



Installation Guide

Corvo Identify - Milestone XProtect Integration

Version: 1.0

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Prepared By: Nevalabs Software and Information Technologies Inc.

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1. Overview

1.1 Components

The Nevalabs® Corvo Identify® and Milestone XProtect® integration mainly includes face recognition and video management software.

Main Components of Corvo Identify - XProtect Integration

- Nevalabs Corvo Identify - Ubuntu 16.04 (English)
- Milestone XProtect VMS - Windows 10

1.2 Architecture

The Corvo Identify integration has been performed using *XProtect Protocol Integration* and *Plug-in Integration* architectures.

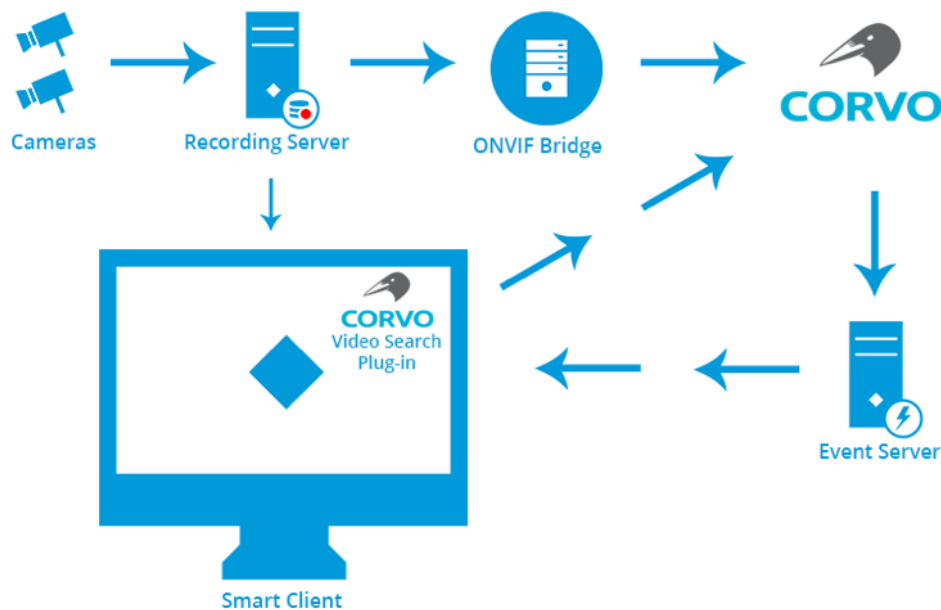


Figure 1: Corvo Identify - XProtect integration scheme

1.3 Corvo Identify

Corvo Identify, that is integrated with XProtect VMS, is a deep learning-based centralized face recognition and alarm management software developed by Nevalabs. Corvo Identify includes functions such as subject card creation, bulk import operations, suspect investigation through

photos and archived videos, real-time alarm generation from cameras, and search from face detections, etc.

Corvo Identify Product Features:

- Easy to use and maintain web-based thin client
- Responsive and intuitive design
- Central management
- Monitoring operations from the dashboard
- Creating an album involving multiple photos of a subject (person)
- Bulk import operations
- Searching persons of interest from watch lists
- Searching for suspects from the face detection history
- Suspect investigation from still images and archived videos
- Smart alarm dispatch
- Real-time on screen alerts via cameras
- Easy alarm verification and instant notifications
- Camera and server management
- ONVIF Profile S compatibility
- Automatic camera discovery
- ATM (At The Moment) error notifications
- Automatic disk cleanup
- Audit logs
- Reporting
- User, role and group-based authorization
- LDAP integration
- Load balancing and failover



It should be installed before plug-in installation so that Corvo Identify may run in XProtect. Please contact Nevalabs team for the Corvo Identify installation.

1.4 Required Versions

Corvo Identify and XProtect versions required for the integration are listed in below.

Corvo Identify Versions:

- Corvo Identify 4.5.2 and later versions

XProtect Versions:

- XProtect Essential+
- XProtect Professional+
- XProtect Expert

1.5 Corvo Identify Configuration

To activate the integration, the parameters listed as follows should be filled in the Corvo Identify configuration file (.env) located /opt/corvo-dev-env on the server where Corvo Identify is installed.

Required parameters for Corvo Identify integration:

- *MIP_IP*: XProtect server IP address
- *MIP_USERNAME*: User name (Windows Authentication) to connect to XProtect
- *MIP_PASSWORD*: User password (Windows Authentication) to connect to XProtect

Parameters required for alarm integration:

- *MIP_ANALYTICS_EVENT_PORT*: Port number to be used for sending alarms to XProtect (Default: 9090)
- *MIP_ALARM_INTEGRATION_ENABLED*: **True** to activate alarm integration; **false** to disable it
- *MIP_FACE_FRAMING_ENABLED*: In XProtect, **True** to mark the face of a person for whom an alarm is generated with frame on alarm video; **false** to disable marking

Parameters required for video search integration:

- *MIP_CORVO_USERNAME*: User name of the Corvo Identify user, which is authorized to search videos in Corvo Identify
- *MIP_MAX_EXPORT_DURATION*: Setting the maximum duration for video exports

Parameters required for camera integration:

- *MIP_CAMERA_INTEGRATION_ENABLED*: **True** to activate the camera integration; **false** to disable it
- *MIP_ONVIF_HOST*: ONVIF Bridge server IP address
- *MIP_ONVIF_RTSP_PORT*: ONVIF Bridge RTSP port number (Default: 554)
- *MIP_ONVIF_USERNAME*: 'Basicuser' username created for ONVIF Bridge
- *MIP_ONVIF_PASSWORD*: 'Basicuser' user password created for ONVIF Bridge

2. XProtect - Corvo Identify Plug-in

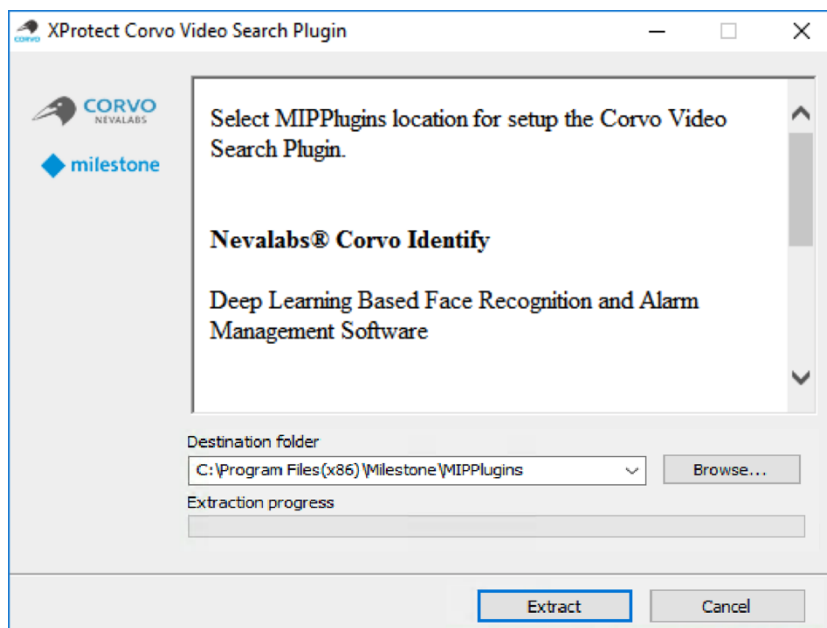
2.1 Technologies Used

XProtect Plug-in Integration structure has been used to create a Corvo Identify plug-in. Using the *CefSharp* library, it has been run in *Chromium* based browser plug-in and the Corvo Identify screen has been displayed.

2.2 Plug-in Installation

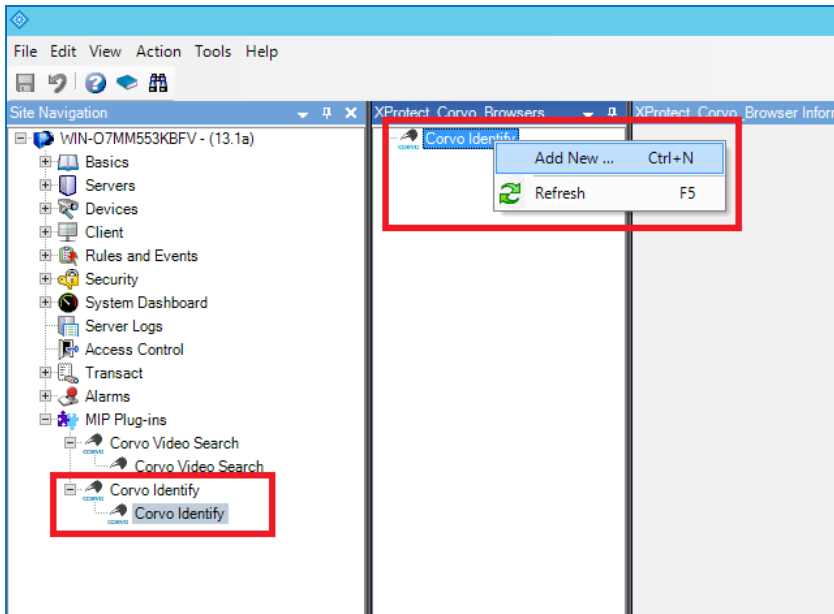
The following are the steps to be followed for the Corvo Identify plug-in installation:

- Run the 'XProtect - Corvo Identify Plug-in' setup file.
- Select the Milestone XProtect plug-in location. (*Default plug-in location: C:\Program Files (x86)\Milestone\MIPPlugins*)

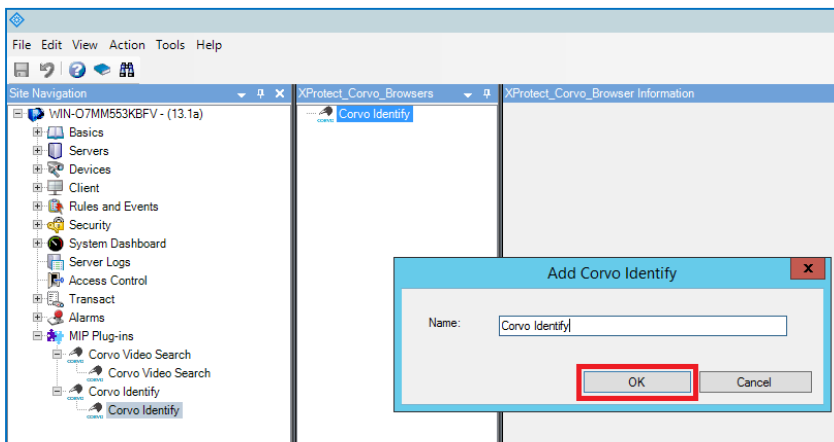


- Click the 'Extract' button.
- Open the 'XProtect Management Client' software.
- Open the 'MIP Plug-ins > Corvo Identify > Corvo Identify' menu in the left-hand menu.

- Right-click 'Corvo Identify' item and click the 'Add New...' option.



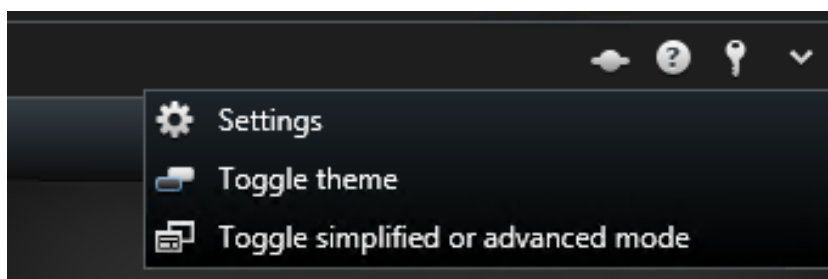
- Type the name of the plug-in you want to appear in the Smart Client software and click the 'OK' button.



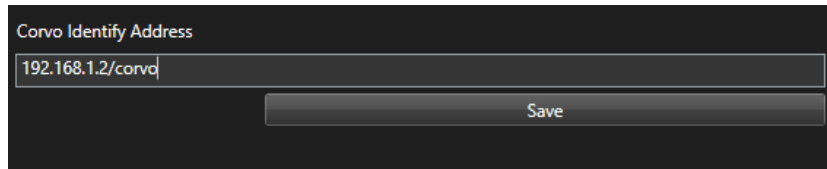
2.3 Configuring the Plug-in

The steps to configure the Corvo Identify plug-in are listed as follows:

- Open the 'XProtect Smart Client' software.



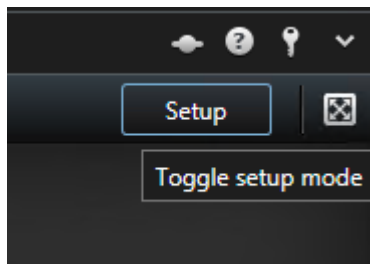
- Open the 'Settings' window from the 'Live' tab.
- Click on the 'Corvo Identify' option from the left-hand menu and open the Corvo Identify plug-in configuration menu.
- Enter the Corvo Identify address and click the 'Save' button.



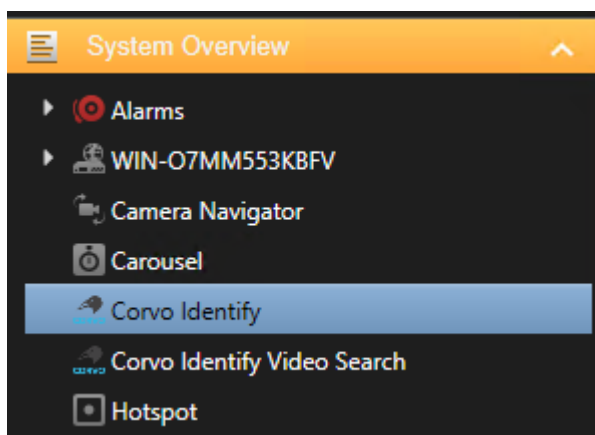
2.4 Running the Plug-in

The steps to run the Corvo Identify plug-in are listed as follows:

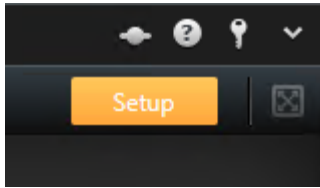
- Open the 'XProtect Smart Client' software.
- Click the 'Setup' button on the 'Live' tab.



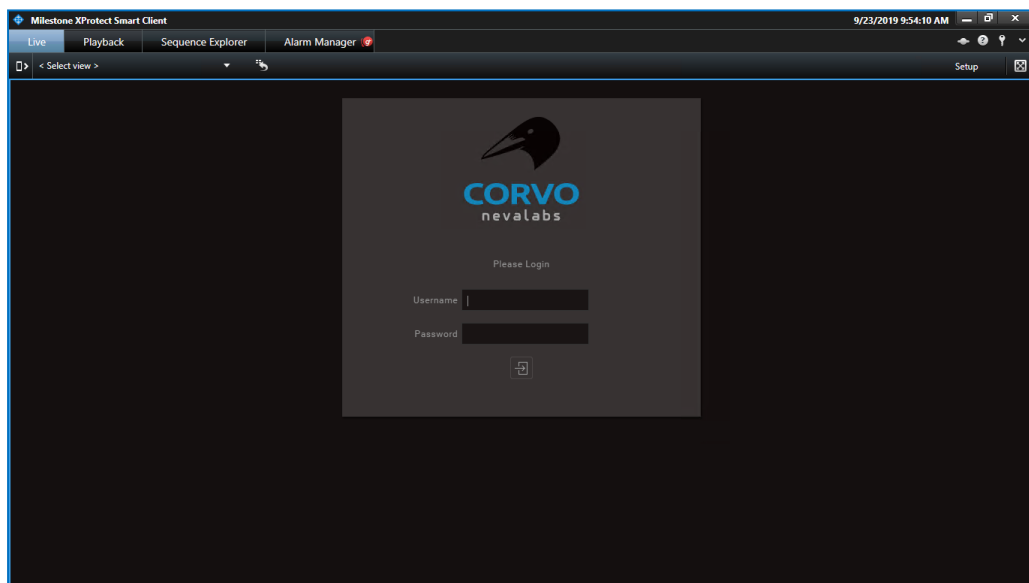
- Select Corvo Identify plug-in from the 'System Overview' menu on the left-hand side and drag it to the window you want to run.



- Close the configuration view by clicking the 'Setup' button again.



- When Corvo Identify is started, the user login screen will open; you will be prompted to login with your username and password. You can contact your system administrator in order to connect to the Corvo Identify system.



3. Alarm Integration

Corvo Identify - XProtect alarm integration enables monitoring of real-time face recognition alarms from cameras via XProtect.

3.1 Technologies Used

In the alarm integration, the *XProtect Protocol Integration* structure has been used.

Face recognition alarms generated in Corvo Identify are sent to XProtect via *Event Server* in *Analytics Event* structure with the protocol integration. Face recognition alarms sent to XProtect are listed under the *Alarm Manager* tab on the *XProtect Smart Client* software.

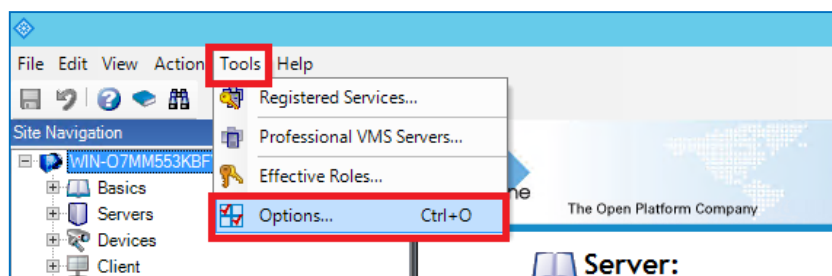
The person for whom an alarm is generated is marked with *Bounding Box* on the alarm video of the alarm instance in the alarm detail. Recognized face, subject photo and a snapshot of the alarm instance are sent to XProtect with *Snapshot* structure and these images are displayed in the alarm detail.

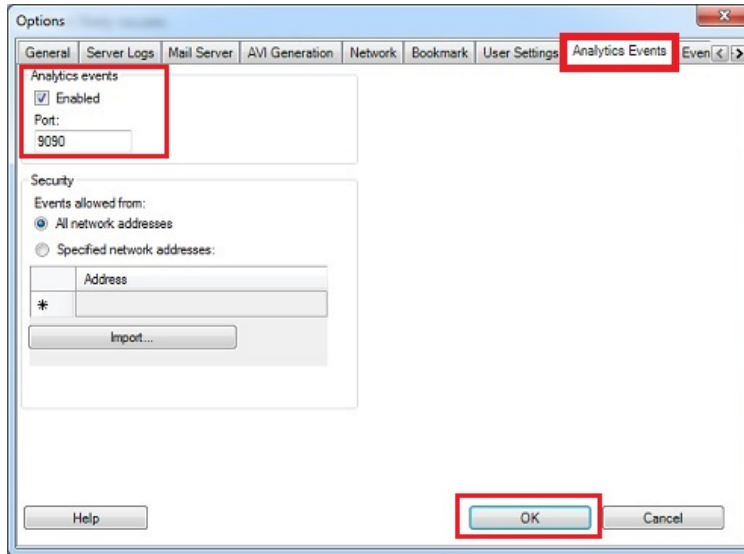
Note: In order to run Alarm Integration correctly, the machine on which XProtect is running and the time servers of the machine on which Corvo Identify is running should be synchronized with NTP.

3.2 Integration Installation

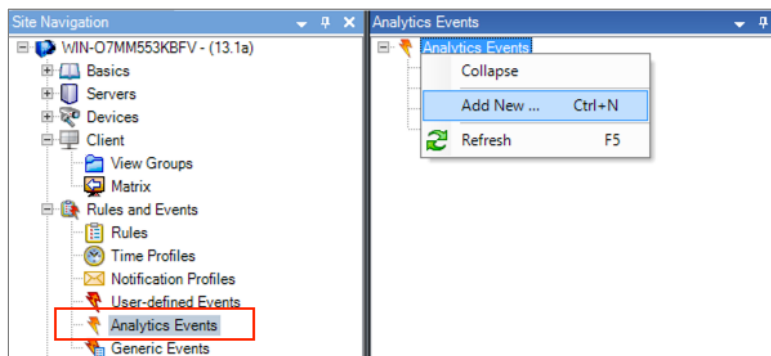
The steps required to install Corvo Identify alarm integration are listed below:

- Open the 'XProtect Management Client' software.
- Open the 'Tools > Options' menu at the top.

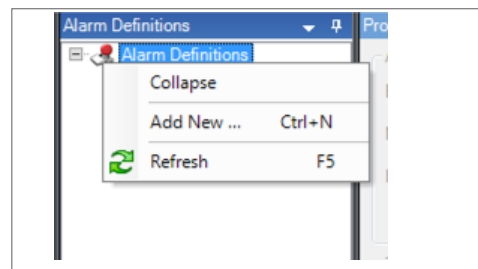
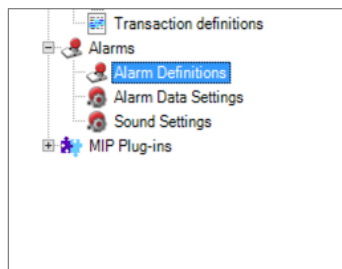




- Open the 'AnalyticsEvents' tab. Select 'Enabled' option and click the 'OK' button.
- Open the 'Rules and Events > Analytics Events' menu on the left.
- Right-click 'Analytics Events' item and click the 'Add New...' button.

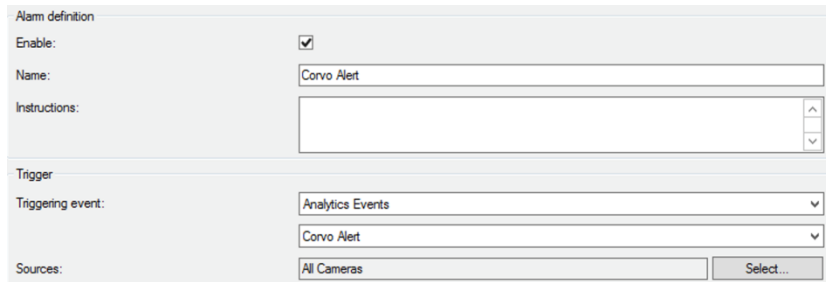


- Type 'Corvo Alert' in the 'Name' text field for the new event.
- Open the 'Alarms > Alarm Definitions' menu on the left.
- Right-click 'Alarm Definitions' item and click the 'Add New...' button.



- Set the new alarm definition as follows:
 - *Enable*: Marked

- Triggering event:
 - Analytics Events
 - Corvo Alert
- Timeprofile: Always
- Sources: Select from which cameras the generated alarms should be sent to XProtect. Select 'All Cameras' item to send all the alarms generated by Corvo Identify to XProtect.



Alarm definition

Enable:

Name: Corvo Alert

Instructions:

Trigger

Triggering event: Analytics Events

Corvo Alert

Sources: All Cameras

3.3 Selecting Cameras for Face Recognition

Cameras for face recognition should be defined in Corvo Identify. The Corvo Identify plug-in should be used to add cameras to the Corvo Identify system.

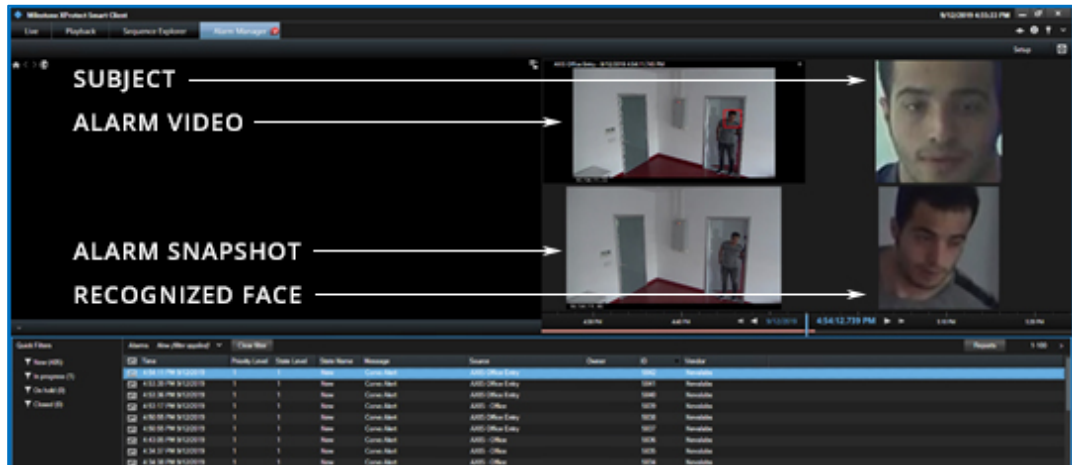
When an alarm is generated by Corvo Identify, the alarm will be sent to XProtect if the camera where the alarm was generated is also defined in the XProtect system. If the camera from which the alarm is generated is not defined in the XProtect system, then the alarms can only be observed via the Corvo Identify system.

3.4 Viewing Alarms

The steps listed as follows are required to observe the face recognition alarms via XProtect by using the Corvo Identify alarm integration:

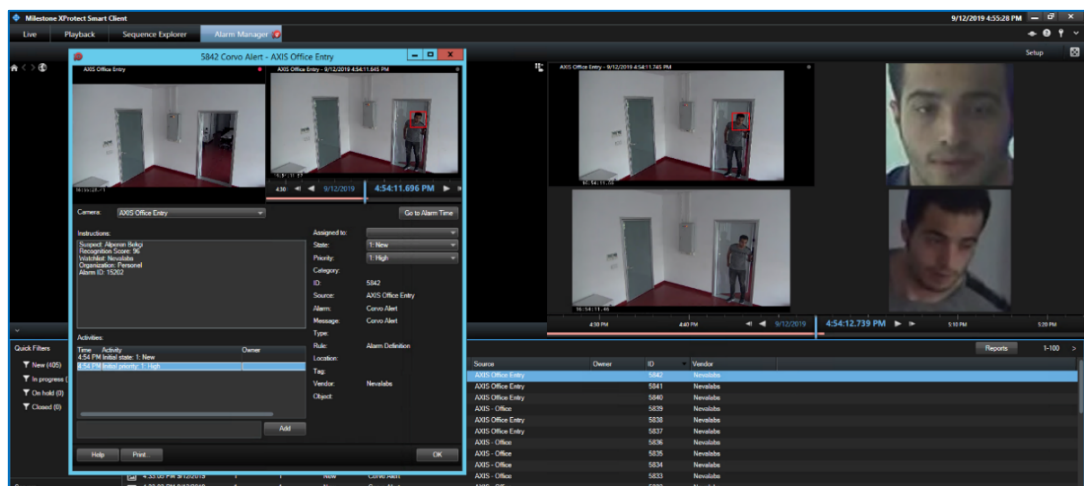
- Open the 'XProtect Smart Client' software.
- Open the 'Alarm Manager' tab. Alarms are listed in the alarm list at the bottom with the message 'Corvo Alert'.

Note: Only alarms generated from cameras connected to both Corvo Identify and XProtect are listed here.



- Click once on the alarm to view the alarm snapshot, the face image of the recognized person and the photo of the subject.

Note: If the Corvo camera integration is activated and the camera streams are received via VMS, then the person for whom the alarm is generated is marked with a frame on the alarm video.
- Double click on the alarm you want to see its details.
- Click the 'Go to Alarm Time' button to view the video recording of the alarm instance.



- 'Acknowledge', 'Set on hold' and 'Close' in the alarm list are alarm conditions that can be selected in XProtect. Alarm verification processes should be done through Corvo Identify.

Note: The alarm conditions selected in XProtect have no effect on Corvo Identify.
- The Corvo Identify plug-in should be used to examine, verify or reject alarms in more detail.

4. Video Search Integration

Thanks to the integration of XProtect - Corvo Identify video search, face recognition can be made from the archived videos and the generated alarms can be observed via XProtect.

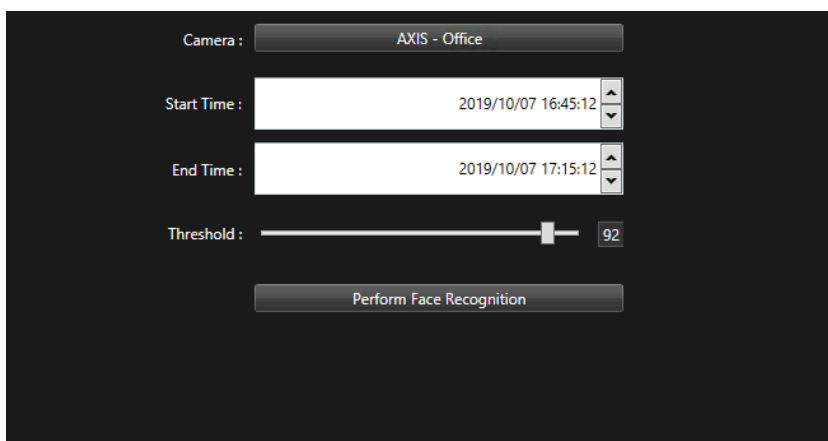


Figure 2: Face recognition from the archived video

Note: In order to run Video Search Integration correctly, the machine on which XProtect is running and the time servers of the machine on which Corvo Identify is running should be synchronized with NTP.

4.1 Technologies Used

In Video Search Integration, *XProtect Protocol Integration* and *XProtect Plug-in Integration* structures have been used.

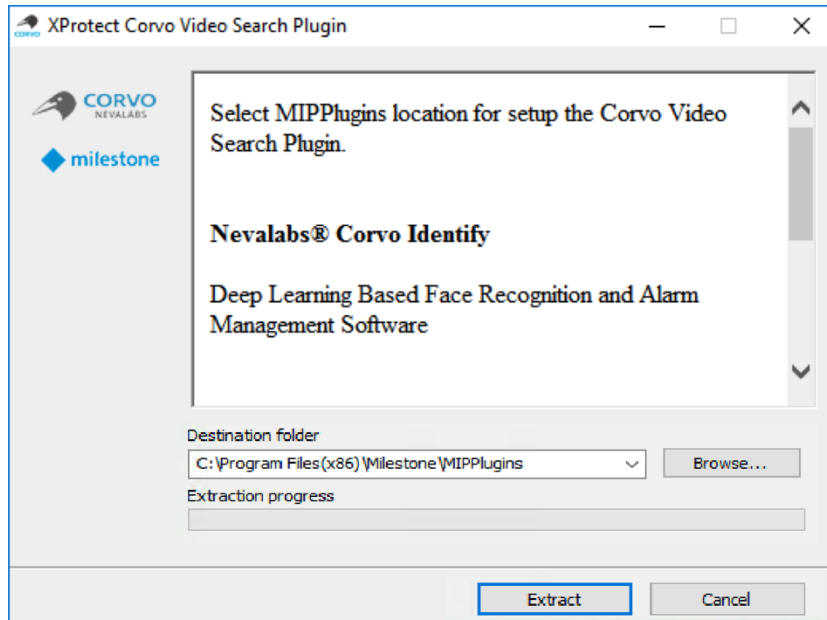
Corvo Identify Video Search plug-in runs in the *XProtect Smart Client* software. Using the *Exporter* tool in the *Video OS* library, the video record of the desired range is exported and sent to Corvo Identify. Corvo Identify performs face recognition on the exported video. Alarms are sent to XProtect via *Event Server* with protocol integration in the *AnalyticsEvent* structure.

Face recognition alarms sent to XProtect are listed under the *Alarm Manager* tab on the *XProtect Smart Client* software. Recognized face, subject photo and the alarm snapshot are sent to XProtect with *Snapshot* structure and these images are displayed in the alarm detail.

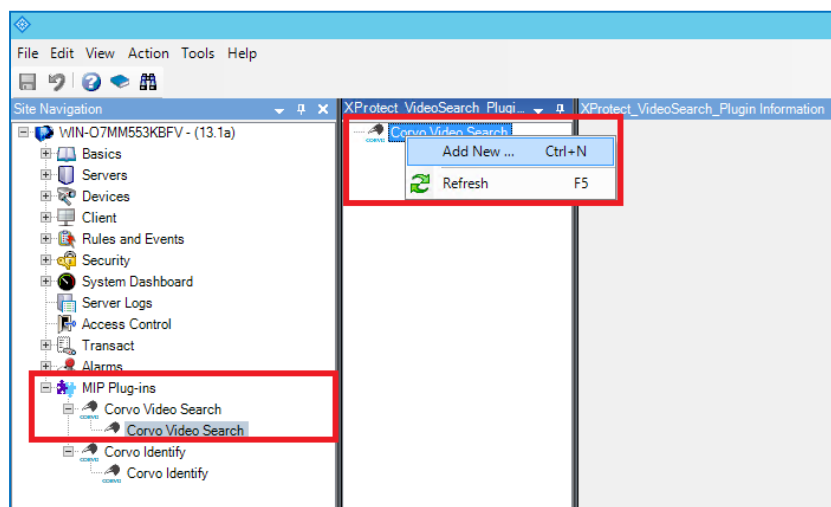
4.2 Plug-in Installation

The steps to be followed for the installation of the face search integration through the archived video are listed as follows:

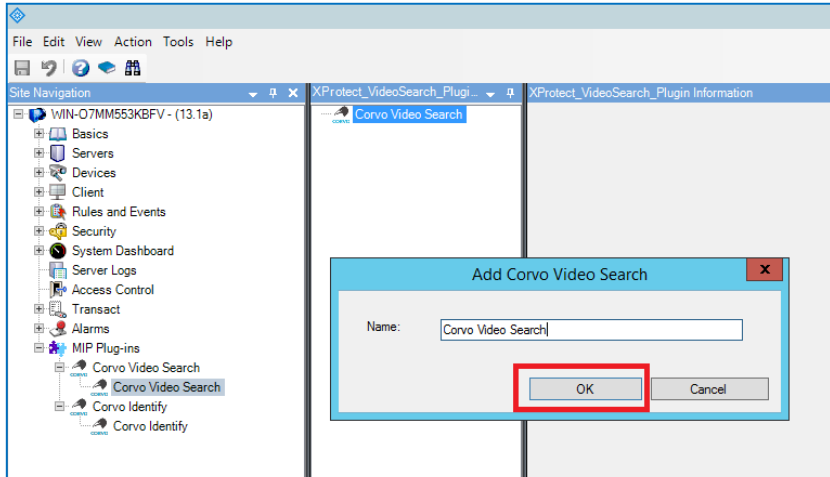
- Run the 'XProtect Corvo Video Search Plug-in' setup file.
- Select the Milestone XProtect plug-in location. (Default plug-in location: C:\Program Files (x86)\Milestone\MIPPlugins)
- Click the 'Extract' button.



- Open the 'XProtect Management Client' software.
- Open the 'MIP Plug-ins > Corvo Video Search > Corvo Video Search' menu in the left-hand menu.
- Right-click 'Corvo Video Search' item and click the 'Add New...' option.



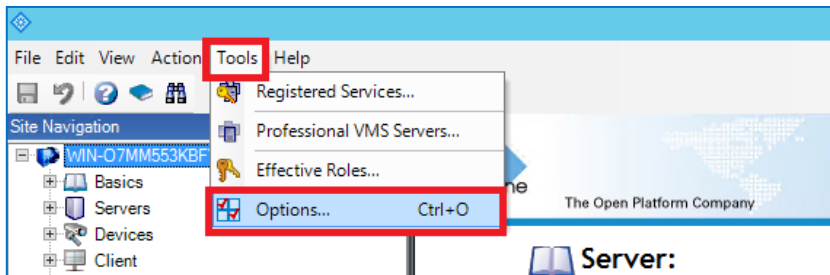
- Type the name of the plug-in you want to appear in the Smart Client software and click the 'OK' button.



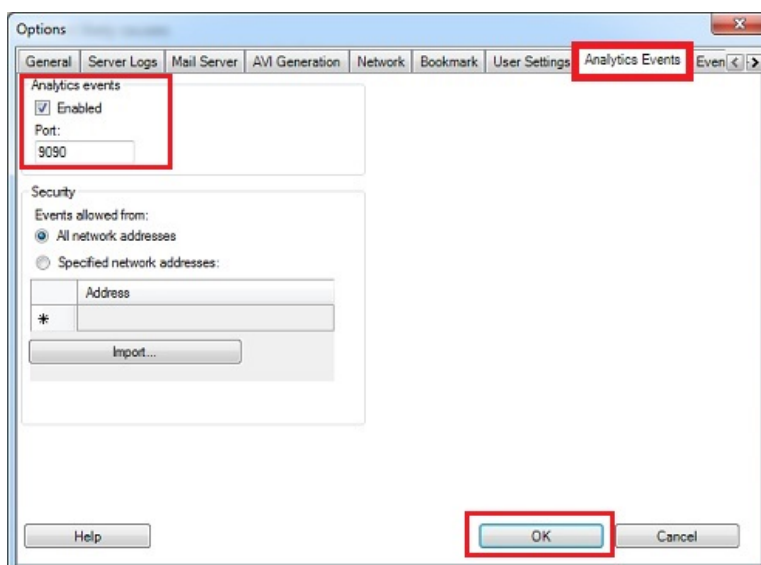
4.3 Integration Installation

The steps to be followed for the archived video search integration are listed as follows:

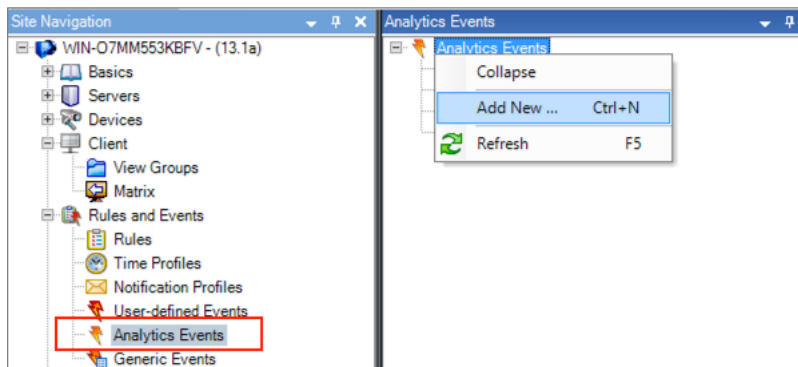
- Open the 'XProtect Management Client' software.
- Open the 'Tools > Options' menu at the top.



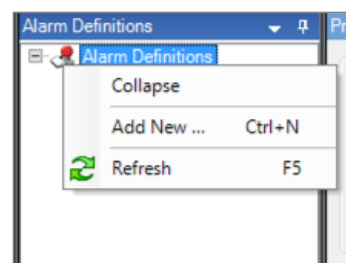
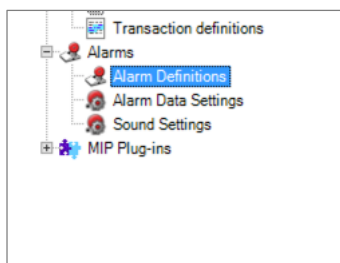
- Open the 'AnalyticsEvents' tab. Select 'Enabled' option and click the 'OK' button.



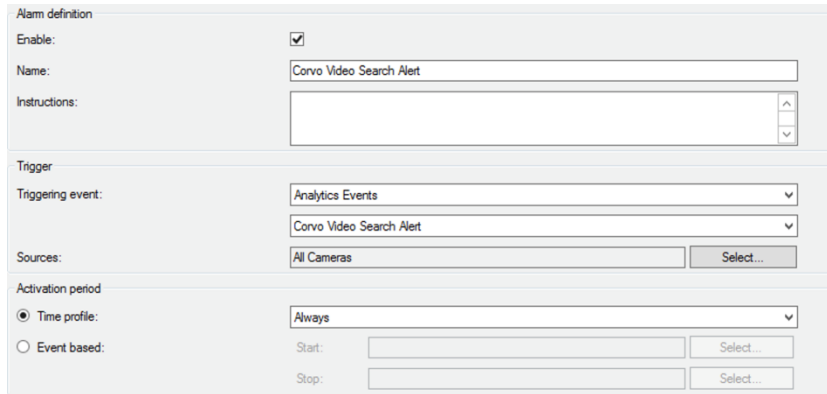
- Open the 'Rules and Events > Analytics Events' menu on the left.
- Right-click 'Analytics Events' item and click the 'Add New...' button.



- Type 'Corvo Video Search Alert' in the 'Name' text field for the new event.
- Right-click 'Analytics Events' item again and click the 'Add New...' button. Then add two more events named "Corvo Video Search completed" and "Corvo Video Search Failed".
- Open the 'Alarms > Alarm Definitions' menu on the left.
- Right-click 'Alarm Definitions' item and click the 'Add New...' button.



- Set the new alarm definition as follows:
 - *Enable*: Marked
 - *Triggeringevent*:
 - Analytics Events
 - Corvo Video Search Alert
 - *Sources*: All Cameras
 - *Timeprofile*: Always

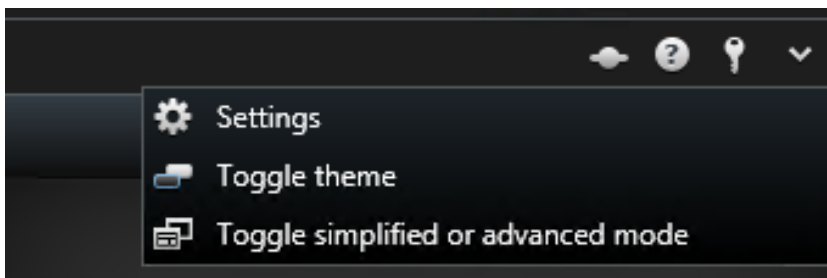


- Right-click 'Alarm Definitions' again and click the 'Add New...' button. Create an alarm definition for “Corvo Video Search Completed” and “Corvo Video Search Failed” Analytics Events by doing the same actions.

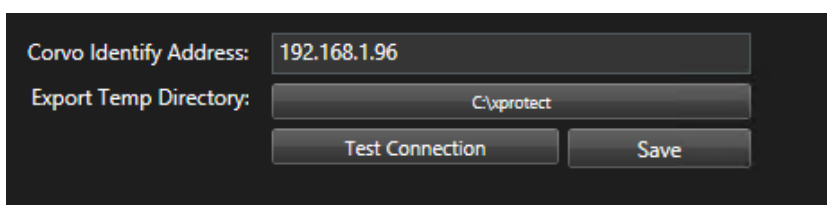
4.4 Configuring the Plug-in

The steps to be followed for configuration of the Corvo Identify plug-in are listed as follows:

- Open the 'XProtect Smart Client' software.
- Open the 'Settings' window from the 'Live' tab.



- Click on the 'Corvo Identify Video Search' option from the left-hand menu and open the Corvo Identify Video Search plug-in configuration menu.
- Type the Corvo Identify address and select the location where the archived videos will be exported.

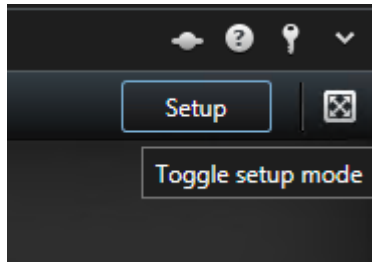


- Click the 'Save' button.

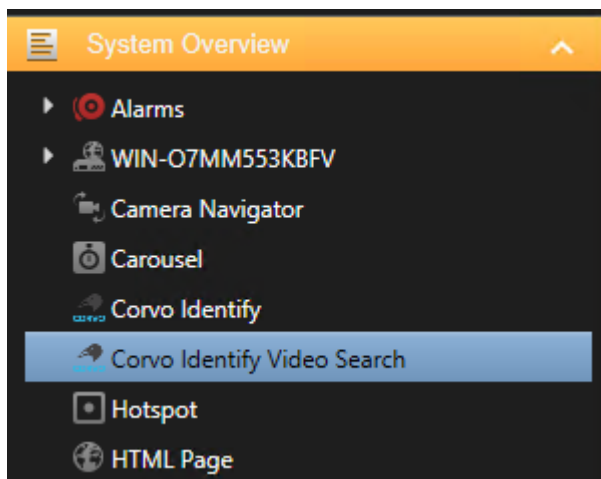
4.5 Running the Plug-in

The steps to run the Corvo Identify plug-in are listed as follows:

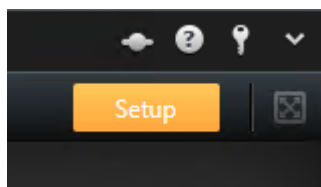
- Open the 'XProtect Smart Client' software.
- Click the 'Setup' button on the 'Live' tab.



- Select the Corvo Identify Video Search plug-in through the 'System Overview' menu on the left and drag the plug-in to the window where you want to run it.



- Close the configuration view by clicking the 'Setup' button again.



5. Camera Integration

XProtect - Corvo Identify camera integration enables face recognition processes by Corvo Identify and optimizes network traffic by utilizing XProtect video management software instead of using the camera directly as a video source.

Note: The resolution and FPS settings of the streams used for live and record from the XProtect camera settings should be the same so that the face for which an alarm is generated may properly be marked on the alarm video in the alarms sent to XProtect via the alarm and video search integrations.

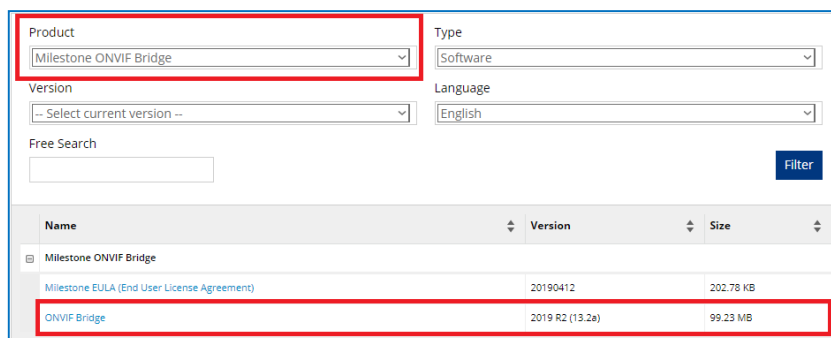
5.1 Technologies Used

In the camera integration, the *XProtect Protocol Integration* structure and the *XProtect ONVIF Bridge* software have been used.

In the camera integration, the ID information of the cameras is accessed via the *Image Server* protocol. An RTSP stream address suitable for the *XProtect ONVIF Bridge* software is created and the camera streams are accessed via *XProtect ONVIF Bridge*.

5.2 Installing Milestone ONVIF Bridge Product

- Open the download page of the Milestone Systems website (<https://www.milestonesys.com/support/resources/download-software/>) and find the Milestone ONVIF Bridge product.
- Click the ONVIF Bridge installation file and download the setup file.



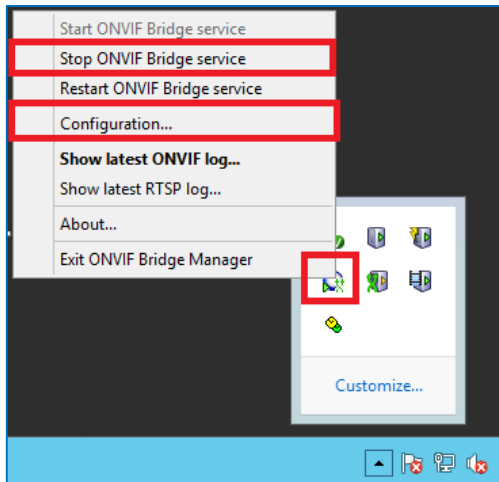
The screenshot shows a web interface for downloading software. It features several dropdown menus for filtering: 'Product' (set to 'Milestone ONVIF Bridge'), 'Type' (set to 'Software'), 'Version' (set to '-- Select current version --'), and 'Language' (set to 'English'). There is a 'Free Search' input field and a 'Filter' button. Below the filters is a table with columns for 'Name', 'Version', and 'Size'. The table lists two items: 'Milestone ONVIF Bridge' (with sub-items 'Milestone EULA (End User License Agreement)' and 'ONVIF Bridge'). The 'ONVIF Bridge' row is highlighted with a red border, showing version '2019 R2 (13.2a)' and size '99.23 MB'.

Name	Version	Size
Milestone ONVIF Bridge		
Milestone EULA (End User License Agreement)	20190412	202.78 KB
ONVIF Bridge	2019 R2 (13.2a)	99.23 MB

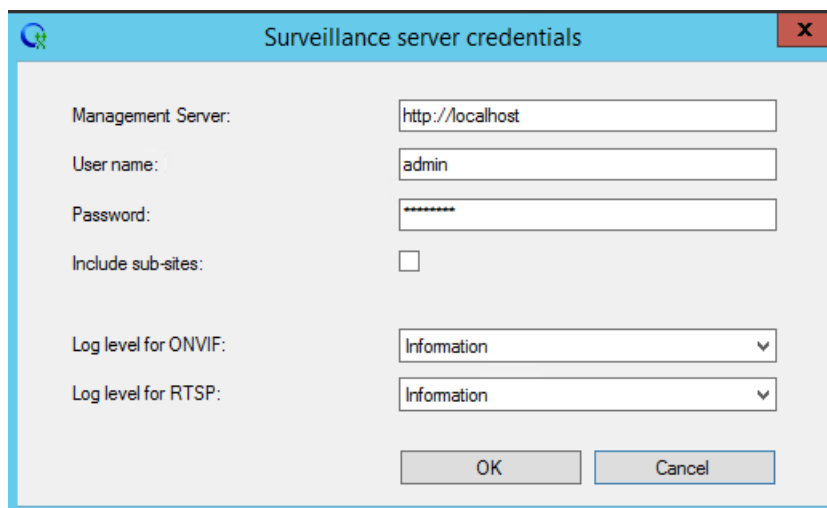
- Complete the installation using the Milestone ONVIF Bridge Detailed Setup Guide. (<http://download.milestonesys.com/MTSKB/KB000003403/ONVIF-Bridge-detailed-guide.pdf>)

5.3 Configuring ONVIF Bridge Product

- From the computer where the ONVIF Bridge Server is installed, right-click the ONVIF Bridge icon in the notification area at the bottom right of the screen.
- Click on it if the 'Stop ONVIF Bridge service' menu is active.
- Click on the 'Configuration' menu.

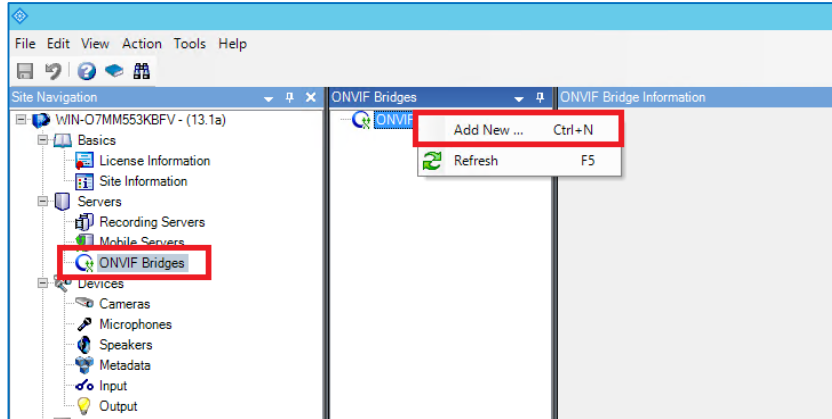


- Type in the required information to connect to the XProtect Management Server and click the 'OK' button.

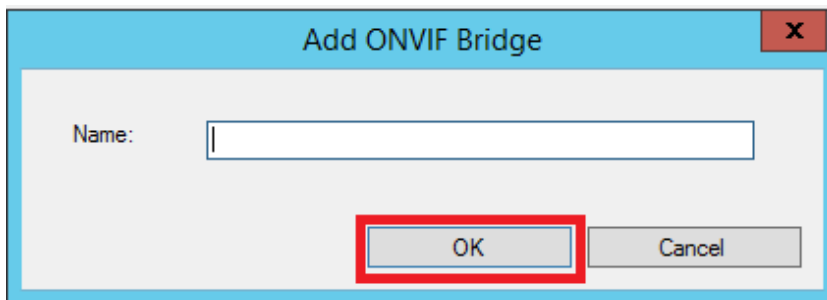


- From the computer where the ONVIF Bridge Server is installed, right-click the ONVIF Bridge icon in the notification area at the lower-right corner of the screen, and click the 'Start ONVIF Bridge Service' menu.
- Open XProtect Management Client software.

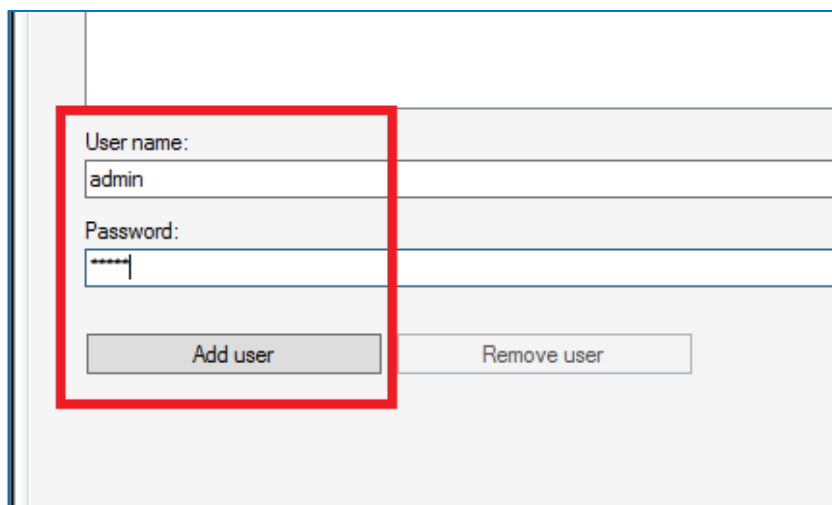
- From the 'Site Navigation' tab, open the 'Servers > ONVIF Bridges' menu.
- Right-click 'ONVIF Bridges' and click the 'Add New...' option.



- Give a name to the ONVIF Bridge object and click 'OK'.

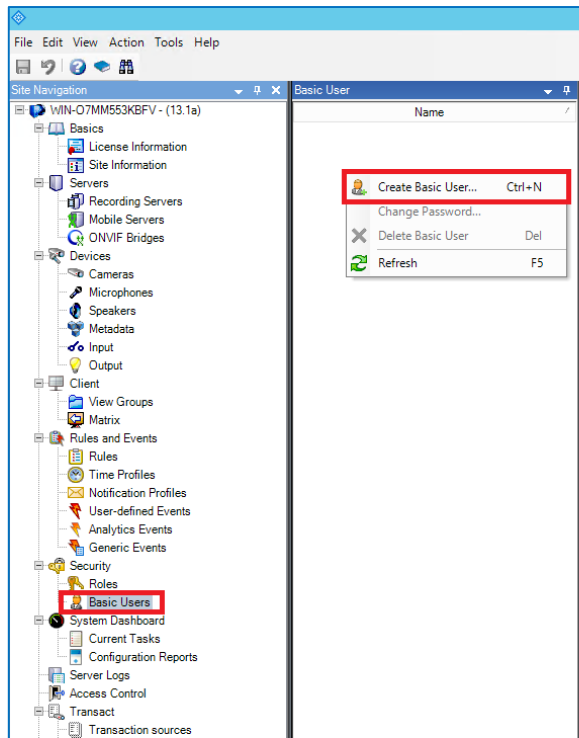


- Using the 'User name' and 'Password' fields, add a 'Basic User' with administrator authorization that you have previously created to be used for the connection to the ONVIF Bridge server.

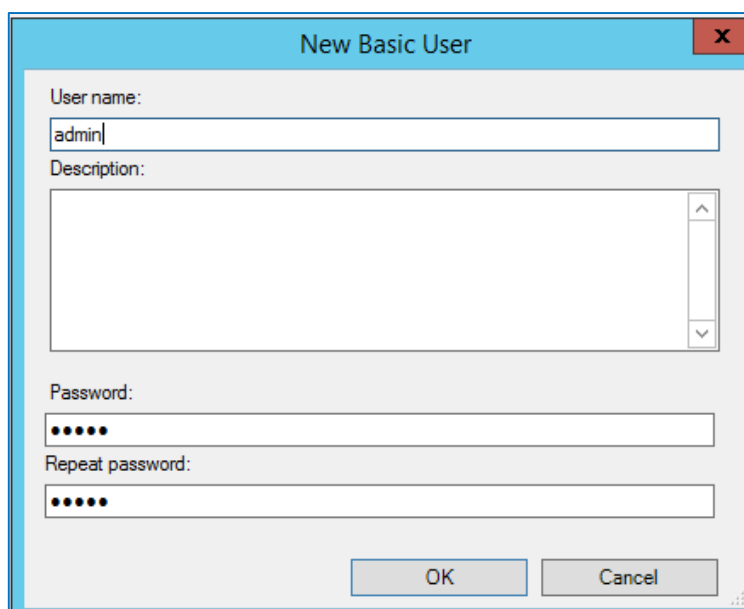


5.4 Creating an XProtect 'Basic User'

- Open XProtect Management Client software.
- From the 'Site Navigation' tab, open the 'Security > Basic Users' menu. Right-click on an empty field on the 'Basic User' tab and select the 'Create Basic User...' menu.

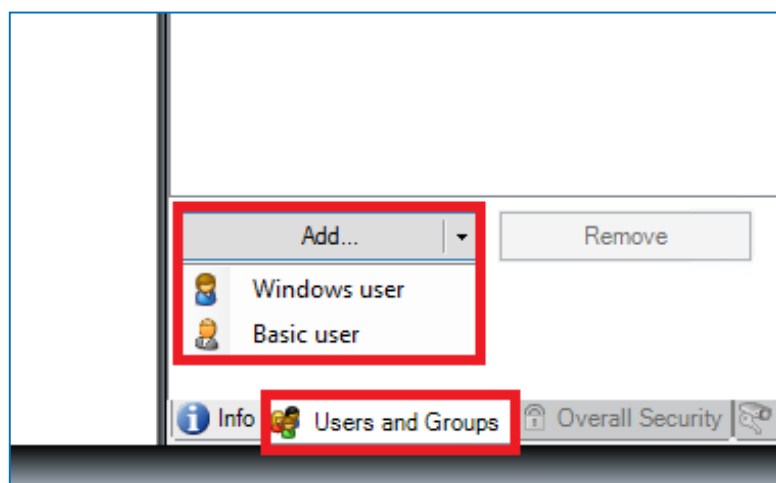
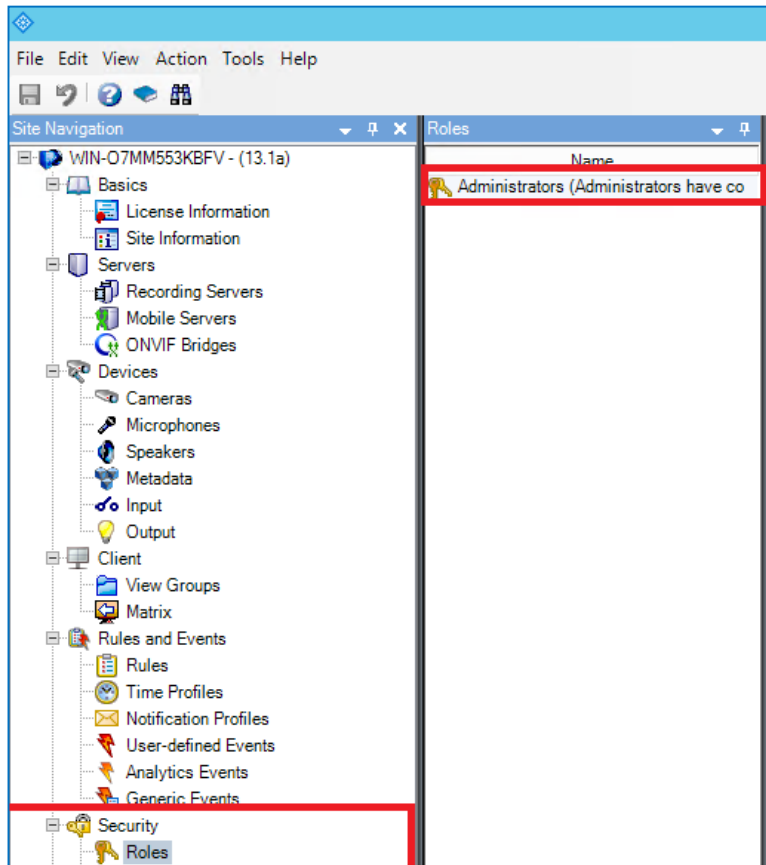


- Set the user name and password for the 'Basic User' you will create and click the 'OK' button.



5.5 Authorizing XProtect 'Basic User'

- From the 'Site Navigation' tab, open the 'Security > Roles' menu.
- From the 'Roles' tab, select the authorization you want to assign to the user and open the 'Users and Groups' tab. Click the 'Add' button and select the 'Basic User' option.



- Check the 'Select' box on the left side of the user you want to authorize and click the 'OK' button.

