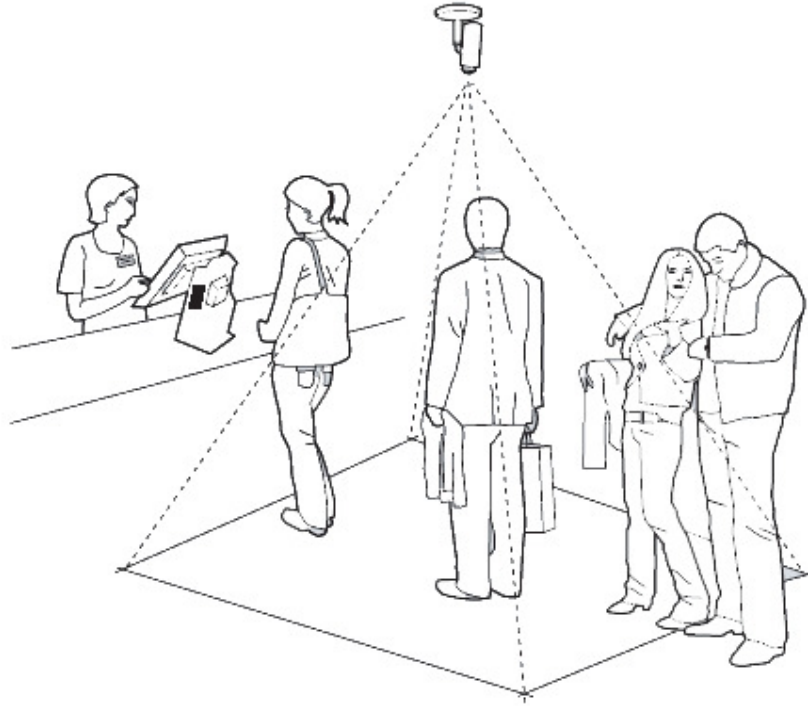# TrueView Queue® — Manual

Embedded for Axis IP cameras
version 1.0
Copyright © 2014 Cognimatics

Table of Contents

Overview

TrueView Queue® is a fully embedded software module developed by Cognimatics for Axis IP cameras, intended for retail and other environments where one wants to detect the number of persons in a queue or the intensity of movement in a queue area and analyse and potentially take action on that information. It is also a perfect tool for analyzing other interest areas in the store as hot spots.

One TrueView Queue® application can handle up to three queue lines (interest regions) simultaneously - depending on the installation situation, camera height and view of the scene- and trigger alarms if the queue becomes too long.

TrueView Queue® offers features like:

1. **IP technology** – Using IP technology it offers a cost efficient, infinitely scalable, easy-to-install and flexible system for queue detection.

2. **Embedded** – Fully embedded application running from the Axis IP cameras, no need for external computers or other equipment. All calculations and distinctions of the queue are made within the camera itself.

3. **Queue areas** - TrueView Queue® can handle up to three different queue areas from one camera at the same time.

4. **Maintenance** - Maintain your TrueView Queue® remotely over IP, set and check parameters, and stream video.

5. **Trigger events –** Trigger an alarm when the queue reaches a selected limit (X number of persons) in the queue area. An alarm can go of when X persons has been in the area for Y amount of time.

6. **Statistics –** Graphically display and export the queue statistics directly from the camera. The camera can hold up to three month of statistics.

7. **Web reporting** – Automatically export queue data to TrueView Web Report® in order to store data over time and to build graphs and reports or export data in different formats for further analysis and action.

Mounting the camera

The camera should be mounted at a high position looking down over the queue area. See example below. This is a convenience store with one queue area marked in purple.
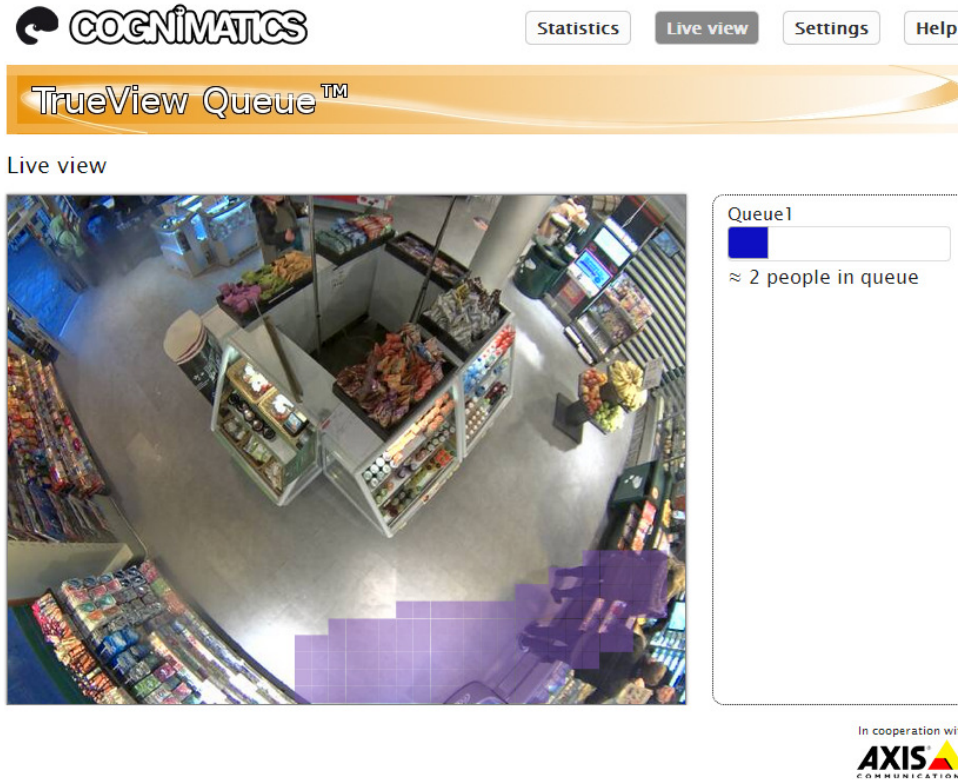

Installing the software

If TrueView Queue® software module is not already installed from your vendor it must be installed manually in your Axis camera.

1. Install the camera on your network, start it up and point your web browser to it (you can use the Axis IP Utility to easily find the camera on the network). The camera supported web browsers are Mozilla Firefox 3+, Internet Explorer 8+, Safari 4+ and Google Chrome 4+.

2. Upload the TrueView Queue® installation file by clicking *Setup -> Applications* in the Axis camera menu. Under the section *Select package file to upload*, specify the path to the TrueView Queue® installation file or use the browse button. Click on the *Upload Package* button.
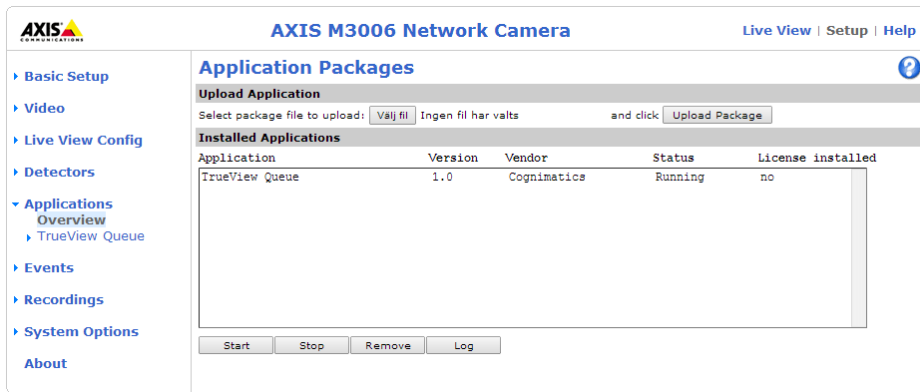
3. You will now be redirected to the registration page.
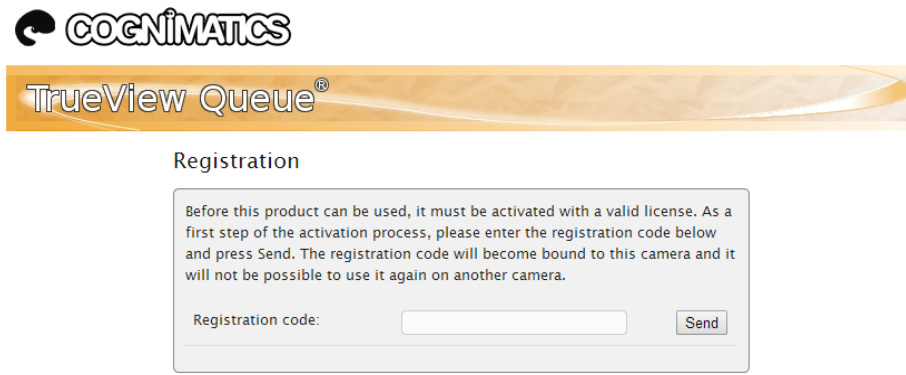
The first time you use the product, you will be asked to enter your license code. Enter your license code you have received in the licence delivery and follow the instructions.
The software will attempt to activate the license automatically by connecting to a registration server.

If the server cannot be reached you will be asked to activate the license on a computer with Internet access via the web page:
http://face.cognimatics.com/activation
When the license activation is complete the camera is ready for the queue configuration.

Note that your software license is valid for <u>one</u> camera only. You cannot activate another camera without a new software registration key.

Configuring TrueView Queue®

All configuration of the three different queue areas (interest regions) and their triggers are made from the settings page of the queue application.

General

Start off by giving the queue application an appropriate name. For example the area that the camera covers, e.g. Front desk, Reception, Register 2 etc. See picture below.
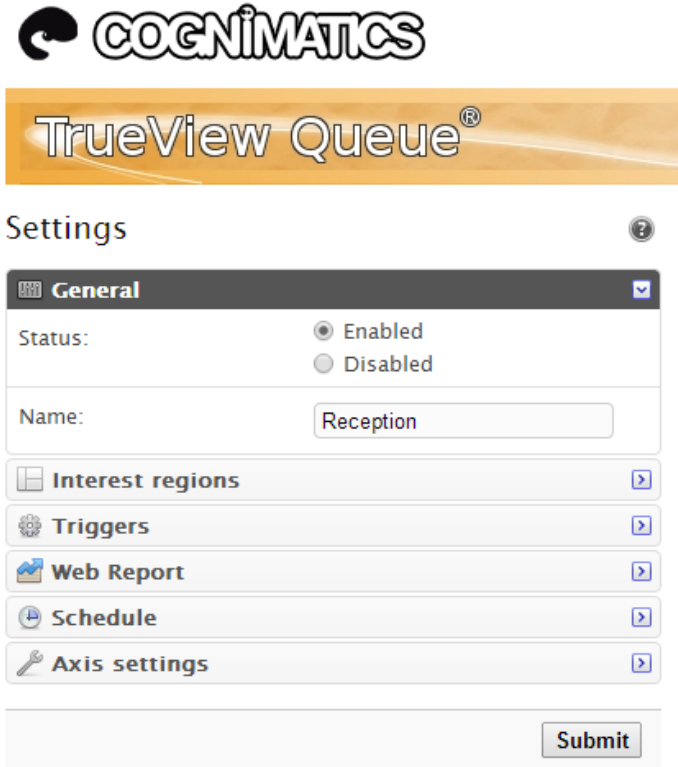
Interest Regions

In the *Interest Regions* section you define up to three different areas for your queues. Click on the image to get a grid for where you draw your queue areas. See picture below. The first interest region is purple, the second is orange and the third is green. On the picture below there is only one interest region.

Select one of the Empty Regions 1, 2 or 3 and draw an area for where your queue area preferably should be.

Tip: Hold the shift key down when drawing your region to get a larger brush.

When you have drawn an area of interest (queue area) you can click on *Live Calibration* in order to configure the number of persons that fit in your region i.e. your definition of a queue situation. See picture below.
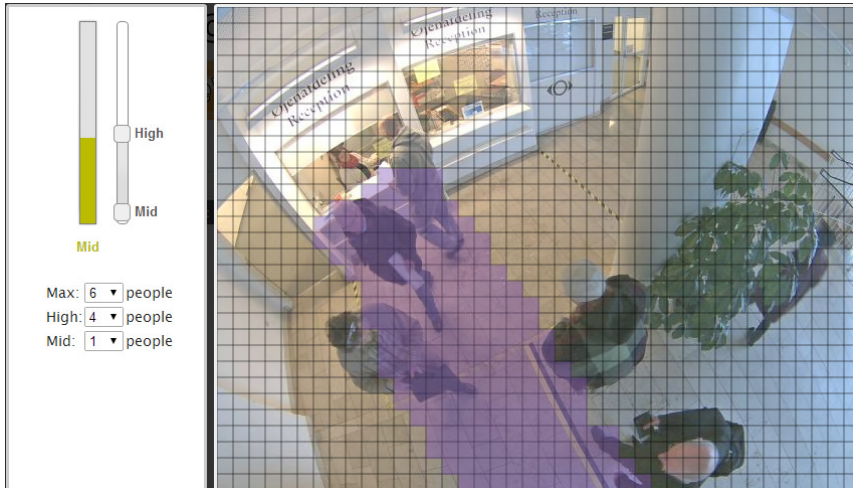
There are three different levels of intensity in an interest area (queue area): Low, Mid and High.
Start by selecting how many persons that represent Mid and High queue for your environement or based on your targeted vallue and then set the maximum numbers of persons that fit in the queue area.

See example below:
- Low = No queue at all.
- Mid = 1 person .
- High = 4 persons.
- Max = The maximum number of persons that can fit in the queue area at the same time.
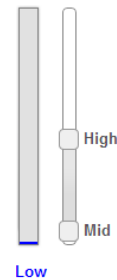
Now you can change the sliding bar in order to finetune the representation for Low, Mid and High queue according to your preference.
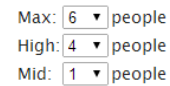
Tip: It is easier to setup the queue area and fine tune the settings when you have people standing under the camera and forming an actual queue.

When the setup of queue areas is done you need to submit your changes at the main settings page.

In order to confirm your changes or the setup of the queue areas you can go to *Live View* and see people queueing in your areas. See picture below.

Notice that the representaion of the number of persons only is an estimate based on the movement in the interest region (queue area) and not the abolute value at any given point in time.

Triggers

In order to trigger an alarm when the queue area is filled, e.g. when the queue reaches X number of persons, you enable the triggers and configure the queue limit and the time required before the trigger should go off. See picture below.

An example could be to trigger an event when the queue is full in order to open a new cashier line.


In this example, see picture above, the trigger will go off when three or more persons are standing in the "Left Region" for more then 10 seconds.

The trigger will activate an Axis Event that can be setup to send an email or trigger an I/O output etc.

Tip: It is possible to setup multiple triggers, click on the green plus sign at the upper right corner.

Axis Events

The Axis Events are managed from the Axis camera menu. To access the Axis menu you can click on Axis settings. See picture below.
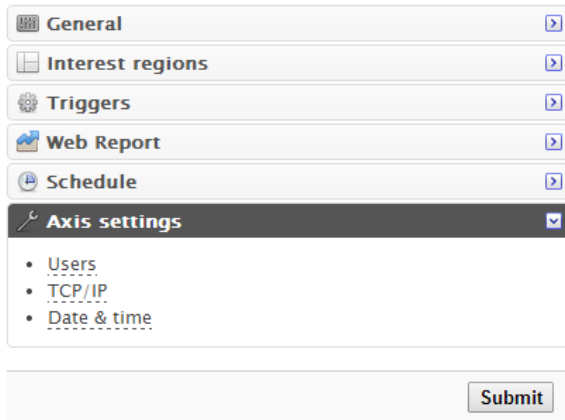
You can also change the URL to the camera as below in order to access the Axis menu.
http://<IP>/admin

In the Axis menu you should click on Events and then Action Rules.
Click Add to configure the event. See picture below.

In the Action Rule Setup, select the trigger type Application and QueueEvent.
In below example a video recording will start when the queue trigger goes off.
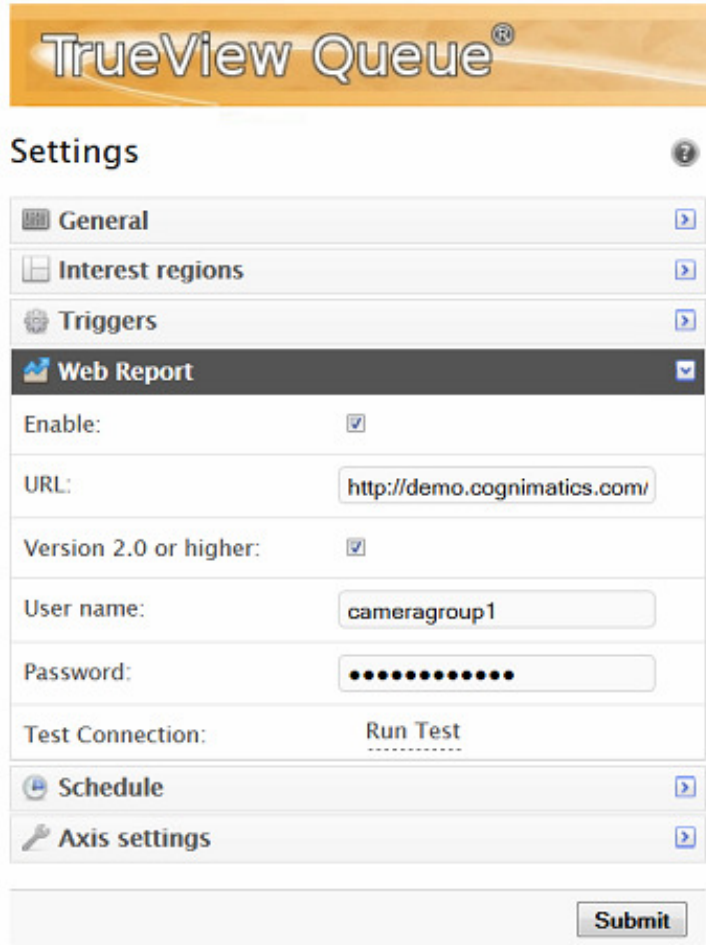
Web Report

Apart from showing statistics in the camera interface and delivering CSV data, TrueView Queue® can also push data to the TrueView Web Report® server. The settings are found in the Web Report menu in the queue application. See picture below.

1. Check the *Enable* check-box to enable pushing data to TrueView Web Report®.
2. Select the correct version of TrueView Web Report® that will be accessed.
3. Enter the Web Report server address and your camera group credentials.
4. Click *Run Test* to verify the connection to TrueView Web Report®. This will aid you with troubleshooting if some setting or provided information is incorrect.

The Web Report Server is a separate product from Cognimatics, more information can be found at www.cognimatics.com

Schedule

In order to avoid the camera detecting movements (queue indications) when the lightning is turned off during the night it is recommended to always setup a schedule for the TrueView Queue® application.

Statistics and Export

Week Chart

In the statistics menu (week chart) you will get information about how long time it has been medium and high queue during the last week.

In this example, high queue equals 3 to 4 persons and mid queue equals 1 or more persons. Only two queue areas has been used and the purple bar represents queue 1 and the orange bar represent queue 2.

By looking at the statistics we can see that queue 1 (purple bar) have a higher flow of persons compared to the queue 2 (orange bar).
However, queue 2 (orange bar) has a higher density of persons (high queue).

Notice that the Mid and High representation depends on how you have configured the interest regions (queue areas).
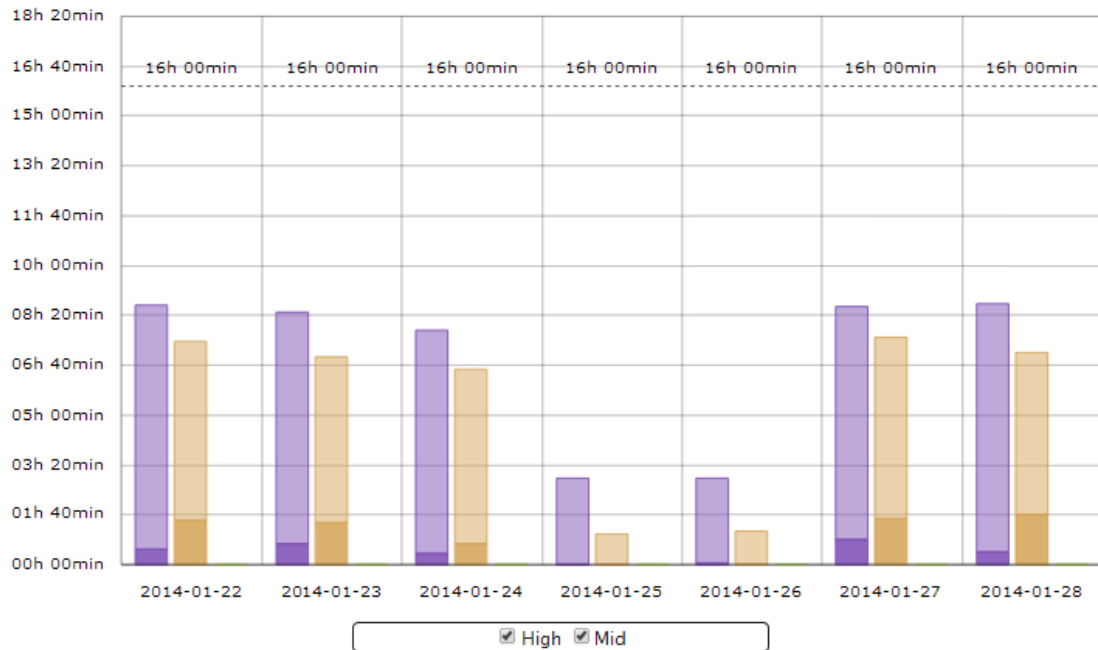
Day Chart (Queue time)

In the day chart you will get information about the minutes of Mid and High queue for each interest region (queue area).

By looking at the chart we can see that queue 1 (purple line) have over 20 minutes of high queue at twelve aclock (in this example high queue equals about 3 to 4 persons).
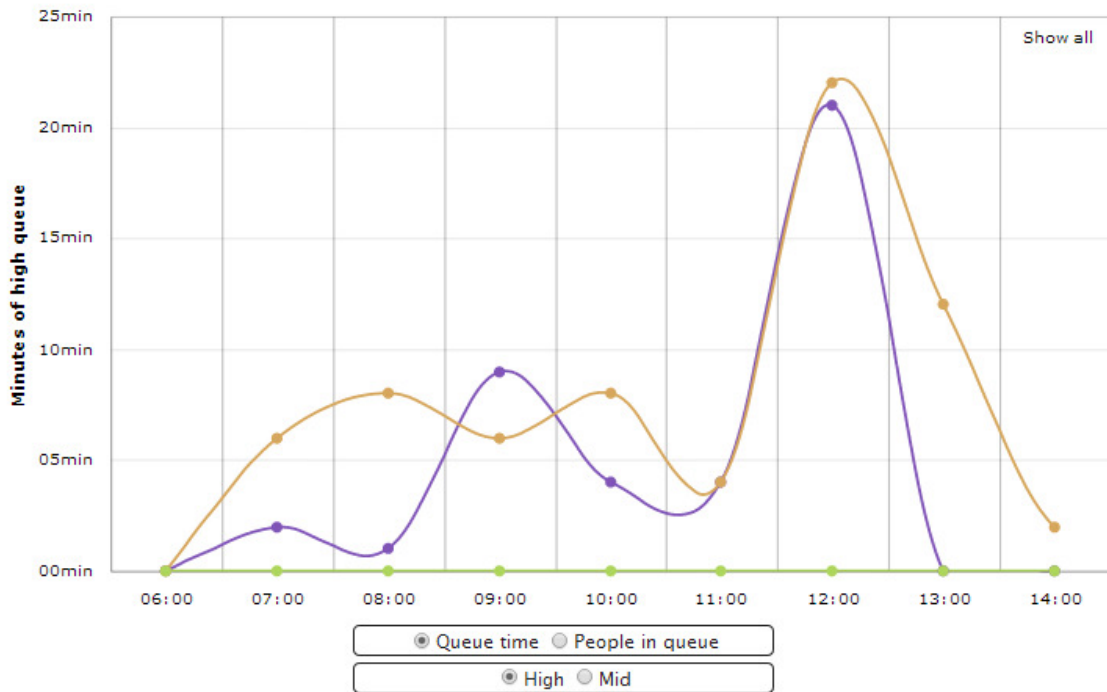
Day chart (People in queue)

You can also get information about the average of persons in the queue during the day.

By looking at the chart below we can see when people starts to queue and get an estimate of how many persons that queues during different time intervals for each interest region (queue area).
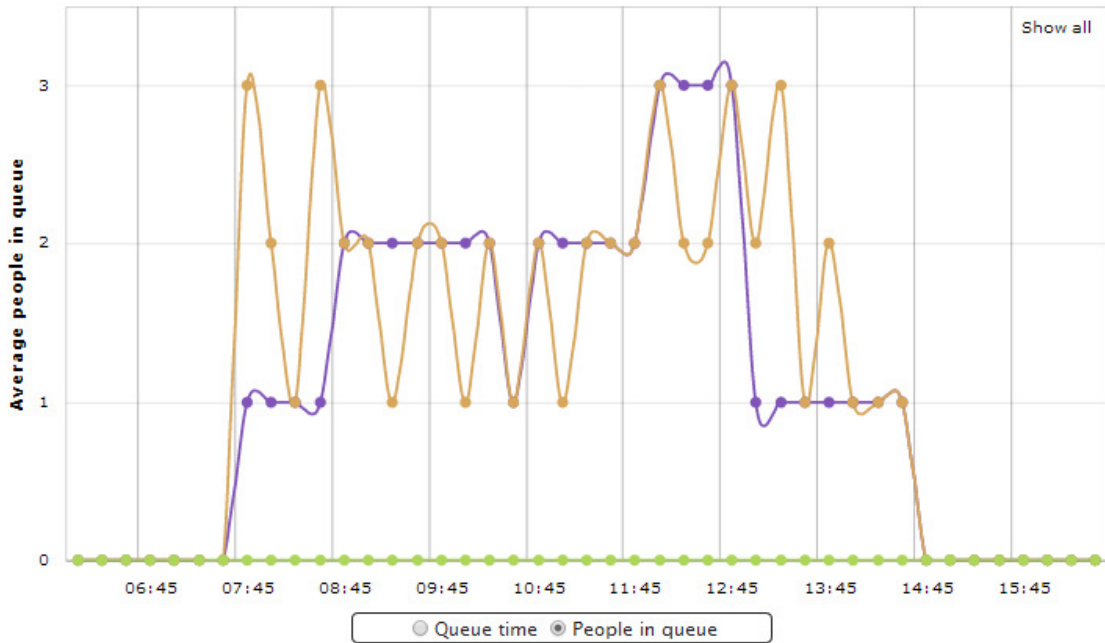
CSV Export

It is possible to export the data directly from the camera in CSV format.
Depending on what you want to export you need to select Queue time or People in queue.

The data is stored for 90 days in the camera and the shortest time resolution for export is 15 minutes interval. See picture below.

The export can be done for all 90 days at once or individual days by clicking on the day in the calender.

CSV file (queue time)

The CSV output for the queue time contains below columns:

- Interval start
- Interval stop
- Camera serial number
- Name
- Queue 1 High
- Queue 1 Mid
- Queue 1 Low
- Queue 2 High
- Queue 2 Mid
- Queue 2 Low
- Queue 3 High
- Queue 3 Mid
- Queue 3 Low

The output will look like below when exported in 15 minutes resolution.

2014-01-30 11:15:00,2014-01-30 11:30:00,00408CE9CH32,Queue Camera,<mark>1,12,2</mark>,0,13,2,0,0,15

2014-01-30 11:30:00,2014-01-30 11:45:00,00408CE9CH32,Queue Camera,2,12,1,1,13,1,0,0,15

The numbers marked <mark>yellow</mark> in above example is the data for Queue 1, High, Mid and Low. The numbers are in minutes and the total sum should always be 15 minutes when you export in a 15 minutes time interval.

The data should be interpreted like this:

1 minute of High queue.
12 minutes of medium queue.
2 minutes of low queue = no queue at all.

The High and Mid queue could represent X number of persons depending on how the configuration of the queue area was made.

CSV file (People in queue)

The CSV output for the People in queue contains below columns:

- Interval start
- Interval stop
- Camera serial number
- Name
- People in Queue 1
- People in Queue 2
- People in Queue 3

The output will look like below when exported in 15 minutes resolution.

2014-01-30 11:15:00,2014-01-30 11:30:00,00408CE9CH32,Queue Camera,1,1,0
2014-01-30 11:30:00,2014-01-30 11:45:00,00408CE9CH32,Queue Camera,<mark>2,1,0</mark>

The numbers marked <mark>yellow</mark> in above example is the data for Queue 1, 2 and 3. The numbers are an average of the number of persons that has stayed in the queue during a 15 minutes period.

The data should be interpreted like this:

The average number of persons between 11:30 to 11:45 in queue 1 = 2 persons
The average number of persons between 11:30 to 11:45 in queue 2 = 1 persons
The average number of persons between 11:30 to 11:45 in queue 3 = 0 persons

HTTP API

- Real-time people in queue data.
- Request CSV minute data: Returns historical minutes of queue data in CSV format.
- Request CSV people data: Returns historical people in queue data in CSV format.
- Clear local queue data.
- List application parameters.
- Set application parameters.
- Show the system log.
- Generate a log archive: Generates a gzip'ed tarball containing log files and settings

Real-time People in queue data.

URL
http://<servername>/local/queue/.api?live-sum-people.json

Format
JSON
Method
GET
Return

```
{
  "serial":"<camera-serial>",
  "name":"<counter-name>",
  "timestamp":"<timestamp>",
  "region1name":"<name1>",
  "region1people":<people1>,
  "region2name":"<name2>",
  "region2people":<people2>,
  "region3name":"<name3>",
  "region3people":<people3>
}
```

<camera-serial>
camera serial number
<counter-name>
name of the counter
<timestamp>

time in the camera in the format YYYYMMDDhhmmss

<region1name>

name of region 1
<region1people>

number of people standing in region 1

Example

Request the number of people standing in queue at this moment.

URL

http://<servername>/local/queue/.api?live-sum-people.json

Return

```
{
  "serial":"00408CAC512B",
  "name":"North counters",
  "timestamp":"20110615112756",
  "region1name":"Fast checkouts",
  "region1people":5,
  "region2name":"Main aisle",
  "region2people":4,
  "region3name":"Returns counter",
  "region3people":2,
}
```

Request CSV minute data

URL
http://<servername>/local/queue/.api?export-csv-
minutes[&date=<date>][&res=<res>]
where <date> can be:

• 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 and <res> can be
• 15m (default) for data in 15 minute bins
• 1h for data in 1 hour bins
• 24h for data in 1 day bins

Format
CSV
Method
GET
Return

This script returns data in plain text, comma-separated values. The first line is a comma-separated header describing each column. Each integer value states the number of minutes for which there has been a certain amount of queue (High/Mid/Low) for a certain region.

Example

Request historical CSV data for the 12th and the 15th of May 2012 with a 60 minute resolution.

URL

http://<servername>/local/queue/.api?export-csv-
minutes&date=20120512,20120515&res=1h

Request CSV people data

URL
http://<servername>/local/queue/.api?export-csv-people[&date=<date>][&res=<res>]
where <date> can be:

• 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 and <res> can be
• 15m (default) for data in 15 minute bins
• 1h for data in 1 hour bins
• 24h for data in 1 day bins

Format
CSV
Method
GET
Return

This script returns data in plain text, comma-separated values. The first line is a comma-separated header describing each column. Each integer value states the average number of people queueing for a certain region.

Note: Increasing <res> will average over a larger amount of time.

Example

Request historical CSV data for the 12th and the 15th of May 2012 with a 60 minute resolution.

URL
http://<servername>/local/queue/.api?export-csv-
people&date=20120512,20120515&res=1h

Clear local queue data

URL
http://<servername>/local/queue/.api?clear-data

Format
text/plain
Method
GET
Return
OK

List application parameters

URL
http://<servername>/local/queue/.api?params.json

Format
JSON
Method
GET
Return

A JSON object of all the application related parameters.

Set application related parameters

URL
http://<servername>/local/queue/.api?setparams

Format
text
Method
POST. The post format has a format where pairs and values need to be specified, best described by an example.
&p1=Counter.Enabled&v1=1&p2=WebReportUpload.Enabled&v2=1
Return
OK

Show the system log

URL
http://<servername>/local/queue/.api?show-logs

Format
Plain text
Method
GET
Return

Displays the system logs.

Generate a log archive

URL
http://<servername>/local/queue/.api?generate-logs

Format
tar.gz
Method
GET
Return
A log archive.

Supported cameras

All Axis ACAP (Axis Camera Application Platform) compatible cameras will work with the TrueView Queue® application.