AXIS Occupancy Estimator

User Manual

AXIS Occupancy Estimator

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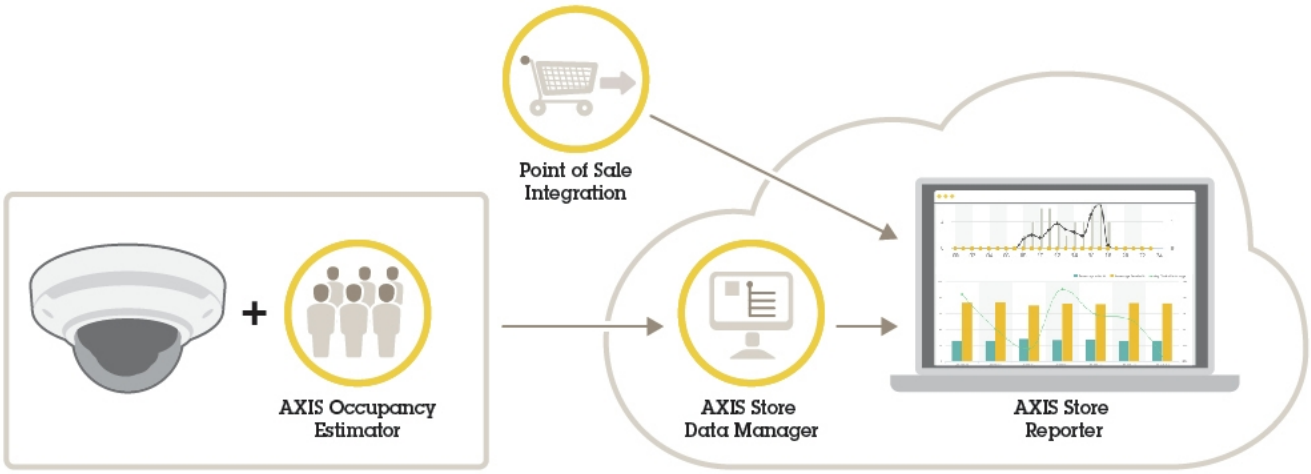
AXIS Occupancy Estimator

Solution overview

Solution overview



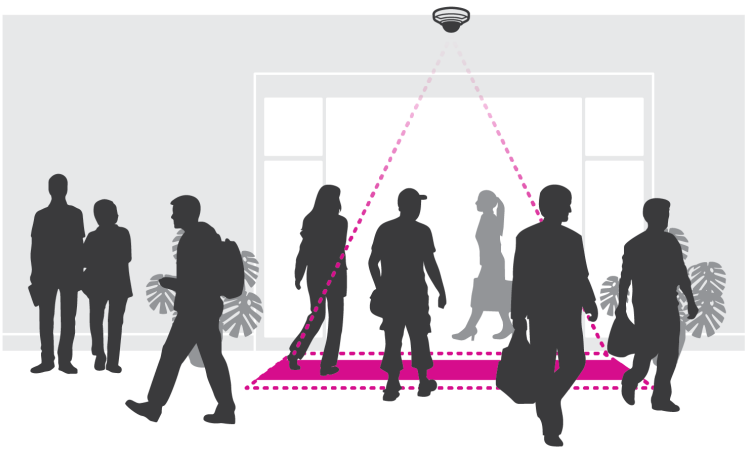
An overview of the different devices, applications, and tools needed for a complete system.

AXIS Occupancy Estimator

AXIS Occupancy Estimator is an analytic application that can be installed on a network camera. The application keeps track of how many people are currently occupying a closed area.

The application can also estimate how long the average person spends in the area.

AXIS Occupancy Estimator includes AXIS People Counter functionality.



How does it work?

The application works both in a single retail shop with just one entrance or in a store with several entrances and exits. Each entrance and exit to the building needs to be equipped with a network camera with AXIS Occupancy Estimator installed. If there are several cameras, they communicate with each other over the network in a primary and secondary concept. The primary camera continuously fetches data from the secondary cameras and presents the data in the live view. Every fifteen minutes, the primary camera sends the statistical data to AXIS Store Data Manager. Consequently, the reports generated from AXIS Store Data Manager can present the data in a minimum of 15 minutes time interval.

Mount the camera

Mount the camera

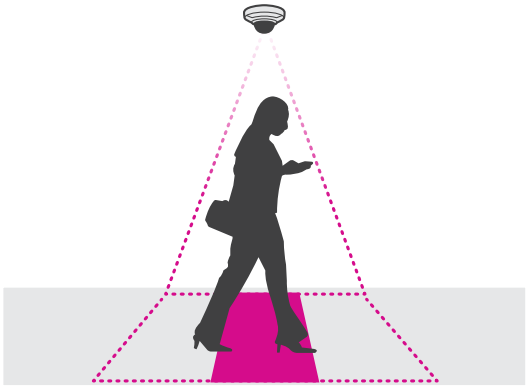
Mount the camera

NOTICE

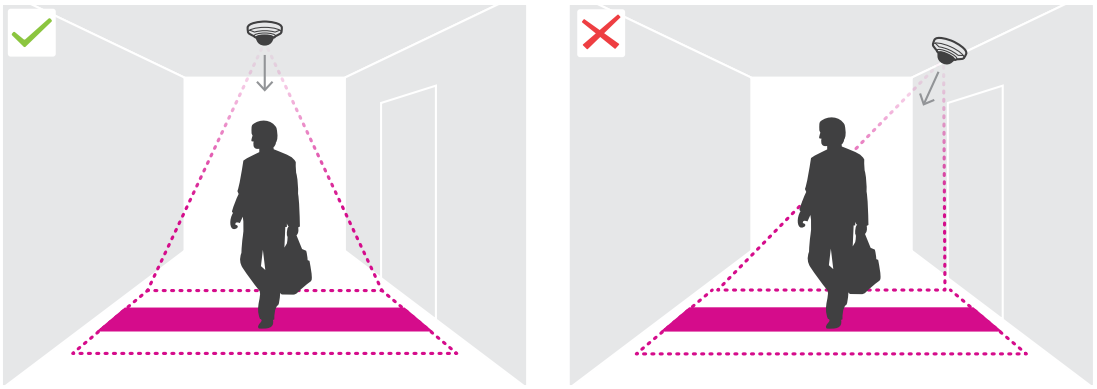
The application is designed for retail scenarios where it counts objects with the characteristics of an adult pedestrian. The exact height limitation of the object depends on camera model, camera lens, and the selected counter sensitivity.

In addition to the instructions in the camera's Installation Guide, there are some important steps to follow for the application to behave in the expected way:

- We recommend that you install the camera at a minimum height of 270 cm (8.9 ft).
- As a rule-of-thumb, the camera covers an area as wide as the camera's mounting height. For details about a specific camera model, see the **Camera selector for retail analytics tool** available at *www.axis.com*
- After installation, the covered area can be increased depending on the camera's zoom setting.
- If the camera is mounted high enough, you can get a coverage width of 8 meters. You can cover even wider entrances by using multiple counters.
- The camera must be mounted straight above the point where people pass.



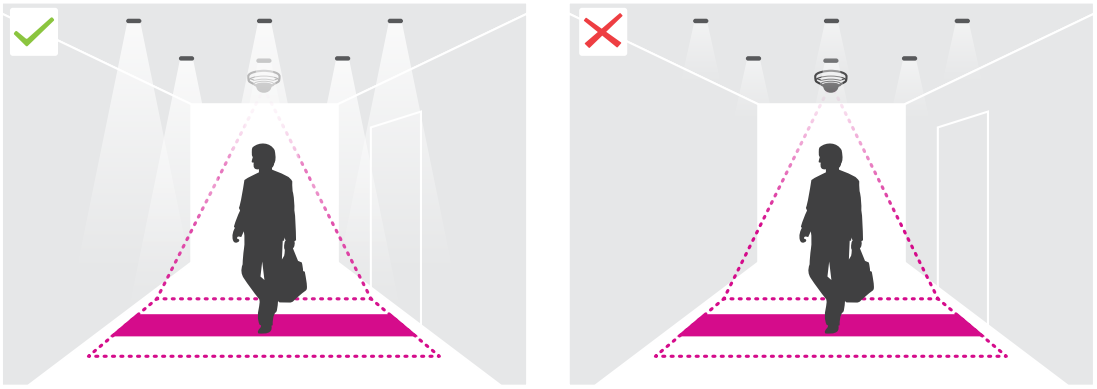
- Make sure the camera is facing straight down, in line with the ceiling.



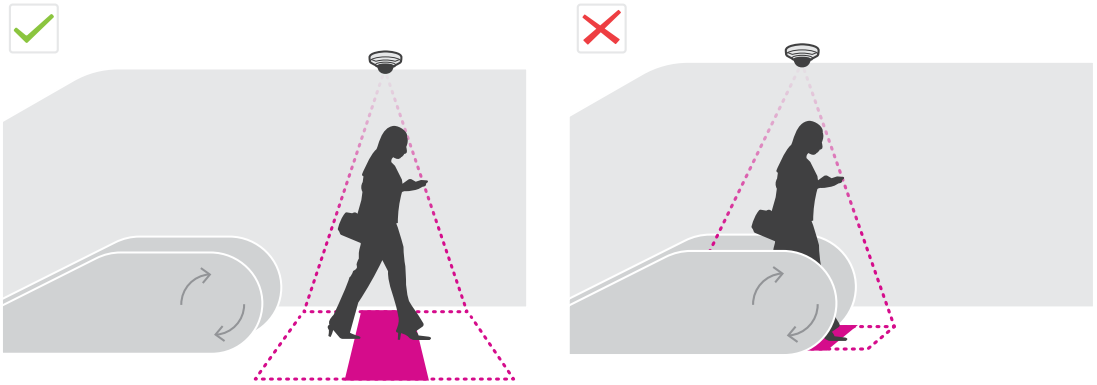
- If you install the application before you install the camera, you can use the counting area indicated in the live view to position the camera. The counting area should go from left to right, perpendicular to the path where people cross.

Mount the camera

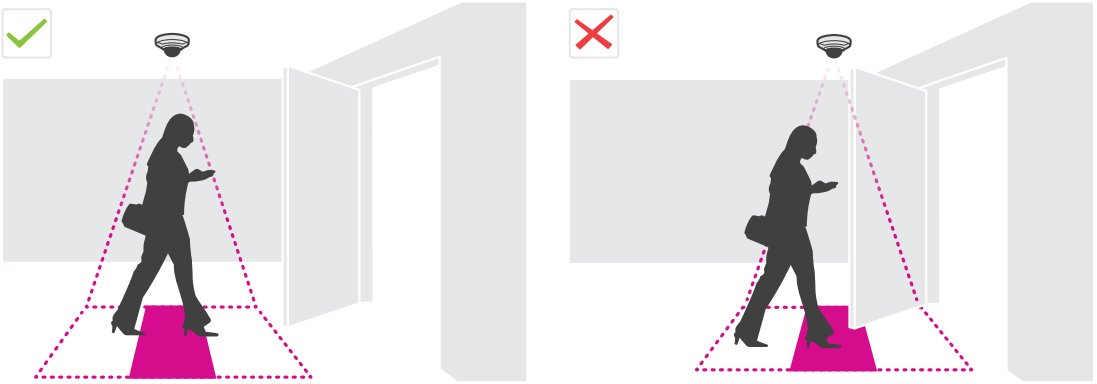
- Make sure there is sufficient white light or IR illumination on site.



- Make sure that there are no continuously moving objects in the counting area. For example, do not install the camera above an escalator.

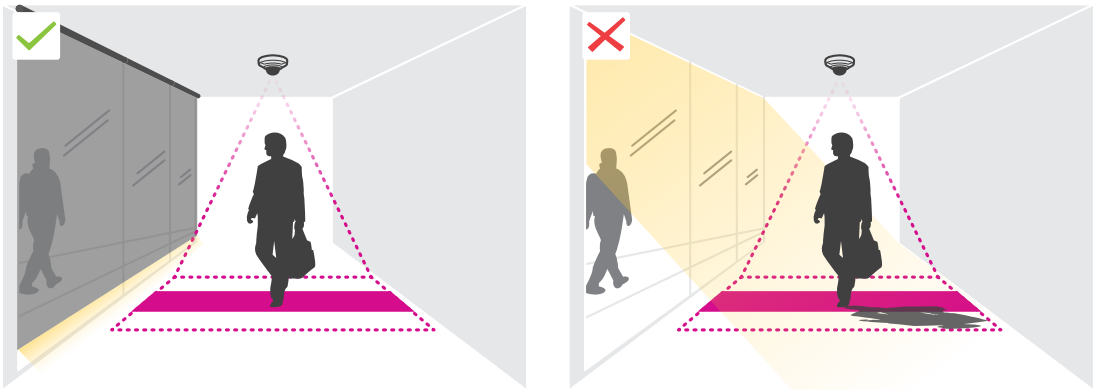


- Make sure there are no moving objects interfering in the counting area. For example, do not install the camera too close to a door.



- Avoid getting very strong light, like sunlight, and sharp shadows in the camera view.

Mount the camera



Find the device on the network

To find Axis devices on the network and assign them IP addresses in Windows®, use AXIS IP Utility or AXIS Device Manager. Both applications are free and can be downloaded from *axis.com/support*.

For more information about how to find and assign IP addresses, go to *How to assign an IP address and access your device*.

Access the device

1. Open a browser and enter the IP address or host name of the Axis device.

   If you do not know the IP address, use AXIS IP Utility or AXIS Device Manager to find the device on the network.

2. Enter the username and password. If you access the device for the first time, you must set the root password. See *Set a new password for the root account on page 7*.

3. The live view page opens in your browser.

Secure passwords

Important

Axis devices send the initially set password in clear text over the network. To protect your device after the first login, set up a secure and encrypted HTTPS connection and then change the password.

The device password is the primary protection for your data and services. Axis devices do not impose a password policy as they may be used in various types of installations.

To protect your data we strongly recommend that you:

- Use a password with at least 8 characters, preferably created by a password generator.
- Don't expose the password.
- Change the password at a recurring interval, at least once a year.

Set a new password for the root account

Important

The default administrator username is **root**. If the password for root is lost, reset the device to factory default settings. See

Support tip: Password security confirmation check

1. Type a password. Follow the instructions about secure passwords. See *Secure passwords on page 7*.

2. Retype the password to confirm the spelling.
3. Click **Create login**. The password has now been configured.

Install the application on the camera

Note

- The license is only valid for one camera. You cannot activate the license on another camera without a new registration key.
- To install applications on the camera you need administrator rights.

1. Install the camera on your network..
2. Go to the camera's webpage in your browser, see the User Manual for the camera.
3. For products with firmware 7.10 or later, go to **Settings > Apps**.

   For products with firmware 6.50 or previous, go to **Setup > Applications** .
4. Upload the application file (.eap) to the camera.
5. Activate the license. If you're online, enter the license code. The application automatically activates the license.

How to activate the license when you're offline

To activate the license when you're offline, you need a license key. If you don't have a license key on the computer, do the following:

1. Go to *www.axis.com/applications*
2. Go to **License key registration**. You need the license code and the Axis device serial number.
3. Save the license key file on the computer and select the file when the application asks for it.

Access the application settings

1. In the camera's webpage, go to **Settings > Apps**, select the application and click **Open**.

Additional settings

Set the date and time

The date and time settings are important for your camera to keep the correct time for a longer period of time, and for the statistics to be attributed to the correct time.

1. To set the date and time you need to go to the camera's webpage.
   - For products with firmware 7.10 or later, go to **Settings > System > Date and time**.
   - For products with firmware 6.50 or previous, go to **Setup > System Options > Date & Time**.
2. For detailed instructions about the user account, go to the product's built-in help.

Create a user account

You can create user accounts with different privileges, so that unauthorized personnel can view statistics but not change any settings of the counter.

1. To create a user account, go to the camera's webpage.
   - For products with firmware 7.10 or later, go to **Settings > System > Users**.
   - For products with firmware 6.50 or previous, go to **Setup > System Options > Security > Users**.
2. For detailed instructions about the user account, go to the camera's built-in help.

Set up the counter

To check if the application is calibrated for your camera, go to the *Camera selector for retail analytics* tool.

1. In the application's webpage, go to **Settings > General**.
2. Make sure **Status** is on.
3. In the **Name** field, type the name of the camera or location.

   This can be for example "Axis_Main_entrance_T_building". All cameras need to have unique names.
4. Set **Calibration mode**. Do one of the following:
   - If the application is calibrated for your camera, select **Height setting**. Type the mounting height in the **Visual height** field.
   - If the application is not calibrated, select **Manual setting** and click **Setup**. Place a person underneath the camera and adjust the size of the yellow box so that it covers just one person.
5. If you need to zoom in, do one of the following:
   - Turn on **Digital zoom** and click **Setup**.
   - If the camera has optical zoom, you need to go to the camera's webpage to adjust the zoom.
6. Set **Direction in** to **Up** or **Down**, depending on the direction of the people passing by in live view.
7. To adjust the counting area, go to *Adjust the counting area on page 10*.

Additional settings

Adjust the counting area

Note

The camera model and the mounting height both limit how much you can adjust the counting area.

In the live view image, the counting area is indicated by two blue lines and a red area. A person needs to pass through the red area to be counted.

Use the curvature settings to change the shape so that it is natural for people to pass through the counting area. Keep the curvature as close to a straight angle as possible.

1. Go to **Settings > Counting area**.
2. To move the entire counting area up or down, use the **Line offset** slider. How much it can be moved depends on the counting area size.
3. To adjust the height of the counting area, use the **Counting area height** slider.
4. To adjust the width of the counting area, use the **Counting area width** slider. How much it can be changed will depend on the camera's mounting height.
5. To use a curved counting area, turn on the **Curved line** and then use the **Radius** slider to adjust the radius.
6. To change the direction of the curvature, click on the **Radius** icon.
7. Press the **Submit** button when you are done, otherwise the settings are not saved.
8. The counter may need to be fine-tuned for best performance, see *Validate the system on page 17*.

About multiple camera setup

NOTICE

You can only use this feature with cameras of the same model.

If you need to cover a wide entrance with several counters you can set up multiple cameras, also called **Neighbour counters**. To calculate how many cameras are needed to cover the entire width of the entrance, use the **Camera selector for retail analytics** tool available at *axis.com/tools*

Note

Note that this setup with primary and secondary cameras is not the same as the primary and secondary roles set under **Settings > AXIS Occupancy Estimator**. Multiple cameras are used to cover wide entrances or exits. The primary and secondary roles, however, are necessary for the occupancy algorithm to work.

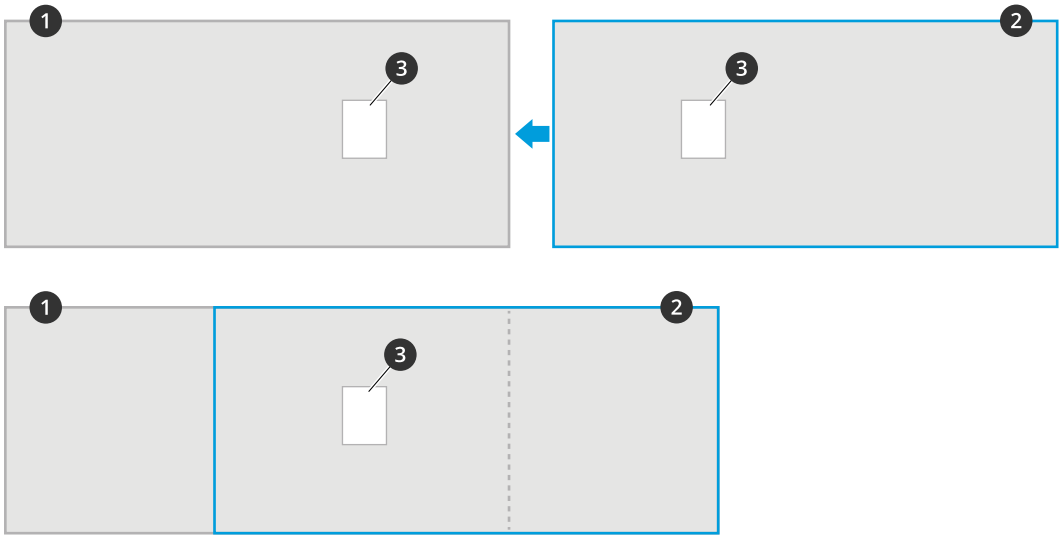
The primary camera overrides the following settings on the secondary cameras:

- Visual height
- Counter sensitivity
- Digital zoom
- Network & time
- Line offset
- Counting zone height
- Counting schedule

Additional settings

Configure multiple cameras

1. Mount the cameras side by side following the measurements indicated by the camera selector tool.
2. Go to the primary camera's application webpage and select **Settings > Advanced > Neighbour counters**.
3. Select **Enable as primary**.
4. For each secondary camera, you have to go to **Settings > Advanced > Neighbour counters > Display camera credential** and copy the following credentials:
   - IP address: the camera's URL
   - Username: automatically set to **AxisAnalytics**
   - Password: automatically generated
5. Go back to the primary camera's webpage and paste the credentials into the form under **Neighbour counters**.
6. If the cameras are configured to send data to AXIS Store Data Manager, make sure that only the primary camera is connected. The primary camera automatically uploads the data from all the secondary cameras as one single unit.
7. When you have connected all cameras, go to **Calibrate secondary position**.
8. Place an object, for example a sheet of paper, at the exact mid-point between the two cameras. It's very important that you place the object exactly in the middle of the two cameras since the object is used as a reference point to calibrate the cameras.
9. Drag the view of the secondary camera over the primary camera view. Try to avoid vertical offset.



1 Primary camera view
2 Secondary camera view
3 Reference object

10. Once the calibration is done, go to **Live view** in the primary camera to view all of the secondary cameras.

If you can't see the video stream from the secondary cameras in the primary camera, make sure that there are no other connections to the secondary cameras running.

Additional settings

How to set up a primary camera

One of the cameras has to be the primary. The primary camera represents the whole area and makes the estimations of the occupancy and average visit time for the whole area.

1. Enter an **Occupancy name**. This is the name that shows up in AXIS Store Data Manager.
2. Enter the local IP addresses for the secondary cameras.
   - If the secondary camera connects two different occupancy areas, select **Reverse In/Out direction**. See *About reverse in/out direction on page 12*.
   - If there are no secondary cameras, leave the IP address field empty.
3. Select **Full-day analysis**, see *About full-day analysis on page 13*.
4. Select **Occupancy mode**, see *How to change to naïve occupancy mode on page 14*.

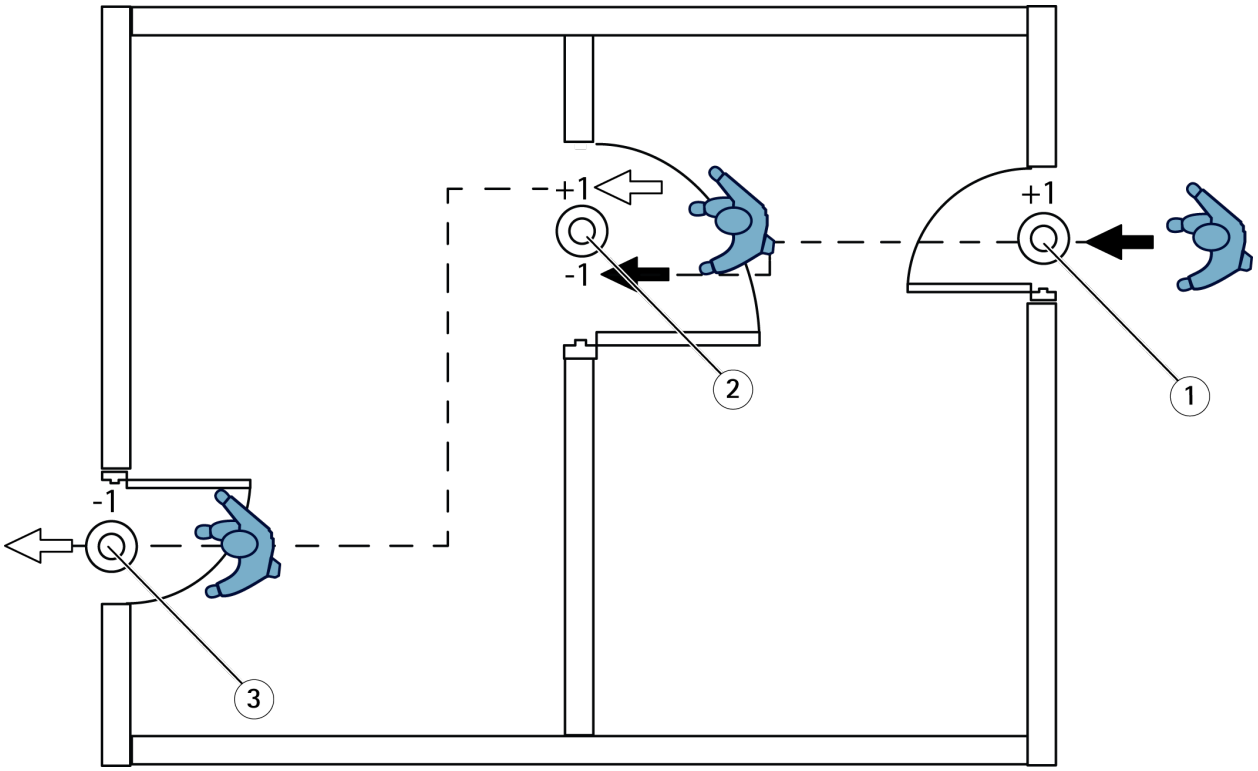
How to set up a secondary camera

1. Install AXIS Occupancy Estimator on all of the cameras covering the entrances or exits.
2. Go to **Settings > AXIS Occupancy Estimator**.
3. Select **Secondary**.
4. Go to **Settings > Advanced > Neighbour counters**.
5. Select **Display camera credentials**.
6. Copy the IP address, username and password.
7. In the primary camera, go to **Settings > AXIS Occupancy Estimator** and add the credentials to the list of secondaries. See *How to set up a primary camera on page 12*.

About reverse in/out direction

To calculate the occupancy levels of the two adjacent rooms connected by the same secondary camera, the **Reverse In/Out direction** must be selected in one of the primary cameras. This overrides the **Direction in** setting made in the secondary camera, but only for this occupancy area. In other words, this ensures that people walking **out** from the first room, are considered walking **in** to the second room and vice versa.

Additional settings



1 *Primary camera, room 1*
2 *Secondary camera*
3 *Primary camera, room 2*

About full-day analysis

The full-day analysis is selected by default.

Full-day analysis means that the occupancy that has been calculated during the day will be slightly modified after closing. This is because when the data for a complete day is gathered, more details about that day is available and the application can give a more precise estimation of the occupancy during that day. The occupancy application automatically detects when the occupancy area is open or closed by observing the flow of visitors.

Consequently, full-day analysis also means that the primary camera only sends statistical data once a day to AXIS Store Data Manager.

About smart and naïve occupancy mode

AXIS Occupancy Estimator can be run in two modes. The application is developed for smart occupancy, however at locations where traffic and average visit time are not steady, naïve occupancy can still provide additional value

Smart occupancy mode

The smart occupancy means that the application analyses frequency of passages and in turn calculates an average visit time, which is then used to filter away counting errors accumulating throughout the day. The output is an estimated occupancy and average visit time at any given time as well as a corrected full day analysis at the end of the day.

Naive occupancy mode

If you select the naïve occupancy mode, the application estimates the occupancy by counting "people coming in" minus "people coming out". This estimation is not as sophisticated as the smart occupancy mode, and the occupancy error accumulates over time. The error will be larger if there is a high flow of people and if the counter is poorly configured.

Additional settings

The table shows recommended occupancy mode for different scenarios, based on traffic flow and average visit time.

Location	Smart occupancy mode	Naive occupancy mode	Comments
Larger grocery store (super-market)	x		High flow of people, similar average visit time.
Library		x	Low flow of people, varying average visit time.
Pharmacy	x		Medium flow of people, varying average visit time.
Cinema		x	Varying average visit time and long visit time, in most cases more than 90 minutes.
Fast food restaurant	x		High flow of people, similar average visit time.
News agent/kiosk	x		High flow of people, similar average visit time.
Coffee shop		x	Low flow of people, varying average visit time.
Gym	x		Medium flow of people, long average visit time but in most cases less than 90 minutes.
Shopping mall		x	High flow of people, varying average visit time, in most cases more than 90 minutes. For the individual shops in the mall the average visit time is likely to be significantly shorter and the application can be applied in smart occupancy mode.
Destination store (specialty retail)	x		High flow of people, similar average visit time.

If you select naïve occupancy mode, we recommend that you schedule a reset of the counter. See *How to change to naïve occupancy mode on page 14*.

How to change to naïve occupancy mode

1. Go to **Settings > AXIS Occupancy Estimator**.
2. Set **Occupancy mode** to **Naïve**.
3. Select when to reset the counter by moving the **Reset occupancy** slider.

If you don't want to reset the counter automatically, move the slider to the right until it says **Never reset occupancy**. You can reset the counter at any time in the live view.

Send an email when the occupancy level exceeds the limit

This example explains how to set up a rule to send an email when the number of people inside the premises exceeds a limit. In the example, the limit is 200.

Set the maximum occupancy limit

1. In the application, go to **Settings > AXIS Occupancy Estimator**.
2. Select **Enable stateful events**.
3. Enter `200` in **Higher threshold**.
4. Click **Submit**.

Create a rule

1. In the device's webpage, go to **Settings > System > Events > Rules** and add a rule.
2. Type a name for the rule.
3. In the list of conditions, under **Application**, select **Occupancy-High**.
4. In the list of actions, under **Notifications**, select **Send notification to email** and then select a recipient from the list.

   To create a new recipient, go to **Recipients**.
5. Type a subject and a message for the email.
6. Click **Save**.

Set up a schedule

The application automatically disables the counting functionality when it gets dark. If you want to limit the counting further, you can set up a schedule.

1. Go to **Settings > Schedule**.
2. Select start and stop times by moving the slider. You can set individual schedules for each day of the week by selecting **Per day schedule** and then move the corresponding slider.

Disable the application on a specific day of the week

Clear the checkbox next to the slider.

Anonymize people

You can configure the application so that people can no longer be identified from the camera. There are two levels of anonymization; soft and hard.

Anonymize soft

This feature blocks all video streams and images from the camera. The live view still shows a blurred image which means you can still see what is going on but you can't identify people.

1. Go to **Maintenance > Anonymize**.
2. Click **Anonymize soft**.
3. To go back to normal mode, click **Reset anonymization**. Only users with an administrator account can do this.

Anonymize hard

Important

Anonymize hard removes all administrator users, locks the root password, and can only be reversed by doing a reset to factory default on the camera.

1. Go to **Maintenance > Anonymize**.
2. Click **Anonymize hard**.

Additional settings

Copy the application settings to another camera

Use the copy functionality if you want to copy the application settings to, for example, other cameras in the same store with the same mounting height. Camera-specific settings, such as the application license and camera name, are not included.

1. To copy the application settings, go to **Maintenance > Parameter backups**.
2. Click **Copy**. The computer saves the file in your browser's default folder for downloads.

Validate the system

Note

Before you validate the system, make sure you have mounted the camera according to the recommendations. See *Mount the camera on page 4*.

When you have installed and set up all cameras in the building, we recommend that you validate the accuracy and fine-tune the system. This is likely to increase the accuracy or identify any problems with the counters.

To get an overview, go to **Statistics** and look at the counting data for a couple of days back. If the difference between number of persons going in and out is <5% it's a good first indication that the system is configured correctly.

If the difference is greater than that, go to *Validate the counter on page 17*.

Validate the counter

1. Go to **Live view**.
2. Click on the **Test accuracy** button.
3. Click **Hide** to hide the automatic counter.
4. Click **Start** and manually count 100 or more passages by pressing the up and down arrows on your keyboard. You can also use the **In** and **Out** buttons.
5. Click **Reset** if you need to start over and **Result** when you are done.
6. Check the accuracy table. Under normal circumstances, the total accuracy percentage should not be less than 95 %.
7. If you're not satisfied with the accuracy of the counter, go to *Fine-tune the counter on page 17*.

Fine-tune the counter

1. Go to *Mount the camera on page 4* and make sure it's not the physical mounting that is making the counter not work correctly.
2. Go to **Settings > General**.
3. Go to the **Counter sensitivity** slider, or click **Setup** if the counter is running in manual mode, and do one of the following:
   - If the counter is counting too many compared to the control figure, decrease the counter sensitivity with about 20 units or increase the size of the yellow box slightly.
   - If the counter is counting too few compared to the control figure, increase the counter sensitivity with about 20 units or decrease the size of the yellow box slightly.
4. Go to *Validate the counter on page 17* to revalidate the accuracy.

Integration

Send a notification when the occupancy limit is exceeded

This example explains how to set up a rule in AXIS Camera Station to send mobile notifications when the number of people inside the premises exceed the maximum limit. In the example, the maximum limit is 50.

Before you start

You need:

- a computer with AXIS Camera Station 5.36 or later installed
- AXIS Camera Station Mobile app

Set the maximum occupancy limit

1. In the application, go to **Settings > AXIS Occupancy Estimator**.
2. Select **Enable stateful events**.
3. Enter `50` in **Higher threshold**.
4. Click **Submit**.

Create a device event trigger

1. In AXIS Camera Station, click + and go to **Configuration > Recording and events > Action rules** and click **New**.
2. Click **Add** to add a trigger.
3. Select **Device event** from the list of triggers and click **Ok**.
4. In the **Configure device event trigger** section:
   - In **Device**, select the device.
   - In **Event**, select **Occupancy-High**.
   - In **Trigger period**, set an interval time between two successive triggers. Use this function to reduce the number of successive recordings. If an additional trigger occurs within this interval, the event will continue and the trigger period starts over from that point in time.
5. In **Filters**, set **active** to **Yes**.
6. Click **Ok**.

Create actions to send notifications to the mobile app

1. Click **Next**.
2. Click **Add** to add an action.
3. Select **Send mobile app notification** from the list of actions and click **Ok**.

Note

The message is what the receiver sees when an alarm is triggered.

4. In **Message**, enter the message to send when the occupancy limit is exceeded.
5. Select **Default**. This opens the main page of the AXIS Camera Station Mobile app when the receiver clicks the notification.
6. Click **Ok**.

Integration

Specify when the alarm is active

1. Click **Next**.
2. If you only want the alarm to be active during certain hours, select **Custom schedule**.
3. Select a schedule from the list.
4. Click **Next**.
5. Enter a name for the rule.
6. Click **Finish**.

Statistics

Statistics

There are several ways to use the statistics from the counter:

- In the application's webpage, view real-time counting data in the built-in graphs.
- View built-in graphs in day and week view from the statistics page. The data is updated in real time.

  Data is available on the camera for up to 90 days and updated every 15 minutes. The data is stored in 15-minute bins representing the in and out counts for the 15-minute periods.
- Download data through an open API. See *VAPIX® Library*.
- Use AXIS Store Data Manager, a software package that acts as a central point to store and manage data collected from all devices. See *Connect a camera to a folder in AXIS Store Data Manager on page 20*.
- Use AXIS Store Reporter, a statistical web-based solution, for managing and monitoring historical data.
- Download statistics to your computer, see *Download statistics on page 20*.

Connect a camera to a folder in AXIS Store Data Manager

To perform this task, the application must be installed on the camera.

1. In AXIS Store Data Manager, go to **Sources** and get the **Folder connection identifier** and the **Folder connection password** for the folder you want to connect to.
2. In the camera's webpage, go to **Settings > Apps** and open the application's webpage.
3. In the application's webpage, go to **Settings > Reporting**.
4. To enable pushing data to a server, select **Enabled**.
5. Enter the web address for AXIS Store Data Manager, for example `https://[systemintegrator1].asdm.axis.com/datamanager` where `[systemintegrator1]` is replaced by a unique name.
6. Enter the **Folder connection identifier** and **Folder connection password**.
7. To test the connection, click **Run test**.
8. Click **Submit**.

Download statistics

1. Go to **Statistics > Download statistics**.
2. Select the file format:
   - If you select .xml, .csv or .json format you can also select the time interval.
   - File format .cnt is a proprietary, binary format, available for compatibility reasons.
3. Select date in the calendar. The data is presented in a new tab in your browser.
4. If you want to save the data as a local file on the computer, right-click and select **Save as**. The browser saves the file in the default download folder.

If you want to download all available data, click **Download all** next to the file format.

Troubleshooting

Issue	Action
The software doesn't upload to AXIS Store Data Manager.	The most common reason is network communication problems. Run the connection test under **Settings > Reporting** to get information about the root cause for the problem.
The software doesn't count.	Make sure the instructions for how to mount the camera has been followed, see *Mount the camera on page 4*.
The software doesn't count correctly.	Make sure people pass the entire counting zone, crossing both blue lines. They should not turn left or right before they have passed both lines.
There's no video stream in live view.	Make sure no one else is watching the video or that you have a video stream to a VMS or other ongoing recording. Check if the camera has a limited number of viewers or video streams allowed at the same time.
The software prompts me with a warning saying that the frame rate is too low.	1. Make sure the scene has sufficient lighting. If the scene is too dark, the camera does not deliver enough frames per second for the application to work. 2. If the processor in the camera has a high workload, the application might suffer. When streaming video from the camera make sure to open only one stream at a time.
The software doesn't count after changing parameters.	After changing the parameters the software may need to run up to 10 minutes before the counting accuracy is optimal.
I still can't get the software to count.	If you have followed the advice above and still can't get the software to work, contact your Axis reseller.

Restart the application

If the counting is inaccurate or the web interface unusually slow, you can try restarting the running services or restart the device.

To restart the device, go to **Maintenance > Restart**.

Reset the application

Go to **Maintenance > Reset** and do one of the following:

- To clear all counting data from the camera, click **Clear data**.
- To restore all settings of the application to default, click **Restore settings**.

Back up the settings

1. To back up the application settings, go to **Maintenance > Parameter backups**.
2. Click **Backup**. The computer saves the file in your browser's default folder for downloads.

Restore the settings

1. Go to **Maintenance > Parameter backups**.
2. Browse to select the previously saved backup file and then click **Restore**.

Troubleshooting

Generate a log report

If you have any trouble with your device you can generate a log report.

1. Go to **Maintenance > Logs**.
2. Click **Generate logs**.
3. The browser saves the file on the default download browser on the computer.
4. Attach the log report when submitting an issue to support.

Manage your license

Go to **Maintenance > Registration**.

- To register a license, click on the **Registration page**.
- If you want to remove you license from this product, click **Clear registration**.
- If you have an updated license, click **Renew license**.

The light web interface

There is a light-weight version of the web interface at the URL http://<servername>/people-counter/lite/index.html. These pages can for instance be used to embed the application into systems, for example AXIS Camera Station or Milestone's XProtect Smart Client.

There are four pages available:

- http://<servername>/people-counter/lite/day.html: The page shows the day plot, the same plot that can be seen on the **Statistics** page.
- http://<servername>/people-counter/lite/week.html: The page shows the week plot, the same plot that can be seen on the **Statistics** page.
- http://<servername>/people-counter/lite/count.html: A page that shows the live count for the current day.
- http://<servername>/people-counter/lite/liveview.html: A slim version of the live view page that shows live count and the video stream with the counting area as overlay.

The menu at the bottom of the pages can be disabled by appending ?clean to the URL:s above, e.g. http://<servername>/people-counter/lite/liveview.html?clean. You can also add a lang tag before lite to display these pages in other languages, example http://<servername>/people-counter/cn/lite/liveview.html

People counting apps API

Occupancy estimator API

The occupancy estimator API fetches the total number of people entering or leaving a location, their occupancy and average visit time.

Request

Request historical data for all available days and a 24–hour resolution.

```
http://<servername>//occupancy-estimator/.apioperator?occupancy-export-json&date=all
&res=24h
```

Response

```
{
  "counter":  {
    "name":  "Axis-ACCC8E019C5F",
    "serial":  "ACCC8E019C5F",
    "delta":  86400,
    "types":  {
      "Occupancy":  64,
      "Average Time":  64,
      "Total In":  66,
      "Total Out":  67
    }
  },
  "data":{
    "20170908000000" :  [0,0,17,17],
    "20170909000000" :  [0,0,18,17],
    "20170910000000" :  [0,0,1,0],
    "20170911000000" :  [0,0,0,0],
    "20170912000000" :  [0,0,21,15],
  }
}
```

Parameter	Description
name	The name of the application, chosen by the client.
serial	The Mac address for the camera.
delta	The time difference between `data` entries, measured in seconds.
Occupancy	The number of people currently in the location.
Average time	Average time a person is staying in a location.
Total In	Total number of people entering a location.
Total Out	Total number of people leaving a location.

API specification

Real-time data

Request a JSON file with the real time occupancy data.

```
http://IPaddress/local/occupancy-estimator/.api?live-occupancy.json
```

Reset occupancy

Request a reset of the available occupancy data.

```
http://IPaddress/local/occupancy-estimator/.api?occupancy-reset&occ=[value]
```

Export occupancy

Export the occupancy data by specifying a date and time frame using either the CSV, JSON or XML-format.

CSV

```
http://IPaddress/local/occupancy-estimator/.api?occupancy-export-csv&date=[date]
&res=[res]
```

JSON

```
http://IPaddress/local/occupancy-estimator/.api?occupancy-export-json&date=[date]
&res=[res]
```

XML

```
http://IPaddress/local/occupancy-estimator/.api?occupancy-export-xml&date=[date]
&res=[res]
```

Parameter	Description
`[date]`	A date in the form `YYYYMMDD`, for example `date=20180520`
`[res]`	`1m` for data in 1 minute bins.
	`15m` for data in 15 minute bins.
	`1h` for data in 1 hour bins.
	`24h` for data in 24 hour bins.

People counting apps API

The following applications include People counter functionality:

AXIS People counter – Intended for retail environments, like stores or shopping malls, or other environments where you want to count people.

AXIS Occupancy Estimator – Keeps track of how many people are currently occupying a closed area. The application can also estimate how long the average person spends in the area.

AXIS Direction Detector – Monitors in what direction people are passing under a camera. If a person is moving in one of the directions, the application can trigger an alarm.

AXIS Tailgating Detector – Detects if more than one person passes under a camera during a predefined time interval. If the application detects more than one person it can trigger an alarm.

AXIS Random Selector – Detects when someone is leaving the premises and randomly determines if that person should be scheduled for inspection or not.

Common examples

Note

The value of *<appname>* in the different examples specifies the application according to the table below.

Value	Application
`people-counter`	AXIS People Counter
`occupancy-estimator`	AXIS Occupancy Estimator
`direction-detector`	AXIS Direction Detector

People counting apps API

Value	Application
`tailgating-detector`	AXIS Tailgating Detector
`random-selector`	AXIS Random Selector

Example

Request real time data from People Counter.

Request

```
http://<servername>/local/<appname>/.api?live-sum.json
```

Return

```
{
  "serial":"00408CAC512B",
  "name":"Exit south",
  "timestamp":"20170503112756",
  "in":12,
  "out":318
}
```

See *Request real-time data on page 27* for more information.

Example

List all days of data available in People Counter.

Request

```
http://<servername>/local/<appname>/.api?list-cnt.json
```

Return

```
{
  "timestamp" :  "20170513132513",
  "days":["20170510", "20170511", "20170513"]}
}
```

See *List available data on page 28* for more information.

Example

Request historical data for the 12th to the 15th of May 2017.

Request

```
http://<servername>/local/<appname>/.api?export-cnt&date=20170512-20170515
```

See *Download binary data on page 28* for more information.

Example

Request all available historical data.

Request

```
http://<servername>/local/<appname>/.api?export-cnt&date=all
```

See *Download binary data on page 28* for more information.

Example

Request historical CSV data for the 12th and the 15th of May 2017 with 15-minute resolution.

Request

```
http://<servername>/local/<appname>/.api?export-csv&date=20170512,20170515&res=15m
```

See *Request CSV data on page 29* for more information.

Example

Request historical data for all available days, with 24-hour resolution.

Request
`http://<servername>/local/<appname>/.api?export-csv&date=all&res=24h`

See *Request CSV data on page 29* for more information.

Example

Request historical XML data for the 12th and the 15th of May 2017 with 15-minute resolution.

Request
`http://<servername>/local/<appname>/.api?export-xml&date=20170512,20170515&res=15m`

See *Request XML data on page 30* for more information.

Example

Request Live view information from People Counter.

Request
`http://<servername>/local/<appname>/.api?cntpos.json`

Response
```
{
  "width":320,
  "height":240,
  "left":0,
  "right":296,
  "top":88,
  "bottom":224,
  "yfirst":88,
  "ylast":152,
  "radius":0
}
```

See *Live view information on page 31* for more information.

API specification

Request real-time data

Returns JSON file with real time counting data.

Request
`http://<servername>/local/<appname>/.api?live-sum.json`

The value of `<appname>` specifies the application according to the table below.

Value	Application
`people-counter`	AXIS People Counter
`occupancy-estimator`	AXIS Occupancy Estimator
`direction-detector`	AXIS Direction Detector
`tailgating-detector`	AXIS Tailgating Detector
`random-selector`	AXIS Random Selector

Return
```
{
  "serial":"<camera-serial>",
  "name":"<counter-name>",
  "timestamp":"<timestamp>",
  "in":<in>,
```

```
  "out":<out>
}
```

Return value descriptions

Value	Description
<camera-serial>	camera serial number
<counter-name>	name of the counter
<timestamp>	time in the camera in the format YYYYMMDDhhmmss
<in>	number of people passing in until now today
<out>	number of people passing out until now

List available data

Returns a list of days where data exists.

Request
`http://<servername>/local/<appname>/.api?list-cnt.json`

The value of <appname> specifies the application according to the table below.

Value	Application
people-counter	AXIS People Counter
occupancy-estimator	AXIS Occupancy Estimator
direction-detector	AXIS Direction Detector
tailgating-detector	AXIS Tailgating Detector
random-selector	AXIS Random Selector

Return

```
{
  "timestamp" :  "<timestamp>",
  "days":["YYYYMMDD", [..]  "YYYYMMDD"]}
}
```

Return value descriptions

Value	Description
<timestamp>	time in the camera in the format YYYYMMDDhhmmss
<days>	an array of days where there exists

Download binary data

This script returns a binary data file for the given date(s), to be used in AXIS Store Data Manager

Request
`http://<servername>/local/<appname>/.api?export-cnt&date=<date>`

The value of <appname> specifies the application according to the table below.

Value	Application
people-counter	AXIS People Counter
occupancy-estimator	AXIS Occupancy Estimator
direction-detector	AXIS Direction Detector
tailgating-detector	AXIS Tailgating Detector
random-selector	AXIS Random Selector

Request parameter descriptions

Parameter	Description
<date>	a date of the form YYYYMMDD
	a date interval of the form YYYYMMDD-YYYYMMDD
	comma separated dates of the form YYYYMMDD,[..],YYYYMMDD
	all for all available data

Return

A binary data file for the given date(s).

Request CSV data

Returns historical data in CSV format

Request
`http://<servername>/local/<appname>/.api?export-csv[&date=<date>][&res=<res>]`

The value of <appname> specifies the application according to the table below.

Value	Application
people-counter	AXIS People Counter
occupancy-estimator	AXIS Occupancy Estimator
direction-detector	AXIS Direction Detector
tailgating-detector	AXIS Tailgating Detector
random-selector	AXIS Random Selector

Request parameter descriptions

Parameter	Description
<date>	a date of the form YYYYMMDD
	a date interval of the form YYYYMMDD-YYYYMMDD
	comma separated dates of the form YYYYMMDD,[..],YYYYMMDD
	all (default) for all available data
<res>	15m (default) for data in 15 minute bins
	1h for data in 1 hour bins
	24h for data in 1 day bins

Return

This script returns data in plain text, comma-separated values. The first line contains a description of each element, and the following lines contain the corresponding data for the chosen time interval and resolution.

Request XML data

Returns historical data in XML format

Request
`http://<servername>/local/<appname>/.api?export-xml[&date=<date>][&res=<res>]`

The value of `<appname>` specifies the application according to the table below.

Value	Application
`people-counter`	AXIS People Counter
`occupancy-estimator`	AXIS Occupancy Estimator
`direction-detector`	AXIS Direction Detector
`tailgating-detector`	AXIS Tailgating Detector
`random-selector`	AXIS Random Selector

Request parameter descriptions

Parameter	Description
<date>	a date of the form `YYYYMMDD`
	a date interval of the form `YYYYMMDD-YYYYMMDD`
	comma separated dates of the form `YYYYMMDD,[..],YYYYMMDD`
	`all` (default) for all available data
<res>	`15m` (default) for data in 15 minute bins
	`1h` for data in 1 hour bins
	`24h` for data in 1 day bins

Return

This script returns data in XML format. The DTD file can be found at `http://<servername>/local/<appname>/appdata.dtd`.

Request JSON data

Returns historical data in JSON format

Request
`http://<servername>/local/<appname>/.api?export-json[&date=<date>][&res=<res>]`

The value of `<appname>` specifies the application according to the table below.

Value	Application
`people-counter`	AXIS People Counter
`occupancy-estimator`	AXIS Occupancy Estimator
`direction-detector`	AXIS Direction Detector

Value	Application
tailgating-detector	AXIS Tailgating Detector
random-selector	AXIS Random Selector

Request parameter descriptions

Parameter	Description
<date>	a date of the form YYYYMMDD
	a date interval of the form YYYYMMDD-YYYYMMDD
	comma separated dates of the form YYYYMMDD,[..],YYYYMMDD
	all (default) for all available data
<res>	15m (default) for data in 15 minute bins
	1h for data in 1 hour bins
	24h for data in 1 day bins

Return

This script returns data in JSON format.

Clear counting data

Request
`http://<servername>/local/<appname>/.apioperator?clear-data`

The value of <appname> specifies the application according to the table below.

Value	Application
people-counter	AXIS People Counter
occupancy-estimator	AXIS Occupancy Estimator
direction-detector	AXIS Direction Detector
tailgating-detector	AXIS Tailgating Detector
random-selector	AXIS Random Selector

Return
OK

Live view information

Returns information about the placement of the lines in Live view.

Request
`http://<servername>/local/<appname>/.api?cntpos.json`

The value of <appname> specifies the application according to the table below.

Value	Application
people-counter	AXIS People Counter
occupancy-estimator	AXIS Occupancy Estimator

Value	Application
direction-detector	AXIS Direction Detector
tailgating-detector	AXIS Tailgating Detector
random-selector	AXIS Random Selector

Response

```
{
   "width":<width>,
   "height":<height>,
   "left":<left>,
   "right":<right>,
   "top":<top>,
   "bottom":<bottom>,
   "yfirst":<yfirst>,
   "ylast":<ylast>,
   "radius":<radius>
}
```

Return value descriptions

Value	Description
<width>	dimension of the video stream
<height>	
<left>	x coordinates in pixels forstart and stop for the blue lines in Live view
<right>	
<top>	y coordinates in pixels for the two blue lines in Live view
<bottom>	
<yfirst>	y coordinates in pixels for the top and bottom of the red counting area, disregarding curvature
<ylast>	
<radius>	radius in pixels describing the curvature of the red counting area, as measured in the center of the area on both axes, or if the area is not curved

Show the system log

Request

```
http://<servername>/local/<appname>/.apioperator?show-logs
```

The value of <appname> specifies the application according to the table below.

Value	Application
people-counter	AXIS People Counter
occupancy-estimator	AXIS Occupancy Estimator
direction-detector	AXIS Direction Detector
tailgating-detector	AXIS Tailgating Detector
random-selector	AXIS Random Selector

Return

Displays the system logs.

People counting apps API

Generate a log archive

Request
`http://<servername>/local/<appname>/.apioperator?generate-logs`

The value of `<appname>` specifies the application according to the table below.

Value	Application
`people-counter`	AXIS People Counter
`occupancy-estimator`	AXIS Occupancy Estimator
`direction-detector`	AXIS Direction Detector
`tailgating-detector`	AXIS Tailgating Detector
`random-selector`	AXIS Random Selector

Return

A log archive

List people counter parameters

Request
`http://<servername>/local/<appname>/.api?params.json`

The value of `<appname>` specifies the application according to the table below.

Value	Application
`people-counter`	AXIS People Counter
`occupancy-estimator`	AXIS Occupancy Estimator
`direction-detector`	AXIS Direction Detector
`tailgating-detector`	AXIS Tailgating Detector
`random-selector`	AXIS Random Selector

Return

A JSON object of all the People Counter related parameters.

Set people counter parameters

The post format has a format where pairs and values need to be specified, best described by an example:
`&p1=Counter.Enable&v1=1&p2=Counter.Height&v2=280&setparams=needstobeincluded`

Note

For Firmware-version 5.60 and later, use: `setparams&Counter.Height=280` instead.

Request
`http://<servername>/local/<appname>/.apioperator?setparams`

The value of `<appname>` specifies the application according to the table below.

Value	Application
`people-counter`	AXIS People Counter
`occupancy-estimator`	AXIS Occupancy Estimator

People counting apps API

Value	Application
`direction-detector`	AXIS Direction Detector
`tailgating-detector`	AXIS Tailgating Detector
`random-selector`	AXIS Random Selector

Return
`OK`

User Manual
AXIS Occupancy Estimator

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