Chapter 1. ExactQ Camera System Integration with Protector.Net

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Protector.Net is capable if integrating with a variety of Video Management Software (VMS). Integrating with VMS systems allows you to perform the following functions:

• Integrate with cameras from multiple VMS systems, including instances across LAN/WAN/ Internet.

• Real time video monitoring displays imported cameras from the VMS right in your web browser. Real time video can be displayed based on pre-defined alerts such as Door Held Open, Door Forced Open, etc.

• Associate cameras with Doors and Elevators. Associate PTZ cameras based on camera preset positions.

• Linking of video and notifications based on pre-defined events provided by the access control software.

Protector.Net currently integrates with the following Video Management Systems:

Table 1.1. Video Management Systems

System	Minimum Version	Notes
Exacq exacqVision	7.4.3	Web Server must be enabled. SSL Certified needs to be generated.

Supported Browsers

This section will display which camera systems are compatible with which browsers.

Table 1.2. Video Management Systems

System	Support Browsers	Notes
Exacq exacqVision	Internet Explorer 11 Opera 35.0 Google Chrome Mozilla Firefox Apple Safari	• Uses HTML5, supported on many platforms. • Stream utilizes JPEGs, medium performance and quality. • Web Sockets supported. • Mobile supported.

Enable the VMS Web/Mobile Server

This section will outline what is required before Protector.Net can synchronize and view cameras on the VMS.

Each system will need their respective VMS Web Server enabled. For more specific details on enabling and configuring the web server on a specific VMS, please contact the dealer/installer of the VMS or the VMS manufacturer.

Enable Web Server: Exacq exacqVision Web Services

1. Login to the server hosting exacqVision.

2. Enable the exacqVision Web Service as outlined in the Web Service User Manual.

3. Use a web browser and browse to the URL of the exacqVision web interface. Accept any certificate warnings and proceed.

4. You should add the Self-Signed exacqVision SSL certificate; this process is outlined in the section called "Adding Website Certificates for Camera Integration".

5. Proceed to the section called "Adding a Camera System".

Adding a Camera System

Adding a camera system (VMS) allows you to associate cameras to Doors/Elevators and view historical playback and real-time video.

1. Access your Protector.Net system through your HTML5 browser of choice.

2. Log in using the administrator account you created during the initial setup or provided to you by your dealer/installer.

3. On the **Home Screen**, scroll down to the section titled **Hardware**; click on the **Camera Systems** icon (pictured below).

Camera Systems
View camera systems

4. On the **Camera Systems** screen, you'll see any other camera systems you've already added. You can connect to multiple camera systems if required. Click the **Add** button on this screen.

Figure 1.1. Add Camera System Screen

5. On the **Add Camera System** screen, you'll have a few text boxes to populate.

Table 1.3. Add Camera System

Text Box	Description
Name	Unique name of your camera system. Accepts 2 to 255 characters. We recommend naming your camera system based on location or function.
Integrator Type	Choose the correct integrator type based on the VMS you'd like to integrate with.
Address	The address of the server/computer hosting the VMS. This can be a name or an IP address. Include http/https header. Include the port number used by the video management software if not using default port 80. The port number is only required if not using the default port 80 (http) or 443 (https).
Username	The username that will be used to access the VMS. This can be located in your camera management software.
Password	The password for the VMS account that will access the VMS. This can be located in your camera management software.
Time Zone	The local time zone the camera system will reside in.
Partition	The partition the camera system will be located in.
Playback Delay	Number of seconds difference to sync notification time to recording time.

6. Once you have filled in the required fields, you may now press **Save** to create the camera system in the selected partition. You'll be prompted to add another system, or continue configuration for camera system you just added.

⚠ **Warning**

> If the VMS is using HTTPS (recommended), you will likely need to add the SSL certificate of the VMS to any client computers that will be viewing cameras through Protector.Net. Please see the section called "Adding Website Certificates for Camera Integration" for more details on this process.

Manage Camera Systems

Once you've added a camera system, the next step is to synchronize the available cameras from the VMS and enable which cameras you would like to integrate with Protector.Net.

If you just added a Camera System, clicking **"Continue Configuration"** will bring you to the **Manage Cameras Screen**; otherwise:

1. On the **Home Screen**, scroll down to the section titled **Hardware**; click on the **Camera Systems** icon (pictured below).

   Camera Systems
   View camera systems

2. On the **Camera Systems** screen, you'll see any camera systems you've already added. Click the blue edit button next to the camera system you would like to modify.

Once on the **Manage Camera Systems** screen for a specific camera system, the next step is to synchronize cameras (retrieve a list of available cameras or camera groups) and select which cameras you want the Access Control System to have access to.

1. Click the **"Synchronize Cameras"** drop-down button and choose if you want to synchronize all cameras on the camera system, or by certain camera groups (if the VMS supports it). Synchronizing cameras by groups allows you to import pre-defined groups from the camera management software; this is useful on sites with a large number of cameras.

   📝 **Note**

   > Depending on the number of cameras in the video management software, this process may take up to a few minutes. The process will also let you know if it fails to communicate with the server.

2. Once the synchronization process is complete, you'll see a list of available cameras that was retrieved from the VMS System.

3. Each camera in the list will contain the name of the camera imported from the VMS, the camera type, if it's a new or missing camera and if the camera is enabled.

4. The **Enable** checkbox beside each camera dictates if the camera is available to the Access Control System for door association or viewing.

   ⚠ **Warning**

   > Once a camera is enabled, this will count towards the camera limit imposed by your product license.

Figure 1.2. Manage Cameras Screen

Purging Cameras

When a camera in the camera management software is removed or renamed, the cameras will need to be re-synchronize. If the access control software detects that a camera that was available previously no longer exists, it will be labelled as "Not Found". When this happens, and the camera is not expected to be available again, we can purge the camera from the system. This will remove the camera and all associations that camera has to Doors and Elevators.

To remove cameras that no longer exist, simply synchronize cameras to detect which cameras are no longer available; click the**"Purge Cameras"** button once if you see any cameras that are "Not Found".

Figure 1.3. Purging Cameras

GPU Acceleration

On the configuration tab of the **Edit Camera System** page, there is an option titled **GPU Acceleration** may appear if the VMS supports it. This option is used to borrow processing power from the computer video card when clients are viewing cameras; this can help offload CPU load on the client computer.

📄 **Note**

This feature requires a compatible video card and web browser.

WebSockets

The configuration option Use WebSockets may appear if the VMS supports it. This option is used to use WebSocket transport protocol and can make transporting camera playback more efficient.

📋 Note

This feature requires compatible operating systems (Windows 8 or higher).

Viewing Synchronized Cameras

Viewing cameras in Protector.Net can be done in several ways; we also support inline camera view that can be triggered based on events such as Access Denied or Door Forced Open. This section will cover viewing live video and playback video.

⛔ Warning

In order to view cameras in Protector.Net over HTTPS communication, you must first create a trust between the client computer browsing to Protector.Net and the VMS web server. In order to do this we must import a certificate from the VMS server or the SSL certification needs to be registered with valid Certificate Authority. Please see the section called "Adding Website Certificates for Camera Integration" for more details on this process.

1. On the **Home Screen**, scroll down to the section titled **Day to Day**; click on the **Camera Viewer** icon (pictured below).
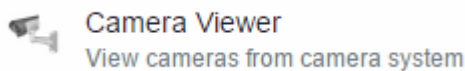
On the Camera Viewer screen, you'll have several options for viewing cameras in your system.

Figure 1.4. Camera Viewer
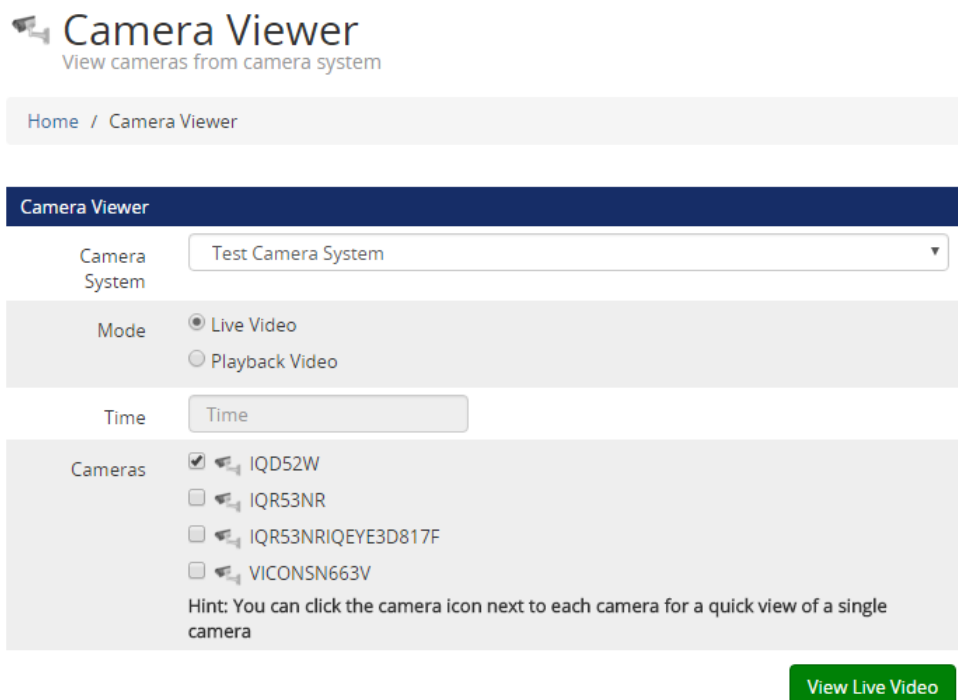
ⓘ Tip

You can quickly view live feed of a single camera by clicking directly on the camera icon next to the name of each camera on this screen.

Viewing Live Video

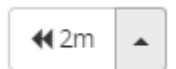To view live video on the View Cameras screen, input the following parameters:

1. **Camera System**: Select the Camera System you would like to view.

2. **Matrix Size**: If the VMS supports a video matrix, you can select a matrix size. By default, the system will automatically choose the best size for the amount of cameras you are viewing.

3. **Mode**: Select **Live Video** as the mode.

4. **Cameras**: Select which cameras you would like to view. You can select multiple cameras if the VMS supports a video matrix.

5. Once you've selected the camera(s), you can now click the **"View Live Video"** button on this screen.
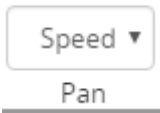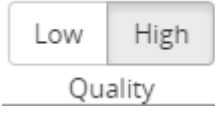
Figure 1.5. Camera Viewer
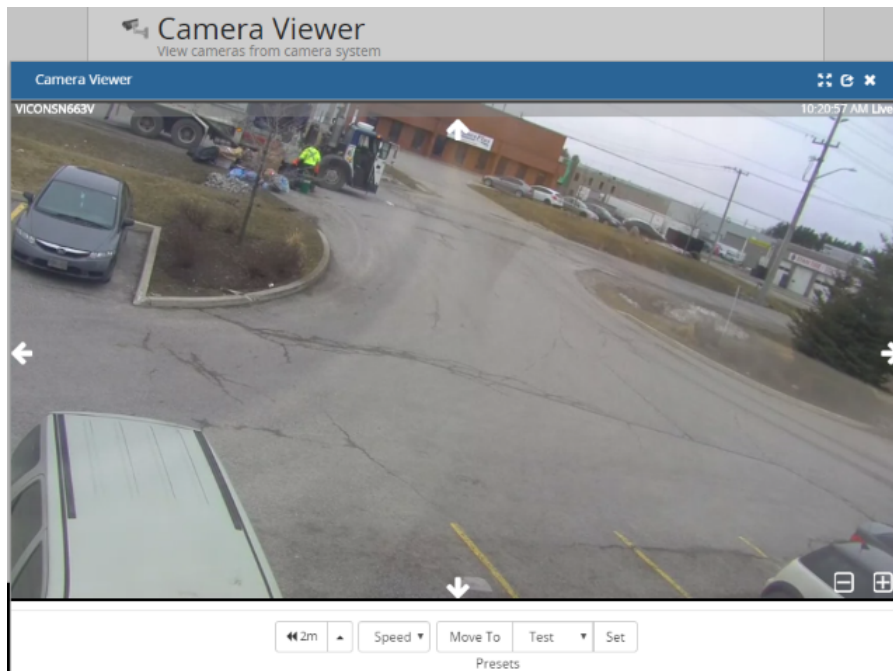
6. A new window will appear over your current screen. This is the **Camera Viewer**. It will show live video of the camera you selected. You'll have several options on this screen; some will be dependent on the type of camera or VMS you are viewing:

Table 1.4. View Camera Options

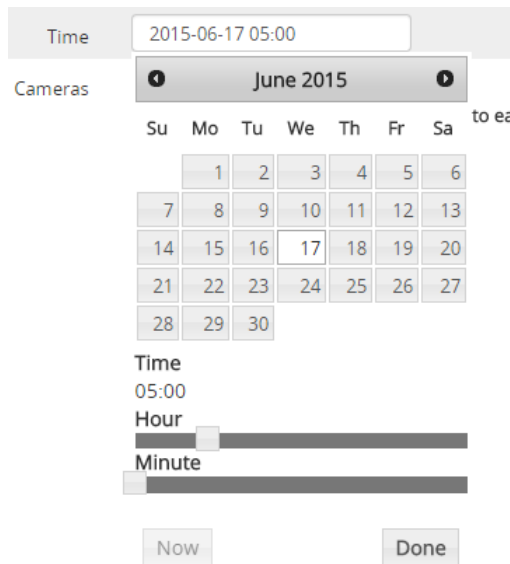| Option	Description
◄◄ 2m ▲	This button will change the camera mode to playback. You can use the Up arrow to select where to start playback based on the current time or select a time with the date and time picker.

Option	Description
Speed ▾ Pan	PTZ Only. Pan Speed will influence how fast a PTZ camera will move when changing positions manually or with auto pan.
Move To Test ▾ Set Presets	PTZ Only. The Move To button will move the camera to the selected preset position; this also allows you to set presets based on the current camera position with the Set button.
Low High Quality	ExacQ Only. Low quality can be selected to save bandwidth at the expense of stream quality.

7. If your screen is black or has any errors on the bottom such as "Error Retrieving Video" or "source", please see the section called "Troubleshooting Video Playback".

Viewing Playback Video

To view playback video on the View Cameras screen, input the following parameters or click:

1. **Camera System**: Select the VMS system you would like to view.

2. **Matrix Size**: If the VMS supports a video matrix, you can select a matrix size. By default, the system will automatically choose the best size for the amount of cameras you are viewing.

3. **Mode**: Select **Playback Video** as the mode.

4. **Time**: When the mode is selected as **Playback Video**, the **Time** field will need to be filled. Clicking in the text box will present the time and date widget; select the time you would like to view video playback.

5. **Cameras**: Select which cameras you would like to view.

6. Once you've selected the cameras, you can now click the **"View Playback Video"** button on this screen.

7. A new window will appear; this is the playback camera viewer. It will begin playback at the time selected.

🛈 Tip

You can switch back to live video at any time by pushing the **Live Video** button on the camera viewer.

8. On the camera viewer, you'll have options specific to video playback.

9. You can choose a new time for the video playback by clicking the button displayed below:

Associating Cameras with Doors and Elevators

Protector.Net allows support for cameras to be associated with Doors/Elevators. This is so notifications can be linked to playback video.

Door/Elevator to cameras associations also allow us to display an inline camera view when alerts occur on a door associated with that camera, such as Door Forced Open and Door Held Open.

Use the following steps once your cameras have been synchronized and enabled in the system:

Camera Associations: Door

1. On the **Home Screen**, scroll down to the section titled **Hardware**; click on the **Doors** icon (pictured below).

   Doors
   View all doors
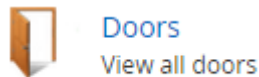
2. On the **Doors** screen, you'll see any Doors you've already configured listed here. Click the blue button next to the door for which you'd like to configure a camera association.

3. On the **Edit Door** screen, you'll see there are 6 tabs, each with their own configuration items. Click on the **Camera Association** tab; this is where we will configure camera associations for this door.

**Figure 1.6. Camera Association tab of the Edit Door screen**
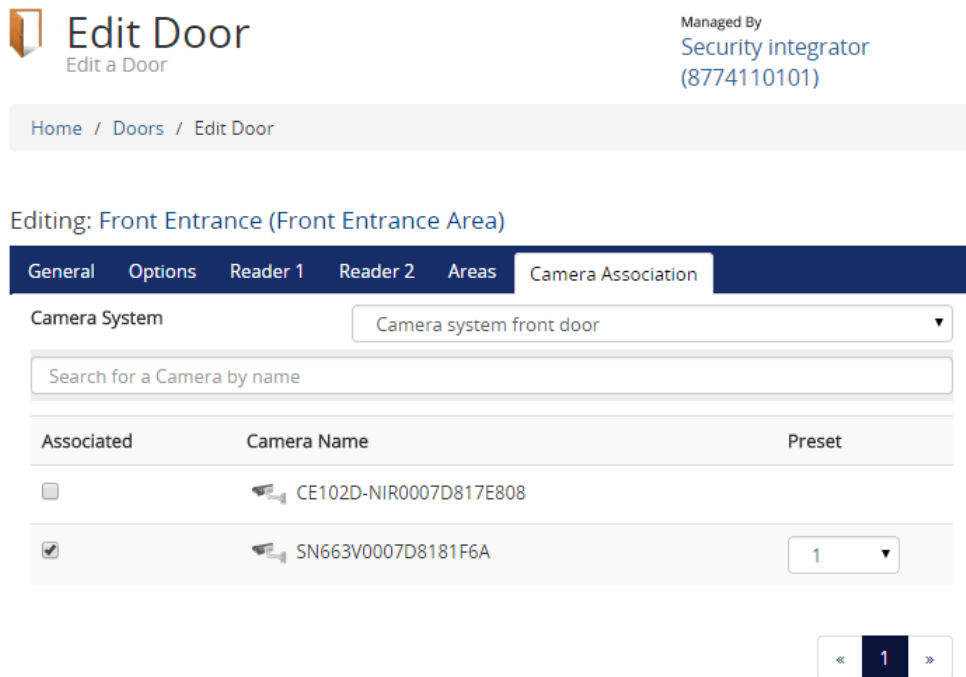
4. Select the camera you would like to associate with the door. If the VMS supports matrix views, you may select more than one.

> 🛈 **Tip**
>
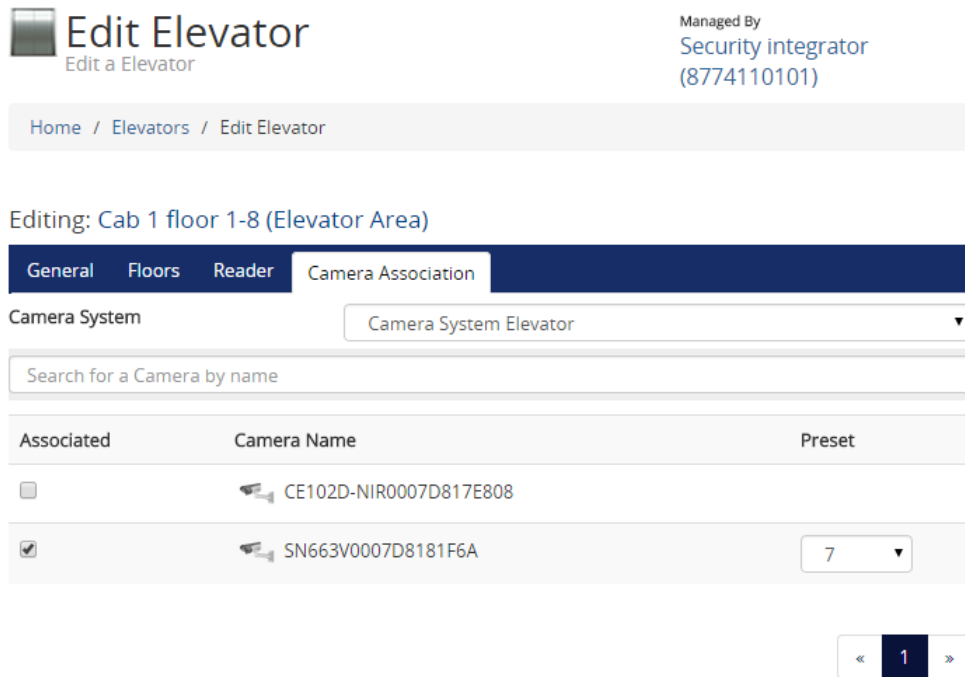> You can associate a camera with a preset position if the camera is a PTZ camera.

Camera Associations: Elevator

1. On the **Home Screen**, scroll down to the section titled **Hardware**; click on the **Elevators** icon (pictured below).
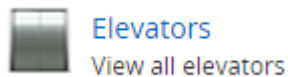
2. On the **Elevators** screen, you'll see any elevators you've already configured listed here. Click the blue button next to the elevator for which you'd like to configure a camera association.

3. On the **Edit Elevator** screen, you'll see there are 4 tabs, each with their own configuration items. Click on the **Camera Association** tab; this is where we will configure camera associations for this elevator.

Figure 1.7. Camera Association tab of the Edit Elevator screen.

4. Select the cameras you would like to associate with the elevator.

> ℹ️ **Tip**
>
> You can associate a camera with a preset position if the camera is a PTZ camera.

Camera Notifications

Once a camera is associated with a door/elevator, an icon will appear next to all notifications related to that device, including live and playback video. Clicking the camera icon will bring up a playback camera viewer that will match the time of the event. Any reports will also have a camera link next to each entry that includes a device with a camera associated to it.

Figure 1.8. Door Notifications With Camera Link
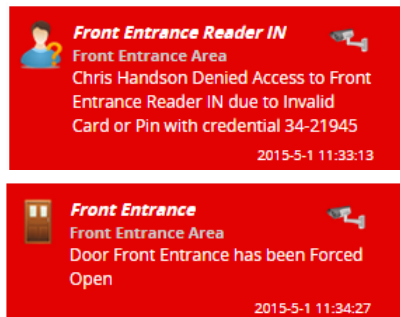
Figure 1.9. Elevator Notifications With Camera Link
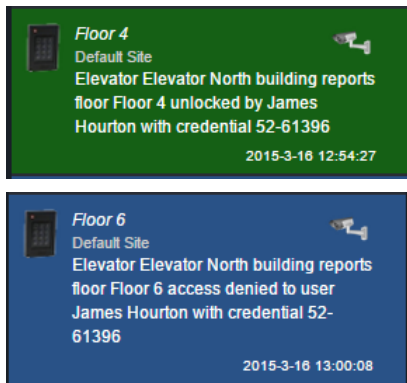
Figure 1.10. Door Activity Report With Camera Link

Configuring Live Camera Alerts

Once doors and elevators have camera associations, Protector.Net supports configuration for event messages to display an inline video feed above the notifications area.

This is useful for time critical events such as Door Forced Open, Door Held Open, or cards being denied access to a secured area. This section will go over the configuration of these alerts.

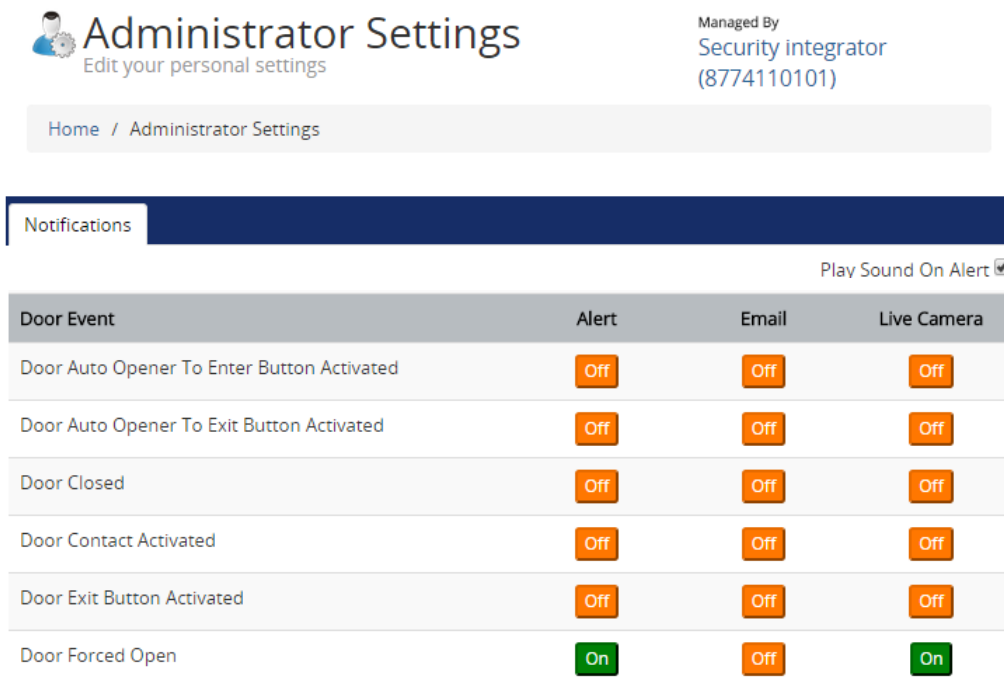**Figure 1.11. Inline Camera View based on Denied Access**

Configuring specific notifications for use with the inline camera viewer is very simple in Protector.Net:

1. On any page in the software web interface, click on the **Administrative** icon on the top right of the screen. A drop-down menu will appear.
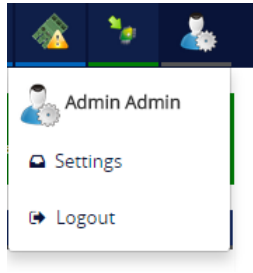
2. Click **Settings** on the drop-down menu. This will open the **Administrator Settings** page.

3. On the **Administrator Settings** screen, you'll have a list of every type of notification in the system. Beside each notification are three buttons. For the purposes of cameras, only the third button is needed.

   • **Live Camera:** When live camera button is selected, the event will display an inline live video of any cameras associated with the device that triggers the event. For example, if Live Camera was selected for the Access Denied, Invalid Stop Work Date, a live video feed will appear for the associated cameras on the door attached to the reader the notification occurred on.

   • Select any notifications you need to trigger the inline camera view. You must navigate away from the page for the settings to take effect.

Figure 1.12. Notification Settings

The inline camera view is good for a quick glance, but if there are more than one camera associated with a door it can be difficult to see.

We can open an external display for live video notifications using the button highlighted below.

While this external display is open, notifications with the live video option will display in the new window, not the notification bar.

Troubleshooting Video Playback

This section will outline common issues when playing live or playback video.

Adding Website Certificates for Camera Integration

Protector.Net uses secure HTTPS secure communication. If the VMS is using HTTPS as well, we must create a "trust" between the client PC and the VMS. If the VMS web server is using a self-signed certificate (as opposed to an official certificate purchased from a company, such as godaddy.com), you must add the self-signed certification generated by the VMS web server. This does not apply if you are using regular HTTP communication.

The following instructions will work on most operating systems and web browsers.

1. Log into Protector.Net. On the main page scroll down to the section titled "Hardware"; click on the Camera Systems icon.

2. Click the blue edit button next to the camera system you would like to add a certification for. Click on the "Configuration" tab.
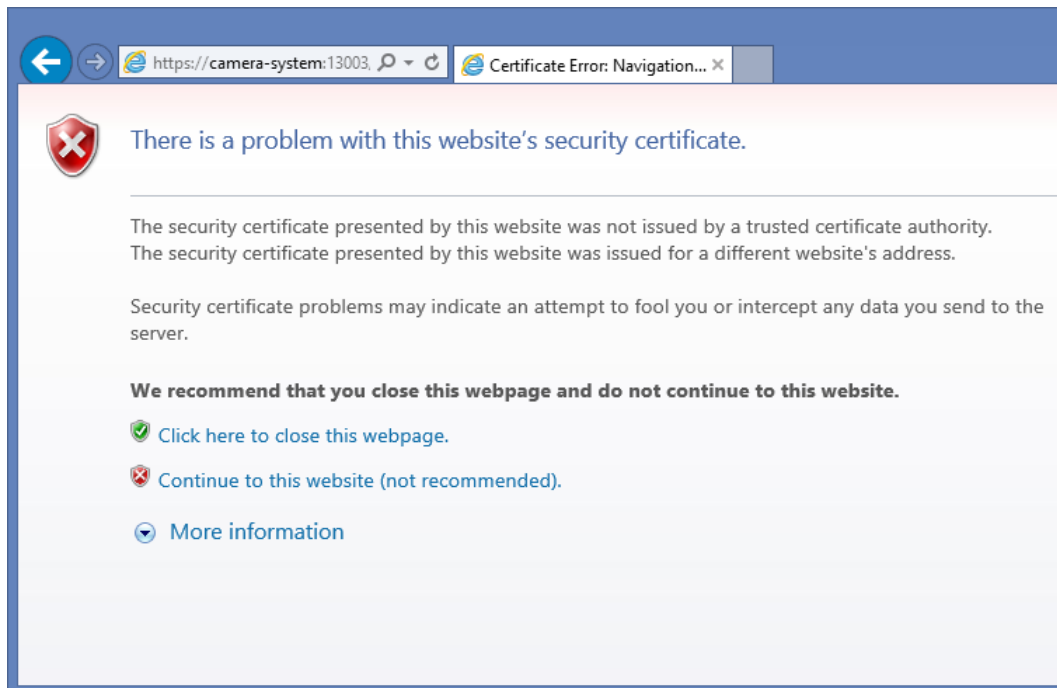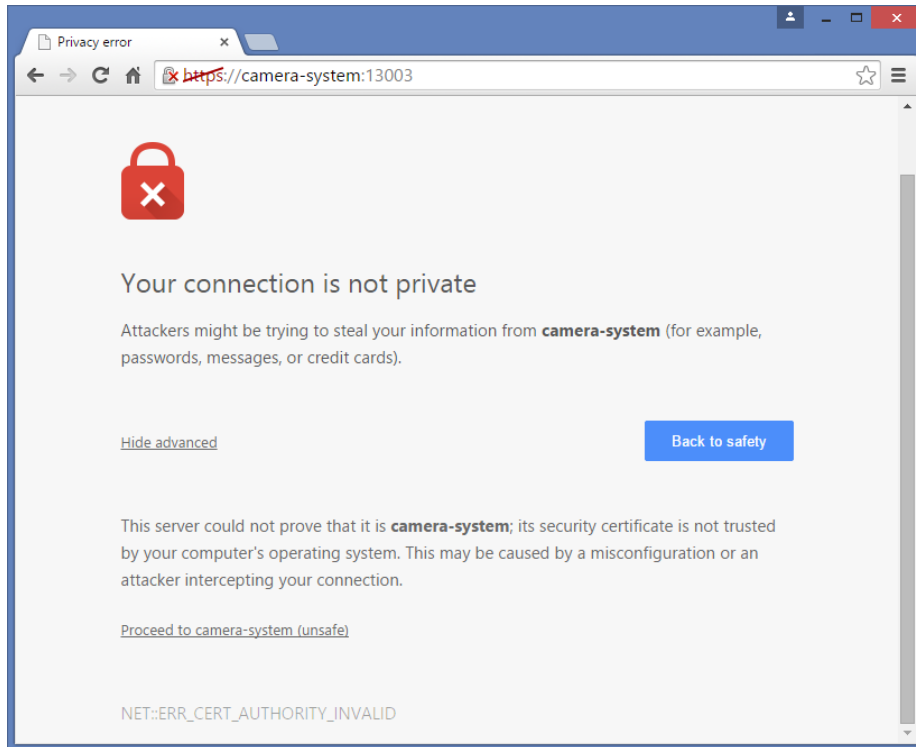

3. On the configuration tab, copy the text box titled "Address". We will need to browse to this address in another tab of our web browser in order retrieve the certification file. Copy the URL and place it into a web browser address bar. Press enter and you should see the following message (depending on your browser).

4. The next step is to extract the certification so that we can install it on our computer.

Importing Certification in Internet Explorer

1. In Internet Explorer, click "Continue to this website"; once the site loads you'll see a red button in the URL titled "Certificate Error". Click on this button; a small pop-up will appear. Click "view certificates".
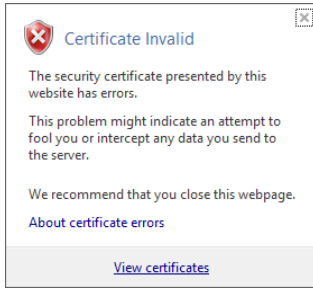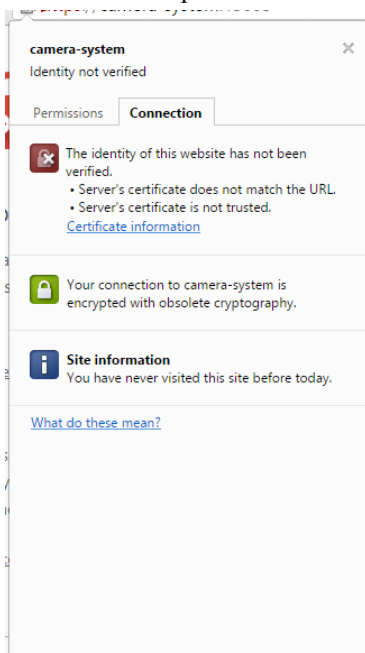
2. On the certificates window, click "install Certificate" on the bottom of the window. The certificate Import Wizard will now appear. Please proceed to the section called "Importing Certificates with the Certificate Import Wizard" to continue the certificate import process.
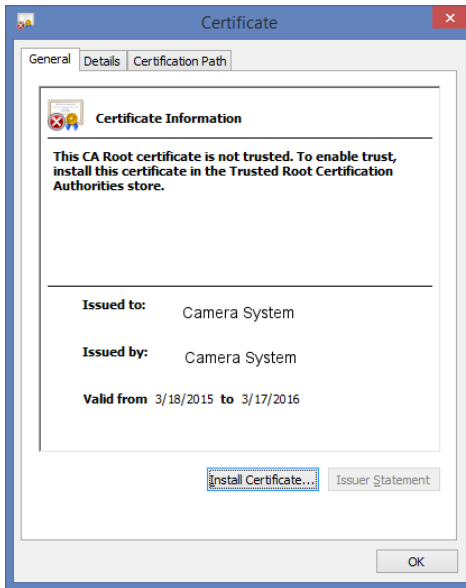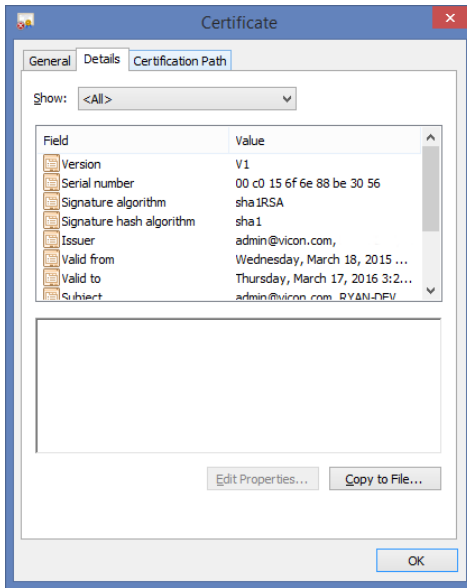

Importing Certification in Google Chrome.

1. In Google Chrome: Once you see the message "Your connection is not private", click on the icon that looks like a padlock in the URL with an "X" through it. A small window will appear.
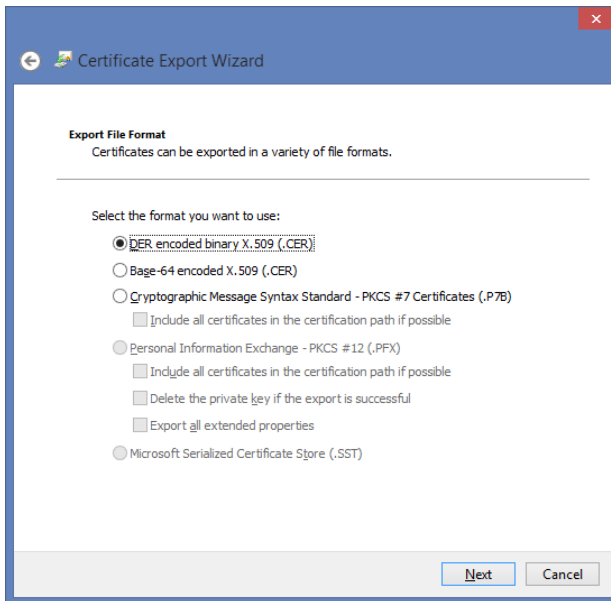
2. On this window, click the link titled "Certificate Information". A new window will appear. Click on the Details tab of this window.
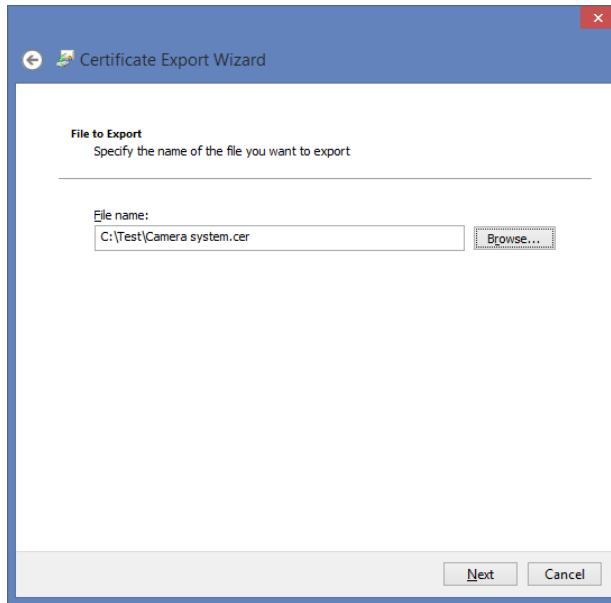

Click on the "Copy to File" button on this screen. This will launch the Certificate Export Wizard.
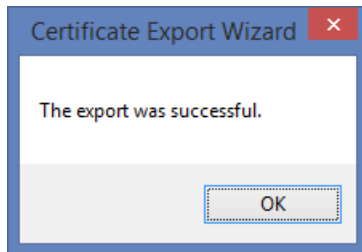
3. On the first page of the certificate export wizard, click "Next". On the "Export File Format" screen, click "Next".

4. On the "File to Export" screen, browse to the location you would like to save the certificate. You must name the file as well. Click "Next".

5. On the last screen, click "Finish". The certification filed will now be exported to the selected location.


6. Browse to the location you exported the certification file. Right click on the file and select "Install Certificate". This will now launch the Certificate Import Wizard. Please proceed to the section called "Importing Certificates with the Certificate Import Wizard" for further instructions.

Importing Certificates with the Certificate Import Wizard

This section covers how to proceed once you bring up the certificate import wizard. This can be accessed by clicking "Install certificate" in Internet Explorer, or after exporting a certificate from Google Chrome and double clicking the saved file.

1. On the first screen of the import wizard, select "Current User" as the Store Location; if more than one Windows user will be utilizing the Protector.Net web interface, select "Local Machine". Click Next.
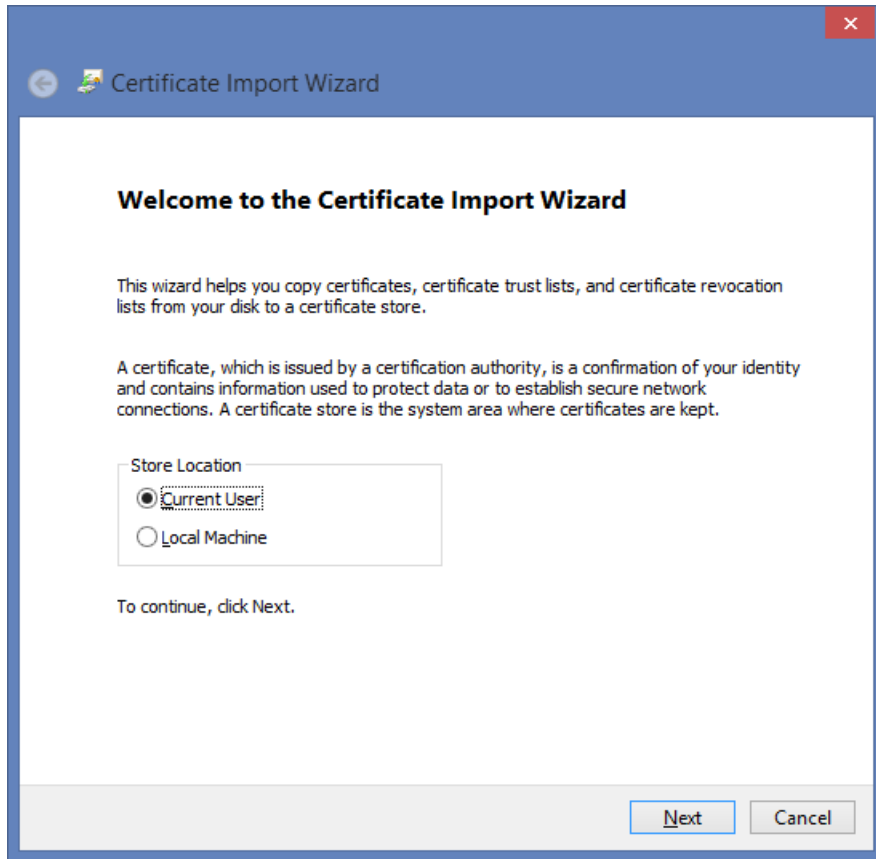
2. On the next screen, select "Place all certificates in the following store" and click the browse button.
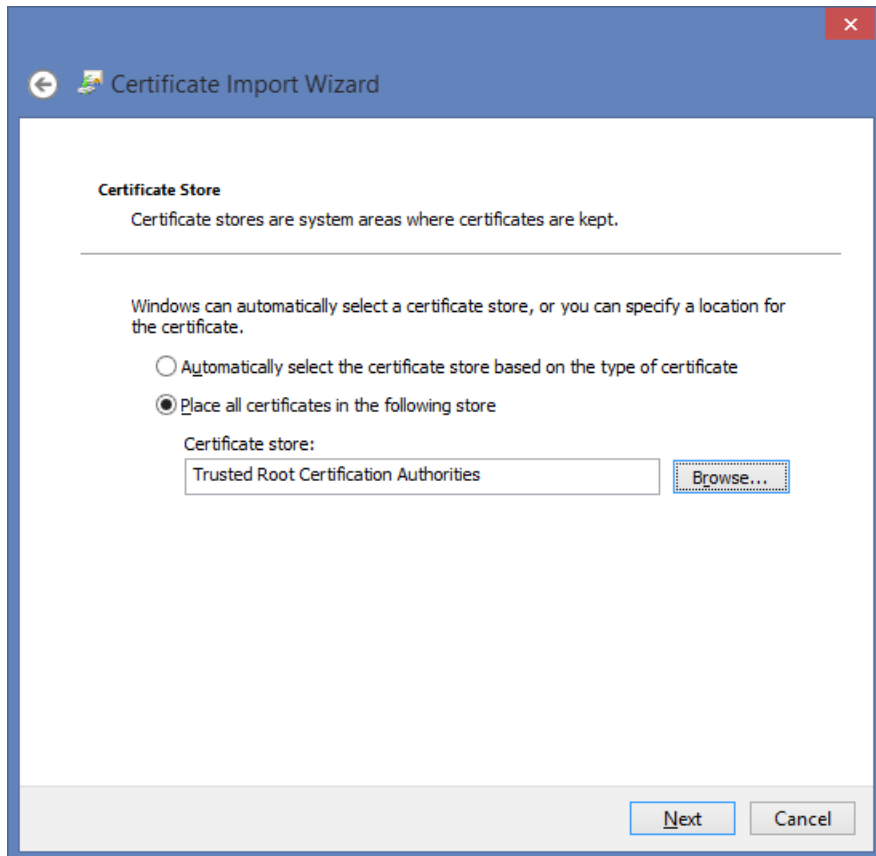
3. A small window will appear with various folders; select "Trusted Root Certificate Authorities" as the certificate store. Click "OK". Click "Next" again.
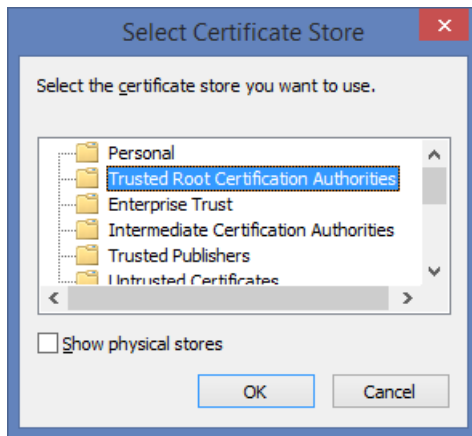
4. On the last screen, click "Finish". You will be prompted that you are about to install a certificate. Click "Yes" to install the certificate.

5. You must restart your web browsers and clear your browser cache before the new settings will take affect.

📑 Note

This process must be done on all client computers that will be viewing camera systems through Protector.Net via HTTPS protocol. Failure to do so will result in the error "Failed to load list of sites".

Multi-vendor Camera Matrix

The Camera Matrix is a full screen in Protector.Net dedicated to viewing cameras in a grid view. Cameras from multiple vendors can be viewed simultaneously. A maximum matrix size of 4 x 4 is supported.

On the **Home Screen**, scroll down to the section titled **Day To Day**; click on the **Camera Matrix** icon (pictured below).
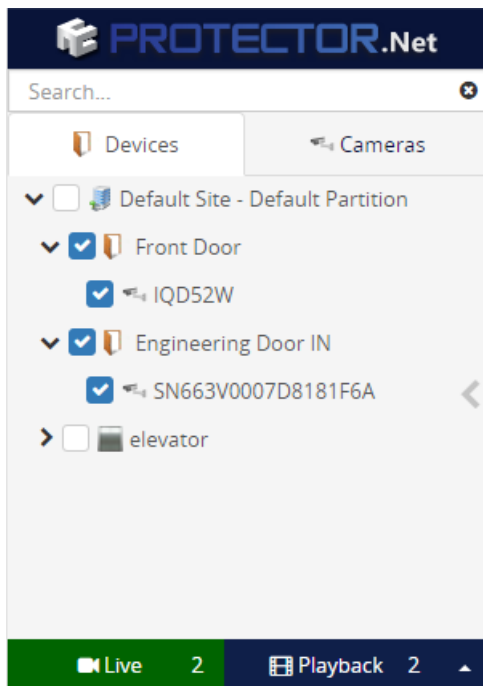

Camera Matrix
View multiple cameras in a grid
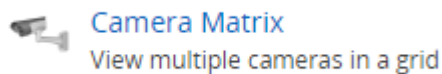
The Camera Matrix screen will open in another tab or external window.

Figure 1.13. Camera Matrix With Cameras
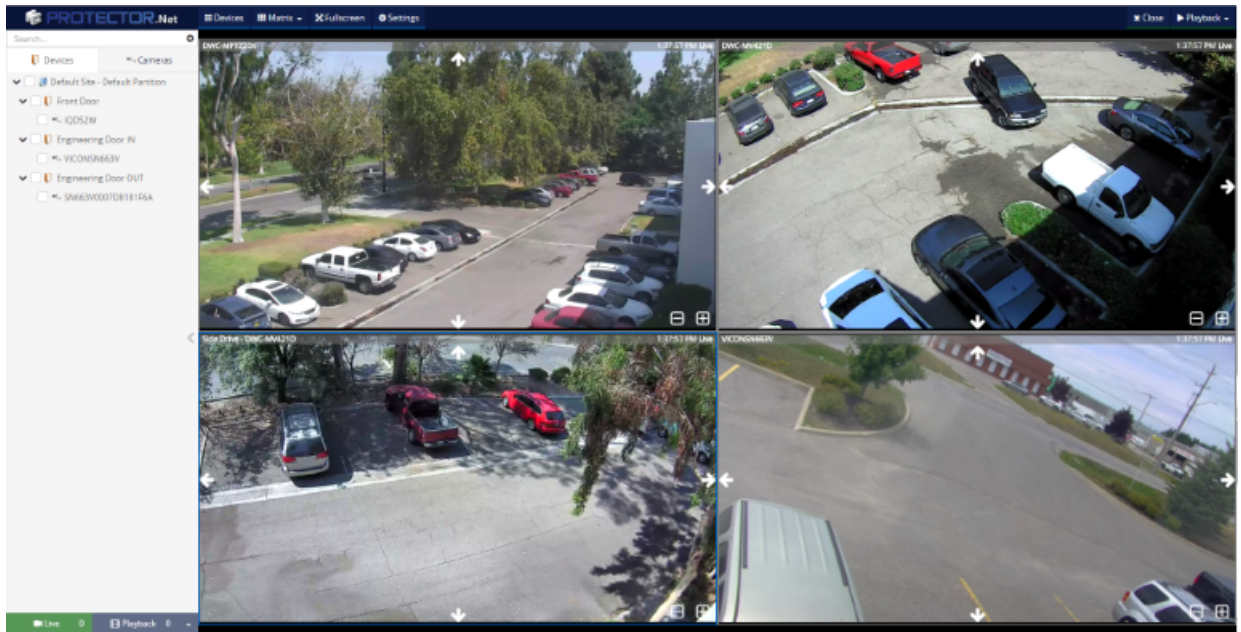
On the left side of the screen is your **Devices** list and **Camera** list.
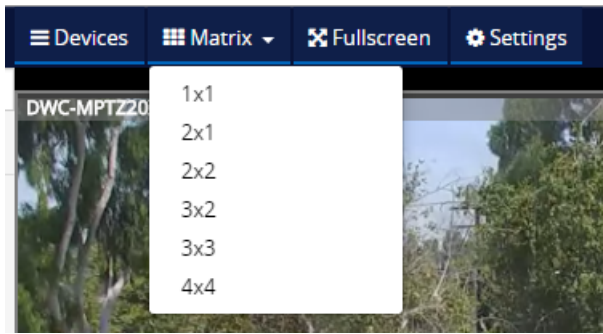
Figure 1.14. Devices List

When **Devices** is selected, you'll get a list of Doors and Elevators with cameras associated to them. When **Cameras** is selected, you'll get a list of camera systems and cameras.

On the top side of the screen are various page options.

Figure 1.15. Devices List

Click **Devices** to toggle the device list on the left side. Use this when more screen size is needed.

Click **Matrix** to select a Matrix size. 1x1 to 4x4 are available.

Click **Fullscreen** to make the current web browser into full screen mode. Use this when more screen size is needed.

Click **Settings** to reveal page specific settings. Enable Restore On Load to allow the page to remember which cameras we're being displayed upon reload. Show PTZ Controls can be toggled to remove PTZ controls from the inner window when viewing PTZ cameras.

Viewing Cameras in Matrix

To view live video or playback, do the following:

1. Click Settings on the top of the page. Select the appropriate Matrix Size.

2. On the Devices and Camera list, expand the tree view. When you want to view a camera, simply click and drag a camera or device into one of the video windows in the middle of the screen. You can check multiple cameras off and click Live or Playback on the bottom of the screen.

ⓘ **Tip**

You can right click on the inner window when viewing a camera to quickly change between Playback and Live video. You can also access PTZ presets this way.