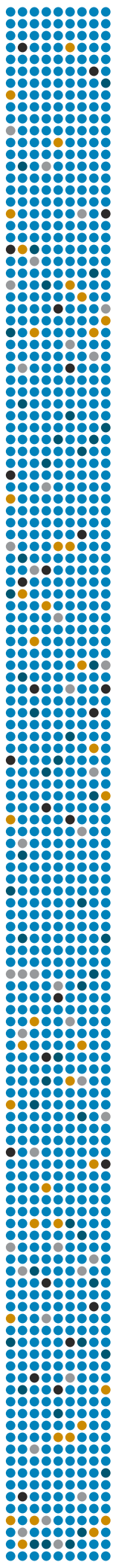




Senstar Symphony Face Recognition

1.8

User Guide



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Face Recognition

The Face Recognition video analytic offers facial recognition, event triggering, and alarms.

The Face Recognition video analytic uses profiles to represent individuals. Each profile can include multiple images of an individual's face. Use the Senstar Symphony Client interface to create profiles, add images of faces, and set whether the profile is blocked or allowed. When the Face Recognition video analytic identifies a face in video, it can trigger events on the Senstar Symphony Server.

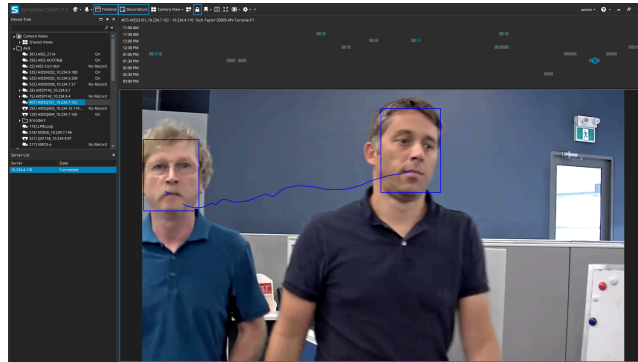
The Face Recognition video analytic can detect faces when there is greater than 29 pixels between the eyes and it works best when the resolution of the camera is greater than or equal to 640 x 480.

The Face Recognition video analytic includes spoof attack detection. The video analytic can detect the difference between pictures of faces and real faces. You can use spoof attack detection to generate alarms when the video analytic detects spoofed faces.



Note: The Face Recognition video analytic cannot generate alarms on real faces and spoofed faces at the same time. You must create two rules to generate alarms on both.

In the Senstar Symphony Client interface, a blue square surrounds a tracked face and a red square surrounds a tracked face that triggers an alarm.



Installation

Install the Face Recognition video analytic on each server in the Senstar Symphony Server farm.

Requirements

The requirements for the Face Recognition video analytic are in addition to the requirements for the Senstar Symphony Server.

Each camera that runs the Face Recognition video analytic uses a single processing core. To improve performance, it is better to increase the speed of processing cores rather than increase the number of processing cores.

Component	Requirements
Hardware	<ul style="list-style-type: none"> 2.5 GHz or faster CPU core per camera 300 MB of RAM per camera
Cameras	<ul style="list-style-type: none"> Resolution: 1024 x 768 or 1280 x 720 <ul style="list-style-type: none"> Lower resolutions are supported, but accuracy might be affected Higher resolution require faster cores Frame rate: 5 FPS
Camera location	<p>Place the camera in a location where the details of faces are clearly visible in the detection zone and the lighting provides adequate contrast between faces and the background.</p> <ul style="list-style-type: none"> Suggested: <ul style="list-style-type: none"> Mount the camera so that it is less than 20 degrees above or below the target detection area. Mount the camera so that it is less than 45 degrees to the side of the target detection area. Mount the camera at a distance where faces in the detection area are 50px or greater in height Minimum: <ul style="list-style-type: none"> Mount the camera so that it is less than 40 degrees above or below the target detection area. Mount the camera so that it is less than 70 degrees to the side of the target detection area.
License	Face Recognition V8 (S8SW2081-XXY)

Install the Senstar Symphony Face Recognition video analytic

Install the Face Recognition video analytic on the computer that hosts the Senstar Symphony Server to which the cameras that will run the video analytic connect.

1. Download and run the installer.
2. On the **Welcome** screen, review the license terms and conditions and select **I agree to the license terms and conditions**.
3. Click **Next**.

4. Click **Install**.
5. When the installation is complete, press **Close**.

Update face templates

When the face templates for the Face Recognition video analytic are updated, you must run the UpdateFaceTemplates utility for Face Recognition video analytic to function correctly.

The Face Recognition installer includes the UpdateFaceTemplates utility and automatically runs the UpdateFaceTemplates utility when you install the Face Recognition video analytic.

1. On the computer that host the Senstar Symphony Server and Face Recognition video analytic, navigate to `C:\Program Files (x86)\Senstar\Symphony Server v7_bin`.
2. Run `UpdateFaceTemplates.exe`.

Configuration

Configure the Face Recognition video analytic to optimize it for camera placement.

Both the location of cameras and the configuration settings for the Face Recognition video analytic determine the effectiveness of the video analytic.

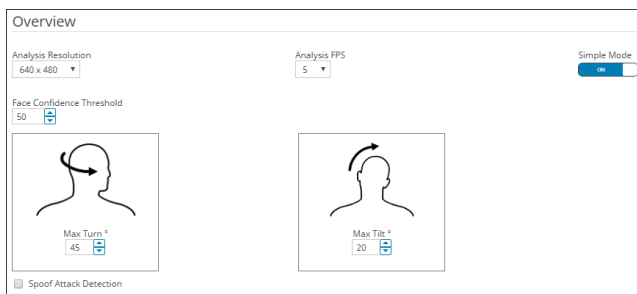
The Face Recognition video analytic works best when:

- There is good lighting that provides good contrast without the faces being back lit.
- Cameras are focused on the distance through which you expect faces to move.
- Cameras are as close to level with faces as possible.
- Cameras are as close to inline with faces as possible.
- There are four or fewer faces in the view.

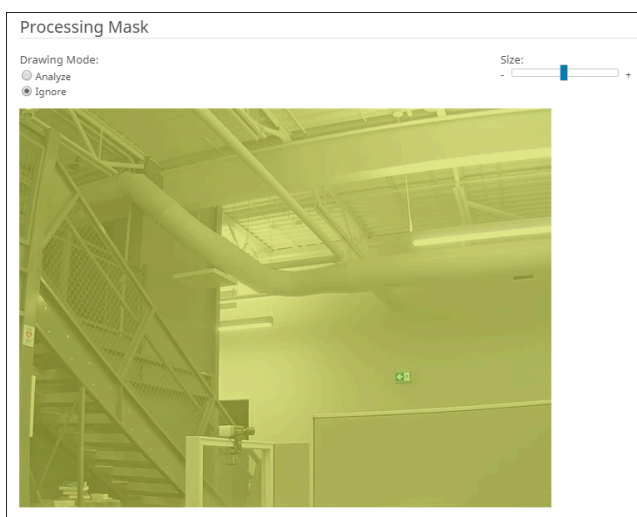
Configure Face Recognition

Configure the settings for the Face Recognition video analytic in the Senstar Symphony Server configuration interface.

1. In the Senstar Symphony Server configuration interface, click **Devices > Cameras**.
2. Select the camera and click **Edit**.
3. In the **Add-Ons** list, turn Face Recognition on and click **Configure**.
4. In the **Overview** section, set the parameters that Face Recognition uses when detecting faces.



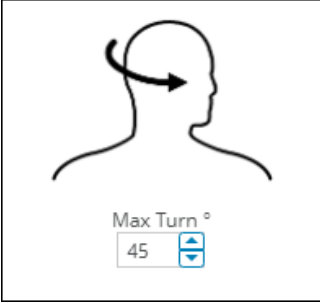
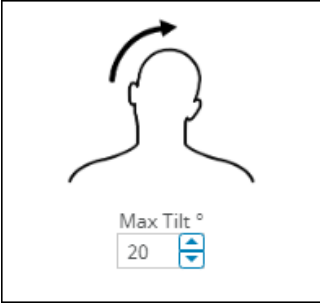
5. In the **Processing Mask** section, set the areas in the image that the camera ignores or analyzes.



6. Click **OK**.
7. Click **Save**.

Face Recognition settings

Overview

Setting	Description
Analysis Resolution	Set the resolution for the camera on which the Face Recognition video analytic is active.
Analysis FPS	Set the frames per second for the camera on which the Face Recognition video analytic is active.
Face Confidence Threshold	Set how confident the Face Recognition video analytic must be that objects are faces before it tracks objects.
Max Turn	<p>Set the horizontal angle (in degrees) from center where the Face Recognition video analytic does not track objects. The recommended value is 45 degrees or less. The maximum value is 70 degrees.</p> 
Max Tilt	<p>Set the vertical angle (in degrees) from center where the Face Recognition video analytic does not track objects. The recommended value is 20 degrees or less. The maximum value is 45 degrees.</p> 
Spoof Attack Detection	<p>Select to enable spoofing attack detection. Spoof attack detection requires 15 frames for processing. So, if the Face Recognition video analytic is operating at 5 frames per second, it will take 3 seconds to generate an alarm.</p> <p>This setting is disabled by default.</p>

Processing mask

Setting	Description
Drawing Mode	Select whether the paintbrush marks areas in the processing mask image to include (Analyze) or exclude (Ignore).
Size	Select the size of the paintbrush that you use in the processing mask image.

Create a rule

You can create a rule to trigger the Senstar Symphony Server to perform actions.

1. In the Senstar Symphony Server configuration interface, click **Rules > Rules**.
2. Click **Add**.
3. Type a name for the rule.
4. Enable or disable the rule.
5. Add an existing event to the rule or create a new event to add to the rule.
6. If you add multiple events to the rule, select how the events must occur to trigger the rule.
 - Select **in sequence** to trigger a rule when the events occur in the order in which the Senstar Symphony Server configuration interface lists the events.
 - Select **within a time period of** and specify the number of seconds to trigger an rule when all of the events occur in the specified time period.
7. Add an existing action set to the rule or create a new action set to add to the rule.
8. Add an existing schedule to the rule or create a new schedule to add to the rule.
9. Click **Save**.

Create an event

You can create an event that triggers a rule on the Senstar Symphony Server.

When the Senstar Symphony Server receives input from a device, it can trigger a rule. Different devices can trigger rules in different ways. For additional information on devices, see the manufacturer's documentation.

1. In the Senstar Symphony Server configuration interface, click **Rules > Events**.
2. Click **New Event**.
3. Type a name for the event.
4. To add a device, perform the following tasks:
 - a) Click **Add Devices**.
 - b) Select the device.
 - c) Click **OK**.
5. Perform one of the follow tasks:
 - If you add a camera, select the video engine and configure how it triggers a rule.
 - If you add a metadata device, select the input and configure how it triggers a rule.
 - If you add an access control device, select the readers and inputs, and configure how they trigger a rule.
6. Click **Save**.

Face Recognition event settings

Select video engine from those running on camera

Face Recognition ▼

Match Threshold ▲▼

Max Spoof Score ▲▼

Alarm type

Alarm on all real faces

Alarm only on real faces not in the list(s)

Alarm only on real faces in the list(s)

Alarm only on spoofing attacks

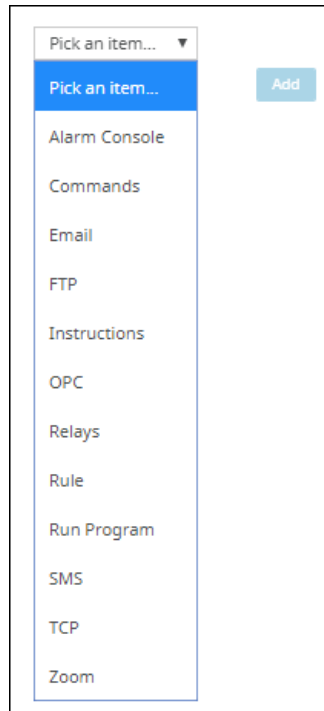
Setting	Description
Match Threshold	Set how closely the detected face must match a face on the blocked list to trigger an alarm or a face on the allowed list to not trigger an alarm. This setting does not apply if you select Alarm on all faces.
Max Spoof Score	Set the score that a face must exceed for the Face Recognition video analytic to consider the face a spoof. The default value is 30.
Alarm on all real faces	Select to trigger an alarm when the Face Recognition video analytic detects a face.
Alarm only on real faces not in the list(s)	Select to trigger an alarm when the Face Recognition video analytic detects a face that is not on the lists that you select. The list options include the default lists (Allowed and Blocked) and any custom lists that you create.
Alarm only on real faces in the list(s)	Select to trigger an alarm when the Face Recognition video analytic detects a face that on the lists that you select. The list options include the default lists (Allowed and Blocked) and any custom lists that you create.
Alarm only on spoofing attacks	Select to trigger an alarm only when the Face Recognition video analytic detects a face with a spoof score greater than the max spoof score.

Create an action set

You can create an action set to determine what actions the Senstar Symphony Server takes when rule is triggered.

1. In the Senstar Symphony Server configuration interface, click **Rules > Action Sets**.
2. Click **New Action Set**.
3. Type a name for the action set.
4. In the **Alarm** list, select the cameras to view when an alarm occurs.
5. In the **Choose a Camera** list, select the device that displays the alarm in its timeline.

6. To select where the alarm appears, perform one of the following tasks:
 - To associate the alarm with a camera and display the alarm in a camera timeline, select the camera in the **Choose a Camera** list.
 - To associate the alarm with a map and display the alarm on the map, select the map in the **Choose a Map** list.
7. In the **Record** list, select the cameras that record footage when an alarm occurs.
8. To add other actions, perform the following tasks:
 - a) In the **Pick an item** list, select an action.



- b) Click **Add**.
 - c) Configure the settings for the action.
9. Click **Save**.

Create a schedule

You can create a schedule to determine when a rule is active.

1. In the Senstar Symphony Server configuration interface, click **Rules > Schedules**.
2. Click **Add Schedule**.
3. Type a name for the schedule.
4. Define the active and inactive times for the schedule.
5. If required, add exceptions to the schedule.
 - a) Select a date.
 - b) Select whether to repeat the exception every year on that date.
 - c) Click **Add Exception**.
 - d) Define the active and inactive times for the exception.
6. Click **Save**.

Operation

Use the Face Recognition video analytic in the Senstar Symphony Client interface to manage faces, manage lists of faces, and search for faces.

Add a profile

1. In the Senstar Symphony Client interface, click **Face Recognition > Manage Faces**.
2. Click **New**.
3. Type a name for the profile.
4. Select whether the profile is blocked or allowed.
5. Click **Save**.

Remove a profile

1. In the Senstar Symphony Client interface, click **Face Recognition > Manage Faces**.
2. Double-click the profile.
3. Click **Remove**.
4. Click **Yes**.

Add a face

You can add multiple images to each profile to increase the accuracy of the Face Recognition video analytic.

The Senstar Symphony Client automatically crops the image to provide the best image of the face. When you upload an image, a green (high quality), yellow (medium quality), or red (low quality) dot will appear to show the quality of the image.

1. In the Senstar Symphony Client interface, click **Face Recognition > Manage Faces**.
2. Double-click the profile.
3. Click **Upload face**.
4. Browse to and select the image.
5. Click **Open**.
6. Click **Save**.

Image guidelines

The Face Recognition video analytic produces the best results when face images adhere to the ISO/IEC 19794-5 standard.

Photograph guidelines

- The subject should not be too close or too far from the camera.
- The distance between the eyes in the image should be approximately $\frac{1}{4}$ of the width of the image.
- The face should be centered horizontally and vertically in the image.
- The background of the image should be uniform.
- The face should be in sharp focus from the nose to the ears.
- The lighting should be uniform without shadows or reflections.
- The face should be square to the camera.
- The face should be upright and an imaginary line between the eyes should be parallel to the top edge of the image.

Subject guidelines

- Eyes should be open and visible.
- The face should not be obscured by hair.
- The face should have a neutral expression with a closed mouth.
- Eyeglasses should not obscure any part of the eyes and should not reflect light.
- Head coverings should not obscure or cast shadow on the face.

Remove a face

1. In the Senstar Symphony Client interface, click **Face Recognition**.
2. Double-click the profile.
3. Select the image and click **Remove Face**.

Search for a face

1. In the Senstar Symphony Client interface, click **Face Recognition > Search Faces**.
2. To search for a face that is associated with a profile, perform the following steps:
 - a) Select **Registered**.
 - b) Click **...**, select the profile, and click **OK**.
 - c) Use the arrow buttons to select an image from the profile.
3. To search for a face that is not associated with a profile, perform the following steps:
 - a) Select **Unknown**.
 - b) Click **Upload Image**.
 - c) Navigate to and select the image, and click **Open**.
4. Use the slider to select the match threshold.
5. In the **Camera** list, perform one of the following steps:
 - To limit the search to footage from one camera, select the camera.
 - To search the footage from all cameras that include the Face Recognition video analytic, select **All Cameras**.
6. Define the start and end for the search.
7. Click **Search**.

Create a face list

You can create a list of faces to allow the Face Recognition video analytic to take action on a group of faces.

1. In the Senstar Symphony Client interface, click the **Face Recognition** icon.
2. Click **Manage Lists**.
3. In the **Add List** field, type a name for the list.
4. Click **Save**.
5. Click **Close**.

Add a face to a list

You can add a face to a list to include it with the actions that the Face Recognition video analytic performs on the list.

1. In the Senstar Symphony Client interface, click the **Face Recognition** icon.
2. Click **Manage Faces**.

3. Double-click a face.
4. In the **List** field, type the name of or select the list.



Note: When you start typing the name of the list, a list of possible choices appears.

5. Click **Save**.

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