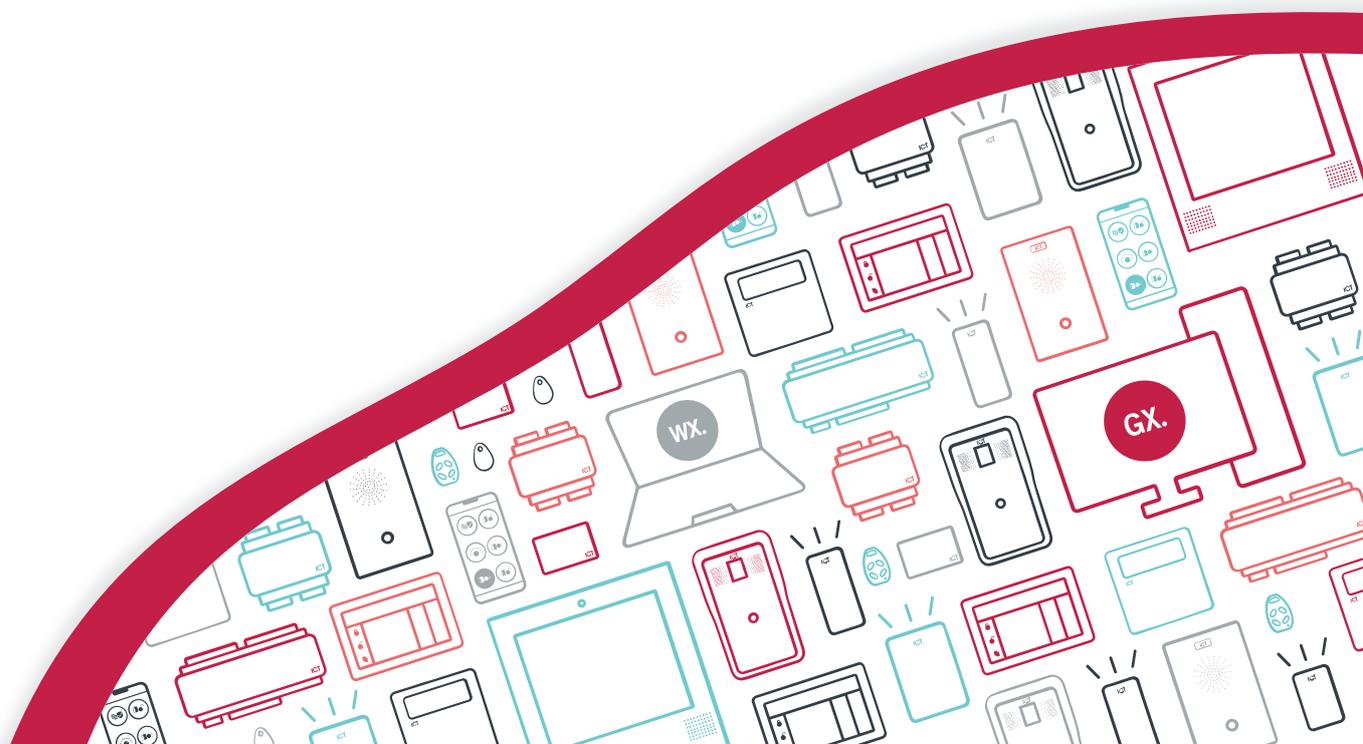




AN-320

March Networks Integration with Protege GX

Application Note



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Introduction

The March Video Service provides a seamless integration between Protege GX and March Networks Command Enterprise Server, enabling you to control cameras and view live and historical video footage from a single, easy-to-use interface.

Cameras can be linked to doors, inputs, outputs and areas, allowing you to easily retrieve footage based on any change of status, such as when a PIR is triggered or a door is opened. An automatic popup can display a live video stream on any door event, allowing you to see when someone is at the door or when a door has been forced open.

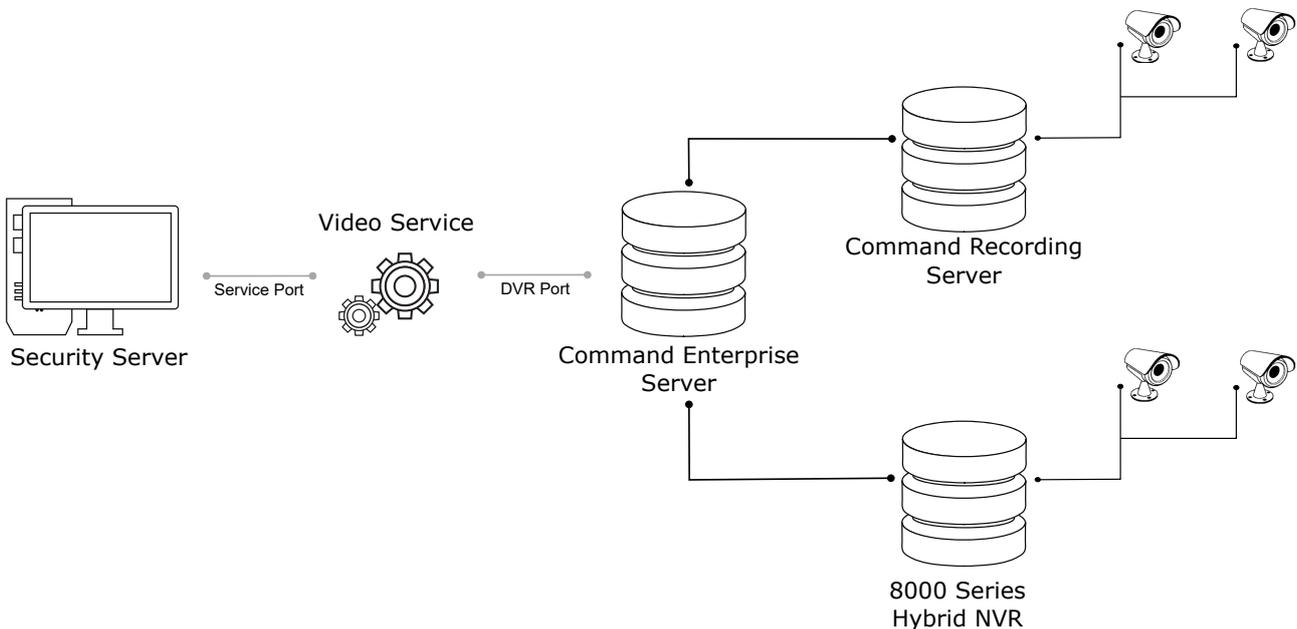
The included high level interface (HLI) enables the communication of PTZ triggers and alarm interfaces back to the DVR, providing bi-directional exchange of information. If desired, VMS events such as 'Motion Detected' can be monitored directly in Protege GX.

The following instructions outline how to install the March Video Service and configure the DVRs, cameras and doors within Protege GX.

Integration Architecture

In this integration Protege GX communicates with the March Networks Command Enterprise Server via the integration's *video service*. This service monitors the two systems and sends any camera commands from Protege GX to the DVR server, and continuously transfers any events triggered in the DVR system to Protege GX.

The Command Enterprise Server in turn connects to Command Recording Servers and NVRs, which record the camera footage.



Ports

As shown in the diagram above, the video service communicates with Protege GX via the **Service port**, and with the DVR server via the **DVR port**. These ports are configured in the Protege GX DVR programming.

The DVR port is determined by the third-party VMS. If required, the service port can be customized when installing the video service. It is recommended to use the default ports where possible.

The default ports can be found in the [Port Settings](#).

Feature Support

- View live video footage from programmed cameras.
- View historic and archived video footage.
- Embed cameras into a status page.
- Link a camera to a door, input, output or area.
- View live or archived video footage directly from an event associated with a camera.
- Automatically launch a camera view window when specific types of events occur.
- Send PTZ preset commands to the VMS in response to a Protege GX event filter.
- View the following HLI events directly within Protege GX.
 - Motion Detected
 - Camera Online/Offline
 - System Diagnostics

For more information, see [Configuring HLI Events](#) (page 8).

Prerequisites

Software Requirements

All prerequisite software must be installed and operational.

Software	Version	Notes
Protege GX software	4.3.298 or higher	
Protege GX March Video Service	1.0.0.4 or higher	Installation instructions are included below (see page 7).
March Networks Command Enterprise Server	2.12.0	This is the only tested and supported version for this integration. Supported cameras are determined by the March Networks system.
Microsoft .NET Framework	4.6.2 or later	
Microsoft DirectX	11	
Visual Studio	Visual C++ Redistributable for Visual Studio 2015	

It is the responsibility of the installation professional to verify the version of the proposed third-party system and supported components with the version listed in this document. ICT will not accept responsibility for the failure to verify integrated system versions and requirements.

Protege GX Licensing Requirements

License	Order Code	Notes
Protege GX Camera License	PRT-GX-CAM-10	1 license required per camera programmed in Protege GX. A single camera is included with the Protege GX standard license.
	PRT-GX-CAM-50	The base Protege GX license includes an unlimited number of DVRs and DVR HLIs. HLIs allow bi-directional communication between Protege GX and the DVR system. Note that this is separate to the live and archived video display that is covered by a camera license.

March Networks Licensing Requirements

You must upgrade your March Networks license to allow you to use the SDK. For more information, see [Licensing the Integration](#) (below).

Time Settings

DVR integrations rely on the time being accurately configured for both the hardware and the operating systems used in a site.

To ensure the system is keeping precise time, all devices should be set to synchronize with the same NTP time server. NTP servers work by sending accurate time information periodically to the system. Many corporate organizations have an NTP server running on the internal network, allowing you to simply enter the relevant IP address. Alternatively, you could use any public NTP server. Finding an NTP server relevant to your region is usually as simple as a quick web search.

The same time server should be used for the workstations, DVRs and controllers within the site. You can configure the time server for each computer in the Windows **Date and Time** settings, and set a time server for the controller in the **Sites | Controllers | Time update** settings in Protege GX.

Licensing the Integration

For the March Video Service to operate, the license of the March Command server must be updated to allow the integration. Before configuring this integration, complete the following steps:

1. Email March SDK support (SDKSupport@marchnetworks.com) and request to upgrade your license for use with the ICT Protege GX integration. Include the following:
 - The ICT AppID: **bdb5591f-b980-4dbd-b725-5146b8da5e72**
 - Your Command Server ID.
2. March SDK support will generate and return a license file.
3. Use the license file to update your license in the Command software.

Installing the Video Service

The March Video Service must be installed on the Protege GX server and each client machine that uses the integration. You must have administrator rights on each computer to complete the installation.

1. Run the Protege GX March Video Service.exe file to launch the Protege GX March Video Service install wizard, then click **Next**.
2. Select **Complete** for the installation type then click **Next**.
3. Click **Install**.
4. Enter the **Service Port Number** to be used for the integration (8091 is the default) and click **Next**.
5. Click **Finish**.
6. If the Windows Defender Firewall is on, you will see a Windows Security Alert popup indicating that some features of the integration service have been blocked.
To allow the service to function, check the boxes to allow the service to communicate on **Domain networks** and **Private networks** (or as appropriate for your installation). Then click **Allow Access**.

Check the Services are Running

The services used by the integration must be running so that Protege GX can communicate with the March Networks VMS.

1. Open the **Services** snap-in by:
 - Pressing the **Windows + R** keys
 - Typing **services.msc** into the search bar and pressing **Enter**
2. Scroll down to locate **Protege GX March Video Service**.
3. Ensure the service has started automatically (check the **Status** column to confirm that it's 'Running'). If not, right-click the service and select **Start**.
4. Ensure **Protege GX DVR Service B** is running.

Configuring Secure Communications

The Protege GX March Video Service can communicate with the March server using either HTTP or HTTPS. It is strongly recommended that you use the encrypted protocol HTTPS to secure your installation.

To use HTTPS communication, some additional configuration is required:

1. Open the **Services** snap-in by:
 - Pressing the **Windows + R** keys
 - Typing **services.msc** into the search bar and pressing **Enter**
2. Locate the Protege GX March Video Service in the list. Right click on the service and click **Stop**.
3. Open a File Explorer window and navigate to the installation directory for the March Video Service:
C:\Program Files (x86)\Integrated Control Technology\GXVideoService_March
4. Open the config file for the service: GXVideoService_March.exe.config

Files in this directory require administrator permissions to edit. You may need to open the file as an administrator using an application like Notepad++, or make a copy in a different directory to edit and replace the original.

5. Under **<appSettings>** you will see the following line:

```
<add key="HostConnectionScheme" value="http" />
```

6. Update the value so that it refers to HTTPS:

```
<add key="HostConnectionScheme" value="https" />
```

7. Save the config file.
8. Start the video service again, unless you also wish to configure HLI events (see below).

In addition, you will need to use the correct port for HTTPS communications (see page 11).

Configuring HLI Events

A number of Command alarms can be transmitted to Protege GX as HLI events, allowing you to use the Protege GX system's powerful monitoring and reporting features to keep track of motion detection and system diagnostics.

Any alarms that will be monitored in Protege GX must first be programmed in the March Command software. To create an alarm in Command Config:

1. Open the **Alarms** page and add a new alarm.
2. Give the alarm a relevant **Name** (e.g. Motion Detection). This name will be used to map the alarm to an HLI event in Protege GX.
3. Set the **Source** for the alarm. Ensure that this is relevant to the Protege GX HLI event that you want to receive (see the list of HLI events below).
4. Select at least one camera to associate with this alarm.
When the alarm is received by the video service it will check whether the camera has been programmed in Protege GX. The camera that generated the alarm will be included in the HLI event.
If there is no associated camera, or the camera has not been programmed in Protege GX, the video service will not pass on the alarm.
5. Click **Save**.
6. You can test the alarm by clicking the bell icons to turn the alarm on and off.

To map Command alarms to Protege GX HLI events:

1. Open the **Services** snap-in by:
 - Pressing the **Windows + R** keys
 - Typing **services.msc** into the search bar and pressing **Enter**
2. Locate the Protege GX March Video Service in the list. Right click on the service and click **Stop**.
3. Open a File Explorer window and navigate to the installation directory for the March Video Service:
C:\Program Files (x86)\Integrated Control Technology\GXVideoService_March
4. Open the config file for the service: GXVideoService_March.exe.config

Files in this directory require administrator permissions to edit. You may need to open the file as an administrator using an application like Notepad++, or make a copy in a different directory to edit and replace the original.

5. Under **<appSettings>**, you will see the following lines:

```
<add key="58000" value="Motion Detection, Motion Detection 1" />
<add key="58001" value="Motion Ceased Event" />
<add key="58002" value="DVR/NVR Storage Alarm" />
<add key="58003" value="DVR/NVR Temperature Alarm" />
<add key="58004" value="Camera Diagnostic Event" />
```

```

<add key="58005" value="Camera Online Event" />
<add key="58006" value="Camera Offline Event" />
<add key="58007" value="Camera Physical Online Event" />
<add key="58008" value="Camera Physical Offline Event" />
<add key="58009" value="Camera property changed Event" />
<add key="58010" value="Camera Video Analytics Event" />
<add key="58011" value="DVR/NVR Alarm" />
<add key="58014" value="Camera Scene Changed Event" />
<add key="58015" value="Camera Image Blurred Event" />
<add key="58016" value="Audio Detected Event" />
<add key="58017" value="Audio Detached Event" />
<add key="58018" value="Audio Attached Event" />
<add key="58019" value="Camera Input Activated Event" />

```

This section contains the instructions for mapping alarms to HLI events.

- The **key** is the Database ID of the Protege GX event type (see the table below).
- The **value** is the name of the alarm in the March system. You can update the names in this file to match the names of the alarms in your system.

6. For each HLI event that you want to use in Protege GX, select one or more Command alarms that will activate it. Enter the **Name** of each alarm as the **value**. Multiple values should be separated by commas.

For example, the following mapping triggers 'Motion Detected/Ceased' events for two cameras:

```

<add key="58000" value="Motion Detection Camera A, Motion Detection Camera B" />

```

The 'Motion Detected/Ceased' and Camera Offline/Online events are included by default. These should be updated with the names of alarms in your March Command server, or disabled by deleting the **value**.

7. Save the config file.
8. Start the video service again.

HLI events must also be enabled in both the DVR and the camera record to appear in Protege GX (see page 11).

HLI Event Keys

The key for each event is the Database ID for each event type in Protege GX (see **Global | Event types**).

Key (Event Type ID)	Event Description in Protege GX	Notes
58000 (58001)	Camera Motion Detected On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	When the alarm turns on, 'Motion Detected' is generated.
	Camera Motion Ceased On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	When the alarm turns off, 'Motion Ceased' is generated. Event 58001 does not need to be mapped.
58002	DVR/NVR Storage Alarm on DVR/NVR <DVR_NAME>	
58003	DVR/NVR Temperature Alarm on DVR/NVR <DVR_NAME>	
58004	Camera Diagnostic Event On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	

Key (Event Type ID)	Event Description in Protege GX	Notes
58005 (58006)	Camera Online Event On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	When the alarm turns on, 'Camera Offline' is generated.
	Camera Offline Event On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	When the alarm turns off, 'Camera Online' is generated. Event 58006 does not need to be mapped.
58007	Camera Physical Online Event On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	When the alarm turns off, 'Camera Physical Online' is generated.
58008	Camera Physical Offline Event On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	When the alarm turns on, 'Camera Physical Offline' is generated.
58009	Camera property changed On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	
58010	Camera Video Analytics Event On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	
58011	DVR/NVR Alarm On DVR/NVR <DVR_NAME>	
58014	Camera Scene Changed On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	
58015	Camera Image Blurred On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	
58016	Audio Detected On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	
58017	Audio Detached On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	
58018	Audio Attached On Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	
58019	Camera Input Activated on Camera <CAMERA_NAME> On DVR/NVR <DVR_NAME>	

Programming Cameras in Protege GX

Port Settings

To configure the DVR in Protege GX you will need to enter the DVR port and service port settings, as described in the Integration Architecture section. It is recommended to use the default ports where possible.

- Default **DVR port**:
 - 443 for HTTPS communications (recommended). Some additional configuration is required (see page 7).
 - 80 for HTTP communications.
- Default **Service port**: 8091

Adding the DVR

For this integration you must program one DVR record. This represents the Command Enterprise Server and all connected Command Recording Servers and NVRs.

From the main menu, navigate to **Monitoring | Setup | DVRs**. Add a DVR record and configure the following options:

1. Enter the **IP address** and **DVR port** of the DVR server.

The DVR port is determined by the third-party VMS and will depend on the configuration of the DVR itself.

2. Set the **DVR type** to Custom.
3. Set the **Service port** that was configured during the video service installation. This option is only visible once the **DVR type** is set to Custom.

The service port must be defined for the integration to work correctly. If necessary, it can be changed in the config file for the service.

4. Enable the **Monitor events from this DVR/NVR** option to start logging HLI events from the DVR in Protege GX. The operator can right click any HLI event to view the footage archived at the time the event was logged.

For camera motion events, the **Monitor events** option must be enabled in the camera settings in Protege GX. Note that motion detection must also be enabled for that camera in the VMS.

5. If required, enable the **Connect to this DVR/NVR on start up** option. When this option is enabled, Protege GX will send a login request to the DVR when the client starts up. Otherwise, Protege GX will not connect to the DVR until it needs to request a camera list or footage.
6. If logging in to the VMS requires authentication, enable **Logon required** and enter the **Username** and **Password** required to access the VMS.

Adding the Camera(s)

Once the DVR record has been configured you can add a record for each of the installed cameras, enabling you to view live and historical (archived) video feeds directly from a status page or floor plan.

1. From the main menu, navigate to **Monitoring | Setup | Cameras**. Add a new camera with a descriptive name.
2. Set the **Type** to DVR and select the **DVR** you created earlier.
3. On the **DVR camera name** row, select the [...] button to open the **Select camera** window.

The pipe character | is not permitted in the **DVR camera name**. You may need to change the camera's name in the third-party system.

4. The window should display a list of cameras connected to the March system. This includes all cameras connected to any Command Recording Servers and NVRs. Highlight the camera you want to use and click **Select**.
5. Set the required display options:
 - **Show sidebar controls in status page:** When this option is enabled, PTZ controls are displayed by default when the camera feed is viewed on a status page. When this option is disabled the control sidebar can be opened but will not be displayed by default.
 - **Stretch image:** When this option is enabled the camera image will be stretched to fill the tile where it is displayed. This may not preserve the aspect ratio.
 - **Floor plan:** The floor plan the camera belongs to. This allows you to right click on a camera event in the event log and open the floor plan associated with the camera.
6. Enable the **Monitor events** option if you wish to log HLI events from the DVR system. This setting must be used in conjunction with the **Monitor events from this DVR** option of the DVR record. It enables certain camera events, such as motion detected, to be logged from the DVR/NVR. The operator can then right click the event and select the camera to view the footage archived from the time the event was logged.

For Protege GX to receive HLI events, the camera selected in Protege GX must match the camera programmed in the March system. This means that if you change the name of the camera in March, you must also update the **DVR camera name** in the Protege GX camera record.

Linking a Camera to a Record

Linking a camera to a record enables you to view a live or archived feed by right clicking a record or any associated event. Cameras can be linked to doors, inputs, outputs or areas, allowing you to track any status changes, such as when a PIR is triggered or an area is disarmed.

If an event has a camera associated with it, a small yellow camera icon appears to the left of the event. Right-clicking the event allows you to view the archived footage from the camera at the time the event was logged.

If the door auto camera popup settings are enabled, Protege GX will automatically display a window with the live camera feed whenever a door event is triggered, or if a door is forced open.

1. Select the door, input, output or area you wish to link the camera to (from the appropriate **Programming** menu).
2. In the **General** tab, scroll down to **Graphics**. Set the **Camera** which is monitoring that physical space. For doors, you can set a **Camera (entry)** and **Camera (exit)**. Depending on where the camera is located, you may wish to use the same camera for both entry and exit, or select a different camera for each.
3. For doors, you can set the following **Auto popup options**:
 - **Auto camera popup on any door event:** When enabled, displays a popup window showing a live camera feed when any door event is triggered.
 - **Auto camera popup on door forced event:** When enabled, displays a popup window showing a live camera feed when a forced door event is triggered.
 - Select the **Camera** to be displayed in the popup window.
4. Save your changes.
5. To view the camera feed, right click on the record in the programming window or status list and click the **Camera** button. Right click any events associated with that record to view either live footage or archived footage from the time of the event.

Including a Camera in a Status Page

A camera can also be included in a status page for live viewing of video footage while monitoring a site.

1. Open the **Status page editor (Monitoring | Setup | Status page editor)**. Select an existing status page to update, or create a new status page by clicking **Add** and choosing a layout.
2. Select the panel where you wish to display the camera and set the **Type** to Camera.
3. For the **Record**, select the camera that you wish to display.
4. Save your changes.
5. Navigate to **Monitoring | Status page view** to view the camera feed on your status page. Click the arrow button on the upper right of the panel to display PTZ arrows, which can be used to pan, tilt and zoom a PTZ camera.

You can also include camera HLI events on a status page. You can do this by including a panel that displays All Events. Alternatively, you can create an event report that displays only camera HLI events, and display that on the status page:

1. Navigate to **Events | Event filters** and create a new event filter which will filter for camera HLI events.
2. In the **Event types** tab, disable **Include all event types**.
3. Click **Add** and expand the **All PC events** section. Scroll down to the Camera events, select the desired HLI events and drag and drop them onto the main window. **Save** the event filter.
4. Navigate to **Reports | Setup | Event** and create a new event report to display the HLI events.
5. **Add** the event filter created above.
6. Finally, to display the event report on a status page, navigate to **Monitoring | Setup | Status page editor**. Select an existing status page to update or create a new status page.
7. Select a panel and set the **Type** to Event windows. Set the **Record** to the event report created above.
8. Save your changes and navigate to **Monitoring | Status page view** to view the events on your status page. You can right click the events to open the camera window to the time of the event.

Note: Some HLI events require the corresponding camera feature to be enabled in the VMS (such as motion detection).

Programming Camera Actions

Actions in Protege GX are triggered in response to particular events, as defined by an event filter. There are two actions related to cameras: sending PTZ commands and popping up a camera feed window.

Send PTZ Command on Event

Through the HLI, Protege GX can send PTZ commands to connected cameras in response to particular events. This allows the system to physically move PTZ cameras to preset positions to get the best view of the situation.

Before you begin, ensure that the cameras have PTZ enabled and the PTZ preset commands are programmed in the VMS. Note down the **Command string** for each PTZ preset that you wish to use. This is the **Name** of the PTZ camera preset in the Command software.

See the documentation for your VMS for information on programming PTZ presets and viable command strings. These cannot be programmed directly in Protege GX.

1. Navigate to **Monitoring | Setup | PTZ commands** and create a new PTZ command.
2. Under **Configuration**, select the **Camera** which the command will be sent to, and type the **Command string** that will be sent to the DVR.
3. Navigate to **Events | Actions** and create a new action.
4. Set the **Event filter** to define the events that will trigger the action. If required, click the ellipsis [...] button to break out the event filter programming window and create a relevant event filter.

5. Select the **PTZ command** created above.
6. Click **Save**.

Pop Up Camera Window on Event

Actions can be used to automatically trigger a live popup window when specific events occur, such as when a door is left open or when an area alarm is triggered.

1. Navigate to **Events | Actions** and create a new action.
2. Set the **Type** to **Popup camera window**.
3. Set the **Event filter** to define the events that will trigger the action. If required, click the ellipsis **[...]** button to break out the event filter programming window and create a relevant event filter.
4. Select which camera to use. You can choose from:
 - Default camera associated with event
 - Door entry camera
 - Door exit camera
 - Select camera from list
5. Click **Save** to create the action.

The Camera Window

The camera window displays a split view showing archived and live camera footage. It can be opened by right clicking on a record or event associated with a camera.

- The **top left pane** displays a 5 second looping video centered 2 seconds either side of the time of the event.
- The **top right pane** displays a 30 second controllable window centered 15 seconds either side of the time of the event. Drag the slider to adjust the image to any point within the 30 second period.
- The **main lower pane** displays the live camera view.
 - The **Archive view controls** allow you to select any date and time in the past.
 - The **Live view controls** provide PTZ camera control buttons, allowing you to physically control a PTZ enabled camera.
- The options on the **right** provide control over the main view:
Select the tab on the side to switch between the two views as required.

Release History

This video integration service was first released as version 1.0.0.4.

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