

ProHawk[®]

ProHawk Vision Milestone
XProtect Smart Client Plugin
Users Guide

ProHawk[®]
More Than Meets The Eye[™]

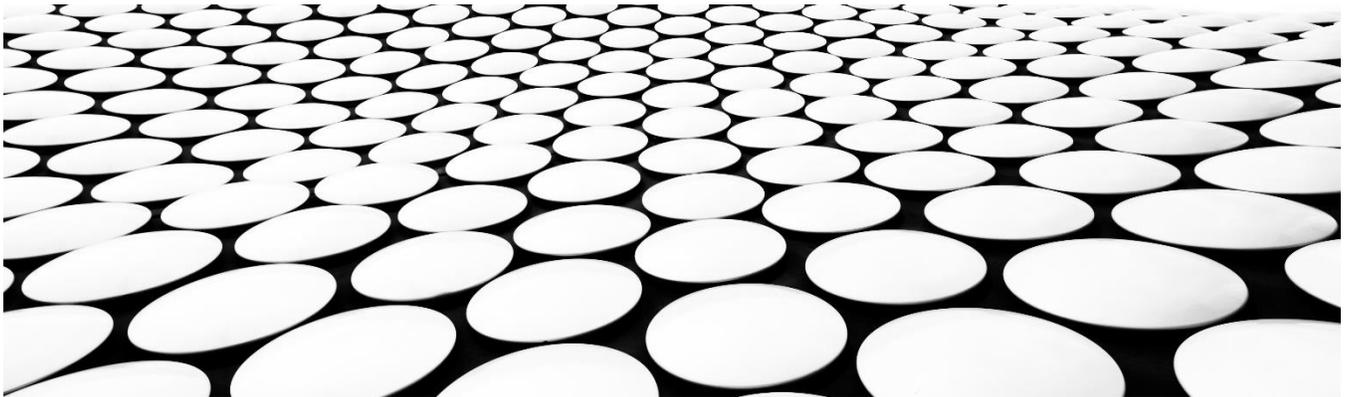


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1 Introduction

ProHawk® Vision Server Client

The ProHawk® Vision Server Client Users Guide provides an overview for the ProHawk Vision Milestone XProtect Smart Client Plugin. It is designed to directly integrate with the Milestone XProtect Smart Client. We have tried to make this overview clear, easy to understand, and informative. We value the relationship that we have with our users and believe this guide will be valuable in expediting the setup of ProHawk Vision Server.

ProHawk Vision Milestone XProtect Smart Client Plugin receives video from a recorded Milestone Server camera, or a Milestone XProtect VMS Server to improve. ProHawk Vision provides an automatic restoration along with various preset and detailed restoration parameters that can be changed by accessing the ProHawk Vision Plugin in the Milestone XProtect Smart Client. Automatic and One-Click filter preset radio buttons assist users in clarifying challenging visual conditions. ProHawk Vision advanced filters settings allow users to adjust the ProHawk parameters individually. These are specific adjustments that may have an impact on details to be revealed.

Once the video stream is selected, ProHawk Vision provides several options to view the original and/or improved picture or video: Improved; Original and improved picture or video side-by-side; Improved with original preview.

The current video frame or picture can be saved to the Windows clipboard and users Pictures\ProHawk folder on both video ProHawk improved and original stream types. The ProHawk Vision Milestone XProtect Smart Client Plugin provides media player controls for video control and record capabilities. This allows users to Play, Pause, Forward, Rewind, Stop, or Record the input video. The improved video can also be recorded to a file for future use.

This is the 6.0.0 release of ProHawk Vision Milestone XProtect Smart Client Plugin.

2 System Requirements

Following are the systems requirements for ProHawk Vision Milestone XProtect Smart Client Plugin to operate properly:

- 64-bit Multicore CPU
- 8GB RAM (16GB or more recommended; 2GB per stream recommended)
- Windows 10, Windows Server 2012, Windows Server 2016, Windows Server 2019, Ubuntu 18.04.3 LTS, Ubuntu 20.04.1 LTS
- NVIDIA Quadro, Tesla, GRID, GeForce or RTX products with Kepler, Maxwell, Pascal, Turing, Volta or Ampere generation GPUs

ProHawk Vision Milestone XProtect Smart Client Plugin includes and requires the following external libraries:

- Microsoft Visual C++ 2015-2019 Redistributable (x64) runtime
- Microsoft .NET Framework 4.8 Redistributable
- NVIDIA CUDA 11.0
- OpenCV 4.4.0 – OpenCV 4.4.0 and lower versions are licensed under the 3-clause BSD license. See license information at <https://opencv.org/license/>
- FFmpeg - This software uses libraries of [FFmpeg](#) licensed under the [LGPLv2.1](#)

ProHawk Vision Milestone XProtect Smart Client Plugin supports 64-bit (x64) architectures. ProHawk Vision does not support 32-bit (x86) architectures.

3 Directories & Files

There will be several directories created after extracting the ProHawk Vision Server setup into the C:\Program Files\ProHawk\Vision Server main folder. Following are the folders and their descriptions:

Folder	Description
docs	Documentation files: ProHawk Vision Milestone XProtect Smart Client Plugin Users Guide.pdf.
ProHawk. InstantVisualClarity. Plugin	A folder containing the ProHawk Vision Milestone XProtect Smart Client Plugin and associated files and folders to run. This is typically located off the C:\Program Files\Milestone\XProtect Smart Client\MIPPlugins directory

4 ProHawk Vision Milestone XProtect Smart Client Plugin

The ProHawk Vision Milestone XProtect Smart Client Plugin is designed to directly integrate with Milestone XProtect Smart Client. Once added to the users' setup, the plugin displays both unenhanced and ProHawk enhanced video streams. *Figure 89* below shows the ProHawk Vision Milestone XProtect Smart Client Plugin.

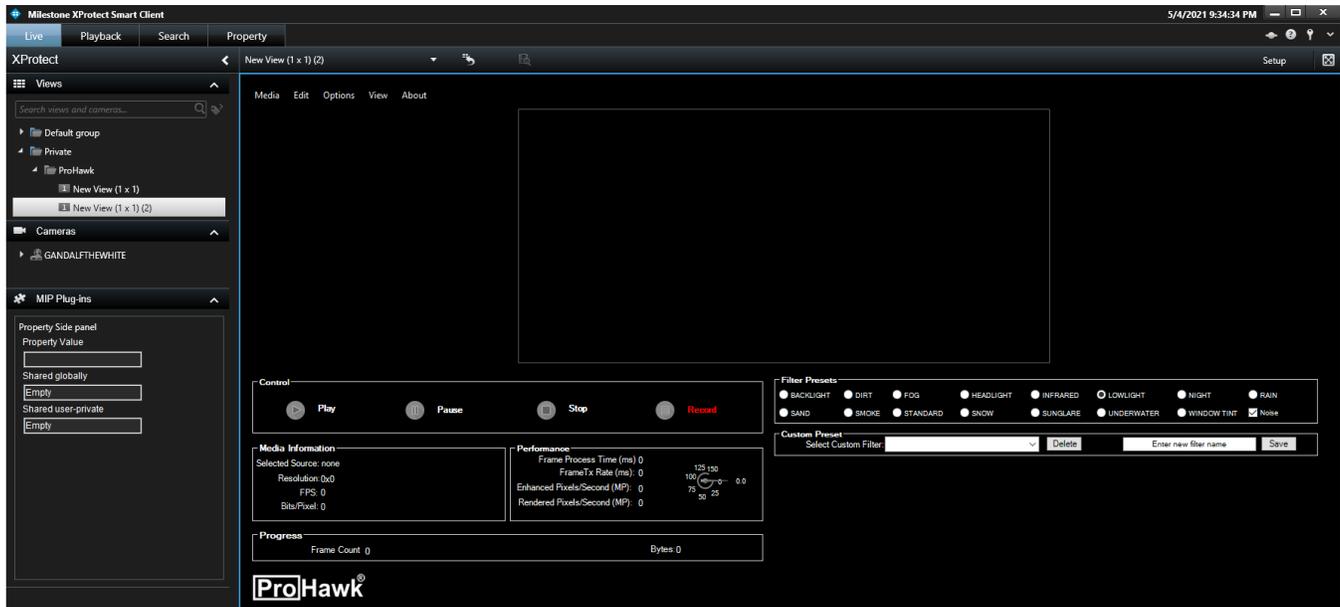


Figure 89

4.1 Loading Plugin into a Camera View

To use the ProHawk Vision Milestone XProtect Smart Client Plugin, the first step is to make the ProHawk Vision Milestone XProtect Smart Client Plugin available in the Milestone XProtect Smart Client View(s). The following series of steps will enable the ProHawk Vision Milestone XProtect Smart Client Plugin in the Milestone XProtect Smart Client View(s) selected. *Click* on the **Setup** button near the upper right-hand corner of the Milestone XProtect Smart Client. (Figure 90)

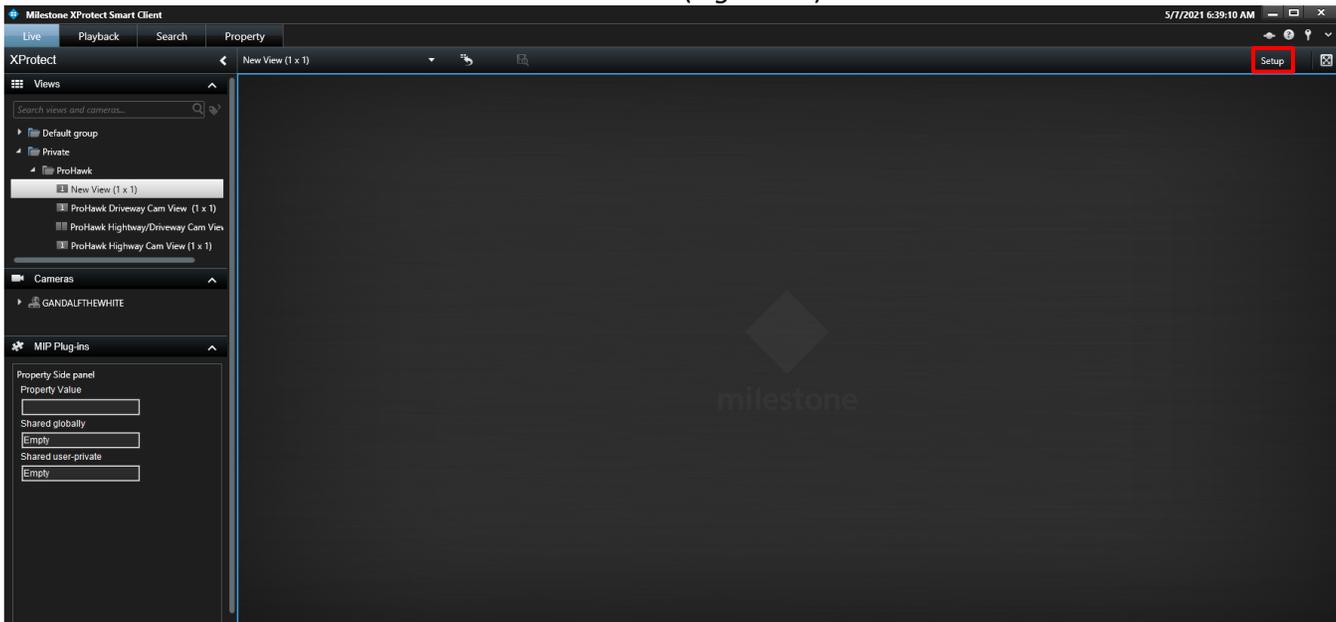


Figure 90

The Setup function will provide a **System Overview** section, with a **MIP SDK Samples** option. The ProHawk Vision Milestone XProtect Smart Client Plugin is in the **MIP SDK Samples** folder. *Click* on the **Arrow** next to the **MIP SDK Samples** option, this will expand the **MIP SDK Samples** folder and expose the plugins available. (Figure 91)

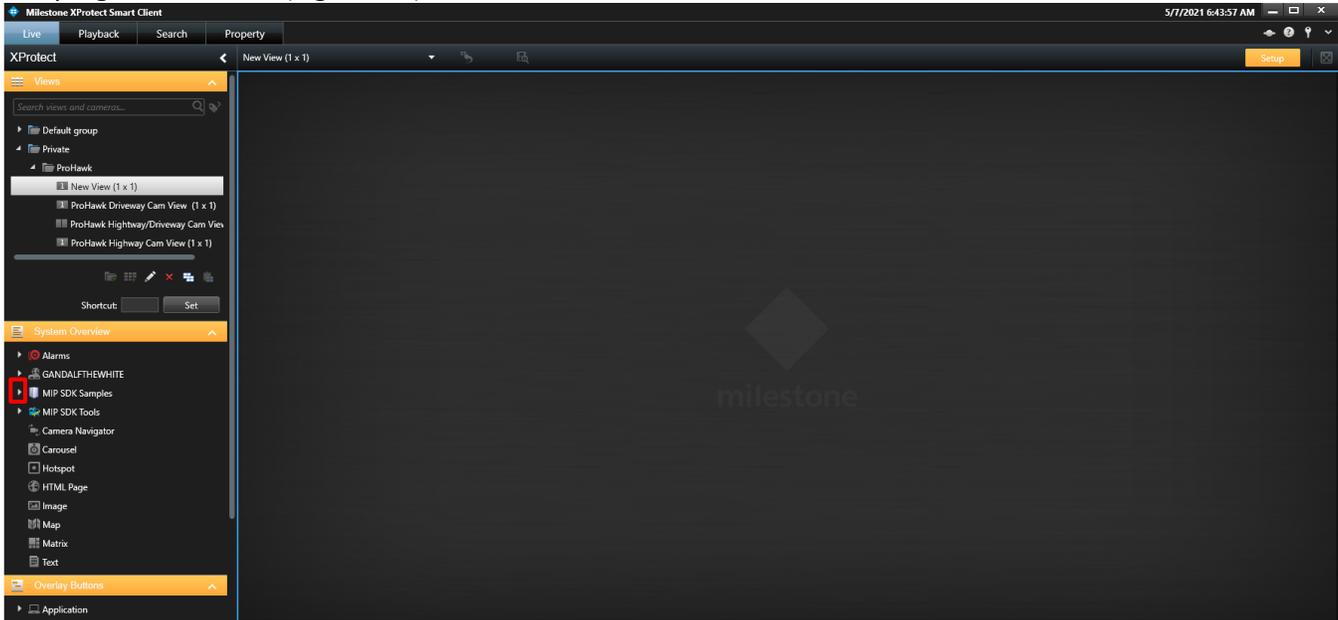


Figure 91

When expanded, the **MIP SDK Samples** folder shows the plugins that are available, including the **ProHawkXProtectPlugin**. (Figure 92)

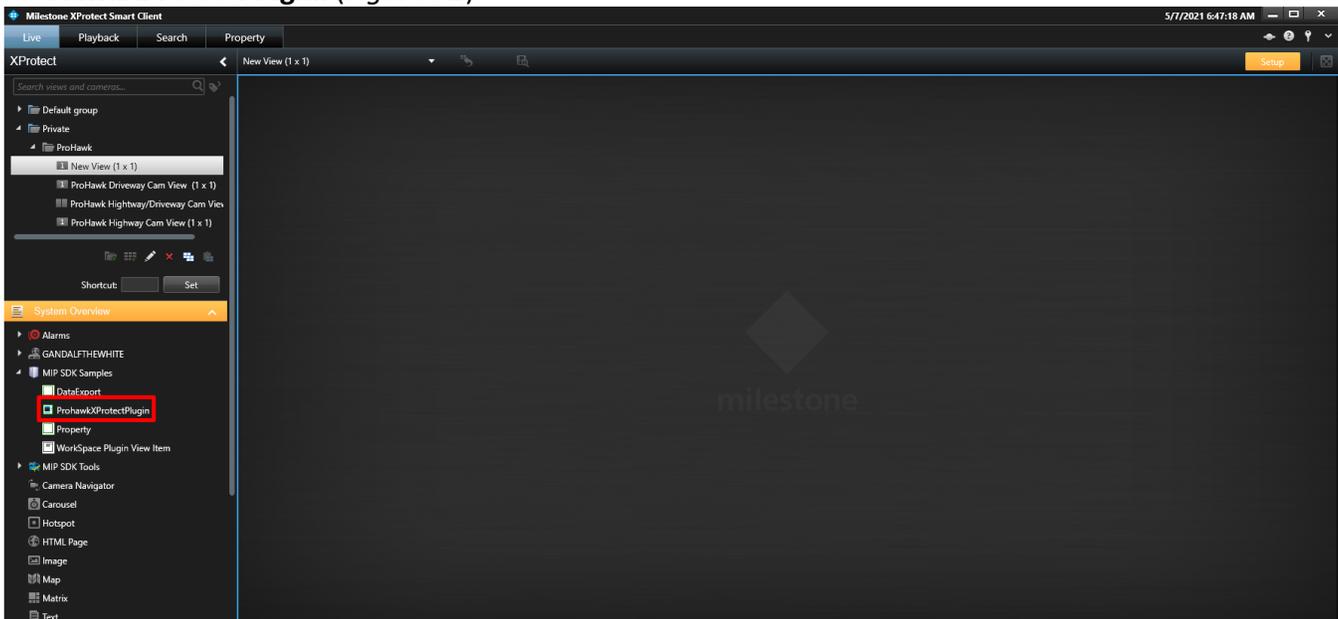


Figure 92

Next, *select* the **Milestone XProtect Smart Client View** that you want to add ProHawk Vision capabilities too. (Figure 93)

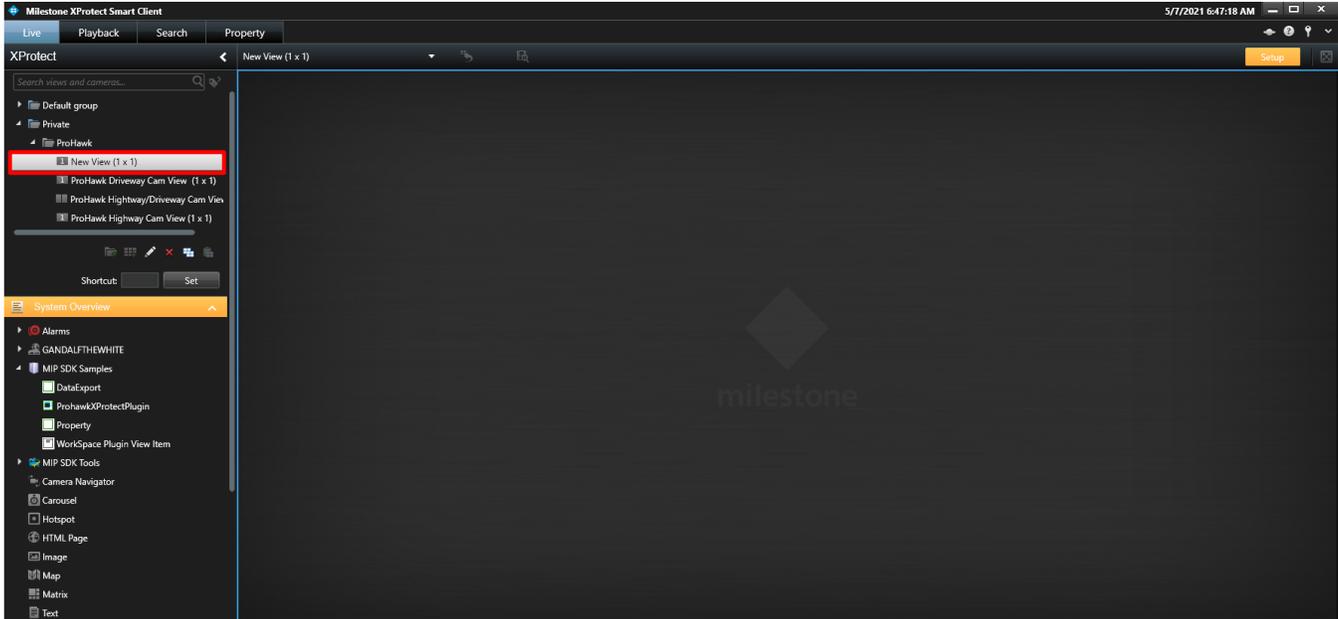


Figure 93

Once the Milestone XProtect Smart Client View that you want is selected, *drag* the **ProhawkXProtectPlugin** into the **View** pane to the right. (Figure 94)

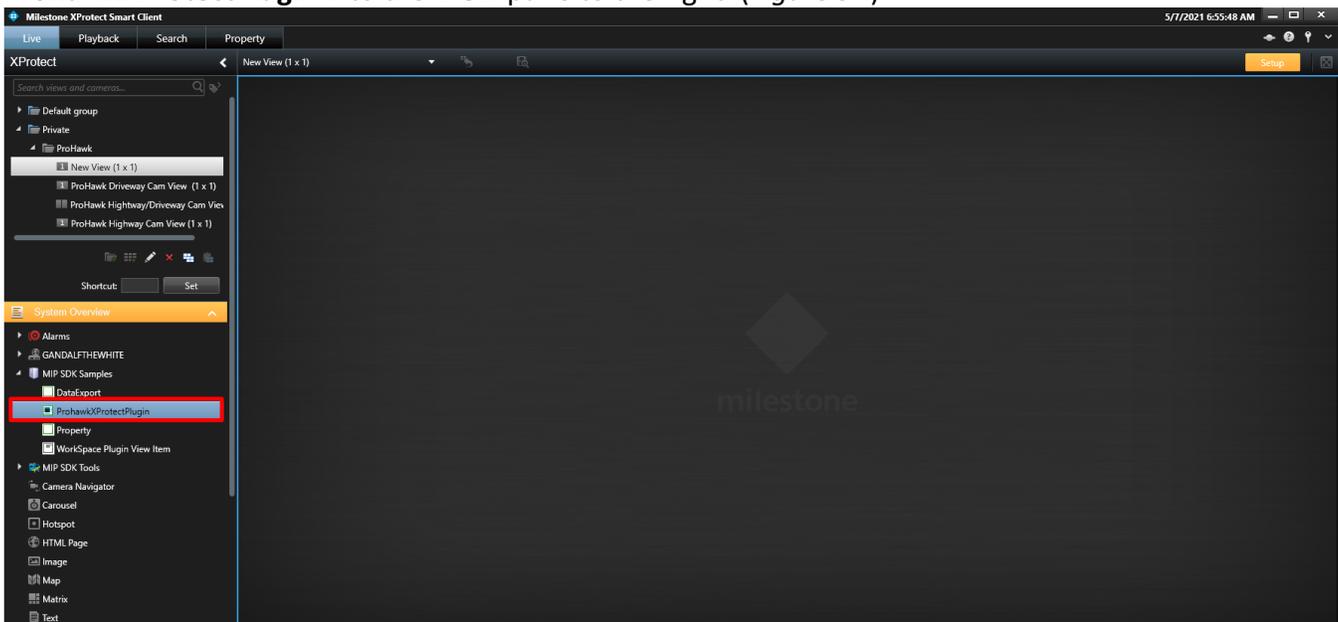


Figure 94

4.2 Loading Plugin into Multiple Camera Views

To use the ProHawk Vision Milestone XProtect Smart Client Plugin in a multi-camera Milestone XProtect Smart Client View, the first step is to make the ProHawk Vision Milestone XProtect Smart Client Plugin available in the Milestone XProtect Smart Client View(s). The following series of steps will enable the ProHawk Vision Milestone XProtect Smart Client Plugin in the Milestone XProtect Smart Client View(s) selected. *Click* on the **Setup** button near the upper right-hand corner of the Milestone XProtect Smart Client. (Figure 95)

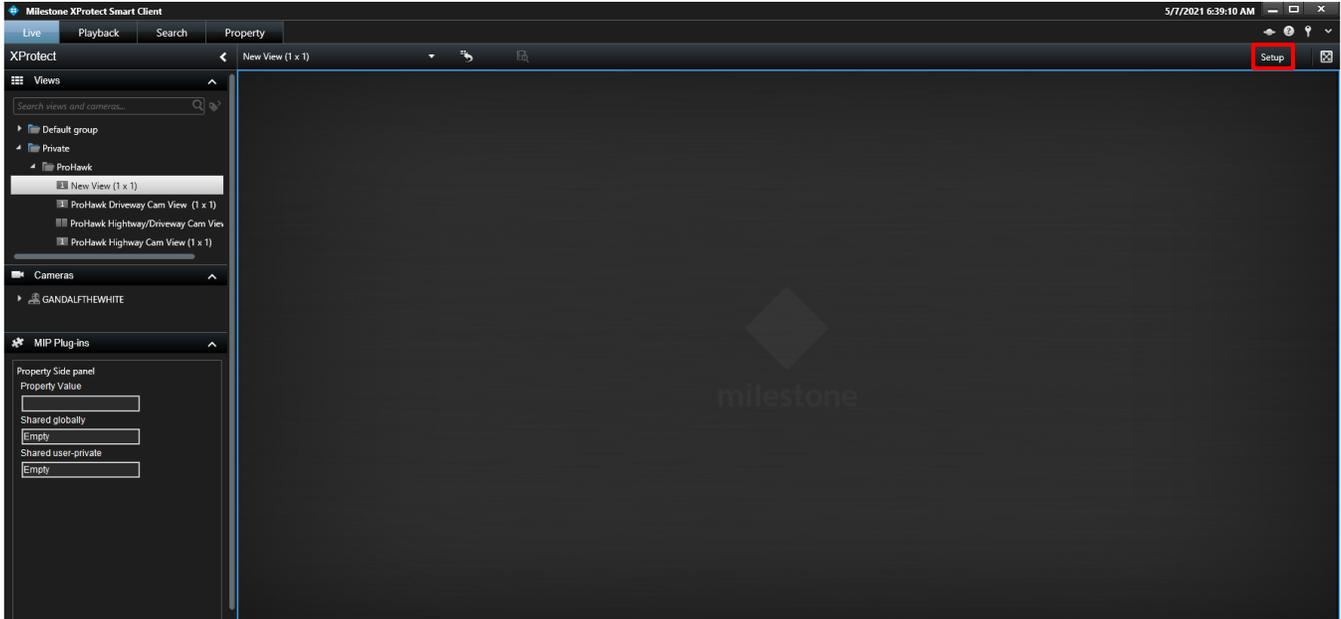


Figure 95

The Setup function will provide a System Overview section, with a **MIP SDK Samples** option. The ProHawk Vision Milestone XProtect Smart Client Plugin is in the **MIP SDK Samples** folder. *Click on the Arrow* next to the **MIP SDK Samples** option, this will expand the **MIP SDK Samples** folder and expose the plugins available. (Figure 96)

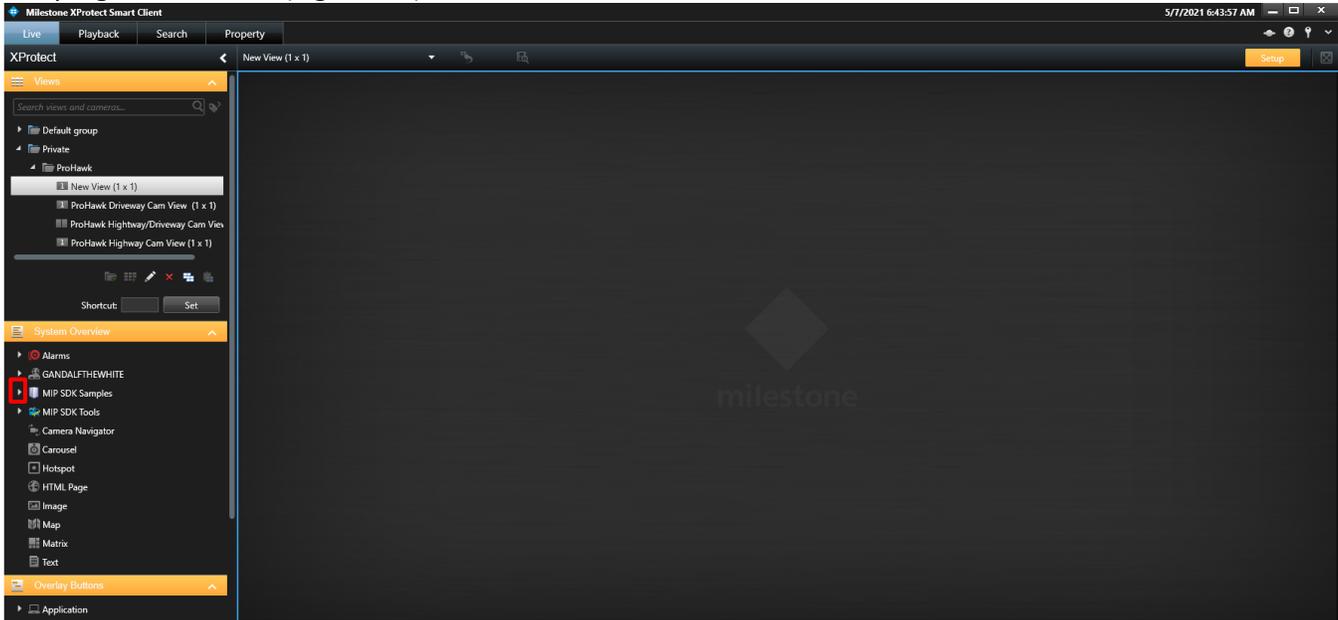


Figure 96

When expanded, the **MIP SDK Samples** folder shows the plugins that are available, including the **ProHawkXProtectPlugin**. (Figure 97)

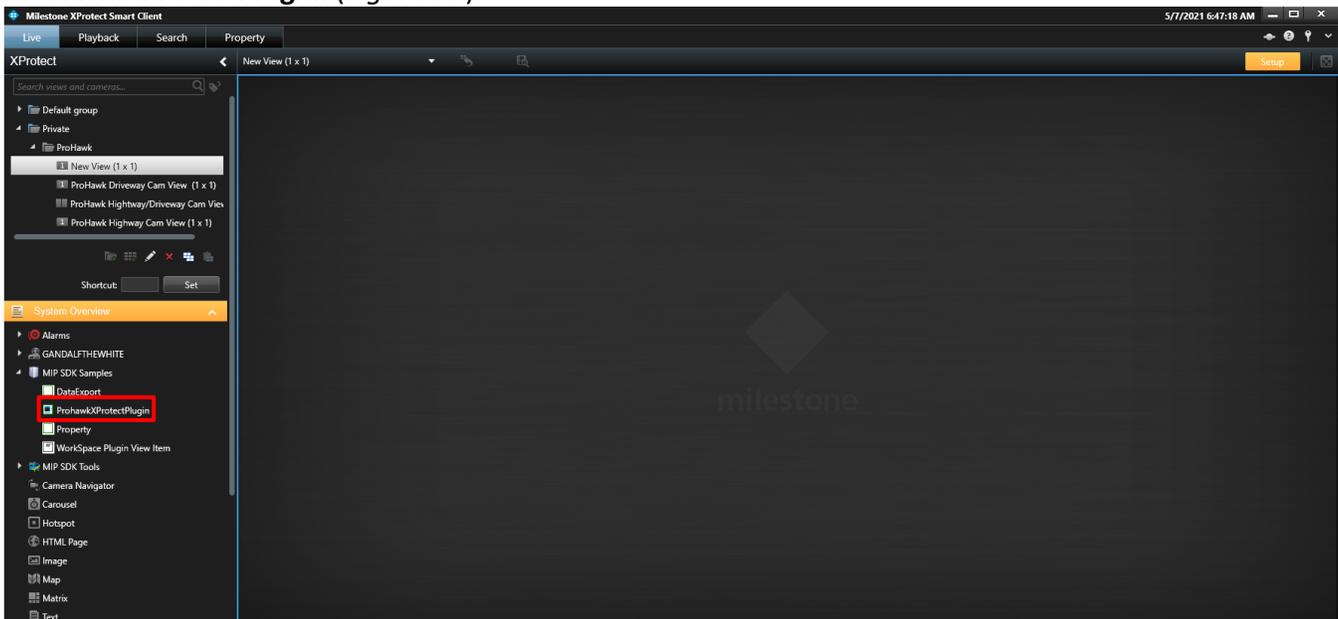


Figure 97

Next, *select* the multi-camera **Milestone XProtect Smart Client View** that you want to add ProHawk Vision capabilities too. (Figure 98)

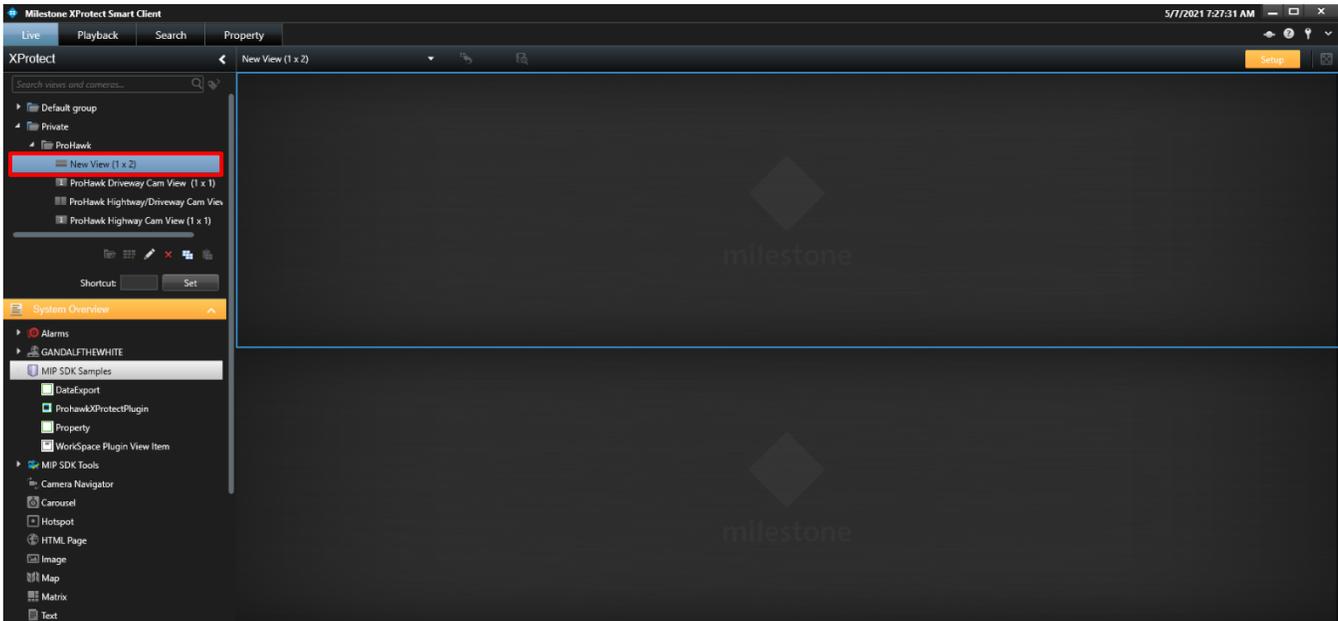


Figure 98

Once the multi-camera **Milestone XProtect Smart Client View** that you want is selected, *drag* the **ProhawkXProtectPlugin** into each of the two View panes to the right. (Figure 99)

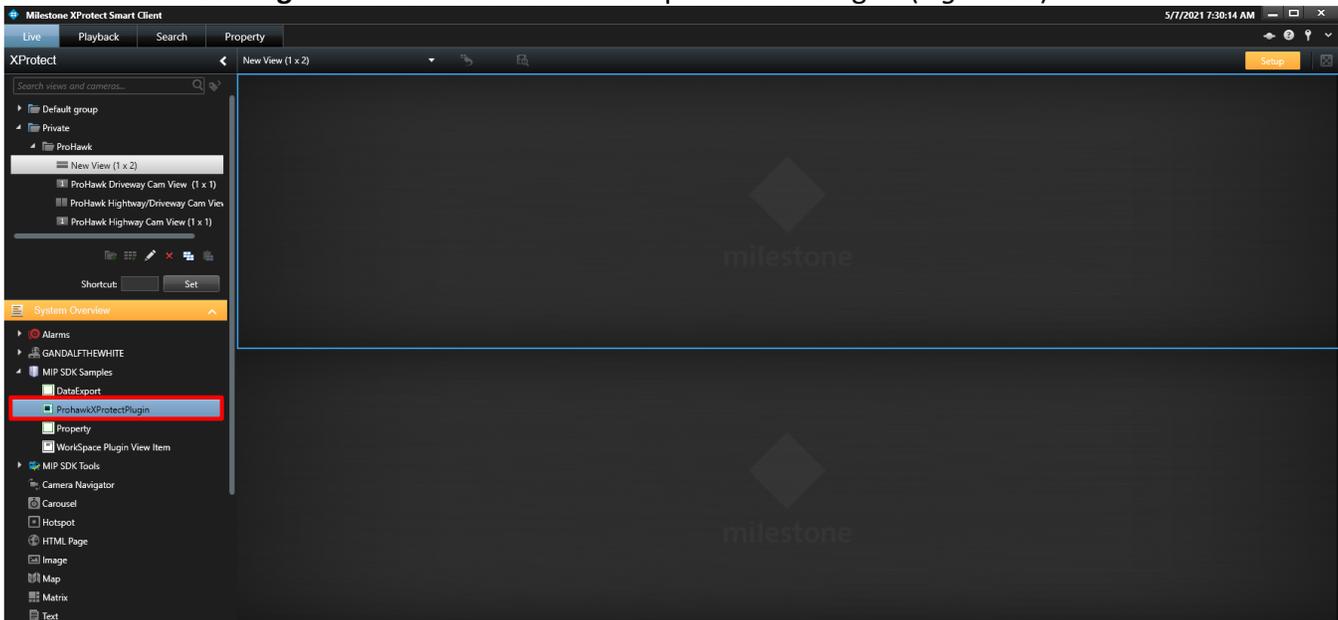


Figure 99

4.3 Media Menu

Once the **ProhawkXProtectPlugin** has been dragged into the **View** pane it will be displayed in the selected **View** pane as shown in the image below. The ProHawk Vision Milestone XProtect Smart Client Plugin **Media** menu provides two options to view live video streams or stored media files. (Figure 100)

The four **Media** menu options are:

- **Open Video Source...**
- **Close Video Source**
- **Open Recorded Source...**
- **Open Recording Folder...**

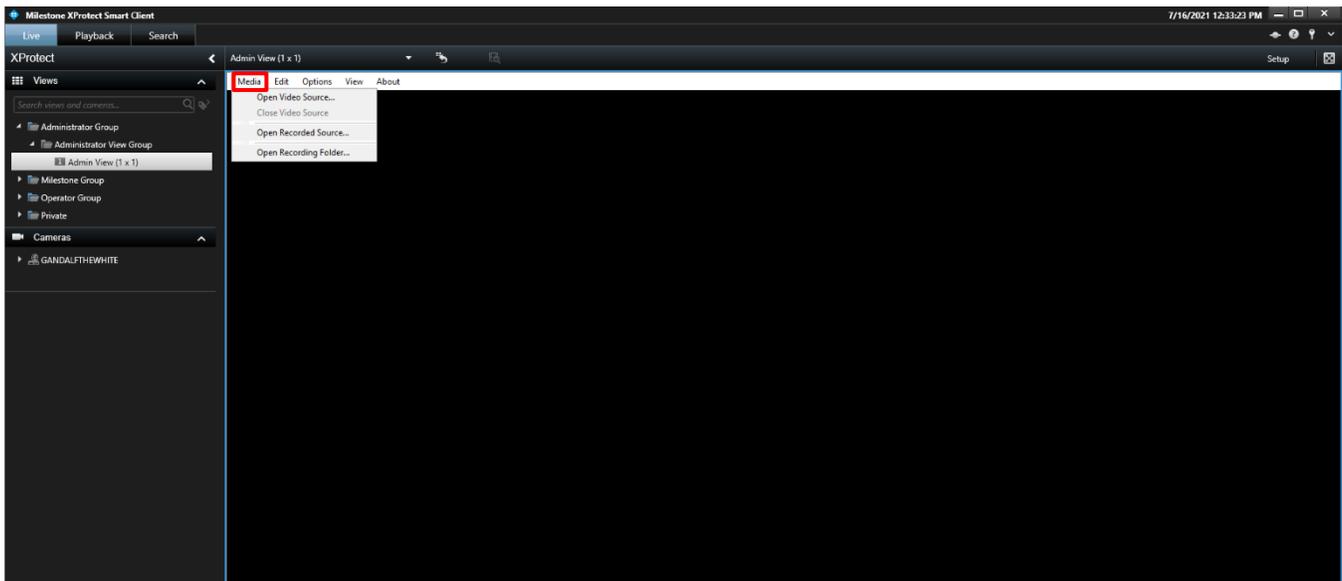


Figure 100

This section of the ProHawk Vision Users Guide will describe the ProHawk Vision Milestone XProtect Smart Client Plugin **Media** menu options above. (Figure 100)

4.3.1 Open Video Source

The first step is to select a video source to view. To select a live Milestone XProtect VMS video stream to view in the ProHawk Vision Milestone XProtect Smart Client, *click* on the **Media** menu, then *click* on the **Open Video Source** menu option. (*Figure 101*)

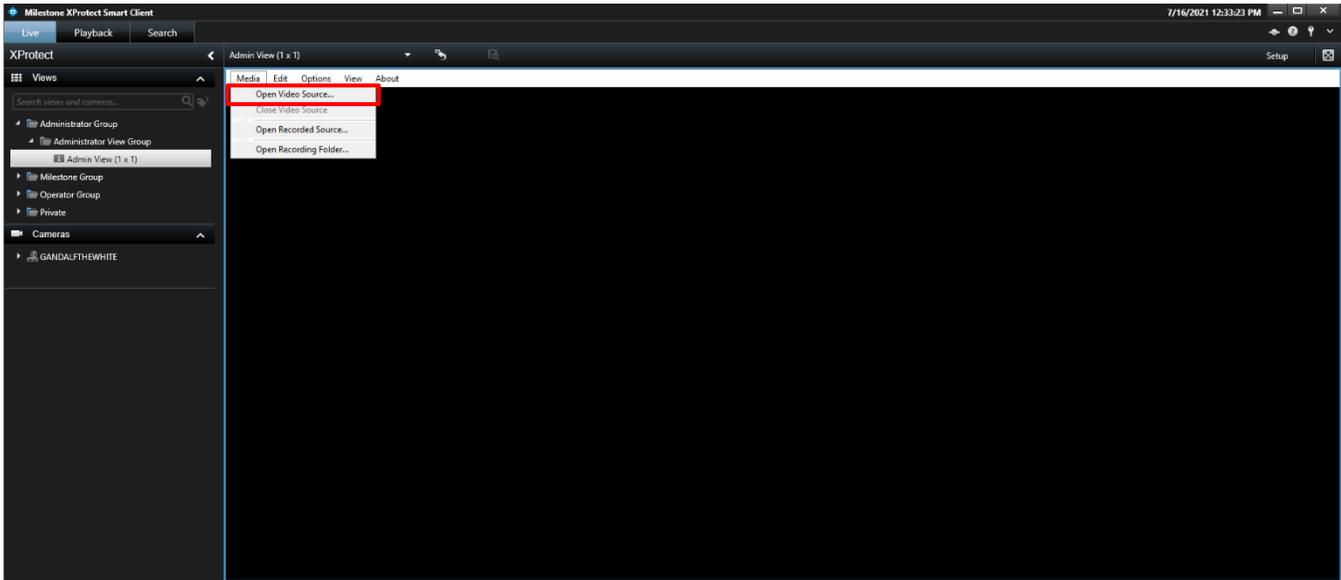


Figure 101

The ProHawk Vision Milestone XProtect Smart Client Plugin **Open Video Source** menu choice will open the **Camera Source Selection** dialog box that will allow you to select a Milestone XProtect VMS Server video stream, as can be seen below in *Figure 102*.

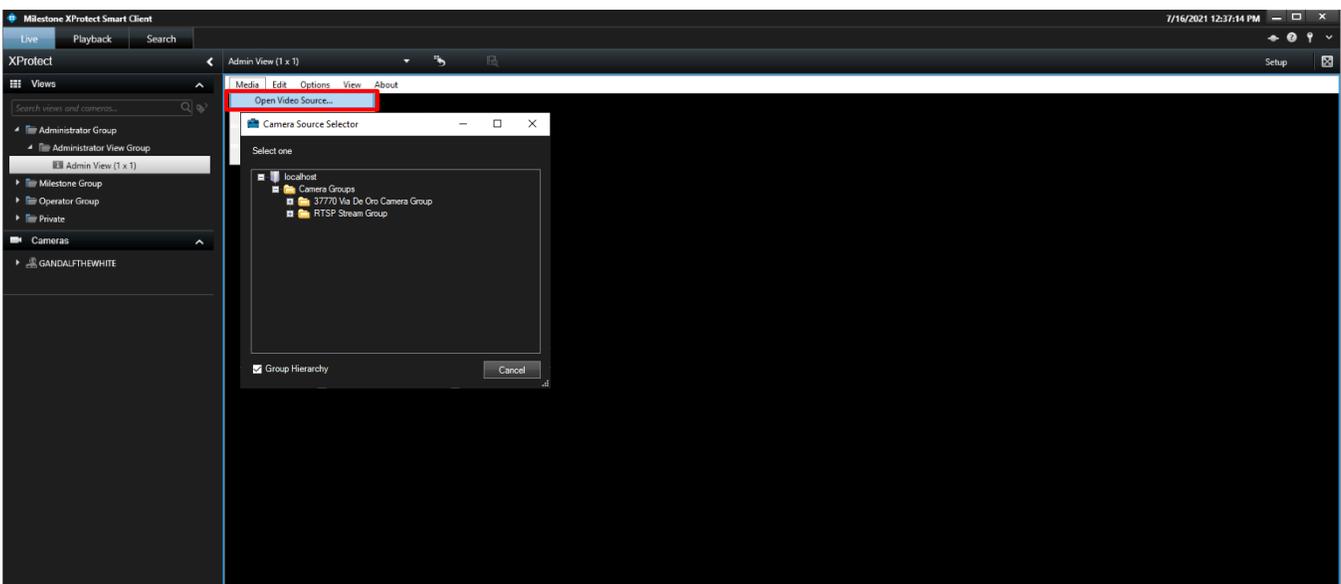


Figure 102

4.3.2 Close Video Source

The **Close Video Source, Media Menu** option allows you to close a source selected. This option is available when the Operator View Menu option is enabled. To close a video source, *click* on the **Close Video Source, Media Menu** option. (*Figure 103*)

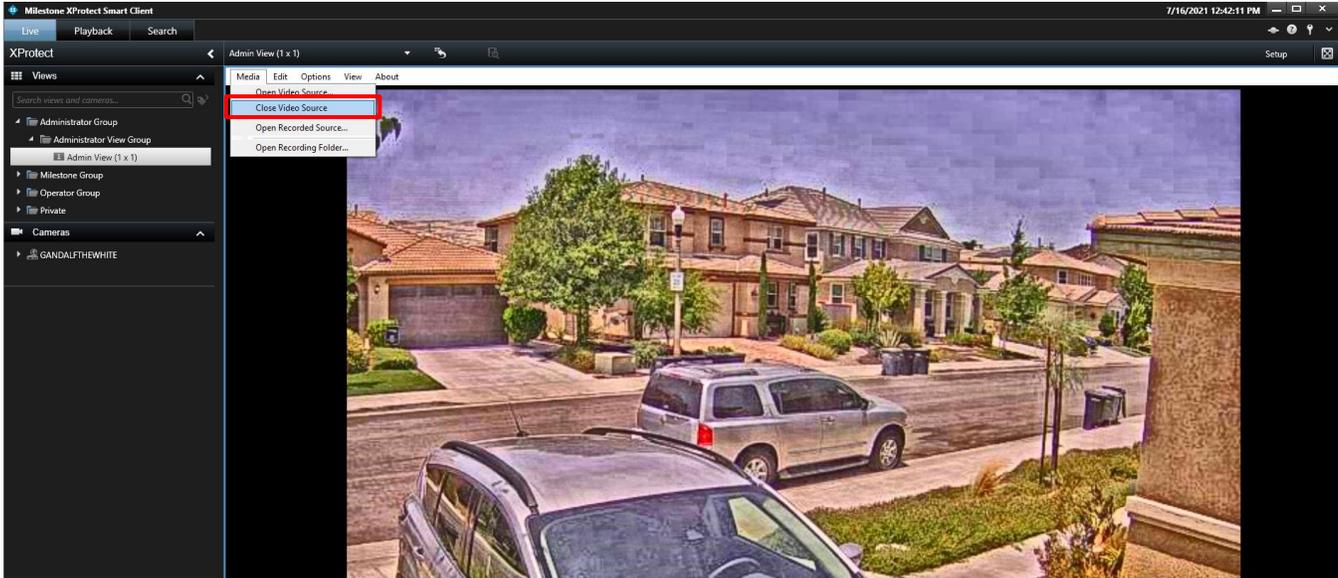


Figure 1

4.3.3 Open Recorded Source

The **Open Recorded Source, Media Menu** option allows you to select a recorded video in the Milestone XProtect Server by specifying the camera and time/date range to load. (*Figure 104*)

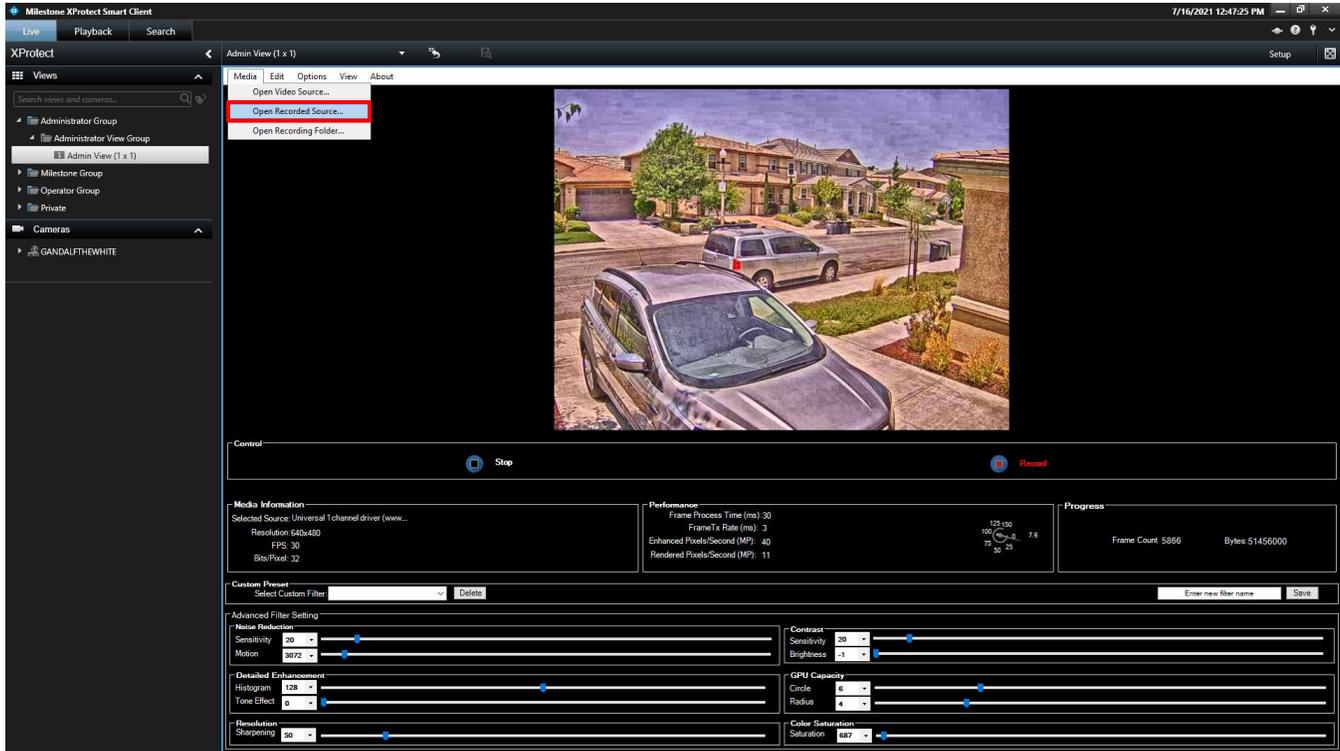


Figure 2

In Recorded Media Source Selector dialog box, *click on the Camera Source button.* (Figure 105)

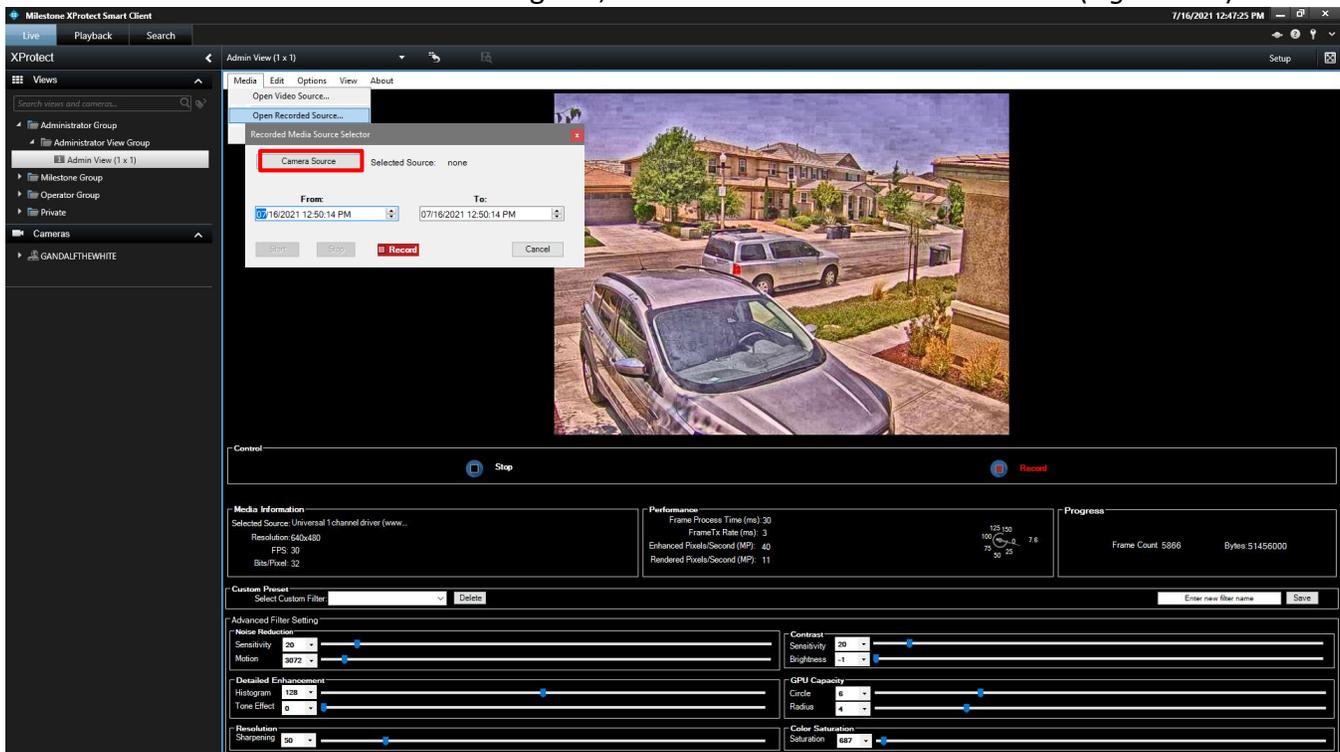


Figure 3

In the Camera Source Selector dialog, *click on the recorded camera source you want.* (Figure 106)

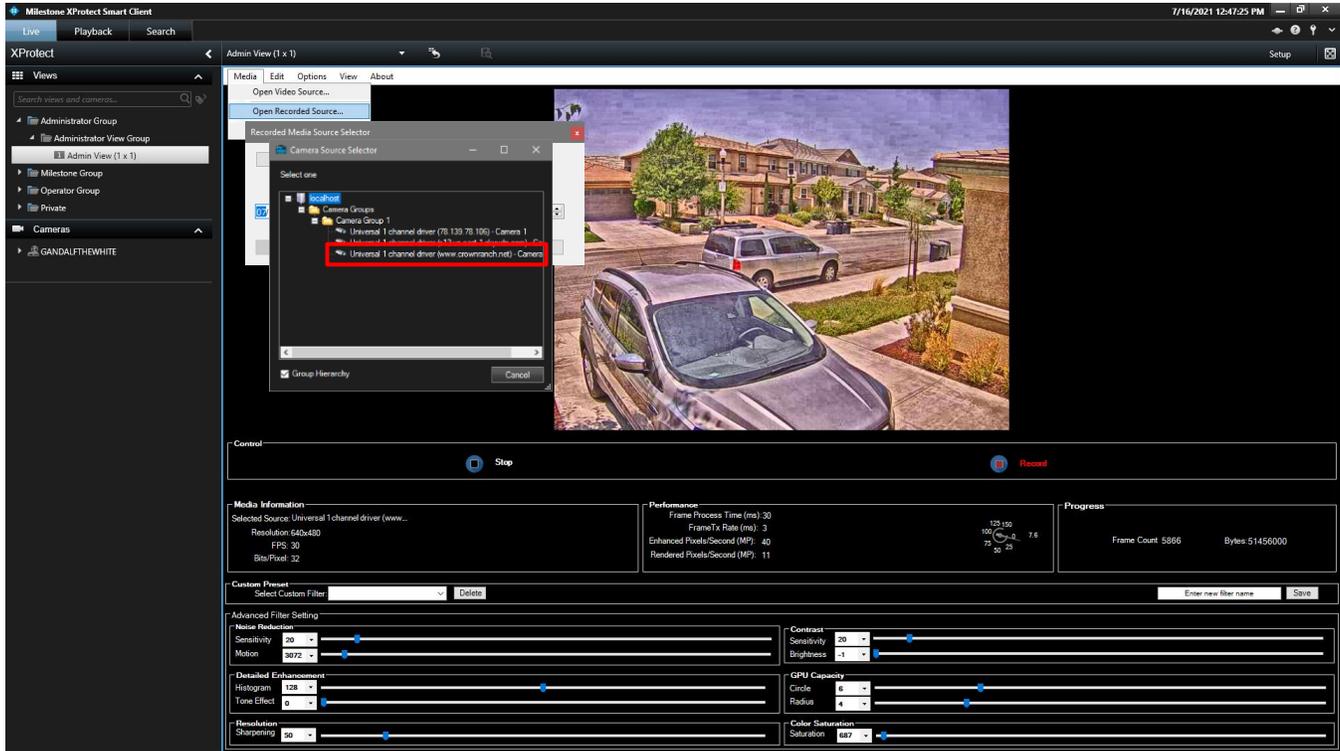


Figure 4

In Recorded Media Source Selector dialog box, select the **From** and **To** dates of the video. (Figure 107)

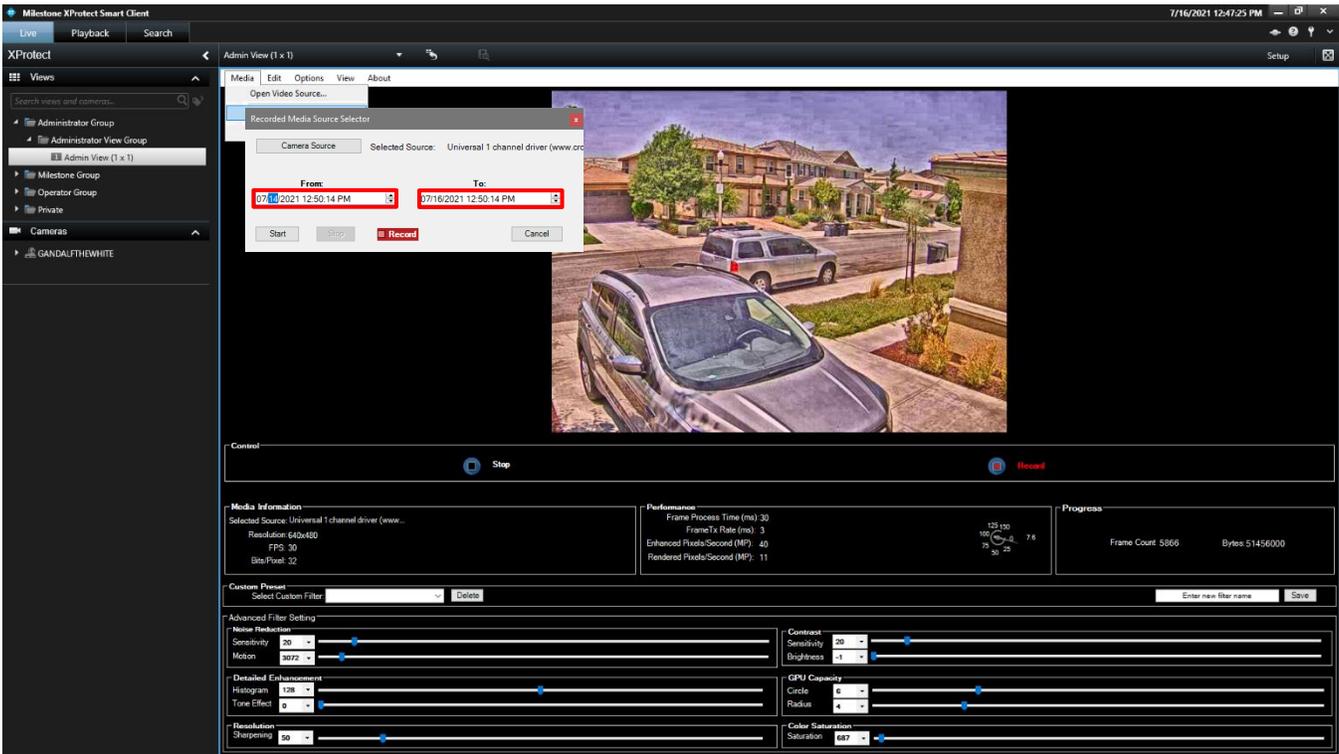


Figure 5

In the Recorded Media Source Selector dialog box, click on the **Start** button. (Figure 108)

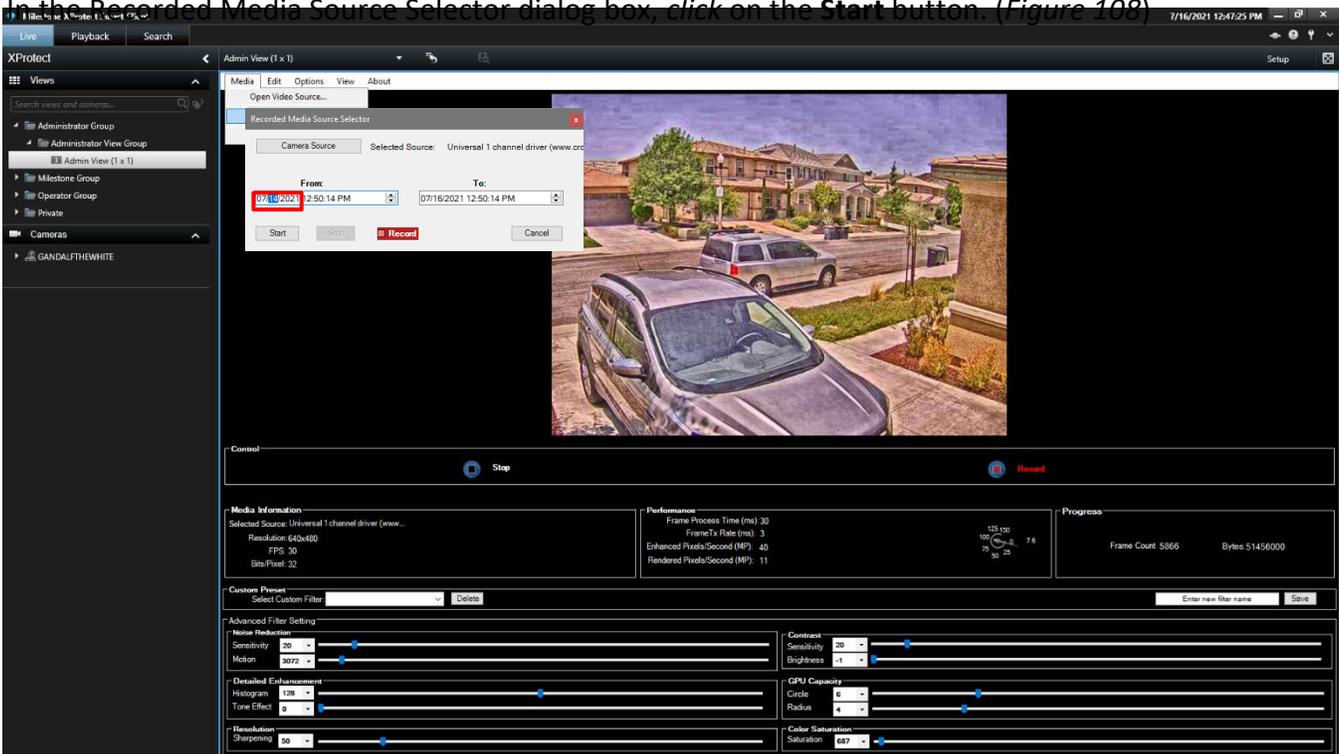


Figure 6

4.3.4 Open Recording Folder

To Open a previously recorded ProHawk Vision restored file, *click* on the **Media** menu, then *click* on the **Open Recording Folder** menu option to allow selection of the desired file. (Figure 109)

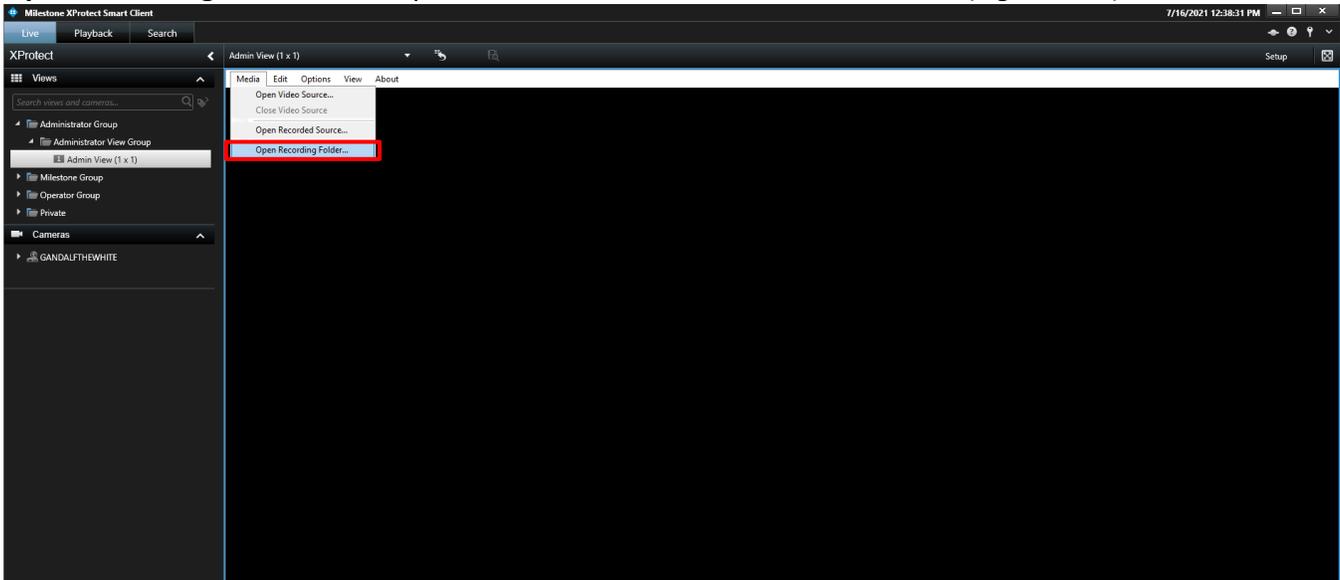


Figure 109

Double-click on the restored ProHawk Vision file in the file selection dialog box to load the desired file. (Figure 110)

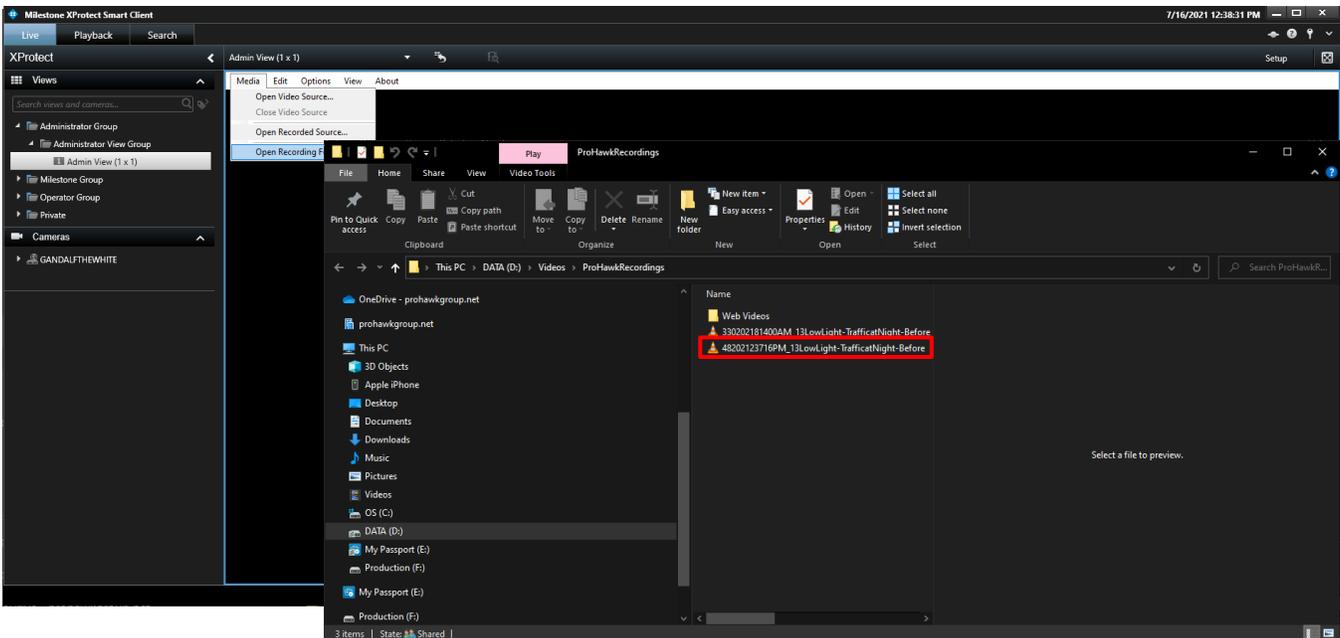


Figure 110

4.4 Edit Menu

The ProHawk Vision Milestone XProtect Smart Client Plugin **Edit** menu allows you to copy the current video frame or picture to the Windows clipboard and users Pictures\ProHawk folder on both video ProHawk enhanced and original stream types. (Figure 111)

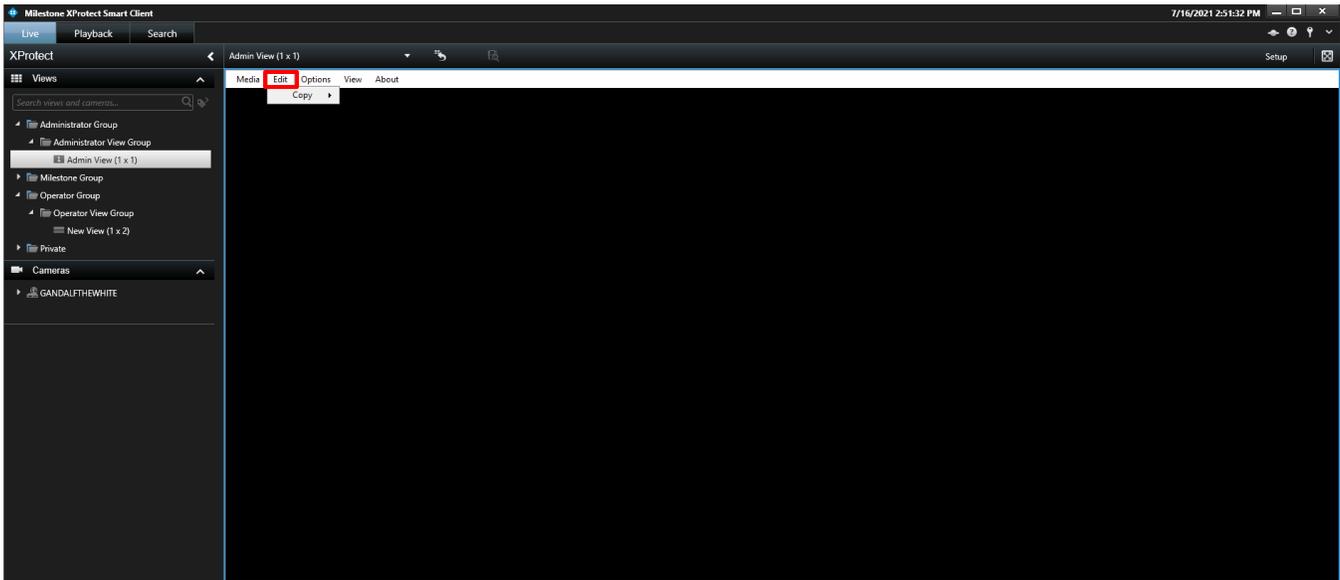


Figure 111

This section of the ProHawk Vision Users Guide will describe the ProHawk Vision Milestone XProtect Smart Client Plugin **Edit** menu options above. (Figure 111)

4.4.1 Copy

Click on the **Edit** menu, then click on the **Copy** menu option, then click either the **Original** or **ProHawk** menu option to copy the current video frame as an image file to the Windows clipboard and to the current users' desktop. (Figure 112)

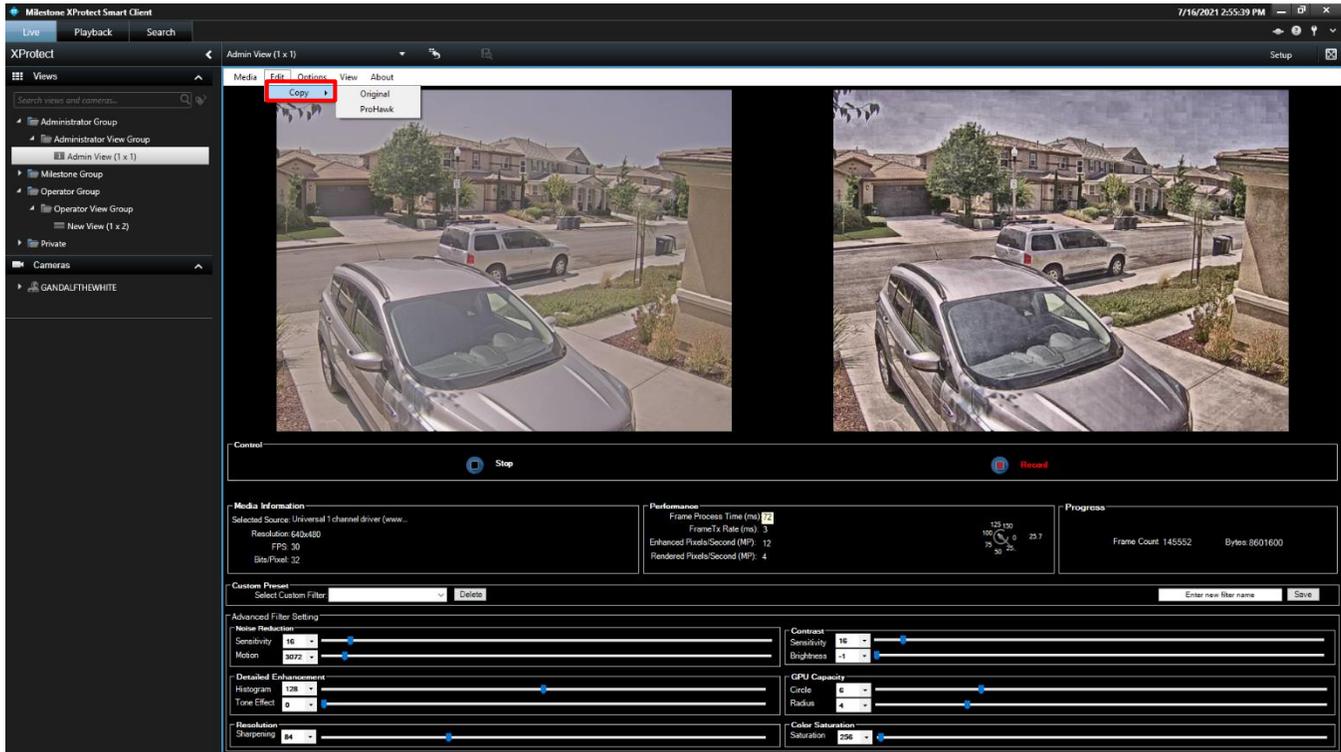


Figure 112

Copy->Original – Saves the displayed source image to the clipboard and the current users' desktop

Copy->ProHawk – Saves the displayed enhanced image to the clipboard and the current users' desktop

4.5 Options Menu

ProHawk Vision Milestone XProtect Smart Client Plugin provides an **Options** menu to control enhancement, recording, voice commands, and default folders. (Figure 113) The **Options** menu options and their default Options settings are:

- **Disable Enhancement – Enable/Disable**
- **Enable 2X Enhancement – Disable/Enable**
- **Standard Filter Preset – Standard**
- **Custom Tiler Preset - None**

This section of the ProHawk Vision Users Guide will describe the ProHawk Vision Milestone XProtect Smart Client Plugin **Options** menu options above. (Figure 113)

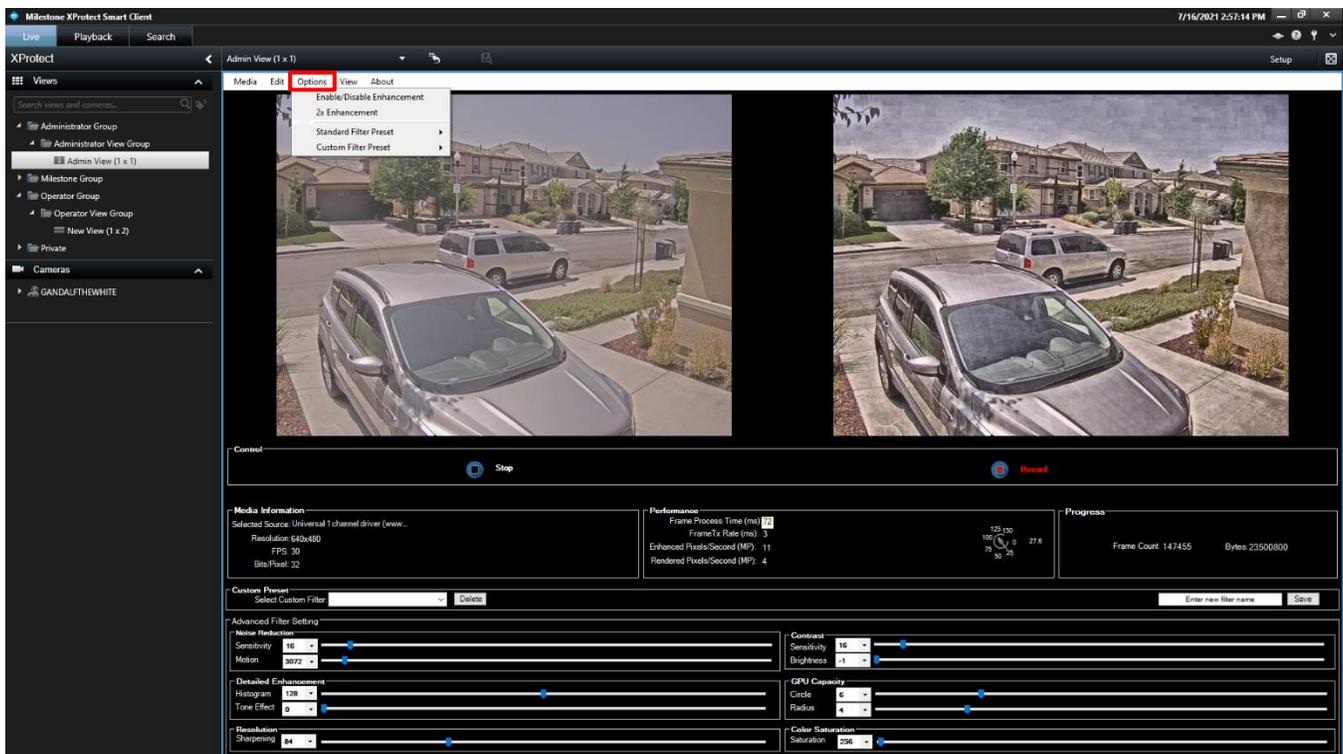


Figure 113

4.5.1 Enable/Disable Enhancement

ProHawk Vision Milestone XProtect Smart Client Plugin defaults to the **Enable/Disable Enhancement, Options** menu being unselected. This sets the ProHawk Vision engine **On**. When the **Enable/Disable Enhancement, Options** menu is unselected, there will be no checkmark next to the menu option. (Figure 114) To turn the ProHawk Vision engine **Off**, click on the **Enable/Disable Enhancement, Options** menu choice.

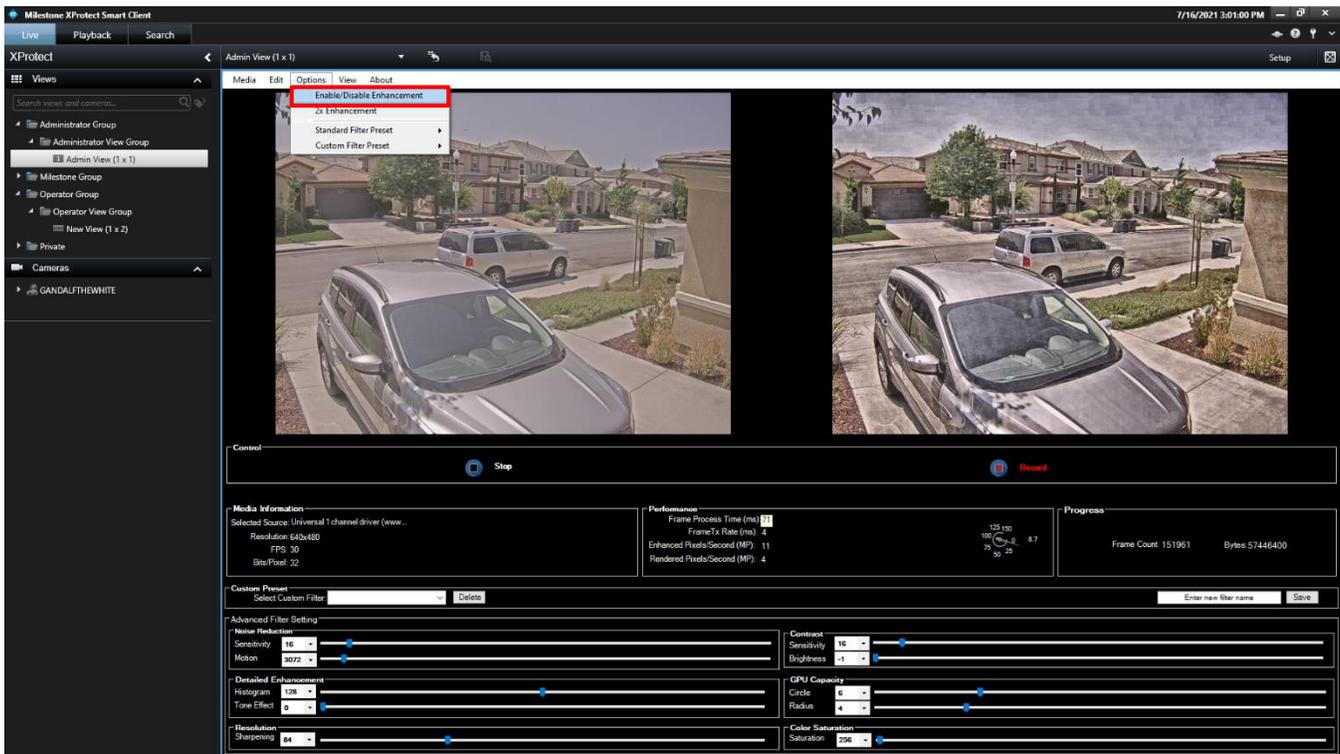


Figure 114

When the **Enable/Disable Enhancement**, ProHawk Vision Milestone XProtect Smart Client Plugin **Options** menu is selected, it will display a checkmark next to the **Enable/Disable Enhancement, Options** menu choice. This sets the ProHawk Vision engine **Off**. (Figure 115) To turn the ProHawk Vision restoration engine **On**, click on the **Enable/Disable Enhancement, Options** menu choice.

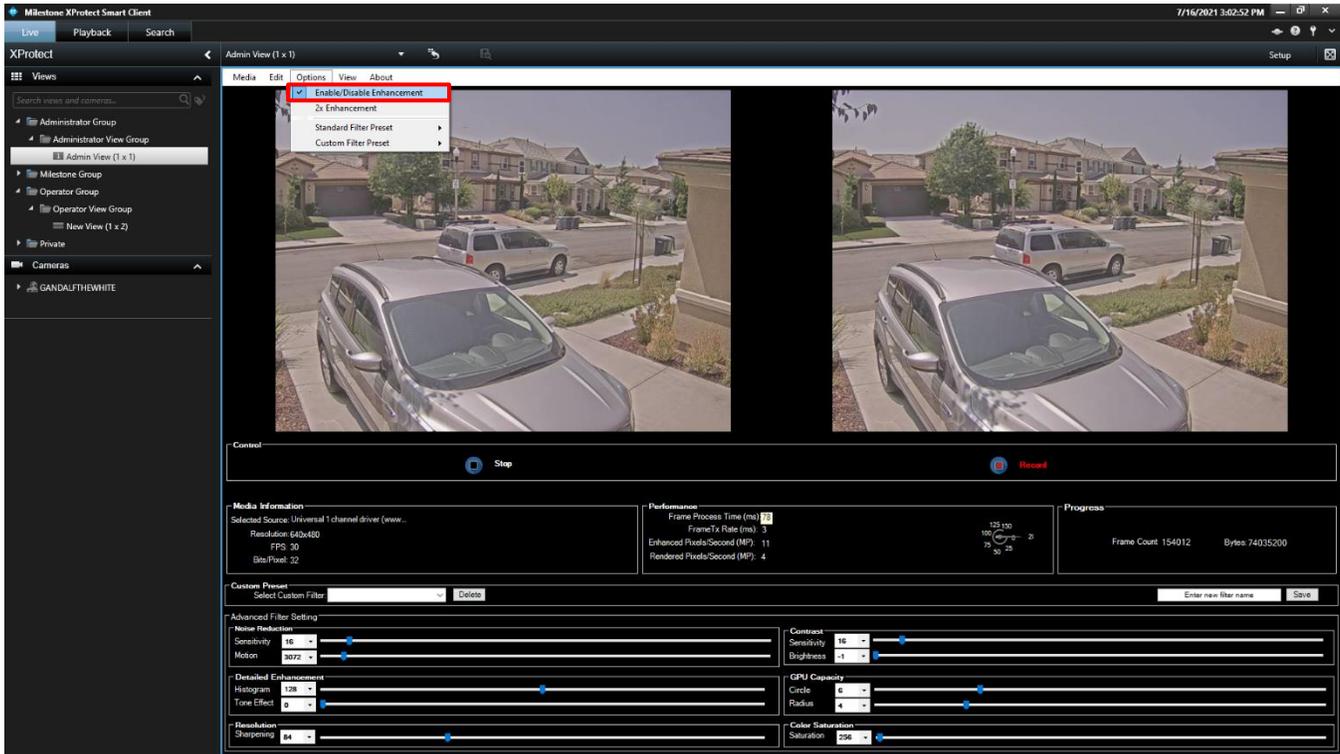


Figure 115

4.5.2 Enable 2x Enhancement

ProHawk Vision Milestone XProtect Smart Client Plugin defaults to the **2x Enhancement, Options** menu being unselected. This sets the ProHawk Vision engine in a normal mode of operation. When the **2x Enhancement, Options** menu is unselected, there will be no checkmark next to the menu option. (Figure 116) To run the imagery through the ProHawk Vision engine twice, *click* on the **2x Enhancement, ProHawk Vision Milestone XProtect Smart Client Plugin Options** menu choice.

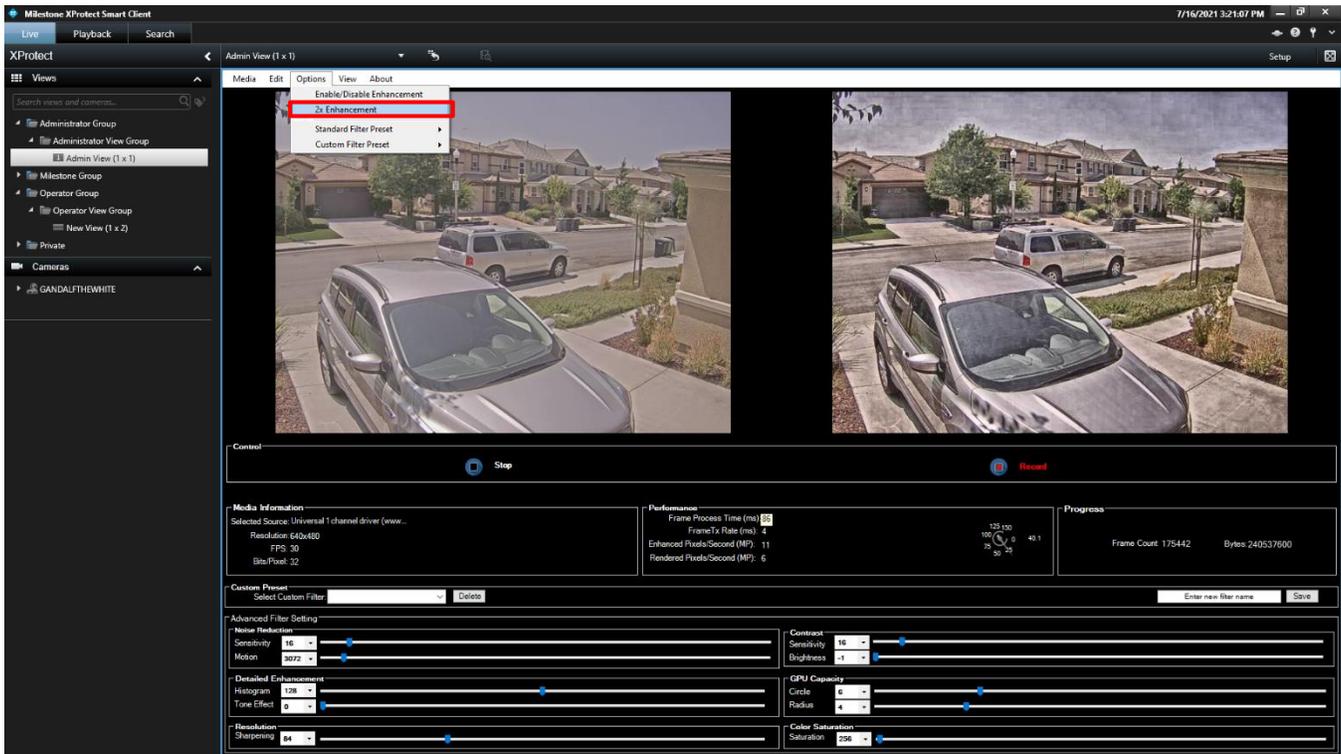


Figure 116

When the ProHawk Vision Milestone XProtect Smart Client Plugin **2x Enhancement, Options** menu is selected, it will display a checkmark next to the **2x Enhancement, Options** menu choice. This sets the ProHawk Vision engine in a two-pass mode where the imagery is run twice through the ProHawk Vision engine. (Figure 117) To turn the ProHawk Vision two-pass mode **Off**, click on the **2x Enhancement, Options** menu choice.

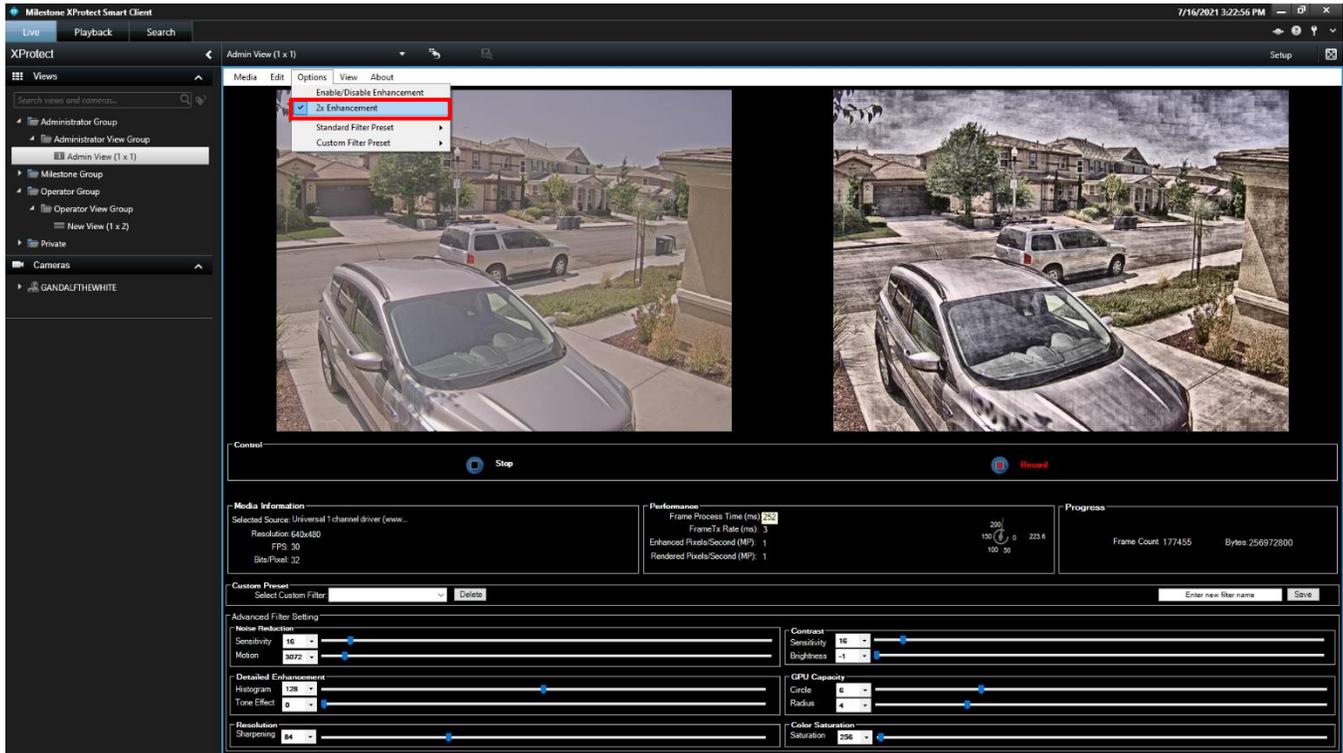


Figure 117

4.5.3 Standard Filter Preset

The ProHawk Vision Milestone Xprotect Smart Client Plug provides a **Standard Filter Preset, Options Menu** option containing one click preset adjustments for problematic video. **Filter Preset** selections assist users in clarifying challenging visual conditions. (Figure 118)

The problem conditions include:

- BACKLIGHT
- DIRT
- FOG
- HEADLIGHT
- INFRARED
- LOWLIGHT
- NIGHT
- RAIN
- SAND
- STANDARD
- SNOW
- SMOKE
- SUNGLARE
- UNDERWATER
- WINDOW TINT

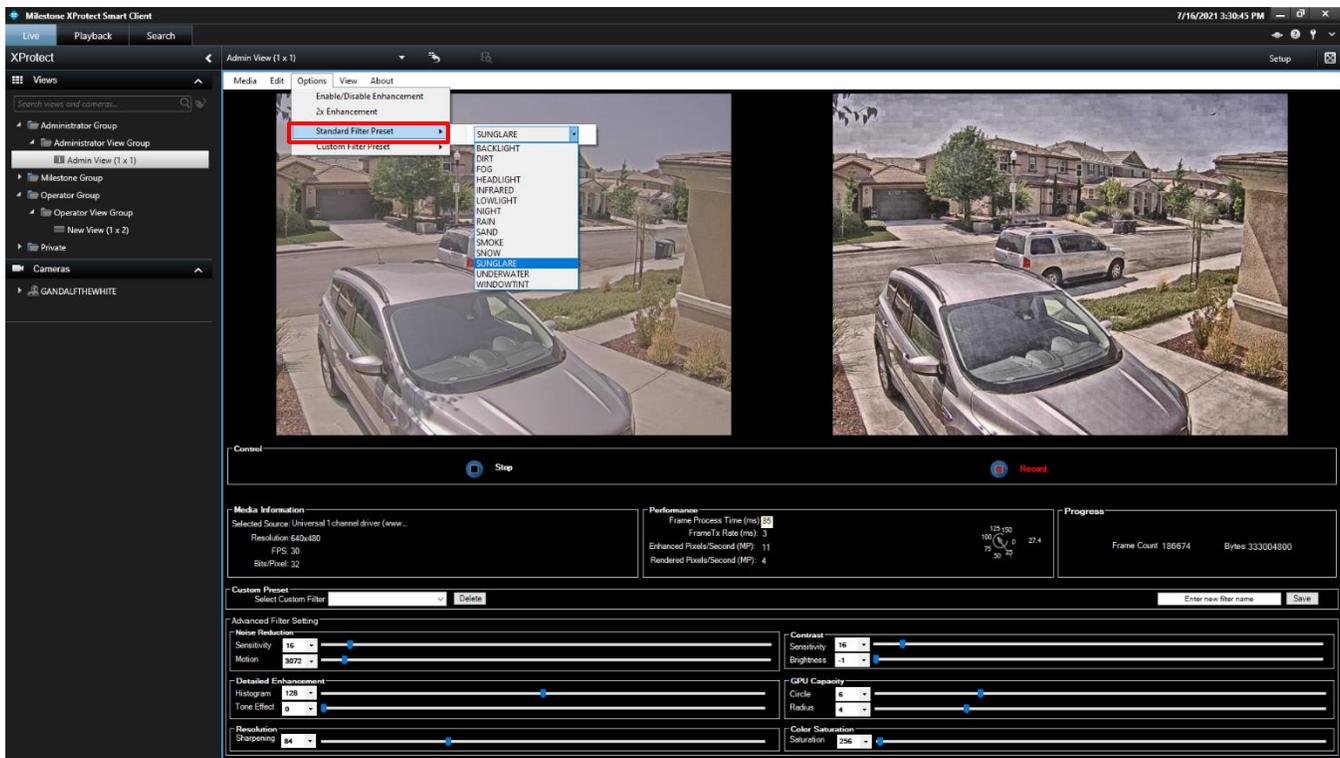


Figure 118

Click on the **Options Menu**, then click on the **Standard Filter Preset, Options Menu** item to expose the dropdown list of **Preset Conditions**. Select the **Preset Condition** to restore your video.

4.5.4 Custom Filter Preset

The ProHawk Vision Milestone XProtect Smart Client Plugin provides a **Custom Preset, Options Menu** containing detailed restoration settings that have been saved filters by the administrator. (Figure 119)

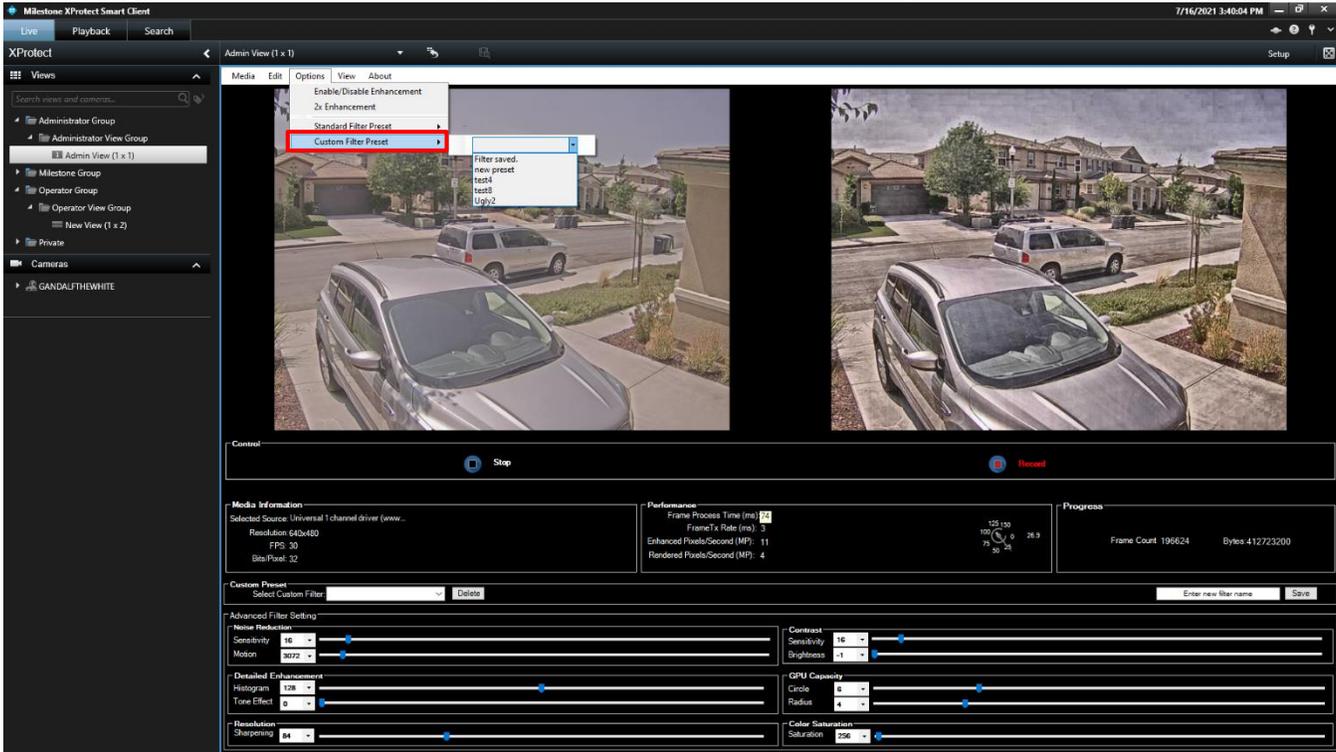


Figure 7

Click on the **Options Menu**, then click on the **Custom Filter Preset, Options Menu** item to expose the dropdown list of **Custom Preset Conditions**. Select the **Custom Preset Condition** to restore your video.

4.6 View Menu

ProHawk Vision Milestone XProtect Smart Client Plugin provides several viewing options accessible through the **View** menu (Figure 120). The available **View** menu options and their default View options settings are:

- **Advanced Filter Settings – Off**
- **Enhanced View - On**
- **Side-by-Side View - Off**
- **External Enhanced View - Off**
- **Unenhanced External View – Off**
- **Administrator**
- **Operator**

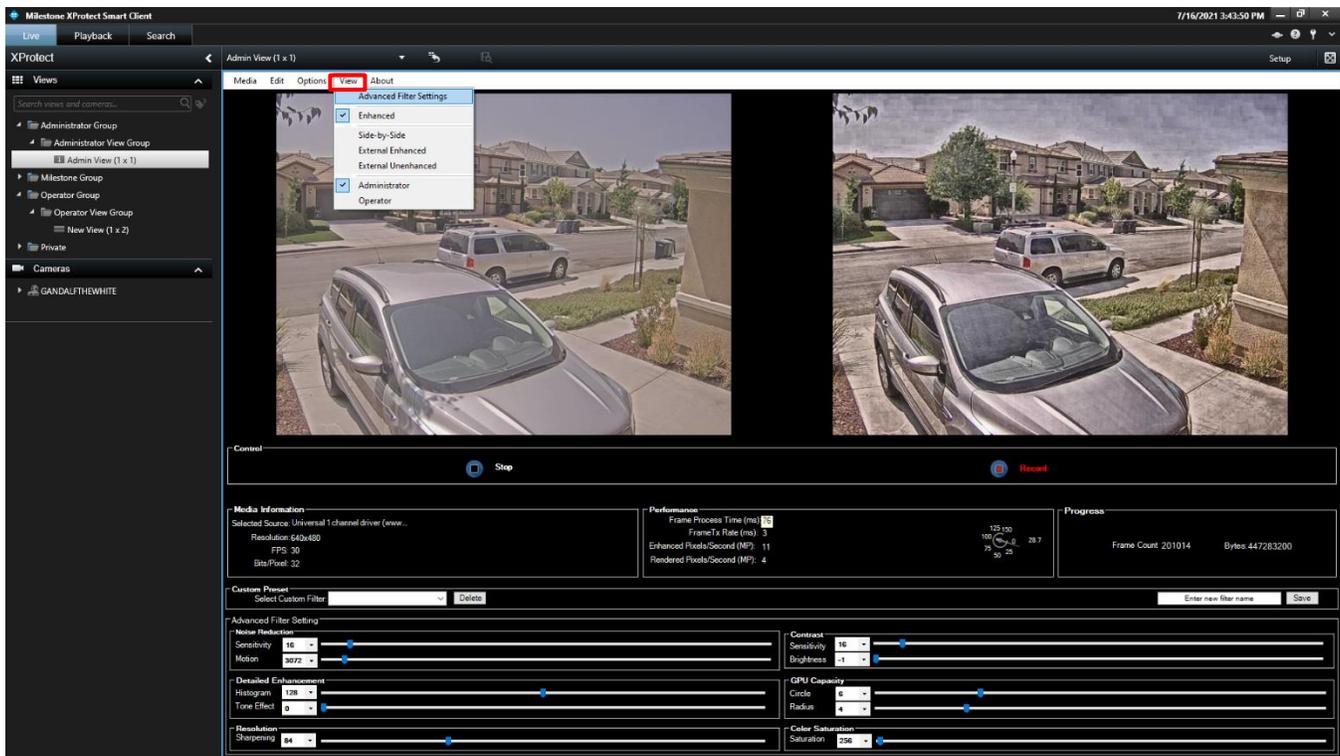


Figure 120

This section of the ProHawk Vision Users Guide will describe the ProHawk Vision Milestone XProtect Smart Client Plugin **View** menu options above. (Figure 120)

4.6.1 Advanced Filter Settings

ProHawk Vision Milestone XProtect Smart Client Plugin **Advanced Filters Settings** allows user to adjust the ProHawk parameters individually. To display and access the Advanced Filter Settings, *click* on the ProHawk Vision Milestone XProtect Smart Client Plugin **View** menu, then *click* on the ProHawk Vision Milestone XProtect Smart Client Plugin **Advanced Filter Settings** menu option. This will display the Advanced Filter Settings Section in the user interface. (Figure 121)

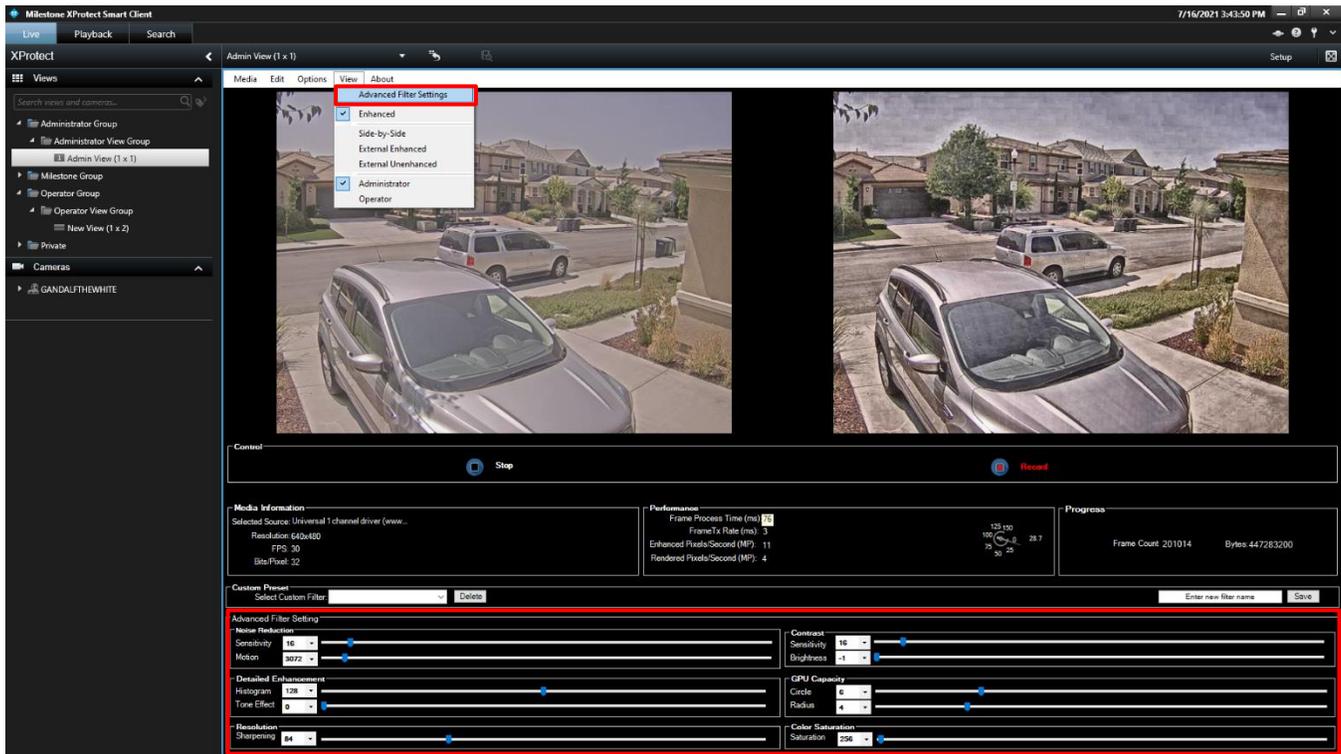


Figure 121

4.6.2 Enhanced View

The ProHawk Vision Milestone XProtect Smart Client Plugin **View** menu, **Enhanced View** menu option is turned **ON** by default. (Figure 122) The **Enhanced View** menu option toggles the ProHawk Vision restoration filter **ON** and **OFF**. Click on the **Enhanced View** menu option to select restoration.

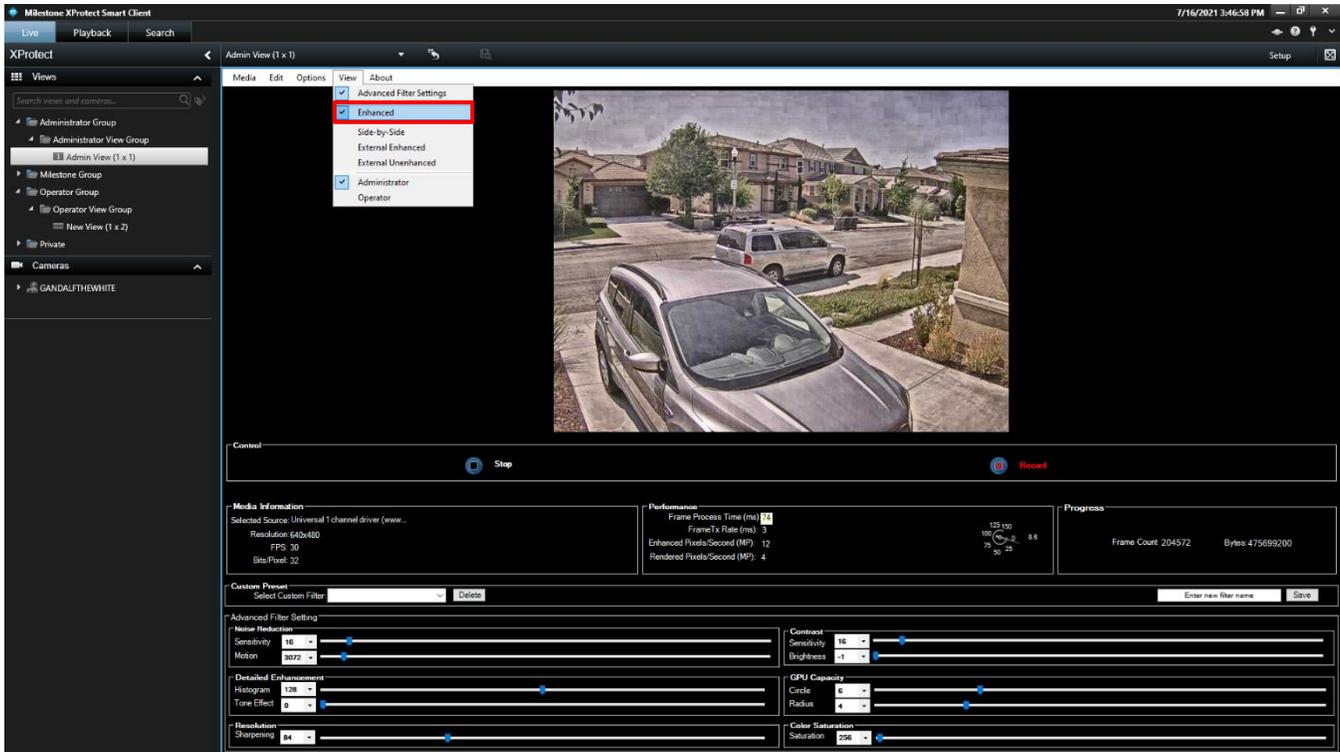


Figure 122

4.6.3 Side-by-Side View

The ProHawk Vision Milestone XProtect Smart Client Plugin **View** menu **Side-by-Side View** menu option is turned **OFF** by default. (Figure 123) The **Side-by-Side View** menu option toggles the ProHawk Vision user interface display between one video, and a side-by-side videos. Click on the **View** menu, **Side-by-Side** menu choice to toggle the display.

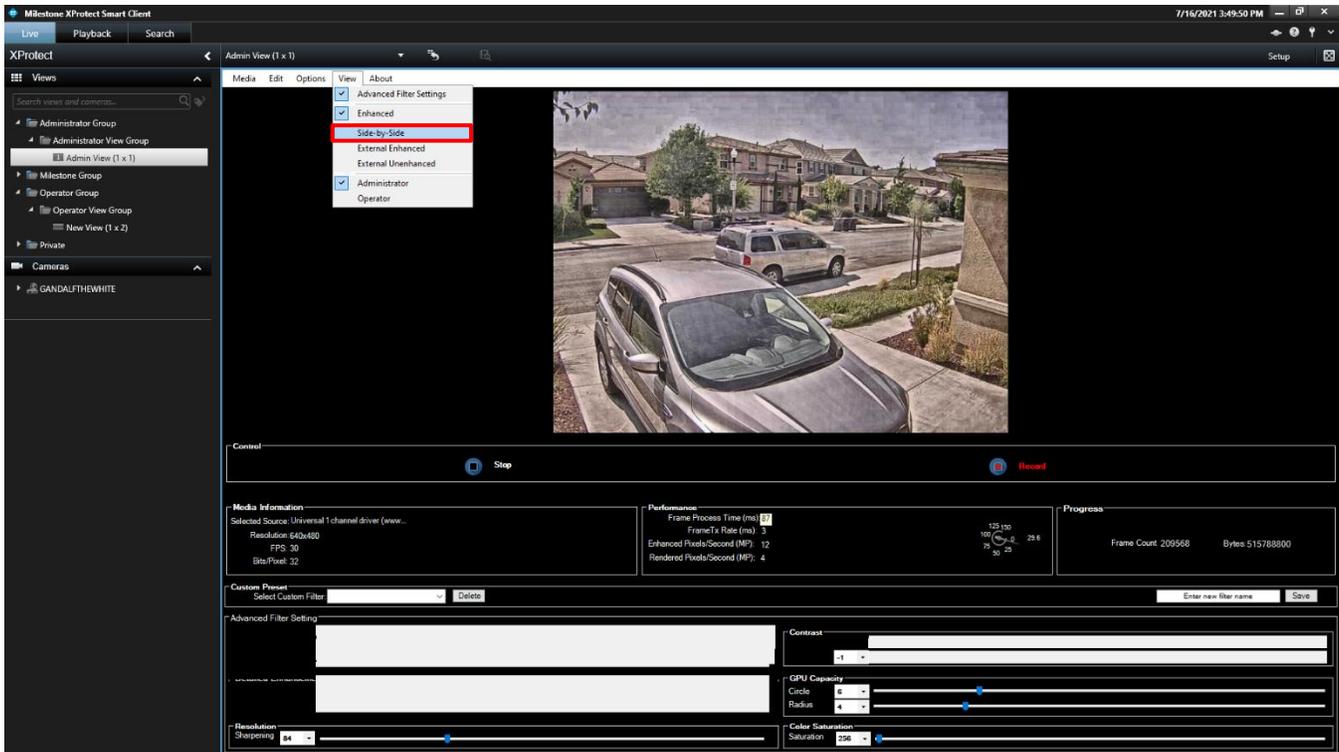


Figure 123

When the ProHawk Vision Milestone XProtect Smart Client Plugin

Side-by-Side View menu option is selected, it will toggle the **Enhanced View** menu option **OFF**, as the **Side-by-Side View** menu option display both the original and enhanced streams together. ProHawk Vision will simultaneously display both the original (source) stream on the left and the restored (enhanced) stream on the right. The example below shows how the user interface displays the imagery side-by-side. (Figure 124)

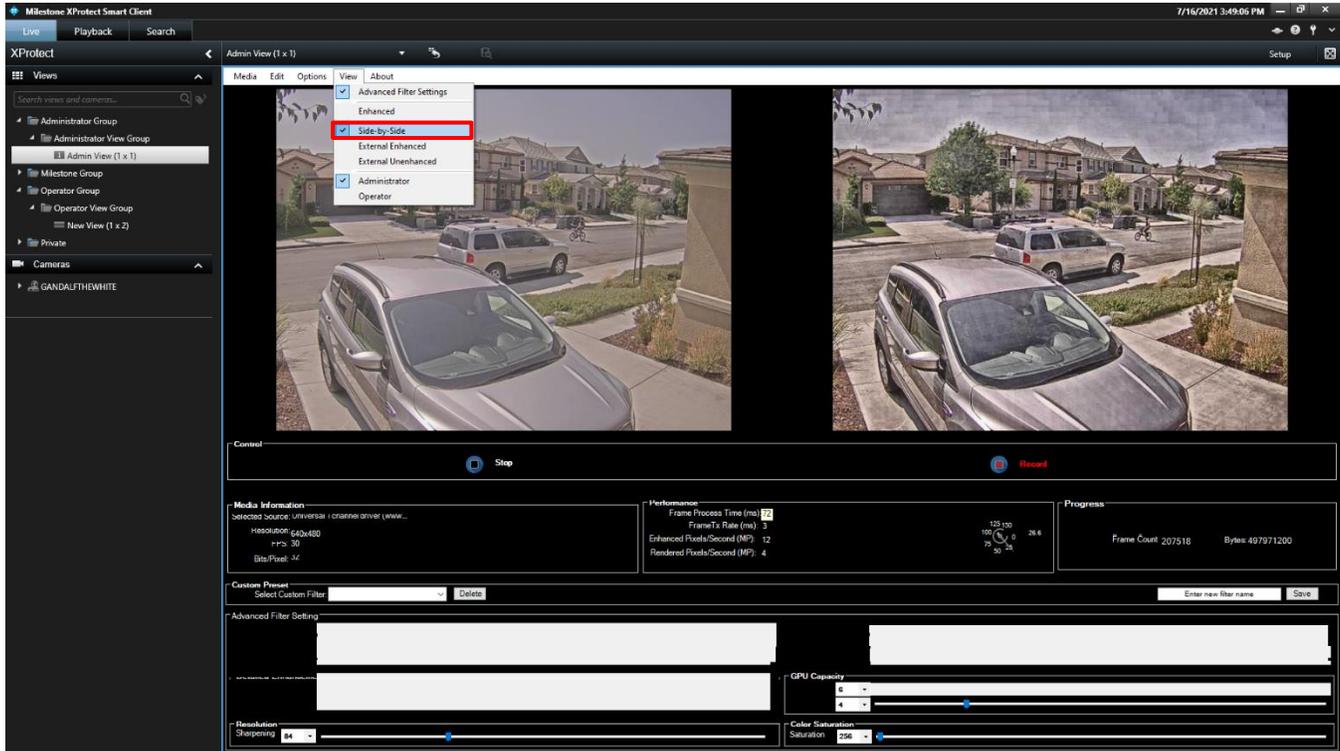


Figure 124

4.6.4 External Enhanced View

ProHawk Vision Milestone XProtect Smart Client Plugin provides the **External Enhanced View**, **View** menu option, to open a separate window with only that ProHawk Vision enhanced imagery displayed. *Click on the External Enhanced View, View* menu option. This will allow you to view a ProHawk Vision enhanced video stream in full screen mode. (Figure 125)

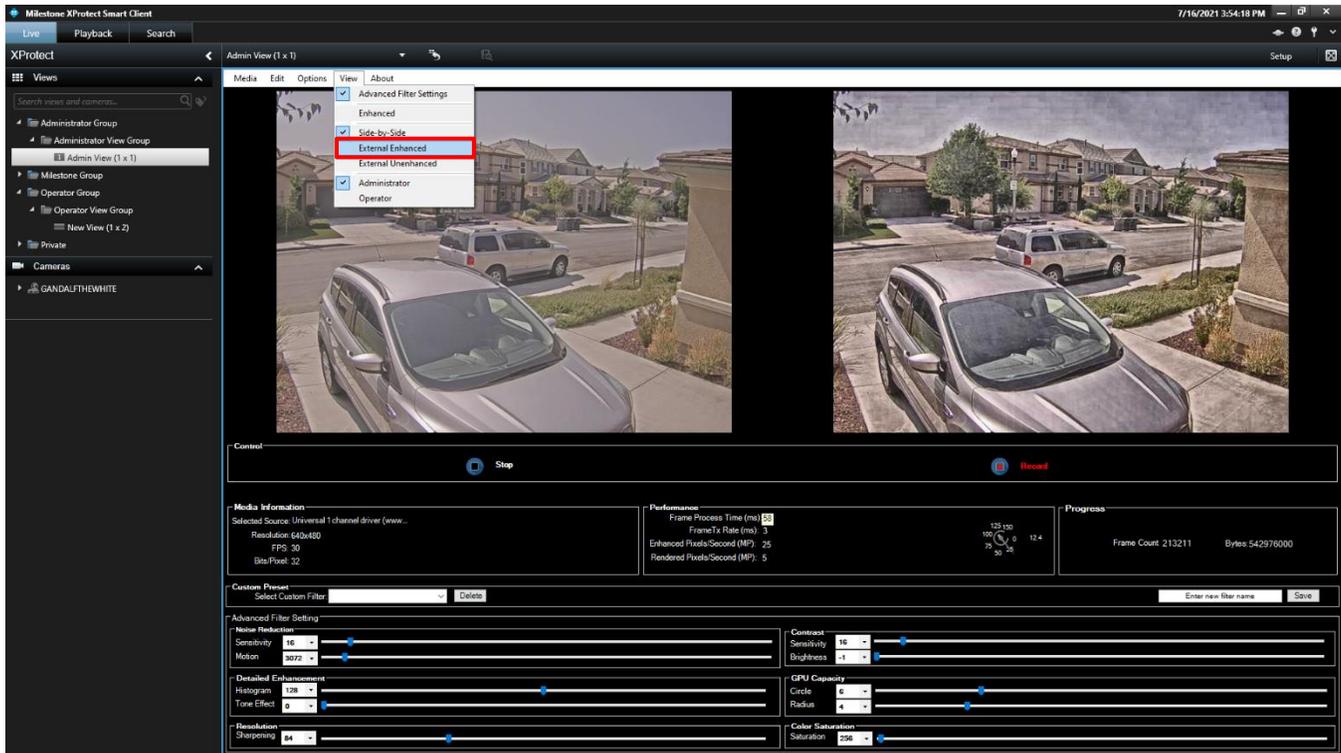


Figure 125

ProHawk Vision Milestone XProtect Smart Client Plugin opens the **External Enhanced View** separate window with only the ProHawk Vision enhanced live video stream being displayed. (Figure 126)



Figure 126

4.6.5 External Unenhanced View

ProHawk Vision Milestone XProtect Smart Client Plugin provides the **External Unenhanced View, View** menu option, to open a separate window with only that native original imagery displayed. *Click on the External Unenhanced View, View* menu option. This will allow you to view a ProHawk Vision original video stream in full screen mode. (Figure 127)

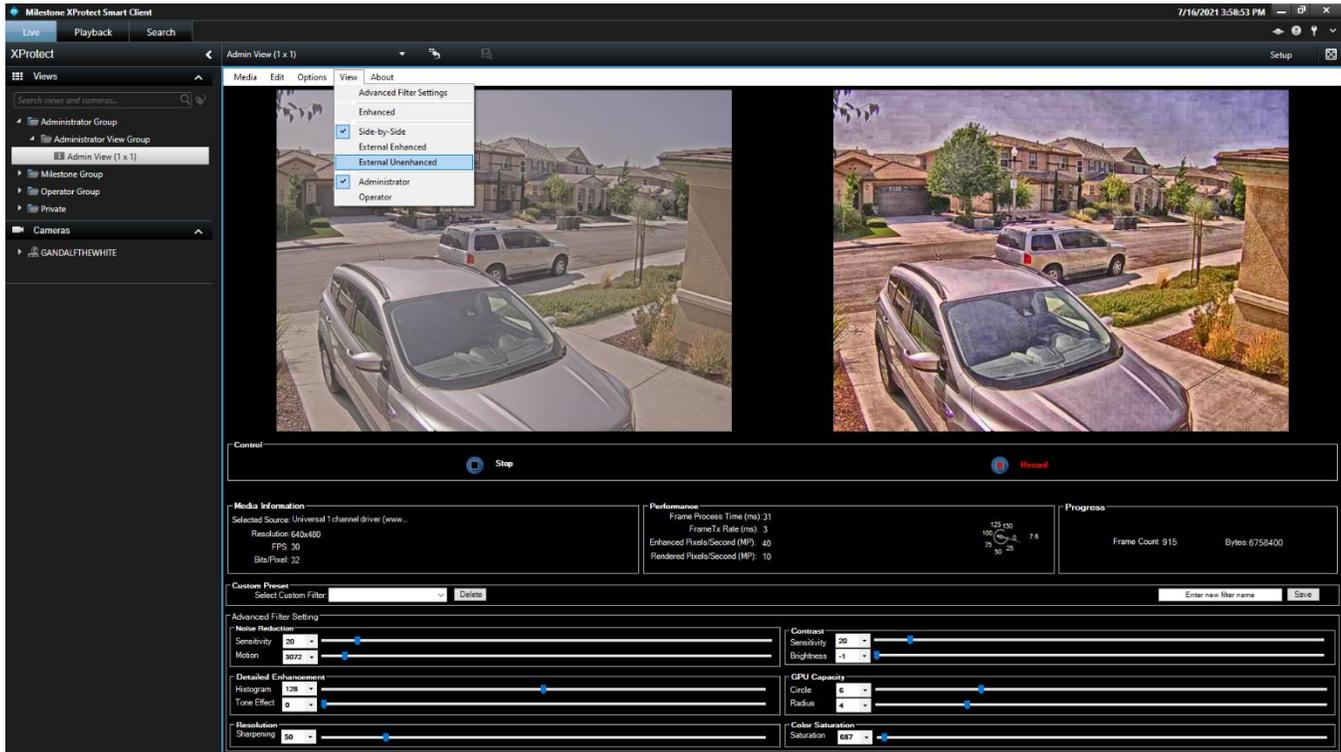


Figure 127

ProHawk Vision Milestone XProtect Smart Client Plugin opens the **External Unenhanced View** separate window with only the original live video stream being displayed. (Figure 128)

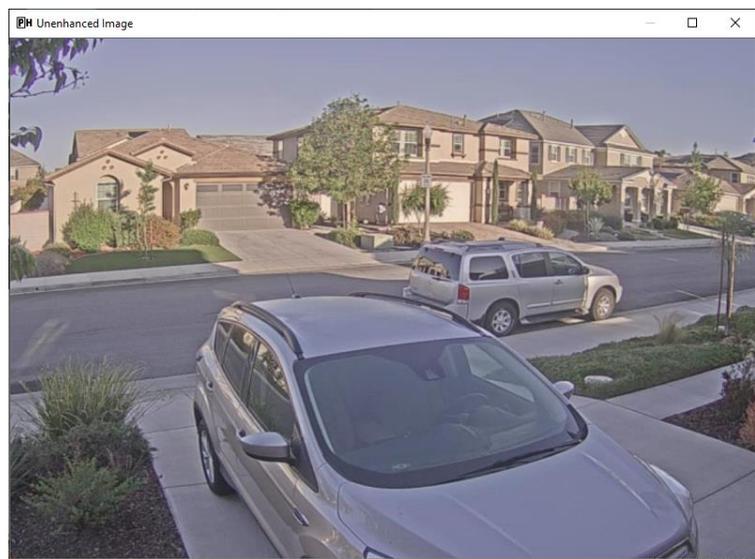


Figure 128

4.7 Administrator View

The Administrator View in the ProHawk Vision Milestone XProtect Smart Client Plugin is designed for the network administrator. It contains additional capabilities, features, and functions that are not available in the Operator View. (Figure 129) The Administrator View provides these additional capabilities:

- Control Section – Stop & Record Controls
- Media Information Section – Metadata Fields from the Media
- Performance Section – ProHawk Vision Engine Performance Measurements
- Progress Section – Frame & Bytes Counts
- Custom Preset Section – Save & Delete Custom Preset Conditions
- Advanced Filter Setting Section – Restoration Detailed Parameter Controls

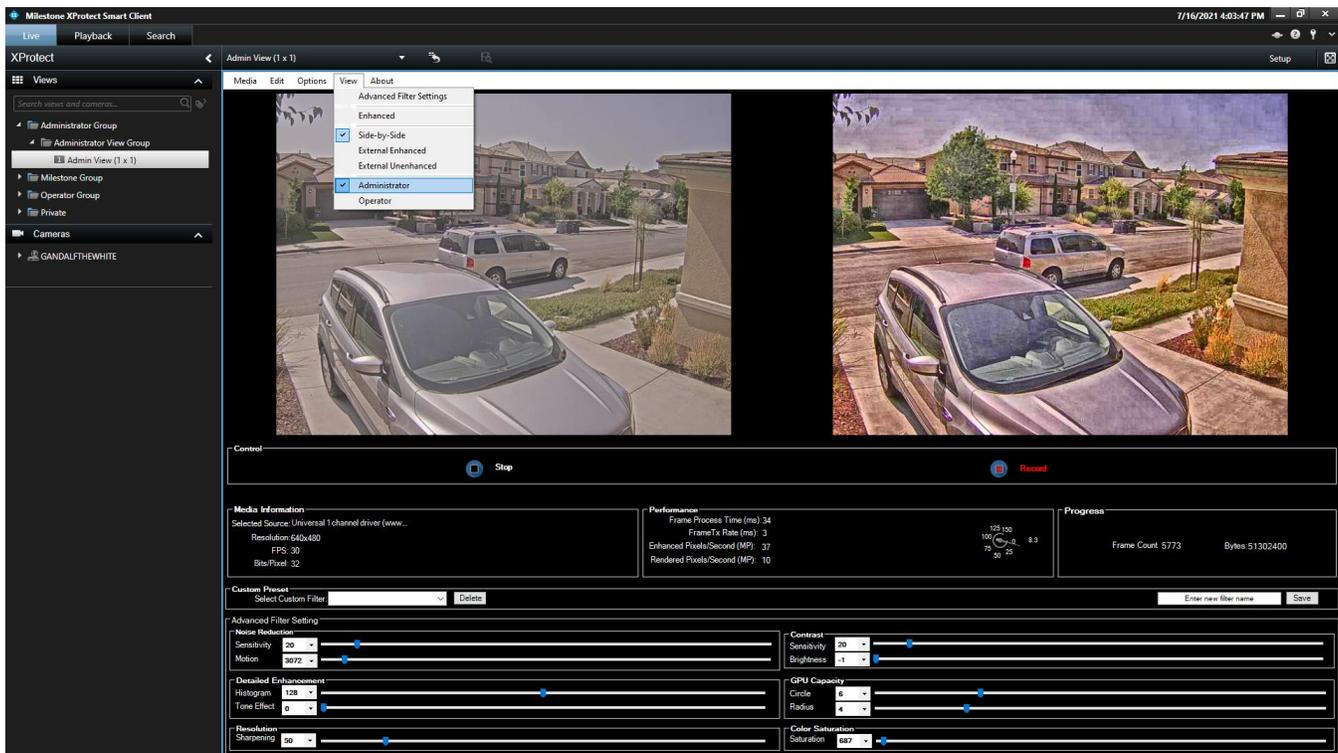


Figure 129

4.8 Operator View

The Operator View in the ProHawk Vision Milestone XProtect Smart Client Plugin is designed for the Milestone Operator. It contains only capabilities designed for an Operator to use to eliminate screen clutter and keep as much display available for the video window. (Figure 130) The Operator View provides these capabilities:

- Menu Bar – Media, Edit, Options, View, & About
- Restored or Side-by-Side Video Windows

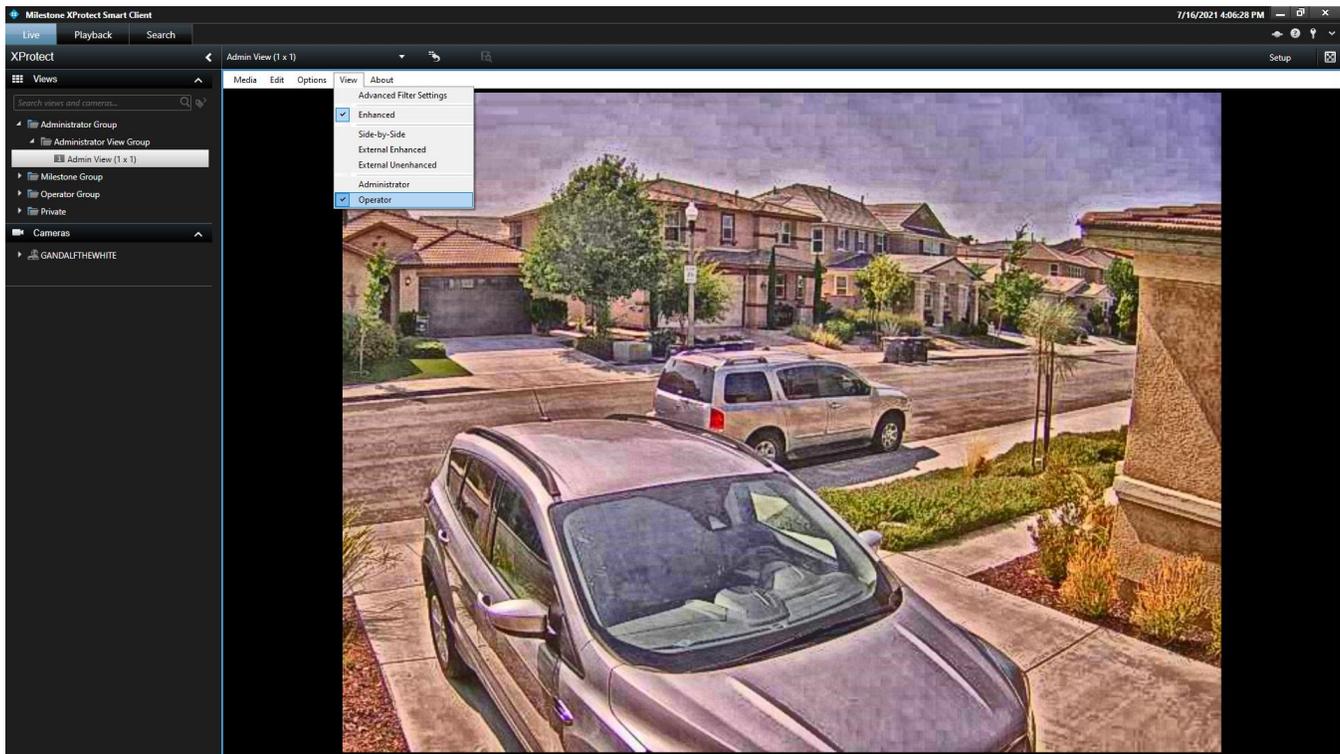


Figure 8

4.9 About Menu

The ProHawk Vision Milestone XProtect Smart Client Plugin application provides an **About** menu that provides access to license key information. The **license key** information that is displayed in the dialog box is the expiration date of the license. (Figure 131)

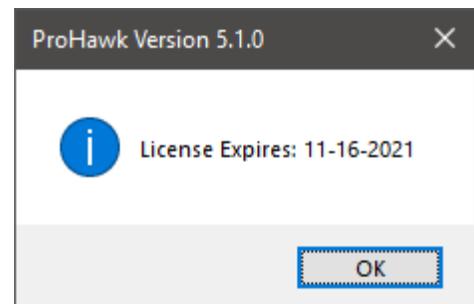


Figure 131