

# Manual – TrueView Zone Counter™, embedded for Axis IP Cameras

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## Document history

November 10, 2008, 0.1	Initial version
April 6, 2009, 0.2	Gui-updates & Queue area

## Overview

TrueView Zone Counter™ - Queue Monitoring is a fully embedded software module for AXIS IP cameras, intended for shops and other indoor environments where you need to detect and count people in an area of interest. TrueView Zone Counter™ offers an unbeaten customer behavior analytics tool with features such as

- 1) **Embedded people area counter** – fully embedded into AXIS IP camera. TrueView Zone Counter™ is a powerful standalone people counter directly in your AXIS camera. Requiring no dedicated PC, all human detection and counting is done automatically in the camera.
- 2) **Queue Area** – Define an area of interest as a queue area. Record statistics about number people in queue and waiting time.
- 3) **IP technology** – Using IP technology it offers a cost efficient, infinitely scalable, easy-to-install and flexible system for automatic people counting, with a superior accuracy.
- 4) **Maintenance** – Maintain your software remotely over IP, set and check parameters, download or stream video.
- 5) **Web reporting** – automatically export all counting to SQL server from all TrueView Zone Counter™ in your system. This functionality requires a dedicated server running TrueView Web Report™.

Using TrueView Zone Counter™ you get instant access to key customer behavior analytics. The software module automatically detects and counts the number of people standing under the camera. Use it to monitor how many people are occupying certain areas of you your store, shopping mall or waiting rooms and view data per minute, hour or day over the network. With the TrueView Zone Counter™ you may collect data such as number of people in queue, waiting time in queue, customer hot zones, trend analyses, evaluation of advertising and promotions and enhance your strategic marketing decisions through effective monitoring of customer traffic. Improve your network video surveillance system with new cost-efficient possibilities. The software is a breeze to install and requires only a minimum of parameters to set.

There are several ways to use the data from TrueView Zone Counter™:

- View real time counting data.
- View graphs of historical data directly on the camera.
- Download data through an open API.
- Use TrueView Report™, which is a powerful statistical software package that lets you manage and monitor historical data convenient.

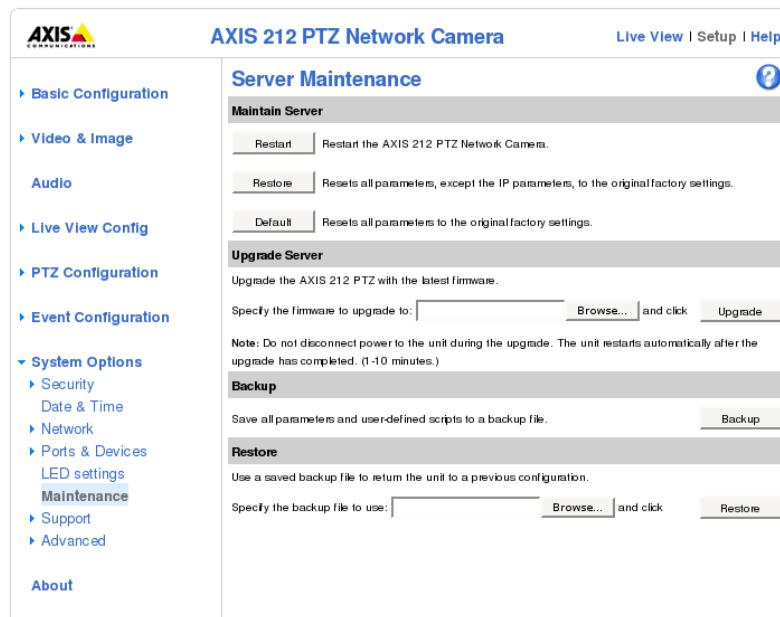
Historical data is available on the camera up to one month back and is updated regularly.

# Installation

If TrueView Zone Counter™ software module is not already installed from your vendor it must be installed manually in the AXIS camera.



Screen 1: Axis 212 PTX First page



Screen 2: Axis 212 PTZ Maintenance page

- 1) Make sure you have one of the supported AXIS IP cameras and that you have the correct corresponding software module of TrueView Zone Counter™. The supported cameras and the corresponding software modules are listed in Appendix A.
- 2) Start the camera and install it to your network. Start a web browser on your PC and log onto the camera by writing its IP address in the address field of the web browser. Currently the only fully supported web browsers are Firefox 3, Internet Explorer 7 or higher.
- 3) Upload the TrueView Zone Counter™ software module as a new firmware to the camera by clicking **Setup** -> **System Options** -> **Maintenance**. Under the section **Upgrade Server**, specify the path to the TrueView Zone Counter™ installation file or use the **Browse** button. Click on the **Upgrade** button. The camera will now restart.

**Note that username and password will be reset to default values.**

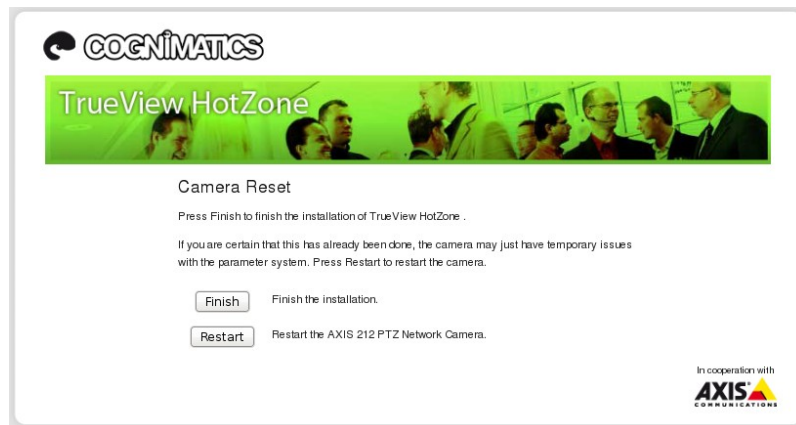
- 4) Reload the camera in the web browser.
- 5) Click either the **Restore** or the **Default** button to reset all parameters to the original factory settings. This will also finish the installation of the software module. (Screen Reset)

**You cannot use the software if you do not reset to factory default!**

Note that resetting to factory default also resets the user name and password to their default settings '**root**' and '**pass**'. The IP address may also change.

- 6) Reload the camera in the web browser.
- 7) Click on **TrueView Zone Counter** to get to the counter pages. The first time you will be asked to enter your license code (Screen Registration). Enter your license code and follow the instructions. After successful registration the camera will restart again (Screen Registration Complete). The camera is now ready to be used for counting.

Note that your software license is for one camera only. You cannot install the software to another camera without a new registration key.



Screen 3: Reset



## TrueView HotZone



### Register

Before this product can be used, it must be activated with a valid license. As a first step of the activation process, please enter the registration code below and press Send. The registration code will become bound to this camera and it will not be possible to use it again on another camera.

Registration code:

Send

In cooperation with  
**AXIS**  
COMMUNICATIONS

Screen 4: Registration



## TrueView HotZone



### Register

Thank you for registering **TrueView HotZone**. We hope you will enjoy this product. Go to the settings page to get started.

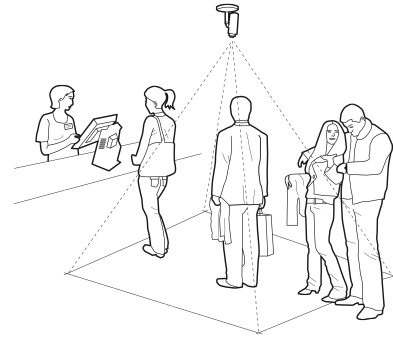
In cooperation with  
**AXIS**  
COMMUNICATIONS

Screen 5: Registration Complete

## Configuring TrueView Zone Counter™

To ensure optimal performance, the TrueView Zone Counter™ must be calibrated before use.

1. Place the camera in the ceiling facing straight down according to the drawing above. The camera should be at least 270 cm above the floor.
2. Log on to the camera by writing its IP address in the address field of the browser. Adjust the position and zoom of the camera so that its field of view constitutes the area of interest. The pan and tilt parameters should be in the middle position (neutral).
3. Avoid having moving objects like opening and closing doors in the camera's view as this may reduce the accuracy of the software. Also avoid having strong light and shadows in the camera's view.
4. Click on **TrueView Zone Counter** to get to the **Statistics** page.
5. Select **Settings** in the upper part of the page.
6. Turn on or off the counting by selecting **Enable** or **Disable**.
7. Set the name of the camera or location the TrueView Zone Counter™ is viewing. This name will appear in the data files and on the statistics chart in the **Statistics** page. Note that all cameras used for counting should have unique names.
8. Set **Person Size** by using the slide bars. The two handles set the minimum and maximum size limits between which the software searches for human heads in the video. The limits are indicated in the image by two squares. In order for a person to be counted his/her head has to have a size between the two limits.
9. The Sensitivity setting is used to fine-tune the behavior of the counter.
10. If the counter should be on only during certain hours of the day, check the enabled box and enter the start and stop hours in the fields below.
11. It is possible to define a queue area inside the camera field. Define the queue area by pressing **Redefine area**. Drag the corners to move a point. Select add/remove point and click to remove or add a point. Press **Done** when ready. Persons detected inside the defined area will be registered as standing in queue. If setting the average waiting time for a customer the total waiting time will also be stored.
12. Counting data may be sent automatically to TrueView WebReport. Choose **Enable** in the **Web Report** tab on the settings page and fill in the required information.
13. Click the **Submit** button to save the settings.
14. The regular parameters of the AXIS camera may be set by selecting any of **Users**, **TCP/IP**, **Date & Time** or **PTZ Config**. See the AXIS camera manual for how to set the parameters. Do not use any camera built-in functionality that may affect the counting accuracy. Do not set any other parameters than:
  - a. Local time
  - b. IP address



*The camera should be mounted facing straight down.*

Settings

General Person detection Start-stop time

Queue Web Report Axis

Enable: ☐ Enabled

Counter name: hotzone-212-dev

Submit

*Screen 6: Settings - General*

Settings

General **Person detection** Start-stop time

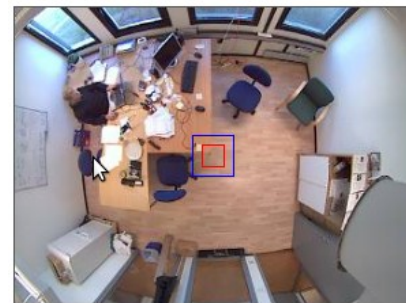
Queue Web Report Axis

Person size:

Sensitivity:  8

Submit

*Screen 7: Settings - Person Detection*



*Screen 8: Detection Size Preview*

- c. Users
- d. Zoom (where applicable)

Settings

General

Person detection

Start-stop time

Queue

Web Report

Axis

Enable: ☒

Time interval: 

Start time09:34

Stop time09:23

Submit

Screen 9: Settings - Start stop time

Settings

General

Person detection

Start-stop time

Queue

Web Report

Axis

Queue area: 

Redefine area

Average Waiting time: 

30

Submit

Screen 10: Settings - Queue



Screen 11: Redefine Area

Settings

General

Person detection

Start-stop time

Queue

Web Report

Axis

Enable: ☒

URL: 

http://10.2.3.226/webrep

Version: 

☐ Version 1

☒ Version 2

User name: 

countuser2

Password: 

●●●●●●●●

Proxy address:

Proxy port:

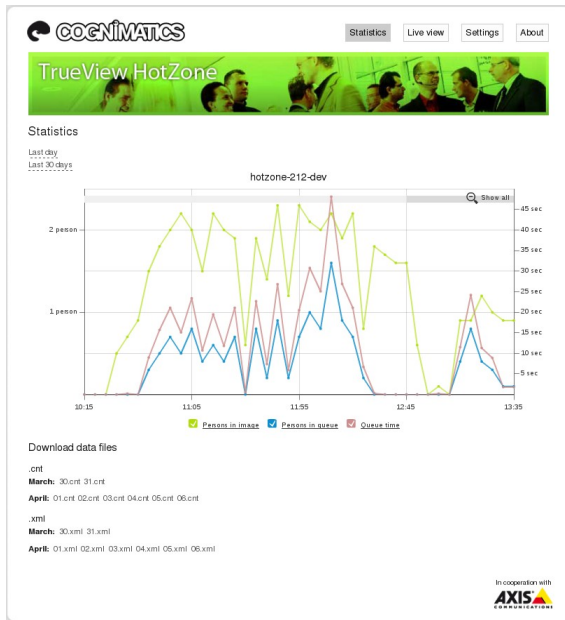
Proxy user name:

Proxy password:

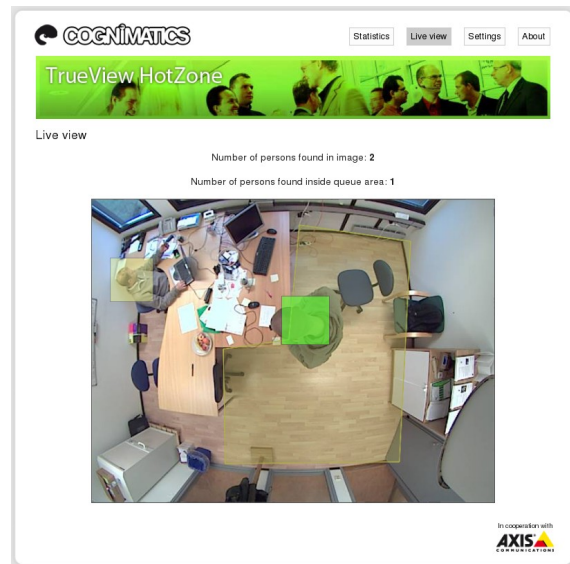
Submit

Screen 12: Settings - Web Report

## Statistics



Screen 13: Statistics



Screen 14: Live View

Statistics from TrueView Zone Counter™ can be obtained in the several ways.

- 1) **Real time** – As soon as people are detected, the number of persons standing in the camera's view is updated on the live view page.
- 2) **Graph** – View the graph of the average number of persons per minute counted by the software by clicking Statistics in the upper part of the page. Zoom in and out in the graph by clicking and dragging with the mouse in either of the graph windows. The scale of the vertical axis is adjusted automatically, as and when required.
- 3) **TrueView Report™** – Installing TrueView Report™ on your windows PC or TrueView Web Report™ on a Linux server lets you manage and view historical data conveniently. For more information about these statistical software packages we refer to their respective manual.

# HTTP API

You can request and clear data in different ways.

- 1) **Request DTD file:** Returns a DTD file describing the format of the XML data in
- 2) **Request XML file:** Returns an XML file describing the historical data.
- 3) **Request CNT file:** Returns a CNT file describing the historical data.
- 4) **List** all available .cnt data files.
- 5) **Clear** local counting data.

## 1) DTD file

**Method:** GET

**Syntax:**

```
http://<servername>/local/appdata.dtd
```

**Return:**

```
<?xml version="1.0"?>

<!-- A cntset element contains a number cnt elements with the number of
people inside the camera (ndet), the number of persons in the defined. The
first cnt element is the number of entries and exits between
starttime and starttime+delta, while the second is between
starttime+delta and starttime+2*delta
Delta is specified in seconds
starttime in time in POSIX format
(seconds since 00:00:00 LOCAL_TIME, January 1, 1970) -->

<!ELEMENT countdata (cntset+) (queue?)>
<!-- not yet implemented -->
<!-- defined queue area at the time of xml generation -->
<!-- <!ELEMENT queue (point+)>
    <!ATTLIST queue
        name CDATA #IMPLIED
        covarage CDATA #IMPLIED>
    <!ELEMENT point EMPTY>
    <!ATTLIST point
        x CDATA #REQUIRED
        y CDATA #REQUIRED>
-->
<!-- Counting set -->
<!ELEMENT cntset (cnt+)>
    <!ATTLIST cntset
        starttime CDATA #REQUIRED
        delta CDATA #REQUIRED
        name CDATA #IMPLIED>
    <!ELEMENT cnt EMPTY>
    <!ATTLIST cnt
        ndet CDATA #REQUIRED
        ndet_iq CDATA #REQUIRED
        iqt CDATA #IMPLIED>
```



## 2) XML file

**Method:** GET

**Syntax:**

```
http://<servername>/local/cnt2xml.cgi[?<date>]
```

**Return:**

```
<?xml version="1.0" ?>
<!DOCTYPE countdata SYSTEM "appdata.dtd">
<count data>
  where <count data> is
  <countdata>
    <count set>
  </countdata>
  and <count set> is
  <cntset starttime="<start time>" delta="<delta>" name="<camera name>">
    <count >
  </cntset>
  <count set>
    <start time> - Start time of set in (local) POSIX format (seconds since 00:00:00
LOCAL_TIME, January 1, 1970)
    <delta> - The time interval specified in seconds between each entry
    <camera name> - The name of the camera
    and <count> is
    <cnt ndet="<ndet>" ndet_iq="<ndet_iq>" iqt="<iqt>" />
    <count>
    <ndet> - Number of detected persons during the specified time interval.
    <ndet_iq> - Number of detected persons inside the defined queue area during the
specified time interval.
    <iqt> - Average waiting time during the specified interval.
```

**Example:** Request the historical data from TrueView Zone Counter™.

```
http://myserver/local/tvpcWebGui/appdata.xml
```

**Return:**

```
<?xml version="1.0" ?>
<!DOCTYPE countdata SYSTEM "appdata.dtd">
<countdata>
  <cntset starttime="1238976000" delta="60" name="Zone Counter1">
    <cnt ndet="2.07" ndet_iq="0.47" iqt="14.00"/>
    <cnt ndet="2.71" ndet_iq="0.64" iqt="19.29"/>
    <cnt ndet="1.67" ndet_iq="0.60" iqt="18.00"/>
    <cnt ndet="1.56" ndet_iq="0.50" iqt="15.00"/>
    <cnt ndet="1.69" ndet_iq="0.44" iqt="13.13"/>
  </cntset>
</countdata>
```

Note: There can be multiple sets in the file.

### 3) XML file

**Method:** GET

**Syntax:**

```
http://<servername>/local/cnt2xml.cgi?[all||<day1>[&<day2>[...]]]
```

**Return:**

```
Binary cnt file to be used in True View Report products.
```

**4) List all available .cnt data files.**

**Method:** GET

**Syntax:**

```
http://<servername>/local/lscnt.cgi?plain
```

**Return:**

```
{
  "timestamp":"1237294947",
  "files":["xx.cnt", [..] "xx.cnt"]}
}
```

**where <timestamp> is**  
the time set in the camera

**and <files> is**  
an array of available .cnt files sort in write date descending order.

**Example:** List all data files available in TrueView People Counter™.

```
http://myserver/local/lscnt.cgi?plain
```

**Return:**

```
{"timestamp":"1237294947","files":["17.cnt","16.cnt"]}
```

## 5) Clear local counting data.

**Method:** GET

**Syntax:**

```
http://<servername>/local/tvpcWebGui/rmcnt.cgi
```

**Example:** Clear local counting data from TrueView Zone Counter™.

```
http://myserver/local/tvpcWebGui/rmcnt.js
```

## Troubleshooting

- 1) *The video does not show in **Live View***: Click reload in your web browser.
- 2) *The software does not count*: Make sure you reset to factory default after installation and restart the camera. Make sure the scene is well lit.
- 3) *The software does not count after changing parameters*: After changing the parameters the software may need to run up to 10 minutes before the counting accuracy is at optimum.
- 4) *The software asks for registration code every time*: Reset to factory default after installation and restart the camera.
- 5) *The setting page does not show the parameter values*: Reset to factory default after installation and restart the camera.

## Appendix

The following camera models are currently supported

Camera model	Software module
Axis 212PTZ	tvpcAxis212_xx.bin

*xx is the version number of the software module.*