Aimetis Symphony™

Aimetis Automatic License Plate Recognition (ALPR) Guide:

Field Installation & Planning
Software Installation
Analytics Configuration

November 13, 2014

aimetis

Disclaimers and Legal Information

Document History

Table 1. Changes to this manual

Date	Description
November 13, 2014	**Updated Support Regions List:** "Table 2. Supported Region, Country or State/Province" on page 7
August 6, 2014	**Revised:** Replaced last sentence of the paragraph text with a note in " Overview and Usage" on page 2 "Figure 17. Search License Plate dialog box" on page 34 **Removed:** Part Numbers section
July 31, 2014	Symphony Release 6.13.1 Updated Support Regions List: "Table 2. Supported Region, Country or State/Province" on page 7
May 26, 2014	Updated Support Regions List "Table 2. Supported Region, Country or State/Province" on page 7 "Task 1: Configure VE410" on page 18 "Figure 11. Analytics Configuration tab" on page 19 "Table 3. Analytics Configuration tab settings" on page 20
October 4, 2013	Removed erroneous references to VE130
June 17, 2013	**LPR 6.12.0.0** License Plate Log can now display plates for dates in the past. See "View License Plate Log" on page 32
April 11, 2013	**Revised:** VE250 should be selected with VE410: " To configure the VE410:" on page 18 and "Figure 10. Analytics Engines tab" on page 18
March 15, 2013	**Revised** VE130 not recommend. Procedure and screenshot revised. " To configure the VE410:" on page 18 and "Figure 10. Analytics Engines tab" on page 18
December 6, 2012	**Revised note:** **Important**: We do **NOT** recommend using VE130 to first detect motion. See "Use with Motion Detection" on page 21 Minor typographical error correction. VE410 on page 27.

Table 1. Changes to this manual

Date	Description
August 2012	Updated for 6.10 Release "Task 1: Configure VE410" on page 18 "Figure 11. Analytics Configuration tab" on page 19 "Table 3. Analytics Configuration tab settings" on page 20 - New options and new default settings.
January 31, 2012	Aimetis License Plate Recognition software now detects plates from Indonesia and Vietnam. See Table 2, "Supported Region, Country or State/Province," on page 7
November 24, 2011	**Added**: • "LPR Menu in Symphony Client" on page 32 • "View License Plate Log" on page 32 • "Search License Plate Log" on page 34 • "Configure License Plate Descriptions" on page 36 • "Adding a License Plate" on page 39
September 27, 2011	**Added** two Advanced settings: • Analysis Timeout (100-1000ms) • Analysis Heuristical Sensitivity (0-500) See "Figure 11. Analytics Configuration tab" on page 19 and Table 3, "Analytics Configuration tab settings," on page 20.
September 20, 2011	**Added** to "Installing License Plate Recognition (LPR)" on page 14 Step 3: Download **LPR_Installer** from Aimetis Xnet and copy it to your desktop. *The installer must be copied to a drive where you have has write access because the installer first writes the extracted files to disk before running*.
September 19, 2011	**Added**: • Installation instructions: "Installing License Plate Recognition (LPR)" on page 14 • Set up in Aimetis Symphony: "Setting up the VE410 - License Plate Recognition Video Engine in Aimetis Symphony" on page 18
August 24, 2011	**Clarification**: For Mexico (North America) and Colombia (South America), you must select **Central America** for **Region for plate analysis.** See Table 2, "Supported Region, Country or State/Province," on page 7**.**
July 25, 2011	Correction: Vehicles traveling 30 km/h in "Overview and Usage" on page 2, "Working Scenarios" on page 2, and "Image Frame Rates" on page 6.
July 2011	First instance of this guide.

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ALPR

Introduction

This document helps you successfully plan and deploy an automatic license plate Automatic License Plate Recognition (ALPR) system using Aimetis Symphony software. ALPR installations have more demanding image requirements than traditional CCTV installations. Images must meet specific criteria for accurate license plate readings, including license plate size in pixels, contrast, lighting conditions, motion blur, and exposure. This guide provides qualified image examples as well as tips and tricks to help maximize the use of your ALPR system.

Overview and Usage

License plate recognition is available as the VE410 video engine inside Aimetis Symphony. The VE410 allows you to detect and index license plates. The VE410 ALPR is designed to work with network video. Specialized analog ALPR cameras can be connected to Aimetis Symphony using a video encoder.

Note: If more than 12 images per second of processing is required (across all connected ALPR cameras), contact Aimetis for a multicore option.

Key Features

- License plates from different regions and countries recognized and logged
- Searchable license plates
- White lists and black lists can be used raise alarms on various subsets of plates
- Aimetis Symphony can be leveraged for live and recorded video streams

Working Scenarios

The VE410 ALPR can be used in environments where vehicles are travelling 30 km/h or less. It is not designed for mobile surveillance (such as a police car). With a 720p network camera, up to 2 lanes of traffic can be analyzed per camera (for example, Axis P1344) provided that the qualified image requirements are met. The VE410 ALPR is able to analyze video in real-time; therefore, no external trigger is required. Typical working scenarios include:

- Parking garage toll collection or assisted visitor management
- Traffic Control
- Border crossings
- Marketing tool to log patterns of use

Minimum System Requirements

The recommended system requirements for processing 12 images per second (across all ALPR cameras):

- CPU: Intel dual core 3Ghz or higher
- RAM: 2GB
- HD Space: 250MB
- OS: Windows XP or higher
- Aimetis Symphony Enterprise
- PCI slot for hardware key (not necessary if using USB key)

Note: If more than 12 images per second of processing is required (across all connected ALPR cameras), contact Aimetis for a multicore option.

Optimizing Server Performance

The VE410 ALPR uses one CPU core only. Therefore, a multicore processor will not be leveraged across all cores when processing ALPR video. It is more advantageous to a use a processor with a faster clock speed and fewer cores as opposed to a slower clock speed but more CPU cores. A fast dual core processor is recommended.

The number of ALPR cameras that can be run per server depends on:

- Speed of the CPU core
- FPS per each camera
- Analysis image size sent to the VE410 for processing

Normally 1 CPU core can process 12 FPS across all cameras. As an example, this could mean 2 cameras each at 6 FPS, or 12 cameras at 1 FPS.

> **Note:** Other Video Engines can be run simultaneously against the same video stream as the VE410. While the VE410 uses only one CPU core, other CPU cores can be used for other video engines. Therefore it is possible to successfully mix ALPR cameras with non-ALPR cameras on the same server.

Qualified Image Criteria

- For license plates with Latin characters, 32-pixel height is recommended.
- For non-Latin (Arabic, Chinese), characters, 40-pixel height is recommended.

Examples of Good Images

Figure 1 and Figure 2 are examples of good quality night and day images. Use these types of images as a model for best results.

Figure 1. License plate detected at night with IR illuminator

Figure 2. License plate detected during day

A network camera can be used in good lighting conditions. However an external light source (such as IR illuminator) may be required to avoid headlight interference in low light conditions. For more challenging environments, a professional ALPR camera may be required.

Examples of Poor Images

When setting up your cameras for License Plate Recognition, as with any video engine, try to avoid poor image quality issues (Table 1).

Table 1. Poor image quality issues

Images to avoid	Description
	Low spatial resolution - (characters are too small on the plate) • Latin characters - **Minimum** character size is 16 pixels height and 2 pixels line-width in image. • Non-latin characters (Arabic, Chinese, Thai, Korean) - **Minimum** pixel height is 20 pixels and 2 pixels line-width in image.
	Blurred image
	Low contrast - Minimum 20 grayscale difference is required between the background and the characters of the plate.
	Over exposure
	Poor lighting conditions (shadows and strong light)
	High distortion
	Interlaced
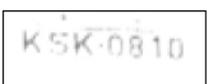
Image Frame Rates

The number of frames per second (FPS) per camera that the VE410 requires to successfully detect license plates depends on how fast vehicles are travelling. If vehicles are stopping, 1 FPS per camera may be sufficient. If vehicles are travelling up to 30 km/h, up to 10 FPS may be required. It is important that the license plate is clearly readable for at least 3 frames of video.

Camera Field of View

Recommended: Install the camera directly in line with the vehicle path as much as possible. This will ensure the vehicle will be in the field of view for the maximum number of frames, and the license plate will be easily readable.
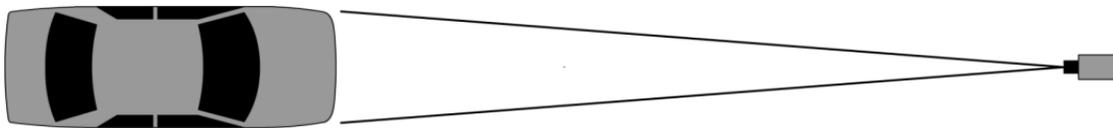

Figure 3. Camera in line with vehicle path

The distance between the vehicle and the camera should be within 50 meters. The camera height should be within 3 to 9 meters. The camera angle should not exceed 30 degrees (Figure 4).
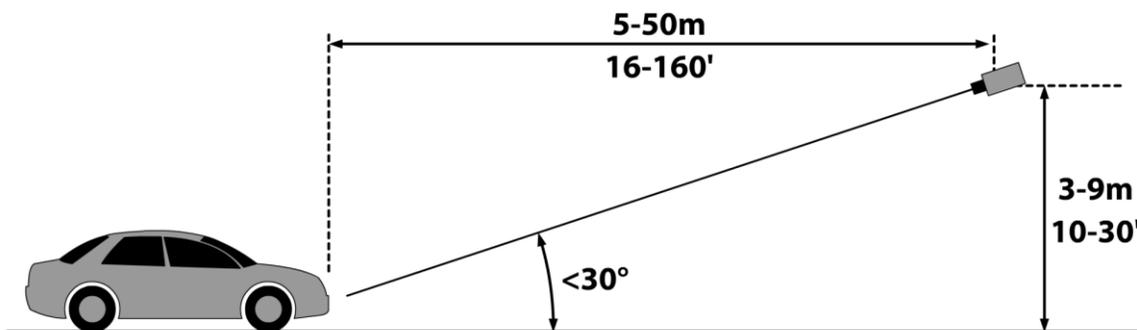
Figure 4. Distance between vehicle and camera

If overhead camera mounting is not possible (for example, camera is pole mounted or on side of road), ensure the camera angle does not exceed 15 degrees (Figure 5).
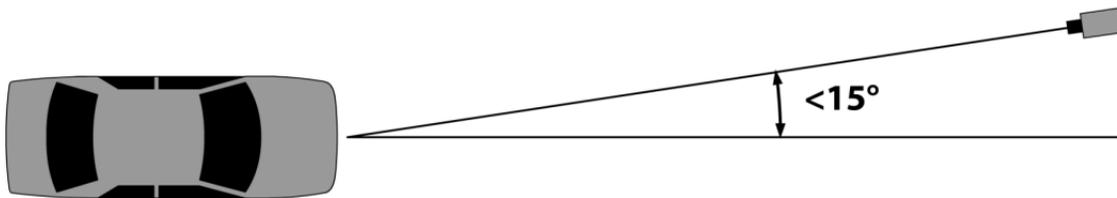
Figure 5. Camera angle

Supported Regions

Table 2. Supported Region, Country or State/Province

Region	Country or State/Province
China	Beijing
	Guangdong
	Hubei
	Hebei
	Inner Mongolia
	Jiangsu
	Military Police
	Shangdong
	Tibet
CIS (Commonwealth of Independent States)	Armenia
	Azerbaijan
	Belarus
	Kazakhstan
	Kyrgyzstan
	Moldova
	Russia
	Tajikistan

Table 2. Supported Region, Country or State/Province (Continued)

Region	Country or State/Province
	Turkmenistan
	Ukraine
	Uzbekistan
Europe	Albania
	Andorra
	Austria
	Belarus
	Belgium
	Bosnia and Herzegovina
	Bulgaria
	Croatia
	Czech Republic
	Denmark
	Estonia
	Finland
	France
	Germany
	Gibraltar
	Greece
	Hungary
	Iceland
	Ireland
	Italy
	Latvia
	Liechtenstein
	Lithuania
	Luxembourg
	Macedonia
	Malta
	Monaco
	Montenegro

Table 2. Supported Region, Country or State/Province (Continued)

Region	Country or State/Province
	Netherlands
	Norway
	Poland
	Portugal
	Romania
	San Marino
	Serbia
	Slovakia
	Slovenia
	Sweden
	Switzerland
	Spain
	Turkey
	United Kingdom
Korea	
Mexico	Federal District
	Aguascalientes
	Baja California
	Baja California Sur
	Campeche
	Chiapas
	Chihuahua
	Coahuila
	Colima
	Durango
	Guanajuato
	Guerrero
	Hidalgo
	Jalisco
	Mexico State

Table 2. Supported Region, Country or State/Province (Continued)

Region	Country or State/Province
	Michoacan
	Morelos
	Nayarit
	Nueovo Leon
	Oaxaca
	Puebla
	Queretaro
	Quintana Roo
	San Luis Potosi
	Sinaloa
	Tabasco
	Tamaulipas
	Tlaxcala
	Veracruz
	Yucatan
	Zacatecas
Middle East	Bahrain
	Iraq
	Jordan
	Kuwait
	Lebanon
	Oman
	Qatar
	Saudi Arabia
	Syrian Arab Republic
	United Arab Emirates
	United Arab Emirates DUBAI
	United Arab Emirates ABU DHABI
	United Arab Emirates AJMAN
	United Arab Emirates FUJAIRAH
	United Arab Emirates SHARJAH

Table 2. Supported Region, Country or State/Province (Continued)

Region	Country or State/Province
	United Arab Emirates UMM AL QUWAIN
	United Arab Emirates RAS AL KHAIMAH
	Yemen
Morocco	
South America	Argentina
	Bolivia
	Brazil
	Chile
	Colombia
	Ecuador
	Paraguay
	Uruguay
	Venezuela
Taiwan	
Thailand	
USA / Canada	Alabama
	Alaska
	Arizona
	Arkansas
	California
	Colorado
	Connecticut
	Delaware
	District of Columbia
	Florida
	Georgia
	Hawaii
	Idaho
	Illinois
	Indiana
	Iowa
	Kansas

Table 2. Supported Region, Country or State/Province (Continued)

Region	Country or State/Province
	Kentucky
	Louisiana
	Maine
	Maryland
	Massachusetts
	Michigan
	Minnesota
	Mississippi
	Missouri
	Montana
	Nebraska
	Nevada
	New Hampshire
	New Jersey
	New Mexico
	New York
	North Dakota
	Ohio
	Oklahoma
	Oregon
	Pennsylvania
	Rhode Island
	South Carolina
	South Dakota
	Tennessee
	Texas
	Utah
	Vermont
	Virginia
	Washington
	West Virginia
	Wisconsin

Table 2. Supported Region, Country or State/Province (Continued)

Region	Country or State/Province
	Wyoming
	Alberta
	British Columbia
	Manitoba
	New Brunswick
	Nova Scotia
	Ontario
	Quebec
	Saskatchewan
	Yukon

Installing License Plate Recognition (LPR)

The Aimetis VE410 is an add-on video analytic in Aimetis Symphony . A server hardware key is also required.

Procedure

To install all LPR components:

1. Install Symphony Server and Client.

2. Close any Aimetis applications that are running.

3. Download **LPR_Installer** from Aimetis Xnet and copy it to your desktop. The installer must be copied to a drive where you have has write access because the installer first *writes* the extracted files to disk before running.

4. Run **LPR_Installer.exe** (on all servers in the farm).

   - All servers in the farm must have the LPR component installed regardless of whether they are the server hosting the cameras running the LPR video engine.

5. A **Welcome** page appears, and then the **License** page.

6. Select the **I accept the terms in this License Agreement** check box and click **Install**.
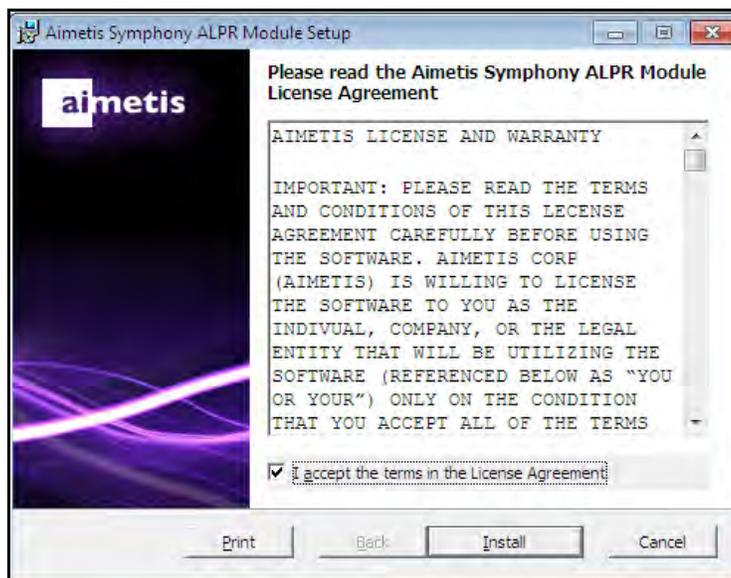

Figure 6. ALPR Module License Agreement page

7. You may receive a message indicating the some files must be updated. By default, the **Close all applications and attempt to restart them** option is selected in the **Files in Use** page. Click **OK**.
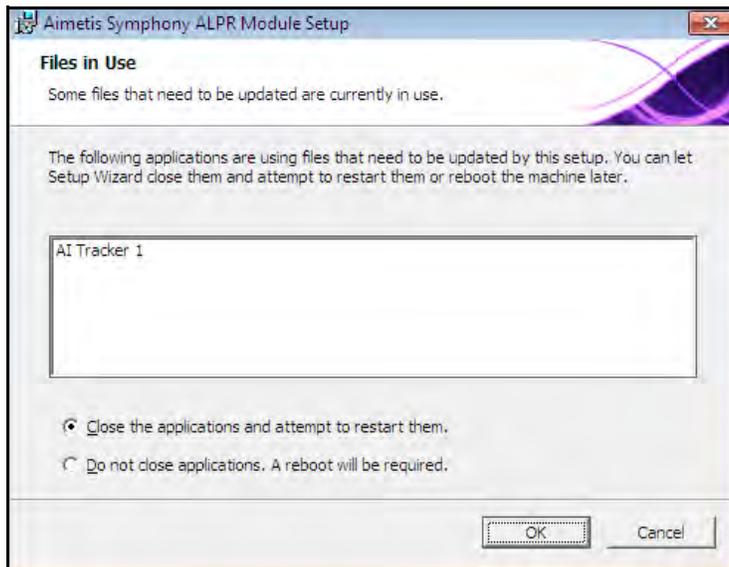
Figure 7. ALPR Module Setup - Files In Use page

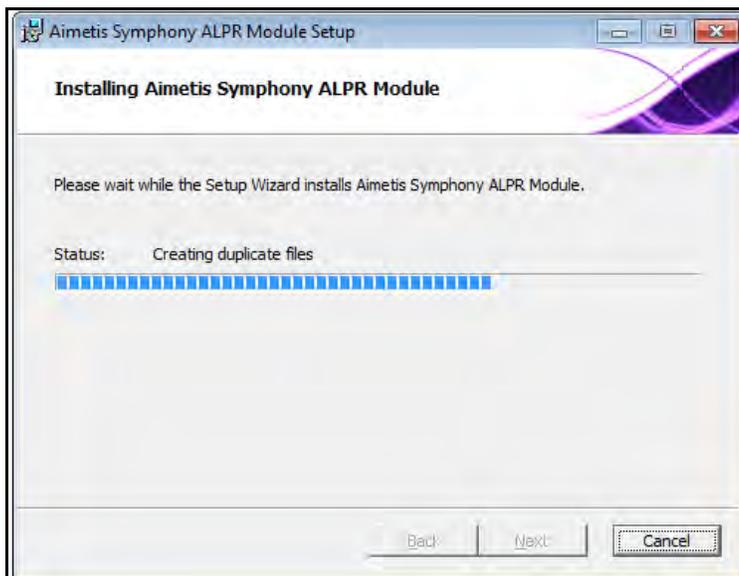8.   The installation process begins.

Figure 8. ALPR installing page
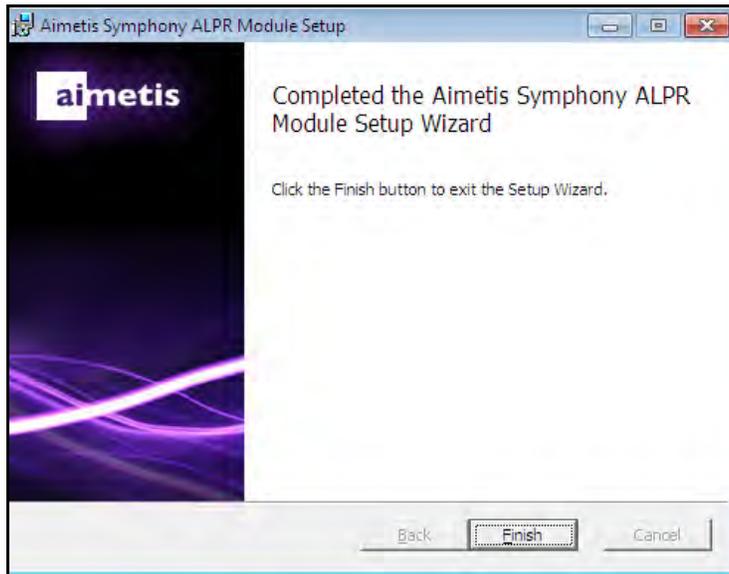
9.   To exit the setup, click **Finish** .

Figure 9. ALPR Module has completed installation

The **LPR** installation is complete.

Uninstalling License Plate Recognition (LPR)

Procedure

To remove all LPR components:

1. From **Programs and Features** in your Control Panel, select **GX Full Uninstall** and choose **Uninstall**.

   - On 64 bit machines, you must remove both **GX Full Uninstall** and **2 bit GX Full Uninstall**.

2. Click **Next**. The **Remove the Program** screen opens.

3. Click **Remove**.

   - If files on your system are in use, select the **Automatically close and attempt to restart applications** option and click **OK**.
   - If Windows fails to close the applications, you may see the following warning: "The setup was unable to automatically close all requested applications. Please ensure that the applications holding files in use are closed before continuing with the installation." Click **OK**.

4. Click **Finish** to complete the uninstall process.

5. From **Programs and Features** in your Control Panel, select the Aimetis Symphony **ALPR Module** item. Choose **Uninstall**.

6. Restart your computer.

Setting up the VE410 - License Plate Recognition Video Engine in Aimetis Symphony

The hardware key must be plugged into the server that is performing analytics. (Plug in the USB key or install the PCI card into the server after installing the LPR Installer package.)

If you are using redundancy, you must switch the camera to **Unmovable** OR you must install hardware keys on all servers in the redundancy group that the camera could switch to.

Task 1: Configure VE410

Procedure

To configure the VE410:

1. In Aimetis 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 **VE410**. (By default **VE250** is selected. You can use the VE250 Motion Tracking analytic with VE410.)

> **Note:** If the **VE410** option is not displayed, clear the cache. From the main menu, select **File**, **Empty Cache**. Restart Aimetis Symphony Client. The option will now be visible.
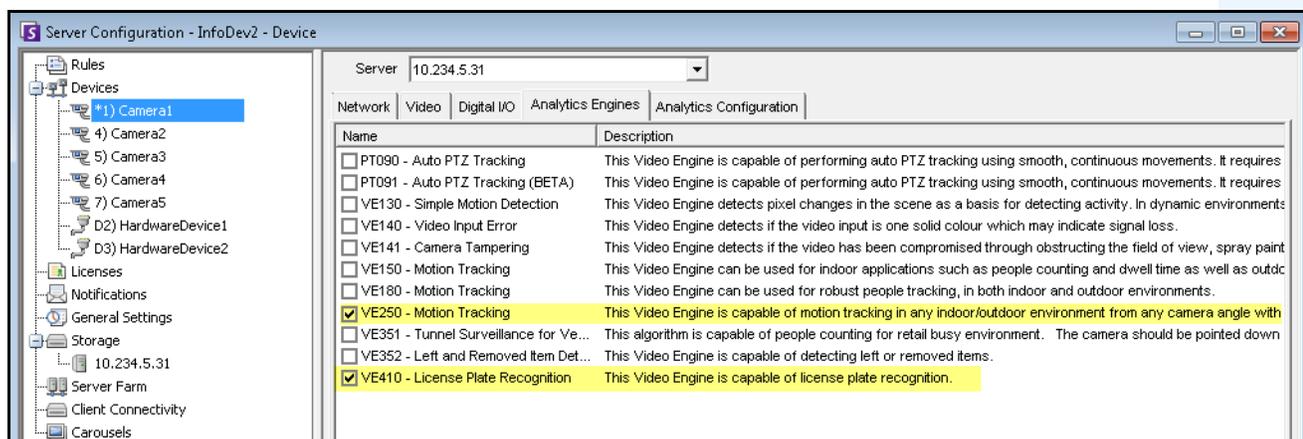

Figure 10. Analytics Engines tab

5. Click the **Analytics Configuration** tab.

6. From the **Analytics Engines** drop-down list, select **Intel_VE410**.

Figure 11. Analytics Configuration tab

7. The following settings for each LPR analytic must be the same across all cameras on the same server:

   • Minimum Plate Length
   • Region Plate for Analysis
   • Analysis Timeout

8. Use an image with a vehicle in the scene. Drag your mouse across the image and a rectangle appears.

- Rotate or slant the rectangle by moving the corners.
- To make the rectangle bigger or smaller, move the outer edges.
- To move the entire rectangle, click on the center and drag the rectangle with your mouse.
- Set multiple plate areas to capture the change in plate orientation as the car moves away.
- See "Height, Slant, Slope", and settings in "Table 3. Analytics Configuration tab settings".

Table 3. Analytics Configuration tab settings

Analysis FPS	Value from 1 to 10. • Indicates the number of frames per second that the LPR engine uses for plate analysis. • In parking lots, or at gates where a vehicle comes to a complete stop, or goes by slowly, use a lower setting. • Where a vehicle is moving fast and/or the license plate is visible only for a short time in the camera, use a higher setting. • Ideal Setting: Use a high frame rate, high analysis resolution and a small mask. • (Higher Analysis FPS resolutions and no masking will result in degraded performance.)
Capture Resolution	Resolution that is being recorded by the camera. Value is read-only and cannot be changed in the VE410 configuration. To modify the capture resolution, use the **Resolution** setting on the **Network** tab.
Analysis Resolution	Contains one or more supported resolutions that can be used to detect license plates. The resolutions displayed are calculated based on the capture resolution, to allow for easy scaling and to keep the aspect ratio consistent. The image captured by the camera will be downsized to the selected analysis resolution. Such downsizing will improve performance, but may reduce the ability of VE410 to detect a license plate, especially if it is relatively small in the capture resolution. However, higher analysis resolutions may result in a degradation of performance.
Queue Time (1s-120s)	Default value is 10 seconds. Represents maximum busy period on a camera. For example, two trucks may be coming through a gate one after another. It takes 10 seconds for one truck to pass. So **Queue Time** should be set to 20 seconds. Working in conjunction with the **Use with Motion Detection** feature, **Queue Time** allows, for example, 10 cameras to be used for detecting motion with only one LPR hardware key per server. Ideally, you should consider the amount of RAM the server has before setting **Queue Time** to a high value. (10 to 20 seconds is recommended.) For a sample calculation, see the Knowledge Base article: How to set the Queue Time feature in ALPR
Use with Motion Detection	Enabled if a Symphony Motion Detection analytic is enabled on the camera. This feature reduces the amount of processing the LPR engine requires by analyzing video only where motion is first detected. When this feature is not used, the LPR engine is constantly analyzing video even if no motion is detected. **Important**: We do **NOT** recommend using VE130 to first detect motion.

Table 3. Analytics Configuration tab settings (Continued)

Region for plate analysis	Geographical location of plate analysis; typically country or continent. • If your region, country, or state/province is not listed, select the **Default (No Region Data)** option. • If you are trying to optimize the speed of license plate recognition, select the **Default (No Region Data)** option as it provides the fastest recognition.
Minimum plate length	Plates detected that have fewer characters will be ignored (not reported to the user).
Plate Dwell Time (Seconds)	Indicates the amount of time in seconds that a given plate must be present before it is reported in the database. If you are getting a lot of false positives, increase this value. In general a value of less than 0.5 seconds is desirable.
Reporting confidence	A slider set to **Medium** (50%) by default. • Plates that are detected below the specified confidence will not be decorated or reported in the database. • Set to **Low** if the camera environment is not ideal. This will allow the engine to capture everything. • If your system is detecting far more than license plates, raise the confidence to **High** to eliminate unneeded detection. For an actual value, click **Show XML View.** **0** is **Low**, **Medium** is **50%** and **High** is **70%.**
Analysis Timeout (100-1000ms)	The maximum number of milliseconds that the analytic engine will look for a license plate per frame. **The default value is 250ms.** Note that if you specify a smaller value, LPR returns the "best guess" license plate after the given amount of time. That is, the risk of false positives increases. However, a smaller value increases performance. **Note:** In Symphony 6.9 and prior, the default value was 1000ms.

Table 3. Analytics Configuration tab settings (Continued)

|	
	Inner rectangle represents the minimum plate character size. Outer rectangle represents the maximum plate character size. **Important**: The rectangle is for one line of text in the license plate. Ensure that the top and bottom edges of license plate characters are within the highlighted region. If you change the **Height**, **Slant**, and **Slope** minimum and maximum settings, the rectangle with automatically adjust. • A Red rectangle indicates that the minimum plate character size cannot be detected at the current analytics resolution The correct analysis resolution will be displayed in a message above the image .
Height, Slant, Slope	

Table 3. Analytics Configuration tab settings (Continued)

• A Green rectangle indicates that the minimum plate character size can be detected at the current analysis resolution.

Good configurations:
The character height is bounded
within the highlighted region.

Bad configurations:
The character height is not
bounded within the highlighted region.
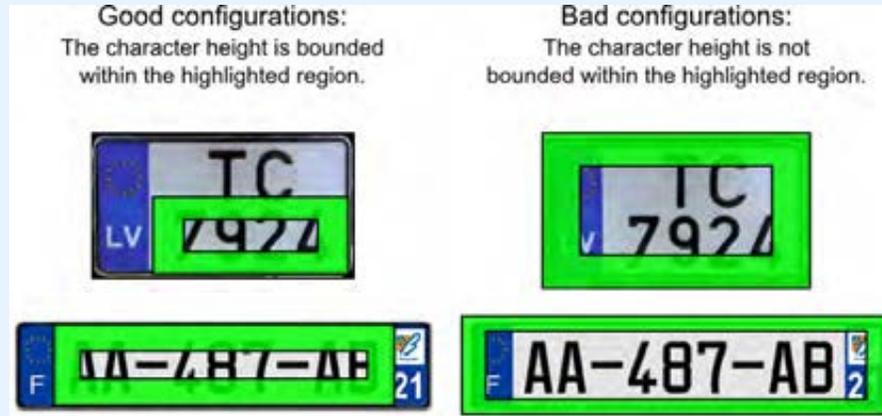
9.   From the **Analytics Engines** drop-down list, select **Intel_VE250.**

10. Click the **Processing Mask** tab.
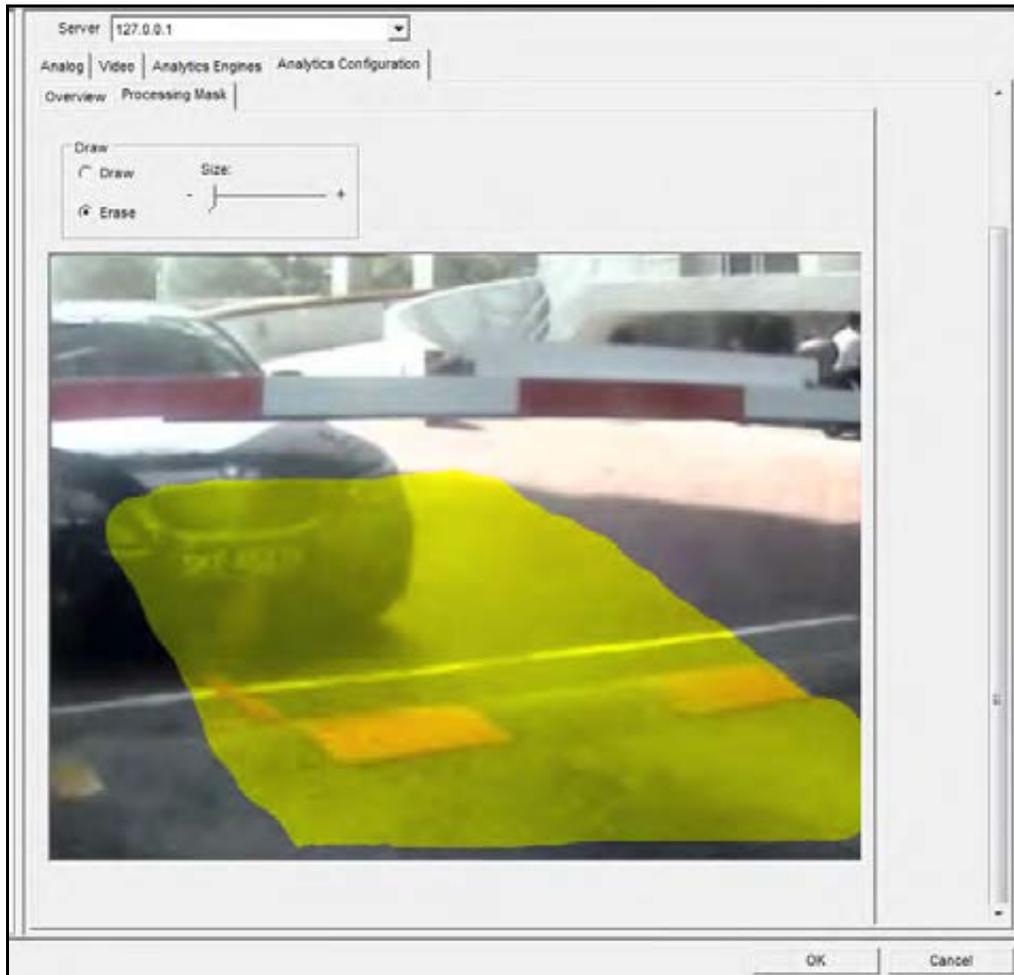
The analysis image size is based on the image size defined in the motion mask (for example, the original image size may be 1280 x 720 but only 400 x 300 is masked and included for analysis). Normally, some of the image can be masked which prevents the VE410 from analyzing the entire image. Mask only the image where license plates are likely to be visible. This improves the speed at which the VE410 can process frames of video.

> **Note:** Only the areas painted in yellow will be used to detect license plates.
> • License plates appearing outside of the masked area will not be reported.
> • Smaller masking areas allow for higher frame rates and resolutions to be used.
> • Motion tracking of a license plate will stop if the vehicle leaves the masked in area.

11. Click **OK** to save all changes.

Task 2: Create a Rule using VE410

Depending on the rule configuration, alarms can be generated for every license plate or for specific license plates detected by the LPR component.

Procedure

To configure a Rule using the VE410:

1. You must configure the **VE410** before creating a Rule that uses the **VE410**.

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 **VE410 - LPR**. 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

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. From the **Select video engine from those running on camera** drop-down list, select **VE410 - License Plate Recognition**.
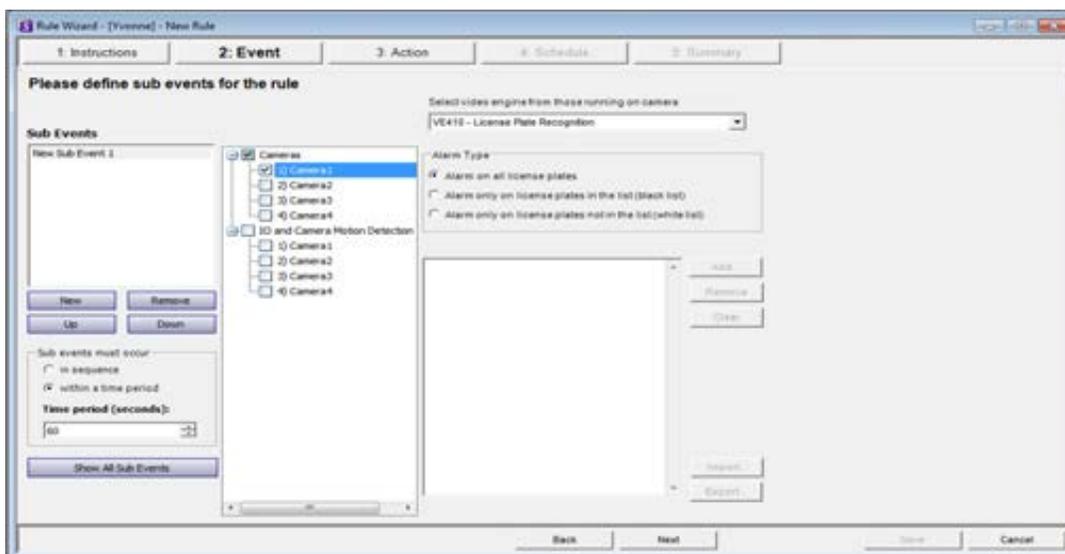

Figure 12. Rule Wizard - Events tab for License Plate Recognition

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.

3. Click **Next** to configure the **Actions.**

Actions

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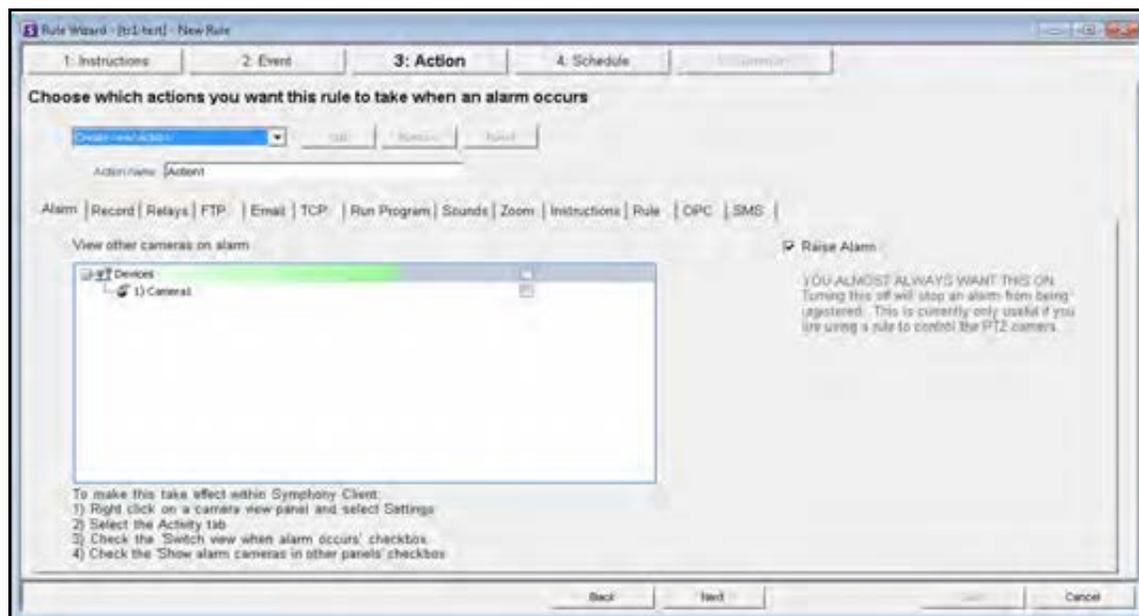

Figure 13. Rules Wizard - Action

Table 4. Rules Wizard Action Section tabs

Tab	Description/Usage
Alarm	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. 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.
Record	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. 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**.
Relays	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. **Trigger Relay** check box allows you to set if the relay should be turned on, off, or toggled. **Relay #** field allows you to define which address of the relay board to control. **Restore state after** check box allows you to specify how long the relay should be in its current state before being reset. For more information, visit the Aimetis Knowledge Base article on configuring Alarm Relays.
FTP	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. The filename can be automatically generated based on the date, time, Rule and camera information using the symbols shown in the **FTP** tab. Examples of filename patterns are: %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
Email	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. The email will also include a hyperlink to the alarm's actual jpg file on the server.

Table 4. 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	By configuring this, Symphony can execute another 3rd party program. **Working Directory** - Must contain the path to the program\bat file. For example: C:\Program Files\Aimetis\Symphony _bin **Executable Name** - Must contain the path and program of cmd (for bat files at least). For example: C:\Windows\System32\cmd.exe **Arguments** - Must contain the batch file name and the "/C" parameter. For example: /C RecordToggle.bat
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	Allows you to specify actions for a dome (PTZ) camera after the current Rule Trigger is detected. By selecting the **Auto-tracking** check box, the camera will leave its Home Position and automatically zoom and track the object. 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).
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.

LPR Menu in Symphony Client

This menu option is available only if you have purchased and completed the **License Plate Recognition** (LPR) installation. Using the main menu within Symphony Client, you can:

- "View License Plate Log"
- "Search License Plate Log" on page 34
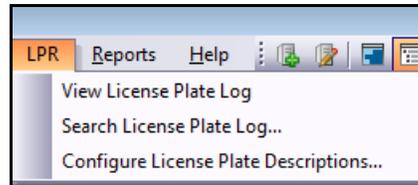- "Configure License Plate Descriptions" on page 36

Figure 14. Main menu access in Symphony Client for LPR

View License Plate Log

The **License Plate Log** contains the following information fields:

- **Timestamp** - when the license plate was first detected by your camera. Each license plate instance has a start and end time (to create a duration) but the log displays only the start time.
- **Plate** - the plate number of the detected vehicle.
- **Farm** - the server farm associated with the camera that detected the license plate.
- **Camera** - the camera that detected the license plate of the vehicle.

Figure 15. License Plate Log dialog box

- The **License Plate Log** displays one day's worth of logs, either for a date in the past, or for today's date.
- If today's date is selected or you are in live mode, the **License Plate Log** will continue to display new incoming plates.
- Each time you select a new date, the **License Plate Log** will be updated and contain only plates for that date. Multiple date selections do not accumulate plates.
- New plates/logs are sensed in two-second intervals.
- The **License Plate Log** is sorted by date in descending order.

Procedure

To view the License Plate Log:

1. From the main menu in Symphony Client, select **LPR**.

2. Select **View License Plate Log**. The **License Plate Log** dialog box opens.

Sorting Information in the License Plate Log

You can sort each field such that only information you need is displayed in the log list by **Timestamp, Plate**, **Farm**, or **Camera**. The **Timestamp** field has extensive filter options.
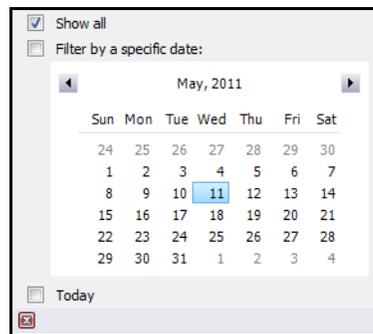
- Right-click on the filter icon beside the **Timestamp** field. A calendar is displayed.

Figure 16. Filter option for Timestamp field in License Plate Log

Search License Plate Log

The **Search License Plate Log** dialog box allows you to search detected license plates in your system based on:

- **License Plate Number** - by default, set to **All Licence Plates**, but you can enter an individual plate number.
- **Start date & time** and **End date & time**.
- **License Plate Region** - region which the detected plate is from.
- **Camera** - all farms and cameras or specific cameras.
- **Description** - a key word or phrase that was entered in the **Description** field when the license was plate was reviewed and information about it was edited to include a description in the **License Plate Detail Editor** dialog box. See .

Figure 17. Search License Plate dialog box

If you do not know the first letter or number of the license plate, use the **%** (per cent) sign as a wildcard character to complete the search for plate number or plate description.

For example, **R2%R%S** or **%R7S** or **%FR%** would match the plate **R2FR7S**.

Procedure

To search for a license plate:

1. From the main menu in Symphony Client, select **LPR**.

2. Select **Search License Plate Log**. The **Search License Plate Log** dialog box opens.

3. Use any field to refine your search and click the **Search** button. Search results are displayed in the left pane, the video associated with the license plate can be viewed in the right pane.

   - By default, the search results contain all license plates for the current day (since midnight). This search is automatically executed before you open the **Search License Plate Log** dialog box. As such, when you first open the **Search License Plate Log**, you will potentially see results.
   - The search will return a maximum of 10,000 results. If there are more than 10,000, a message is displayed indicating that the first 10,000 results have been returned and that you should refine your search.

4. Click on a license plate in the resulting search. The associated video and detailed description is displayed in the right pane.

5. Once you have selected the license plate to which you want to add information, enter information in the **Detailed Description** field in the lower right pane.

Configure License Plate Descriptions

You can associate each plate with a description that will be displayed when an alarm occurs or in search results. Adding a description is helpful when you want to search all plates with a particular description.
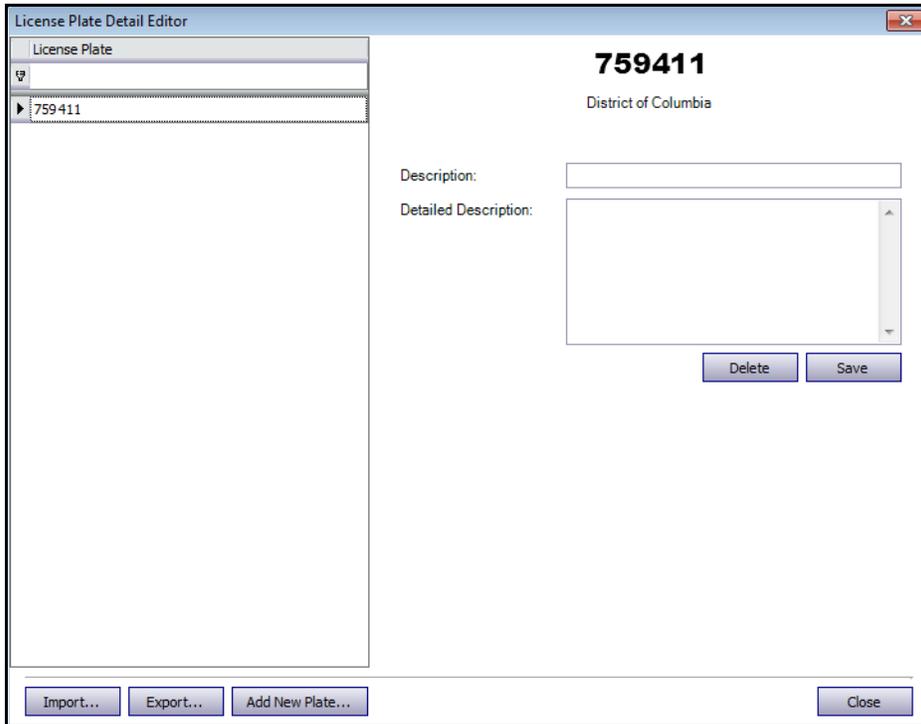
Figure 18. License Plate Detail Editor

Procedure

To configure license plate descriptions

1. From the main menu in Symphony Client, select **LPR**.

2. Select **Configure License Plate Descriptions**. The **License Plate Detail Editor** opens.

3. Search for the license plate you want to add a description to:

   a. In the blank text field below **License Plate**, enter the first letter or number of the plate you need. At the bottom of the column, **[License Plate] Like '<your first letter or number>%'** is displayed. All matching plates appear in the list.
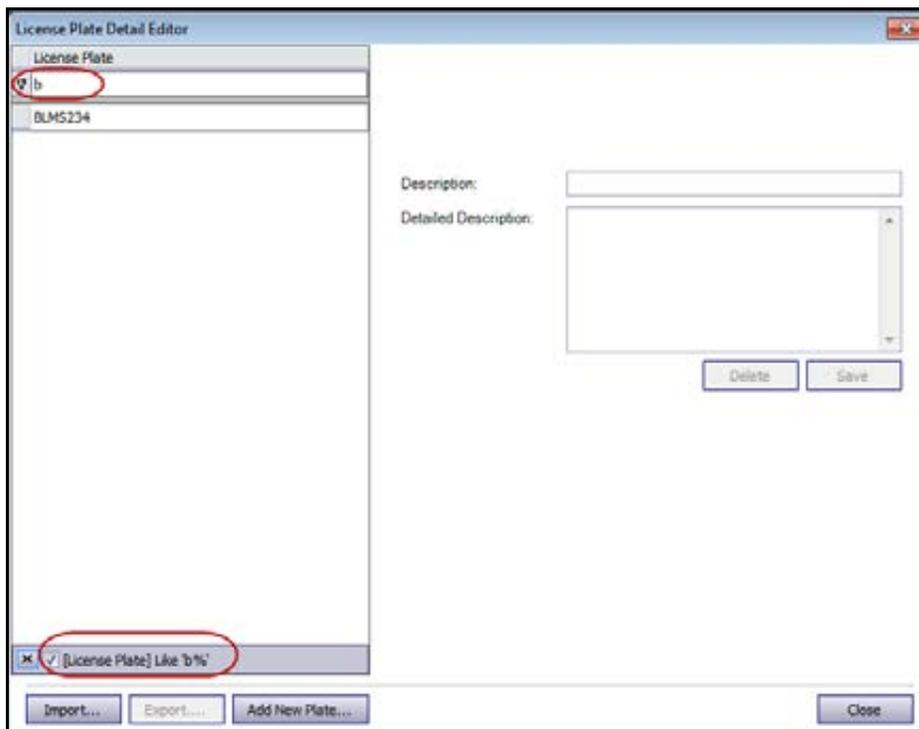
Figure 19. Search for license plate using first letter or number in the plate

   b. If you do not know the first letter or number, use the **%** (per cent) sign as a wildcard character to complete the search.
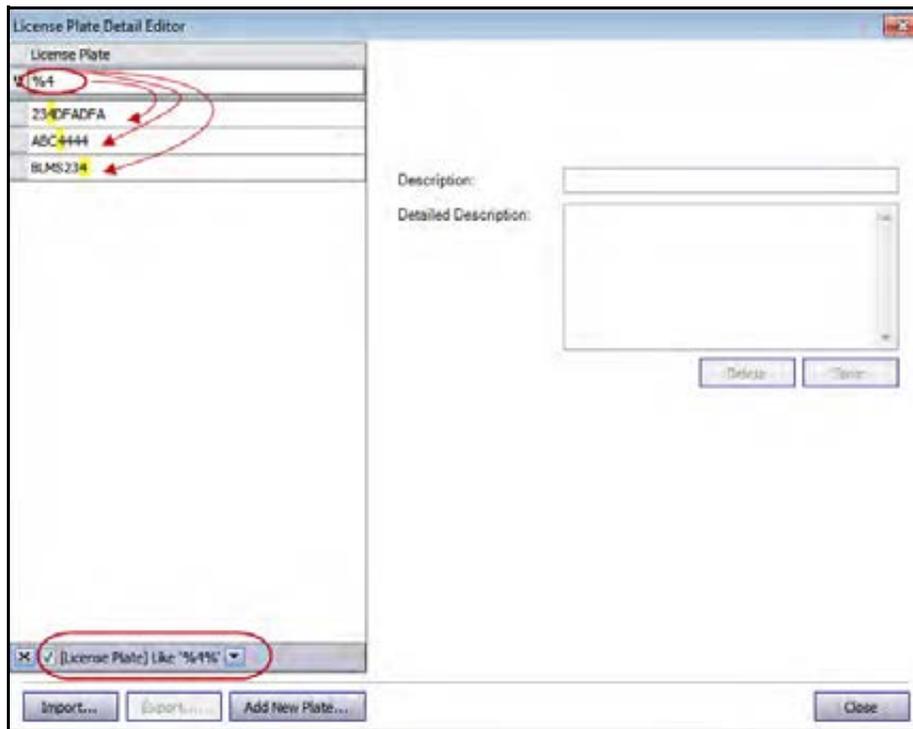
Figure 20. Search for license using % wildcard character

4. Once you have found the license plate you want, select it and enter a short description in the **Description** field.

5. (Optional) If necessary, you can enter more information in the **Detailed Description** field.

6. Click **Save**.

Adding a License Plate

You use the **License Plate Detail Editor** to add descriptions to license plates. License plates must adhere to the following format:

- They cannot contain spaces.
- They must be in uppercase.

If you enter spaces or lowercase letters, Symphony will automatically correct this for you. For example, if you enter **AbCd 1234**, the plate will be added as **ABCD1234**.

Procedure

To add a new license plate to your database:

1. From the main menu in Symphony Client, select **LPR**.

2. Select **Configure License Plate Descriptions**. The **License Plate Detail Editor** opens.

3. Click **Add New Plate**. The **Add License Plate** dialog box opens.

4. Enter the license plate number and select the region of the plate from the **License Plate Region** drop-down list.

5. Click **OK**. The plate is added to your list.
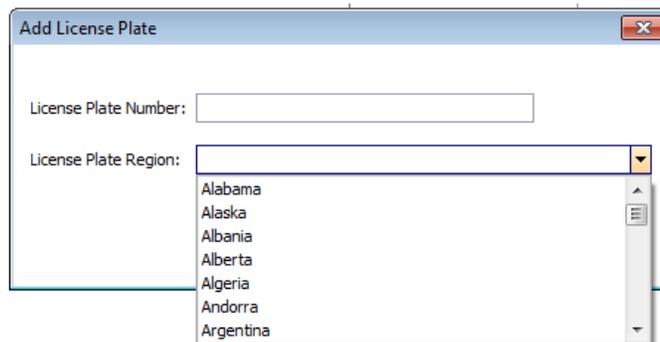
Figure 21. Add License Plate dialog box

Saving or Importing your sorting lists

- After sorting and editing license plates, you can save your list by clicking **Export**. The file will be saved as an XML (.lprdata) file on your client computer.
- You can import this list at any time by clicking **Import** and then selecting the name of the .lprdata file from the **Import License Plate Configuration Data** file manager.
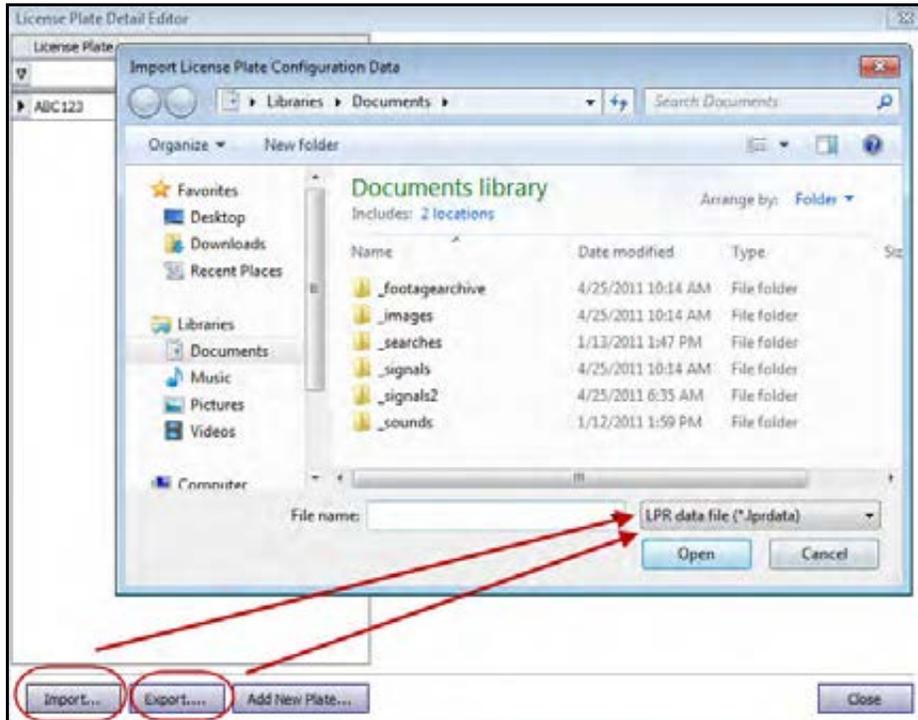

Figure 22. File manager - Import or Export your list of licenses to manage