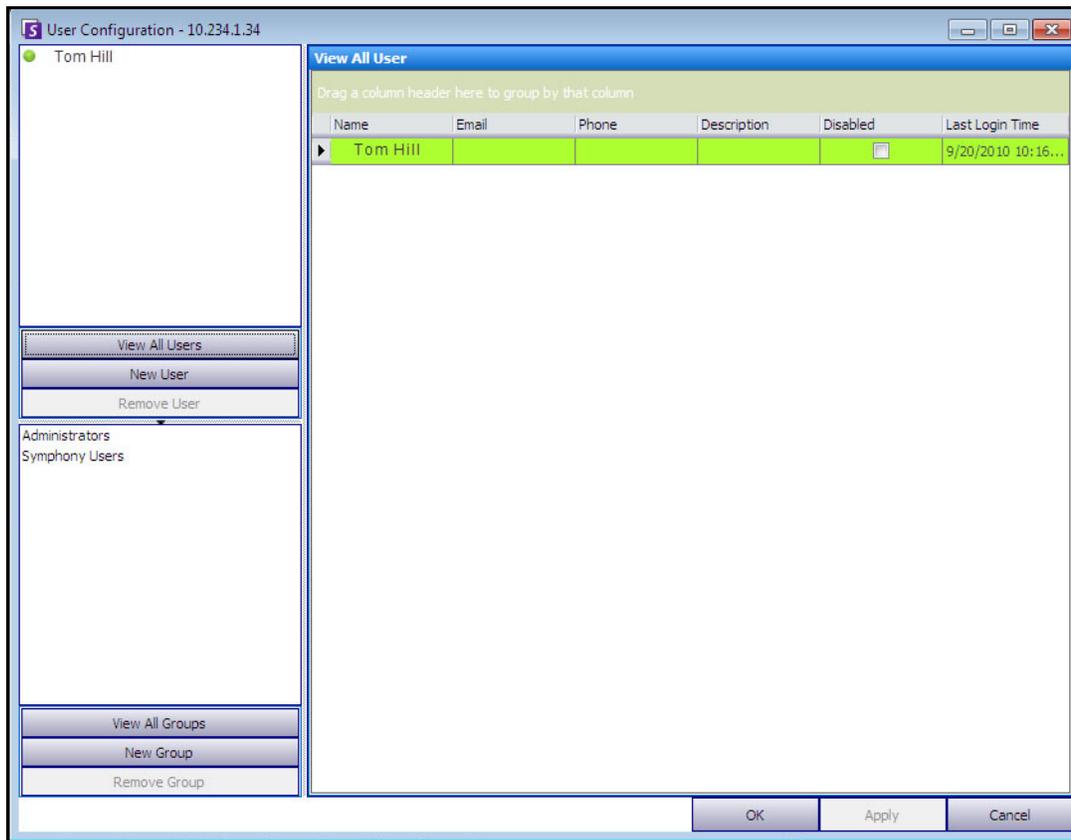


Figure 6. User Configuration dialog box

The **Users** section in the left pane summarizes a list of users on the system. The color of the button beside each user indicates the status of the user:

- green for logged on
- red for disabled
- grey for logged off

The **Groups** section in the lower left pane summarizes all security groups in Symphony.

Understanding User Groups

The user management system in Symphony employs user groups. This allows administrators to organize the security privileges of users as part of **Groups**. The administrator establishes group security privileges and then assigns users to groups.

- An administrator can create, rename, and delete groups, as well as modify group membership.
- A group may contain users or even other groups.
- Both a user and a group may be in multiple groups.
(Not allowed: Group A is part of Group B, which is part of Group A.)

By default, there are two User Groups.

- The **Administrators** user group allows users who are a member of this group full access to the system.
- The Symphony **Users** group allows users limited access.

Group membership makes the security management of many users easier than managing privileges on a per user basis.

- If a security restriction is applied to a group, this restriction is implicitly applied to all members of that group.
- If users are added to the group at a later date, the same security restrictions automatically apply.
- If users are removed, the security restrictions no longer apply.

Procedure

To view an existing User Group:

- From the **Groups** section, select the name of the group. The **Group Information** is displayed in the right pane.

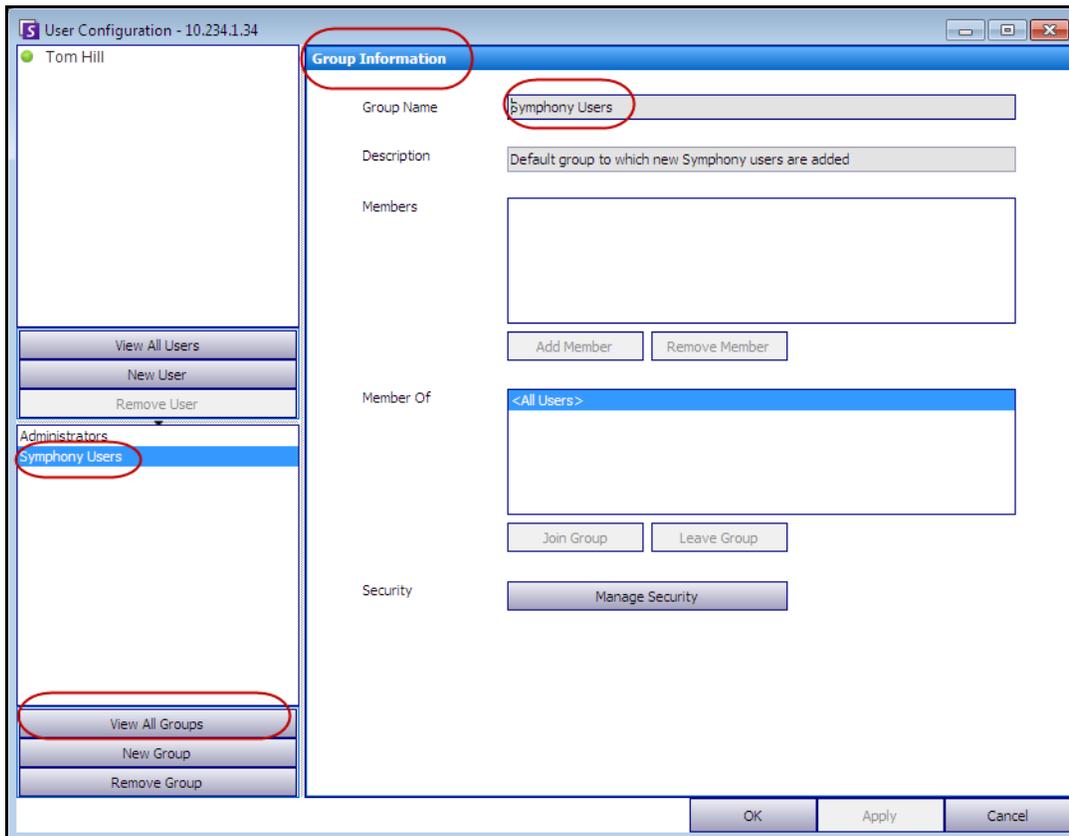


Figure 7. Group Information

Adding a New User to a Group

Procedure

To add a new User to a Group:

- From the **Groups** section, select the name of the group. The **Group Information** is displayed in the right pane.
- Click **Add Member**. The **User/Group Selection** dialog box opens.
- Select a user name and click **OK**.
- Click **Apply**.

Making a Group a Member of Another Group

Procedure

To make a Group a member of another Group:

1. From the **Groups** section, select the name of the group. The **Group Information** is displayed in the right pane.
2. Click **Join Group**. The **User/Group Selection** dialog box opens.
3. Select a group name and click **OK**.
4. Click **Apply**.

Modifying Access Rights for a Group

Security rights will be defined at a resource (for example, camera) level within the group. Rights may include the ability to view a camera, to use the PTZ, or to change camera settings. Permissions to access these rights can be associated with users and/or user groups by an administrator.

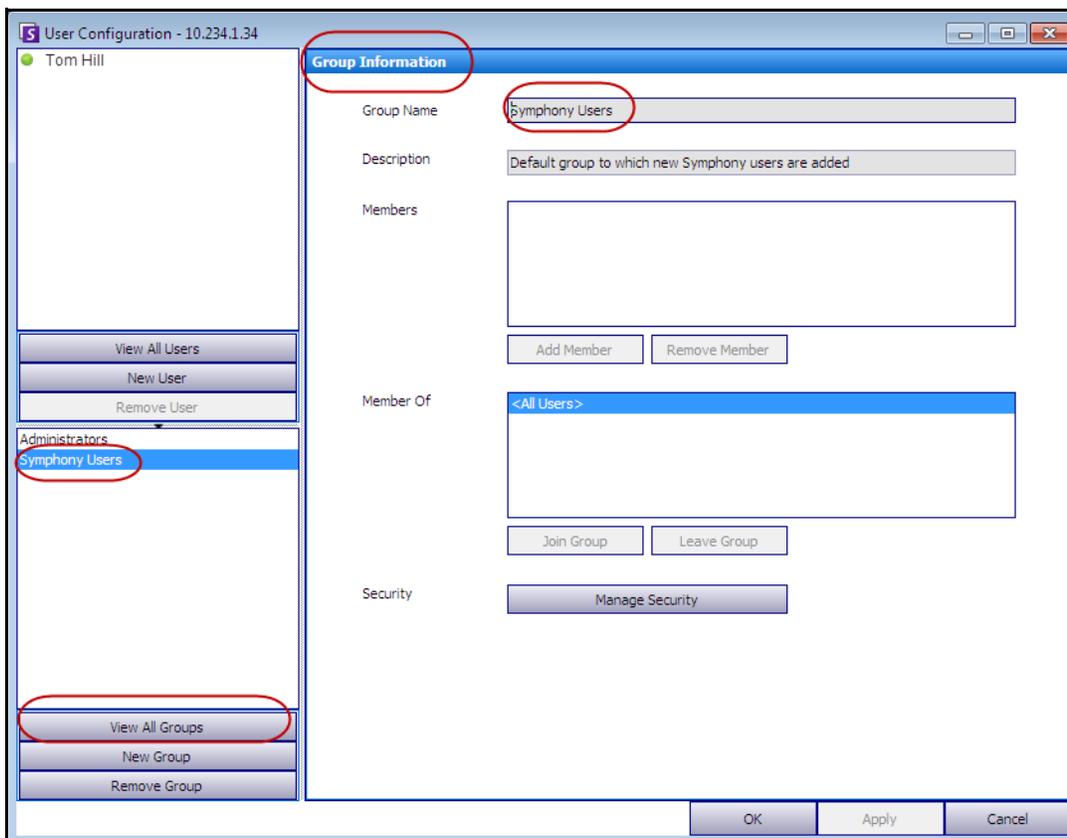


Figure 8. Manage Security

Procedure

To modify access rights for a Group:

1. From the **Groups** section, select the name of the group. The **Group Information** is displayed in the right pane.
2. Click **Manage Security**. The **Security Configuration** dialog box opens.
3. From the **Security Profiles** drop-down box, select the profile for which you want to modify privileges. (For background information, see [“Managing Security Profiles” on page 23.](#))

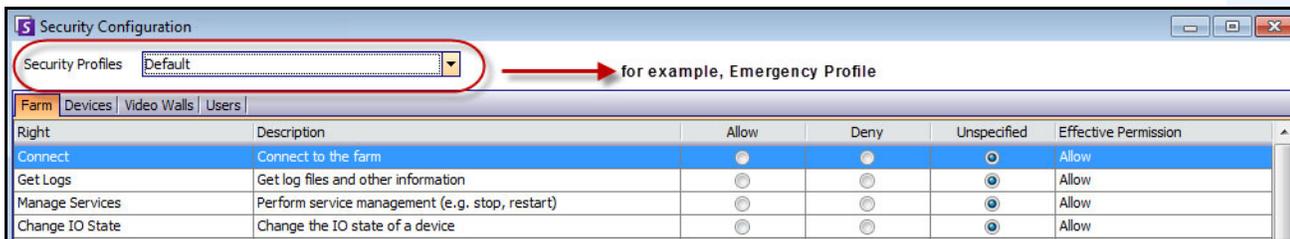


Figure 9. Selecting a Security Profile

4. Select the **Allow**, **Deny**, or **Unspecified** option for each **Right** (see [Figure 10 on page 31](#)).
 - **Farm** tab defines access rights for core functionality that is not specific to a camera or other resource; for example, whether a user can connect to the farm, or export video.
 - **Devices** tab defines user permissions that can be defined for device; for example, whether a user can view the live feed or change the configuration for a specified camera.
 - **Video Walls** tab defines user permissions that can be defined for video walls; for example, whether a user can move a window in the video wall, or edit a video wall layout.
 - **Users** tab defines user permissions that can be defined for other users; for example, whether a user can view or edit the properties of another user or group.
 - The **Effective Permission** column calculates the access granted this group for the current functionality. Symphony checks if this group is a member of another group that may restrict access to the resource. For example if the current group allows access but another group of which it is a member restricts access, the effective permission will be **Deny**.
5. Click **Apply** to save changes and then **Close**.

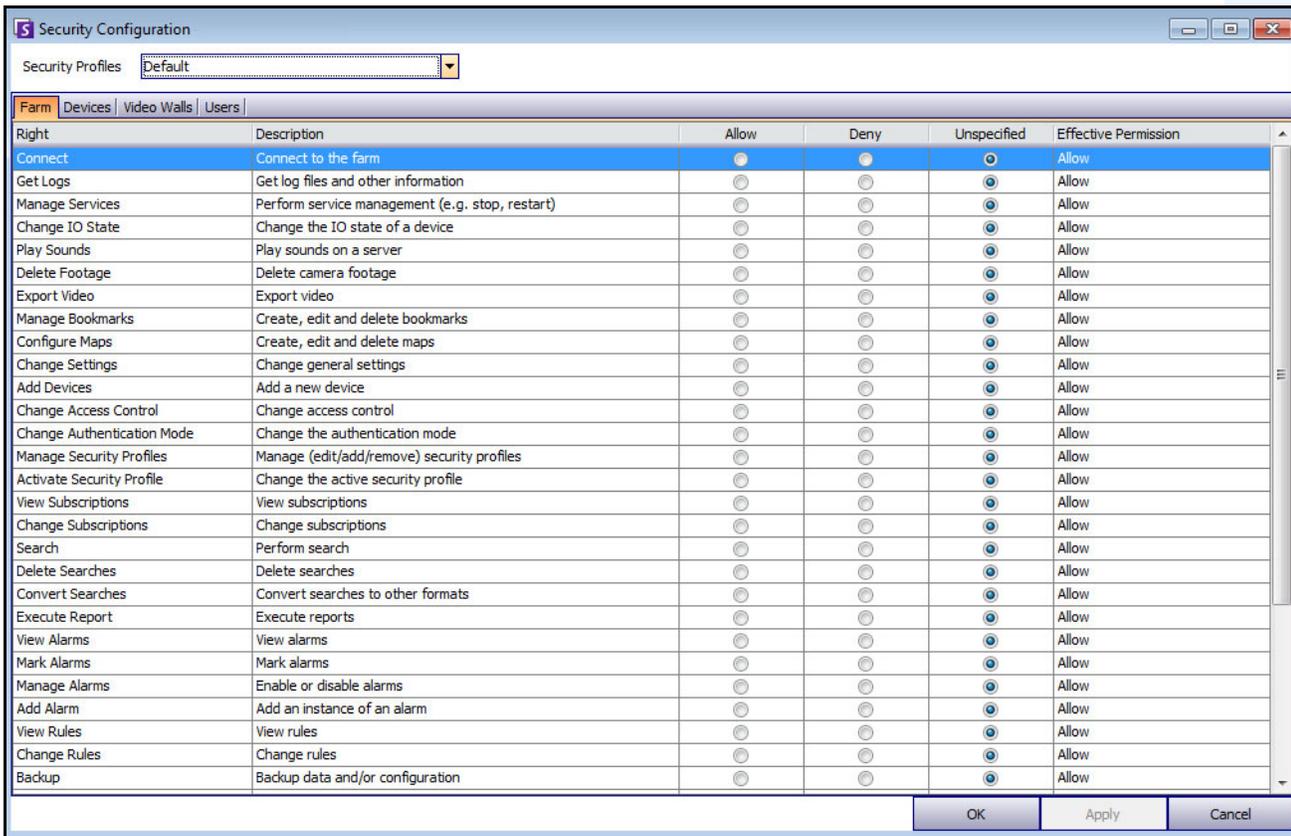


Figure 10. Security Permissions

You can click on the effective permission entry for a given right to display a list of inherited permissions. This helps you determine which group membership is causing the current effective permission.

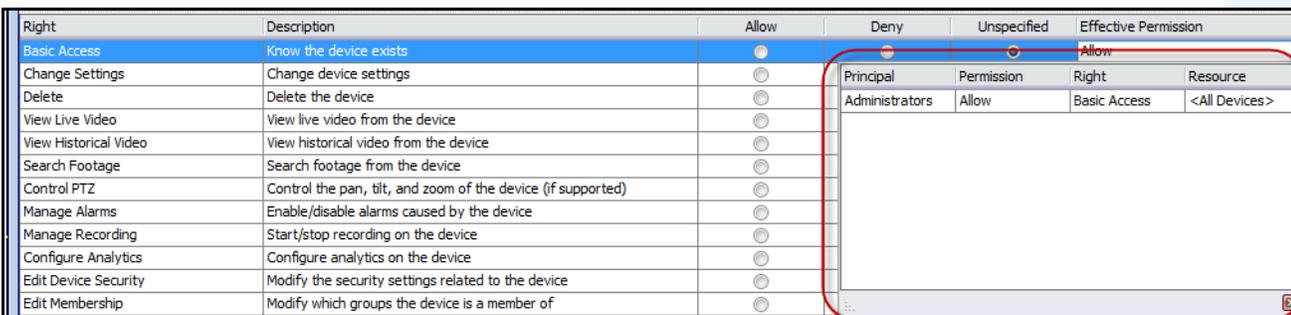


Figure 11. View inherited permissions

Users within Groups and Effective Permissions

Users can be assigned individual security privileges if necessary.

The **Deny** option for any individual user or group overrides **Allow**.

- If at any point there is an explicit **Deny** permission defined between a user/group and the resource/group, permission will be denied.
- If there are no explicit **Allow** or **Deny** permissions, permission will be denied.
- If no explicit **Deny** permissions exist, but there is at least one **Allow** permission, permission will be allowed.

Example 1	
	<p>User A has individual right of Allow, belongs to Group 1 which also has Allow, but is a sub group of Group 2, which has Deny. User A will be Denied the right.</p> <p>User B has individual right of Deny, belongs to Group 1 which has Allow and is a subgroup of Group 2, which has Allow. User B will be Denied the right, irrespective of the group designations (of Allow). Deny is always the effective overriding permission.</p>

Associating Groups with Active Directory

When the Active Directory authentication is enabled, groups can be optionally associated with Active Directory groups. Associating groups with Active Directory may be beneficial in large organizations with an existing Active Directory hierarchy. Once the associations have been defined, Symphony is periodically synchronized with Active Directory to ensure that the group relationships are equivalent.

Procedure

To associate a group with Active Directory groups:

1. In the **Group Information** dialog box, click the **Associate** button. The **Active Directory Search** dialog box opens.



Figure 12. Active Directory options

2. Use the search feature to find and select the Active Directory group to associate. If groups are associated with Active Directory, group membership is automatically synchronized.

Managing Users

Users are managed from the **User Configuration** dialog box. The following information is stored about a user:

- Name, password, email, phone, description
- Priority (higher priority has control of PTZ camera) PTZ priority and rule management is configured on a per-user basis, not through Groups.
- Type of User
 - Symphony (basic user with customized restrictions)
 - Administrator (advanced user with customized restrictions)
- Membership in Group (must be a member of at least one group). The security permissions for each user are defined through its Group membership.

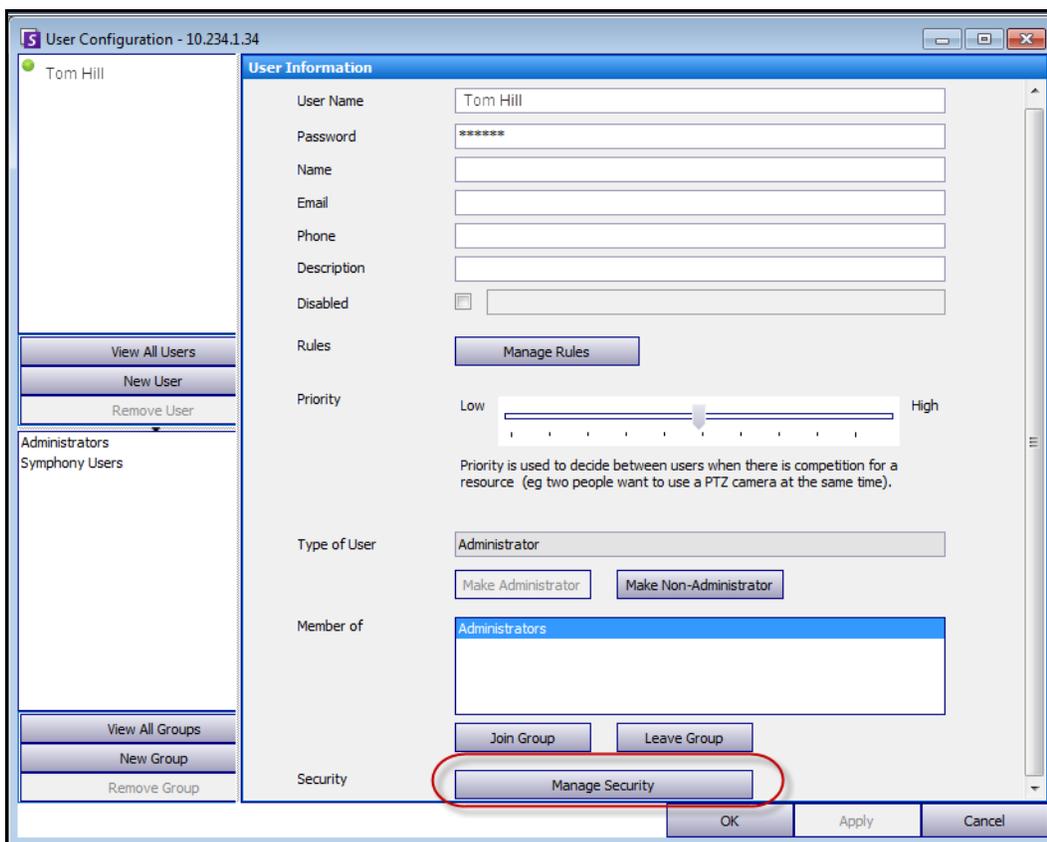


Figure 13. User Configuration dialog box

Procedure

To set up a new user:

1. From the **Server** menu, select **User Configuration**. The **User Configuration** dialog box opens.
2. In the left pane, click **New User**. The **User Information** dialog box opens. By default, the new user is a member of Symphony **Users** and is designated as a Symphony User **Type**.
3. Enter information about the user such as **User Name** and **Password**.
4. Click **Apply**.



Note: If Active Directory mode was defined during setup, no password is stored in Symphony as the Windows domain password will be used.

5. Define the rules for which the user will receive alarms:

By default, the user receives all alarm notifications configured for that user. In some cases, however, users may not want to receive alarms for particular rules, despite having access to the camera.

 - a. Click **Manage Rules**. The **Rule Configuration** dialog box opens.
 - b. Select or clear the rule check boxes as necessary and click **Ok**.
6. Using the **Priority** slider in the middle of the dialog box, assign **High** or **Low** priority access for your user. For example, a user with higher priority gets control of PTZ camera when two users want to access the camera.
7. To define access rights for this user, select the appropriate group in the **Member Of** section.
8. Click **Apply** to save changes and then **Close**.



If you upgraded from Symphony v6.2 to v6.7, note that the **Priority** slider settings for PTZ control is now very simple. Users with a high priority should be set to **High**. Users with a low priority should be set to **Low**.

Active Directory Authentication

When Active Directory authentication is enabled, each user in Symphony must have a corresponding Active Directory user. The **Check Active Directory** button is enabled only when Active Directory authentication was enabled in the **Setup Wizard** (see **Installation Guide**). When the **Check Active Directory** button is clicked, Symphony attempts to find the closest match to the text currently typed into the **User Name** field.

- If there is only one match, the **User Name**, **Name**, and **Description** fields will be populated from the corresponding fields in Active Directory.
- If there are no matches, or multiple matches, the **Active Directory Search** dialog box will be displayed. This allows you to find the appropriate Active Directory user to associate with the Symphony user.

Advanced Information - Active Directory Associations

Before reading this advanced level information, ensure that you have reviewed the information in the following sections:

- [“User Authentication” on page 25](#)
- [“Configuring User Access” on page 26](#)
- [“Understanding User Groups” on page 27](#)

Authentication Mode Set to Active Directory (in Installation Setup Wizard)

When the authentication mode is set to Active Directory, Symphony users are tightly bound to their Active Directory information.

- When creating a new user in Symphony, the user must have a corresponding Active Directory user designation. (See [“Active Directory Authentication” on page 34](#)).
- Users with no Active Directory association cannot be authenticated. The user properties of unassociated users, however, are still modifiable.

Synchronizing with Active Directory

On a periodic basis, certain user attributes are synchronized with Active Directory, and thus these properties cannot be modified manually.

The following properties are synchronized with Active Directory:

- User Name, Full Name, and Description.
- Group membership except for Administrators. Users in the **Administrator Group** are only in the Administrator group.



Important: Passwords are never stored in this mode, so they cannot be modified.

Logging on to Symphony if your user does not exist in Symphony

- If authentication mode is Symphony, logon will fail because the credentials cannot be authenticated.
- If authentication mode is **Active Directory** - after the credentials have been successfully authenticated against Active Directory - a new Symphony user is created and associated with the specified Active Directory user. This user is added to the Symphony Users group, and thus inherits all security permissions from that group.

Groups Associated with Active Directory

When the authentication mode is set to Active Directory, groups can optionally be associated with Active Directory groups. Groups with Active Directory associations have their group membership periodically synchronized with Active Directory.

Example 2	
	<p>Symphony Group A is associated with Active Directory group 1 Symphony Group B is associated with Active Directory group 2</p> <p>If group 1 is a member of group 2, then Symphony Group A will become a member of Symphony Group B when group membership is synchronized.</p>

Table 4. Restrictions on Symphony Groups

Membership	Symphony Group	Symphony Group with Active Directory Association
Member of another Symphony group	Allowed	Allowed
Member of another Active Directory group	Not-allowed	Allowed
Explicitly leave an Active Directory group		Not-allowed
Explicitly join an Active Directory group		Not-allowed

Periodic Synchronization

Periodically (daily, at 11:59 pm), Symphony is synchronized with Active Directory. The process is as follows:

1. User associations are verified and updated
 - a. For every Symphony user **without** an Active Directory association, we determine if there is a matching Active Directory member (by comparing user name to Active Directory account name).
 - If there is a match we create an association between the two.
 - b. For every Symphony user **with** an Active Directory association, we verify that the Active Directory member still exists.
 - If not, we remove the association.
 - If the association exists, we ensure that the user name, full name, and description in Symphony match the same values in Active Directory.
2. Group membership is updated
 - a. For every Symphony user and group with an Active Directory association, we determine the Active Directory group membership.
 - If group membership has changed in Active Directory, then those changes are applied to the Symphony Group membership. Any non-Active Directory relationships are maintained.

For a visual representation of this process, see [Figure 14 on page 37](#).

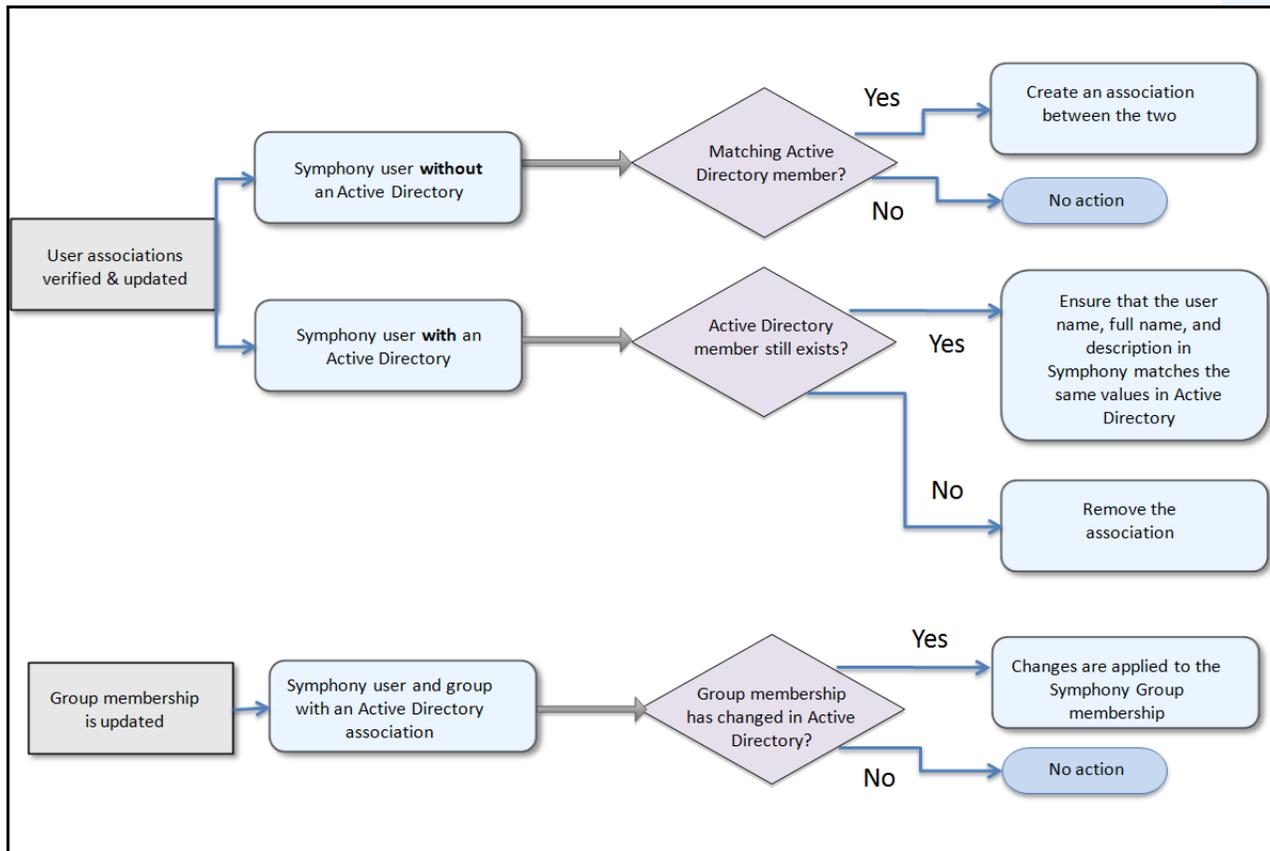


Figure 14. Synchronization Process

When a user joins another Active Directory group:

1. Any changes to Active Directory will not be detected immediately by Symphony.
2. When the daily synchronization occurs, Symphony will detect that the user has joined a new Active Directory group.
3. The server will then attempt to find a matching Symphony group.
 - If a matching Symphony group exists, the user will be added to that group.
 - If not, the server proceeds to recursively check all the parents of the Active Directory group, trying to find a match with Symphony groups. The operation continues up each parental line until either:
 - a. an associated Symphony group is found, or
 - b. there is no parent to check.

This operation ensures that the Symphony group membership matches the Active Directory group membership as closely as possible.

Using the Camera Tree

The Camera Tree is the default method of navigating in the user interface of Symphony Client between cameras. Like tree or folder organization of files in common Windows applications, all cameras are listed in a specific order. In Symphony Client, the cameras are listed in order of camera ID. Each camera has a unique ID and is set automatically by the system as cameras are added.

Procedure

To display the camera tree:

- From the **View** menu, select **Camera Tree**. The **Camera Tree** can be docked to the main console, or undocked and dragged to any monitor.

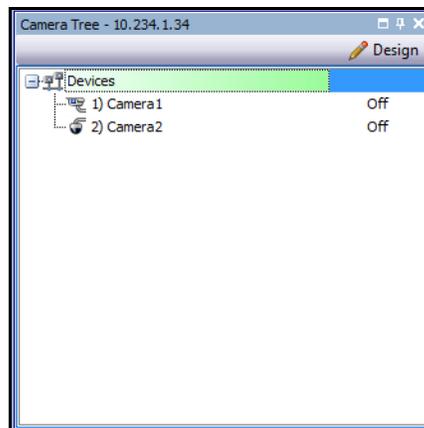


Figure 15. Camera Tree - How camera IDs are organized

Customizing the Camera Tree

Procedure

To customize the Camera Tree:

1. Access the **Camera Tree** panel one of the following ways:
 - From the **Server** menu, select **Device Tree Configuration**. The **Device Tree Configuration** dialog box opens.OR
 - From the **View** menu, select **Camera Tree**. Click the **Design** button in the right corner of the **Camera Tree** dialog box. The **Device Tree Configuration** dialog box opens.
2. To add a folder to your camera tree, click **Add**.
3. To delete the currently selected object, either a camera or folder, click **Delete**.
4. Click **Options** in the upper right corner of the dialog box. You can select or clear the **Show Device Icons** and **Show Device Numbers** check boxes to modify the display of these items.
5. To add a camera to the tree, select a camera from the right pane. Drag and drop it with your mouse in the left pane.



Note: The Device Tree can be automatically generated and maintained from an external source. In this scenario, Symphony needs to query the source for changes in the camera tree structure. Define the time interval to query the source in the **Device Tree Synchronization** found in [“Managing General Settings” on page 66](#).

Using Maps

Symphony allows you to upload an image (jpg, gif or bmp file) to be used as a map (visual representation) of your camera configuration.

- [“Viewing a Map”](#)
- [“Adding a Map” on page 41](#)
- [“Deleting a Map” on page 41](#)
- [“Placing Cameras on Maps” on page 42](#)
- [“\(Optional\) Creating Map Hot Spots” on page 43](#)
- [“Icons on Map” on page 45](#)
- [“Adding Rules to Maps” on page 47](#)
- [“Adding Digital Input and Output to Maps \(ADAM hardware devices only\)” on page 49](#)
- [“Customizing Digital Input and Output Names” on page 52](#)
- [“Digital Input Context Menu” on page 53](#)
- [“Digital Output Context Menu” on page 54](#)

Viewing a Map

Procedure

To display the map:

- From the **View** menu, select **Map Navigation**. Any maps already in your system are displayed. Use the left and right arrows to scroll through all maps.

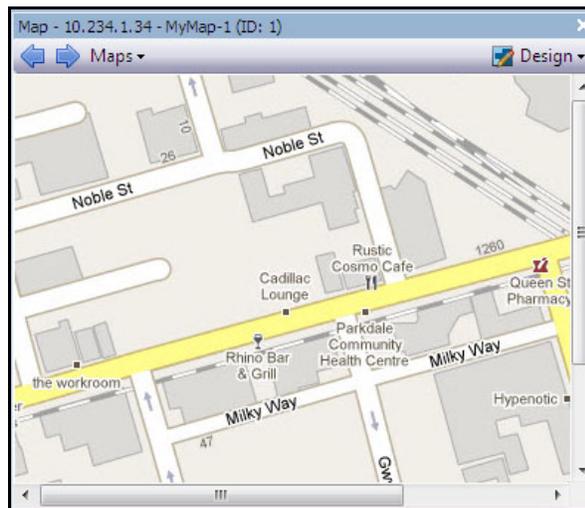


Figure 16. Map

Adding a Map

Procedure

To add a map:

1. From the **View** menu, select **Map Navigation**.
2. In the upper right corner of the **Map** dialog box, click **Design** and then **Edit Maps**. The **Map Configuration** dialog box opens.
3. Click **New Map** and then browse for the image file you want to use for the new map (jpg, gif or bmp) and click **Open**.
4. The map is displayed. Click **Apply** and then **Ok**.

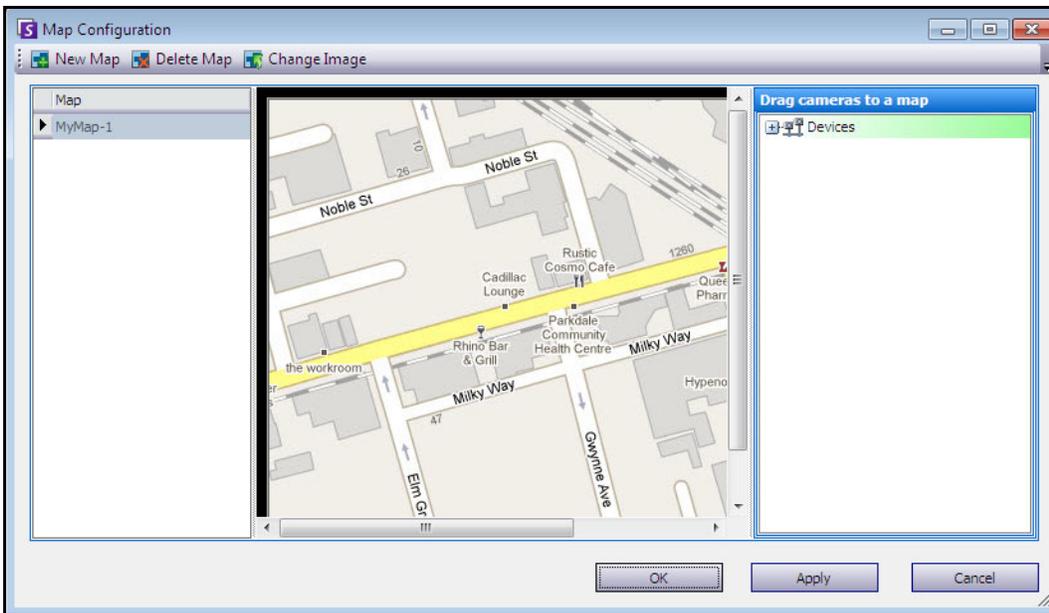


Figure 17. Map Configuration dialog box

Deleting a Map

Procedure

To delete a map:

1. From the **View** menu, select **Map Navigation**.
2. In the upper right corner of the **Map** dialog box, click **Design** and then **Edit Maps**. The **Map Configuration** dialog box opens.
3. Under the **Map** column heading, select the map you want to delete.
4. Right-click and select **Delete this Map**. (Alternatively, click the **Delete Map** button.)
5. Click **Apply** and then **Ok**.

Placing Cameras on Maps

Procedure

To place cameras on the Map:

1. From the **View** menu, select **Map Navigation**.
2. In the upper right corner of the **Map** dialog box, click **Design** and then **Edit Maps**. The **Map Configuration** dialog box opens.
3. From the right pane listing the cameras, drag and drop your cameras to the map with your mouse. (Cameras are not added to the map by default.)
4. Right-click on a camera on the map and select **Rotate Map Icons** to position the camera angles as required.
5. Click **OK** to save settings.

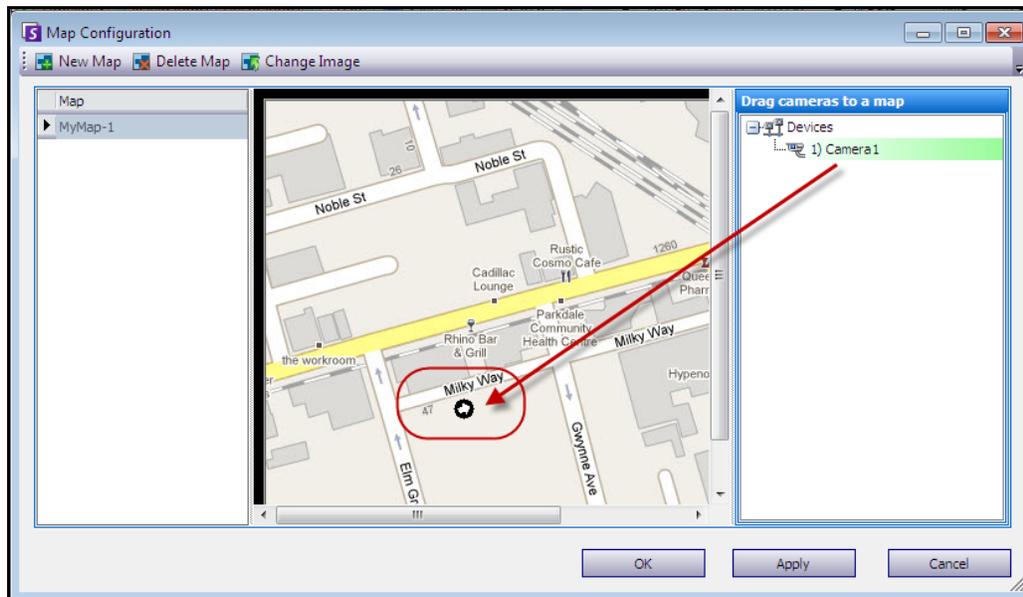


Figure 18. Drag cameras onto the map

(Optional) Creating Map Hot Spots

In larger sites where you want to have more than one site map, you can layer maps by creating linked hot spots. For example, you can have one main site map where hot spots link to a zoomed-in image (another map) of a particular area on the site.

Procedure

To create map hot spots:

1. From the **View** menu, select **Map Navigation**.
2. Scroll through the maps to select the one which will have hot spots.

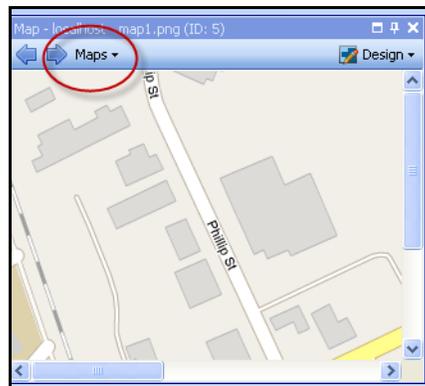


Figure 19. Scroll through maps

3. In the upper right corner of the **Map** dialog box, click **Design** and then **Edit Maps**. The **Map Configuration** dialog box opens.
4. Ensure that you have at least two maps to link. If not, follow [“To add a map:” on page 41](#).
5. In the **Map** dialog box, click the **Design** button and select **Create Map Link**. The **Create Map Link** dialog box appears.
6. Select a destination map from the list of maps in the right pane.

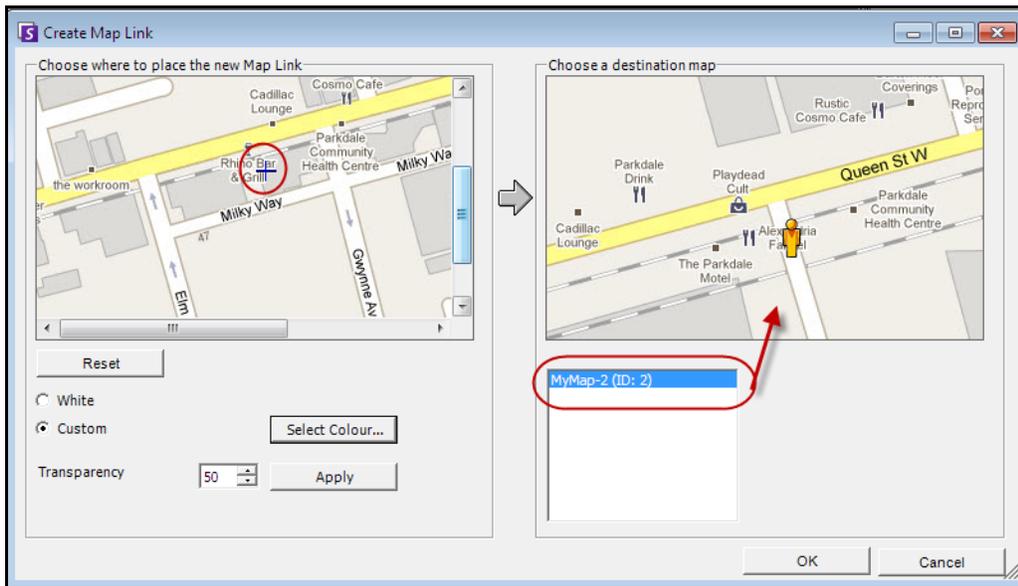


Figure 20. Destination map selected in the Create Map Link dialog box

7. You must now set the top left and bottom right boundaries of the map link using the map in the **Map Link** pane on the left. (When Symphony Users click this hot spot, the map on the right pane will be displayed.)
 - a. Click the map in the **Map Link** pane to mark the top left corner of the link.
 - b. Click the map in the **Map Link** pane to mark the bottom right corner of the link.
 - c. Select the colour or transparency of the hot spot and click **Apply**.
8. Click **OK**. A message appears indicating the map link was created successfully. The red rectangle illustrates the map link.

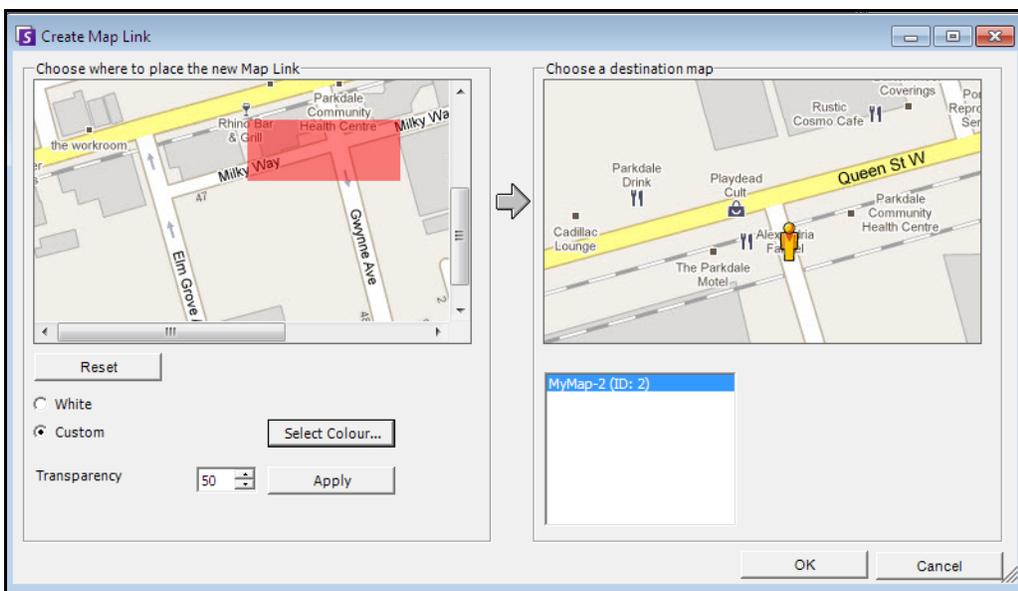


Figure 21. Area of the hot spot on the map

Icons on Map

Use the following legend to understand the icons placed on maps.

Table 5. Map Icon Legend

Icon	Icon Description	Represents	Colours Indicate
	Filled in circle	Rule on a camera	You can set colours to indicate various states as necessary
	Triangle pointing up in circle	Digital Input (e.g., person presses a button, which causes an appropriate action in the system)	Green arrow, white background - not activated Green arrow, yellow background - activated
	Triangle pointing down in circle	Digital Output (e.g., motion sensor detects motion and closes a gate)	Green arrow, white background - not activated Green arrow, yellow background - activated
	Circle containing an arrow	Camera	Green arrow - recording Orange arrow - activity Red arrow - alarm Orange circle - camera currently selected
	Box around a circle containing an arrow	PTZ Camera	Green arrow - recording Orange arrow - activity Red arrow - alarm Orange circle - camera currently selected
	Door	Access control device (e.g., key card or key fob)	Green - access granted Red - access denied

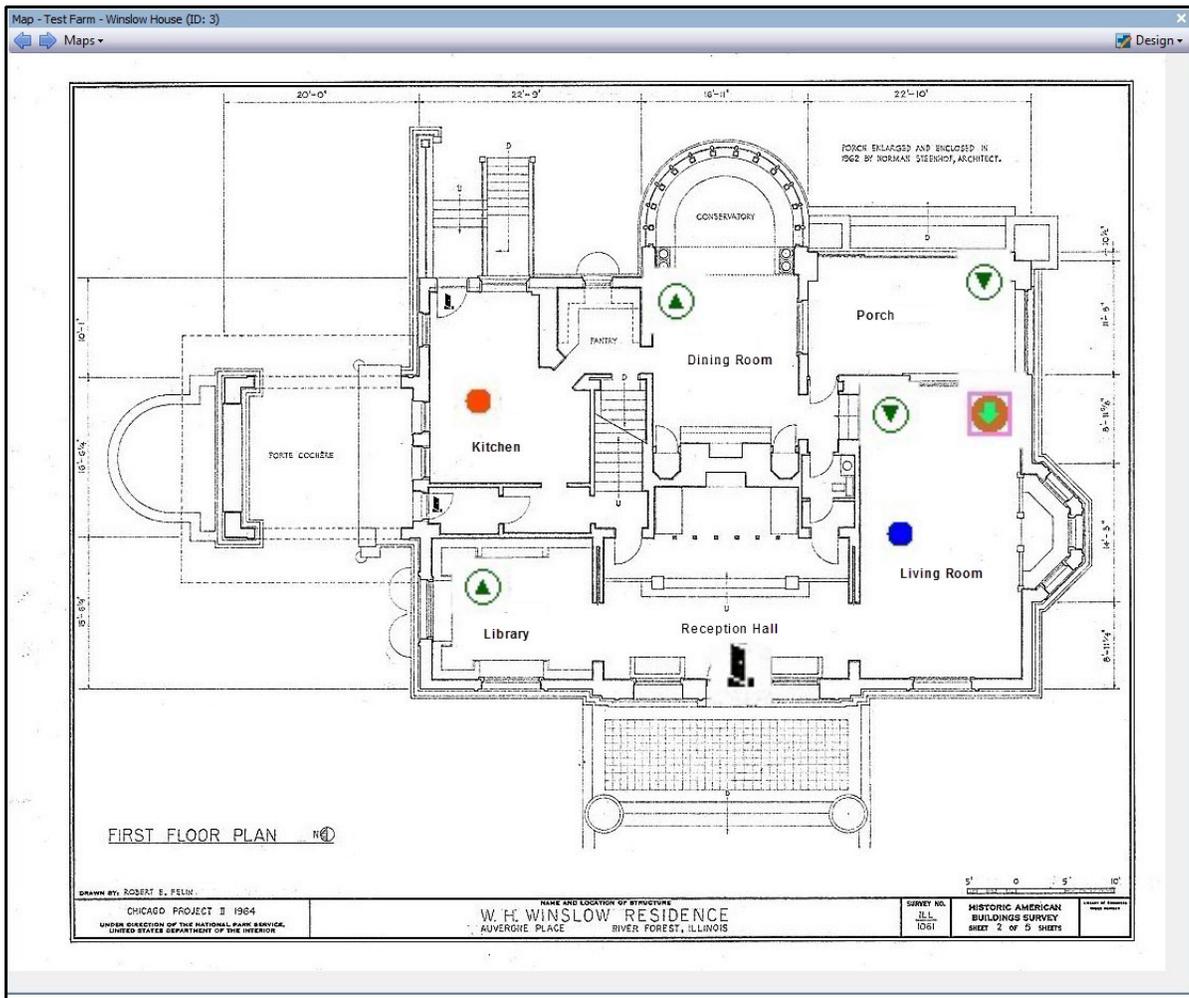


Figure 22. Example of a typical map with camera, PTZ camera, digital I/O, and control access device icons, and rules

Adding Rules to Maps

Every Rule on Map must be associated with a camera or a device. The Rule on Map icon helps emphasize alarm notification by either flashing for 10 seconds at every new alarm, or by flashing until security personnel mark the alarms as real/false/actionable.

Because you can always create more than one rule for the same camera, with Rules on Maps, you can see exactly which rule is triggered. The name of the rule is displayed when hovering over a map.

Any rule created for a server in the active server farm in the **Rules Wizard** will be listed in the **Rules** tab of the **Map Configuration** dialog box. For more information on the creating rules, see [“Rules - Using the Rule Wizard” on page 177](#).

A Rule can be used in the following ways:

- Added to multiple maps.
- Added to the same map more than once.
- Moved to another location on the same map.
- Removed from a map.

Alarms function as follows:

- Only alarms that appear in the **Alarm Log** will appear on the map. (If you start the Symphony Client and there are pre-existing unacknowledged alarms loaded, the map will display flashing alarm icons (if this has been configured).
- When you left-click on the rule icon, the Symphony Client will display the last unacknowledged alarm JPEG for the associated camera (the first camera if there are multiple cameras).

A Rule on map reflects the current state, configurable by user:

- Option 1: Flashes if any alarms are unacknowledged; otherwise, remains invisible. Once you have acknowledged all alarms (related to that rule), the rule disappears from the map.
- Option 2: Flashes for 10 seconds when a new alarm occurs; otherwise, remains invisible
- These options are available in the **Maps** tab of the **Client Settings** dialog box.
 - From the **View** menu, select **Settings**. The **Client Settings** dialog box opens. Click the **Maps** tab.

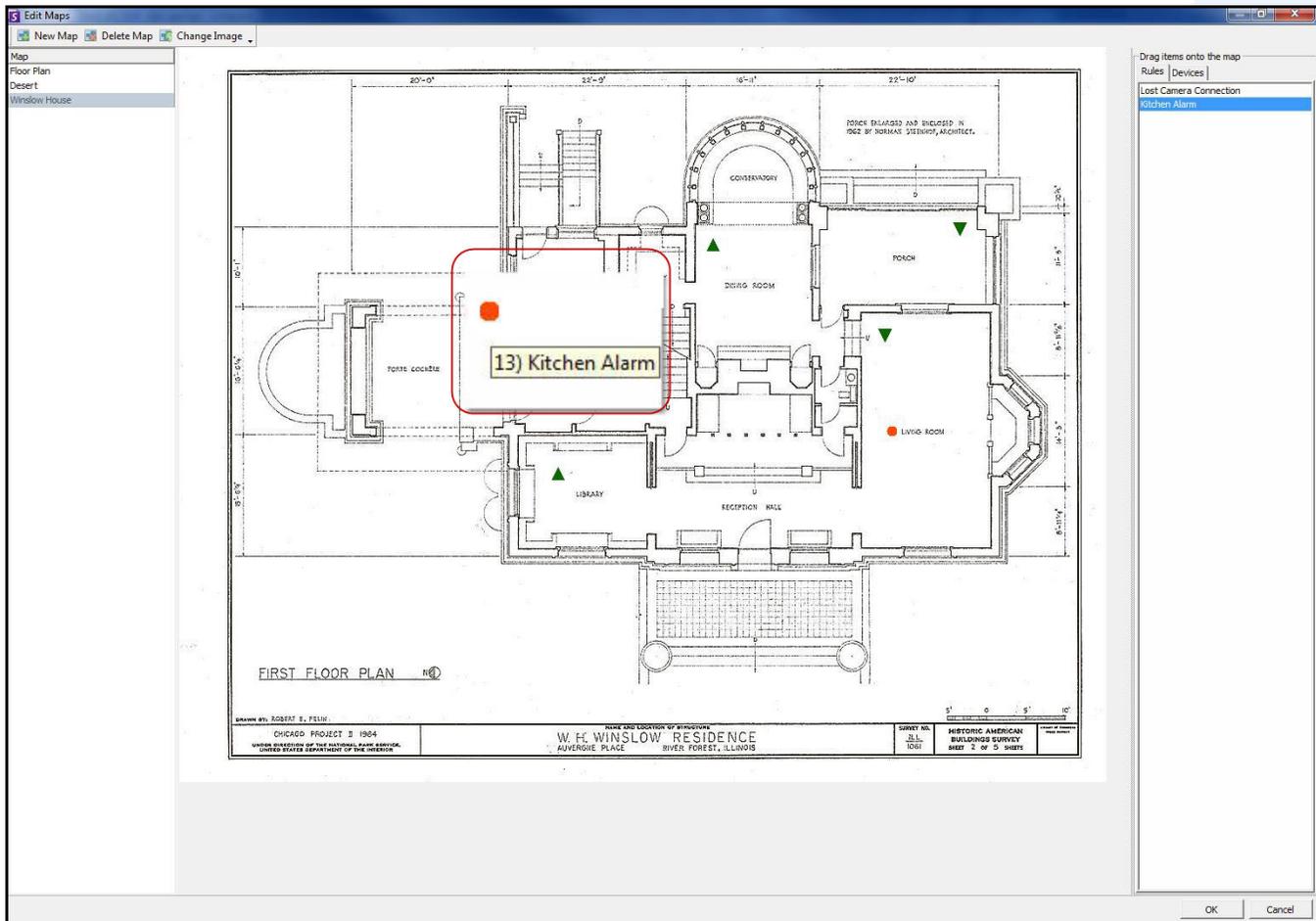


Figure 23. Rule on Map example

Procedure

To place rules on a map:

1. From the **View** menu, select **Map Navigation**.
2. Scroll through the maps to select the one which will have rules.
3. In the upper right corner of the **Map** dialog box, click **Design** and then **Edit Maps**. The **Map Configuration** dialog box opens.
4. Click the **Rules** tab. From the right pane listing the rules, drag and drop your rules to the map with your mouse.
5. Click **OK** to save settings.

Acknowledging Rules on Maps

Procedure

To acknowledge an alarm (rule on map):

1. From the **View** menu, select **Alarm Log** OR click the **Alarm Log** icon on the Menu Toolbar.
2. Right-click on the alarm you want to acknowledge.
3. Select an action to perform:
 - **Mark As Alarm** - To mark as a real alarm without leaving comments.
 - **Mark as False Alarm** - To mark as a false alarm without leaving comments.
 - **Mark as Real Actionable** - To mark as Actionable.

Adding Digital Input and Output to Maps (ADAM hardware devices only)

The **Map Configuration** dialog box contains a **Devices** tab, listing all cameras and digital input and output devices.

You can customize digital input and output names to help identify them.

Icon	Icon Description	Represents	Colours Indicate
	Triangle pointing up in circle	Digital Input (e.g., person presses a button, which causes an appropriate action in the system)	Green arrow, white background - not activated Green arrow, yellow background - activated
	Triangle pointing down in circle	Digital Output (e.g., motion sensor detects motion and closes a gate)	Green arrow, white background - not activated Green arrow, yellow background - activated

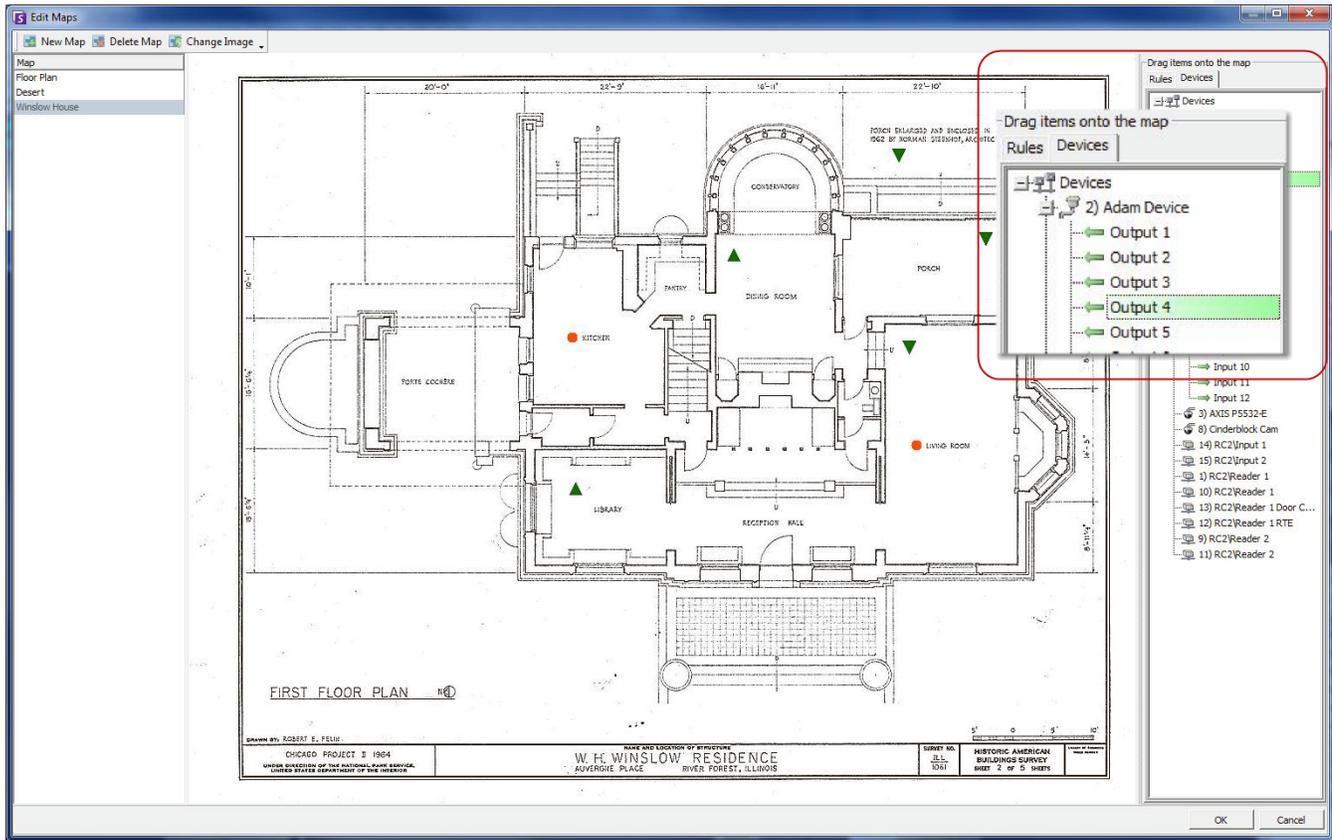


Figure 24. Devices tab with output devices listed

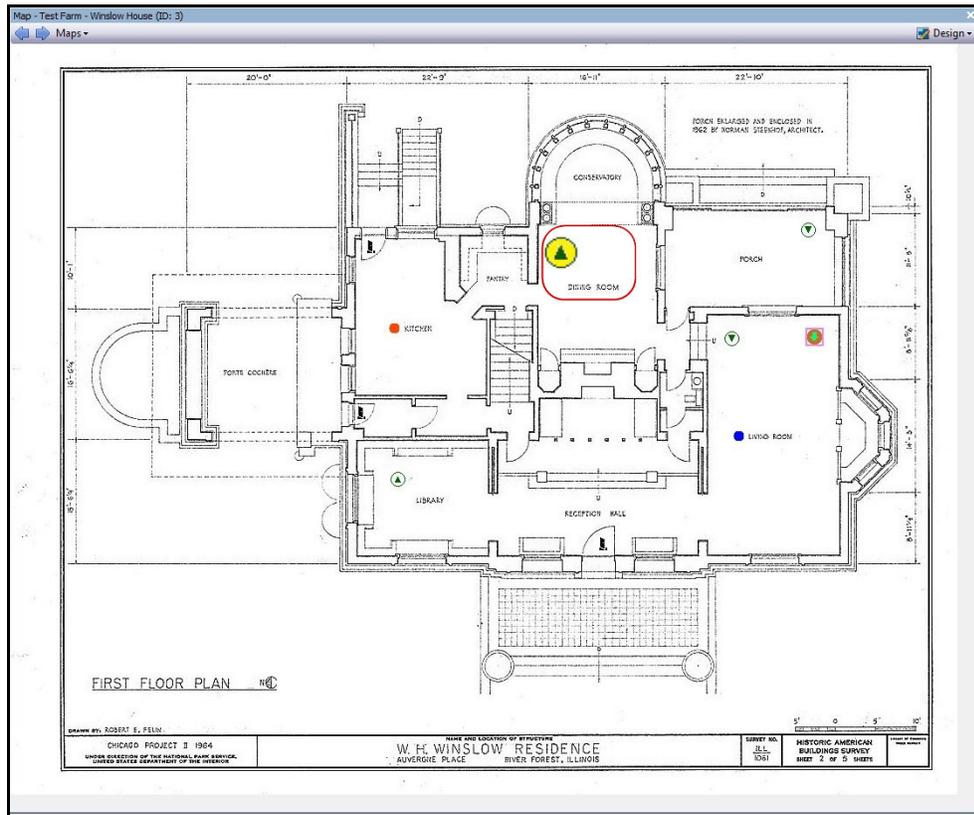


Figure 25. Example of an activated input device on map

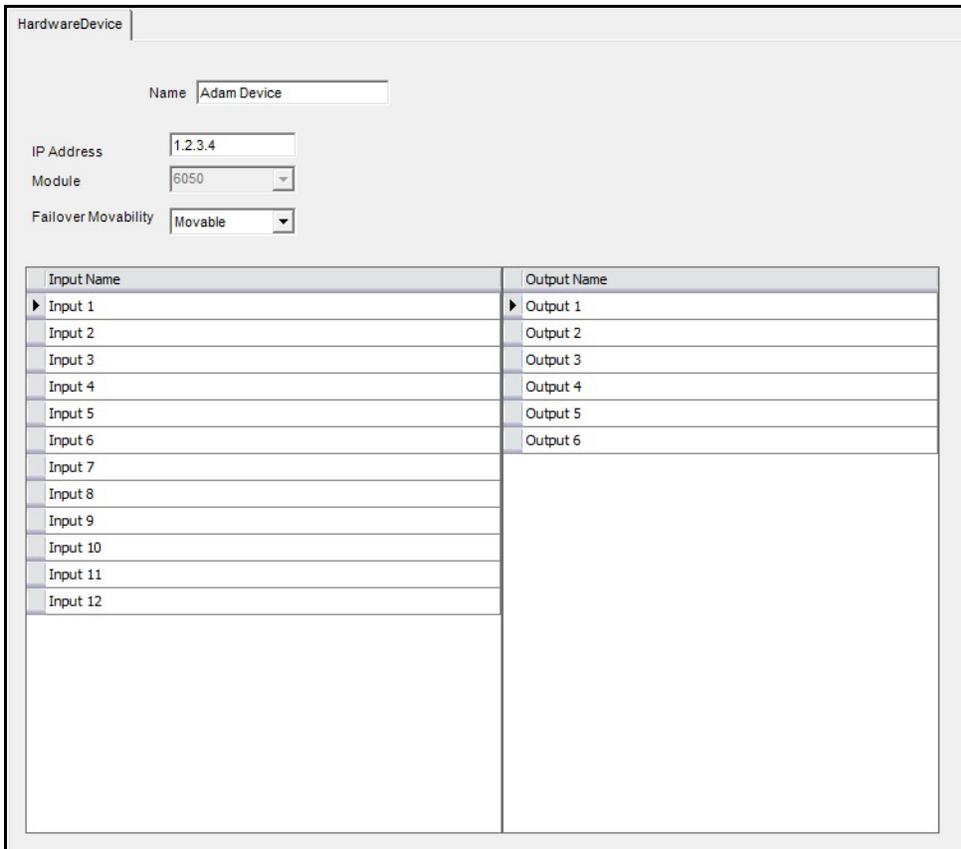
Procedure

To place digital inputs/outputs on the Map:

1. From the **View** menu, select **Map Navigation**.
2. Scroll through the maps to select the one which will have rules.
3. In the upper right corner of the **Map** dialog box, click **Design** and then **Edit Maps**. The **Map Configuration** dialog box opens.
4. Click the **Devices** tab. From the right pane listing the devices, drag and drop the digital devices to the map with your mouse.
5. Click **OK** to save settings.

Customizing Digital Input and Output Names

If this is an initial setup, see “[Device - I/O](#)” on page 20.



The screenshot shows the 'HardwareDevice' configuration window. It includes the following fields:

- Name: Adam Device
- IP Address: 1.2.3.4
- Module: 6050
- Failover Movability: Movable

Input Name	Output Name
▶ Input 1	▶ Output 1
Input 2	Output 2
Input 3	Output 3
Input 4	Output 4
Input 5	Output 5
Input 6	Output 6
Input 7	
Input 8	
Input 9	
Input 10	
Input 11	
Input 12	

Figure 26. Hardware Device tab

Procedure

To customize digital input and output names:

1. Right-click on a device on the map, and select **Setup**. The **HardwareDevice** tab appears for the device type selected in the **Server Configuration** dialog box.
2. Click on each **Input** or **Output** you want to change and enter a new name.

Digital Input Context Menu

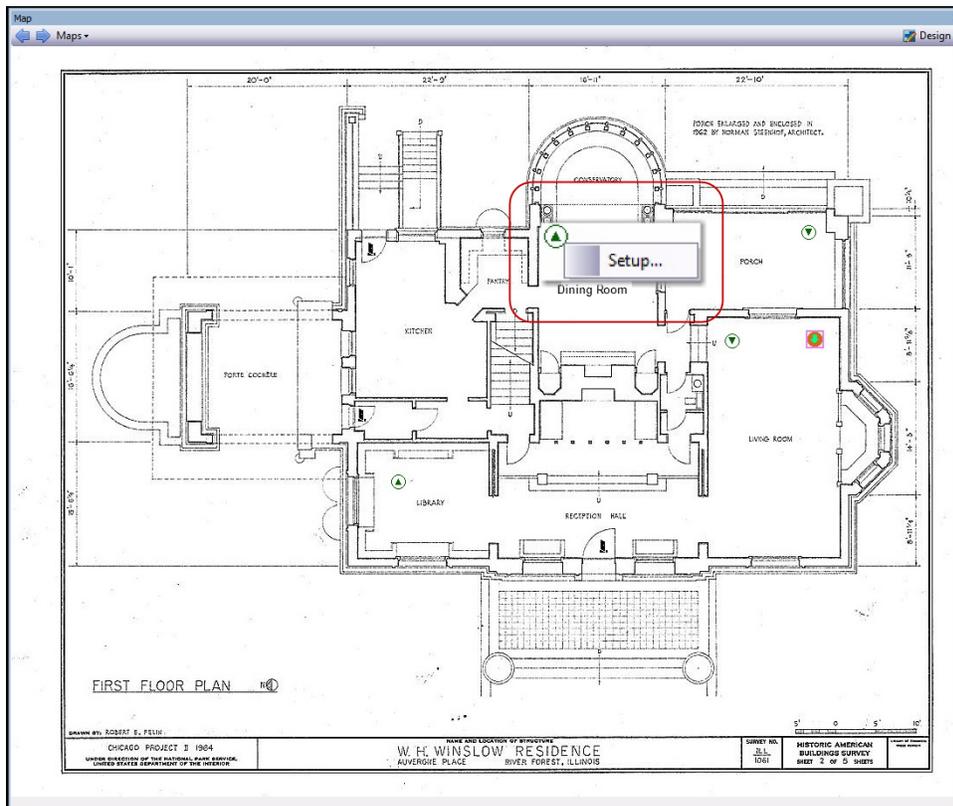


Figure 27. Right-click context menu

Procedure

To set up the input device using the context menu:

1. Right-click on the device. The context menu opens.
2. Click **Setup**. The **Server Configuration** dialog box opens.
3. In the left pane, click **Rules**. The **Rules Summary** opens in the right pane.
4. For further instructions, see [“Rules - Using the Rule Wizard” on page 177](#).

Digital Output Context Menu

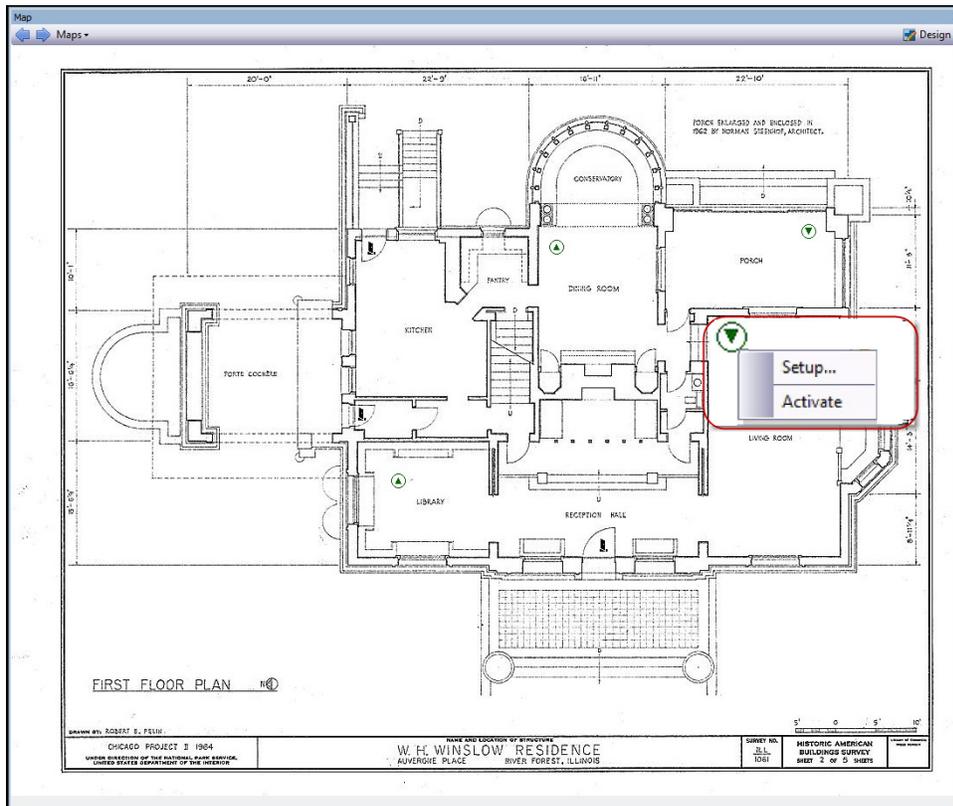


Figure 28. Right-click context menu

Procedure

To set up output device using the context menu:

1. Right-click on the device. The context menu opens.
2. Click **Setup**. The **Server Configuration** dialog box opens.
3. In the left pane, click **Rules**. The **Rules Summary** opens in the right pane.
4. For further instructions, see [“Rules - Using the Rule Wizard”](#) on page 177.

Procedure

To activate output device using the context menu:

1. Right-click on the device. The context menu opens.
2. Click **Activate**. The icon turns yellow.

Customizing Storage Settings

Symphony allows you to customize where video is stored, how much storage to use, and when video should be deleted.

Video and logs should be stored in separate folders. Ideally, no more than 5000 files per folder. We recommend that each camera store its video in its own folder. You can group them in a logical way so that you do not have to manage hundreds or thousands of folders.

Procedure

To view the storage settings:

1. From the **Server** menu, select **Configuration**.
2. Using the tree view in the left pane, select **Storage**. The **Storage Summary** is displayed in the right pane.
3. Click on one of the storage devices in the tree. **Disk Usage Limits** and **Footage Storage** information are displayed. For details, see [Table 6](#).

Table 6. Storage Options

Storage	Task
Disk Usage Limits	
Minimum Disk Space	Specify the minimum amount of free disk space on the hard disk. Symphony starts deleting video as soon as free disk space is below this setting.
Minimum Disk Percentage	Specify a percentage of free disk space to maintain.
Footage Storage	
Limit the number of days video is stored	Specify a global setting (Default max storage days field) or Max Storage Days for each camera in the Footage Storage section. In certain situations, disk space may be available to record more video, but you may want to artificially have the video removed. This may be the case in certain jurisdictions where you are legally required to delete video after a certain time.
Default max storage days (global setting)	If the Limit the number of days video is stored option is enabled, specify the default value in days when video is over written, even if extra hard disk space exists. Alternatively, by adjusting the Max Storage Days value per camera, individual camera settings supersede the global settings.
Keep metadata longer	Specify that metadata can be stored longer than video. This is useful in order to maintain reporting capability.
Default metadata storage days	Specify how long metadata will be stored.
Default path	The default path location where video will be recorded is displayed (as defined at installation). You can adjust the path for an individual camera under the Storage Path column in the camera table.

Managing Server Farms

A Server Farm is a collection of computer servers used to accomplish server needs beyond the capability of one machine. Server farms often have backup (redundant) servers, which can take over the function of primary servers in the event of a primary server failure.

Procedure

To manage your Server Farm:

1. From the **Server** menu, select **Configuration**. The **Configuration** dialog appears.
2. In the left pane, click **Server Farm**. The **Server Farm Summary** is displayed in the right pane. The server named displayed in bold is the Master server.

Farm Setup

You can create a server farm two ways:

- One at installation - refer to the **Aimetis Symphony Installation Guide**.
- By merging existing farms into a single farm - See "[Creating a Farm from Multiple Existing Farms](#)"

Creating a Farm from Multiple Existing Farms

The following steps will create a multi-server farm from 2 or more existing farms.

Procedure

To create a multi-server farm from existing farms:

1. Save configuration settings for each server:
 - a. If upgrading servers, save configuration settings for each server.
 - b. When uninstalling, select the **Save Settings** option.
 - c. Ensure all servers are installed as or upgraded to the same version of Symphony (6.2 or later).
2. On all servers enable SQL remote access. For instructions, see, <http://support.microsoft.com/default.aspx?scid=kb;EN-US;914277>
3. Choose one server to be the master, for example, Server A.
 - a. On the Aimetis Xnet web account, select the **Servers** link from the left panel.
 - b. Click on Server A's ID to launch the **Server Settings** page.
 - c. The ID for server A will now be considered the Farm Id. All other servers and their ID's will become void once they are in the Farm.
 - d. Click the **Add Server to Farm** link to add the MAC addresses of all child servers to server A.
 - e. Refresh the **Settings** page for server A to ensure all MACs have been added correctly.
4. Start Symphony Client and register the farm by [farm name] or server A's IP address or DNS name. From the **File** menu, select **New Symphony Server Registration**.

Figure 29. Register Symphony Server

5. Open the **Server Configuration Licenses** page:
 - a. From the **Server** menu, select **Configuration**. The **Server Configuration** dialog box opens.
 - b. In the left pane, select **Licenses**. The **Licenses Summary** is displayed in the right pane.
 - c. Click the **Refresh licenses from Aimetis.com** button.
6. In the left pane, select **Server Farm**. The **Server Farm** information is displayed in the right pane.
 - If this page is not available it may be because some standard camera licenses exist. Server farms will only work if there are no standard licenses. All camera licenses must be Professional and/or Enterprise.
 - a. In the **Server address** field, enter the IP address or DNS name of a child server to merge into the farm. Do 1 child at a time.
 - b. Click the **Add server from another farm** button. This will add the child to the farm, transfer all cameras and rules from the child server to the farm's database (residing on server A), and change the database connection string on the child to point to server A's database.
7. Restart server A and the child server that was just added.
8. Ensure that all cameras from the child have been added correctly, as well as all rules and masks.
9. Repeat steps **6a** to **8** for remaining servers.

Master Server

At all times one of the servers is deemed Master. The Master takes on the additional task of controlling the operations of a failover. If the Master happens to be the down server, another master is quickly designated to take over the failed master's duties.

Redundant Server

A redundant server is a server currently running 0 cameras. Upon detecting a server as being down, a redundant server is used to replace the down server's camera and device processing in its entirety. Meaning, all cameras will be moved and run on the redundant server. Video loss will be a little as 15 seconds.

To enable redundancy:

- you must have at least 1 redundant server available at all times (one with 0 cameras).
- the redundant server must be in the same **Redundancy Group** as the potential down server.
- redundancy must be turned **On** for that **Redundancy Group**

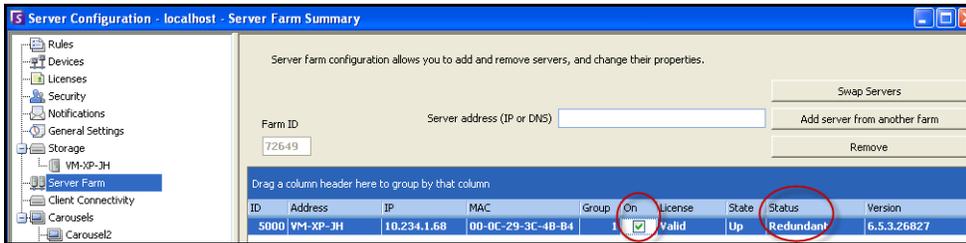


Figure 30. Redundancy for Group is On

Example 3



Server Farm configuration:

If either of the first 2 servers fail, their cameras will failover to the 3rd Redundant server.

ID	Address	IP	MAC	Group	On	License	State	Status
5000	DEV15	10.234.1.35	00-19-D1-56-4A-7C	1	<input checked="" type="checkbox"/>	Valid	Up	4 cameras
5001	10.234.1.58	10.234.1.58	00-1B-77-DF-BC-3B	1	<input checked="" type="checkbox"/>	Valid	Up	2 cameras
5002	Juke1.com	125.53.24.72	AB-CD-EF-GH-IJ-01	1	<input checked="" type="checkbox"/>	Valid	Up	Redundant

Figure 31. Example - All three servers in the same Redundancy Group "1"

If the first server (Redundancy Group 7) fails, no failover will occur, as there is no Redundant server in Group 7.

ID	Address	IP	MAC	Group	On	License	State	Status
5000	DEV15	10.234.1.35	00-19-D1-56-4A-7C	7	<input type="checkbox"/>	Valid	Up	4 cameras
5001	10.234.1.58	10.234.1.58	00-1B-77-DF-BC-3B	1	<input checked="" type="checkbox"/>	Valid	Up	2 cameras
5002	Juke1.com	125.53.24.72	AB-CD-EF-GH-IJ-01	1	<input checked="" type="checkbox"/>	Valid	Up	Redundant

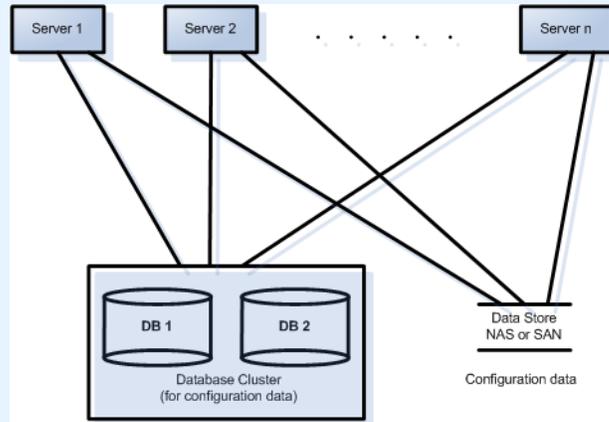
Different Redundancy Groups "1" and "7"

Example 4



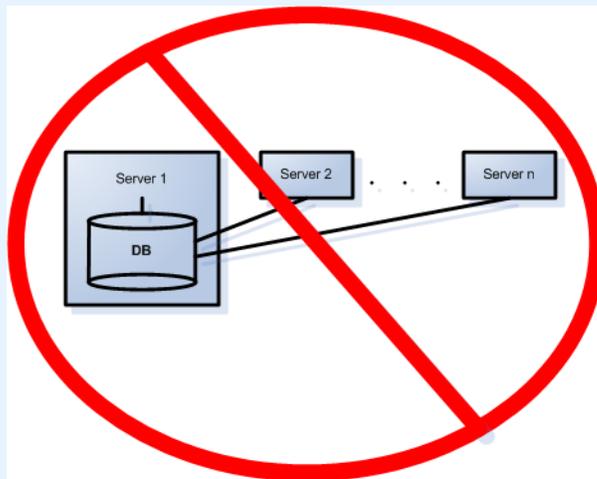
Typical Symphony Server Farm:

This configuration depicts use of an external database cluster for configuration data redundancy, and a NAS or SAN for historical footage file access after failover.



Multi-server Farm with configuration database existing on one of the Symphony Servers:

If server redundancy is a requirement, this is not a recommended setup, since it involves a single point of failure, namely Server 1. If this server fails, configuration is not accessible by the remaining servers.



Redundancy Groups

Due to geographical constraints for file storage, it may be necessary for certain servers to failover only to specific servers. A redundancy group allows you to group your servers such that failover happens only amongst servers within the same group. Ensure that there is at least 1 redundant server within each server group.

Buddy System

A **Redundancy Group** uses a buddy neighbor system where each server monitors the health of its neighbors (or buddies). Each server broadcasts an **Alive** status every second to each of its buddy servers, and each server listens for **Alive** messages from other neighbors. It is a connected graph of neighbors such that if more than one server is **down** there will always be someone to detect them.

Each server runs a monitoring thread that receives UDP socket messages from each of its buddies.

- If the detection threshold time expires without receiving an **Alive** message from a particular buddy, then that server may be **down**. A **possible down server** message is sent to the Master server.
- If more than 1/2 of the buddies notify the Master of this **down** server, it is confirmed to be **down**. In this case a failover camera swapping algorithm takes place to transfer all the **down** server's camera processing to a redundant server if one is available.

Redundancy Configuration Settings

The following are the configurable farm redundancy settings.

Table 7. Configuration Farm Redundancy Settings

Setting	Description
FarmHealthStartDelayMs	On server startup, it will delay by this amount before starting to monitor for one of its buddies being down.
FarmHealthSockTimeoutMs	UDP sockets are used to receive Alive messages from all buddies. Each will have this timeout. (You should not have to change this).
FarmHealthMissedUdpMs	The amount of time in milliseconds a server can be down before it is determined down and failover is performed. Some customers may want this to be several minutes to allow a windows update reboot to perform.
FarmHealthUdpPort	Only change this if failover is not working at all and the is* log files indicate there are port conflicts.

These settings are NOT in the database by default. To add them, use the following lines. The last parameter is the default used.

```
dbupdater "insert into Settings (Type,ID,Section,K,V) values ('Global','','Main','FarmHealthStartDelayMs', '5000')"
```

```
dbupdater "insert into Settings (Type,ID,Section,K,V) values ('Global','','Main','FarmHealthSockTimeoutMs', '1500')"
```

```
dbupdater "insert into Settings (Type,ID,Section,K,V) values ('Global','','Main','FarmHealthMissedUdpMs', '30000')"
```

```
dbupdater "insert into Settings (Type,ID,Section,K,V) values ('Global','','Main','FarmHealthUdpPort', '5045')"
```

Failover

A down server is detected within 30 seconds, but can be configured for any time threshold. Windows operating system updates or other maintenance that cause a reboot may be reason to increase this threshold to several minutes. Failover will transfer all the camera processes from running on the down server to running on a redundant server. It will transfer only cameras that are **Movable** according to the camera configuration as defined in the **Device** settings. Some devices are not movable by nature (USB devices, or analog cameras plugged into a video card on the down server for example). When a down server comes back up, and its cameras have been failed over to another server, it will now be considered a redundant server, since it has no cameras.

Storage

Each server writes its footage and files to one of the following:

1. a data folder on the server itself
2. a logical drive on a SAN
3. a logical drive on a NAS

If method 1 is applied, the footage files for a given camera will exist on the original server up until the failover swap, from which point they will be created on the redundant server.

If method 2 or 3 is applied, the footage files for a given camera will never move. When a failover swap happens, the new server will just point to the data of the down server's logical drive on the SAN or NAS.



Note: Aimetis recommends a NAS in cases where failover is required.

Database Configuration

All configuration settings for an entire farm are stored in a single SQL database. For this reason it is recommended that the database reside on a reliable server in the farm, or better yet on a separate dedicated database server set up with its own redundancy system (such as a Microsoft Windows cluster).

Without a reliable server or dedicated database server, the entire farm will no longer be able to make any configuration changes, and stopped trackers will not be able to restart if the Symphony server that contains the database fails.

All Symphony servers in a farm must be granted access to the centralized configuration database. To enable remote access to the SQL server, refer to the **Aimetis Symphony v6.6 Installation Guide.**)

Symphony Client

The client application can register (connect to) any server in a farm. Upon failover, if the client's registered server is the one that failed, one of the servers will notify the clients that a server is down and the registration will automatically switch to an up server to take future requests.

For more information on Server Farms, consult the Technical Article: Server Farms in Aimetis Symphony.

Configuring a Camera Tour

By default, each Pan-Tilt-Zoom (PTZ) camera has a Home Position, where it is positioned unless a user manually controls the camera, or if the camera is automatically controlled by Symphony (for more information on auto control, see the Rule element Actions). Using the Camera Tour function, the camera can be configured to have multiple Home Positions. This effectively allows the camera to cover more area.

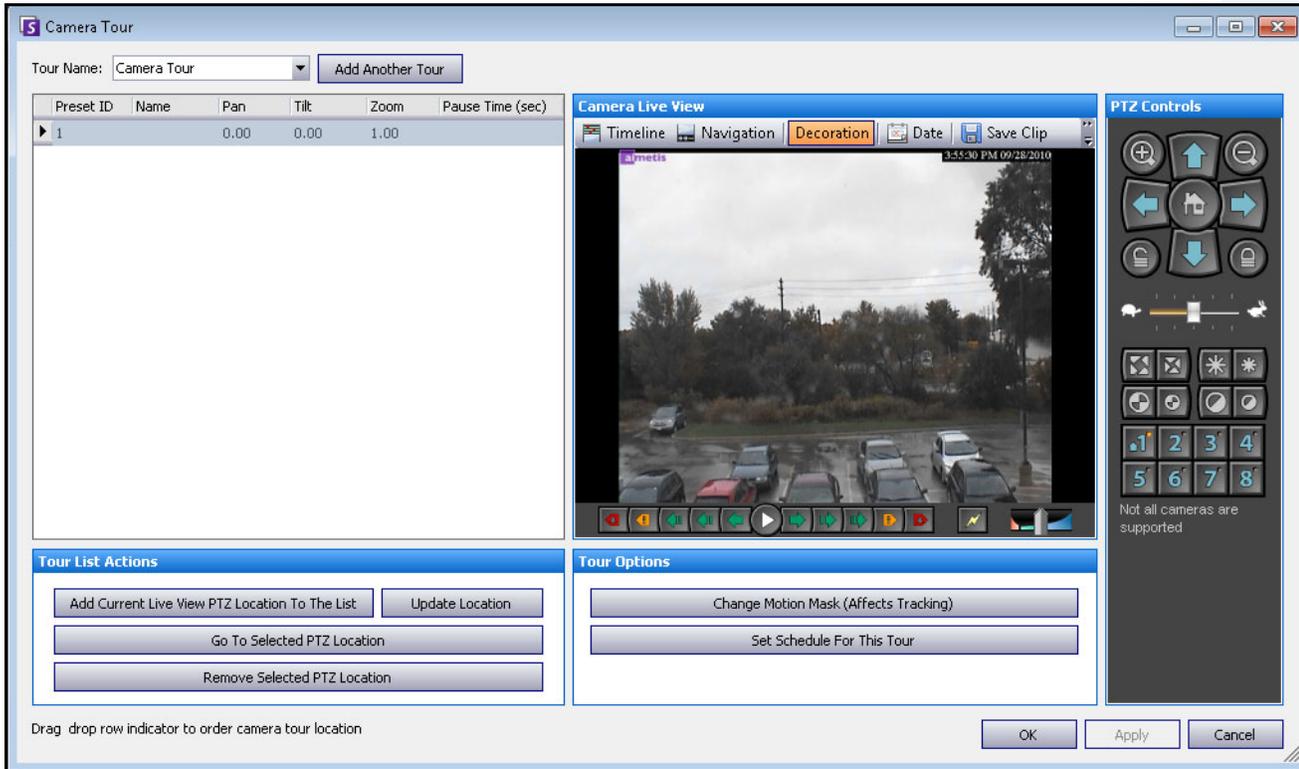


Figure 32. Camera Tour dialog box

Procedure

To configure a Camera Tour:

1. Access your PTZ camera. For example, click on the PTZ camera name in the Camera Tree.

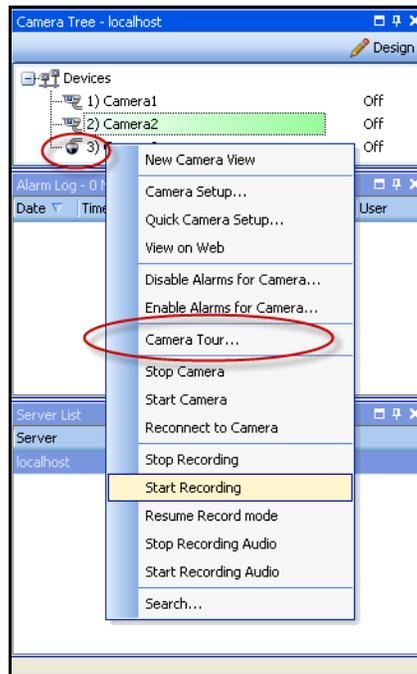


Figure 33. Right-click on the PTZ camera name

2. Right-click on the live view of the camera and select **Camera Tour** and then click **Edit**. from the menu. The **Camera Tour** dialog box opens.
3. From the **Tour Name** drop-down list, select a tour to modify. By default, there is one Camera Tour configuration. You can create multiple Camera Tour configurations with different tour locations and schedules.
4. Using the PTZ controls, move the camera to the desired location by using the arrows, and the **+** and **-** buttons to configure the zoom level.
5. To save location, in the **Tour List Actions** group area, click **Add Current Live View PTZ Location To The List**.
6. By default, Symphony will move the camera between the different locations every 600 seconds. To change this value, modify the value (in seconds) in the **Pause Time** field.
7. To modify the mask an area for the new Camera Tour location, in the **Tour Options** area, click **Change Motion Mask**. The **Server Configuration** dialog box open with the **Devices** listed and the mask tool (eraser icon) tool active.
 - This enables you to define where Symphony should track or not track objects.
 - Each Camera Tour location is much like a separate camera, since it has its own field of view. As a result, must define the **Motion Mask** area for each Camera Tour location. For more information on setting a Motion Mask, see **Masks**.

8. To modify perspective information for the new Camera Tour location (not all video analytic engines require this), click **Change Perspective Settings**. The Camera Tour location requires its own perspective information (to classify objects properly). For more information, see Perspective configuration.
9. To define when this Camera Tour is active, click **Set Schedule for This Tour**. Since many Camera Tours can be configured, you may decide to have a Camera Tour sequence that is different during the day than at night. The **Set Schedule for this Tour** dialog allows you to configure the schedule for this specific Camera Tour. Each Camera Tour can run on a separate schedule. Make sure that Camera Tour schedules do not overlap in time.
10. Click **Apply** to save changes and **OK** to complete the configuration.

Managing General Settings

You can configure various system settings in the **General Settings** dialog box.

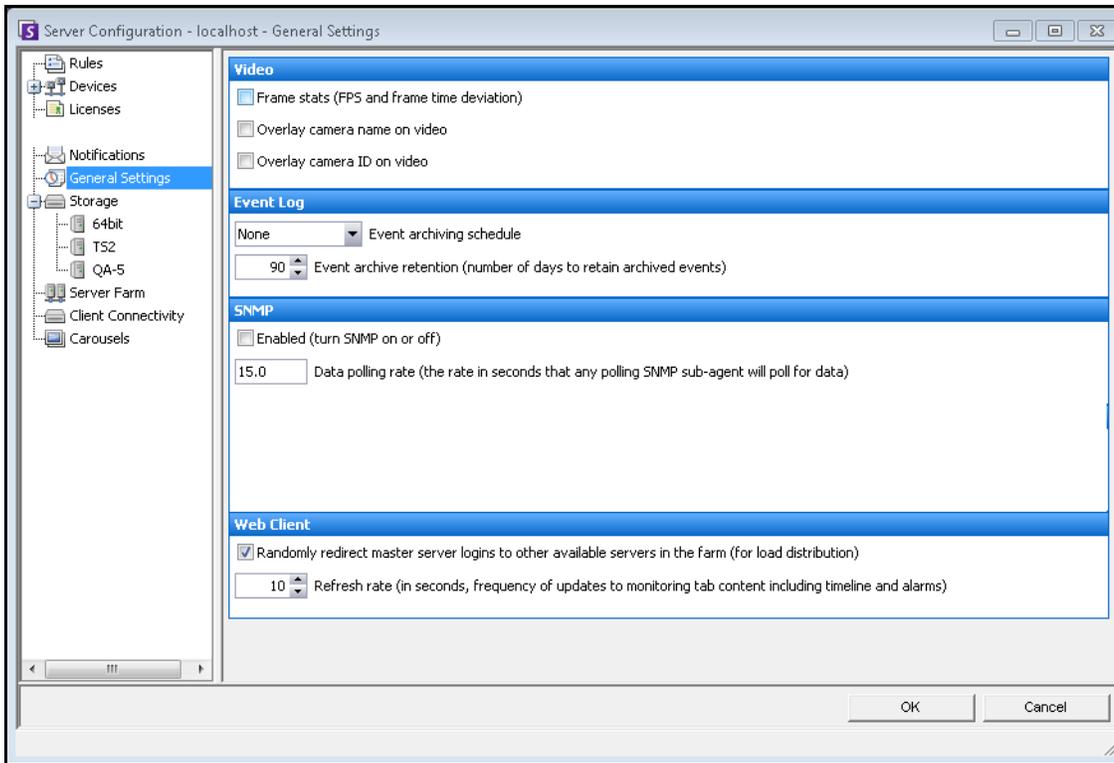


Figure 34. General Settings dialog box

Procedure

To access the General Settings dialog box:

1. From the **Server** menu, select **Configuration**. The **Server Configuration** dialog box opens.
2. In the left pane, click **General Settings**. The **General Settings** dialog box opens in the right pane.

Table 8. General Settings dialog box options

Option	Task
Video	
Frame stats (FPS and frame time deviation)	Select this check box to display frame information on live video
Overlay camera name on video	Select this check box to display camera name on actual live video in addition to video titlebar
Overlay camera ID on video	Select this check box to display camera ID on actual live video in addition to video titlebar
Event Log	
	Schedule archiving
	Define how long events are saved before being over written
SNMP	
	Enable or disable SNMP. For more information visit SNMP section.
	Indicate data polling rate in seconds.
Device Tree Synchronization	
	Define synchronization frequency in minutes for devices. The Device tree can be automatically generated and maintained from an external source. In this scenario, Symphony needs to query the source for changes in the camera tree structure. Define the time interval to query the source in the Device Tree Synchronization field.
Web Client	
	Randomly redirect master server logins to other available servers in the farm.

Specifying Licenses

The **Licenses** dialog box allows you to specify which license to run on which camera.

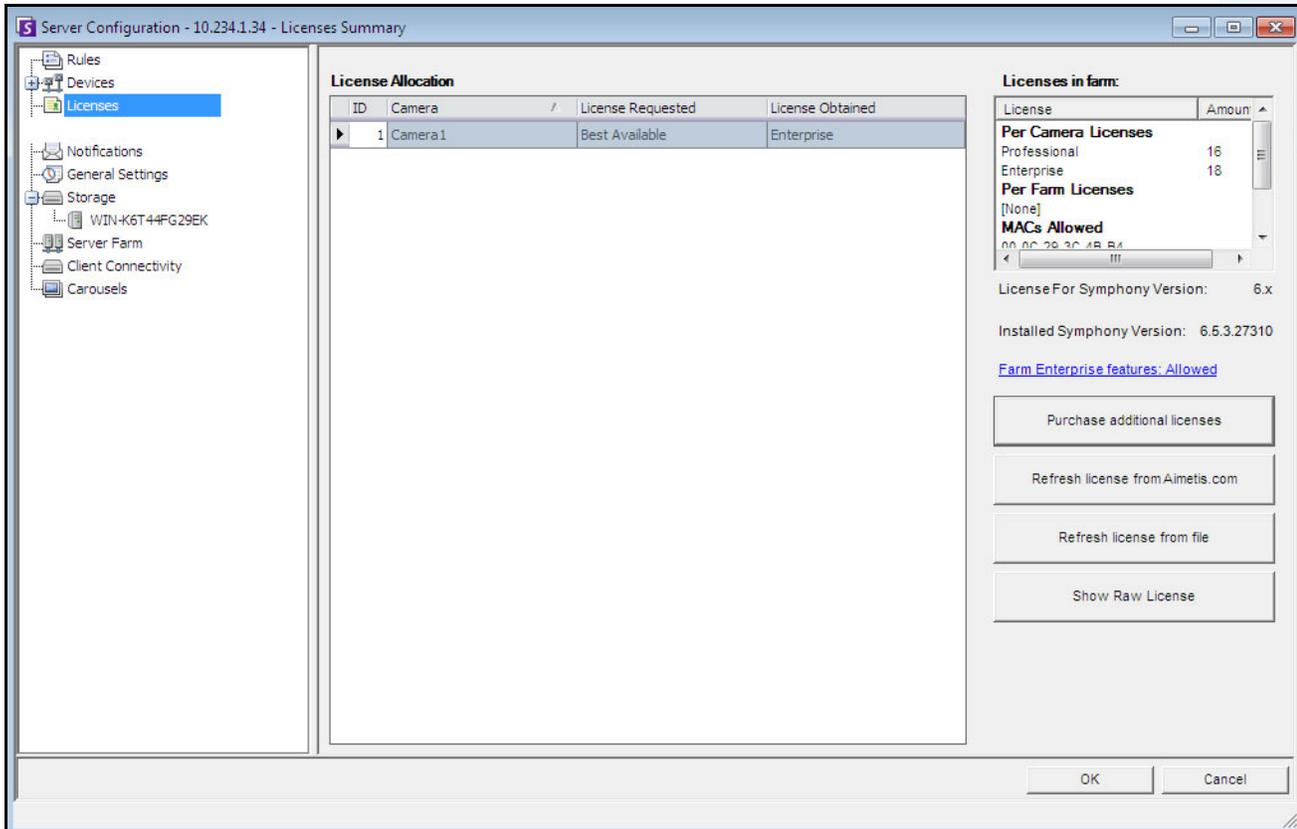


Figure 35. Licenses dialog box

Procedure

To view the License dialog box:

1. From the **Server** menu, select **Configuration**. The **Server Configuration** dialog box opens.
2. In the left pane, select **Licenses**. The **Licenses Summary** is displayed in the right pane. The **Licenses Summary** indicates counts of each license type per server.

Modifying License Settings for a Specific Server

Procedure

To modify license settings for a specific server:

1. From the **Server** menu, select **Configuration**. The **Server Configuration** dialog box opens.
2. In the left pane, select **Licenses**. The **Licenses Summary** is displayed in the right pane.
3. Click on the server in the **Licenses** tree in the left pane. The **Licenses Allocation** for that server appears. It displays how many licenses are available and what type of license is applied per camera.
4. To change License types between cameras, select a licence type from the **License Requested** drop-down field adjacent to each camera. If the **Licensed Requested** field does not equal the **License Obtained** field, this indicates that this license was not available.
5. Click **OK** to save changes.

Table 9. Additional License Tasks

Button	Action
Purchase additional licenses	Links you to the Aimetis Xnet where you can log into your account and obtain additional licenses.
Refresh license from Aimetis.com	If a newer license is available for your server, clicking this button will force Symphony to download the latest license file. (You must have internet connectivity for this option.)
Refresh license from file	If you have a Symphony server without internet access, or are otherwise unable to automatically download a new license, this option allows you to download the license and then manually apply it to the server.
Show Raw License	Displays the raw license in XML.



Note: In a Server Farm, the entire farm shares one license file. All cameras and licenses will be summarized as if it were one physical server.

Using the Manual Configuration Editor

Symphony settings can be changed by modifying the configuration settings directly, which are stored in the SQL database. The configuration can be accessed directly through Symphony Client. This may be required for less common features that do not have a Graphical User Interface and must be configured through the configuration files directly.



Caution: Modifying configuration incorrectly can cause serious problems that may require you to reinstall Symphony. Aimetis cannot guarantee that problems resulting from incorrectly modifying the configuration files can be solved. Do this at your own risk.

Procedure

To manually edit the configuration files:

1. From the **Server** menu, select **Manual Configuration Editor**.
2. Modify the portion of the configuration by navigating to the value under the **Value** column
or
Add a new setting. Click the **Add a new setting...** field. Enter values under each column ([Figure 36 on page 70](#)).
3. Click **OK** to save changes.
4. Restart the Symphony services in order for the changes to take effect.

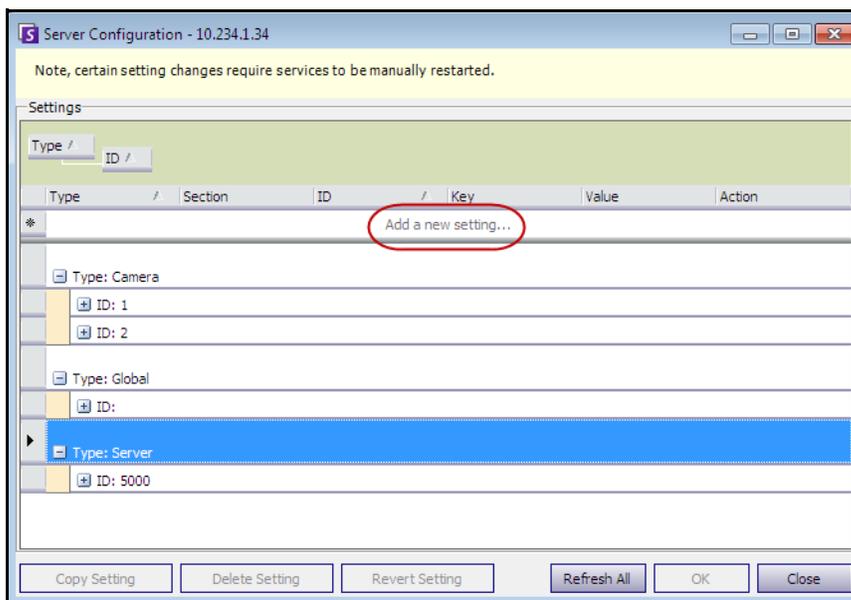


Figure 36. Manual Configuration Editor with the Add a new setting button featured

Setting Up Notifications

Use Notifications to automatically email information to users when an event occurs on the Symphony server, for example, when some configuration has changed.

- The Notifications are NOT used for Alarms. To be notified via email whenever an alarm occurs, you must first set up **Rule Actions** in the **Email** tab of the **Rules Wizard**. This allows different users to be notified only for specific Rules triggers (for example, user A wishes to be notified in a vehicle parks, user B wishes to be notified if people are loitering).
- Each email includes the username, IP, date/time, and event-specific content.
- You must have a SMTP server configured on the Symphony PC. For more information, see [“Configuring your Mail Server on Windows 2008 Server R2”](#) on page 101.

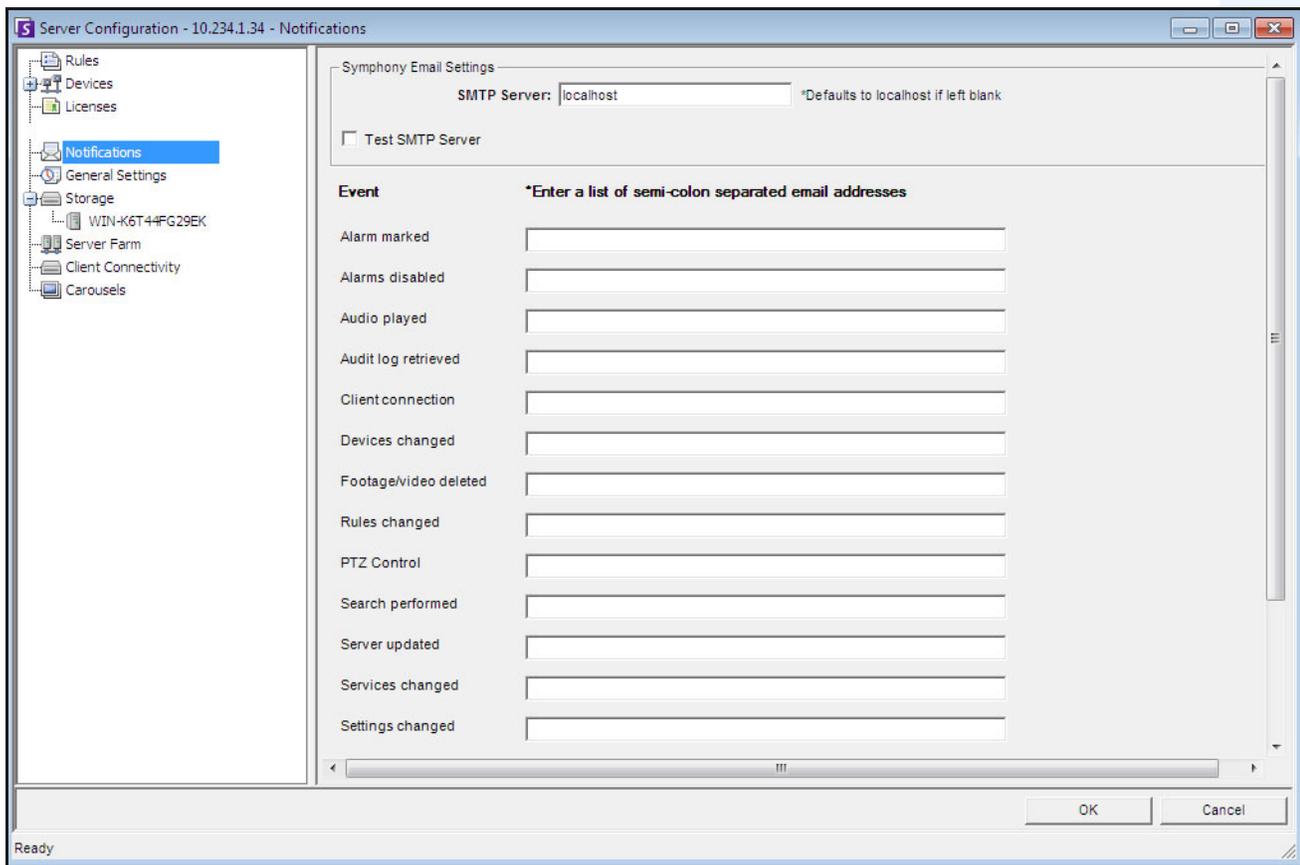


Figure 37. Notifications

Procedure

To view the Notifications dialog box:

1. From the **Server** menu, select **Configuration**. The **Server Configuration** dialog box opens.
2. In the left pane, click **Notifications**. The **Notifications** list is displayed in the right pane.

Adding Subscribers to Individual Events

Procedure

To add subscribers to individual events:

1. From the **Server** menu, select **Configuration**. The **Server Configuration** dialog box opens.
2. In the left pane, click **Notifications**. The **Notifications** list is displayed in the right pane.
3. Next to each event listed under the **Event** column, enter an email address in the corresponding text box. To add multiple recipients of an event, separate the email addresses with a **semicolon**. For a description of notifications, see [Table 10](#).
4. Click **OK** to save changes.

Table 10. Event Descriptions

Event	Description
Alarm marked	An alarm was marked as false or real or comments were added via the alarm log panel.
Audio played	A user played a sound file or spoke over the speaker using the Alarm console.
Audit log retrieved	The audit logs detailing everything that occurs on the Symphony server were retrieved
Client connection	A user connected from Symphony Client.
Devices changed	A user has added, deleted, or modified a Device.
Exported video	A user has exported video from the system.
Footage/Video deleted	A user has deleted video from the system.
Rules changed	A user added, deleted, or changed a Rule.
PTZ Control	A user has taken control over a PTZ camera.
Search performed	A user performed a video search.
Server updated	The Symphony server code was updated to a new version from Aimetis.
Services changed	A user changed which Services are running.
Settings changed	A user changed camera, video, or other miscellaneous setting.
Subscriptions changed	A user changed settings on this form.
Unauthorized access	A user tried to access something he or she was not allowed to access.
Users changed	Users were added, deleted, or changed

Integrating 3rd Party Systems with Symphony

Symphony can interface with 3rd party systems (such as alarm panels or access control products) using any of following ways:

- Using I/O Device
- TCP tab in Actions
- SDK
- Packaged Integrations

Using I/O Device

Symphony can communicate with external systems by interfacing with dry contact (or Input/Output) devices. This is the simplest form of access control support.

- To receive alarms via I/O device, configure a Rule where the input is the dry contact of a network camera or external IO device.
- Symphony can also close relay's on I/O devices by configuring the **Actions** tab in the **Rule Wizard**.

TCP tab in Actions

Another way of sending alarms to external systems is by using the **TCP** tab in the **Actions** menu. On alarm, the Rule Action will be to send a plain text message to a designated IP/Port on the network.

SDK

Symphony can communicate more richly with 3rd party systems via the Aimetis SDK. The SDK includes numerous sample applications with source code, which demonstrate communicating over a TCP/IP network.

Packaged Integrations

Symphony has pre-packaged integrations with Access Control Manufacturers. For more information, refer to the Technical Paper on Access Control Support.

Configuring and Managing a Video Wall

With **Aimetis Symphony**, you can create video walls by using numerous PCs and controlling them remotely through the network.

The video wall is not a physical wall but a **software representation of a collection of real monitors** displaying video.

- The collection of monitors could be on a single wall in a room or in different physical locations.
- Multiple video walls can be associated with a farm, each with different sets and layouts of monitors.

Any Symphony Client can become a Video Wall Client.

- When a Symphony Client is designated as a Video Wall Client, all monitors associated with that client can be included in a video wall.
- Any client on the network can control the monitors remotely.

For video wall functionality, Professional or Enterprise licenses must be used. No Standard licenses can be used.

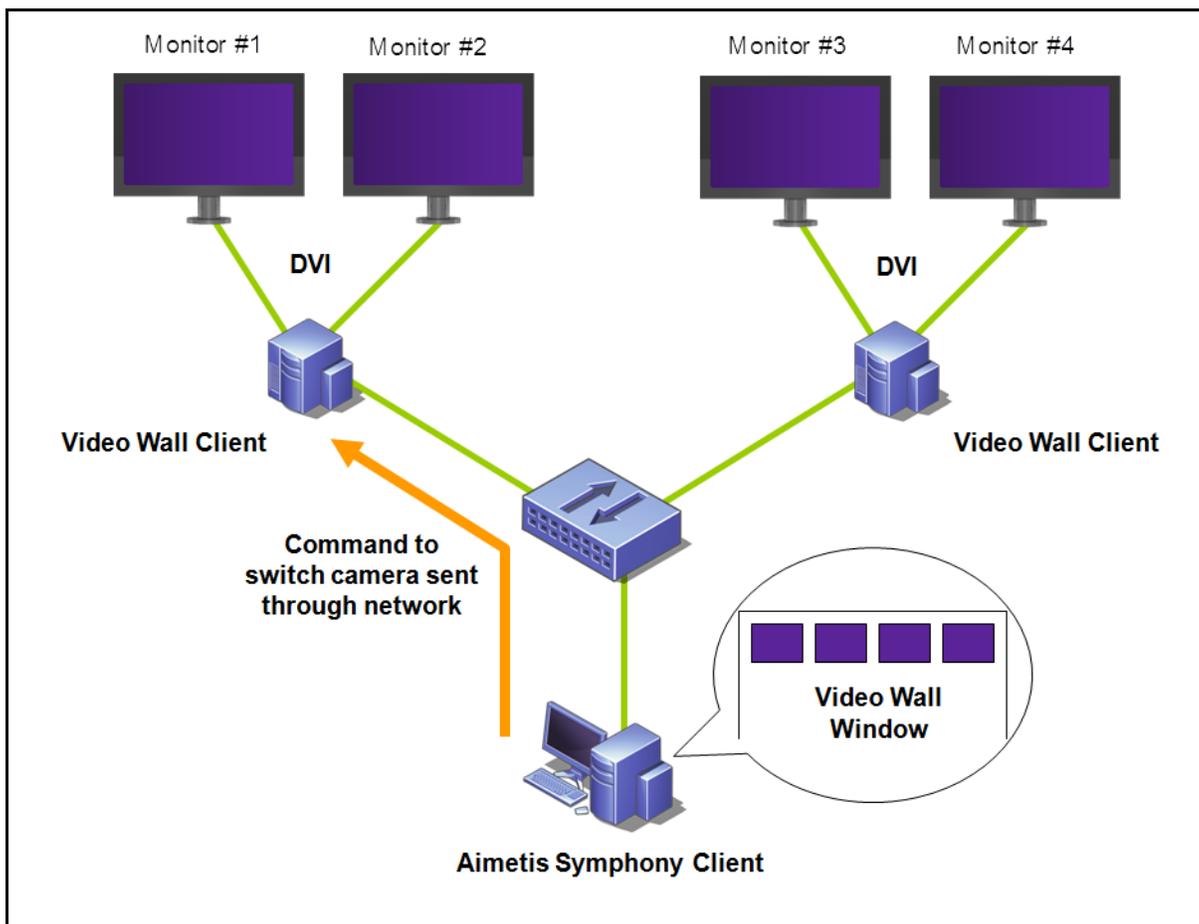


Figure 38. Video Wall

Procedure

To configure and manage Video Walls from Symphony Client:

Task 1: Register the PCs (clients) whose monitors will be used in the Video Wall

1. Login to every computer (client) that is physically connected to the monitors which will be used in the Video Wall. Using the following diagram as an example, you would login to computer (client) **B** or **C** or both.
2. Launch the Symphony Client software.

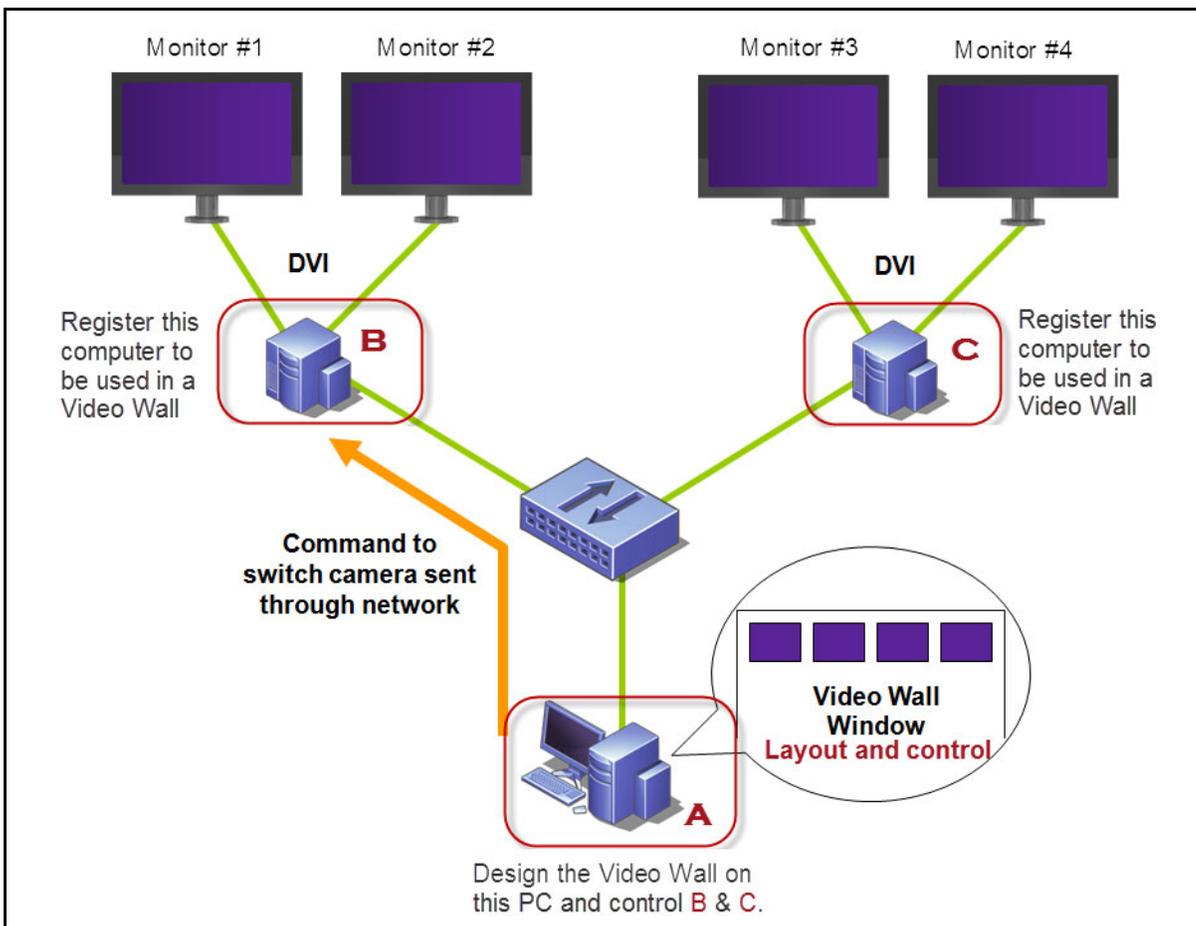


Figure 39. Video Wall setup diagram

- From the **Server** menu, select **Video Wall**.

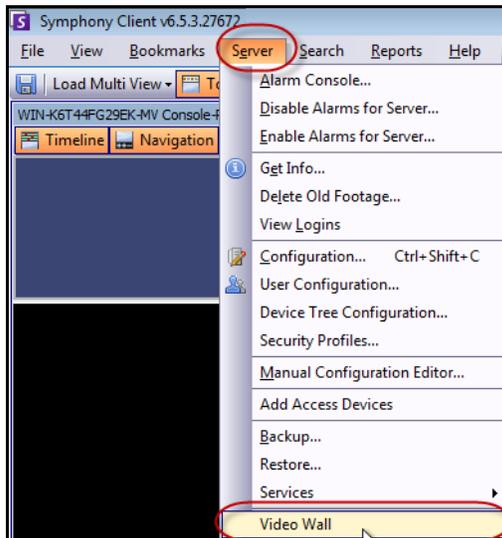


Figure 40. Server menu > Video Wall

- The **Video Wall** dialog box opens. Click the **Video Wall Client Configuration** tab.
- Click **Register current** Symphony Client. This allows you to remotely control that registered client from a video wall window you will create in **Task 2**. (You will be able to remotely control video, switch cameras, create/change/close a **Multi View** and more of that registered client.) Aimetis provides an SDK for this feature. For more details, see <https://www.aimetis.com/Xnet/Downloads/Files.aspx?P=development%2fSDK>.

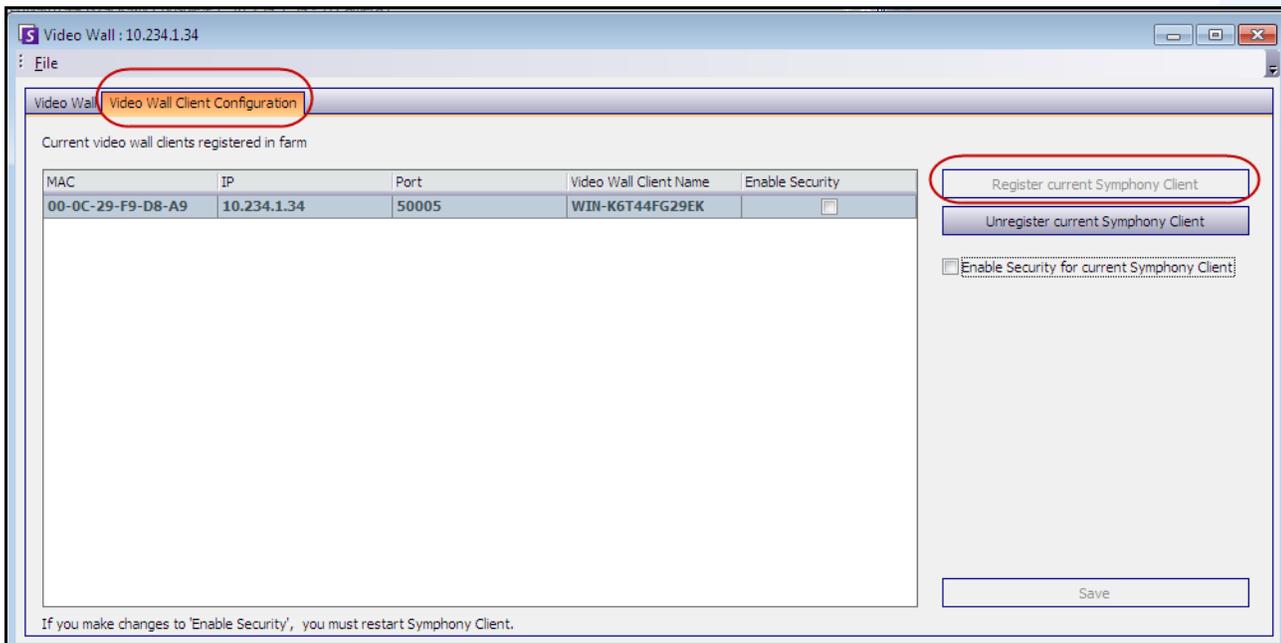


Figure 41. Video Wall dialog box

Task 2: Design the Video Wall

1. Login to a computer (client) that you want to use to design the video wall layout and control the computers you registered in **Task 1**. Using the following diagram as an example, you would login to computer (client) **A**.

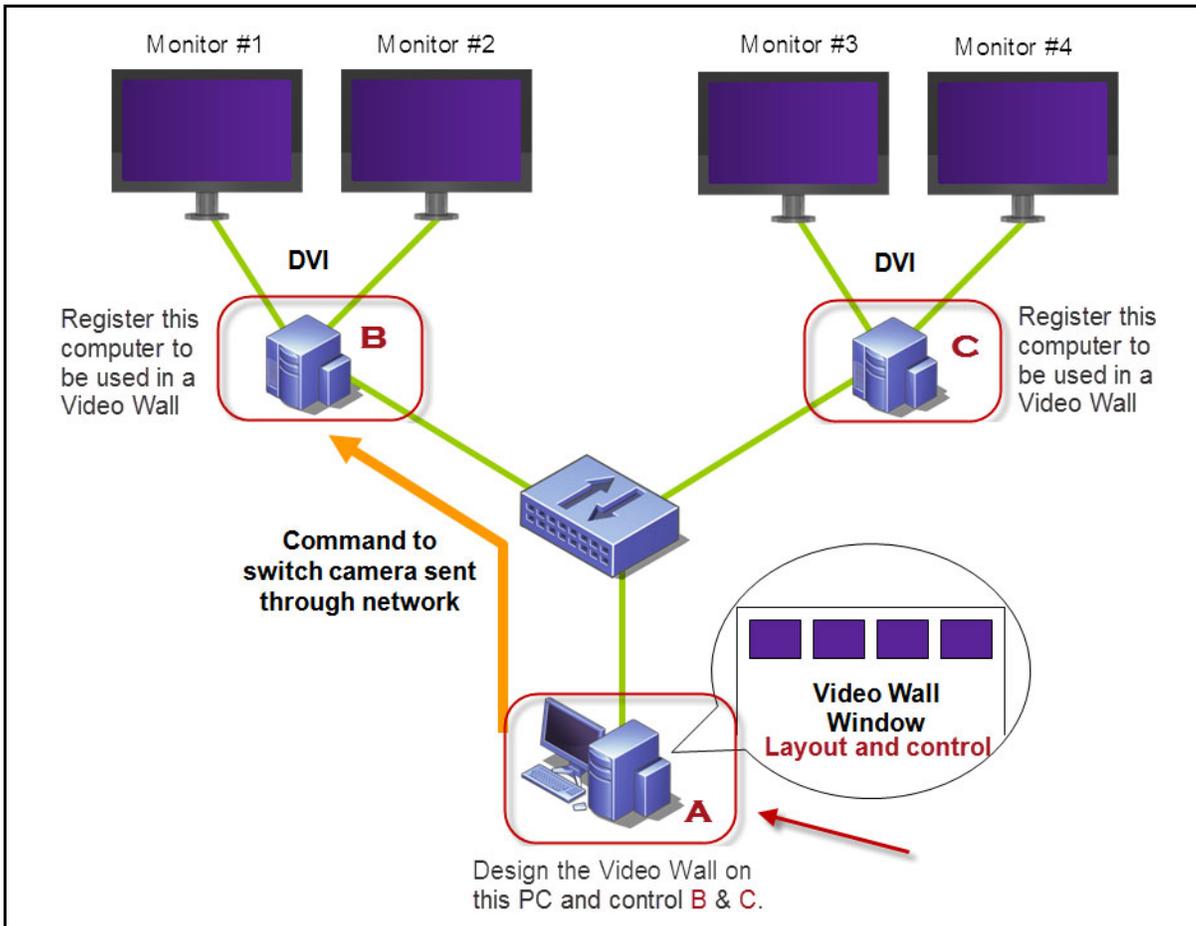


Figure 42. Use computer A to design the video wall

2. Launch Symphony Client.
3. From the **Server** menu, select **Video Wall**. The **Video Wall** dialog box opens.
4. From the **File** menu, select **Design Video Wall**. The **Video Wall Designer** opens (Figure 43).
5. Click **New** to create a new layout. By default, the layout is named **VideoWall1**. You can rename the layout by clicking on the name to edit/type a new name.

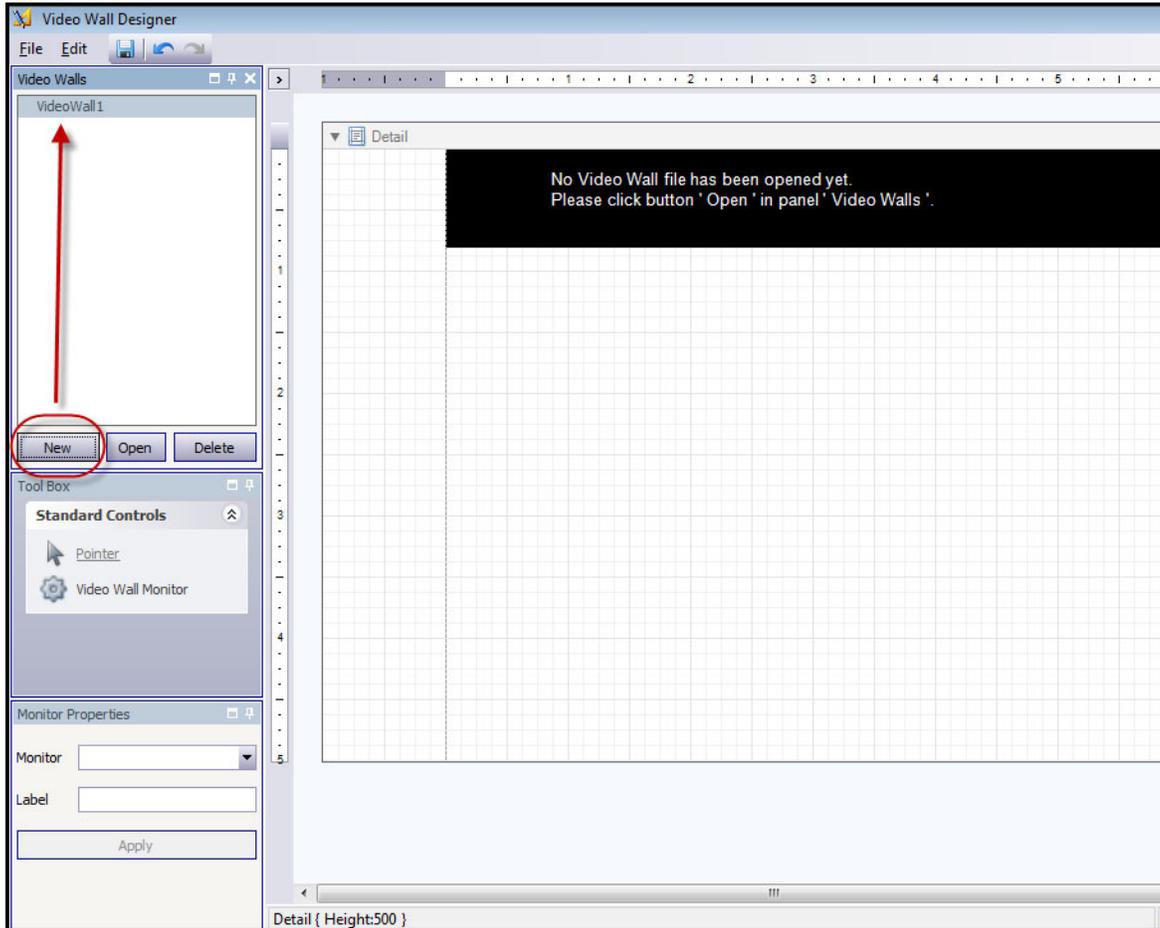


Figure 43. Video Wall Designer

6. Select the name of the video wall and click **Open**. A message in the layout field appears, indicating that you must now select the monitors be used in the video wall you plan to design. Using the example diagram (Figure 42 on page 77), you would select B-Monitor 1 or 2 or C.-Monitor 3 or 4.
7. In the left pane, under **Tool Box**, select the **Video Wall Monitor** icon link and drag it to the grid. If more than one monitor is connected drag it to the grid as well.
8. A black box including the name of the monitor is displayed in the grid. Click the box to activate it. The name of the monitor is displayed in **Monitor Properties** in the left pane in the **Monitor** and **Label** fields (Figure 44 on page 79).
9. (Optional) You can label the monitor with a short, easily identifiable name, for example Monitor B. Edit the **Label** field to enter the name. Click **Apply**.

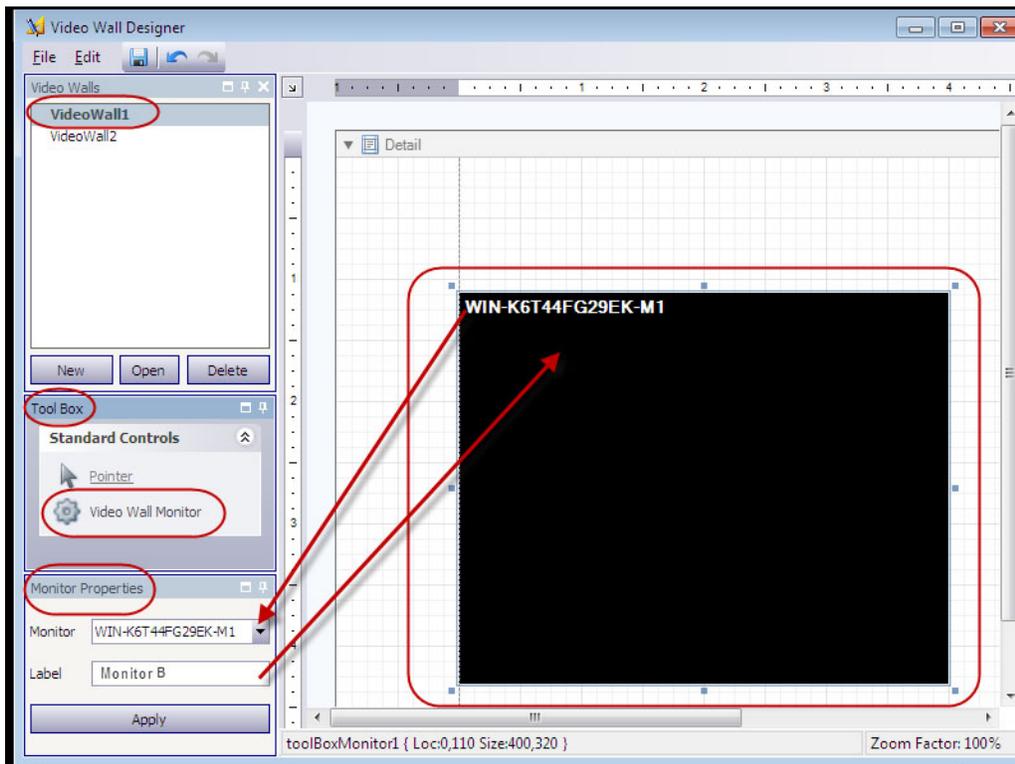


Figure 44. Changing the Label of the monitor

10. You can resize the monitors represented in the grid. Click on the monitor and drag the sizing boxes as necessary. To move the monitor in the grid, click on the center of the black box and drag the entire box.

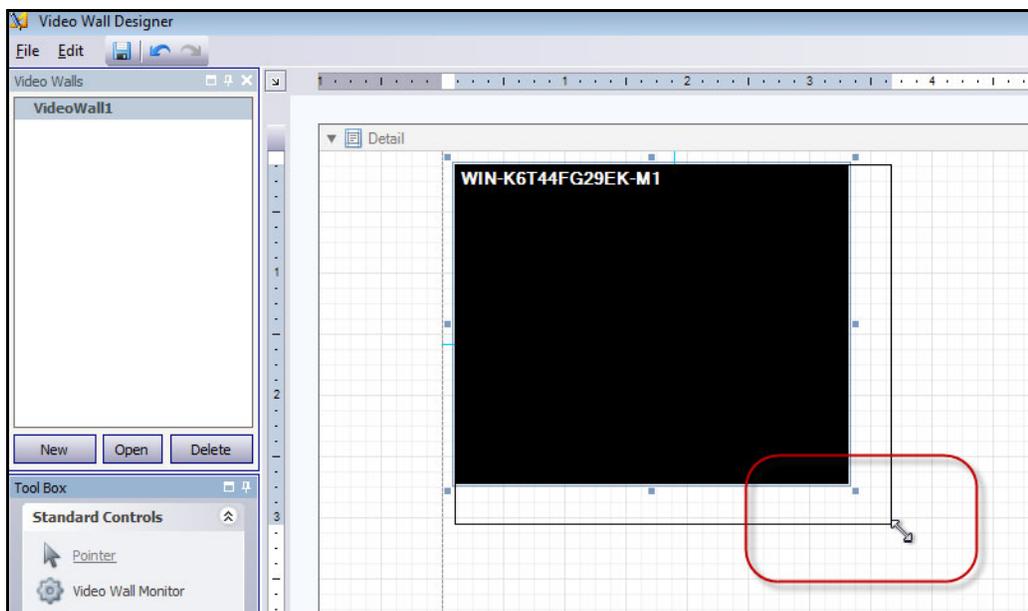


Figure 45. Resizing Monitor

11. When are you satisfied with the layout, you must save it. From the **File** menu, select **Save** and then **Exit**.

Task 3: Use the Video Wall

1. Launch Symphony Client on the computer where you designed the Video Wall layout. (For example, in [Figure 42 on page 77](#), that would be computer A.)
2. From the **Server** menu, select **Video Wall**. The **Video Wall** dialog box opens.
3. Click the **Video Wall** tab.
4. From the **Current Video Wall** drop-down field, select a layout. (This is the layout you saved in **Task 2**.)



Important: At this point, you are now in control of the display on other monitors. (Using the example diagram in [Figure 42 on page 77](#), you would be in control of the layout on Client B or C.)

5. You have several options to control layout on the registered monitors.
 - [“Camera Tree” on page 81](#)
 - [“Add Multi View” on page 82](#)
 - [“Change Multi View or Close Multi View” on page 83](#)
 - [“Multi View Context Menu” on page 84](#)
 - [“Camera View Context Menu” on page 85](#)
 - [“Save Current Video Wall Layout/Load Current Video Layout” on page 86](#)

Camera Tree

To change cameras, from the main menu of the **Video Wall** dialog box, click **Camera Tree**. The **Camera Tree** panel is displayed. Drag a camera from the **Camera Tree** into the layout,

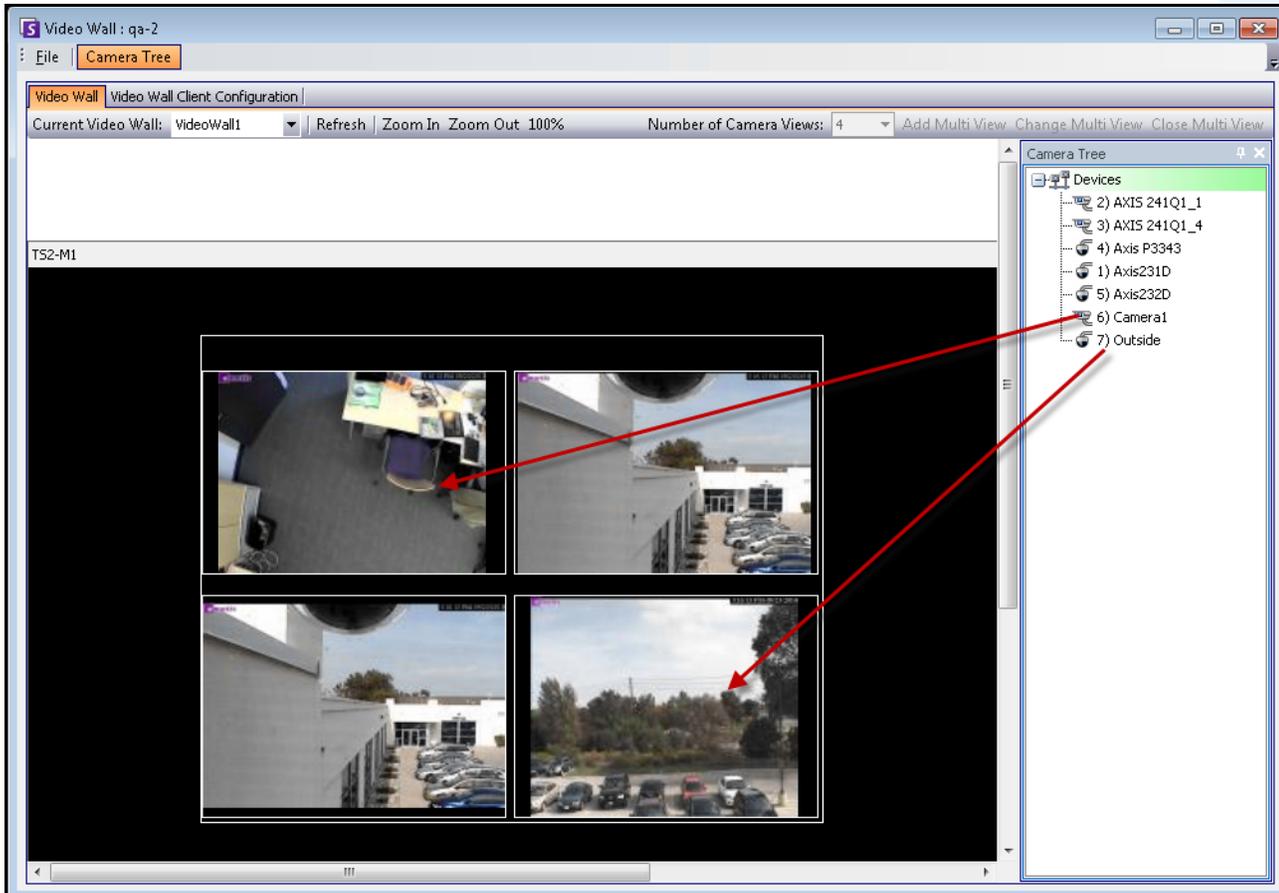


Figure 46. Drag cameras to video wall

Add Multi View

Allows you to change the layout of the registered clients to Multi View.

1. Click title bar of the monitor to activate the button.
2. Click the **Add Multi View** button.
3. From the **Number of Camera Views** drop-down list, select the number of camera views.

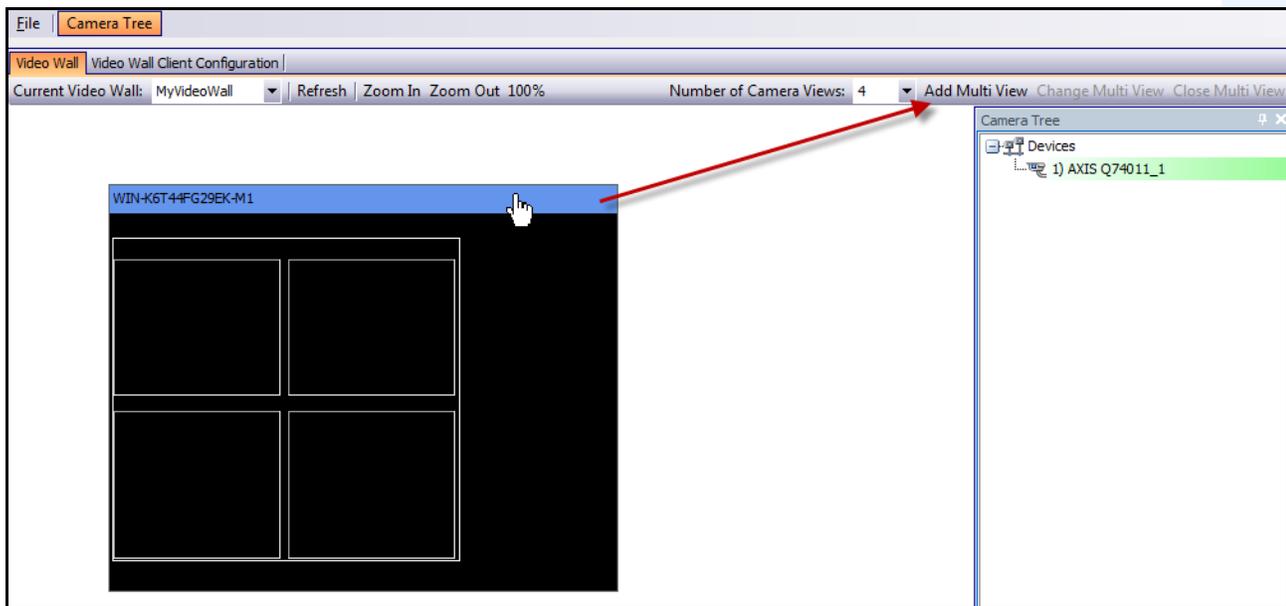


Figure 47. Activate the Add Multi View button

Change Multi View or Close Multi View

You can change or close the views on the remote clients from here.

1. Click on the **Multi View** bar. The **Change Multi View** and **Close Multi View** buttons become active.
2. If you click **Change Multi View**, select the number of camera views from the **Number of Camera Views** drop-down list.

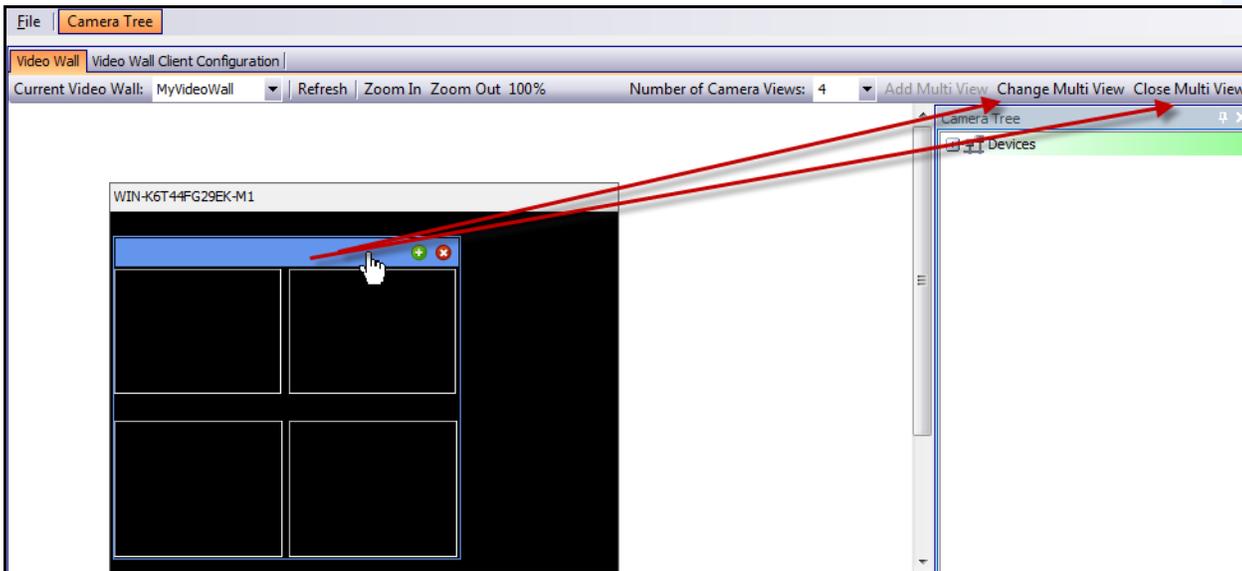
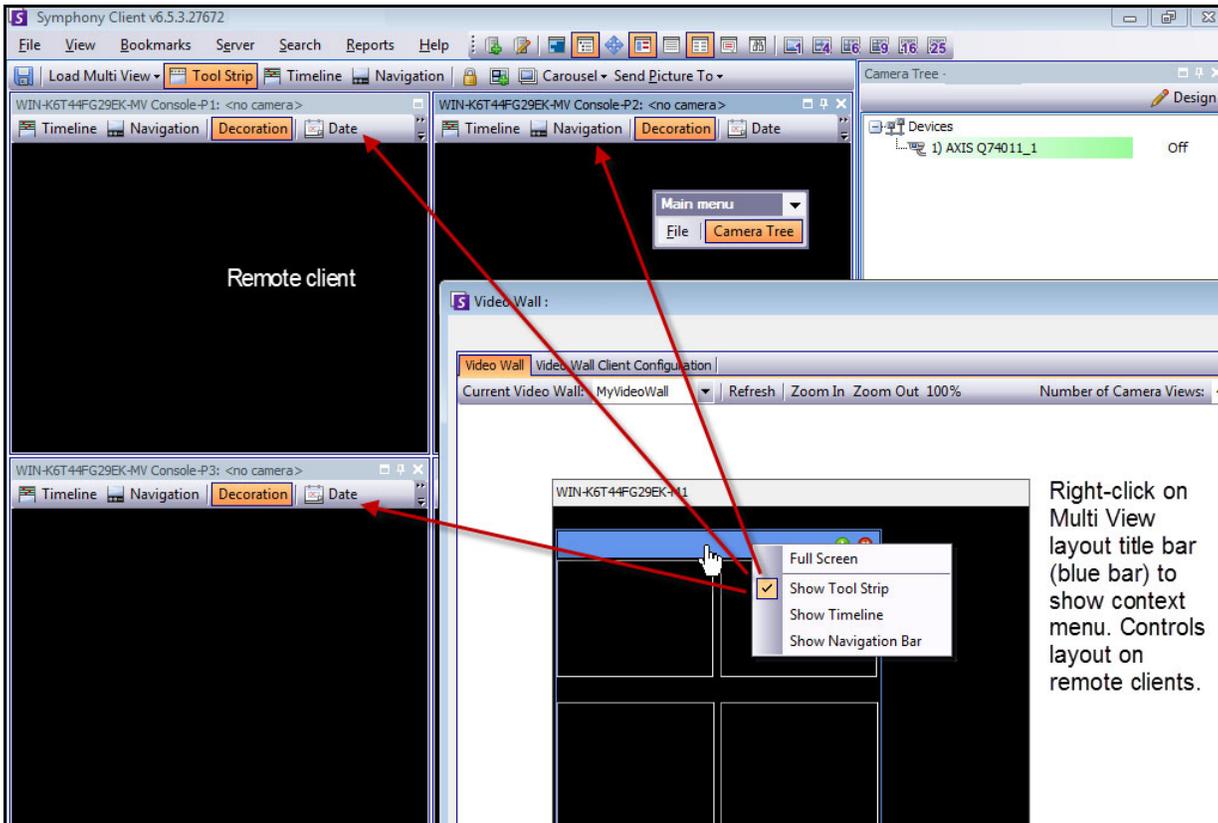


Figure 48. Activate the Change Multi View and Close Multi View buttons

Multi View Context Menu

If you have a **Multi View** display, right-click on the multi view bar (not the monitor title bar). The context menu appears. You can show/hide the **Tool Strip**, **Timeline**, **Navigation Bar**, or display full screen on the remote clients.



Right-click on Multi View layout title bar (blue bar) to show context menu. Controls layout on remote clients.

Figure 49. Remotely change the layout of all monitors

Camera View Context Menu

Right-click on a panel (not the monitor title bar). The context menu appears. You can enable live video, show/hide the **Tool Strip**, **Timeline**, **Navigation Bar**, or change the Camera View **Settings** on the remote client.

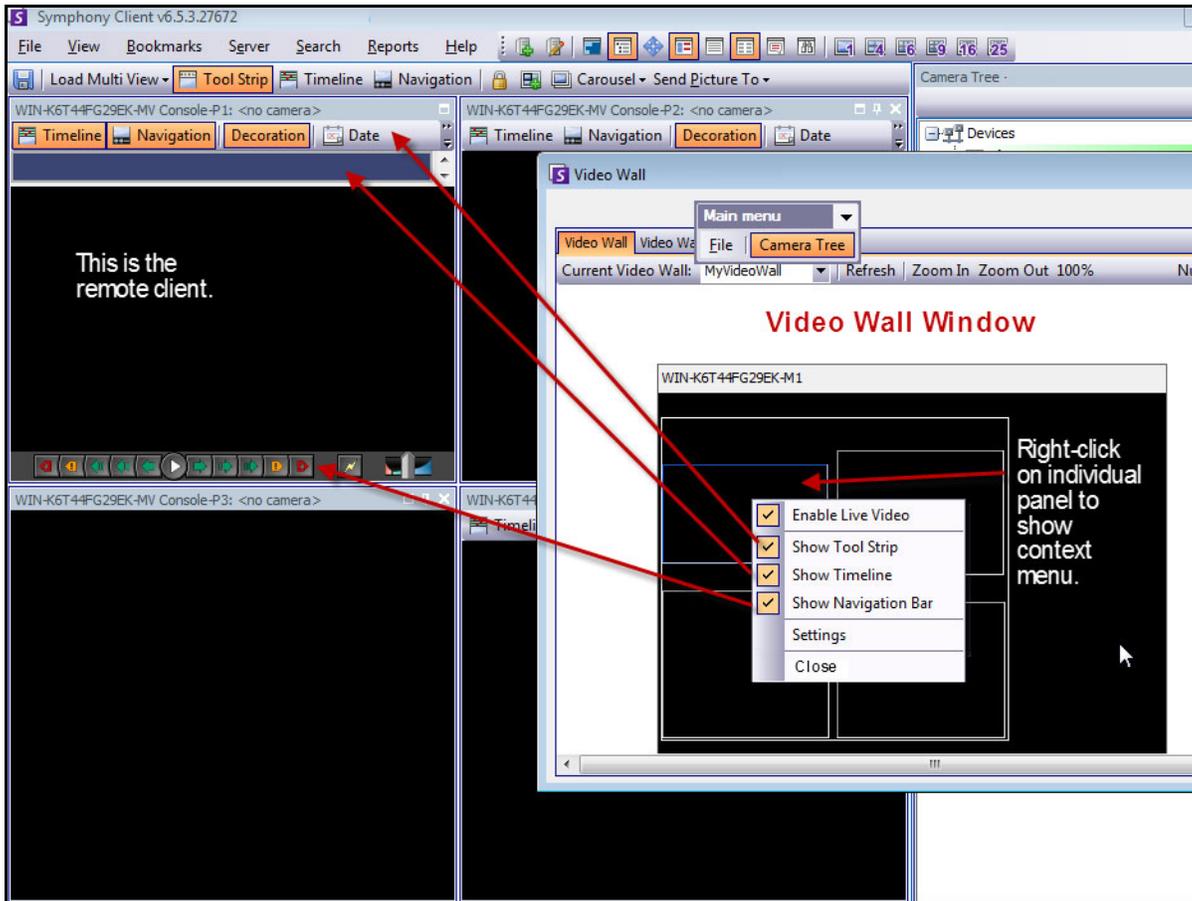
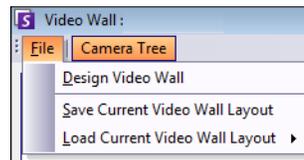


Figure 50. Change the layout in one panel

Save Current Video Wall Layout/Load Current Video Layout



- This layout is saved on the remote computer (client) and NOT on the controlling computer. Using the example diagram ([Figure 42 on page 77](#)), the layout would be saved on computer B or C (if C is online) but not on A. Each connected (registered) video wall client saves (or loads) its client layout on its own machine.
- The layout **name**, however, is also saved in the database.

Refresh

If you click the **Refresh** button, all screens are updated immediately; otherwise, the Video Wall Window updates each camera view screenshot in round-robin. It takes 30 seconds to update all camera views.

Zoom In/Zoom Out

Allows you to zoom layout. It does not zoom the images on the remote (registered clients).

Viewing Detailed Logs

The **View Detailed Logs** feature provides a view of all logs recorded on Symphony server and Symphony Client.

Procedure

To view detailed logs:

1. From the **Help** menu, select **View Detailed Logs**. The **View Detailed Logs** dialog box opens for the current date.
2. By default, the client logs are shown. To access the server logs, click a server in the list. The server name is displayed in square brackets.
3. For a description of menu options, see [Table 11](#). You can right-click on the menu bar to **Customize** the menu and tool bar.



Important: It could take several minutes to get all log files from with a slow connection.

Table 11. View Detailed Log dialog box menu options

Menu option	Description/Action
Date	Shows the logs for the current date. Click the drop-down arrow to activate the calendar interface and select another date.
Copy to Clipboard	Copies Entire text to clipboard.
Download	Zips all log files and places them on your desktop. You can then send them to Aimetis for troubleshooting.
Find Next	Enter text to query the log file.

Viewing Logins

The View Logins feature can be used to see who is accessing a Symphony server.

Procedure

To view logins:

1. From the **Server** menu, select **View Logins**. The **User Logins** dialog box opens.
2. From the **Date** drop-down list, select a day to view.
3. (Optional) To copy data to the clipboard, click **Copy to Clipboard**.
4. (Optional) To group by a column header, drag the column header to the top, above the other columns.
5. (Optional) To print, export, or send the log via email, click **Print and Export**. The **Preview** dialog box opens. From the **File** menu, select any of the options.

Exporting Data from the User Logins Dialog Box

Procedure

To export data from the User Logins dialog box:

1. From the **Server** menu, select **View Logins**. The **User Logins** dialog box opens.
2. From the **Date** drop-down list, select a day to view.
3. Click **Print and Export**. The **Preview** dialog box opens.
4. From the **File** menu, select **Export Document**, and then one of the many formats (PDF, HTML MHT, RTF, XLS, XLSX, CSV, Text, Image). Depending on your selection, additional formatting dialog boxes open, allowing you to refine your exported file.

Viewing Detailed Events

Any event or action caused by a user or the system user is logged in the database. This information may be exported as PDF, HTML, MHT, RTF, Excel, CSV, Text or image file.

The parameters available are Time, Name, EventID, GroupID, Key and Value.

Procedure

To view detailed events:

1. From the **Help** menu, select **View Detailed Events**. The **View Detailed Events** dialog box opens with events listed based on a **Start** and **End** date.
2. (Optional) You can filter information by right-clicking a column and selecting **Filter Editor**. (The right-click menu offers various sorting options.)

Health Monitoring

If the **Health Monitoring** option has been purchased, Symphony Server sends every 15 minutes for each camera a health packet which contains health information about the server.

Aimetis offers a managed service that enables users to login to the Aimetis Xnet (<http://aimetis.com/xnet/>) and see the status on all Symphony Services. Health Packets are sent as UDP packets.

Each Health Packet contains the following information:

- Server name
- Server ID
- Camera ID
- Source IP address
- Version of Aimetis software running on the server
- Amount of CPU the AI Tracker has used
- How long the AI Tracker has been running
- Number of alarms
- Amount of free disk space

The health packet interval can be re-configured in the **Manual Configuration Editor**.



Caution: Modifying configuration incorrectly can cause serious problems that may require you to reinstall Symphony. Aimetis cannot guarantee that problems resulting from incorrectly modifying the configuration files can be solved. Do this at your own risk.

Procedure

To reconfigure the health packet interval:

1. From the **Server** menu, select **Manual Configuration Editor**.
2. Select the **Section = Main** and **Key = StatusInterval** row.
3. In the **Value** field, enter the number of seconds between packets. The default value is **900**.
 - To apply change to a single server only, select the row where **Type = Server**, **Id** = the server's logical ID.
 - To apply to all servers in the farm, select the row where **Type = Global** and **Id** = <empty string>
4. Click **OK** to save changes.
5. Restart the Symphony services in order for the changes to take effect.

Enabling SNMP

Symphony SNMP support is built upon Microsoft's Extendible SNMP Agent. During Symphony installation, the Symphony SNMP Extension-Agent is registered with Microsoft's SNMP Agent by modifying the Windows registry.



Important: The Symphony **Get Info** feature provides more information than “Walking” through mib files using a SNMP query tool. See [“Receiving Full Diagnostic Information”](#) on page 96.

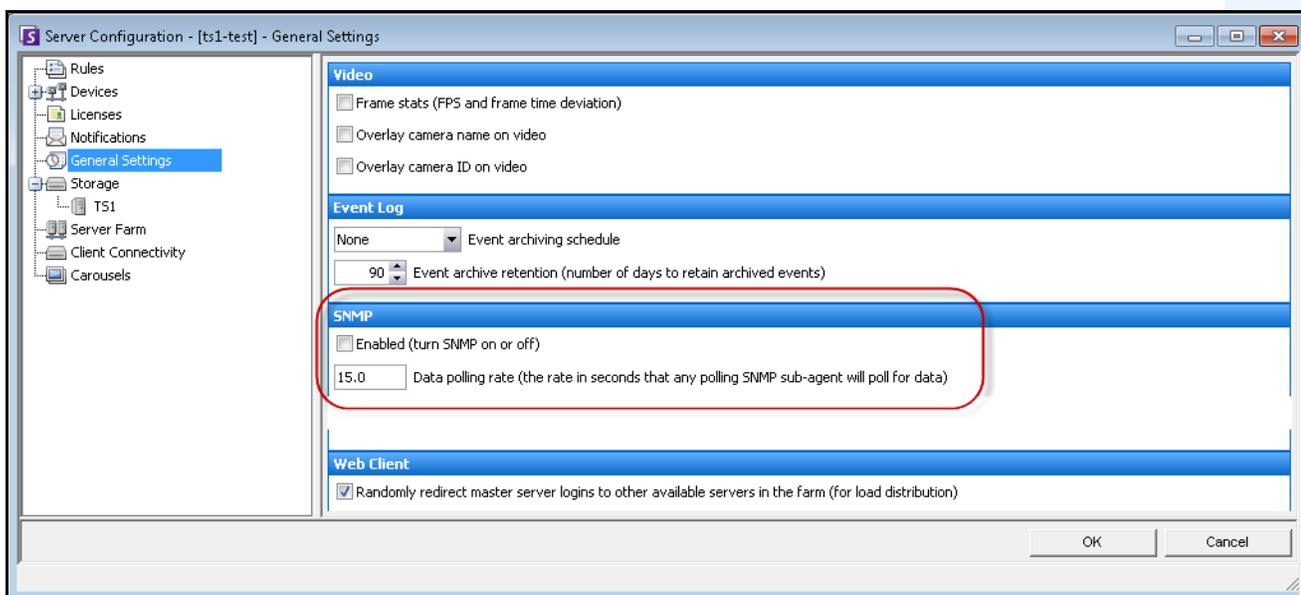


Figure 51. General Settings dialog box featuring SNMP

Procedure

To enable SNMP in Symphony:

Ensure that Microsoft's SNMP Windows Component is installed and set to start automatically with Windows.

Task 1: Enable SNMP in Symphony

1. From the **Server** menu, select **Configuration**.
2. In the left pane, click **General Settings**. The **General Settings** dialog box opens ([Figure 51](#)).
3. In the **SNMP** group area, select the **Enabled** check box and click **OK**.
4. Restart Symphony services: From the **Server** menu, select **Services**, and then **Start Symphony Services**.

Task 2: Configure SNMP Service Security

Microsoft’s SNMP Agent supports **SNMP v2c**; therefore, the SNMP Agent must be configured with the accepted community names and hosts.

1. Via the Windows Services management console, open the properties of the **SNMP Service**.
2. Click the **Security** tab.
3. Create the desired communities (for example “public=” community with “READ ONLY” rights)
4. (Optional) Restrict which hosts may issue SNMP requests.
5. Click **OK**.

Task 3: Test SNMP

1. Start the Symphony services: From the **Server** menu, select **Services**, and then **Start Symphony Services**.
At this time, SNMP data is provided by the **AI InfoService** and **AI Watchdog** services.
 - The **AI Watchdog** service is responsible for providing the service status SNMP values, and **AI InfoService** all other values.
 - The **AI SNMP Registry** serves as a registration of all the sub-agents (and is used by our SNMP Extension Agent).
 - The Symphony management values are rooted at object-identifier 1.3.6.1.4.1.34101.1.
2. Use an SNMP software package to query the SNMP Agent. For example, you can use a GUI tool such as iReasoning’s MIB Browser: <http://ireasoning.com/mibbrowser.shtml>.
3. Start the MIB Browser and open the Symphony mib files. The Symphony mib files are typically located in the program files: **C:\Program Files\Aimetis\Symphony\mib files**.
 - If you are using iReasoning’s MIB Browser, for example, you must load the Symphony mib files into the browser: **File>Load MIBs**. In the file manager that opens, navigate to and select the Symphony mib files (**aimetis.mib** and **symphony.mib**).
4. Walk all the management values currently available within the Symphony sub-tree.

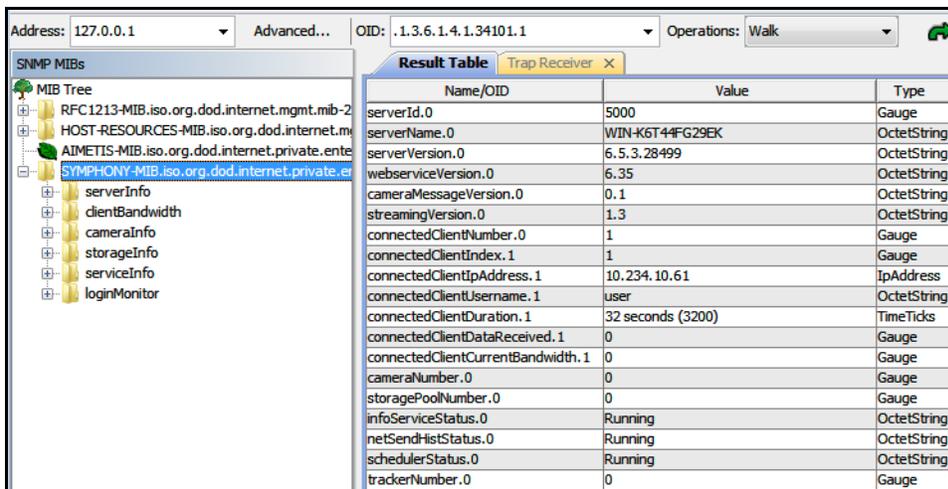


Figure 52. MIB Browser displays Symphony mib files after a “Walk” operation

5. For individual object-identifier descriptions, consult [Table 12](#).

Table 12. Mib file details

Category	Details	Description
server Info	Server ID	
	Server Computer Name	
versionInfo	Server version	Assembly version of the Symphony server
	webserviceVersion	Version for Symphony's web-service protocol
	cameraMessageVersion	Version for Symphony's camera message protocol
	streamingVersion	Version for Symphony's streaming protocol
clientBandwidth	connectedClientNumber	Number of connected clients to this Symphony server
	connectedClientIndex	Unique value for each connected client
	connectedClientIpAddress	IP address the client is connected from
	connectedClientUsername	Username that the client is connected with
	connectedClientDuration	Duration that the client has been connect to this server
	connectedClientDataReceived	Data received, in Kbytes, by the client via this connection
	connectedClientCurrentBandWidth	Current bandwidth, in Kbytes per second, between client and this server
cameraInfo	cameraNumber	Number of cameras managed by this server
	cameraID	Unique identifier for the camera
	cameraName	Name of camera
	footagePath	Path to camera's footage
	footageSize	Size of camera's footage in bytes
storageInfo	storagePoolNumber	Number of storage pools managed by this server
	storagePath	Path to the storage pool
	storageCapacity	Capacity of storage pools in Mbytes

Table 12. Mib file details (Continued)

Category	Details	Description
	storagePercentAvailable	Available capacity in the storage pool, as a percentage of storageCapacity
	storageFootageSize	Size of footage within the storage pool in Mbytes
	storageFootageFiles	Number of footage files in the storage pool.
serviceInfo	infoServiceStatus	Status of AI InfoService service
	netSendHistStatus	Status of AI NetSendHist service
	schedulerStatus	Status of AI Scheduler service
	trackerNumber	Number of tracker services
	trackerID	The ID of the tracker
	trackerStatus	Status of the AI Tracker service for the trackerID
loginMonitor	authorizedLoginNotif	Notification sent when a login is successful
	unauthorizedLoginNotif	Notification sent when an unauthorized login is attempted
	loginNotifyIpAddress	IP address that the client is connected from
	loginNotifyUsername	Username that the client is attempting to login with
	loginNotificationMessage	Message with additional details about the login attempt

Additional Tools and Information

If you prefer a command line tool instead of a GUI MIB Browser, you can use a free command line tool (Net-SNMP) to walk the mib files. (The **snmpwalk** command will perform a sequence of chained **GETNEXT** requests automatically.)

- For instructions, see Net-SNMP: <http://net-snmp.sourceforge.net/>

The following sites also provide information on SNMP:

- How SNMP Works: [http://technet.microsoft.com/en-us/library/cc783142\(WS.10\).aspx](http://technet.microsoft.com/en-us/library/cc783142(WS.10).aspx)
- How to effectively use a MIB Browser: <http://www.unleashnetworks.com/resources/articles/88-how-to-effectively-use-a-mib-browser.html>

Using the DOS killall Utility with Symphony Services

Symphony comes with a dos utility that can be used to automatically start, stop or restart the Symphony Services. This can be faster than individually managing the services from the Services console in Windows (accessed by running **Services.msc** from the **Start > Run** command).



Note: Using the **killall** utility will not restart the SQL Database.

killall <command> Where next **command** is one of:

- 1 - Stop Services gracefully
- 2 - Terminate services
- 3 - Start services gracefully (restart web)
- 4 - Terminate services only if necessary
- 5 - Start services gracefully (leave web alone)
- 6 - **<pid>** - Kill the specified pid
- 7 - Restart web
- 8 - Get CPU usage from shared memory
- 9 - Same as 4 except will also kill infoservice
- r** - Restart services (killall 9, killall 5)
- s** - Restart services in sequence
- t <tracker id>** - Restart tracker **<tracker id>**

Example 5	
	<p>To restart all system services:</p> <p style="text-align: center;">From the command prompt, enter: killall r</p> <p>Click ENTER on keyboard to run command</p>

Receiving Full Diagnostic Information

Symphony server provides detailed logs and monitoring functionality.

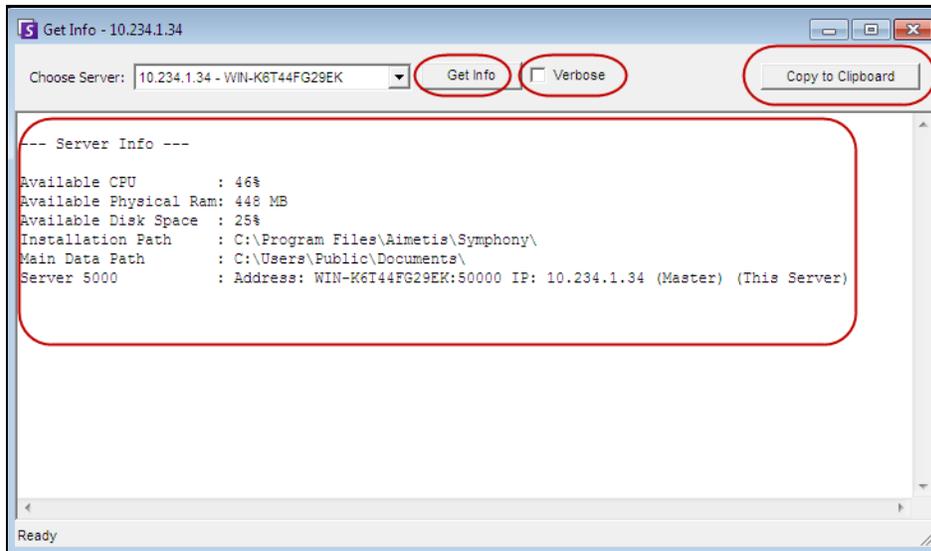


Figure 53. Get Info dialog box

Procedure

To receive full diagnostic information on your Symphony server:

1. From the **Server** menu, select **Get Info**. The **Get Info** dialog box opens. By default, CPU, RAM and DISK information is displayed.
2. (Optional) Select the **Verbose** check box and click **Get Info**. More information is displayed.
3. (Optional) Click **Copy to Clipboard**. The text is copied to the clipboard.

Managing Symphony Services

Symphony server runs the following core Services. All Symphony Services are prefixed with an "AI".

Table 13. Symphony Services

Service	Description
AI InfoService	Web Server running Symphony's web service which receives all requests from the client.
AI NetSendHist	Responsible for historical video streaming and historical .JPEG creation.
AI Scheduler	Responsible for polling hardware alarm inputs, cleaning video, running reports and searches, synchronizes CPU and other processes on system.
AI Tracker #	The process that performs video analysis, saves video to disk, live video streaming. Each camera requires its own AI Tracker service.

Troubleshooting Tips

- Symphony requires the **AI InfoService** to be running properly. Normally connectivity issues between the client and server are caused by a resource conflict between another process using Port 50000, or a Firewall preventing Symphony and the **AI InfoService** from communicating properly.
- By default, Symphony installs a Microsoft SQL Server express database during the installation of Symphony Server. Make sure the SQL Server (AIMETIS) service is started.

Starting and Stopping Symphony Services

Symphony services can be stopped and started individually. Services can be individually restarted directly from Symphony Client, or from Windows directly by using the Services Console.

If you do not have direct access to the Windows environment on the Symphony server, you can manage services remotely using Symphony Client.

Procedure: Using Symphony Client

To manually stop and start individual services:

1. From the **Server** menu, select **Services** and then **Manage Symphony Services**. The **Manage Services** dialog box opens.
2. Select which server to configure from the drop-down field above the **Refresh** button.
3. Select the services you want start or stop by clicking on the service under the **Servername** column.
4. Click the **Toggle** button and then click the **Refresh** button to see if the state of the server changed. In State column, the service will indicate **Running** or **Stopped**.

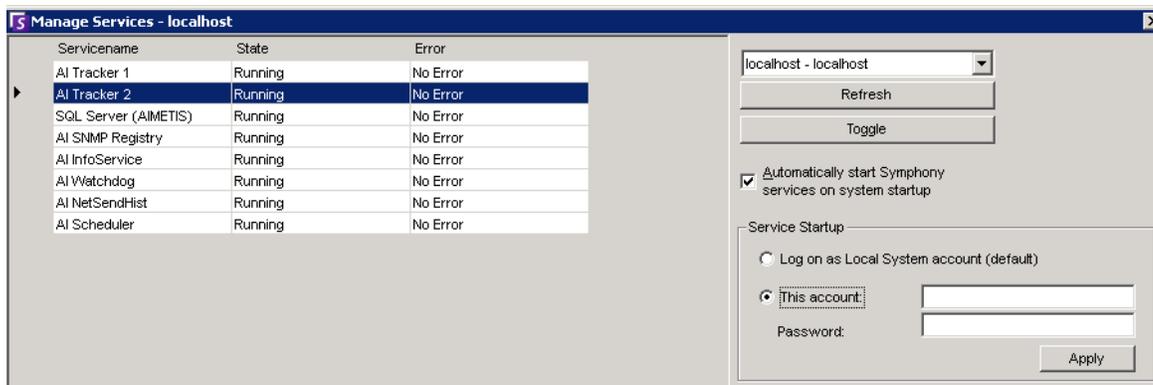


Figure 54. Manage Services dialog box

- By default, the Symphony Services start on startup of the operating system. If you do not want Symphony Services to automatically start on system startup, clear the **Automatically Start Symphony Services on system startup** check box.
- You can change the **Log on as Local System account** for ALL services in the **Service Startup** section.



Caution: Changing service states can adversely affect your Symphony installation.

Procedure: Using Windows directly

To restart the Symphony Services directly from Windows:

1. In your Windows operating system, select **Start** and then **Run**.
2. Enter **Services.msc** and click **OK**. The **Services** dialog box opens.
3. Load the Services Console. Right-click on the service you want to start, stop, or restart.

Virus Scanning

We recommend that you disable virus scanning software on the Symphony server. Virus scans use a large amount of system resources to scan data. Virus scanning software, in some cases, locks each file it scans. Overall, it can affect performance negatively.

Firewalling Symphony

Firewalling your server is a good way to reduce the chances of someone hacking in and damaging your system.

Procedure

To firewall your system:

1. From Control Panel, double-click on the **Network Connections** icon.
2. Right-click on your internet connection and select **Properties**.
3. Select the **Advanced** tab.
4. Select the **Protect my computer** check box.
5. Click **Settings**.
6. Ensure that none of the check boxes in the **Services** tab are selected.
7. Add a new service entry for every TCP port you want to allow through
8. Click the **Add...** button and fill in the dialog box.
9. Enter the name of your computer in the **Name** field.
10. Leave the **Internal Port Number** field empty. By default, Symphony uses the following ports:

Table 14. Default Ports

Port number	Description
50000	WS1
50001	WS2
50010	camera1 live
50012	camera1 historical
50020	camera2 live
50022	camera2 historical
50030	camera3 live

Table 14. Default Ports (Continued)

Port number	Description
50032	camera3 historical
5045	health checks

The port list in [Table 14 on page 99](#) assumes you are publishing 3 cameras on the Symphony server PC behind the firewall. If you are publishing more cameras on the PC, continue opening ports similar to those in [Table 14](#).



Important: If you are using Video Wall functionality, open port 50005 on the client PC.

Publishing Symphony on a Non-Standard Port

By default, Symphony servers will use port 50000 as the default web port. However, in some cases the default port may need to be changed. For example, if multiple servers are being published on the same external IP address, the default ports of the subsequent server(s) need to be changed. By changing the BasePort (web port), other ports will automatically change as well.

Procedure

To change the default ports:

1. In Symphony Client, from the **Server** menu, select **Manual Configuration Editor**.
2. Click **Add a new setting...** The fields under the column headings are activated.
3. Enter the following information:
 - **Type** = Server
 - **Section** = Main
 - **ID** = (enter your Server ID)
 - **Key** = BasePort
 - **Value** = (enter your new default web port)
4. Restart the Symphony services.

HTTPS for AXIS

For instructions on setting up HTTPS for AXIS cameras, refer to the **How To Configure HTTPS for AXIS** document on the Xnet: <https://www.aimetis.com/Xnet/Downloads/documentation.aspx>

Configuring your Mail Server on Windows 2008 Server R2

Configuring your mail server allows your Symphony server to send email notifications when events happen. Symphony may send emails as a result of Rule (Action) configuration or Subscriptions. Symphony will relay email via an email server defined in the Subscriptions page.

- “Using Internal SMTP Server”
- “Using External SMTP Server” on page 102
- “Windows 7 and Vista - SMTP not included” on page 102

Using Internal SMTP Server

Allow Symphony server to relay email through itself using Microsoft SMTP server.

Task 1: Install IIS on the server

- Follow the instructions at <http://digitizor.com/2009/02/20/how-to-install-microsoft-iis-server-on-windows-7/>

Task 2: Add SMTP Server:

1. Start the **Server Manager MMC**.
2. In the **Features** section, click **Add Features**.
3. Select **SMTP Server**.

Task 3: Configure the mail server

1. From Control Panel, double-click on the **Administrative Tools** icon.
2. Double-click on the **Internet Information Services** icon.
 - If this is not installed:
 - a. Go to Control Panel, **Add/Remove Programs**, and select **Add/Remove Windows Components**.
 - b. Scroll to **Internet Information Services**, click **Details**, and add SMTP service.
3. Expand the tree. Right-click on **Default SMTP Virtual Server** and select **Start** if it is enabled.
4. Right-click on **Default SMTP Virtual Server** and select **Properties**.
5. Click the **Access** tab and then click **Connection**.
6. Select the **Only the list below** option and click **Add**.
7. Select the **Single computer** option and enter **127.0.0.1** as the IP address.
8. Click **OK** to close the **Computer** dialog box and click **OK** to close the **Connection** dialog box.
9. Click the **Relay...** button.
10. Select the **Only the list below** option and click **Add**.
11. Select the **Single computer** option and enter **127.0.0.1** as the IP address.
12. Click **OK** to close the **Computer** dialog box.
13. Clear the **Allow all computers that successfully authenticate to relay** check box.
14. Click **OK** to close the **Relay Restrictions** dialog box.

Using External SMTP Server

If an external SMTP server is used for Symphony email relaying, specify this address in the Subscriptions SMTP field. Please note the connection to the SMTP service is not authenticated. Ensure that the SMTP server allows for unauthenticated connections from the Symphony server IP address.

Windows 7 and Vista - SMTP not included

SMTP is not included in Vista or Windows 7. The IIS 6.0 Manager shipped with Windows 7 is not aimed for IIS 7.5 Management. To manage IIS 7.5/FTP 7.5 shipped with Windows 7, you must use IIS 7 Manager.

You have three options if you want SMTP support, so Symphony can email directly from the server:

- Use a server operating system and you then use the Microsoft supplied SMTP server.
- Use Windows 7 but use an external email gateway. For example, if the Symphony server is on the office LAN with a local email server, Symphony can relay through that server.
- Install a 3rd party SMTP server that works with Windows 7.

Backup and Restore

We recommend that you backup the entire Symphony configuration after installation is complete, and that you schedule automatic backups. The configuration file contains all settings of the server (but no recorded video).

Procedure

To access the Backup configuration:

- From the **Server** menu, select **Backup**. The **Backup** dialog box opens.

Manual-backup

We recommend that you backup your entire Symphony configuration after you have completed the first time setup. You may backup to your local PC or the server directly.

Procedure

To backup to local machine:

1. From the **Server** menu, select **Backup**. The **Backup** dialog box opens.
2. Select the **To local machine** check box.
3. Click **Browse** to select location to store the backup file.
4. Click **OK** when finished. The server backup will be stored in this location.

To backup to the server:

1. From the **Server** menu, select **Backup**. The **Backup** dialog box opens.
2. Select the **To server** check box.
3. Enter the location to store the backup file (this can also include a UNC path).
4. Click **OK** when finished. The server backup will be instantly stored in this location.

Automatic Backups

Automatic backups will always be stored in the same location on the server. Only one backup can be saved at the same time.



Important: Each new backup will automatically overwrite the old one.

Procedure

To configure automatic backups of server configuration:

1. From the **Server** menu, select **Backup**. The **Backup** dialog box opens.
2. Select the **Scheduled backup on server** check box.
 - For daily backups, select the **Daily** checkbox for daily backups, and select an hour.
 - For weekly backups, select the **Weekly** check box, and select a day of the week and an hour.
3. Click **OK** when finished.

Restore Configuration

Symphony can restore the entire configuration to a previous state, including Rule information, log files, alarm masks, site maps and so on in configuration files.

The only data not contained in the configuration backup is video data.

Procedure

To restore configuration to a previous state:

1. From the **Server** menu, select **Restore**. The **Restore** dialog box opens.
2. Select the **Restore server configuration** check box.
 - If the backup is on your local machine, select the **From local machine** option and click **Browse** to select a backup file that was stored on your local PC.
 - If the backup is directly on the server, select the **From server** option and enter the path to the backup file.
3. To automatically restore the last auto-backup on the server, select the **Last scheduled backup on server** option.
4. Click **OK** when finished.

Symphony Web Access

Aimetis Symphony also includes a web interface. Each server has its own web interface.

The web interface is designed to mimic the windows rich client (Symphony Client) as much as possible. All core features such as Alarm Log, Timeline, Reporting and live video streaming are included.

Procedure

To access the web interface:

1. Navigate to **http://SERVERNAME:50000** (where SERVERNAME can be your windows hostname or the IP address of the server).
2. Log in.
3. Select a camera from the camera tree to view video.

Procedure

To access web based reporting:

- Click the **Reports** link. Visit Reports section for help on using reports.

Video Analytics and Rules

About Video Analytics

With Aimetis video analytics, you can:

- detect specific events and activities automatically from your cameras without human intervention
- filter video and be notified only when events have been detected, such as vehicles stopping in an alarm zone, or a person passing through a digital fence

Today's robust video analytics produce far fewer false alarms than the previous motion detection methods employed in earlier DVRs or cameras. Aimetis offers video analytics add-ons on a per camera basis in the form of **Video Engines (VE)**.

Read content in the following order:
"Video Analytics Available in Symphony" on page 107
"Process Overview of Using Video Analytics" on page 108
"Video Analytic Instructions and Creating Rules" on page 115

Video Analytics Available in Symphony

Engine	License Required	Description
VE130 Simple Motion Detection	Standard	Detects simple motion. Can be used indoors/outdoors. Does not classify objects. Does not provide object segmentation capability (which is required for object counting).
VE140 Video Input Error	Standard	Detects video signal loss.
VE141 Camera Tampering	Standard	Detects if camera's field of view is compromised (such as spray painting the lens).
VE150 Advanced Motion Tracking	Enterprise	Filters complex motion. Recommended for indoor and outdoor environments. Different modes of operation (for example, outdoor tracking, indoor people counting) are available depending on the environment and application.
VE180 (beta) Indoor/Outdoor People Tracking	Enterprise	Filters complex motion.
VE250 Motion Tracking	Enterprise	Plug and play motion tracking video engine.
VE352 Left & Removed Item Detection	Enterprise	Detects objects left behind or removed. Can be used indoors/outdoors.
PT090 Auto PTZ Tracking	Enterprise	Auto PTZ tracking.
VE410 License Plate Recognition	Enterprise	License Plate Recognition

Process Overview of Using Video Analytics

To detect special events and activities automatically, you must:

1. "Assign analytic(s) to the camera"
2. "Configure the analytics" on page 109
3. "Create a Rule and configure the video engine detection capabilities" on page 114

Task 1: Assign analytic(s) to the camera

In the **Server Configuration** dialog box (**Devices**), you select an analytic engine in the **Analytics Engines** tab.

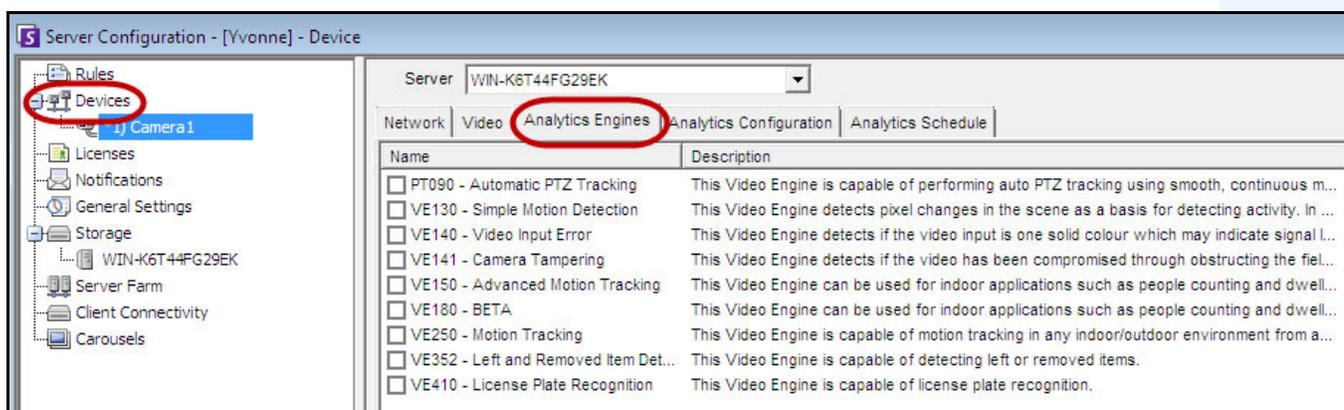


Figure 1. Analytics Engines tab



Important: Some Video Engines (VE) can be run concurrently per camera with others (such as VE150 Motion Tracking and VE352 Left Item Detection) but others cannot be run concurrently (such as VE130 Simple Motion Detection with VE150 Advanced Motion Tracking).

If the desired video engine is not selectable, clear the check box associated with the current engine in order to select any other.

Task 2: Configure the analytics

After cameras have been added and analytic engines have been enabled for cameras, the analytics themselves need to be configured. You configure analytics on the **Analytics Configuration** tab.

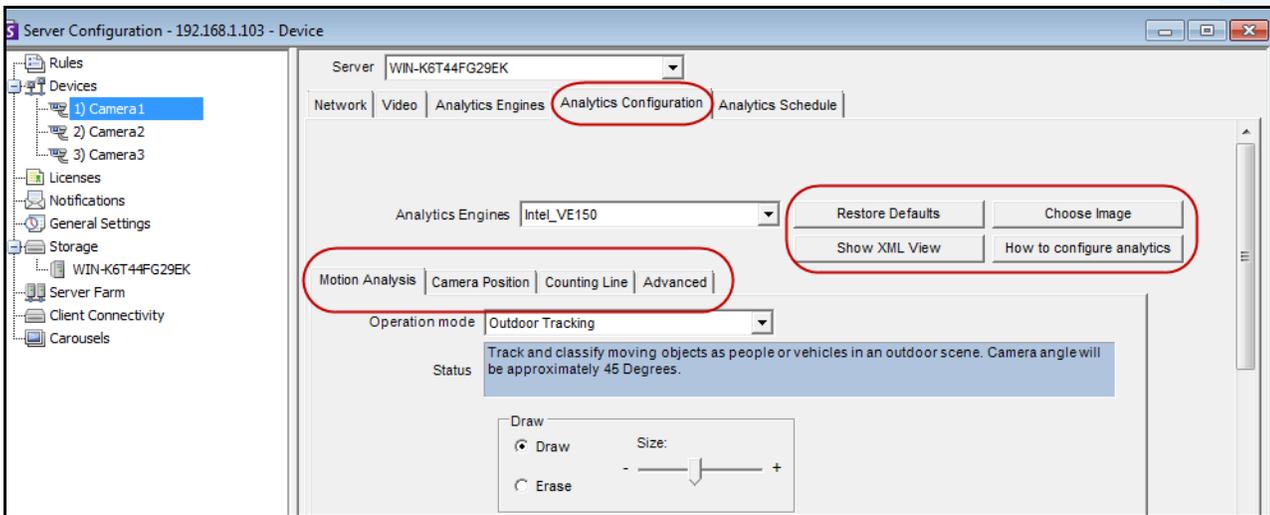
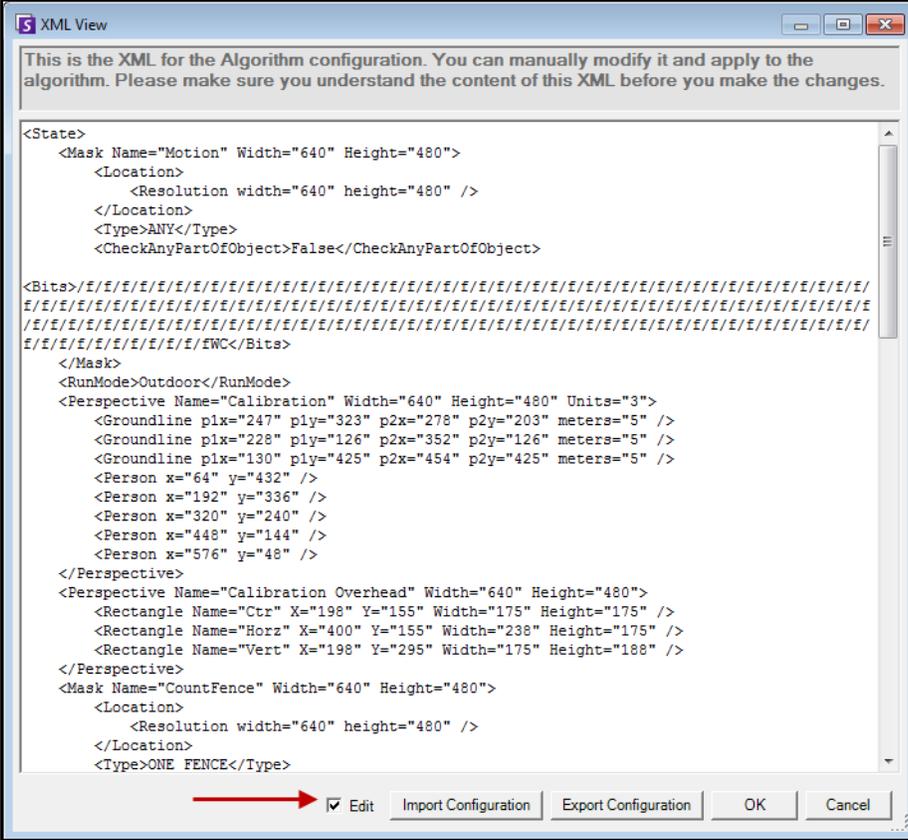


Figure 2. Analytics Configuration tab

Table 1. Buttons beside Analytic Engines selection

Button	Description
Restore Defaults	Allows you to restore your analytic settings to system defaults.
Choose Image	Allows you to select an image from the video clip to define where activity will be detected or alarms will occur in a scene.

Table 1. Buttons beside Analytic Engines selection (Continued)

Button	Description
<p>Show XML View</p>	<p>Allows you to modify settings in XML. Import Configuration allows you to load an analytic engine state XML from disk and manually modify the XML. Once you click OK, the XML is applied to the engine. Export Configuration allows you to save the current analytic engine state XML to disk. This XML option allows you to easily share configuration and, if necessary, submit the XML to Aimetis Support if you have trouble with the configuration.</p> 
<p>How to configure analytics</p>	<p>Opens the online help.</p>

Common Settings

Each video analytic may have slightly different configuration options; however, there are many commonalities:

- [“Masks: The Areas Where Symphony Tracks Objects”](#)
- [“Analysis FPS”](#)
- [“Perspective” on page 112](#)
- [“Analytics Schedule” on page 113](#)

Masks: The Areas Where Symphony Tracks Objects

Masks defines where Symphony can track objects. By default, the entire scene is covered in the yellow mask, meaning everything in the field of view of the camera will be analyzed. Symphony has been designed to work well in dynamic outdoor environments. Rain or snow would not normally result in Symphony falsely tracking objects. However, in some cases, you may want to remove certain portions of the screen from analysis (such as a neighbour's property, or a swaying tree which is causing false alarms).

Motion Mask versus Alarm Mask

Motion Mask:

- Defines the area (in yellow) of the image *where activity is detected*

Alarm Mask (set up in the Rule Wizard):

- Defines the area (in red) of the image *where alarms will occur*
- Cannot be greater than the **Motion Mask**
- Is bound by the **Motion Mask**

Analysis FPS

Analysis FPS allows you to modify the frames per second (FPS) that the analytic should analyze. Normally this field should be left at the default value.



Note: It is possible to *record at a higher frame rate* than what is analyzed by the analytic engine, to reduce CPU use.

Perspective

For certain video analytics, perspective information must be entered for proper functionality. For example, for **Outdoor Tracking**, perspective is established by using 3 lines at different distances in an image. For a general idea, see [Figure 3](#). Note how the size of people are adjusted for distance (foreground versus background).

The two red horizontal lines and the one vertical blue line in the image should closely represent distance at those positions in the image. The units (meters, feet) are irrelevant. The key is that in the distance, say 5 feet, is represented by a short line, while 5 feet in the foreground of the image is represented by a longer line, because of perspective. People and cars closer to our eyes appear bigger than people and cars in the distance. The figures standing on the red lines should closely match the size of a person at those positions.

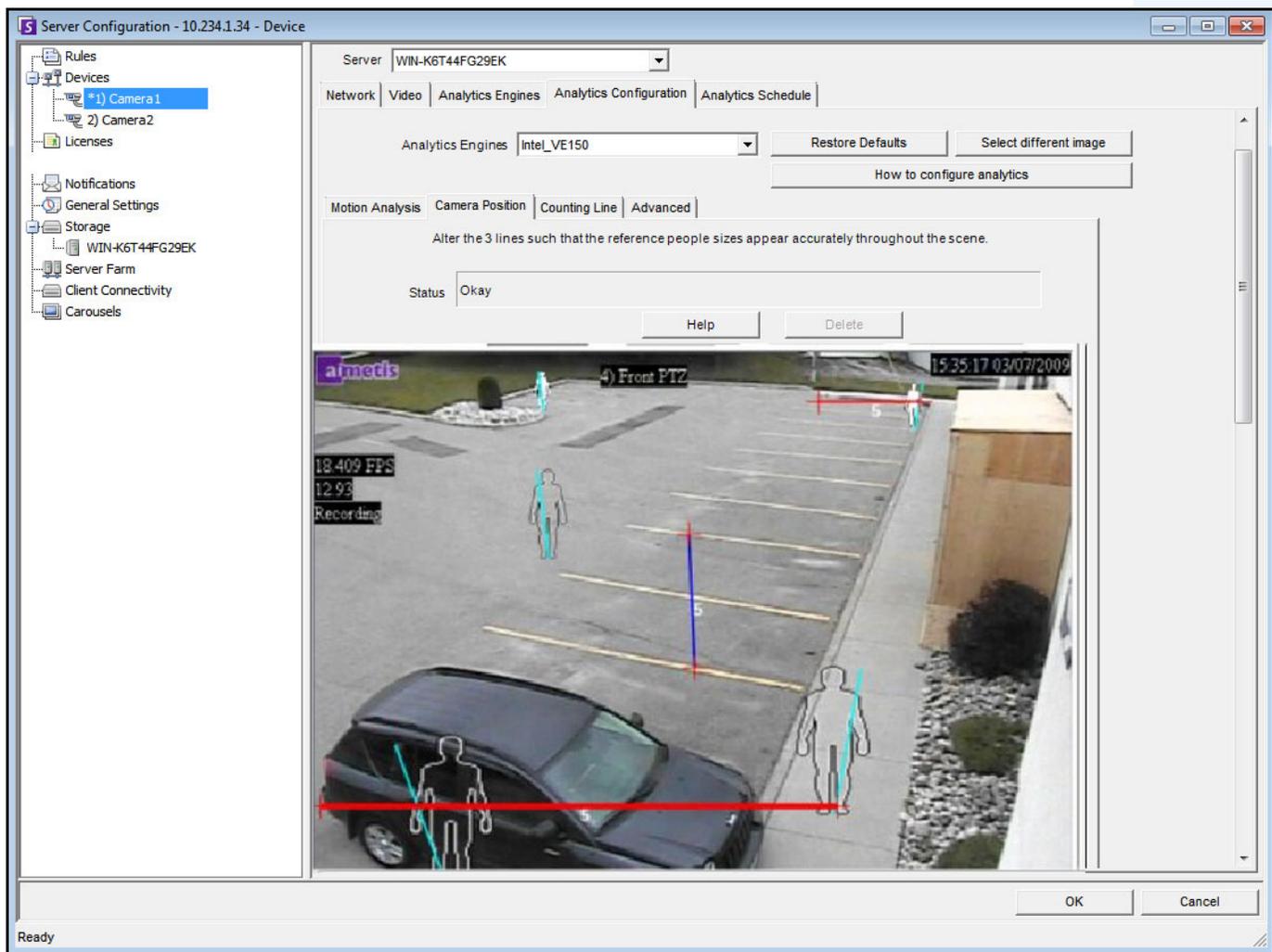


Figure 3. Lines representing perspective in the image

Analytics Schedule

By default, when a video engine (such as VE150) is enabled for a particular camera, it will analyze video for the camera in real-time for all 24 hours in a day. However, you may want to schedule video analytics for active and inactive periods in order to conserve CPU. This feature is called **Post Processing**, since you may not analyze video at the time it was recorded. You define which hours of the day will be analyzed, in the **Analytics Schedule** tab.

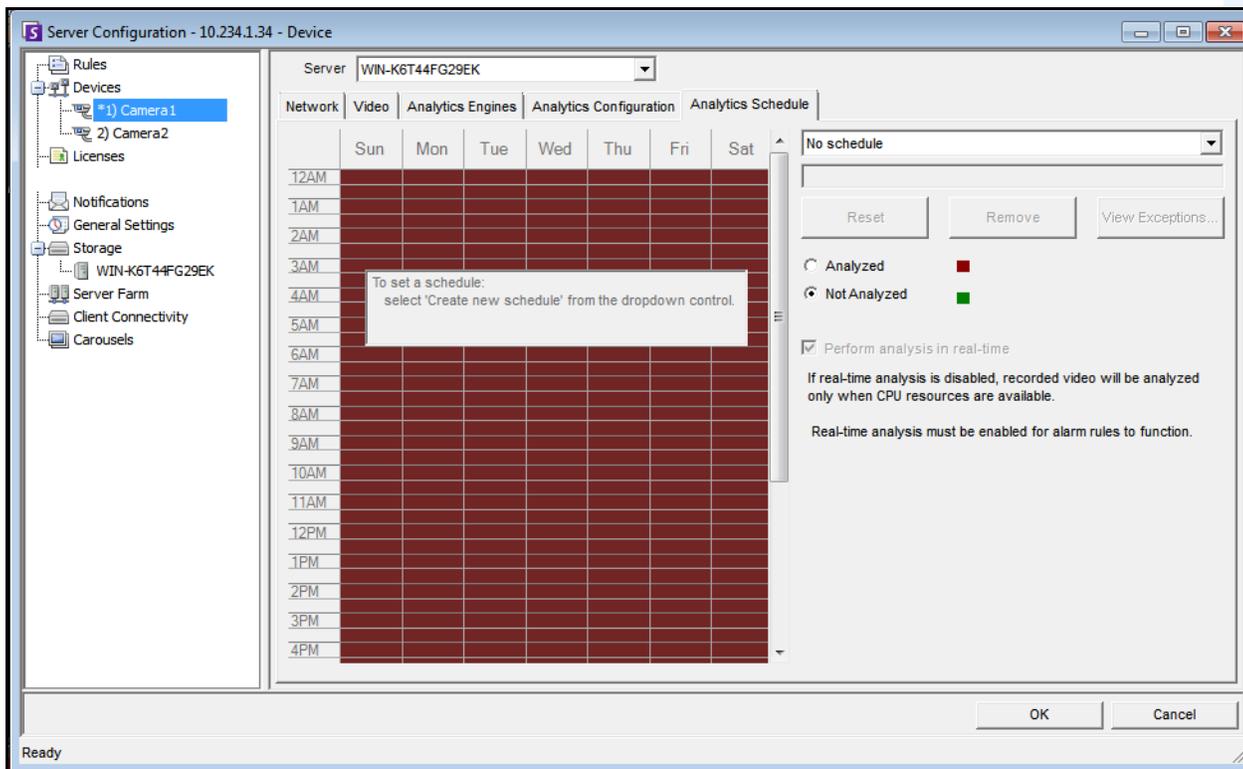


Figure 4. Analytics Schedule



Important: When video analytics is not active, no analytics meta data is generated during this time frame. As a result, no reports or alarms would be available during times when video analytics is disabled.

Task 3: Create a Rule and configure the video engine detection capabilities

As a final step, to receive real-time alarms for specific events, rules must be configured. Using the **Rule Wizard**, you configure the alarm capability of the analytic.

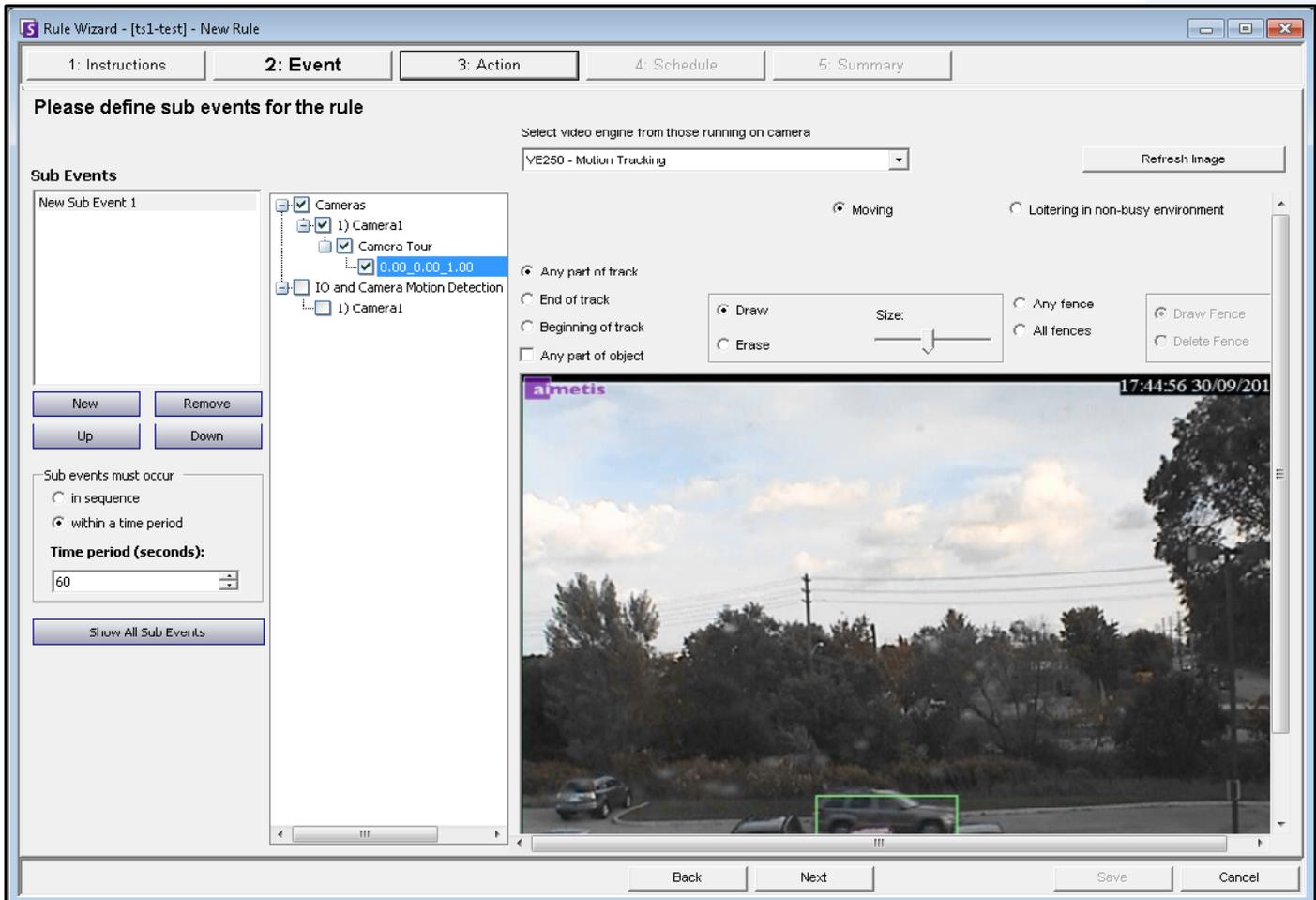


Figure 5. Rule Wizard

Video Analytic Instructions and Creating Rules

Links to Instructions
"VE130 - Video Motion Detection" on page 116
"VE140 - Video Input Error" on page 119
"VE141 - Camera Tampering" on page 121
"VE150 - Advanced Motion Tracking" on page 123
"VE180 (beta) - Indoor/Outdoor People Tracking" on page 141
"VE250 - Motion Tracking" on page 163
"VE352 - Left and Removed Item Detection" on page 165
"PT090 - Automatic PTZ Tracking" on page 171
"VE410 - License Plate Recognition" on page 176
"Rules - Using the Rule Wizard" on page 177

VE130 - Video Motion Detection

The VE130 is a good choice in indoor and simple outdoor environments where only motion is to be detected and the type of object or object count is not required. The VE130 is a good alternative over camera based motion detection due to its simplified configuration and higher accuracy. Camera position is not heavily constrained, making VE130 a good general purpose video engine in many applications. If you require object counting or dwell time, use the VE150. For outdoor environments, also use VE150 as shadows or lighting changes will cause VE130 to function inaccurately.

Task 1: Configure VE130

Procedure

To configure the VE130:

1. In Symphony Client, from the **Server** menu, select **Configuration**. The **Configuration** dialog box opens. This allows you to configure devices for the currently selected server.
2. In the left pane, click **Devices**. The **Devices** dialog box opens.
3. Click the camera you want to configure for use with video analytics and click **Edit**.
4. Click the **Analytics Engines** tab and select **VE130**. By default **VE250** is selected, in which case you must first deselect VE250.
5. Click the **Analytics Configuration** tab ([Figure 6 on page 117](#)).

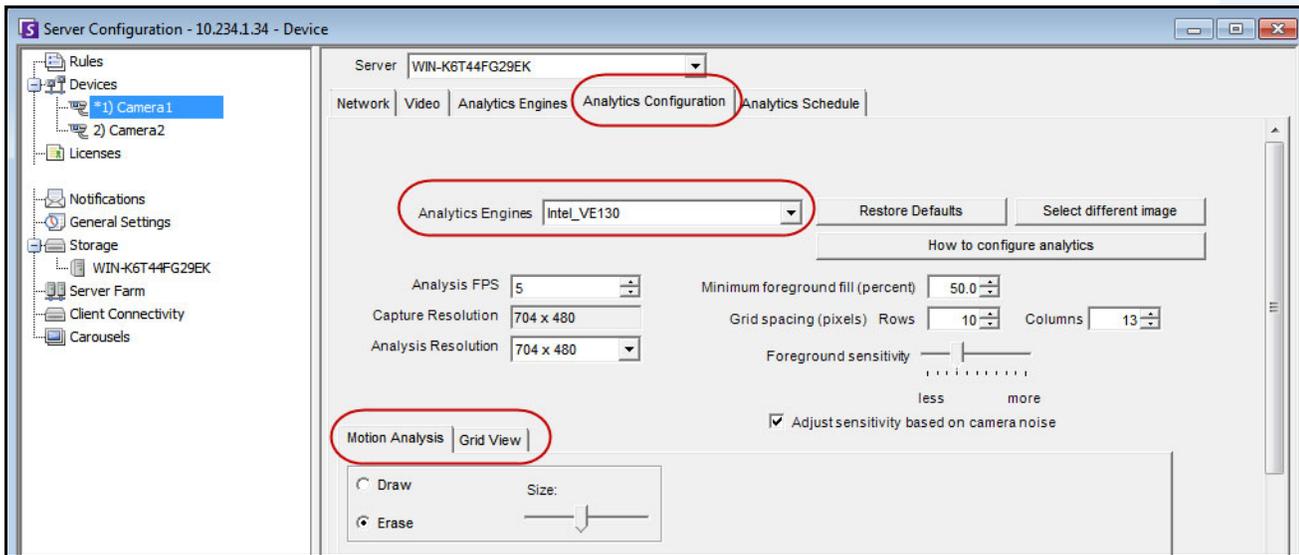


Figure 6. VE130 - Analytics Configuration tab (Grid View subtab)

Analytics Configuration tab

1. From the **Analytics Engines** drop-down list, select **Intel_VE130**.
2. Click the **Motion Analysis** subtab. A current image from the video is displayed.
3. You will define an area in the image for motion detection. If the image is not adequate, click **Select different image**. The **Select Image** dialog box opens. Select an image from the **Timeline**.
4. Using the displayed image from the video, define the area in yellow (a mask) where objects in motion should be detected. (Not sure of the concept? See [“Masks: The Areas Where Symphony Tracks Objects”](#) on page 111.)
 - Select the **Erase** option to erase the yellow mask.
 - Select the **Draw** option to draw the yellow mask.
 - The **Size** slider adjusts the pen thickness.
5. (Optional) You can adjust the following specifications:

Analysis FPS	Frame rate at which the video engine analyzes frames. Can be set lower than the record frame rate.
Capture Resolution	Displays the resolution at which the video is being recorded. This can be changed in the Device setup.
Analysis Resolution	Resolution which is used to analyze frames. Normally this is lower than Capture Resolution to conserve CPU.

6. Click the **Grid View** tab and adjust the following specifications as necessary.

Minimum foreground fill (percent)	The scene is divided into a grid. This value specifies how much each grid square must change (in %) before activity is detected in this square.
Grid spacing (pixels)	Defines grid spacing as Rows and Columns .

Foreground sensitivity	Defines how sensitive the video engine should be to scene change. The more sensitive it is to change, the more likely the minimum foreground fill will detect activity in the grid space.
Adjust sensitivity based on camera noise	

- Click **OK** to save settings.

Task 2: Create a Rule using VE130

Procedure

To configure a Rule using the VE130:

- From the **Server** menu, select **Configuration** and then **Rules**.
- Click **New**. The **Rule Wizard** opens. Read the overview and click **Next**.
- Select the check box next to the camera name. If it is a PTZ camera, select the camera tour position check box.
- From the **Select video engine for those running on camera** drop-down list, select **VE130 - Simple Motion Detection**.
- Using the displayed image from the video, define the area in red (a mask) where alarms should be set. (Not sure of the concept? See [“Motion Mask versus Alarm Mask” on page 111.](#))
 - Select the **Erase** option to erase the red mask.
 - Select the **Draw** option to draw the red mask.
 - The **Size** slider adjusts the pen thickness.
- (Optional) **Sub Events** - see Rules content
- Click **Next** to continue in the **Rule Wizard**. Set up the rules as per concepts and instructions in [“Rules - Using the Rule Wizard” on page 177.](#)



Important: Although the VE130 engine requires less CPU than other video engines, the video still needs to be decompressed in the server for analysis. As a result, the CPU savings are limited.

Troubleshooting

If too many false alarms are caused by shadows, rain, or other environmental conditions, use the VE150.

VE140 - Video Input Error

The VE140 analytic is designed to detect video signal loss. It is a good idea to run the VE140 on all cameras. This analytic is environment independent.

Task 1: Configure VE140

Procedure

To configure the VE140:

1. In Symphony Client, from the **Server** menu, select **Configuration**. The **Configuration** dialog box opens. This allows you to configure devices for the currently selected server.
2. In the left pane, click **Devices**. The **Devices** dialog box opens.
3. Click the camera you want to configure for use with video analytics and click **Edit**.
4. Click the **Analytics Engines** tab and select **VE140**. By default **VE250** is selected, in which case you must first deselect VE250.
5. Click **OK** to save settings. No configuration is required for the VE140 from the **Analytics Configuration** tab (Figure 7).

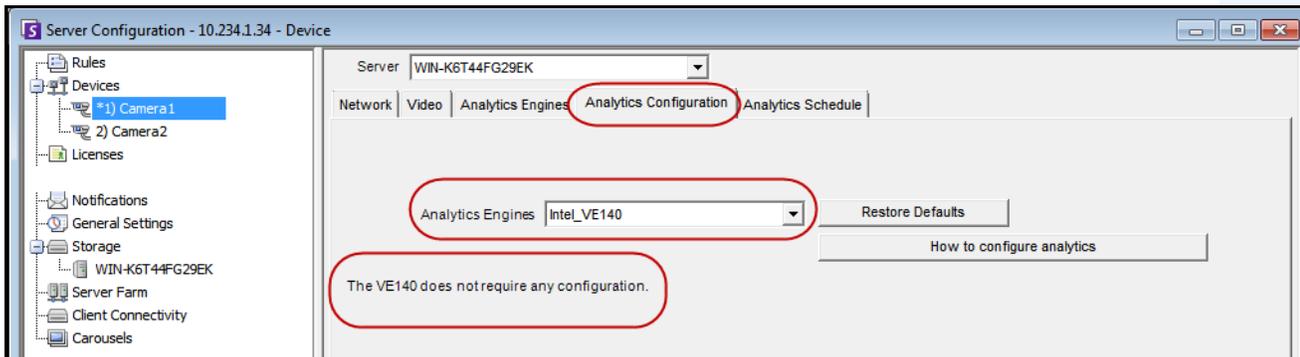


Figure 7. Analytics Configuration tab for VE140

Task 2: Create a Rule using VE140

Procedure

To configure a Rule using the VE140:

1. You must configure the VE140 before creating a Rule that uses the VE140.
2. From the **Server** menu, select **Configuration** and then **Rules**
3. Click **New**. The **Rule Wizard** opens. Read the overview and click **Next**.
4. Select the check box next to the camera name. If it is a PTZ camera, select the camera tour position check box.

5. From the **Select video engine for those running on camera** drop-down list, select **VE140 - Video Input Error**. No further configuration is required.
6. Click **Next** to continue in the **Rule Wizard**. Set up the rules as per concepts and instructions in [“Rules - Using the Rule Wizard” on page 177](#).



Note: The VE140 requires minimal CPU.

VE141 - Camera Tampering

The VE141 Camera Tampering Engine is designed to detect when the field of view is obstructed. This can occur if the camera has been moved, if the lens is spray painted, or if a large object is placed in front of the camera. This is a general purpose analytic and should normally run on each camera.

Task 1: Configure VE141

Procedure

To configure the VE141:

1. In Symphony Client, from the **Server** menu, select **Configuration**. The **Configuration** dialog box opens. This allows you to configure devices for the currently selected server.
2. In the left pane, click **Devices**. The **Devices** dialog box opens.
3. Click the camera you want to configure for use with video analytics and click **Edit**.
4. Click the **Analytics Engines** tab and select **VE141**. By default **VE250** is selected, in which case you must first deselect VE250.
5. Click the **Analytics Configuration** tab (Figure 8).

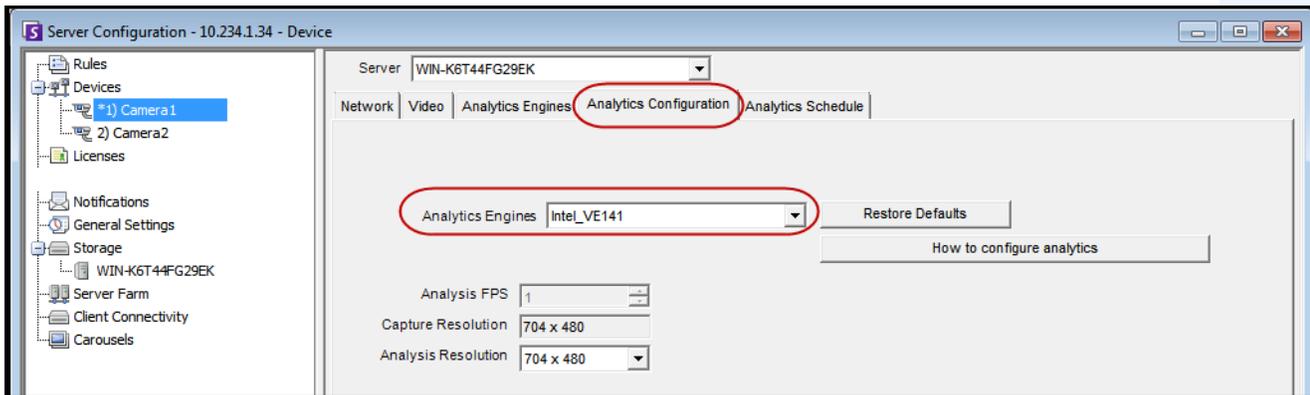


Figure 8. Analytics Configuration tab for VE141

To configure the Analytics Configuration tab:

1. From the **Analytics Engines** drop-down list, select **Intel_VE141**.
2. (Analysis Resolution field)
3. Click **OK** to save settings.

Task 2: Create a Rule using VE141

Procedure

To configure a Rule using the VE141:

1. You must configure the VE141 before creating a Rule that uses the VE141.
2. From the **Server** menu, select **Configuration** and then **Rules**
3. Click **New**. The **Rule Wizard** opens. Read the overview and click **Next**.
4. Select the check box next to the camera name. If it is a PTZ camera, select the camera tour position check box.
5. From the **Select video engine for those running on camera** drop-down list, select **VE141 - Camera Tampering**. No further configuration is required.
6. Click **Next** to continue in the **Rule Wizard**. Set up the rules as per concepts and instructions in [“Rules - Using the Rule Wizard” on page 177](#).

VE150 - Advanced Motion Tracking

The VE150 is a good choice for indoor and outdoor motion tracking applications. The engine can classify the difference between people and vehicles, and can detect if the object is stopping, starting, or simply moving through the scene. Alarm rules can therefore be designed around these features.

Typical deployments include:

- commercial buildings, where people or vehicles are to be detected,
- military bases, where objects entering an alarm zone or crossing a pre-defined perimeter should be detected, or
- for car dealers and construction sites, where full time security guards are not a cost effective approach to detecting people or vehicles after hours.

The VE150 will produce far fewer false alarms caused by a changing outdoor environment as compared to normal motion detection algorithms. Different VE150 modes of operation are available, which can be used for indoor people counting and dwell time applications.

Task 1: Configure VE150

Procedure

To configure the VE150:

1. In Symphony Client, from the **Server** menu, select **Configuration**. The **Configuration** dialog box opens. This allows you to configure devices for the currently selected server.
2. In the left pane, click **Devices**. The **Devices** dialog box opens.
3. Click the camera you want to configure for use with video analytics and click **Edit**.
4. Click the **Analytics Engines** tab and select **VE150**. By default **VE250** is selected, in which case you must first deselect VE250.
5. Click the **Analytics Configuration** tab ([Figure on page 124](#)).

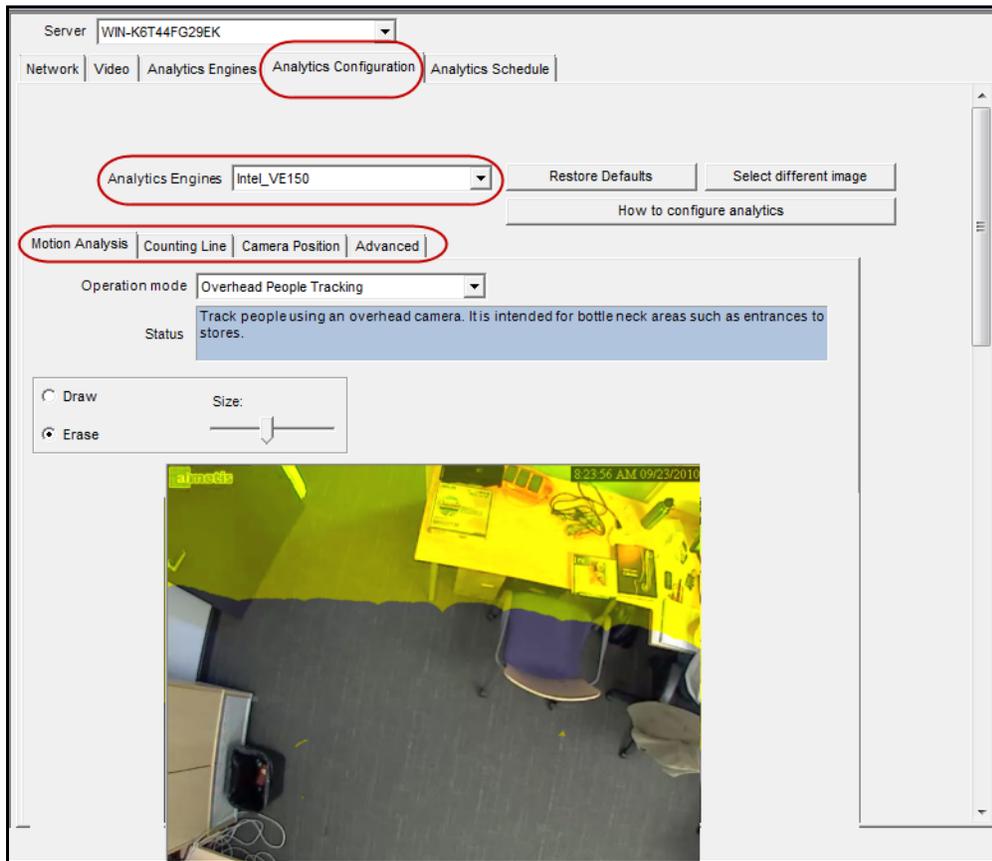


Figure 9. Analytics Configuration tab for VE150

Analytics Configuration tab

1. From the **Analytics Engines** drop-down list, select **Intel_VE150**.
2. Click the **Motion Analysis** subtab. A current image from the video is displayed.

Motion Analysis subtab

1. From the **Operation Mode** drop-down list, select a mode. The **Status** field displays a description of the operation mode selected.
 - Outdoor Tracking
 - Non-Overhead People Tracking
 - Overhead People Tracking
 - Overhead People Counting
 - Wrong Direction Detection
 - Simple Blob Tracker
2. You will define an area in the image for motion detection. If the image is not adequate, click **Select different image**. The **Select Image** dialog box opens. Select an image from the Timeline.
3. Using the displayed image from the video, define the area in yellow (a mask) where objects in motion should be detected. (Not sure of the concept? See [“Masks: The Areas Where Symphony Tracks Objects”](#) on page 111.)
 - Select the **Erase** option to erase the yellow mask.

- Select the **Draw** option to draw the yellow mask.
- The **Size** slider adjusts the pen thickness.

Camera Position subtab

1. Click the **Camera Position** subtab. Depending on which **Operating Mode** you selected in the **Motion Analysis** subtab, the **Camera Position** options will vary.

Operation Modes: **Outdoor Tracking, Non-Overhead People Tracking, and Wrong Direction Detection**

Specify the *camera's position relative to objects in the captured image*:

Alter the three lines such that the reference people sizes appear accurately throughout the scene. (To review the concept, see "[Perspective](#)" on page 112.)

- Resize lines by dragging the line end points.
- Move the line by dragging it at the center.
- Lines represent distance along the ground.
- Length value given only to understand how each line relates to the other lines (foreground versus an expanse in the distance). Therefore units of measurement are irrelevant.
- To move a reference person, **left-click** at feet location of person icon and drag.
- To add a reference person, **right-click** at the desired location in the image.
- To delete a reference person, **left-click** on person icon and press **Delete**.

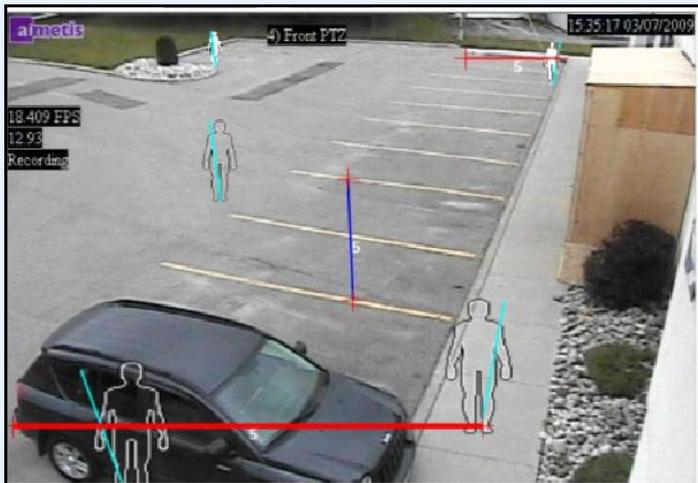


Figure 10. Outdoor Tracking operation mode

Operation Mode: Overhead People Tracking

Specify the *camera's position relative to objects in the captured image*:

- You can configure all objects highlighted in cyan.
- Move the middle cyan point of the center box to a location directly below the camera.
- Using the corner points, adjust the center box to the size of an average person.
- Adjust the outer boxes' cyan lines such that the boxes represent the size of an average person.
- If the camera is placed very high and pointed directly down at the floor, make all three boxes the same size.

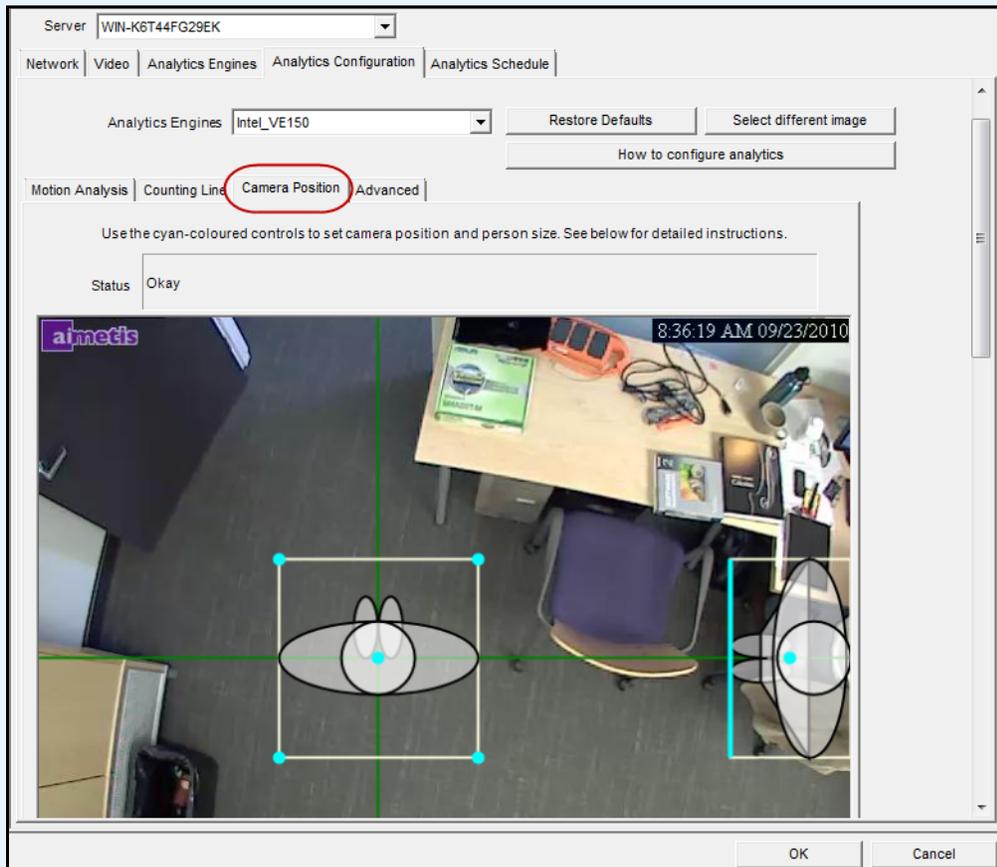


Figure 11. Overhead People Tracking operation mode

Operation Mode: Overhead People Counting

Specify the *camera's position relative to objects in the captured image*:

- You can configure all objects highlighted in cyan.
- Move the middle cyan point of the center box to a location directly below the camera.
- Using the corner points, adjust the center box to the size of an average person.

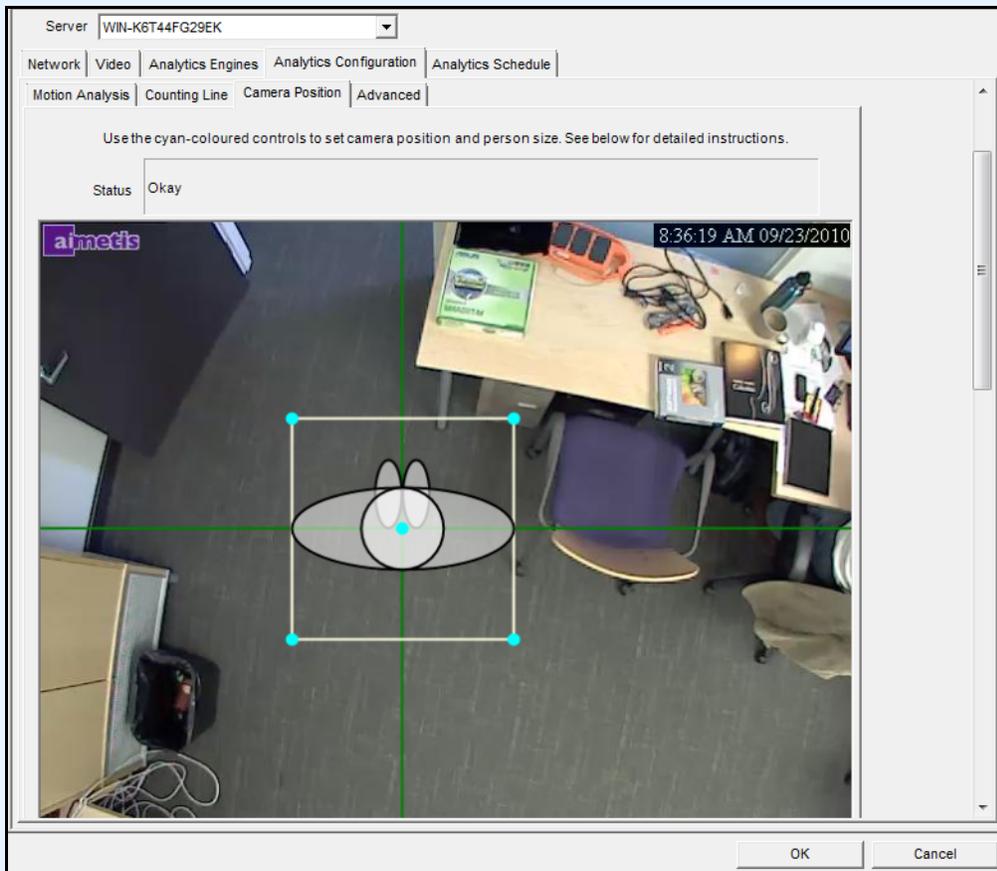


Figure 12. Overhead People Counting operation mode

2. Click **Apply** to save settings.

Counting Line subtab (display based on Operation Mode)

1. Ensure the **Camera Position** and **Motion Analysis** mask is set properly and then click the **Counting Line** subtab.
2. By default, the **Draw Counting Line** option is selected.
3. Left-click on the image and draw a line that will cause items (people or cars) to be counted as they pass the delineated area.
 - The line appears with arrows indicating when movement is detected as **In** to a delineated area and **Out** of the delineated area.
4. Click **OK** to save settings or click the **Advanced** subtab for further settings.

Advanced subtab



Important: The **Advanced** subtab settings are for experts only. Values should be changed only in cases where the analytic engine is not functioning as expected.

1. Enter a frame per second value in the **Analysis FPS** field.
 - This value indicates how many frames will be analyzed by the system. Typically the default value should not be altered. However, there may be cases where the analysis frame rate can be reduced to conserve CPU. Doing this may negatively alter the algorithms performance.
 - Like the **Analysis Resolution**, the **Analysis FPS** can be set to a different value than the **Record FPS**.
2. Set the **Analysis Resolution** as required.
 - Setting the **Analysis Resolution** the same as the **Capture Resolution** ensures that objects will be detected as far away as possible. However, in order to conserve CPU resources it is possible to down sample the video sent for analysis. Downsampling will reduce CPU requirements but may also reduce the detection range of the video analytic.
3. From the **Background Model** drop-down list, select the model that best represents the environment the camera is recording (for example, a high movement area). For a complete description of usage, see [Table 2 on page 129](#).



Important: Adjusting the **Background Model** is usually the best way to reduce false alarms. (It requires more CPU.)

Table 2. Background Model Usage

Background Model	When to use
Static	Use where the background is relatively static (no periodic movement in the background such as swaying trees). This is the fastest Symphony background model.
Dynamic	Use where there are periodic moving objects (like a tree branch moving back and forth in a fairly constant wind, or caused by unstable camera mounting). This background model can handle both static and dynamic backgrounds, but it uses more CPU power than the Static model and thus is not recommended for static backgrounds. Important: An environment might appear static during the day, but rain fall at night will create a dynamic environment. Therefore, you should select the Dynamic setting.
Dual Layer Dynamic	Similar to the Dynamic background model but is capable of tracking objects that are stationary for short periods of time. Use in outdoor areas where you want to track, for example, people standing still for 30 to 60 seconds.
Spatio- Temporal	Tracks only consistent motion, so it is capable of greatly reducing the false alarms due to tree branches and other objects in the background that can move randomly due to the wind. This will use more CPU and will reduce the detection range of the video analytics.

4. Various options and default settings are displayed based on the **Operation Mode** and **Background Model** selected. Before selecting options, learn about their usage from the information in [Table 3 on page 130](#).

Table 3. Advanced Options available based on Background Model selected

Option	Description	Default Setting
Learn normal behaviour	Learns the percentage of time each pixel is in motion and can subsequently ignore. Useful, for example, when tracking boats on water.	False
Options		
Appearance	Manual, Bright shiny, Grey matted	Manual
Lower bound	If Manual selected	0.70
Upper bound	If Manual selected	1.50
Mode	Coherent Motion, Abnormal Behaviour, Wrong Direction	Coherent Motion
Appearance Marginalization	Only detects motion patterns and is not influenced by the appearances.	True
Threshold	Detection threshold for Spatio-Temporal pattern.	0.03
Bg Frames	If Abnormal Behaviour selected	255
Fg. Frames	If Abnormal Behaviour selected	10
Direction	If Wrong Direction selected. Read-only.	242
Foreground contrast	Sets the minimum contrast needed for an object to be detected as a foreground object. Important: If set to a large value, then objects with similar colour as background will not be detected as valid objects to track.	Low
Reset background condition	If this percentage of the frame changes, the background is reset.	100
Foreground contrast for determining camera obstructed	Sets the minimum contrast needed between background and foreground before the change is considered for a camera-obstructed scenario.	Low
Background learning duration (seconds)	Determines the approximate length of time it will take a foreground object that becomes stationary to merge into the background. Important: If an object has a periodic movement with a period greater than the specified time, then that object will always be considered a foreground object (never merged into the background). The background is determined based on the last Update Background Seconds of video. The background is updated all the time, not only when the analytics engine starts.	15
Wait after large background change and before starting to track objects (seconds)	Allows you to set how long to wait after background reset and before starting to track objects. Ideally it should be zero, but if the you are aware of a lighting issue where starting to track immediately can cause false alarms, then set this to the number of seconds needed for the light to stabilize.	0

Table 3. Advanced Options available based on Background Model selected (Continued)

Option	Description	Default Setting
High contrast threshold	The threshold used to determine how far apart an observation can be from the learnt background model before it is detected as foreground. A low value (for example, 5) will make the background model more sensitive to small changes in the pixel intensities. Note: The value can mean different things for different background models.	25
Remove ghost pixels	Any pixels that do not change in value for some time are not considered as foreground.	True
Track Slow Moving Objects / Object Speed	Tracks an object moving very slowly across the video. It can also be an object coming directly toward or directly away from the camera, which will appear to be moving slowly. If Track Slow Moving Objects is disabled these objects tend to become part of the background and as such will not be tracked. By enabling this option these objects will be tracked. Important: This option might increase some false alarms for situations where an object stands still in the video for a long time.	False
Shadow Sensitivity	Controls how aggressively shadows (decreases in lighting) are ignored when tracking moving objects. Increasing the slider (to the right) will allow the engine to correctly ignore more of the shadow areas. Note: This will also increase the potential of a person wearing dark clothing on light background to be classified as a shadow.	Middle (disabled)
Illumination Sensitivity	Controls how aggressively increases in lighting are ignored. Increases in lighting occur due to a light source such as car headlight or when an overcast day becomes a sunny day. Increasing the slider (to the right) will allow the engine to correctly ignore any increases in illumination. Note: This will also increase the potential of a person wearing light clothing on a dark background to be classified as an illumination increase.	Middle (disabled)
Cloud Check	Tries to ignore cloud motion.	False
Check for sudden background movement	Tries to remove false tracks due to sudden movement of objects in the background due to wind. It will also eliminate false tracks due to sudden movements of the camera.	False
Maximum distance in pixels	If Check for sudden background movement selected. A sudden movement is defined as a movement of an object or camera up to this many pixels.	5 (disabled)

Table 3. Advanced Options available based on Background Model selected (Continued)

Option	Description	Default Setting
Time to clear long-term background (seconds)	Only available for Codebook (Dual-Dynamic) background model.	False (disabled)
Time to clear short-term background (seconds)	Only available for Codebook (Dual-Dynamic) background model.	False (disabled)
Time to move short-term background to long-term (seconds)	Only available for Codebook (Dual-Dynamic) background model.	False (disabled)
Initial background model learn time (seconds)	Only available for Codebook (Dual-Dynamic) background model.	False (disabled)
Classification		
Automatic classification	Attempts to automatically classify objects such as cars, people or unknown. Includes colour coding as well.	True
Force all tracked objects to be classified as Vehicles		False
For all tracked objects to be classified as People		False
Force all tracked objects to be classified as Unknown		False
Crowd Detection	Enable the crowd detection module. It attempts to estimate the number of people in the scene at each time step based on the calibration information and on the number of pixels in motion at one given time. It also estimates the % of the processing mask in motion, taking into account the calibration information.	False
Show Stats	If Crowd Detection selected. It displays the current crowd detection estimations.	
Max Mask Fill	If Crowd Detection selected. It re-normalizes the % of the processing mask in motion based on the desired maximum occupancy. For example, if one knows that in the busiest environment, only 60% of the processing mask will be in motion, the Max Mask Fill should be set to 0.61.	
Find Objects		

Table 3. Advanced Options available based on Background Model selected (Continued)

Option	Description	Default Setting
Use contour-based segmentation	Better segmentation of moving objects using the contour.	True
People-only segmentation	If Use contour-based segmentation selected. Will try to keep nearby people as individually tracked objects. There is a potential that large vehicles might appear as multiple smaller objects.	False
Merge objects closer than (meters)	Any detected objects that are within the specified distance of each other will be merged into one object	2.5
Smallest object size (pixels)	Objects with width smaller than Smallest object size will be ignored by the engine.	2
Don't track objects larger than (% of screen)	If a detected object has a width or height greater than the specified percentage of image width or a height respectively, it is ignored.	90
Line People Counting		
Consider only contiguous segments	When performing line counting, looks for continuous segments. Does not try to accumulate all pixels for each direction.	False (disabled)
Min Object Width Ratio	The ratio of the object width considered as the minimum person width (0.33 by default). For example, if the object width is 9 pixels and less than 3 pixels are counted in one direction when crossing the line, it will be not counted as an object.	0.33 (disabled)
Max Object Width Ratio	The ratio of the object width considered as the maximum person width (1.88 by default). This is considered only when Multiple counting support in width is enabled. If more pixels are counted, a new person will be considered. For example, if the object width is 9 pixels and more than $9 \times 1.88 = 16.92$ pixels are counted in one direction when crossing the line, two people will be counted.	1.85 (disabled)
Multiple counting support in width (side-by-side)	Considers cases where there can be more than one person at the same time crossing the line side-by-side.	True (disabled)
Object Line Crossing Duration (seconds)	The time it takes for a person to cross the line.	1.00 (disabled)
Min Object Length Ratio	The ratio of time (with respect to object line crossing duration) that is required to detect an object. For example, assuming 10 FPS analysis rate, it is required that enough motion is detected in at least 2 consecutive frames in order to count a person (as well as in at least 3 pixels width).	0.30 (disabled)

Table 3. Advanced Options available based on Background Model selected (Continued)

Option	Description	Default Setting
Max Object Length Ratio	The ratio of time (with respect to object line crossing duration) that is required to consider that a <i>new</i> object is coming behind without any gap. A default ratio of 3 is considered in order for people walking with strollers/shopping carts not to be counted twice. If the environment does not allow for this, lower the ratio, for example to 2.2.	3.00 (disabled)
Multiple counting support in length	Considers cases where there can be more than one person crossing the line back-to-back without creating a gap.	True (disabled)
Track Objects		
Make all objects foreground	All detected objects will become foreground objects and be displayed.	False
Don't merge overlapping tracks	When the tracks of two objects meet they will not be merged into one object.	True
Foreground sensitivity	Adjusts how sensitive the engine is to tracking objects and can be used to reduce false tracks from trees blowing in the wind, or increase the likelihood of tracking a poorly visible object (such as people partially obstructed by vehicles in a parking lot).	Middle
Specify the minimum distance an object must travel to become a tracked object	Attempt to detect only tracks of a certain length.	False
Minimum travel (meters)		1.0
Reduce false tracks from snow	Try to remove tracks created by snow.	True
Track small objects	Objects less than 5/16 meters will not be deleted as snow.	False

Task 2: Create a Rule using VE150

Procedure

To configure a Rule using the VE150:

1. You must configure the VE150 before creating a Rule that uses the VE150.
2. From the **Server** menu, select **Configuration** and then **Rules**
3. Click **New**. The **Rule Wizard** opens. Read the overview and click **Next**.
4. Select the check box next to the camera name. If it is a PTZ camera, select the camera tour position check box.

5. From the **Select video engine for those running on camera** drop-down list, select **VE150**.
6. For a Digital fence assuming **Outdoor Tracking** mode was selected:
 - a. Click the **Any Fence** or **Delete Fence** to draw and erase the digital fences. The arrows define which direction the offending object must pass through the line(s) in order to cause an alarm.
 - b. Double-click the arrows to change their properties.
 - Red indicates an object crossing the line in this direction will cause an alarm.
 - The green arrow denotes the object crossing the line in this direction would not cause an alarm.
 - Multiple fence lines can be drawn.



Important: If **All fences** has been selected, the object must cross through all fences drawn to cause the alarm.

7. For **Alarm** zone, mark the **Alarm** zone:
 - Select the **Erase** option to erase the red mask.
 - Select the **Draw** option to draw the red mask.
 - The **Size** slider adjusts the pen thickness.
8. The following settings apply only to alarm zones:
 - **Any part of track** denotes the object can be anywhere in the red alarm zone to trigger an alarm. To alarm on vehicles moving anywhere in the alarm zone, select **Any part of track**.
 - **End of track** denotes that the object has stopped in the alarm zone. To alarm on vehicles entering the alarm zone and stopping in it, select **End of track**.
 - **Beginning of track** denotes that the object started moving in the alarm zone. To alarm on vehicles that were parked in the alarm zone and started to move, select **Beginning of track**.
9. Select the **Class** check boxes to filter or detect specific classes of objects.
10. Click **Next** to continue to next step in wizard. See [“Rules - Using the Rule Wizard” on page 177](#) for details.

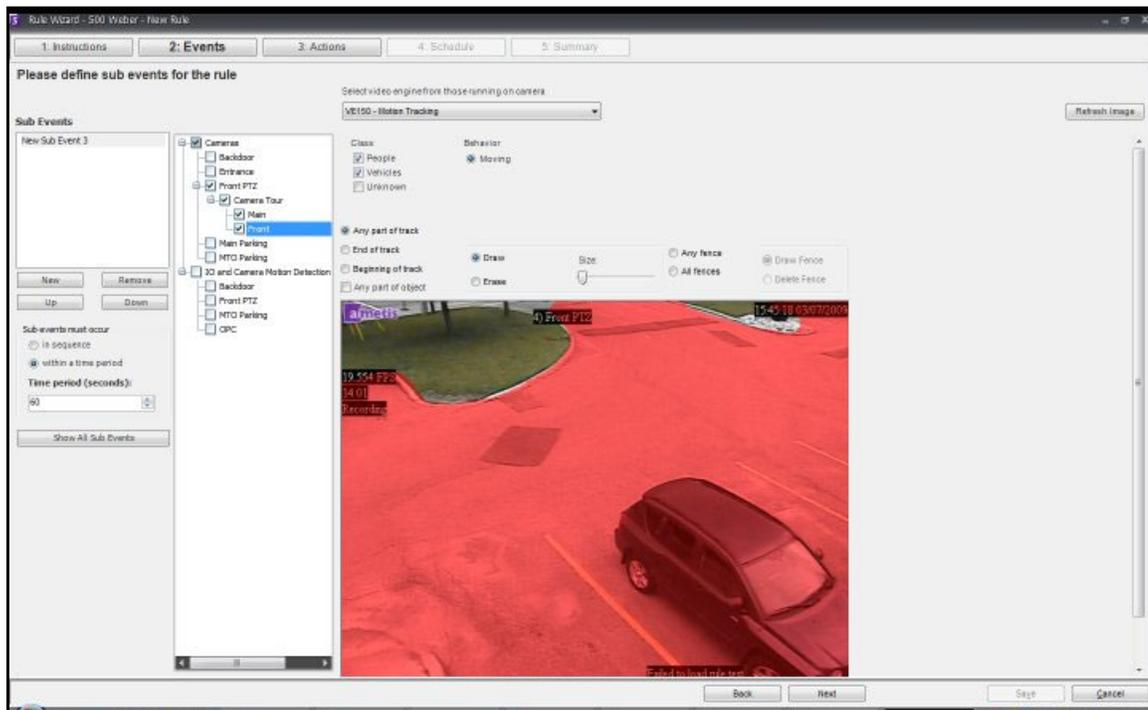


Figure 13. Rule Wizard

Note: In typical situations, the VE150 can detect a person 100 feet from the camera, a vehicle 150 feet from camera (assuming 4CIF or 640x480 and adequate lighting conditions). These distances depend on the lens and zoom used.



Keep the camera lens clean from rain droplets or bugs. Rain droplets hitting the camera lens directly will cause false alarms. Bugs will do the same. If a spot light is installed too close to camera, it will attract bugs.

The camera must be stable, if wind or vibrations causes the camera to move, false alarms will occur

Troubleshooting

- Ensure the correct frame rate is being used, and that enough CPU is available on the system to perform proper analysis.
- Verify that perspective has been properly set by adjusting the **Camera Position** tab.
- If nuisance false alarms occur by trees or reflections, try the **Dynamic background model (Environment tab)**. If problems still persist, contact Aimetis for support.

Hardware Acceleration

Graphics cards contain processing power which can be used by Symphony. This is called “hardware acceleration” and is currently available with the VE150.

When GPU (hardware acceleration) is used, the CPU is not used by VE150, which increases the scalability of Symphony.

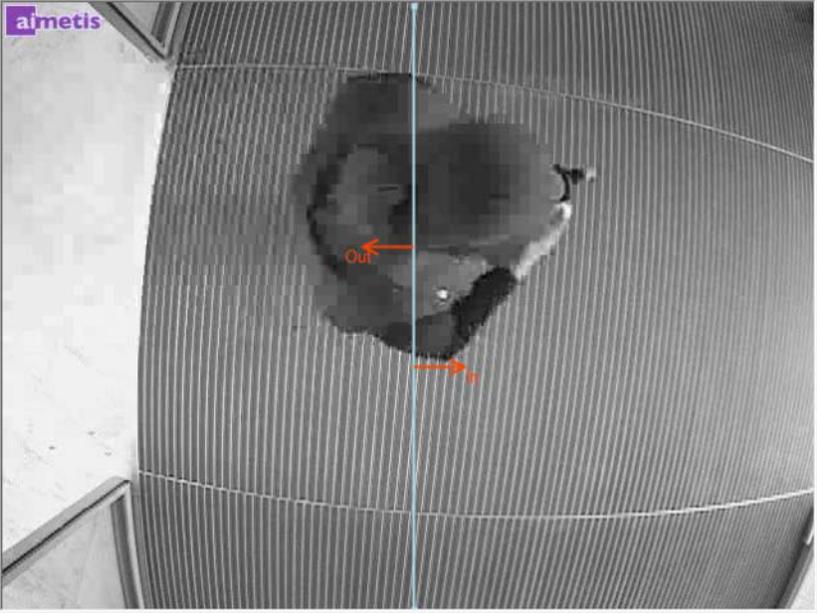
Symphony GPU acceleration is achieved using **OpenCL**, which must be installed properly:

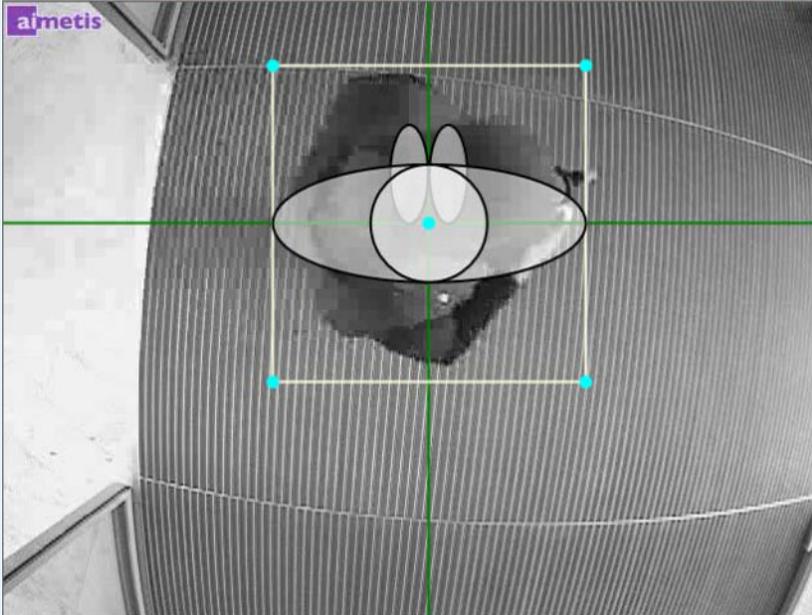
- **NVIDIA** comes with the latest drivers: <http://www.nvidia.com/Download/index.aspx?lang=en-us>
- **ATI/AMD** via ATI Stream v.2.0 with OpenCL 1.0 support:
<http://developer.amd.com/gpu/atistreamsdk/pages/default.aspx>

If OpenCL is detected, new background models will appear in VE150 automatically (Static OpenCL, Dynamic OpenCL, Spatio-temporal OpenCL).



The **Static OpenCL** and **Dynamic OpenCL** models do not provide model specific options such as **Track Slow Moving Objects**, **Shadow/Illumination Removal**, and **Remove Ghost Pixels**.

<p>Example 1</p>	<p>Operation Mode: Overhead People Counting</p>
	<p>Camera Setup: A fully overhead camera configuration where the counting line will either be horizontal or vertical. Camera should be zoomed in such that a person takes up roughly 1/4th to 1/3rd of the width/height of the screen, depending on whether the counting line is horizontal or vertical.</p> <p>Operation Mode: Overhead People Counting</p> <ol style="list-style-type: none"> 1. Drag the counting line such that it covers the required area that people will be crossing. <ul style="list-style-type: none"> • An orange line indicates that the counting line is enabled (active). • A green line indicates that the counting line is disabled. 2. Ensure that the line is a little longer at both ends, such that it covers any possible areas where parts of people might be visible in the camera view. <div data-bbox="354 867 1214 1682" style="border: 1px solid black; padding: 5px;"> <p>Analog Video Analytics Engines Analytics Configuration Analytics Schedule</p> <p>Motion Analysis Camera Position Counting Line Advanced</p> <p>Click and drag the endpoints to position the counting line vertically or horizontally.</p>  </div> <p style="text-align: center;">Figure 14. Example - Counting line</p>

Example 1	Operation Mode: Overhead People Counting (Continued)
	<p data-bbox="297 306 443 333">Person Size:</p> <ol data-bbox="345 352 1263 520" style="list-style-type: none"><li data-bbox="345 352 1263 447">1. Select a good frame from the Timeline that has people walking by and crossing the desired counting line. The engine needs to know the size of the person right across the counting line.<li data-bbox="345 457 1263 520">2. Move the rectangle over the person and resize it such that its square is of size equal to the person's shoulders. <p data-bbox="297 569 1146 632">If you notice that too many people are counted, try decreasing the person size. Alternatively, if not enough people are counted, try increasing the person size.</p>  <p data-bbox="594 1289 967 1316">Figure 15. Example - Person size</p>

Example 1	Operation Mode: Overhead People Counting (Continued)
	<p>Advanced Options</p> <p>Analysis FPS: Should be at least 8 FPS, but higher FPS is recommended (10). The bigger a person is with respect to the total image size, the higher is the required FPS.</p> <p>Analysis FPS: By default, it should be 40x30 for regular size people (1/4th of the image or higher); however, for really small people, this should be increased to 80x60, because when down-sampled at that resolution, the person will become 1-2 pixels, which is not enough for processing. This will take more processing, so it is recommended that the image is zoomed in more.</p> <p>Background Model: Only the spatio-temporal background model has support for motion estimation. Do not change this option.</p> <p>Threshold: The default 0.03 should be used. If you notice that you get counts even when there are no people crossing, try increasing this value.</p> <p>Appearance Marginalization: Should be turned on by default. You can experiment turning it off in environments with more shadows (and adjust the threshold as well, such as increasing it to 0.1).</p> <p>Counting The following parameters influence the counting across the line. These parameters are typically good at the default setting and they usually do not require manual intervention.</p> <ul style="list-style-type: none"> • Consider only contiguous segments • Multiple counting support in width • Min Object Width Ratio • Max Object Width Ratio • Object Line crossing duration • Multiple counting support in length • Min Object Length Ratio • Max Object Length Ratio

VE180 (beta) - Indoor/Outdoor People Tracking

The **VE180-BETA** is a good choice for indoor/outdoor people tracking applications. Typical deployments include commercial buildings. This video engine can be used for applications such as people counting and dwell time.

[Table 4](#) provides ideal settings only. They are not mandatory. **The VE180 is a robust analytic.**

Table 4. Ideal Camera Setup

Setup	Ideal Conditions
Environment	<ul style="list-style-type: none"> • Away from moving objects such as elevator doors, or moved objects such as carts, carriages and large luggage. • Avoid camera placement near escalators or stairs. Ensure that people are tracked on flat and level surfaces for accurate detection. • Ensure that people are fully visible to the camera and not partially hidden by shelves or low walls.
Lighting	<ul style="list-style-type: none"> • At least 75 LUX or better. • Ensure there is consistent light throughout the space and throughout the period of time that people are tracked. • Ensure that there are no shiny objects, like a shiny floor in the area people are tracked. A shiny floor may reflect light/shadows from surrounding area and generate false counts. • In the indoor tracking area, if possible, avoid sunlight from outside. Sunlight occasionally obscured by moving clouds will cast shadows that cross a counting line. • Depending on the angle of an indoor light, the shadows of people walking by (but not through) a counting line can trigger false counts.
Counting Lines	<ul style="list-style-type: none"> • An overhead view is usually more accurate for counting people across a line, but it covers less ground than a 45-degree view if the ceiling is low. • Try to have at least 1 meter of floor space on either side of the counting line. • In angled views, try to have at least 2 meters of space on either side of the counting line. • Setting person size: A person crossing the line should not take up more than about $\frac{1}{3}$ of the view in width and no more than $\frac{1}{2}$ of the view in height.
Camera Placement	<ul style="list-style-type: none"> • Note that accuracy decreases for nearly horizontal views (for example, less than 20 degrees declination). • If the camera is placed such that people appear smaller than 20 pixels on the screen, counting accuracy will decrease and you will need to use advanced option settings.

Task 1: Configure VE180

Procedure

To configure the VE180:

1. In Symphony Client, from the **Server** menu, select **Configuration**. The **Configuration** dialog box opens. This allows you to configure devices for the currently selected server.
2. In the left pane, click **Devices**. The **Devices** dialog box opens.
3. Click the camera you want to configure for use with video analytics and click **Edit**.
4. Click the **Analytics Engines** tab and select **VE180**. By default **VE250** is selected, in which case you must first deselect **VE250**.
5. Click the **Analytics Configuration** tab (Figure 16 on page 142). From the **Analytics Engines** drop-down list, select **Intel_VE180**.
6. Click the **Choose Image** button to select an image from your camera on which to base your analytic configuration.
7. Click all the subtabs necessary to configure your analytic:
 - [“Overview subtab” on page 143](#)
 - [“Processing Mask subtab” on page 143](#)
 - [“Camera Position subtab” on page 144](#)
 - [“Environment subtab” on page 149](#)
 - [“Counting Line subtab” on page 155](#)
 - [“Direction Line Subtab” on page 156](#)
 - [“Advanced Subtab” on page 157](#)

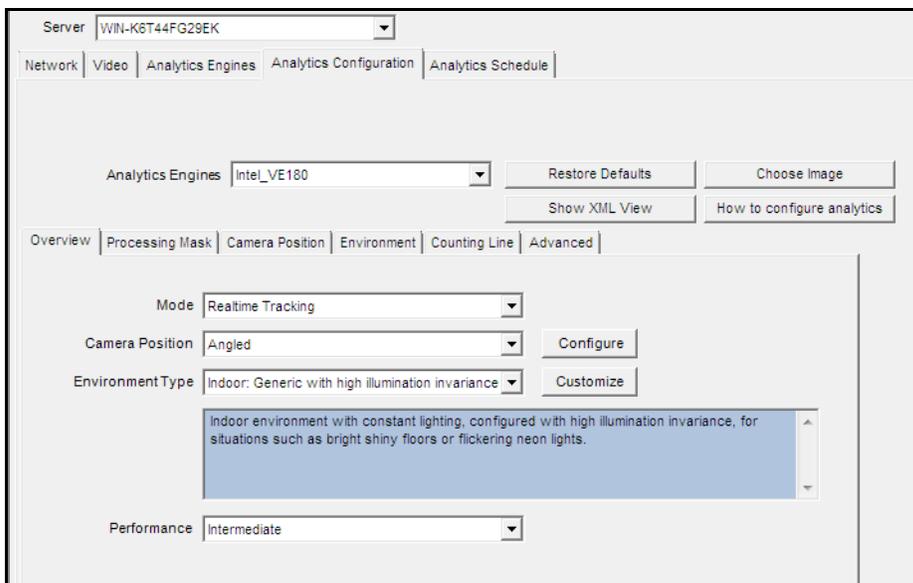


Figure 16. Analytics Configuration tab for VE180

Overview subtab

1. From the **Mode** drop-down list, select **Realtime Tracking**
2. From the **Camera Position** drop-down list, select **Angled, Overhead, Uncalibrated**.
 - **Uncalibrated** - Use only if objects are well separated and accurate counts are not required.
3. From the **Environment Type** drop-down list, select one of the following.
 - **Indoor/Outdoor: Generic**
 - **Indoor: Generic with variable illumination**
 - **Indoor: Generic with constant illumination**
 - **Thermal camera**
 - **Custom** - Automatically displays **Custom** if settings have been changed from default values in the **Environment** tab or **Advanced** settings.
4. From the **Performance** drop-down list, select the level of CPU processing: **Custom, Low, Intermediate, High**. By default, **Intermediate** is selected.

Processing Mask subtab

1. Using the displayed image from the video, define the area in yellow (a mask) where objects in motion should be detected. (Not sure of the concept? See [“Masks: The Areas Where Symphony Tracks Objects” on page 111.](#))
 - Select the **Erase** option to erase the yellow mask.
 - Select the **Draw** option to draw the yellow mask.
 - The **Size** slider adjusts the pen thickness.

Camera Position subtab

In this tab, you must fit the virtual cube into the scene, adjusting the position and specifying size in meters. Correct calibration is important for accurate detection. You do this by placing the correct people size icons into the scene.

1. Click the **Camera Position** subtab. Depending on which **Camera Position** you selected in the **Overview** subtab, the **Camera Position** options will vary.
2. For **Angled** and **Overhead**, adjust the person size icons such that they represent correct sizes for actual people at distances in the image: [“Adjusting Person Size Icons”](#).
3. Decide whether you must use **Assisted Mode** or **Expert Mode** to fit the virtual cube correctly into the scene: [“Assisted Mode Versus Expert Mode”](#) on page 147.

Adjusting Person Size Icons

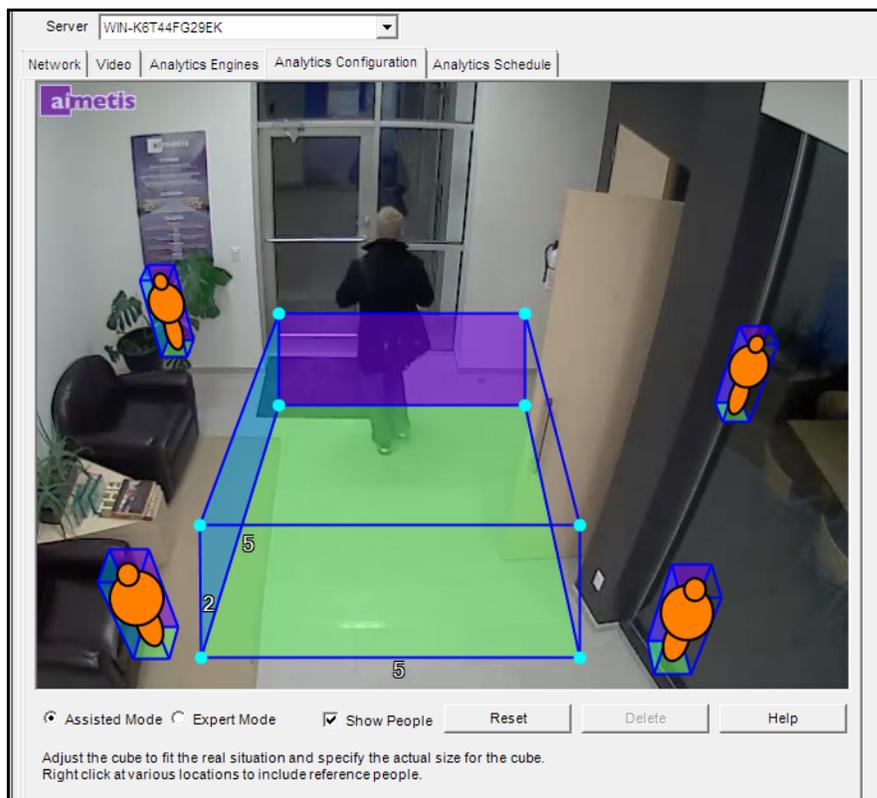


Figure 17. Camera Position tab showing image with Angled camera

- Notice how initially the person size icons are small and do not represent the size of the person approaching the door in the image.

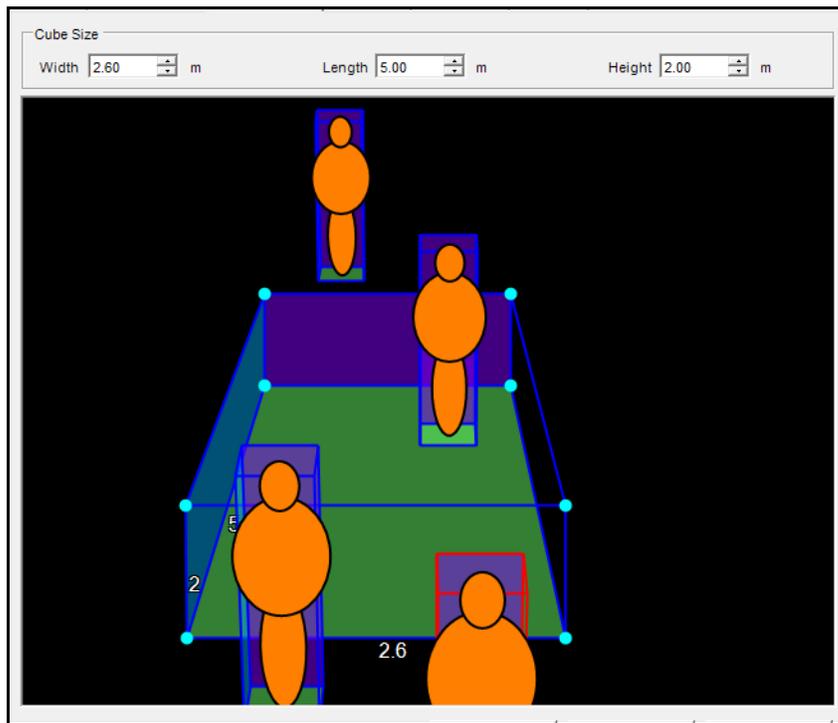


Figure 18. Person size example

4. Move the people to various positions in the image, foreground and background as they would naturally occur.
5. Adjusting the box size adjusts all person icons. Adjust the box size by:
 - Reducing or increasing the **Cube** size fields at the top: **Width, Length, Height**, until the icons match actual people size in the image
 - Moving the box dimensions with mouse
6. If necessary, add more person icons by right-clicking with your mouse. To delete person icons, select the person icons and press the DELETE button on your keyboard.

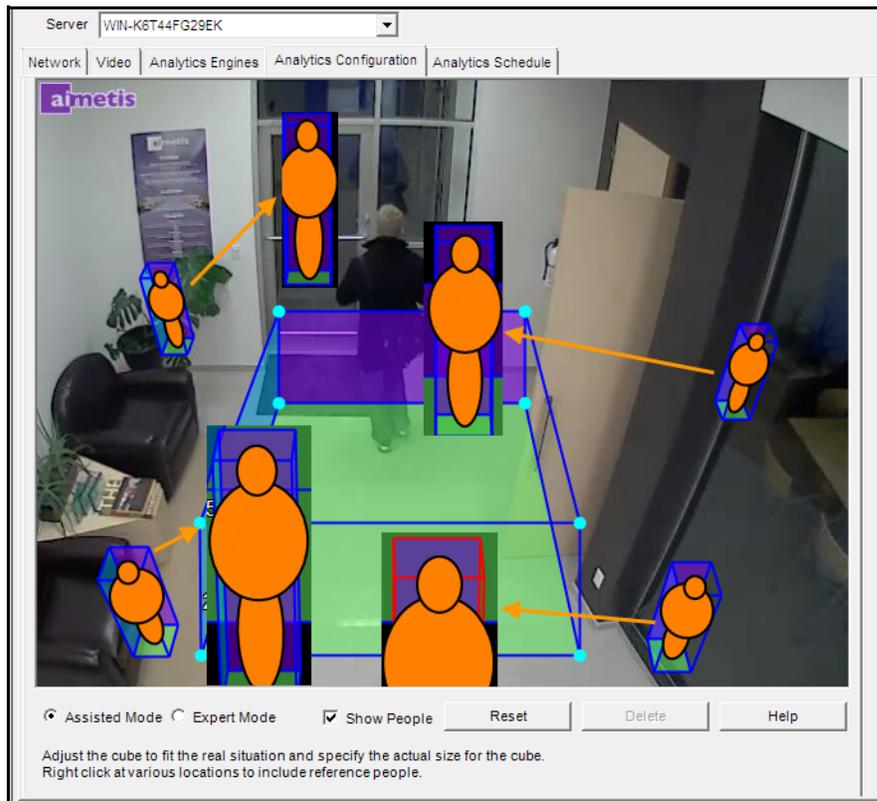


Figure 19. Before and after representation of person size icons

- The person size icons have been adjusted to best match the size of the person in the image in the background.

Assisted Mode Versus Expert Mode

- **Assisted Mode** - The points in the virtual cube are locked. You can move only the rear and front rectangles. This is useful when the horizon in the scene is aligned with the horizontal and vertical axes.
- **Expert Mode** - You can move each point or a line edge individually. This is useful for fitting the virtual cube into a scene where the horizon in the scene is NOT aligned with the horizontal and vertical axes.

In [Figure 20](#), the scene is angled; the horizon is not aligned with the horizontal and vertical axes.

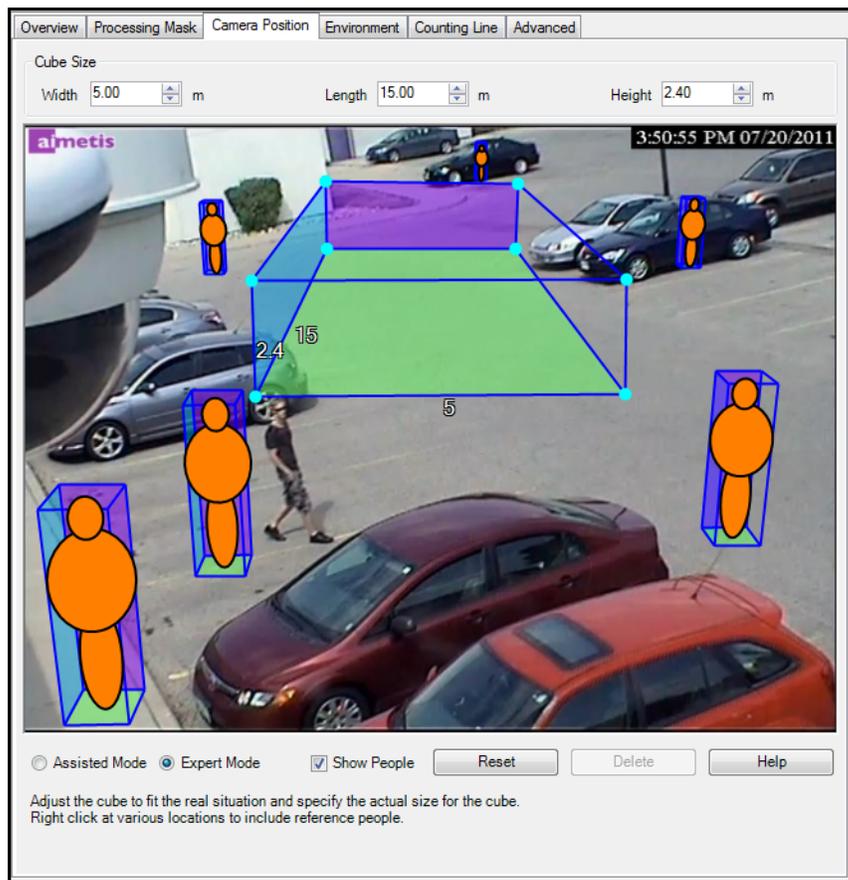


Figure 20. Virtual cube does NOT fit scene



Note: While the cube does not fit the scene, it is a correct calibration. However, it is not as easy to calibrate well and visualize.

In [Figure 21](#) the horizon is aligned with the horizontal and vertical axes.

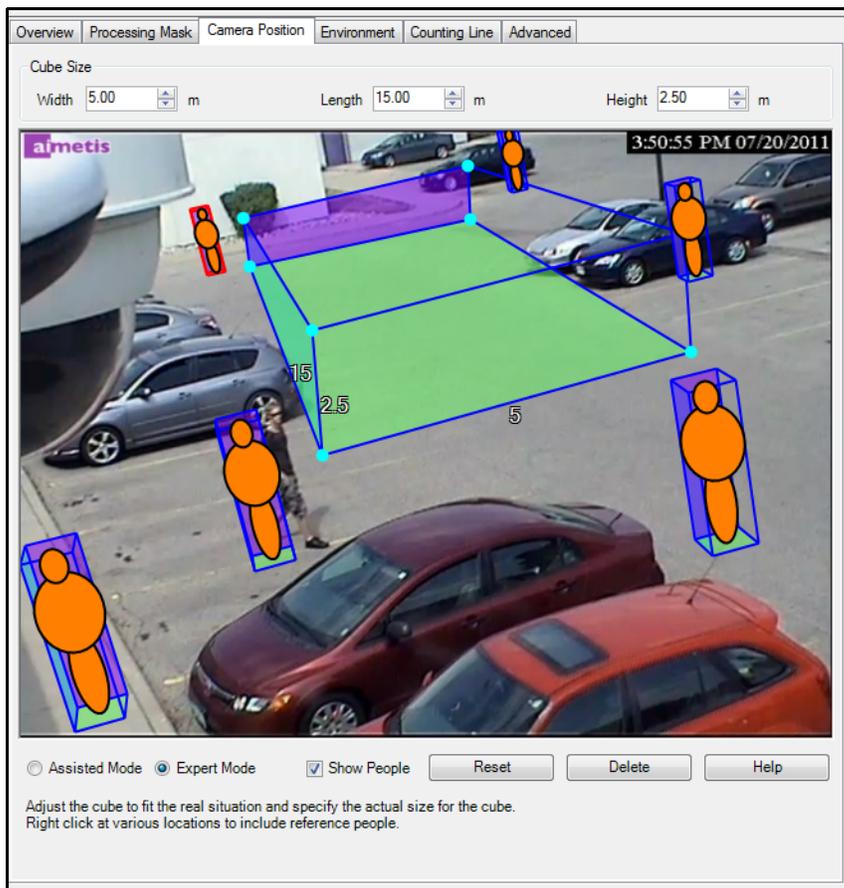


Figure 21. Virtual cube fits correctly in scene

Environment subtab

1. In this subtab, select the background model based on the environment in which your camera will be recording images. For usage, see [Table 5](#).

Table 5. Background Model Usage

Background Model	When to use
Static	Use where the background is relatively static (no periodic movement in the background such as swaying trees). This is the fastest Symphony background model.
Dynamic	Use where there are periodic moving objects (like a tree branch moving back and forth in a fairly constant wind, or caused by unstable camera mounting). This background model can handle both static and dynamic backgrounds, but it uses more CPU power than the Static model and thus is not recommended for static backgrounds. Important: An environment might appear static during the day, but rain fall at night will create a dynamic environment. Therefore, you should select the Dynamic setting.
Dual Layer Dynamic	Similar to the Dynamic background model but is capable of tracking objects that are stationary for short periods of time. Use in areas where you want to track, for example, people standing still for 30 to 60 seconds.
Spatio- Temporal	Tracks only consistent motion, so it is capable of greatly reducing the false alarms due to tree branches and other objects in the background that can move randomly due to the wind. This will use more CPU and will reduce the detection range of the video analytics.
Multi-Layer Hybrid	Uses colour, brightness and texture information. You can customize it to different scenarios by adjusting the sensitivity to intensity, colour or texture information in a given scene. It can also use multi-scale processing to fuse information from different scales.

2. Select other options in the **Environment** subtab as necessary. For all background models refer to [Table 6](#):

Table 6. Environment subtab options for all background models

Option	Description	Default Setting
Common		
Background learning duration (seconds)	Determines the approximate length of time it will take a foreground object that becomes stationary to merge into the background. Important: If an object has periodic movement with a period greater than the specified time, then that object will always be considered a foreground object (never merged into the background). The background is determined based on the last Update Background Seconds of video. The background is updated all the time, not only when the analytic engine starts.	30

Table 6. Environment subtab options for all background models (Continued)

Option	Description	Default Setting
Background Sensitivity	Sets the minimum background sensitivity needed for an object to be detected as a foreground object. Important: If set to a large value, then objects with similar colour as the background will be detected as valid objects to track.	Medium
Learn normal behaviour	Learns the percentage of time each pixel is in motion and can subsequently ignore. Useful, for example, when tracking boats on water.	False (check box not selected)
Large Change Detection		
Method	Two methods for detecting changes in the scene that may be large enough to require a short period of background model relearning before accurate tracking can resume. % of screen change: Monitors the percentage of the scene that is considered foreground. If the amount of foreground is too high, model relearning is triggered. Brightness change: Monitors the scene for abrupt, overall changes in brightness (perhaps caused by a change in lighting or weather event).	20% sensitivity on slider
Sensitivity	Has values in the range between 0 and 100. A high sensitivity means the relearning is easily triggered. For example, 80 sensitivity will trigger when just 20% of the screen is foreground, while a low sensitivity triggers relearning only in an extreme situation.	(slider 20 out of 100)
Time to wait before resuming tracking (seconds)	Allows you to set how long to wait before resuming to track objects. Ideally it should be zero, but if the you are aware of a lighting issue where starting to track immediately can cause false alarms, then set this to the number of seconds needed for the light to stabilize.	3

3. For additional **Environment** subtab options per background model, see the following:

- [Table 7, "Environment subtab options for Static background model," on page 151](#)
- [Table 8, "Environment subtab options for Dynamic background model," on page 152](#)
- [Table 9, "Environment subtab options for Dual-Layer Dynamic background model," on page 153](#)
- [Table 10, "Environment subtab options for Spatio-Temporal background model," on page 153](#)
- [Table 11, "Environment subtab options for Multi-Layer Hybrid background model," on page 154](#)

Table 7. Environment subtab options for Static background model

Option	Description	Default Setting
Shadow/Illumination Removal		
Shadow Sensitivity	<p>Controls how aggressively shadows (decreases in lighting) are ignored when tracking moving objects. Increasing the slider (to the right) will allow the engine to correctly ignore more of the shadow areas.</p> <p>Note: This will also increase the potential of a person wearing dark clothing on a light background to be classified as a shadow.</p>	Middle (disabled)
Illumination Sensitivity	<p>Controls how aggressively increases in lighting are ignored. Increases in lighting occur due to a light source such as a car headlight or when an overcast day becomes a sunny day. Increasing the slider (to the right) will allow the engine to correctly ignore any increases in illumination.</p> <p>Note: This will also increase the potential of a person wearing light clothing on a dark background to be classified as an illumination increase.</p>	Middle (disabled)
Track Slow Moving Objects		
Track Slow Moving Objects	<p>Tracks an object moving very slowly across the video. It can also be an object coming directly toward or directly away from the camera, which will appear to be moving slowly.</p> <p>If Track Slow Moving Objects is disabled, slow moving objects tend to become part of the background and as such will not be tracked. By enabling this option, slow moving objects will be tracked.</p> <p>Important: This option might increase some false alarms for situations where an object stands still in the video for a long time.</p>	False (check box not selected)
Object Speed	Speed of tracked object.	Slow
Remove ghost pixels	Any pixels that do not change in value for some time are not considered as foreground.	True

Table 8. Environment subtab options for Dynamic background model

Option	Description	Default Setting
Shadow/Illumination Removal		
Shadow Sensitivity	<p>Controls how aggressively shadows (decreases in lighting) are ignored when tracking moving objects. Increasing the slider (to the right) will allow the engine to correctly ignore more of the shadow areas.</p> <p>Note: This will also increase the potential of a person wearing dark clothing on a light background to be classified as a shadow.</p>	Middle (disabled)
Illumination Sensitivity	<p>Controls how aggressively increases in lighting are ignored. Increases in lighting occur due to a light source such as a car headlight or when an overcast day becomes a sunny day. Increasing the slider (to the right) will allow the engine to correctly ignore any increases in illumination.</p> <p>Note: This will also increase the potential of a person wearing light clothing on a dark background to be classified as an illumination increase.</p>	Middle (disabled)
Track Slow Moving Objects		
Track Slow Moving Objects	<p>Tracks an object moving very slowly across the video. It can also be an object coming directly toward or directly away from the camera, which will appear to be moving slowly.</p> <p>If Track Slow Moving Objects is disabled, slow moving objects tend to become part of the background and as such will not be tracked. By enabling this option, slow moving objects will be tracked.</p> <p>Important: This option might increase false alarms for situations where an object stands still in the video for a long time.</p>	False (check box not selected)
Object Speed	Speed of tracked object.	Slow
Cloud Check	Tries to ignore cloud motion.	False
Check for sudden background movement	Tries to remove false tracks due to sudden movement of objects in the background due to wind. It will also eliminate false tracks due to sudden movements of the camera.	False
Maximum distance in pixels	If Check for sudden background movement selected. A sudden movement is defined as a movement of an object or camera up to this many pixels.	5 (disabled)
Remove ghost pixels	Any pixels that do not change in value for some time are not considered as foreground.	True

Table 9. Environment subtab options for Dual-Layer Dynamic background model

Option	Description	Default Setting
Timing		
Time to clear long-term background (seconds)	Only available for Dual Layer Dynamic and Multi-Layer Hybrid background models.	120
Time to clear short-term background (seconds)	Only available for Dual Layer Dynamic background model.	5
Time to move short-term background to long-term (seconds)	Only available for Dual Layer Dynamic and Multi-Layer Hybrid background models.	60
Sensitivity		
Appearance	Manual, Bright shiny, Grey matted	a preset value
Lower bound	If Manual selected	0.40
Upper bound	If Manual selected	1.50

Table 10. Environment subtab options for Spatio-Temporal background model

Option	Description	Default Setting
Model Specific		
Mode	Coherent Motion, Abnormal Behaviour, Wrong Direction	Coherent Motion
Appearance Marginalization	Only detects motion patterns and is not influenced by the appearances.	True
Bg Frames	If Abnormal Behaviour selected	255
Fg. Frames	If Abnormal Behaviour selected	10
Direction	If Wrong Direction selected. Read-only. Click Configure. Direction Line subtab opens.	355

Table 11. Environment subtab options for Multi-Layer Hybrid background model

Option	Description	Default Setting
Timing		
Time to clear long-term background (seconds)	Only available for Dual Layer Dynamic and Multi-Layer Hybrid background models.	120
Time to clear short-term background (seconds)	Only available for Dual Layer Dynamic background model.	5
Time to move short-term background to long-term (seconds)	Only available for Dual Layer Dynamic and Multi-Layer Hybrid background models.	60
Sensitivity Controls how sensitive the background model is to a perceived change from the expected background values. If sensitivity is low, it will attribute a change to natural variation in the appearance of the background. If sensitivity is high it will attribute the change to a foreground object. The Multi-Layer Hybrid background model checks three types of features: Brightness (from black to white), color (red, blue, gray, etc) and texture (local patterns of brightness). The slider controls sensitivity between zero and 1. At least one of the three features should be selected.		
Brightness	Looks for changes in gray-level (from black to white). This should usually be selected, but the appropriate sensitivity depends on how much the lighting in the scene varies over time.	True, Medium
Colour	The video engine looks for change in hue and saturation. Color is usually not as strongly affected by lighting, but not all objects can be distinguished from the background by color alone. It requires more CPU time than Brightness.	True, High
Texture	The video engine looks for changes in the local brightness pattern, especially new edges. Texture is generally less affected by lighting, but flatter objects may not have enough texture to be distinguished from the background. It requires more CPU time than Color.	False
Multiscale Processing	Select this option to monitor for changes at multiple spatial resolutions. This can improve accuracy for difficult scenes (especially in combination with Texture features), but it increases CPU load.	True

Counting Line subtab

Click this subtab if you want to use the analytic as a people counter.

1. Ensure the **Camera Position** and **Motion Analysis** mask is set properly and then click the **Counting Line** subtab.
2. By default, the **Draw Counting Line** option is selected.
3. Left-click on the image and draw a line that will cause items (people) to be counted as they pass the delineated area.
 - The line appears with arrows indicating when movement is detected as **In** to a delineated area and **Out** of the delineated area.
 - To reverse the **In-Out** orientation of the line, draw the line in the opposite direction. (Delete the original line first.)
4. Click **OK** to save settings.

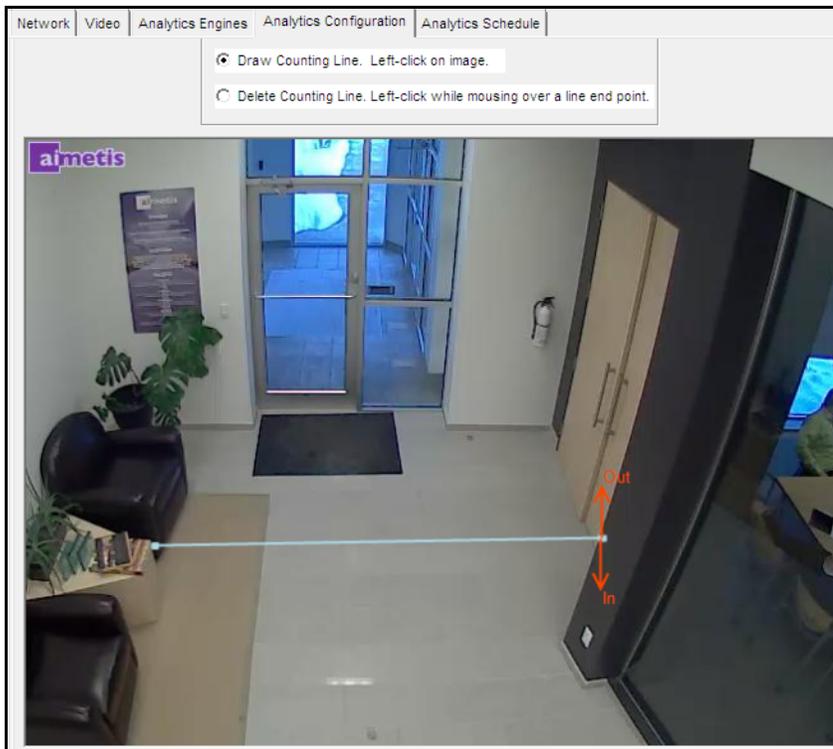


Figure 22. Counting line

Direction Line Subtab

Click and drag endpoints to position the arrow in the direction of interest. All objects moving in this direction will be detected and tracked.

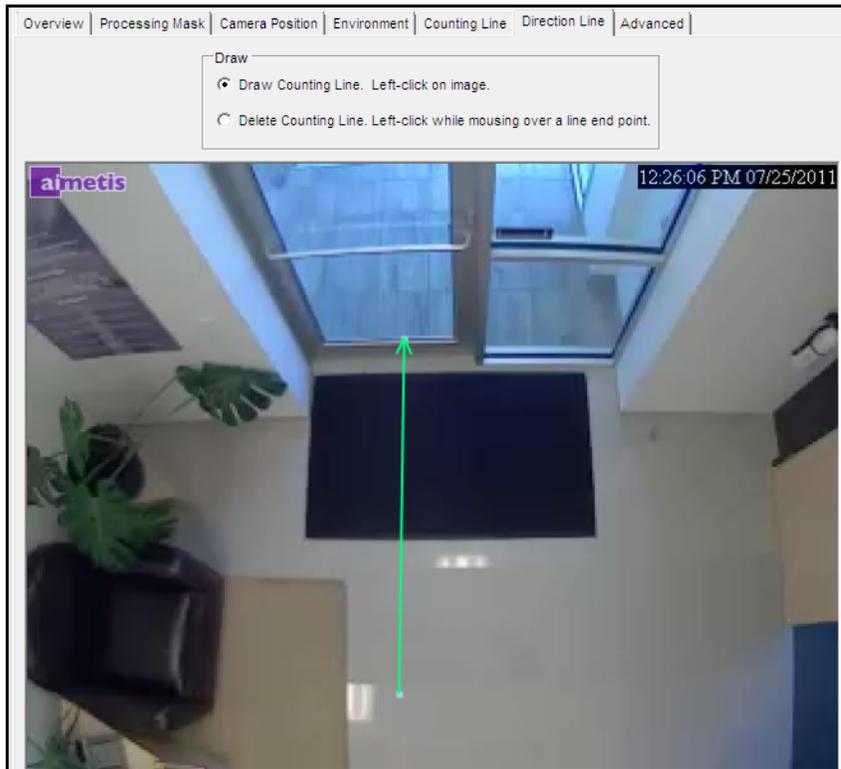


Figure 23. Direction Line subtab

Advanced Subtab

- The **Advanced** subtab settings are for experts only. Values should be changed only in cases where the analytic engine is not functioning as expected. For usage description, see [Table 12](#).

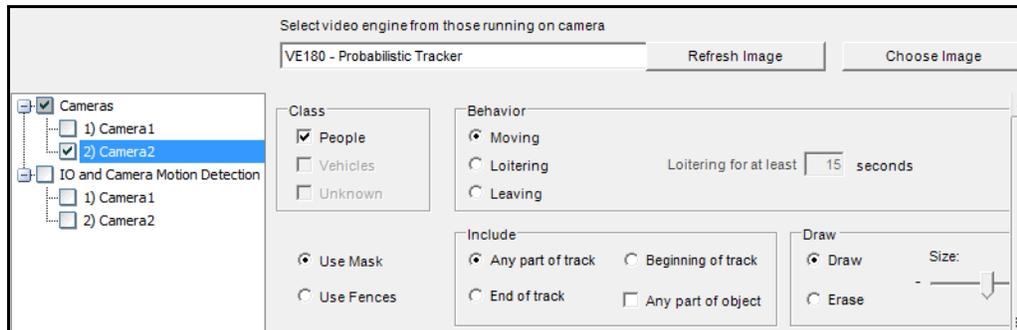
Table 12. Advanced subtab Options

Option	Description	Default Setting
Analysis FPS	Indicates how many frames will be analyzed by the system. Typically the default value should not be altered. However, in many cases the analysis frame rate can be reduced to conserve CPU. Doing this may negatively alter the algorithms performance.	8
Capture Resolution	Displays the resolution at which the video is being recorded. This can be changed in the Device setup.	320 x 240
Analysis Resolution	Setting the Analysis Resolution the same as the Capture Resolution ensures that objects will be detected as far away as possible. However, in order to conserve CPU resources it is possible to down sample the video sent for analysis. Downsampling will reduce CPU requirements but may also reduce the detection range of the video analytic.	320 x 240
Processing delay	For spatio-temporal background model, the tracker must run a few frames to create a buffer before tracking the live images.	0
Dwell Time		
Show after	Displays the number of seconds objects have been dwelling, if they have been dwelling for at least x seconds (10 seconds by default).	10
Motion limit (% of size)	<p>Defines how much an object can move and still be considered to be dwelling.</p> <p>Horizontal and Vertical are calculated as a percent of object size that the object can move.</p> <p>Examples: In an Uncalibrated Camera Position (see “Overview subtab” on page 143), Horizontal 50 means an object can move up to 50% of its max (height, width) horizontally before it is considered to have moved. This is similar for Vertical.</p> <p>For calibrated Camera Position (Angled, Overhead), Horizontal sets the percentage of height that they can move on the ground plane. Vertical is ignored.</p>	H 50 V 50
Tracking		
Total number of proposals per iteration	Defines how much analysis the algorithm is allowed to do per frame.	400
Max proposals per object	Defines how much analysis the algorithm is allowed per object (if there are few objects).	40

Table 12. Advanced subtab Options (Continued)

Option	Description	Default Setting
System Temperature	Defines how willing the system is to think about moves that do not immediately improve the scene model's correspondence with the available evidence.	25
Minimum New Object Size		3
Object Appearance		
Colour blocks	Stores the average colour value at particular locations on the object.	False
Colour histogram	Stores the rough distribution of pixel colour across the object.	True
General Proposers		
Add an object	Tries to add new objects to the scene. If this not selected, no objects will ever be tracked. The default setting weight (1.00) indicates how likely this action is to be tried relative to other actions.	0.5
Remove an object	Removes existing objects. If this is unchecked, they can't be removed.	0.5
Swap two objects' positions	Swap positions of two nearby objects	0.5
Swap two objects' depths	Swap their distance from the camera only	0.5
Adapt an object	Change the object's position to better fit the data.	0.5
Tracking Proposers		
Colour Blocks	Find a new position based on colour block information.	0.5
Colour Histogram	Find a new position based on colour histogram information.	0.5
Contours	Find a new position based on the object's outline.	0.5
Sparse Features	Find a new position based on local texture points.	0.5
Foreground	Find a new position that aligns the object with detected foreground.	0.5
Motion Dynamics	Find a new position, randomly, based on how it moved in previous frames.	0.5

Task 2: Create a Rule using VE180



Procedure

To configure a Rule using the VE180:

1. You must configure the **VE180** before creating a Rule that uses the **VE180**.
2. From the **Server** menu, select **Configuration** and then **Rules**.
3. Click **New**. The **Rule Wizard** opens. Read the overview and click **Next**.
4. Select the check box next to the camera name. If it is a PTZ camera, select the camera tour position check box.
5. From the **Select video engine for those running on camera** drop-down list, select **VE180**.
6. For a digital fence, select the **Use Fences** option:
 - a. Select the **Any Fence** option and draw a line over the image with your mouse. Arrows, which are automatically displayed when you draw a line, define which direction the offending object must pass through in order to cause an alarm.
 - b. With the **Any Fence** option selected, click the arrows to change their properties.
 - Red indicates that an object crossing the line in the arrow direction will cause an alarm.
 - The green arrow denotes that an object crossing the line in the arrow direction will NOT cause an alarm.
 - Multiple fence lines can be drawn.



Important: If **All fences** has been selected, the object must cross through all fences drawn to cause the alarm.

- To delete a line, select the **Erase Line** option and left-click on the endpoint of the line you want to delete in the image.
7. To designate an alarm zone, select the **Use Mask** option.
 - Select the **Erase** option to erase the red mask.
 - Select the **Draw** option to draw the red mask.
 - The **Size** slider adjusts the pen thickness.

The following settings apply only to alarm zones:

- **Any part of track** denotes the object can be anywhere in the red alarm zone to trigger an alarm. To alarm on objects moving anywhere in the alarm zone, select **Any part of track**.
- **End of track** denotes that the object has stopped in the alarm zone. To alarm on objects entering the alarm zone and stopping in it, select **End of track**.
- **Beginning of track** denotes that the object started moving in the alarm zone. To alarm on objects that were in the alarm zone and started to move, select **Beginning of track**.
- **Any part of object** denotes that any part of the object can be anywhere in the red alarm zone to trigger an alarm.

8. Click **Next** to continue to next step in wizard. See [“Rules - Using the Rule Wizard” on page 177](#) for details.

Troubleshooting

Table 13. Solutions for VE180

Problem	Reason	Solution
False counts. Not enough objects tracked	Calibration. Person size too big.	Adjust person size.
	Background model. Sensitivity too low.	Increase sensitivity of the background model.
False counts. Too many objects tracked.	Real person tracked as two or more people. Calibration. Person size too small.	Adjust person size.
	Many objects throughout the scene. Background model. Sensitivity too high.	Decrease the sensitivity of the background model.

Using trackerapp to Adjust Settings

The **trackerapp** utility allows you to run and adjust a video analytic on a live view/recorded video and see exactly which part of an object (for example, a person) is in the foreground.

Procedure

To use trackerapp:

1. In Symphony Client, stop the camera:
 - a. In the **Camera Tree**, right-click on the camera.
 - b. From the context menu, select **Stop Camera**.
2. In the command line, change your directory to **C:\Program Files\Aimetis\Symphony_bin**. If you are running on a 64 bit machine, use **Program Files(x86)** in the path instead.
3. Enter **trackerapp x** where x is the ID of the camera you are using. (The tracker number always precedes the camera name in the **Camera Tree**.)
4. The **Aimetis Demo (Motion Tracking)** dialog box opens ([Figure 24 on page 162](#)). A live video is displayed in the window.
 - If you want to run a recorded video instead:
 - a. Click the **Disk** icon. The **Open** dialog box appears.
 - b. Select the video you want to run back through Symphony (MPEG or AIRA) and click **Open**.
 - c. The **Select Movie** dialog box appears. Select the method/speed to run the video back through and click **OK**. Slow (real-time) is recommended. Symphony will now run the video back through tracker on the camera with the video engine and configuration you selected.

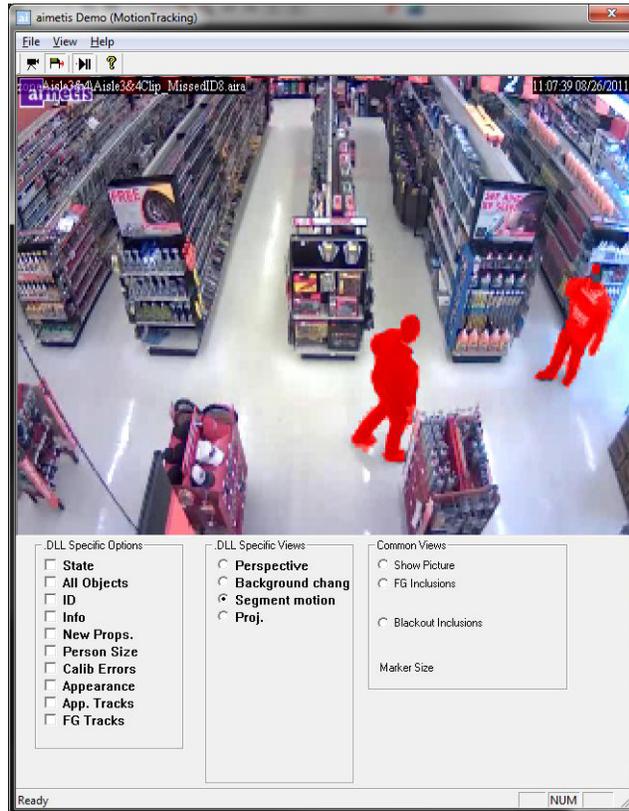


Figure 24. Motion Tracking Interface (trackerapp)

5. Select one of the following options and observe the live view (or run the video).
 - **Background change** - objects in the foreground should appear as red and objects in the background should appear as blue
 - **Segment motion** - foreground image should appear as solid red
 - **Proj. (Projection)** - ellipses appear around object, that is, a projection of the shape. For example, an egg shape around a person.
6. If the object does not appear to be in the foreground for proper detection, adjust settings in the **Analytics Engine - Environment** subtab. See [“Environment subtab” on page 149](#).
7. If you are running a recorded video through the **trapperapp** (and not a live view) you must close **trackerapp** and stop the camera before running the video again.

VE250 - Motion Tracking

The VE250 is a good choice for indoor or outdoor motion tracking applications. The advantage the VE250 has over the VE150, is that no Perspective information is required. It is considered a plug and play video engine. It will work at virtually any camera angle. The VE250 also works better in busier environments since it has better object segmentation capabilities as compared with the VE130. However, the VE250 does not have any object classification capability, and will use more CPU. Typical deployments include commercial buildings, where objects are to be detected, military basis, where objects entering an alarm zone or crossing a pre-defined line are to be detected, regardless of class of object (people or vehicles). The VE250 is essentially a big improvement over the motion detection technology previously on the market (which would generate numerous false alarms caused by lighting changes or environment changes). The VE250 can be used in moderately busy, indoor or outdoor environments, at virtually any camera angle. For best performance, the camera must be mounted far enough away from the objects that 8 frames will contain the moving object as it passes by the camera.

Task 1: Configure VE250

Procedure

To configure the VE250:

1. In Symphony Client, from the **Server** menu, select **Configuration**. The **Configuration** dialog box opens. This allows you to configure devices for the currently selected server.
2. In the left pane, click **Devices**. The **Devices** dialog box opens.
3. Click the camera you want to configure for use with video analytics and click **Edit**.
4. Click the **Analytics Engines** tab and select **VE250**. By default **VE250** is selected. If the check box for VE250 is not selected, you must clear other check boxes (algorithms) that conflict with VE250.
5. Click the **Analytics Configuration** tab.
6. From the **Analytics Engines** drop-down list, select **Intel_VE250**.
7. The Analysis FPS box configures how many frames will be analyzed by the system. Typically the default value should not be altered. However, there may be cases where the analysis frame rate can be reduced to conserve CPU. Doing this may negatively alter the algorithms performance. Like the Analysis Resolution, the Analysis FPS can be set differently than the record FPS.
8. Adjust the **Analysis Resolution** as required.
 - Setting the Analysis Resolution the same as the Capture Resolution ensures that objects will be detected as far away as possible. However, in order to conserve CPU resources it is possible to downsample the video sent for analysis. Downsampling will reduce CPU requirements but may also reduce the detection range of the video analytic.
9. Modify the motion mask by adjusting the yellow mask as required (see how to configure analytics for more help). Select the Erase radio to erase the yellow mask, and select Draw to draw the mask. The Size slider adjusts the pen thickness.
10. Click **Apply** to save settings.

Task 2: Create a Rule using VE250

Procedure

To configure a Rule using the VE250:

1. You must configure the **VE250** before creating a Rule that uses the **VE250**.
2. From the **Server** menu, select **Configuration** and then **Rules**
3. Click **New**. The **Rule Wizard** opens. Read the overview and click **Next**.
4. Select the check box next to the camera name. If it is a PTZ camera, select the camera tour position check box.
5. From the **Select video engine for those running on camera** drop-down list, select **VE250**.
6. Click **Next** to continue in the **Rule Wizard**. Set up the rules as per concepts and instructions in [“Rules - Using the Rule Wizard” on page 177](#).

VE352 - Left and Removed Item Detection

The VE352 video engine detects left or removed items in moderately to less busy indoor environments. Typical deployments include retail facilities where detecting removal of merchandise is desired. Camera position should be at least 15 feet above the ground, and the camera angle can be flexible, depending on the field of view you wish to capture.

Task 1: Configure VE352

Procedure

To configure the VE352:

1. In Symphony Client, from the **Server** menu, select **Configuration**. The **Configuration** dialog box opens. This allows you to configure devices for the currently selected server.
2. In the left pane, click **Devices**. The **Devices** dialog box opens.
3. Click the camera you want to configure for use with video analytics and click **Edit**.
4. Click the **Analytics Engines** tab and select **VE352**. By default **VE250** is selected, in which case you must first deselect **VE250**.
5. Click the **Analytics Configuration** tab. From the **Analytic Engines** drop-down box, select **VE352**.
6. By default, the **Masks** tab is shown. Leave the default settings for the **Analysis FPS** and **Analysis Resolution**.
7. Click the **Persistence Mask** subtab and adjust the yellow mask as required.
 - Select the **Erase** option to erase the yellow mask.
 - Select the **Draw** option to draw the yellow mask.
 - The **Size** slider adjusts the pen thickness.
8. Click the **Perspective** subtab and set the perspective for the scene: The red lines must be drawn such that they represent a length of 5m at their location in the scene. The Person icon will be sized automatically.
9. Click the **Basic** tab to configure additional settings. See [Table 14 on page 166](#).

Table 14. Basic Settings

Option	Usage
Left item duration (seconds)	<p>Specifies how long an object must be left before an alarm will occur.</p> <p>Increasing the value:</p> <ul style="list-style-type: none"> • Reduces false alarm due to person standing still, reflection of people walking near by, etc. • However the person would have left the scene before an alarm is obtained. <p>Decreasing the value:</p> <ul style="list-style-type: none"> • Increases false alarms because there is not enough time to determine if it is a valid alarm • The person who left or removed the item might still be in the scene when the alarm occurred.
Initial background model learn time (seconds)	<p>Specifies how many seconds will be used to build background model.</p> <p>Set this low unless you know for sure there will not be any moving objects during start of camera because the longer the initial background model is learned the more certain the engine is of the initial background.</p> <p>During this time the engine is not running and as such it will not detect any left/removed items.</p>
Object merge distance (pixels)	<p>Determines the distance (in pixels) between objects where they will be automatically merged as one object, that is, the minimum distance between two adjacent alarmable objects.</p> <p>Increasing the value:</p> <ul style="list-style-type: none"> • If parts of a single object are detected as separate objects then they are merged together into one object. • There is a risk of two actual left/removed objects being merged together. <p>Decreasing the value:</p> <ul style="list-style-type: none"> • There is a risk of getting multiple alarms on the same object. • Ensures that two adjacent left/removed items are detected as two different objects.
Check for object drop-off	<p>This enables the software to check for activity around the left or removed item seconds before the alarm occurred (such as a hand reaching in). The pixel value defines the search area around the alarm.</p> <p>The reach width determines how big of an area around the left/removed item you want to search for motion.</p> <p>When selected, this option will reduce false alarms due to reflections, sudden lighting changes, etc. However there is a risk that a true alarm will be missed. For example when a person drops off or removes an item quickly the item might not be alarmed on.</p> <p>Increasing the reach width makes it easier to find the removing/adding motion; however, with a larger value, more motion is needed before the alarm is triggered.</p>

Table 14. Basic Settings (Continued)

Option	Usage
Reduce false alarms from still people	<p>May be used to reduce alarms caused by people standing in scene. The seconds value will determine how long to filter out still objects. A person can come into the scene and stand still for longer than the Left item duration causing a false alarm. This option can be used to remove these false alarms.</p> <p>When this option is enabled, an object of a person size standing still is alarmed on after Time to wait for still people (seconds) NOT after Left item duration (seconds). It is assumed a person will move within Time to wait for still people (seconds), which is set larger than Left item duration. This option ONLY affects objects of a person size as determined by the perspective configuration information.</p>
Reduce reflection	<p>Enables another filter that attempts to reduce false alarms caused by reflections. The slider controls how aggressively to eliminate reflections.</p> <p>Turning on the feature:</p> <ul style="list-style-type: none"> • Reduces false alarms due to reflections • Increases chance of missed alarms <p>Move slider to right</p> <ul style="list-style-type: none"> • Less aggressive reflection control • More alarms due to reflections but less missed alarms <p>Move slider to left</p> <ul style="list-style-type: none"> • More aggressive reflection control • Less alarms due to reflections but more chance of missed alarm
Camera looking at shelf	This should be enabled or disabled depending on camera location relative to shelf.

10. Click **OK** to save configuration changes.

11. The default settings in the **Advanced** tab are sufficient, but you may have cases where adjusting values would be beneficial. Consider the following:

- The advanced settings are trade-offs between detecting false alarms and missing true alarms.
- The default values were set with the assumption that for 99% of the time you do not want to miss any alarms even if some are false.
- Ideally place the camera such that there is little or no occlusion of the alarmable region by a person. This way you can minimize the false alarms due to people standing still. This is particularly important if you have a very small **Left Item Duration** below 60 sec.
- If you cannot place the camera so there is no occlusion of alarmable region by people, place camera such that the entire person is in view when they occlude the alarmable region AND set **Time to wait for still people** high; at least 60 sec, perhaps more.
- Also ensure that the perspective is set properly.
 - Zooming too much can at times cause false alarms do to the following reasons:
 - Parts of people might be detected as left/removed items.
 - Slightest lighting change will cause a large camera gain change, which will cause false or missed alarms.
- [Table 15 on page 168](#) provides details on advanced settings.

Table 15. Advanced Settings

Option	Description
Minimum fill rate %	<p>The default value was found to work for almost all cases. This value should be changed only as a last resort.</p> <p>Increasing this value:</p> <ul style="list-style-type: none"> • Reduces false alarms. • Increases chance of missed alarms (starting with objects on a diagonal). <p>Decreasing this value:</p> <ul style="list-style-type: none"> • Increases the chance of false alarms. • Ensures most true alarms are detected.
Time to recover or drop an item (seconds)	Determines how long [max time] it takes to remove or drop an item.
Minimum valid object dimension (pixels)	<p>Increasing the value:</p> <ul style="list-style-type: none"> • Reduces false alarms on noise. • Does not detect any small object. • Does not detect any object that looks similar to the background. (This happens in retail situations where the same products are stacked together.) <p>Decreasing the value:</p> <ul style="list-style-type: none"> • Increases false alarms for very small objects. • Increases the chance of detecting all true small alarms.
Merge small objects closer than (pixels)	<p>Similar to the Object merge distance option from the Basic tab but is used to merge objects that are smaller than the Minimum valid object dimension. If there are a lot of very small objects very close by, then when combined they should make a single valid alarmable object.</p> <p>Increasing the value:</p> <ul style="list-style-type: none"> • Increases false alarms but ensures you detect some objects that look similar to the background. <p>Decreasing the value:</p> <ul style="list-style-type: none"> • Reduces false alarms but misses some objects that looks similar to the background. <p>We recommend that you keep this value small.</p>
Grayscale background update rate	<p>Controls the long term background update rate.</p> <p>A fast update means only most recent frames are considered in obtaining the background.</p> <p>A slow update means only the older frames are considered in obtaining the background.</p> <p>Mainly effects the reflection reduction settings.</p> <p>Increase the update rate if you want to eliminate reflection objects but there is also a greater chance of missed detection.</p>

Table 15. Advanced Settings (Continued)

Option	Description
Time to clear long-term background (seconds)	Determines how long before a learned long-term background is forgotten. The larger the value, the longer the long term background is remembered even after being occluded by some other object. If an item is dropped then removed before Time to clear long-term background seconds, then no alarm will occur for the remove event.
Time to clear short-term background (seconds)	Determines how long before a learned short-term background is forgotten. This value determines how flexible the engine is in adapting to changing environments without causing false or missed alarms. Large value: <ul style="list-style-type: none"> • Ideal for less busy environments Small value: <ul style="list-style-type: none"> • Ideal for very busy environments
Background reset time after an object is deleted (seconds)	Determines how long to reset after a valid change object is discovered. During this time another object at the current location is not allowed. Large Value: <ul style="list-style-type: none"> • Decreases multiple alarms on same object. • Might miss a left item at the same spot, within this time period. Small Value: <ul style="list-style-type: none"> • Might have multiple alarms on same object. • Will not miss multiple objects at the same spot, within this time period.
Reset camera if this percentage of image becomes foreground in 1 frame	In two situations, you want to stop analysis and restart everything: <ul style="list-style-type: none"> • Sudden change in the video between frames (camera moves). • Slow change in the video within 5 frames (florescent lighting turned on).
Reset camera if this percentage of image becomes foreground in 5 frames.“	In two situations, you want to stop analysis and restart everything: <ul style="list-style-type: none"> • Sudden change in the video between frames (camera moves). • Slow change in the video within 5 frames (florescent lighting turned on).

Task 2: Creating a Rule using VE352

Procedure

To configure a Rule using the VE352:

1. You must configure the **VE352** before creating a Rule that uses the **VE352**.
2. From the **Server** menu, select **Configuration** and then **Rules**
3. Click **New**. The **Rule Wizard** opens. Read the overview and click **Next**.
4. Select the check box next to the camera name. If it is a PTZ camera, select the camera tour position check box.
5. From the **Select video engine for those running on camera** drop-down list, select **VE352**.
6. Using the displayed image from the video, define the area in red (a mask) where alarms should be set. (Not sure of the concept? See [“Motion Mask versus Alarm Mask” on page 111.](#))
 - Select the **Erase** option to erase the red mask.
 - Select the **Draw** option to draw the red mask.
 - The **Size** slider adjusts the pen thickness.
 - The VE352 does not distinguish between a left or removed item.
 - Objects that are left or removed outside the red alarm zone will not cause alarms.
7. Specify what percentage threshold for an object, which is not fully inside an alarm zone, by adjusting the Alarm based on percentage of object inside alarm mask option.
8. (Optional) Alarm conditions may be filtered by enabling the **Alarm only if**, or **OR, at least** options. Both conditions can be enabled together or separately.
 - The **Alarm only if** filter is designed for retailers who want to alarm only if a certain number of items are removed from a shelf in a pre-determined time. For example, 2 LCD monitors must be removed before the event is triggered.
 - The **OR, at least** option is a work-around if multiple objects are removed but they are so close together it creates one bounding box (and therefore one alarm).
 - Therefore by combining both filters, many small background changes or one large background change (caused by a removed item) can trigger the event.
 - **Alarm only, if:** Defines how many alarms must occur in predetermined time
 - **OR, at least:** Defines the size of alarm before
 - **Alarms Occur:** Based on alarms detected
 - **Pixels Change:** Based on pixels changed
9. Click **Next** to continue in the **Rule Wizard**. Set up the rules as per concepts and instructions in [“Rules - Using the Rule Wizard” on page 177.](#)

Further Notes

Currently, there is no distinction between left and removed items.

Troubleshooting

If objects are too small, detection is difficult. Move camera closer to objects that are to be detected.

PT090 - Automatic PTZ Tracking

The PT090 Video Engine is used to automatically control PTZ cameras when activity is detected. After the PT090 is enabled for a PTZ camera, a Rule can be configured where the PTZ camera can be automatically controlled by Symphony to zoom and follow objects that have broken the Rule (such as entered into the alarm zone or crossed a tripwire). The PT090 is typically used in non-busy environments. If the environment is too busy the PTZ camera may auto-follow many different objects and its usability will decrease as a result. No fixed camera is required to control the PTZ camera. The PT090 can control the PTZ camera using the video from the PTZ camera only.

Task 1: Configure PT090

Procedure

To configure the PT090:

1. In Symphony Client, from the **Server** menu, select **Configuration**. The **Configuration** dialog box opens. This allows you to configure devices for the currently selected server.
2. In the left pane, click **Devices**. The **Devices** dialog box opens.
3. Click the camera you want to configure for use with video analytics and click **Edit**.
4. Click the **Analytics Engines** tab and select **PT090**. By default **VE250** is selected. Configure the camera to also use the **PT090**. The **PT090** cannot be used by itself, since it is only used when auto-tracking has started. Typically the VE150 or VE250 analytic is also configured on the camera.
5. Click the **Analytics Configuration** tab. From the **Analytic Engines** drop-down field, select **Intel_PT090**. We recommend that you keep all default settings.
6. Typically you do not need to set PTZ Tracking mask. However, in some cases there may be areas where the PTZ camera should not automatically navigate to. For example, if Symphony detects an alarm and the PTZ camera is configured to zoom on the object, it may be required that the camera stop auto following the object when it gets to certain parts of the scene.
 - a. From the **Analytics Engines** drop-down field, select **PTZ Tracking**.
 - b. Mark in yellow the areas where the PTZ camera may auto-follow objects, and exclude areas where the camera is not to auto-follow object (this is only the auto following mask, not the alarm zone in the home position).
 - c. Select **Include Area** to mark the image in yellow, or **Exclude Area** to erase. The PTZ camera will auto follow objects in the yellow mask. The **Size** slider adjusts the pen thickness.
7. Click **OK** to save settings.

Further notes

- The camera must be stable, if wind or vibrations causes the camera to move, false alarms will occur.
- This engine does not perform well indoors, or where the objects are very close to the camera, or if the environment is very busy.
- Not all PTZ cameras will work properly. Absolute positioning cameras are preferred over relative positioning cameras.
- MJPEG mode, or running MPEG-4 at higher frame rates increases the performance.

Troubleshooting

- Ensure that enough available CPU is present to perform proper analysis.
- Increase the frame rate and image quality settings.

Table 16. PT090 Analytics Configuration Settings

Option	Description	Default	When to use
Analysis FPS	Indicates how many frames will be analyzed by the system.	10	Typically the default value should not be altered. To conserve CPU resources, you can lower the setting, but this may negatively alter the video engine performance.
Capture Resolution	Displays the resolution at which the video is recorded. This can be changed only in the Device setup.		Not applicable.
Analysis Resolution	Resolution that is used to analyze frames. Normally this is lower than Capture Resolution to conserve CPU.		Setting the Analysis Resolution to the same value as Capture Resolution ensures that objects will be detected as far away as possible. To conserve CPU resources, you can lower the setting, but this may reduce the detection range of the video analytic.
Pan Percentage	Enhances or dampens the control of the video engine.	100	If the camera overshoots or appears to be jumping a scene, reduce the percentage to ensure more stable tracking.
Tilt Percentage	Enhances or dampens the control of the video engine.	100	If the camera overshoots or appears to be jumping a scene, reduce the percentage to ensure more stable tracking.
Zoom Percentage	Enhances or dampens the control of the video engine.	100	If the camera overshoots or appears to be jumping a scene, reduce the percentage to ensure more stable tracking.

Table 16. PT090 Analytics Configuration Settings

Option	Description	Default	When to use
Boldness	Controls the target size for the tracked object on the screen. This is the difference between having a clear of the target object and having a clear view of the entire scene. Using a value of 1 will provide a clear view of the entire scene and so the camera will not zoom in. When using a value of 10, the video engine will zoom on the target object aggressively.	5	Increase Boldness to get a closer view of tracked objects. Decrease boldness to see more of the object's surroundings.
Seconds since last movement	Returns to the camera to home position after indicated seconds. The same options exist in the Rules Wizard . The seconds defined in the Analytics Configuration tab plus the seconds defined in the Rules Wizard equals the total number of seconds the camera wait before returning to home position.	15	You have been automatically zoomed in on the same area for more than 1 minute without panning or tilting. This sometimes happens if the camera zooms in on a windy bush and stays zoomed in because the bush is moving continuously.
Seconds since last zoom	Returns to the camera to home position after indicated seconds. The same options exist in the Rules Wizard . The seconds defined in the Analytics Configuration tab plus the seconds defined in the Rules Wizard equals the total number of seconds the camera wait before returning to home position.	60	You have been automatically zoomed in on the same area for more than 1 minute without panning or tilting. This sometimes happens if the camera zooms in on a windy bush and stays zoomed in because the bush is moving continuously.
Seconds since initial zoom	Returns to the camera to home position after indicated seconds. The same options exist in the Rules Wizard . The seconds defined in the Analytics Configuration tab plus the seconds defined in the Rules Wizard equals the total number of seconds the camera wait before returning to home position.	150	You have been automatically zoomed in on the same area for more than 1 minute without panning or tilting. This sometimes happens if the camera zooms in on a windy bush and stays zoomed in because the bush is moving continuously.
Use variable pan/tilt update interval	Allows the PT090 to change the camera's pan and tilt speeds at a much faster speed than the normal speed of once every 500 ms. This is useful for moving the camera right away to track objects about to fall off the edge of the image.	Enabled	Under normal conditions you want this feature enabled [by default it is enabled]. Disable this feature if there are network bandwidth issues or if you are using a PTZ that cannot respond fast.

Table 16. PT090 Analytics Configuration Settings

Option	Description	Default	When to use
Variable interval slope	Controls how aggressively to update the camera's pan and tilt speed. The larger the slope the faster the camera is updated. The smaller the slope the slower the camera is updated. The camera's pan and tilt speeds cannot be updated faster than once every 100 ms. The camera's pan and tilt speeds cannot be updated slower than once every 500 ms.	13	Increase the slope value if you notice that objects are lost because the camera is not moving fast enough, particularly for fast moving objects or object turning a corner.
Use Max Zoom Level	This sets the maximum zoom level possible for a given tilt angle. Note: This does not mean you will reach this zoom level during tracking; it just guarantees you will never exceed this zoom level.	Disabled because the max zoom level depends on where the camera is placed.	If you notice that the camera is zooming too much when tracking objects, use this feature to limit the max zoom. Limiting the max zoom can improve tracking at time.
Max Zoom At Tilt 0 Deg	When the tilt is 0 degrees you are looking into the horizon, so the distance between the camera and the object being viewed is large; a large zoom level is needed here.	10	If the video engine is zooming in too much when looking towards the horizon, then set zoom level appropriate to clearly see objects at the maximum distance you want to track them.
Max Zoom At Tilt 90 Deg	When the tilt angle is 90 degrees the camera is looking directly down, so the distance from the camera to the object being viewed is small (height of camera); a small zoom level is needed here.	1	Set to the zoom level appropriate to clearly see an object directly beneath the camera.

Table 17. Changing options in the camera.ini file

Option	Description	When to Use
Enable Pan and Tilt in One Direction	<p>In the camera.ini file you can add the parameters TiltDir = 0 PanDir = 0</p> <p>0 indicates Pan or Tilt in both directions.</p> <p>1 indicates Pan and Tilt only in the positive direction. [Tilt down only, pan to the right only].</p> <p>-1 indicates Pan and Tilt only in the negative direction. [Tilt up only, pan to the left only].</p> <p>If the parameter is not present in camera.ini, the value is assumed as 0.</p>	<p>If you want to be tracking objects going in only one direction turn this on. For example if you want to track skiers coming down a hill where the camera is at the bottom of the hill you would set the TiltDir to 1 so the camera is only moved down.</p>
Disabling Pan, Tilt or Zoom	<p>In the camera.ini file you can add the parameter. EnablePTZ = 111</p> <p>The first digit enables or disables the pan, The second digit enables or disables the tilt The third digit enables or disables the zoom.</p> <p>1 indicates enabled. 0 indicates disabled (Any digits other than 1 will disable that particular movement).</p> <p>If the label EnablePTZ is not found in camera.ini it is assumed that all three movements are enabled. This is the default behaviour.</p>	<p>If you are monitoring a small parking lot where you can see everything without the need to zoom, then you can disable the zoom to avoid unnecessary zooming, which might lose the object being tracked.</p>

VE410 - License Plate Recognition

Automatic License Plate Recognition is available as a video engine inside Aimetis Symphony. The VE410 allows you to detect and index license plates. It is designed for vehicle access control applications as well as traffic control and enforcement applications.

- For complete instructions on field installation and planning, software installation, and analytics configuration, see the **Aimetis Automatic License Plate Recognition (ALPR) Guide**.
<https://www.aimetis.com/xnet/Support/documentation.asp>

Rules - Using the Rule Wizard

A Rule is user-definable and generates Alarms in Symphony. Alarms can occur as a result of a video event (such as video motion detection) or a signal from another device (such as I/O devices). The **Rules Summary** dialog box lists all the current Rules and allows you to add, edit, delete, disable and enable each one.

Procedure

To access the Rules Summary dialog box:

1. From the **Server** menu, select Configuration. The **Server Configuration** dialog box opens.
2. In the left pane, click **Rules**. The **Rules Summary** opens in the right pane.

Options available in the Rules Summary:

- **New** - Create a new rule.
- **Edit** - Modify an existing rule. Select the rule on the list and click **Edit**.
- **Delete** - Delete an existing Rule. Select the rule on the list and click **Delete**.
- **Disable**- Temporarily disable a rule instead of deleting it entirely. Select the rule on the list and click **Disable**.
- **Enable** - Enable a rule that has been disabled. Select the rule on the list and click **Enable**.

Disable Alarms for Server

The **Disable Alarms for Server** dialog box allows you to disable all the alarms for the currently selected server. This is useful in cases where all alarms should be disabled for a period of time on the server. This is faster than manually disabling individual Rules.

Procedure

To quickly enable or disable all Rules:

1. From the **Server** menu, select **Disable Alarms for Server**.
2. Specify the amount of time to disable the alarms for the current server and click **OK**.

Overview of Process

You must configure the Event, Action, and Schedule for each rule.

- Set Event - Define what causes an Alarm, such as motion detected, people loitering, I/O inputs, etc.
- Set Actions - Define what actions Symphony should take after the alarm is detected.
- Set Schedule - Define which times the Alarm Rule is active.



Note: Rule elements can be reused. For example, if you change the "24/7" Schedule, it will affect all Rules that use this Rule Element.

Events

The first Rule Element to configure is the Event.

- An Event may comprise one or more sub-events. For example, the Event may involve a car stopping and a person loitering within 30 seconds before the Event is triggered.
- The Event could also be an input from an Alarm IO device, or Video Motion Detection (VMD) detected on a network camera.

Selecting a camera as input

Procedure

To configure the Event dialog when selecting a camera as an input:

1. Select a camera to assign to a rule.
2. Select which video engine to configure from those running on camera.
3. Define what alarming attributes this rule will have, such as an alarm zone, or class of object (that is, people, vehicles). Depending on the video engine, different options will be available.
4. If only one event will be used in the rule, click **Next** to continue.
5. If other events are to be included, click the **New** button in the left pane under **Sub Events**.
 - a. Repeat steps 1-3 above. You can select a different analytic engine for the same camera to combine the Events in the Rule.
 - b. In the **Sub Events** group area you will notice two events listed. You can rename the sub-event to something more descriptive: Click inside the **Sub Events** group area and select the sub-event.
 - c. In the **Sub events must occur** group area, you can define what order or what period of time all the sub-events must occur before the alarm will take place.
6. Click **Next** to configure the **Actions**.

Selecting an I/O device as input

Alarm inputs include Video Motion Detection (VMD) from network cameras, external I/O devices, and many others.

Procedure

To configure the Events dialog when selecting the I/O or VMD as an input:

1. Select which Digital I/O Devices (DIO) to assign to this Rule. The **Triggered by camera** group area appears.
2. Enter which **Input Number** to control, and then select if it should be **Activated** or **Deactivated** to trigger the event.
3. Click **Next** to configure the **Actions**.

License Plate Recognition

If you are using the **VE410 - License Plate Recognition** video engine, you will see additional options in the **Rule Wizard**.

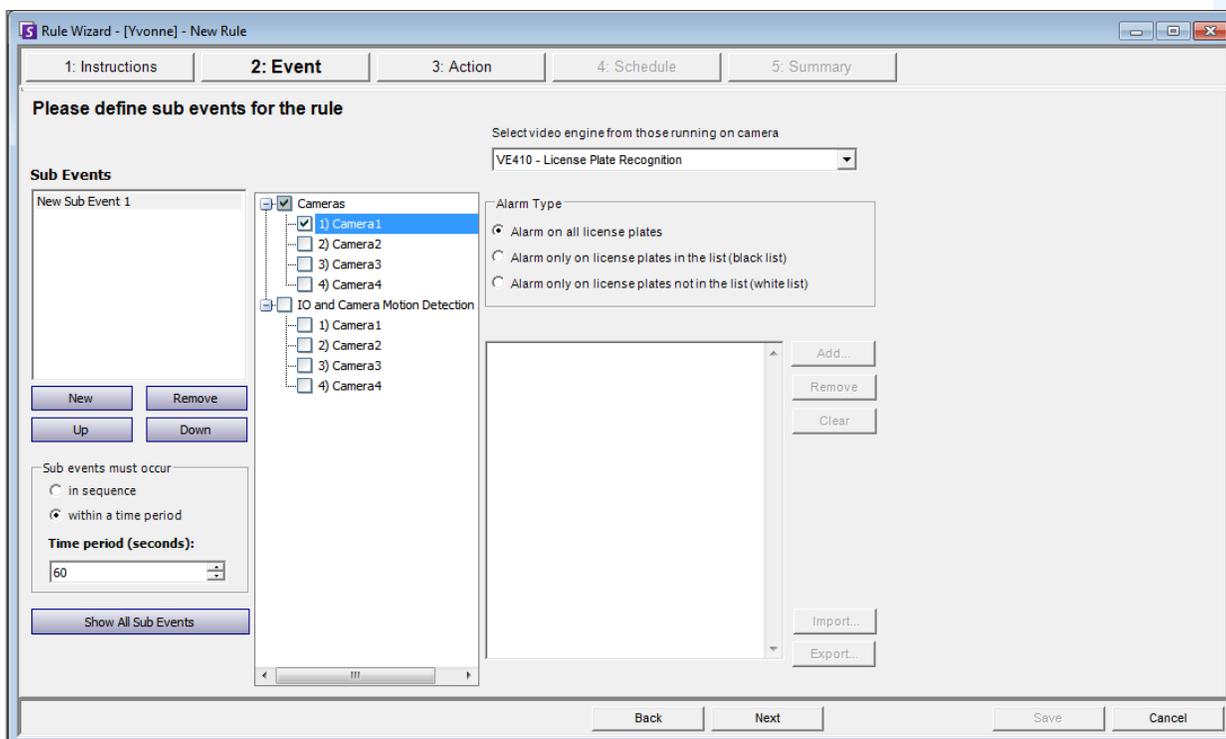


Figure 25. Rule Wizard - Events tab for License Plate Recognition

After selecting the camera or IO/VMD devices, select the **Alarm Type**.

- **Alarm on all license plates** - a useful option when a perimeter should not be crossed at a specific time, for example, a parking lot at night
- **Alarm only on license plates in the list (black list)** - any plates seen by the system that are on the list will raise an alarm

- **Alarm only on license plates in the list (white list)** - any plates seen by the system that are **not** on the list will cause an alarm
- You can **Add** a license, **Remove** a license, or **Clear** the list of license plates.
- You can **Import** a black list or white list of license plates. The list must be stored in .CSV format, for example, license plate number [comma] followed by plate type.
 ABCD123, Ontario
 171807, Illinois
- You can **Export** the list to save it on your computer for future use as well. The list will be stored in .CSV format, for example, license plate number [comma] followed by plate type.

Actions

While the Events define what causes an alarm, Actions specify what Symphony should do as a result.

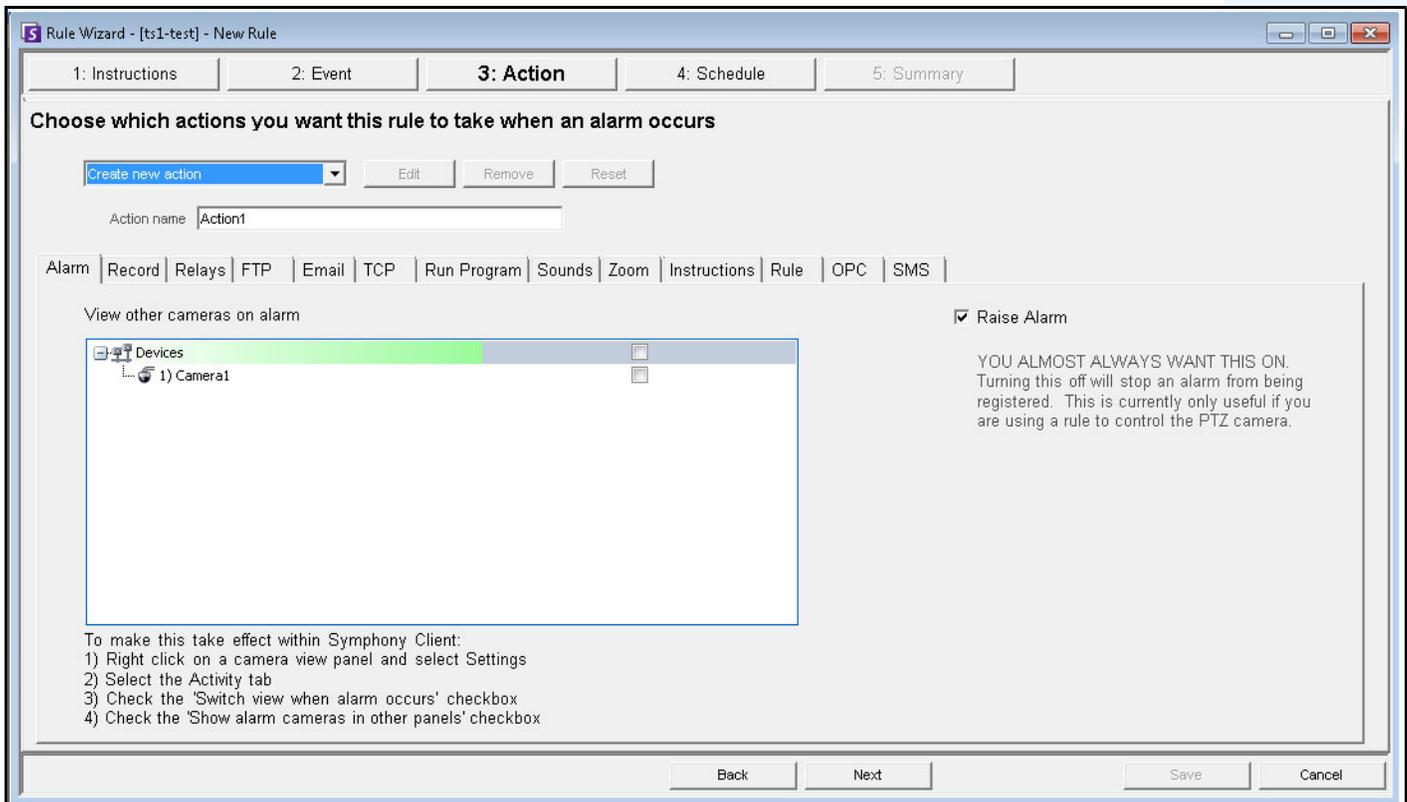


Figure 26. Rules Wizard - Action

Table 18. Rules Wizard Action Section tabs

Tab	Description/Usage
Alarm	<p>If Raise Alarm check box is selected, the Timeline and Alarm Log will reflect an alarm has occurred. When this check box is clear, the opposite is true. However, all other actions specified will still occur.</p> <p>This is useful in the case of zooming with PTZ cameras since it may be unnecessary to show an alarm every time the camera automatically zooms.</p>
Record	<p>The Record check box will ensure video recording for this camera occurred, even if the default setting for the camera is No Recording as defined in the Device setup.</p> <p>The Start recording on other cameras selection is required in cases an alarm I/O has been selected as the event. You select the camera that will be associated with this alarm for the purposes of adding the event to the camera's Timeline.</p>
Relays	<p>Use this to automatically send an electrical signal to an external device whenever an alarm occurs. This would be useful if you setup a Rule that detected when cars were stolen and you wanted Symphony to automatically close a gate or turn on a light. Symphony has been designed to work with alarm relays (such as the QK108) to connect via the serial port of the Symphony Server.</p> <p>Trigger Relay check box allows you to set if the relay should be turned on, off, or toggled.</p> <p>Relay # field allows you to define which address of the relay board to control.</p> <p>Restore state after check box allows you to specify how long the relay should be in its current state before being reset.</p> <p>For more information, visit the Aimetis Knowledge Base article on configuring Alarm Relays.</p>
FTP	<p>You can specify Symphony to automatically send a jpg to a FTP site after a Rule is broken. The jpg features and filenames are configured in this tab.</p> <p>The filename can be automatically generated based on the date, time, Rule and camera information using the symbols shown in the FTP tab.</p> <p>Examples of filename patterns are:</p> <p>%d 2004_06_30.jpg %t 14_01_45_050.jpg %d-%t 2004_06_30-14_01_45_050.jpg %m-%a-%h 05-30-14.jpg %h_%i_%s_%l_%p 14_01_45_050_My_Rule.jpg</p>
Email	<p>You can configure Symphony to automatically send email messages whenever an alarm occurs. You may specify multiple recipients. Each recipient will receive an email with a picture attached of the event which caused the alarm. The email will include a hyperlink to the Aimetis Symphony Web Access application that will navigate to the alarm in question.</p> <p>The email will also include a hyperlink to the alarm's actual jpg file on the server.</p>

Table 18. Rules Wizard Action Section tabs (Continued)

Tab	Description/Usage
TCP	Opens a TCP socket to some IP & port, and sends the specified ASCII message. This is a generic way to interface with any access control system or other device.
Run Program	<p>By configuring this, Symphony can execute another 3rd party program.</p> <p>Working Directory - Must contain the path to the program\bat file. For example: C:\Program Files\Aimetis\Symphony_bin</p> <p>Executable Name - Must contain the path and program of cmd (for bat files at least). For example: C:\Windows\System32\cmd.exe</p> <p>Arguments - Must contain the batch file name and the "/C" parameter. For example: /C RecordToggle.bat</p>
Sounds	You can configure Symphony to play a pre-recorded sound when a Rule is broken. You can upload files to Symphony and select which sound file (such as a .wav file) to play when the current Rule is broken. This might be useful to automatically warn trespassers that the property is under surveillance.
Zoom	<p>Allows you to specify actions for a dome (PTZ) camera after the current Rule Trigger is detected.</p> <p>By selecting the Auto-tracking check box, the camera will leave its Home Position and automatically zoom and track the object.</p> <p>If you select the Force a PTZ camera to a location check box, you must specify a pre-programmed position for the camera to move to. This is useful if you want to create an alarm Rule where the trigger is a Hardware Alarm input (I/O device selected from the list of devices on the Alarm tab). For example, perhaps a motion detector or even a fixed camera caused an alarm, you could force the PTZ camera to automatically move to its location for further investigation. This will not work if the Trigger Rule element is not region specific (such as a Cord Cut alarm).</p>
Instructions	You can bind specific instructions to a Rule. This tells a monitoring agent or operator what to do in case of alarm. When an alarm occurs it appears in the Alarm Log of the Main Console.
Rule	After an alarm occurs, one of the Actions can be set to automatically enable or disable other Rules.
OPC	Symphony can interact with OPC servers on alarm by configuring this tab.
SMS	Symphony can send messages via SMS as a result of the alarm by configuring the COM Port, Baud Rate and adding a Phone Number as required.

Schedule

Schedule, or time period, is the last rule element you define. The **Schedule** dialog box allows you to specify on a weekly basis when the new Rule should be active or inactive. You set different alarm schedules for different Rules.

If the Rule is disabled (in the **Rules Summary**), the schedule is ignored and Actions for that Rule will not be triggered.

The alarm schedule is set in 30 minute intervals only. By default, the schedule is completely red (armed).

Procedure

To modify the alarm schedule:

1. Give the new Schedule a descriptive name in the **Name** field, or reuse an existing Schedule by selecting it from the **Create new schedule** drop-down field.
2. If a new schedule is being created, select the **Armed** or **Unarmed** option, and drag the alarm schedule over to set the schedule.
3. Click **View Exceptions** to set an exception to this weekly schedule. An example might be holidays.
 - a. To set exceptions, mark each half hour increment in red or green. Red means it is armed, green means it is disarmed.
 - b. If a day already has exceptions it will be displayed in bold in the calendar. The current day is highlighted in blue.
4. Click **OK** to save your changes, or the X at the top of the form to close it without saving changes to the current day.
5. Click **Next** to move to the next dialog in the Rule Wizard. The **Summary** displays the essential elements of the rule you created.



Note: You can re-use Rule elements between rules. For example, if you have 2 rules, both may use the same Schedule or Action. Do not, for instance, create 2 schedules that are both 24/7.

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