SAFR® from realnetworks

SAFR® Inside Documentation

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The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

Note: Documentation pertaining to the macOS platform is no longer being actively maintained.

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1 Overview

SAFR is an exceptionally accurate AI-powered facial recognition system that provides a high level of visibility and situational awareness for security professionals. You can easily integrate access control peripherals such as cameras, door locks, or alert systems in order to manage access to a location based on people's identities. SAFR runs on a variety of operating systems, including Windows, macOS, Linux, iOS, and Android.

SAFR Inside is an embedded version of SAFR's Video Recognition Gateway (VIRGO) service which performs video analysis and face detection directly inside supported cameras. Simply install SAFR Inside onto a supported camera model (AXIS Q1615 Mk III or AXIS P3255-LVE), then connectt that camera to a SAFR Server (whether on-premises or in the cloud) to perform real-time face recognition.

Warning: AXIS P3255-LVE requires a large power source: Power over Ethernet (PoE) class 4 or higher.

SAFR Inside gives you the ability to leverage powerful computer vision features with dramatic reductions in Total Cost of Ownership (TCO) compared to traditional deployments. By performing key pieces of the image processing (namely face detection and image cropping) directly on the AXIS camera, bandwidth use and other associated costs are dramatically reduced, thus allowing you to deploy facial recognition with less powerful and/or fewer servers.

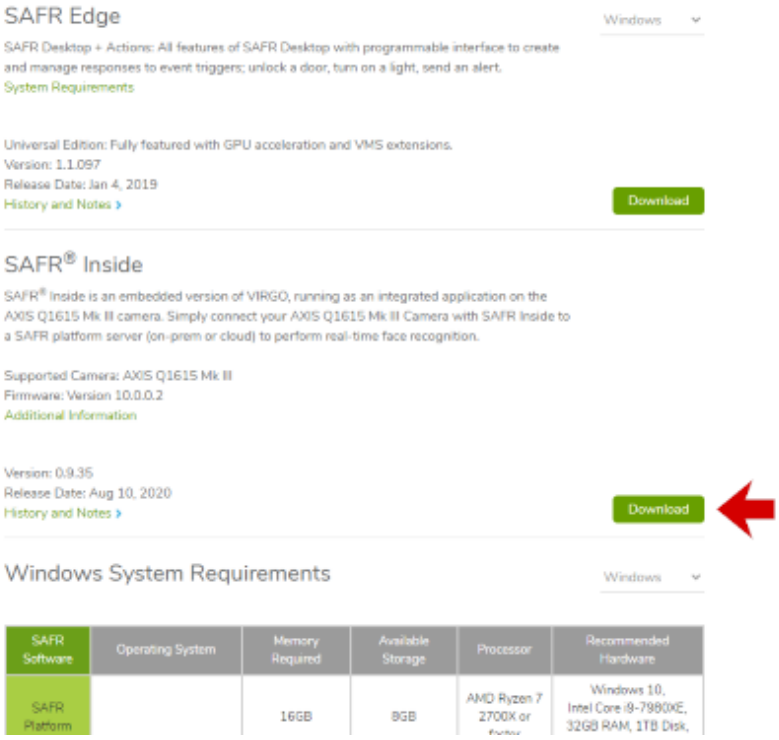
Specifically, SAFR Inside's video feeds are able to do the following:

- Detect faces
- Detect when people are wearing masks
- Identify a person's age
- Identify a person's gender
- Identify a person's sentiment (i.e. happy or unhappy)
- Learn and recognize faces whether or not they're wearing a mask
- Learn and recognize faces that are partially occluded by sunglasses, ballcap, scarves, etc.

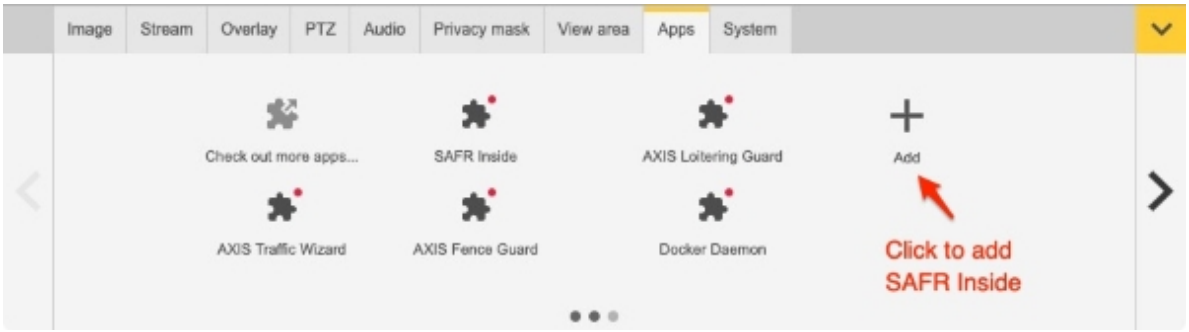
2 SAFR Inside Installation

To install SAFR Inside, do the following:

1. Download the SAFR Inside eap file from the SAFR Download Portal.



2. Log in to your Axis camera by going to its URL and entering your Axis camera credentials.
3. Click on `Settings` in the bottom right corner.
4. Select the `Apps` tab.
5. Click on the `+` icon.



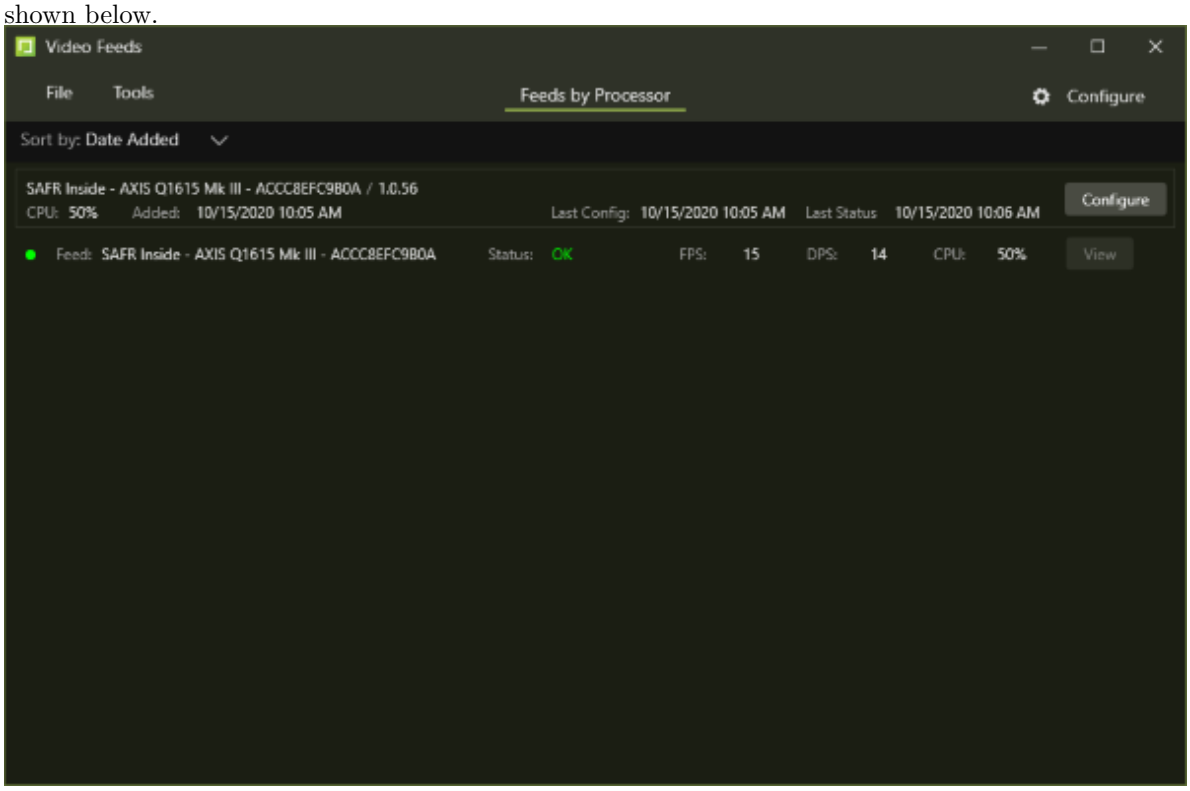
6. In the dialogue, browse to the eap file that you downloaded in step 1, and select `Install`.

SAFR Inside is now installed on your Axis camera.

2.1 Check Installation

To verify that your SAFR Inside installation is working, do the following:

1. Open either the Video Feeds Window of the Desktop client or the Video Feeds Page of the Web Console.
2. Look for an entry for your camera. It's name will probably contain the word "Axis" in its name.
3. Ensure that there is an active feed associated with your camera's entry. Its status should be *OK*, as shown below.

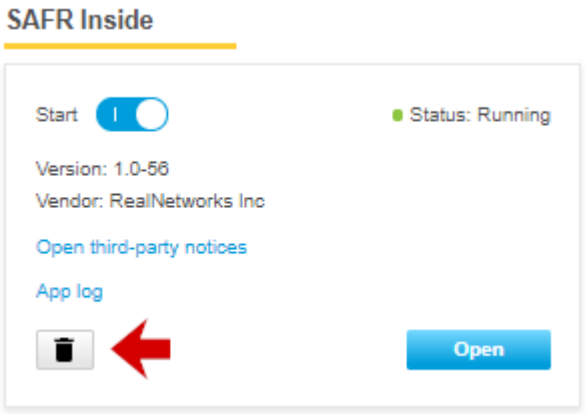


2.2 Uninstall

To uninstall SAFR Inside from the Axis camera, do the following:

1. Go to **Settings -> Apps** on the Axis camera command console.
2. Double click on **SAFR Inside**.

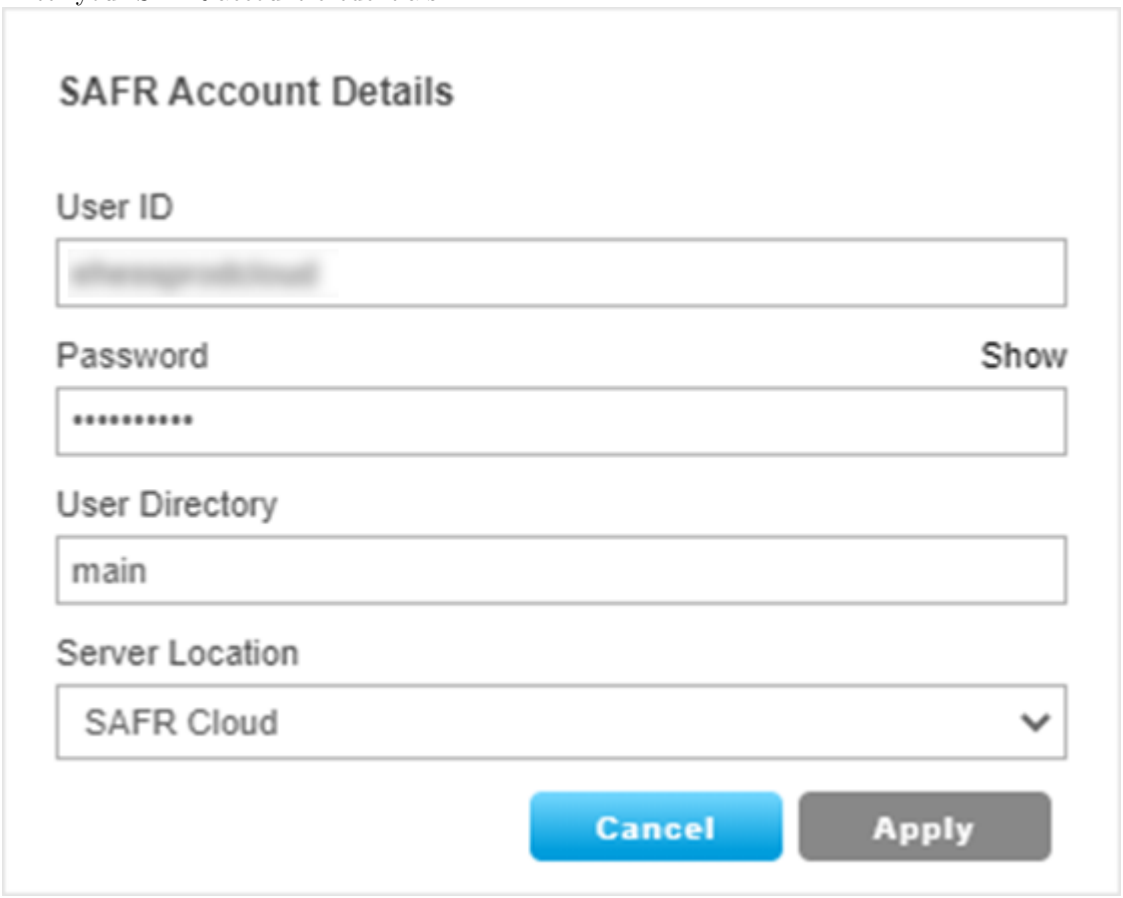
3. Click on the garbage can icon to uninstall SAFR Inside.

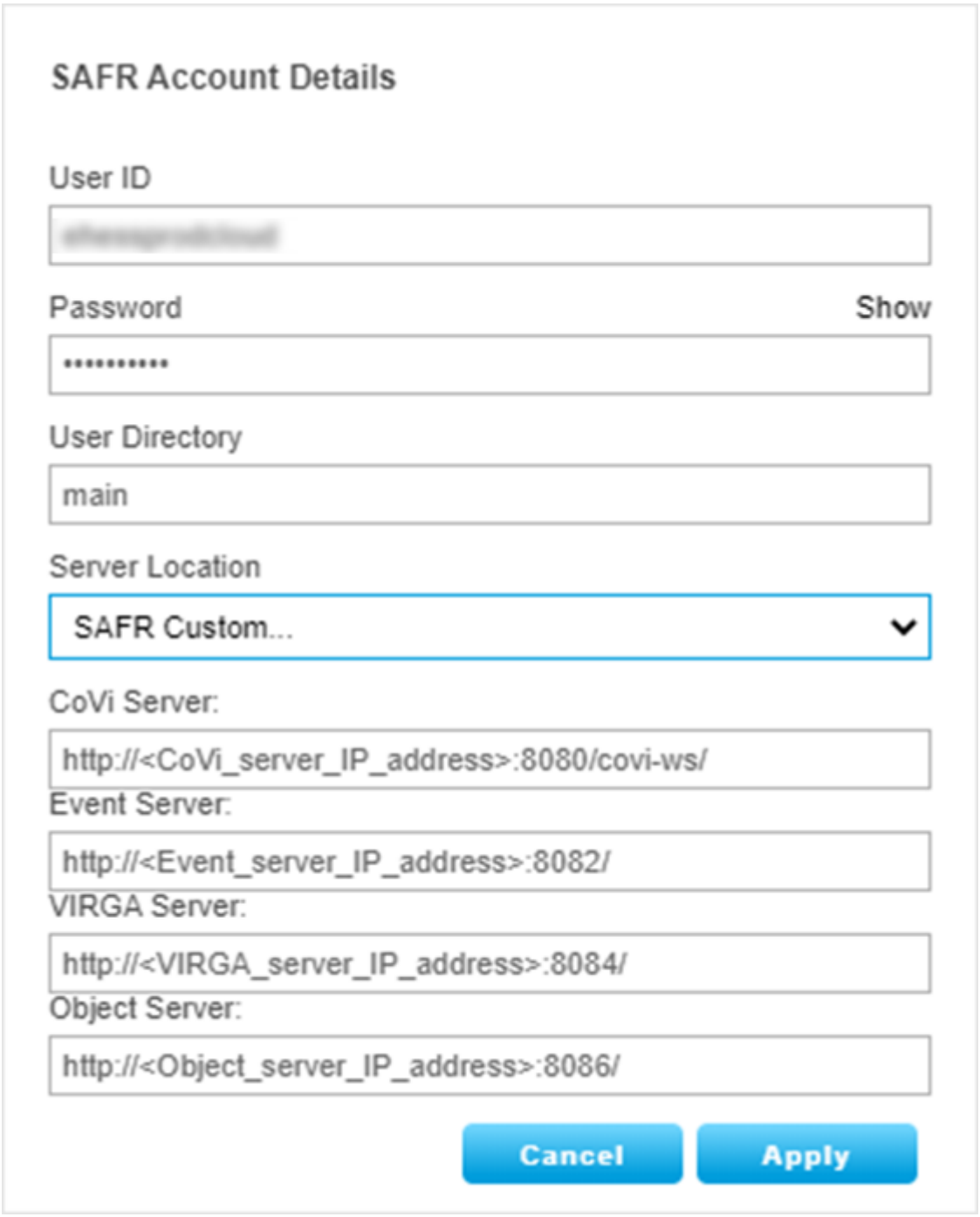


3 Use SAFR Inside

To start using SAFR Inside, do the following:

1. Navigate to the Axis Apps tab and click on `SAFR Inside`.
2. Click on `Open` in the dialogue.
3. Click on the gear icon under Profile properties. 
4. Enter your SAFR account credentials.





3.1 Overlays

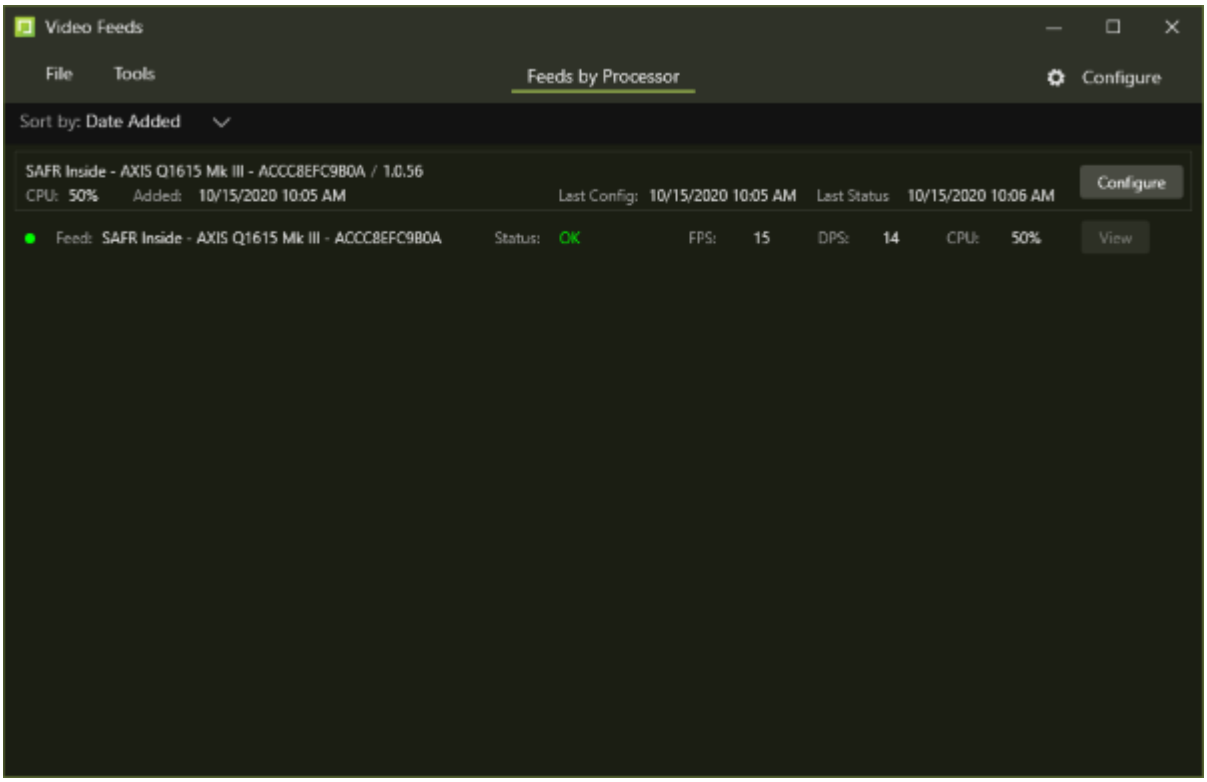
Overlays in SAFR Inside are different than overlays in the Desktop client; in SAFR Inside overlays are intended to be used for setup confirmation and troubleshooting. Overlays shouldn't be on during normal operations because they use the Axis camera's limited CPU processing power, which consequently restricts the maximum number of frames SAFR Inside can process.

- **Display Overlay Information**: Displays the SAFR Inside name, a bounding box for detected faces, and a text indicator if the person is identified (i.e. recognized).
- **Display Identity Information**: Displays the enrolled person's name.

Overlays are visible in the SAFR Inside Settings page only, and do not appear in the camera's *Live View* pages or RTSP video streams.

4 Manage Video Feeds

To manage video feeds, open the *Video Feeds Window* within either the Desktop Client or the Web Console, then click the **Configure** button. You'll see a screen similar to the following: (**Note**: You can often expose additional properties by clicking on the arrow next to entries, as shown by the arrow next to the *SomeFeed* entry below.)

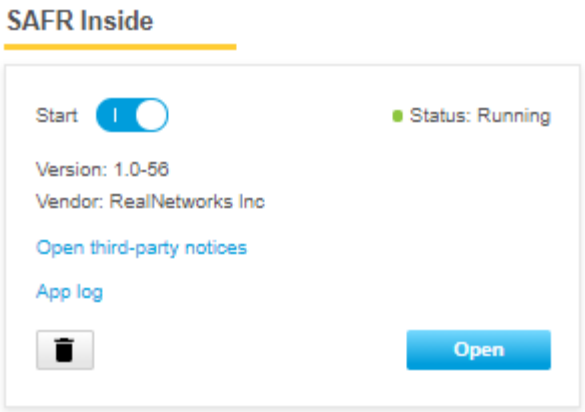


- **name**: The Bonjour/Universal Plug and Play (UPnP) name of the camera on which SAFR Inside is running.
- **admin**: These properties aren't supported for SAFR Inside.
- **global**: Contains global properties. Only one of the global properties is supported for SAFR Inside:
  - *status-interval*: The status reporting time interval in milliseconds.
- **monitoring**: Monitoring properties aren't supported for SAFR Inside.
- **feeds**: Specifies the feed properties. See Appendix: Video Feeds Properties for information about all the video feeds supported for SAFR Inside.
- **update**: Update properties aren't supported for SAFR Inside.

4.1 Terminate a Video Feed

SAFR Inside video feeds that haven't been terminated will continuously run in the background, and will automatically restart themselves after camera shutdowns and restarts. To terminate video feeds that are no longer of interest to you, do the following:

1. Navigate to the SAFR Inside application page in the desired AXIS camera.
2. Click on the start toggle button to terminate SAFR Inside.


SAFR Inside
Start
Status: Running
Version: 1.0-56
Vendor: RealNetworks Inc
Open third-party notices
App log
Open

5 Manage Person Records

Learned identities are saved as person records, which are stored in the Identity Database. The Identity Database can be managed via the People Window of the Desktop client or via the People Page of the Web Console.

5.1 Identity Attributes

Some of the identity attributes are exposed in the default view of the Person Window, but if you double click on people's faces, you can view and configure all the identity attributes. Note that most of their identity attributes will be empty until the information is manually entered.

- **Identifier**: The person's unique identifier within SAFR. This value is automatically assigned to them when they're registered, and cannot be changed.
- **Name**: The person's name. Note that if you enter the person's first and last name into this field, SAFR automatically parses the full name and fills out the first and last name fields for you.
- **First Name**: The person's first name.
- **Last Name**: The person's last name.
- **Id Class**: The person's threat level. (i.e. Threat, Concern, or No-Concern)
- **Person Type**: The person's Person Type. Person Types are groupings that you define to differentiate the people registered in your Identity Database. (e.g. "student", "teacher", and "staff")
- **Gender**: The person's gender.
- **DateofBirth**: The person's date of birth.
- **Moniker**: Used to realize two-factor authentication with visual badges.
- **External Id**: If the person has been imported from another database, this value can be used to track the identity in both databases.
- **Company**: The company the person works for.
- **Home location**: The person's Home Location. Home Locations, much like Person Types, are labels that you define to help differentiate the person records registered in your Identity Database.
- **Phone**: The person's phone number.
- **Email**: The person's email address.
- **Tags**: Any custom tags that you have defined. Each person record can have multiple tags assigned to it.
- **Enrollment date**: The date when the person was registered.
- **Enrollment expiration**: The expiration date of the person's enrollment.
- **Enrolled site**: The site where the person was enrolled.
- **Enrolled source**: The camera that enrolled the person.
- **Last modified**: The time when this person record was last modified. (e.g. an attribute was updated, a more recent reference image was uploaded, etc.)
- **Modified by**: The user that made the last modification to this person record.
- **Modified site**: The site from which this person record was last modified.

5.2 Person Record Sorting and Filtering

You can sort the person records based on either their enrollment date or by the people's names.

Similarly, you can filter which person records are visible based on any of the following criteria:

- **Name**: Filter based on the person records' names.
- **Person Type**: Filter based on the person records' Person Types.
- **Id Class**: Filter based on the person records' Id Classes (i.e. their threat levels).
- **Home Location**: Filter based on the person records' Home Locations.

6 View Events

Events are generated when people passing in front of a connected camera meet any number of configurable event-generating criteria. (e.g. the person is a known threat, the person is wearing a mask, somebody enrolls at a registration kiosk, etc.)

Generated events are stored in the Event Archive, and can be viewed from the Events Window of either the Desktop client or the Web Console. Stored events can be sorted by the following criteria:

- **Chronological**: Sort the events based on when they were recorded.
- **Duration**: Sort the events based on how long they last.
- **Name**: Sort the events based on the name of the person that triggered the event, if known.

6.1 Event Filters

You also have the option of filtering what events you want to browse based on any of the following criteria:

- **Date**: The date when the event was recorded.
- **Id Class**: The threat level of the person that triggered the event.
- **Sites**: The camera or set of cameras that recorded the event. **Note**: Usually *Sites* are set to multiple cameras.
- **Sources**: The camera or set of cameras that recorded the event. **Note**: Usually *Sources* are set to single cameras.
- **Name**: The name of the person that triggered the event.
- **Person Type**: The Person Type of the person that triggered the event.
- **Gender**: The gender of the person that triggered the event.
- **Tenure**: The date when the person that triggered the event was registered to the Identity Database.
- **Shortest Gap**: If a person is viewed by one or more cameras multiple times within this time period, all those appearances are considered the same event.
- **Shortest Duration**: The minimum event duration, in milliseconds.
- **Disparate Sources**: If a person is viewed by multiple cameras at the same time, all those appearances are considered the same event when this filter is enabled. (Only available in the Desktop client)
- **Mask**: Whether or not the person triggering the event was wearing a mask.

7 Configure SAFR Actions

In SAFR an action is essentially a script/macro that communicates a desired action in a language/protocol the receiving device or system understands. It can be written in any language supported by the computer where Actions Relay Event Service (ARES) is installed. It only needs to be invocable as an executable directly or through the use of another executable (usually a script interpreter such as Python).

7.1 Actions Components

These are the principle components involved with actions:

- **Actions Relay Event Service (ARES)**: ARES is a cross-platform Java application that acts as an event listener that dispatches configured actions in response to events, as defined in the SAFRActions.config file. ARES can provide replies on any event to be handled by the client originating the event and is normally installed as a service by either the SAFR Platform or SAFR Desktop installers. It is constantly active and is automatically started by the operating system on power-up.
- **SAFRActions.config**: The SAFRActions.config file defines which events will trigger specified actions. It also can specify additional condition constraints before the action(s) will trigger.
- **SAFR Actions**: Only available on macOS and Windows. SAFR Actions is a GUI tool that makes editing the SAFRActions.config file much easier. It presents the JSON information of the config file in a visual and easy to understand manner and offers drop-down menus so you can quickly and easily see what values are available and valid. SAFR Actions makes the JSON element hierarchies easy to understand, and ensures that your changes will validate against the SAFRActions.config JSON schema.

7.2 SAFRActions.config Overview

Below is a summary of the schema used to define actions. See the SAFR Actions documentation for more detailed information of actions and actions' schemas.

```
<name: value connection attributes>
rules: [
  {
    event: {  },
    triggers: [
        <time of day and week properties>
        actions: [  ],
        reply: {  },
        conditionalReply: {  },
    ],
    excludeDates: [  ]
  }
]
noTriggerReply: {  }
emailDef: [  {  }, {  }, ... ]
smsDef: [  {  }, {  }, ... ]
```

- **rules**:
  - 1 or more rules can be defined.
  - When an event occurs each rule is checked to see if any of its events match.
  - A rule's event matches an occurring event when:
    - All attributes rules[i].events match the event.
  - Each rule has 1 or more triggers.
    - Each trigger inside a matching rule is fired as long as the time of day conditions match.
  - Each trigger has one or more actions.
    - Actions are either:
      - A shell command or a batch/shell script to be executed.

        - A send email command that has the syntax of: `@emailSend <value of emailDef.label>`
      - All actions are run asynchronously unless a *conditionalReply* is specified in which case the first rule is run synchronously (and the return code of that rule is used for the conditionalReply) while all other rules are run asynchronously.
- *noTriggerReply* is used to perform a reply if none of the triggers are fired.
- *emailDef* defines one or more email message attributes (subject, from, message, etc). Before any email can be sent, you must first do the following:
  1. Obtain an SMTP server account that you can use to send emails.
  2. Configure SAFR to use your SMTP server using either the Status Page of the Web Console or SAFR Actions on a Windows machine.
- *smsDef* defines one or more Short Message Service (SMS) messages. Before any SMS messages can be sent, you must first do the following:
  1. Set up an AWS Account which is configured for your region.
  2. Configure SAFR to use your AWS account using either the Status Page of the Web Console or SAFR Actions on a Windows machine.

7.3 Examples

Send email when visitor arrives during work hours.

- rules
  - Rule 1
    - event (hasPersonId=false)
    - trigger (day/hours: 8-5, M-F)
      - action: @emailSend visitorEmail
- emailDef
  - label=visitorEmail
  - subject="Visitor Arrived"
  - message="A visitor has arrived at #I - #S."
  - ...

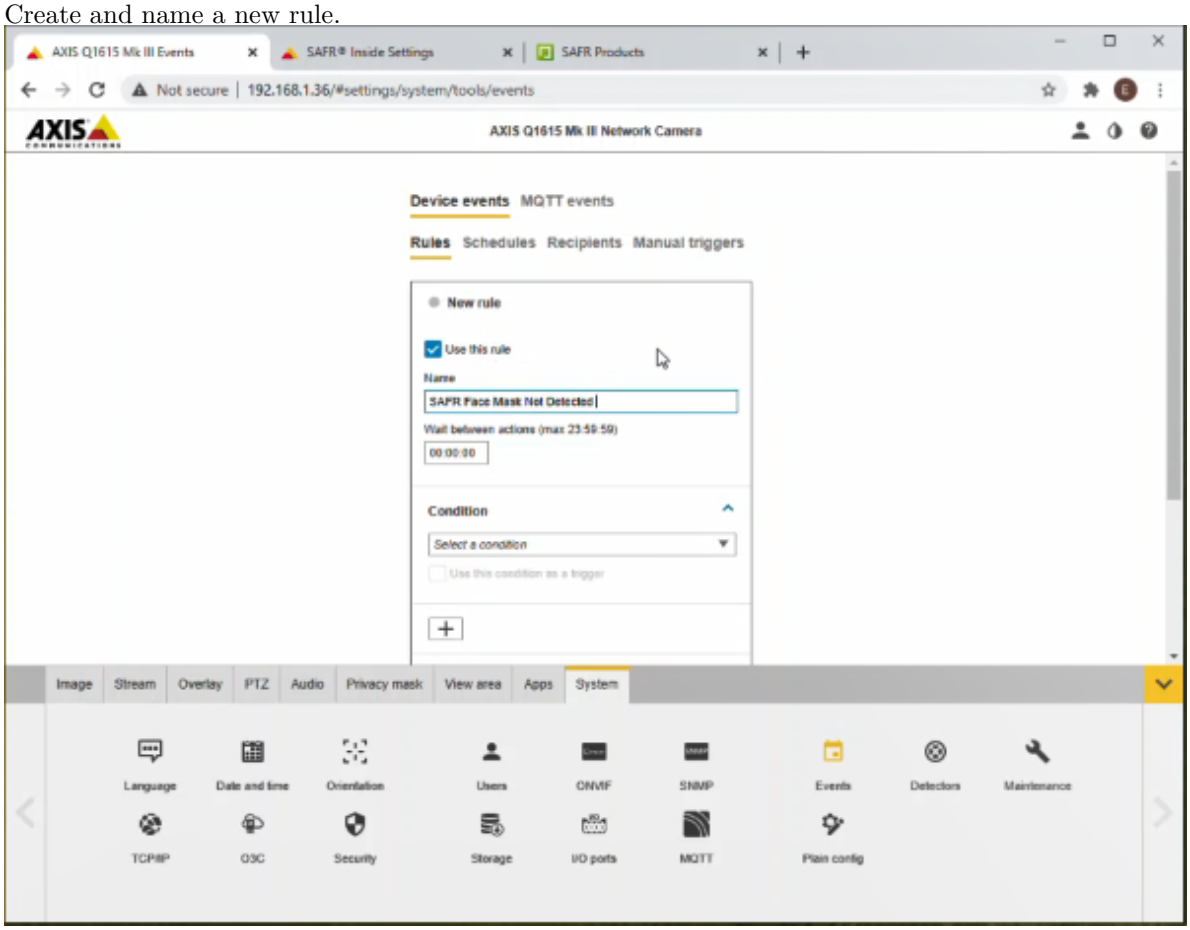
Log all events to a CSV and send one type of email for a known person event and another for a threat event.

- rules
  - Rule1 (known person email)
    - event (hasPersonId=true, idClass=No-Concern)
    - trigger
      - action: @emailSend knownEmail
  - Rule 2 (threat email)
    - event (hasPersonId=true, idClass=[Threat, Concern])
    - trigger
      - action: @emailSend threatEmail
  - Rule 3 (log)
    - trigger
      - action: ".\scripts\log_event.bat "#D" "#N" "#F" ..."
- emailDef
  - 1 (label=knownEmail, subject, message, etc)
  - 2 (label=threatEmail, subject, message, etc)

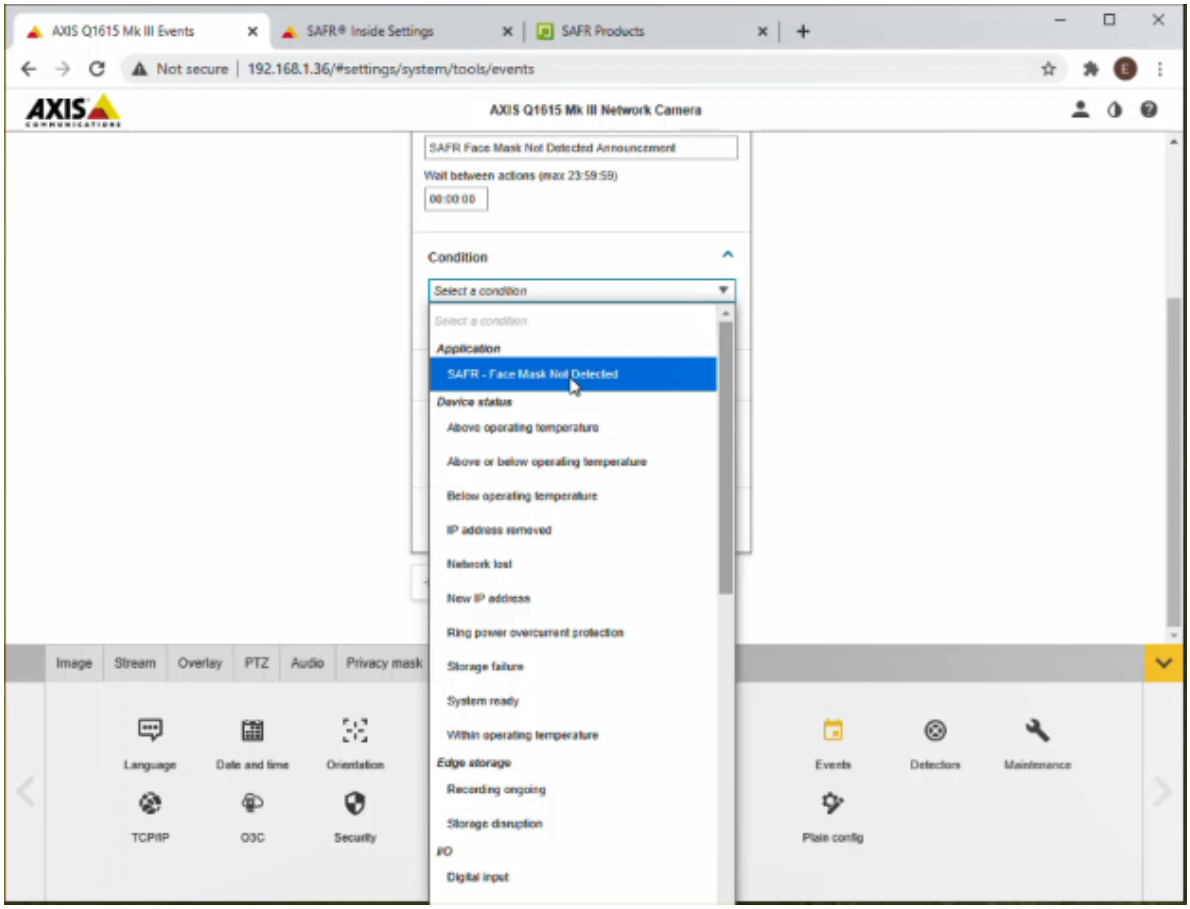
8 Trigger Audio Alerts

You can use SAFR Inside to trigger an audio event using the AXIS camera's *Events and Rules* engine when a face is detected that isn't wearing a mask or PPE.

1. Make sure there are speakers plugged in to the Axis camera; the camera doesn't have any onboard speakers.
2. Open **System -> Events** in the Axis camera app menu.
3. Create and name a new rule.



4. Select the *Application -> SAFR - Face Mask Not Detected* condition from the list of available conditions. **Note**: SAFR Inside must be running for the *SAFR - Face Mask Not Detected* condition to appear in the list of conditions.



5. You may select any audio file that has been uploaded to the camera via the AXIS camera's **Settings -> Audio** tab.
6. If you're using a long audio clip (e.g. more than 10 seconds) you should consider setting the **wait between actions** value in order to avoid having the clip play multiple times on top of itself.

8.1 Sample Audio Alert Sound Files

Here are several sample audio files you could use as audio alerts:

- **Audio alert 1_tone-1.au**: Opening tone 1 followed by "Welcome. Please remember that all guests are required to wear a face mask."
- **Audio alert 1_tone-2.au**: Opening tone 2 followed by "Welcome. Please remember that all guests are required to wear a face mask."
- **Audio alert 2_tone-1.au**: Opening tone 1 followed by "Welcome. Reminder: all shoppers are required to wear face masks. Please see customer service if you need a complementary mask."
- **Audio alert 2_tone-2.au**: Opening tone 2 followed by "Welcome. Reminder: all shoppers are required to wear face masks. Please see customer service if you need a complementary mask."
- **Audio alert 3_tone-1.au**: Opening tone 1 followed by "Welcome. Reminder: face masks are required at all times while indoors. Please see reception if you need a complementary mask."
- **Audio alert 3_tone-2.au**: Opening tone 2 followed by "Welcome. Reminder: face masks are required at all times while indoors. Please see reception if you need a complementary mask."

9 Appendix: Video Feeds Properties

9.1 Supported Properties

Below is a list of all the supported video feed properties. **UI Setting Name** specifies the corresponding setting within the Desktop Client, and **UI Setting Location** specifies where the setting can be found in the Desktop Client.

9.1.1 Camera Properties

Property	Default Value	Description	UI Setting Name	UI Setting Location
input.back-channel.mobotix.cash-point	"None"	When the connected camera is a Mobotix camera, this property must be set to the configured cash point within the Mobotix app for the back-channel to work.	Cash Point	Camera Preferences menu
input.back-channel.type	"None"	When the connected camera is a Mobotix camera, you can set this property to "Mobotix MX" in order to have SAFR report STRANGER and RECOGNIZED event types to the camera. This feature is necessary if you want to make use of the Mobotix app. If the connected camera isn't a Mobotix camera, this property doesn't have any effect.	Back Channel	Camera Preferences menu
input.stream.url	N/A	The video stream URL. The URL must point to a RTSP, HTTP, or FILE stream.	Address	Camera Preferences menu
source	N/A	Source name.	Source	Camera Preferences menu

9.1.2 Detection Properties

Property	Default Value	Description	UI Setting Name	UI Setting Location
detector.detect-faces	TRUE	Whether detection of faces should be enabled for this feed.	Enable face detector	Face detector section of the Detection Preferences menu
detector.detect-faces-input-size	"normal"	Face detector input size. Applicable only when high-sensitivity detection service is used. Possible values: **small** - 320x240 or 320x180 or 240x320 or 180x320 (whichever fits better) **normal** - 640x480 or 640x360 or 480x640 or 360x640 (whichever fits better) **large** - 1280x720 or 720x1280 (whichever fits better)	Input Size	Face detector section of the Detection Preferences menu
detector.maximum-input-resolution	720	Maximum resolution of the Input image. Bigger images are scaled down (aspect-ratio preserving) to this resolution before detection.	Reduce vertical input image size to	Face detector section of the Detection Preferences menu
detector.minimum-required-face-size	0	The minimum size of faces to accept from the detector. Only faces with at least this size are eligible for recognition.	Minimum required face size	Face detector section of the Detection Preferences menu

9.1.3 Tracking Properties

Property	Default Value	Description	UI Setting Name	UI Setting Location
tracker.enable-face-bounds-prediction	TRUE	Enables face bounds prediction, which predicts which direction the face is moving to maintain tracking.	Enable motion prediction	Tracking Preferences menu
tracker.enable-face-size-correlation	TRUE	Enables face correlation of tracked faces, which compares detected faces looking for a change in area.	Enable correlation of faces by size	Tracking Preferences menu
tracker.failed-recognition-back-off-interval	340	After making the initial recognition attempts as quickly as possible, back up the amount specified by this setting for each subsequent recognition. This continues until the retry interval is reached.	Failed recognition back-off interval	Tracking Preferences menu
tracker.failed-recognition-retry-interval	0	The interval in which to run recognition requests if the face has not been recognized.	Retry failed recognition after every	Tracking Preferences menu
tracker.identity-relearn-interval-days	0	Updates the identity only when the currently saved identity is older than the updated identity.	Relearn face interval days	Tracking Preferences menu
tracker.identity-update-better-image	FALSE	Updates the identity when the currently saved identity is of lower quality (in all aspects) than the new image.	Update identity with better image	Tracking Preferences menu

Property	Default Value	Description	UI Setting Name	UI Setting Location
tracker.initial-recognition-attempts	3	The number of initial recognition attempts to make on an unrecognized person as fast as possible.	Initial recognition attempts	Tracking Preferences menu
tracker.maximum-linger-frames	30	Determines for how many frames more we continue to keep a tracked face around after we have failed to detect it in the most recent frame. This makes the tracker resilient against intermittent loss of face.	Stop tracking a face after it has lingered for	Tracking Preferences menu
tracker.max-position-change-relative-to-face	115	The maximum position change, specified in percentage relative to the face size, to continue tracking.	Maximum change to continue tracking, Face position	Tracking Preferences menu
tracker.max-size-change-relative-to-face	50	The maximum size change, specified in percentage relative to the object size, to continue tracking.	Maximum change to continue tracking, Size	Tracking Preferences menu

Property	Default Value	Description	UI Setting Name	UI Setting Location
tracker.min-failed-recognitions-to-stop-tracking-identity	3	When a face is being tracked recognitions are continually confirming the identity. The identity is also being verified if it is transferred from a person object. In these cases, if the recognition or verification fails this number of consecutive times then the identity will be reset and no longer associated with the face because we are no longer sure it is the same identity.	Minimum failed recognitions to stop tracking identity	Tracking Preferences menu
tracker.minimum-number-identical-recognitions-learn	2	The number of consecutive recognitions that need to occur before adding a new identity to the system.	Minimum recognitions to learn identity	Tracking Preferences menu
tracker.minimum-number-identical-recognitions-lock	1	The number of consecutive recognition attempts that we must run and produce the same person identity before we lock onto this identity.	Minimum recognitions to lock on to identity	Tracking Preferences menu

Property	Default Value	Description	UI Setting Name	UI Setting Location
tracker.reconfirm-identity-in-video-on-every-key-frame	FALSE	When a key frame is encountered in a video file all the faces that are being tracked are marked as unconfirmed so that their identities are reconfirmed to make sure they are the same person. This setting only applies to video files; it can't be used with live video. This property doesn't actually appear in the VIRGO property list; possibly delete.	Reconfirm identity in video after each Key Frame	Tracking Preferences menu
tracker.reconfirmation-interval	1000	Identity reconfirmation time interval in ms.	Reconfirm identity after every	Tracking Preferences menu
tracker.stop-tracking-on-failed-re-recognition	FALSE	If recognition fails when re-recognizing a person then delete the identity that was created.	Stop tracking on failed re-recognition	Tracking Preferences menu

9.1.4 Recognition Properties

Property	Default Value	Description	UI Setting Name	UI Setting Location
recognizer.detect-age	FALSE	Enables the detection of age information.	Age	Detect section of the Recognition Preferences menu
recognizer.detect-gender	FALSE	Enables the detection of gender information.	Gender	Detect section of the Recognition Preferences menu

Property	Default Value	Description	UI Setting Name	UI Setting Location
recognizer.detect-identity	TRUE	Enables detection of an identity, which matches against the existing database of people (identities).	Identity	Detect section of the Recognition Preferences menu
recognizer.detect-mask	FALSE	When enabled, SAFR will evaluate all occluded faces to see if they're covered by a mask. If they are, then SAFR will use the mask enhanced model to attempt to recognize the face behind the mask. If the occluded face isn't covered by a mask, then the normal occluded model will be used instead.	Mask	Detect section of the Recognition Preferences menu
recognizer.detect-mask-threshold	0.5	Specifies the threshold at and above which mask detection will conclude that *mask=true*.	Mask Detection Threshold	Detect section of the Recognition Preferences menu
recognizer.detect-occlusion	FALSE	Enables occlusion detection during recognition.	Occlusion	Detect section of the Recognition Preferences menu
recognizer.detect-sentiment	FALSE	Enables the detection of sentiment information.	Sentiment	Detect section of the Recognition Preferences menu
recognizer.identity-masked-threshold-offset	0	Sets the identity threshold when detecting masks.	Masked face threshold offset	Identity recognition threshold section of the Recognition Preferences menu
recognizer.identity-proximity-threshold-allowance	0.13	A boost value that is added to the Identity Recognition Threshold.	Proximity threshold allowance	Identity recognition threshold section of the Recognition Preferences menu

Property	Default Value	Description	UI Setting Name	UI Setting Location
recognizer.identity-recognition-threshold	0.54	Identity recognition threshold.	Identity recognition threshold	Identity recognition threshold section of the Recognition Preferences menu
recognizer.learning-enabled	FALSE	Enables the feed to learn new identities.	Identity	Detect section of the Recognition Preferences menu
recognizer.learn-occluded-faces	FALSE	Enables learning of occluded faces regardless of the maximum occlusion setting. If this is true then the server configuration will be used, which by default doesn't do any occlusion detection.	Allow learning of occluded faces	Detect section of the Recognition Preferences menu
recognizer.maximum-clip-ratio	0.1	The maximum clip ratio on either side the recognition candidate might have.	For recognition	Clipping tolerances section of the Recognition Preferences menu
recognizer.maximum-clip-ratio-identification	0	The maximum clip ratio on either side the insertion candidate might have.	For learning/strangers	Clipping tolerances section of the Recognition Preferences menu
recognizer.maximum-occlusion	0	The maximum occlusion value that is allowed when adding new candidate images into the Person Directory. If the face is occluded with a value greater than this then the face will not be added, but if it's less than or equal to this value then it will be added.	Occlusion threshold	Detect section of the Recognition Preferences menu

Property	Default Value	Description	UI Setting Name	UI Setting Location
recognizer.maximum-pitch-identification	0.4	The maximum pitch value used to determine if the face is looking straight ahead. The pitch value is the forward/backward movement of the face.	Max Pitch	Minimum required center pose quality section of the Recognition Preferences menu
recognizer.maximum-roll-identification	0.15	The maximum roll value used to determine if the face is looking straight ahead. The roll value is the side to side tilt movement of the face.	Max Roll	Minimum required center pose quality section of the Recognition Preferences menu
recognizer.maximum-yaw-identification	0.4	The maximum yaw value used to determine if the face is looking straight ahead. The yaw value is the side to side movement of the face.	Max Yaw	Minimum required center pose quality section of the Recognition Preferences menu
recognizer.minimum-center-pose-quality	0.05	The minimum center pose quality that a recognition candidate must have in order to allow the addition of the candidate image into the Person Directory.	For recognition	Minimum required center pose quality section of the Recognition Preferences menu
recognizer.minimum-center-pose-quality-identification	0.45	The minimum center pose quality that a recognition candidate must have in order to allow the addition of the candidate image into the Person Directory.	For learning/strangers	Minimum required center pose quality section of the Recognition Preferences menu

Property	Default Value	Description	UI Setting Name	UI Setting Location
recognizer.minimum-center-pose-quality-merging	0.59	The minimum center pose quality that a recognition candidate must have in order to allow merging.	For merging	Minimum required center pose quality section of the Recognition Preferences menu
recognizer.minimum-face-contrast-quality	0.1	The minimum face contrast quality that a face image must have before recognition is attempted.	For recognition	Minimum required face contrast quality section of the Recognition Preferences menu
recognizer.minimum-face-contrast-quality-identification	0.3	The minimum face contrast quality that a recognition candidate must have in order to allow the addition of the candidate image into the Person Directory.	For learning/strangers	Minimum required face contrast quality section of the Recognition Preferences menu
recognizer.minimum-face-contrast-quality-merging	0.45	The minimum face contrast quality that a recognition candidate must have in order to allow merging.	For merging	Minimum required face contrast quality section of the Recognition Preferences menu
recognizer.minimum-face-sharpness-quality	0.1	The minimum face sharpness quality that a face image must have before recognition is attempted.	For recognition	Minimum required face sharpness quality section of the Recognition Preferences menu
recognizer.minimum-face-sharpness-quality-identification	0.3	The minimum face sharpness quality that a recognition candidate must have in order to allow the addition of the candidate image into the Person Directory.	For learning/strangers	Minimum required face sharpness quality section of the Recognition Preferences menu
recognizer.minimum-face-sharpness-quality-merging	0.45	The minimum face sharpness quality that a recognition candidate must have in order to allow merging.	For merging	Minimum required face sharpness quality section of the Recognition Preferences menu

Property	Default Value	Description	UI Setting Name	UI Setting Location
recognizer.minimum-face-size	80	The minimum size of faces to detect. This value is applied after searching the image.	For recognition	Minimum required face size section of the Recognition Preferences menu
recognizer.minimum-face-size-identification	120	The minimum resolution that a recognition candidate image must have in order to allow the addition of the candidate image into the Person Directory.	For learning/strangers	Minimum required face size section of the Recognition Preferences menu
recognizer.minimum-face-size-merging	220	The minimum resolution a recognition candidate must have in order to allow merging.	For merging	Minimum required face size section of the Recognition Preferences menu
recognizer.pose-configuration-identification-enabled	FALSE	If this is true then pose configuration is enabled for identification. The pose configuration allows for replacing center pose quality with advanced parameters such as yaw, pitch and roll. When pose configuration is enabled, then recognizer.minimum-center-pose-quality is ignored and the following 3 properties are used instead: recognizer.maximum-yaw-identification, recognizer.maximum-pitch-identification, and recognizer.maximum-roll-identification.	Identification Enabled	Pose liveness action configuration section of the Recognition Preferences menu

9.1.5 Event Properties

Property	Default Value	Description	UI Setting Name	UI Setting Location
reporter.delay	0	Delay the event reporting to the server by this amount in seconds.	Reporting delay	Report events section of the Events Preferences menu
reporter.enabled	TRUE	Enables or disables event reporting.	Report events	Report events section of the Events Preferences menu
reporter.maximum-face-image-size	240	When event images are being saved, this property specifies the maximum size of the event face images, in pixels.	Preserve Event Face Image, Max Image Size	Report events section of the Events Preferences menu
reporter.maximum-scene-image-size	320	When event scene thumbnail images are being saved, this property specifies the maximum size of the event scene thumbnail images, in pixels.	Preserve Event Scene Thumbnail Image, Max Image Size	Report events section of the Events Preferences menu
reporter.minimum-event-duration-identified	0	The minimum allowed recognized person event duration in seconds. Events shorter than this duration will not be reported.	Min Identified Event Duration	Report events section of the Events Preferences menu
reporter.minimum-event-duration-stranger	0	The minimum allowed stranger event duration in seconds. Events shorter than this duration will not be reported.	Min Stranger Event Duration	Report events section of the Events Preferences menu
reporter.minimum-event-duration-unidentified	1500	The minimum allowed unrecognizable person event duration in seconds. Events shorter than this duration will not be reported.	Min Unrecognizable Event Duration	Report events section of the Events Preferences menu

Property	Default Value	Description	UI Setting Name	UI Setting Location
reporter.report-event-face	TRUE	Enables the inclusion of face thumbnails in event reports.	Preserve Event Face Image	Report events section of the Events Preferences menu
reporter.report-event-scene	FALSE	Enables the inclusion of scene images in event reports.	Preserve Event Scene Thumbnail Image	Report events section of the Events Preferences menu
reporter.report-secondary-events	FALSE	Reports secondary events. Secondary events are events that are associated with a primary event via the rootEventId property in the event. It is usually preferred to only report the primary events and the secondary events need to only be reported if there is more detail needed. If this is disabled then all events with a rootEventId property set to a primary event will not be reported. Only events with rootEventId not set to anything will be reported, which are the primary events.	Include Secondary Events	Report events section of the Events Preferences menu
reporter.report-speculated-events	TRUE	Reports events for speculated faces. Speculated faces are faces that aren't a 100% match, but are close.	Include Speculated Identity Events	Report events section of the Events Preferences menu

Property	Default Value	Description	UI Setting Name	UI Setting Location
reporter.report-stranger-events	TRUE	Reports events for people that are strangers. These are people not registered by the system after running facial recognition on the face.	Include Stranger Events	Report events section of the Events Preferences menu
reporter.report-unrecognizable-events	TRUE	Reports events for people that are not recognizable.	Include Unrecognizable Events from Camera and Include Unrecognizable Events from Video	Report events section of the Events Preferences menu
reporter.stranger-events.only-if-occluded	FALSE	Specifies whether only occluded stranger events should be reported. By default stranger events are only generated if the face is not occluded, if occlusion detection is enabled, otherwise they are generated when the face meets the identification image quality metrics. If this option is set to true then stranger events will be reported only if the face is occluded.	Include Stranger Events, Only if occluded	Report events section of the Events Preferences menu
reporter.stranger-maximum-age	0	The maximum age of strangers that will trigger stranger events. If a stranger older than the specified maximum age is detected, no stranger event is generated.	Include Stranger Events, Max Age	Report events section of the Events Preferences menu

Property	Default Value	Description	UI Setting Name	UI Setting Location
reporter.stranger-minimum-age	0	The minimum age of strangers that will trigger stranger events. If a stranger younger than the specified minimum age is detected, no stranger event is generated.	Include Stranger Events, Min Age	Report events section of the Events Preferences menu
reporter.update-images	FALSE	Updates the thumbnail images with higher quality images during the course of the event if possible.	Update in-progress event attributes, Include qualified images with updates	Report events section of the Events Preferences menu
reporter.update-in-progress-event-interval	1000	When **reporter.update-in-progress-event-properties** is set to `TRUE`, this property specifies the time interval in which to update event properties that change. When **reporter.update-in-progress-event-properties** is set to `FALSE`, this property has no effect.	Update in-progress event attributes, Update interval	Report events section of the Events Preferences menu
reporter.update-in-progress-event-properties	FALSE	If this is enabled, then any event properties that change will be updated at the specified **reporter.update-in-progress-event-interval**. Many properties do change periodically. (e.g. averages that are continually computed)	Update in-progress event attributes	Report events section of the Events Preferences menu

9.1.6 Miscellaneous Properties

Property	Default Value	Description	UI Setting Name	UI Setting Location
directory	N/A	Directory name.	User Directory	Account Preferences menu
mode	"Enrolled and Stranger Monitoring"	Specifies which operator mode the feed is using.	The Operator Mode drop-down menu	Camera Feed Analyzer
reporter.events-initial-date-offset	0	When processing a video file for events this value can be used to set the initial date offset to use for the events being processed. By default video events start with current system time.		
site	N/A	Site name, if any.	Default Site	Account Preferences menu

9.1.7 SAFR SCAN Properties

The UI for all these properties can be found in the SAFR SCAN Console.

Property	Default Value	Description	UI Setting Name	Sidetab Location	Tab Location
access.tailgating.cardId	""	If set, this *cardId* is sent to the connected control panel when tailgating is detected.	Tailgating Signal Card ID	Tailgating	Operation
access.tailgating.detect-on-exit	False	If `False`, tailgating is only detected for people entering the facility (i.e., approaching the camera). If `True`, tailgating is detected for people entering or exiting the facility.	Detection direction	Tailgating	Operation

Property	Default Value	Description	UI Setting Name	Sidetab Location	Tab Location
access.tailgating.distance	12	The maximum distance, in meters, after an authorized person where a subsequent person is considered a tailgater.	Maximum tailgating distance	Tailgating	Operation
access.tailgating.door-open-signal	"disabled"	Configures the door open signal. There are three possible values: **disabled**:The door open signal is disabled. **low**:By default, the door open signal will indicate that the door is closed; a charge must be sent in order to indicate that the door is open. **high**:By default, the door open signal will indicate that the door is open; a charge must be sent in order to indicate that the door is closed.	Door open input signal	Tailgating	Operation
access.tailgating.enabled	False	Enables tailgating detection.	Tailgating detection	Tailgating	Operation

Property	Default Value	Description	UI Setting Name	Sidetab Location	Tab Location
access.tailgating.facilityId	""	If set, this *facilityId* is sent to the connected control panel when tailgating is detected.	Tailgating Signal Card Facility ID	Tailgating	Operation
access.tailgating.time	10000	The minimum amount of time, in milliseconds, where tailgating is enforced after an authorized person is granted access.	Minimum enforced tailgating time	Tailgating	Operation
display.message.tailgating	"Tailgating"	Message when tailgating is detected.	Tailgating detected message	Display	Operation
display.tailgating.duration	5000	The duration, in milliseconds, of the LED display when SAFR SCAN detects tailgating.	Tailgating detected light duration	Display	Operation
display.tailgating.max-brightness	1.0	The brightness of the LED display when SAFR SCAN detects tailgating. This value ranges from 0 to 1, inclusive.	Tailgating detected light brightness	Display	Operation
display.tailgating.rgb	"FF6D00"	RGB color code in hexadecimal of SAFR SCAN's LED display when tailgating is detected.	Tailgating detected light color	Display	Operation

9.1.8 Properties Not Appearing in the UI

Property	Default Value	Description
enabled	FALSE	Enables or disables the feed.
input.type	"stream"	The type of feed input; either "stream" or "file".
recognizer.detect-mask-model	"precise"	Specifies the model to be used for mask detection. There are 3 possible values: **Precise**: This model produces the least number of false positives (i.e. detecting that a person is wearing a mask but there is no mask), but it suffers from the lowest true positive rate. (i.e. detecting masks that are actually there) **Sensitive**: This model produces the highest true positive rate, but it suffers from the highest number of false positives. **Normal**: This model produces a moderate amount of both false positives and true positives.
recognizer.mask-check-detection-edge-threshold	0.03	How far a face must be from the edge of the screen before a mask event detection is attempted. For example, if a face is 100 pixels, and **recognizer.mask-check-detection-edge-threshold** is set to .03 (i.e. 3%), then the face must be 3 pixels from the edge of the screen before SAFR will attempt a mask event detection. This property is not supported by SAFR Inside.

Property	Default Value	Description
recognizer.mask-check-enabled	FALSE	Enables the detection of mask event types. Mask event detection attempts can return 3 potential results: *mask=false*, *mask=indeterminate*, or *mask=true*. After the configured number of consecutive mask event detection results, the mask event state is set to the appropriate value. The mask event state can only progress from false towards true; the state never regresses back towards false. For example, once the mask event state for a viewed person becomes set to *mask=true*, then that person's mask event state won't ever regress to mask=indeterminate or *mask=false*. Events are generated when the mask event state is set to either mask=false or *mask=true*.
recognizer.mask-check-min-consecutive-mask-detections	1	Specifies the minimum number of consecutive *mask=true* mask detection results that must occur before SAFR will generate a *mask=true* event. See the **recognizer.mask-check-enabled** property for more information.
recognizer.mask-check-min-consecutive-no-mask-detections	2	Specifies the minimum number of consecutive *mask=false* mask detection results that must occur before SAFR will generate a *mask=false* event. See the **recognizer.mask-check-enabled** property for more information.
recognizer.mask-check-min-consecutive-occluded-no-mask-detections	2	Specifies the minimum number of consecutive *mask=indeterminate* mask detection results that must occur before SAFR will set the mask event state to *mask=indeterminate*. See the **recognizer.mask-check-enabled** property for more information.
recognizer.mask-check-min-mask-detection-size	70	The smallest face size, in pixels, upon which SAFR will attempt to detect a mask event.

Property	Default Value	Description
statistics.enabled	FALSE	Specifies whether VIRGO should record and report statistics for this feed.

9.2 Unsupported Properties

The following video feed properties are implemented for Video Recognition Gateway (VIRGO) feeds, but aren't supported for SAFR Inside.

- accelerator
- accelerator.gpu-id
- accelerator.gpu-frame-pool-size
- access.tailgating.cardId
- access.tailgating.detect-on-exit
- access.tailgating.distance
- access.tailgating.door-open-signal
- access.tailgating.enabled
- access.tailgating.facilityId
- access.tailgating.time
- capture.frame-delay
- capture.maximum-frames
- capture.overlay-level
- capture.size
- detector.detect-badges
- detector.detect-faces-service
- detector.detect-people
- detector.detect-people-every-n-frames
- detector.detect-people-input-size
- detector.detect-people-model
- detector.detect-rgb-liveness
- detector.detect-vehicle
- detector.detect-vehicle-every-n-frames
- detector.detect-vehicle-input-size
- detector.detect-vehicle-model
- detector.face-sensitivity-threshold
- detector.final-face-selection-threshold
- detector.initial-face-selection-threshold
- detector.maximum-concurrent-detections
- detector.maximum-input-resolution-badges
- detector.middle-face-selection-threshold
- detector.minimum-consecutive-detections-required-person
- detector.minimum-consecutive-detections-required-vehicle
- detector.minimum-required-badge-size
- detector.minimum-required-person-to-screen-height-proportion
- detector.minimum-required-vehicle-to-screen-proportion
- detector.minimum-searched-badge-size
- detector.minimum-searched-face-size
- detector.person-detection-threshold
- detector.person-separation-threshold
- detector.rgb-liveness-detection-scheme
- detector.rgb-liveness-evaluate-fake-over-n-frames
- detector.rgb-liveness-evaluate-over-n-frames

- detector.rgb-liveness-fake-threshold
- detector.rgb-liveness-minimum-center-pose-quality
- detector.rgb-liveness-minimum-confirmed-percent
- detector.rgb-liveness-minimum-face-context-percent
- detector.rgb-liveness-minimum-face-contrast-quality
- detector.rgb-liveness-minimum-face-sharpness-quality
- detector.rgb-liveness-minimum-face-size
- detector.rgb-liveness-minimum-preliminary-threshold
- detector.rgb-liveness-threshold
- display.message.tailgating
- display.tailgating.duration
- display.tailgating.max-brightness
- display.tailgating.rgb
- input.contrast-enhancement.detection-only
- input.contrast-enhancement.enabled
- input.contrast-enhancement.exposure-boost
- input.contrast-enhancement.low-light-threshold
- input.crop-rectangle.enabled
- input.crop-rectangle.height
- input.crop-rectangle.left
- input.crop-rectangle.top
- input.crop-rectangle.width
- input.lens-correction.enabled
- input.lens-correction.k1
- input.lens-correction.k2
- input.loop
- input.mirroring.enabled
- input.password
- input.rotation.angle
- input.stream.id
- input.stream.name
- input.stream.rtsp.transport
- input.user-name
- input.video-clock.enabled
- recognizer.3d-liveness-threshold
- recognizer.detect-3d-liveness
- recognizer.detect-pose-action
- recognizer.detect-rgb-action
- recognizer.detect-smile-action
- recognizer.maximum-concurrent-recognitions
- recognizer.minimum-center-pose-direct-gaze
- recognizer.minimum-center-pose-quality-identification
- recognizer.pose-action-max-cpq-jump-after-discontinuity
- recognizer.pose-action-max-cpq-jump-in-continuity
- recognizer.pose-action-max-profile-confidence-end
- recognizer.pose-action-max-profile-pose-quality
- recognizer.pose-action-max-profile-pose-roll
- recognizer.pose-action-min-center-pose-quality
- recognizer.pose-action-min-detections-per-second
- recognizer.pose-action-min-profile-confidence-start
- recognizer.pose-action-min-profile-pose-yaw
- recognizer.pose-action-min-profile-similarity
- recognizer.pose-action-min-transition-poses
- recognizer.pose-action-profile-pose-required-confirmations

- recognizer.pose-action-required-confirmations
- recognizer.rgb-action-identity-threshold-boost
- recognizer.rgb-action-min-recognitions-fake
- recognizer.rgb-action-min-recognitions-live
- recognizer.smile-detect-rgb-liveness
- recognizer.smile-duration
- recognizer.smile-identity-threshold-boost
- recognizer.smile-pre-delay
- recognizer.smile-rgb-action-min-recognitions-fake
- recognizer.smile-rgb-action-min-recognitions-live
- recognizer.smile-threshold-neutral
- recognizer.smile-thresholds-enabled
- recognizer.smile-threshold-smiling
- reporter.events-date-timestamps-enabled
- tracker.detect-direction-of-travel.person.bottom-boundary
- tracker.detect-direction-of-travel.person.down
- tracker.detect-direction-of-travel.person.down-distance
- tracker.detect-direction-of-travel.person.left
- tracker.detect-direction-of-travel.person.left-boundary
- tracker.detect-direction-of-travel.person.left-distance
- tracker.detect-direction-of-travel.person.right
- tracker.detect-direction-of-travel.person.right-boundary
- tracker.detect-direction-of-travel.person.right-distance
- tracker.detect-direction-of-travel.person.top-boundary
- tracker.detect-direction-of-travel.person.up
- tracker.detect-direction-of-travel.person.up-distance
- tracker.enable-high-precision
- tracker.minimum-required-consecutive-badge-detections
- tracker.minimum-required-consecutive-mask-detections