FootfallCam™

FootfallCam User Guide

F100312-21

For FootfallCam People Counter

Revision History

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4	Initial Release	March 24, 2016
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6	Updated Configuration Settings	August 04 2016
7	Updated Report Templates	August 19, 2016
8	Updated Installation Flow	April 09, 2017
9	Updated Formatting	August 22, 2017
10	Updated Counter Replacement	August 25, 2017
11	Updated Import Centre	August 28, 2017
12	Updated Counter Management Section	September 20, 2017
13	Updated Server Installation Requirements	Nov 15, 2017
14	Updated Installation Guidelines	April 8, 2018
15	Updated Server Installation Requirements	May 15, 2018
16	Updated Import and Export Centre	May 24, 2018
17	Updated Import Centre and File Format Requirement	June 7, 2018
18	Updated Exporting via API on Counter Level	June 13, 2018
19	Updated Occupancy Dashboard	August 8, 2018
20	Updated Staff Exclusion Kit Setup	November 16, 2018
21	Updated FootfallCam Installation App, Setting Time Zone	February 19, 2018
22	Updated Data Manipulation Module	March 5, 2019
23	Updated Support Portal Module	March 14, 2019
24	Updated Server Installation Form	March 3, 2020
25	Updated Manual Export	March 4, 2020
26	Updated Support Portal	March 6, 2020
27	Updated Export via Websocket	July 8, 2020

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About the Product

FootfallCam 3D Plus™

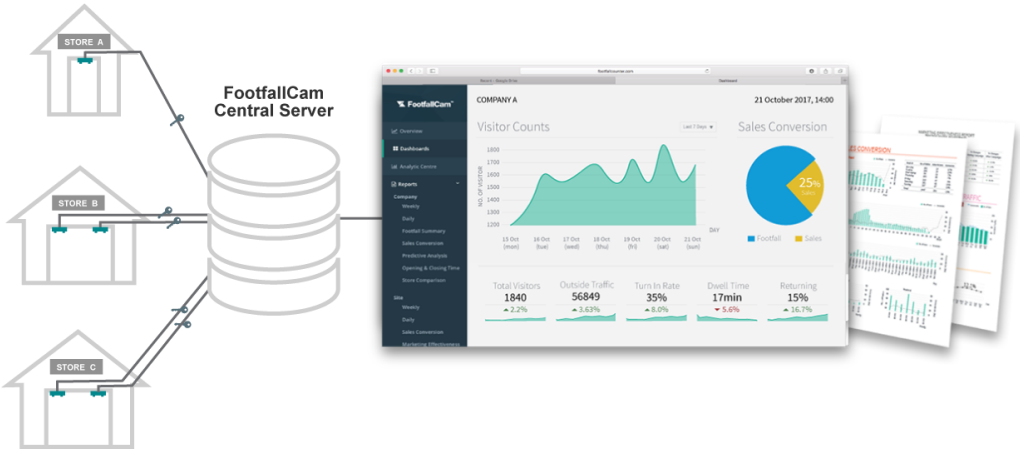
FootfallCam 3D Plus™ is embedded with a powerful 1GHz processor, specifically to run its complex video processing algorithm. Our GPU Processor is powered by the latest algorithm which uses both colour and texture pattern to identify the person, producing far superior accuracy than when using colour pattern alone. FootfallCam 3D Plus™ is equipped with lenses which provide a super wide-angle view in ensuring good depth of view as compared to telephoto lenses.

Device Specification		
Dimension	**Device dimension:**	246 mm(W) x 46 mm(D) x 28 mm(H)
	Packing dimension:	255 mm(W) x 210 mm(D) x 55 mm(H)
Weight	**Device weight:**	0.6 kg
	Packing weight:	1.02 kg
Camera	**Resolutions:**	2 x 5MP
	Illumination:	Minimum 300 lux
	Lens degree:	65°, 100°, 140° Versatile ceiling height range and accommodate most installation environment.
	Output:	5MP omni-vision 5647 camera module
	Frame Rate:	15 fps Live stream will only display 320 x 420 resolution to reduce bandwidth for FootfallCam verification purpose.
LEDs	LEDs troubleshooting for device status.	
Casing	Made by Aluminium oxide alloy for water and dust resistant.	
IP Rating	IP 31	
Power	**Power over Ethernet:**	47V DC, 012A (6W)
	Cabling:	Cat5, Cat6
Thermal Conductivity	235W / mK	
Storage	Micro SD, 8 GB memory	
Ideal Mounting Height	2.1 metres - 7 metres (Based on product variations)	
Ideal Environmental	**Operating environment:**	Temperature 10°C to 45°C, Humidity 10% - 90%
	Storage environment:	Temperature -40°C to 80°C, Humidity 10% - 95%
Tracking Technology	3D-Spacing Mapping Video Tracking Technology and background removal on static object.	
Firmware Features	Auto firmware upgrade. Dual operating system, hardware watchdog, multicore processor.	
Origin	Made in UK.	

FootfallCam Analytic Manager V8™

FootfallCam Analytic Manager V8™ is enterprise web-based control panel designed for user who are managing large number of counters. By collecting data from all counters and store them in a centralised server, user can carry out deep analytics by remotely accessing FootfallCam Analytic Manager V8™ from anywhere.

With a prescriptive dashboard and reports to showcase analysis, user will be able to have better visibility on their store performance level. With access to over 60+ different reports that helps to answer specific business questions, data gets turned into meaningful analyses so user can make data driven decisions to improve business.



Software Specification	
Interface	Http; Https
Compatible Browser	IE7 Mozilla Firefox **Google Chrome Version 4.0 or later (Recommended)** Safari
Ethernet	10 / 100 Mb Ethernet
Time	NTP, adjustable time zone and automatic daylight-saving adjustment.
Data Delivery	TCP / IP
Database Type	SQLite
Data Storage	5-year(s) storage with auto sync.
Data Backup	Daily full backup for data and configuration file. Weekly backup to sub server for contingency purpose.
Report Format	csv, xml, txt
Software Upgrade	Auto software upgrade.

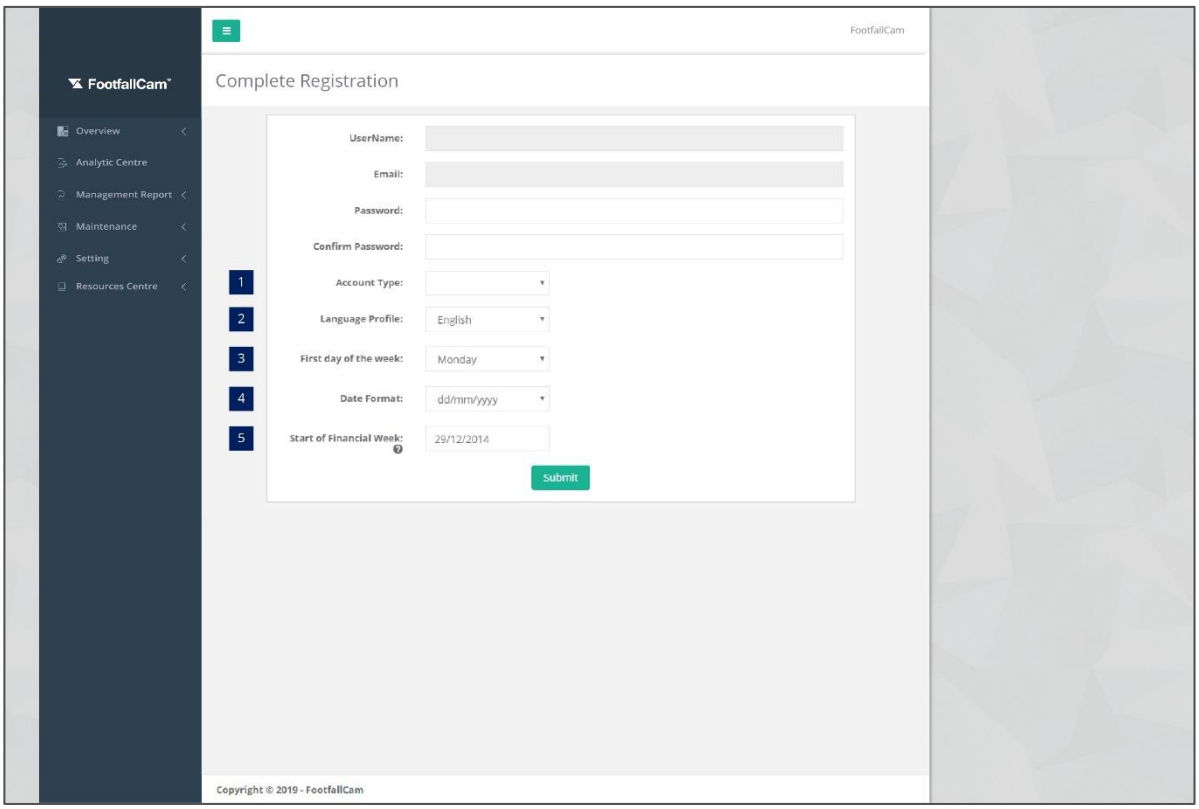
Chapter 1: Getting Started

1.1 Activation for New Company Account

> **Note**
>
> Please contact FootfallCam or Reseller if Activation Email is **NOT** received.

STEP 1 - Check the activation email sent to your registered mailbox.

STEP 2 - Complete the registration form by entering all the required fields and click on **Submit** button.



Item	Description
1. Account Type	Select the type of industry.
2. Language	Select the type of language.
3. First Day of the Week	Select the starting day for a week.
4. Date Format	Select the format of the date. **(Info:** Date format selected will be apply to features in FootfallCam Analytic Manager V8™.**)**
5. Start of Financial Week	Select the starting week of a year based on company fiscal year.

1.2 FootfallCam Analytic Manager V8™ Installation

> **Note**
>
> Please complete the Server Installation Form in **Appendix K** prior to the scheduled installation.

Follow the steps as below to install FootfallCam Analytic Manager V8™ in your corporate server.

STEP 1 - Ensure the current server meets the minimum requirement(s) and provide desktop remote access to FootfallCam.

Server Requirement	
Operating System	Windows Server 2012
Storage	500 GB to 1 TB **(Info:** Up to 2000 counter(s).**)**
Memory	16 GB
Database	MS SQL Server 2016 or later
Web Server	Internet Information Services (IIS) 7.0 or later
Microsoft. NET	4.0
CPU Processor	3.1 GHz (64-bit processor) with multi-core
Recommended Drive	(C:) Drive

Desktop Remote Access [ONLY choose one (1)]	
Remote Desktop Protocol	For further inquiries, please refer to this link.
AnyDesk	Click here to download the application.
TeamViewer 11	Click here to download the application.

STEP 2 – Complete the **Server Installation Form** and email to FootfallCam Sales Team via sales@footfallcam.com. FootfallCam Sales Team will provide user the quotation for server installation.

STEP 3 - Schedule with FootfallCam for server installation session.

1.2.1 Additional Configuration

Apply the connection as below for site network with **outbound connection**.

Configuration for FootfallCam Cloud Server			
Address	**Port**	**Protocol**	**Purpose**
http://91.109.10.77	80 (Http)	TCP	To enable upload of data from counter to server
http://91.109.10.77	443 (Https)	TCP	To enable upload of data from counter to server
http://54.85.80.97	80 (Http)	TCP	To enable upload of data from counter to backup server
http://54.85.80.97	443 (Https)	TCP	To enable upload of data from counter to backup server

Configuration for Corporate Server			
Address	**Port**	**Protocol**	**Purpose**
Static	User require to set-up a static IP to point the FootfallCam outbound traffic to the corporate network.		

Chapter 2: Allocating your Counter

Step 1 - Create New Site	Step 2 - Configure IT Setting	Step 3 - Share Pairing Code
Refer to here.	Refer to here.	Refer to here.

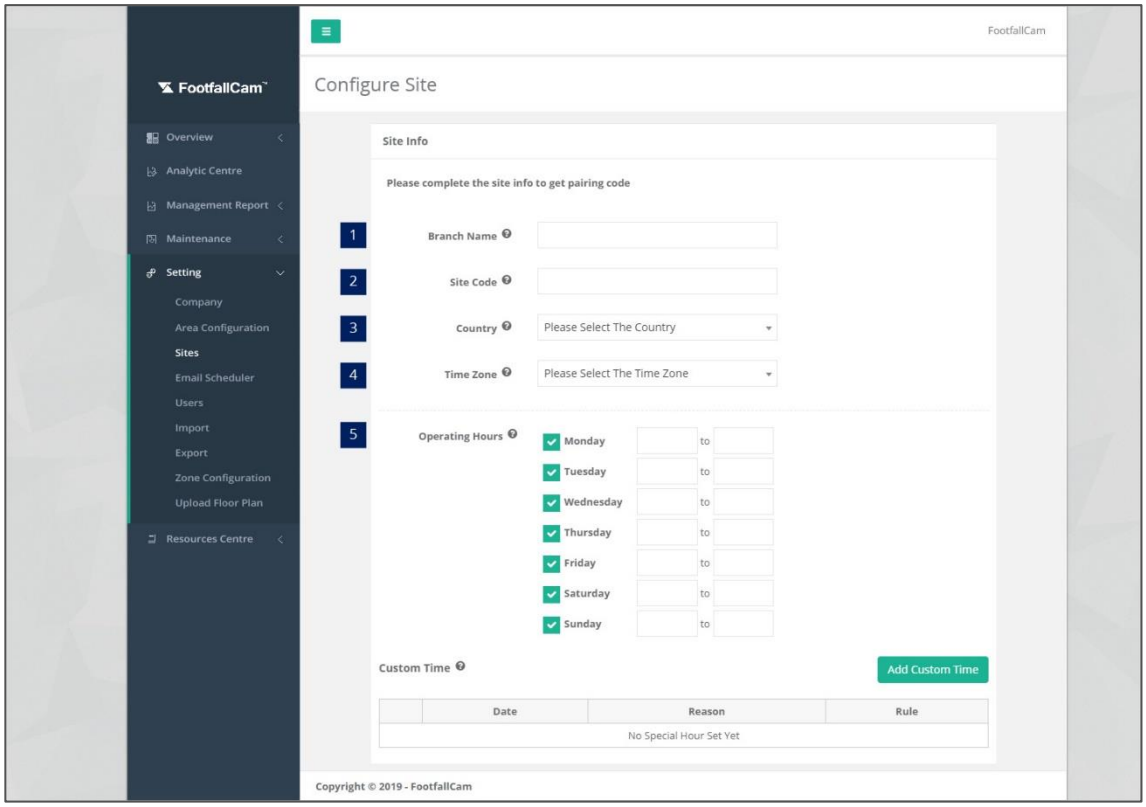
2.1 Create New Site

> **Note**
>
> Installation for multiple counter(s) may use the bulk import option instead. Please refer to Section **4.4 Create Multiple Site via Bulk Import**.

STEP 1 - Click on **Setting > Sites** to access the Counter Management page.

STEP 2 - Click on **+Add Site** button to access the Configure Site page.

STEP 3 - Complete the process by entering all the required fields and click on **Save** button.



Item	Description
1. Branch Name	Enter a preferred branch name. **(Info:** Site name inserted will be apply to features in FootfallCam Analytic Manager V8™.**)**
2. Site Code	Enter a preferred branch code. **(Info:** Site code used to identify branch within a geographic region.**)**
3. Country	Select the country. **(Info:** Country selected will be apply to features in FootfallCam Analytic Manager V8™ for mapping the branch coordination.**)**
4. Time Zone	Select the time zone. **(Info:** Time zone selected will be apply to report feature.**)**
5. Operating Hour	Enter the operating hour for the branch. **(Info:** Click **Add Custom Hour** to configure operating hour for Public Holiday.**)**

2.2 Configure Advanced Settings

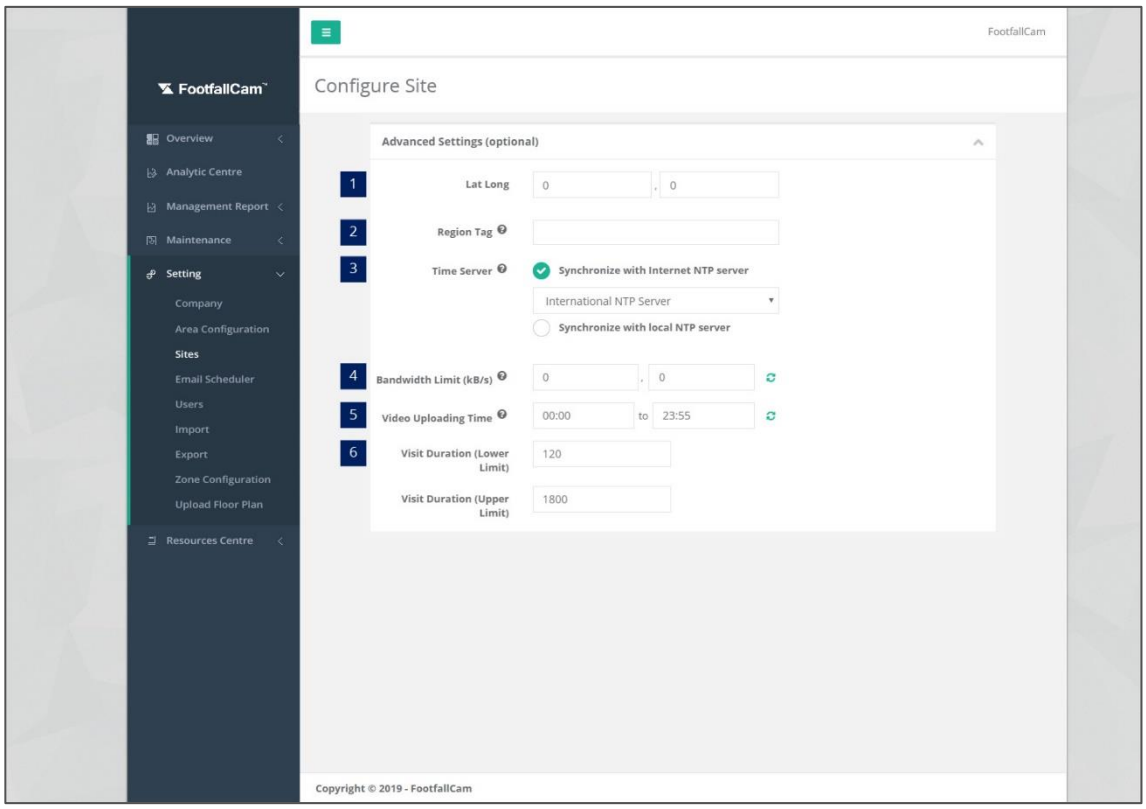
> **Note**
>
> All settings may be reconfigured at any time by re-entering this page available in Section 4.5 Manage Site Detail.

STEP 1 - Click on **Setting > Sites** to access the Counter Management page.

STEP 2 - Select the newly created site and click on **Setting.**

STEP 3 - Navigate to section **Advanced Settings**.

STEP 4 - Complete the process by entering all the required fields and click on **Save** button.



Item	Description
1. Lat Long	Enter the branch location in latitude and longitude format. **(Info:** Lat long used to identify branch within a geographic region.**)**
2. Region Tag	Categorise the branch based on geographical regions. **(Info:** Region tag applied will be apply to report feature.**)**
3. Time Server	Networking Time Protocol (NTP for clock synchronisation between computer systems over data networks).
4. Bandwidth Limit (kB/s)	Enter the preference bandwidth limit for video upload. **(Info:** Video uploaded will be used for counter verification purpose.**)**
5. Video Uploading Time	Enter the preference video uploading time. **(Info:** Video uploaded will be used for counter verification purpose.**)**
6. Visit Duration (Lower and Upper Limit)	Adjust the visit duration threshold. **(Info:** Visit Duration adjusted will be apply to report feature.**)**

2.3 Configure IT Setting

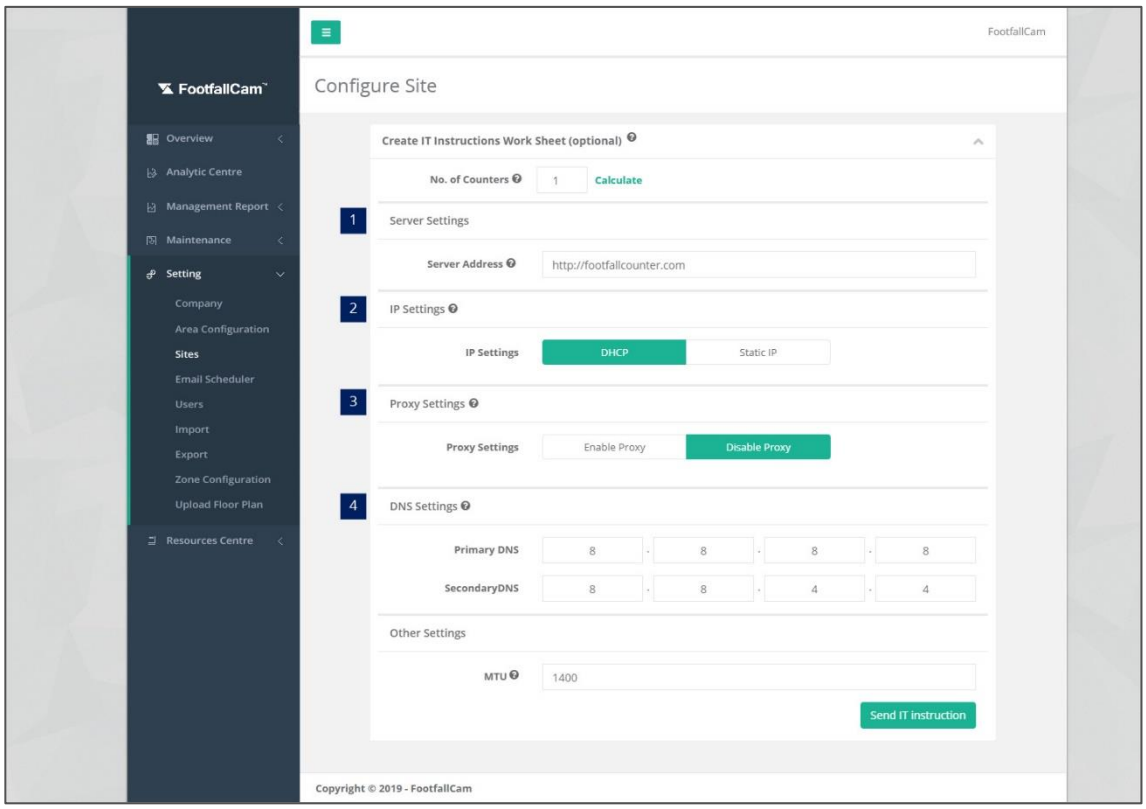
> **Note**
>
> All settings may be reconfigured at any time by re-entering this page available in 4.5 Manage Site Detail.

STEP 1 - Click on **Setting > Sites** to access the Counter Management page.

STEP 2 - Select the newly created site and click on **Setting.**

STEP 3 - Navigate to section **Create IT Instruction Work Sheet**.

STEP 4 - Complete the process by entering all the required fields and click on **Send IT Instruction**.



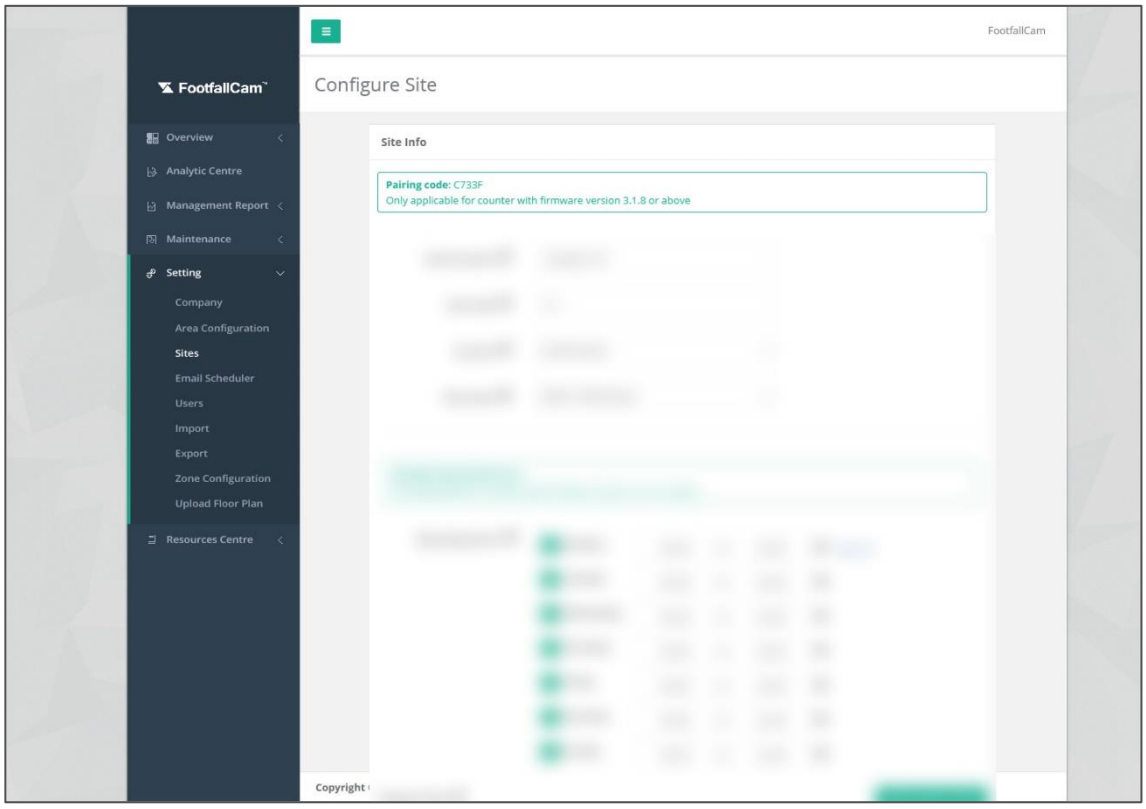
Item	Description
1. Server Address	Enter the server address if user is not using the FootfallCam Cloud Portal.
2. IP Setting	Enter the IP setting if user may set as static IP.
3. Proxy Setting	Optional setting if user is using a proxy server to connect internet.
4. DNS Setting	Use to identity the location of the webpage.

2.4 Share Pairing Code

> **Note**
>
> Pairing code is unique for all site(s).

STEP 1 - Click on **Setting > Sites** to access the Counter Management page.

STEP 2 - Select the newly created site and click on **Setting.**



Chapter 3: Installing the Counter

Step 1 - Site Survey	Step 2 - Installation Preparation	Step 3 – Connect and Configure Counter Setting
Refer to here.	Refer to here.	Refer to here.

3.1 Site Survey

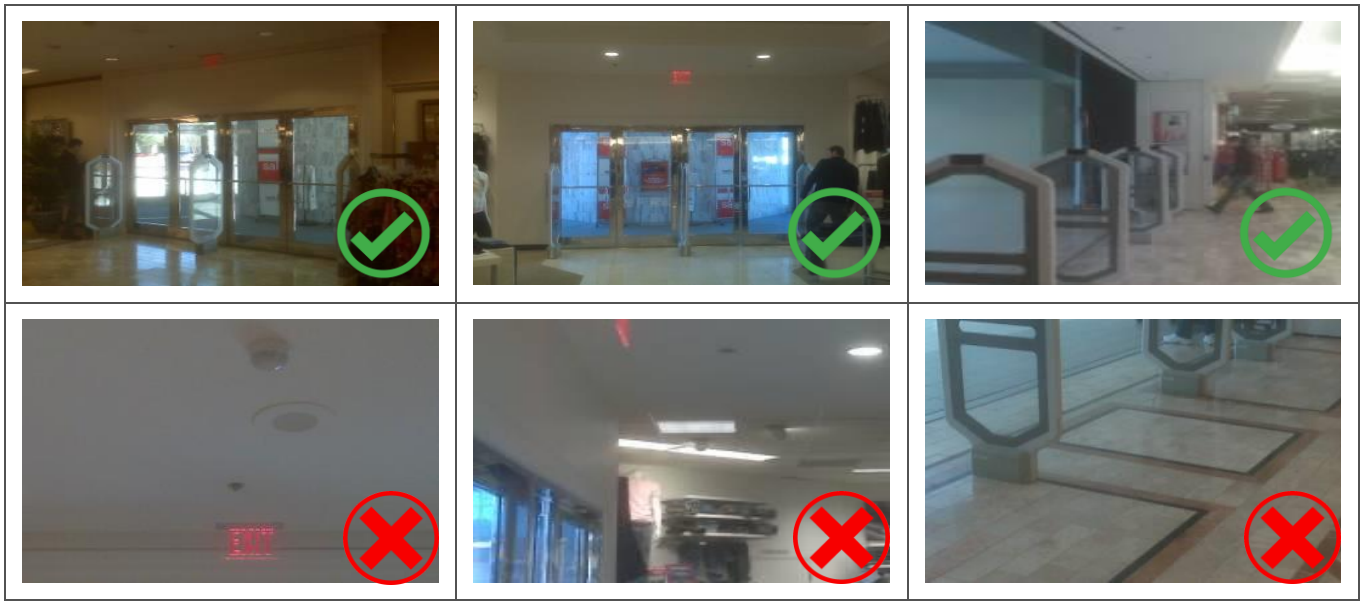
> **Note**
>
> Installer require to complete the **Site Survey Form** in **Appendix A**.

STEP 1 - Perform site survey of the environment prior to an installation.

STEP 2 - Complete the **Site Survey Form** to ensure the counter installation positioning.

Item	Description
Site Name	Name of the branch.
Site Code	Code of the branch.
Site Address	Location of the branch.
Person In-Charge	Branch manager.
Contact Number	Contact number of the branch.
Installation Date Time	Preferred installation date time.
Ceiling Height	To determine the number of counter(s) require to fully cover the tracking area.
Door Width	
Ceiling Composition	To determine the ceiling suitable for physical installation or additional accessories needed.
Floor Slope	To determine the floor condition includes tilted or angled upwards.
Head-end Distance	To determine the distance from the back-office comms cabinet with router and midspan to the counter head.

STEP 3 - Snap photo and check with FootfallCam to assist in determining the counter installation positioning.



3.2 Installation Preparation

> **Note**
>
> Download the **Installation Checklist** in **Appendix B**.
>
> Use FootfallCam Calculator to determine the number of counter(s).

3.2.1 Installation Tool

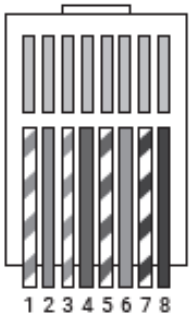
Cat5 network cable to connect the counter from the midspan.	RJ45 crimp tool to terminate the cat5 network cable.	Screwdriver to fix the counter in place after mounting.
Optional installation tool to conceal the cable after the installation.	General height of installation for counter ranges from 3 metres and above.	Scissor to reduce the length of the cat5 network cable.

3.2.2 Installation Cable

Installer **MUST** follow TIA / EIA 568B colour code for crimping the Cat5e cable to avoid crosstalk interference.

CRIMP NETWORK CABLE PLUGS

The Color code of ethernet cable **MUST** only follow the T568B Standard to terminate.



Pin	Wire Color	Wire Diagram
1	White - Orange	
2	Orange	
3	White - Green	
4	Blue	
5	White - Blue	
6	Green	
7	White - Brown	
8	Brown	

Note: Without following the colour code ordering, it may caused cross talk interference.

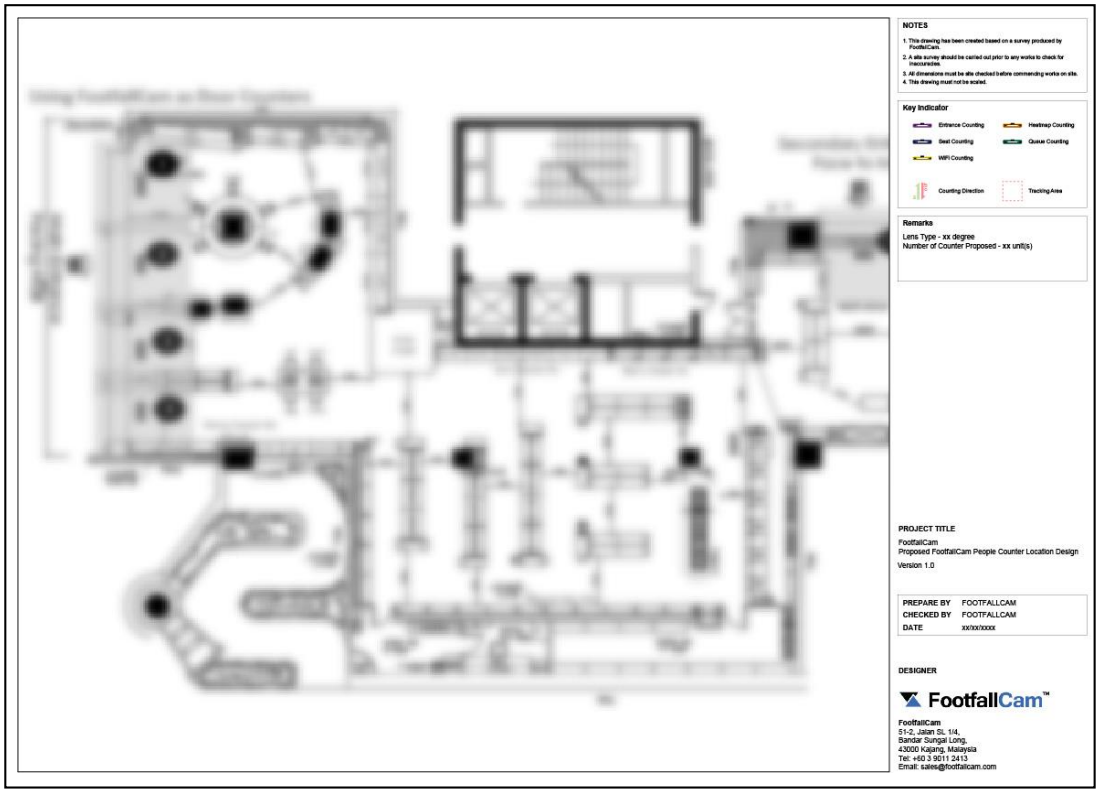
3.2.3 Floor Plan Preparation

> **Note**
>
> Scale of floor plan and ceiling height must be provided to estimate the coverage width accurately.

STEP 1 - Provide ceiling height and measurement for coverage area to FootfallCam.

STEP 2 - FootfallCam will design the floor plan including quantity of counters required, cabling location and mounting position of the counter before every installation.

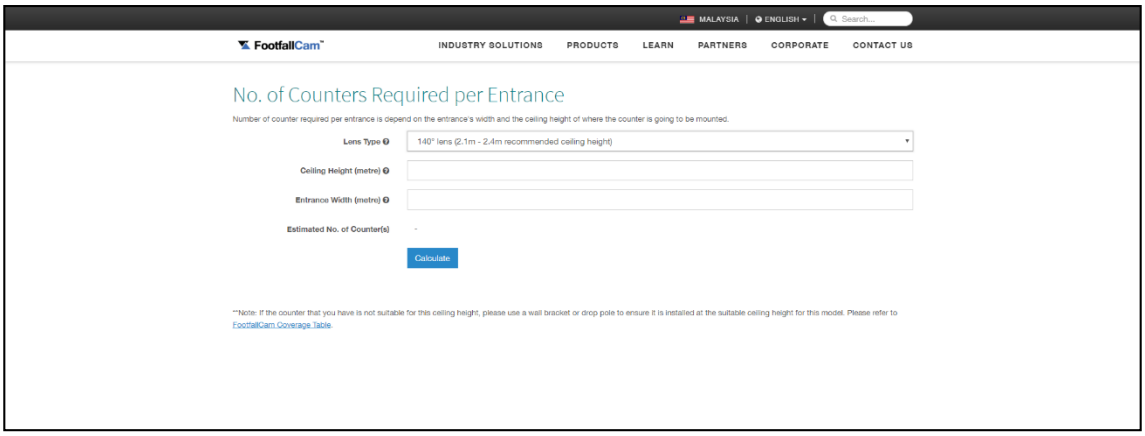
Sample Floor Plan:



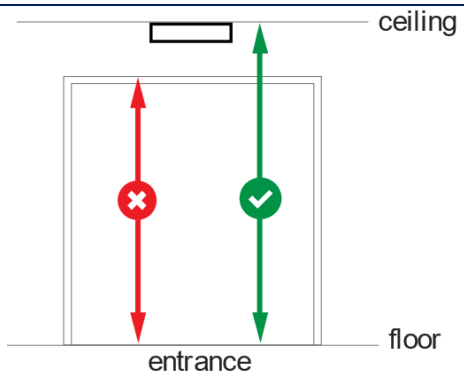
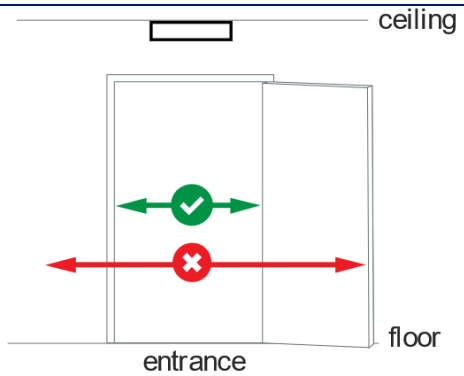
3.2.4 FootfallCam Calculator

> **Note**
>
> Use FootfallCam Datasheet to determine the lens type.

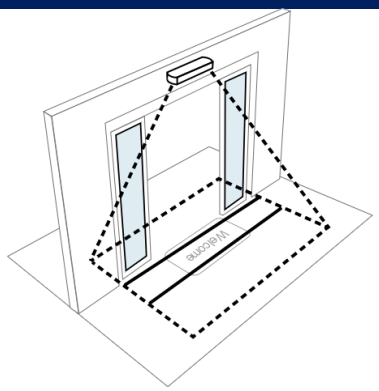
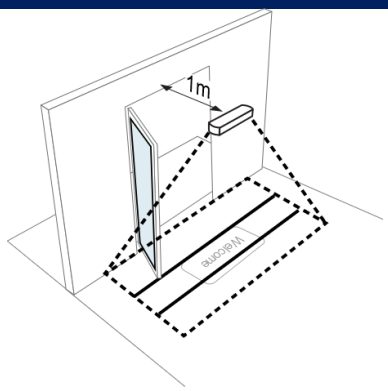
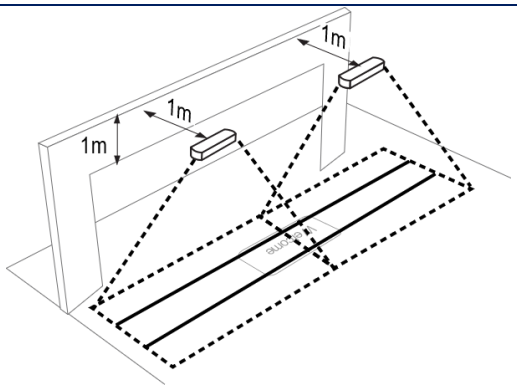
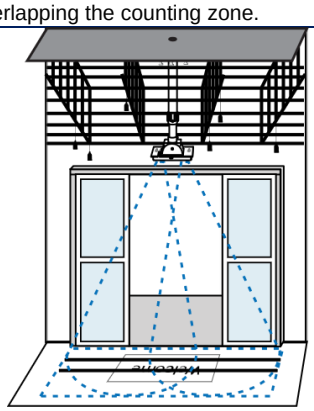
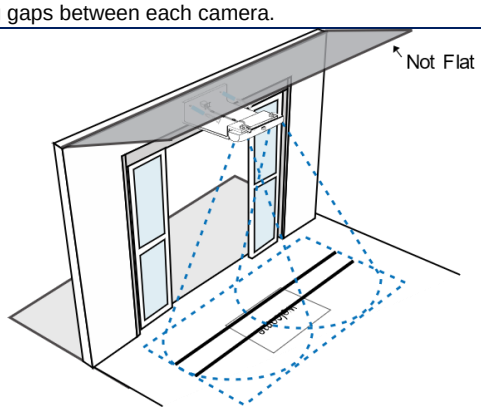
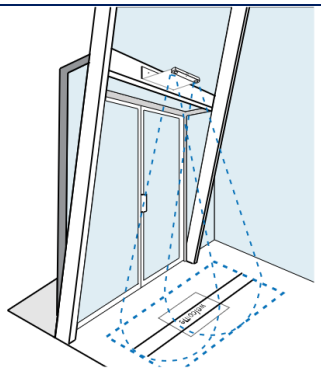
STEP 1 - Access to FootfallCam Calculator to determine the number of counter(s).



STEP 2 - Complete the process by entering all the required fields and click on **Calculate**.

Item	Description
Lens Type	65° lens (Recommended ceiling height: 4.6m - 7.0m)
	100° lens ((Recommended ceiling height: 2.5m - 4.5m)
	140° lens (Recommended ceiling height: 2.1m - 4.4m)
Ceiling Height	 Measure from floor to the camera mounting height.
Door Width	 Measure the door width only on the walkable area.

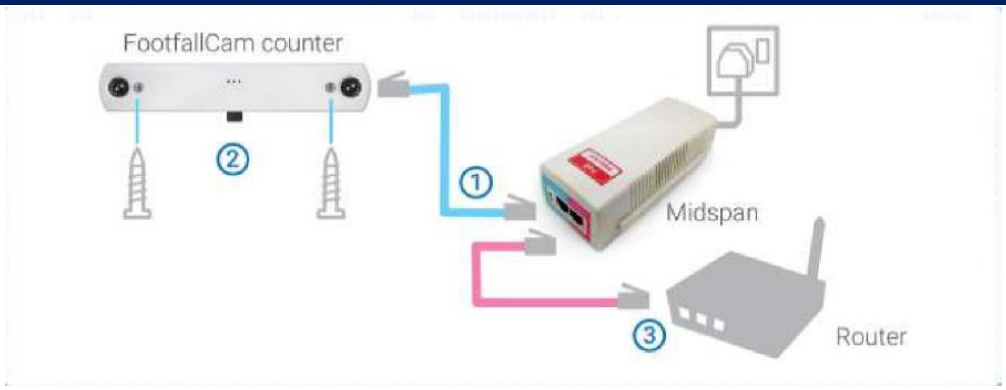
3.2.5 Counter Positioning

Type of Entrance	
 **Sliding Door** Counter require to install in the middle of the entrance perpendicularly down towards the floor. Counting line must align with the entrance and parallel to the door.	 **Swinging Door** Counter require to install at least 0.5 - 1 metre away from the door. Counting line must clearly define the swinging path and make sure the door is not overlapping the counting zone.
 **Wide Entrance** Wide entrance requires multiple counters based on different ceiling height and entrance width. Use FootfallCam Calculator to identify mounting gaps between each camera.	 **Open Ceiling Environment** Use a drop pole to overcome the obstacles that are obstructing the live view of the counter.
 **Slanted Ceiling** Use a wall bracket on the along the side of the wall to ensure that the counter will be installed along an even surface.	 **Glass Entrance** Use a wall bracket on the along the side of the wall to ensure that the counter will be installed along an even surface.

3.2.6 Counter Connection

> **Note**
>
> Installer **MUST** follow TIA / EIA 568B colour code for crimping the Cat5e cable. Please refer to Section **3.2.2 Installation Cable**.

Option 1 - Connect with Midspan

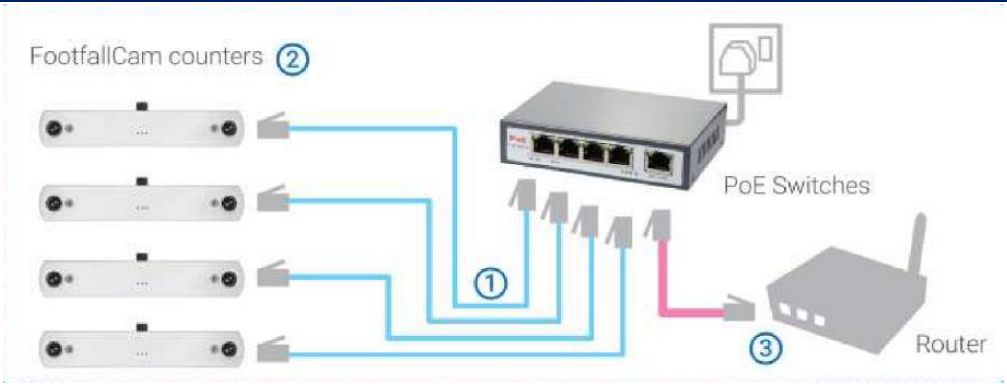


STEP 1 - Connect Cat5e cable (self-prepare) from counter to midspan.

STEP 2 - Plug in the counter and secure it onto the ceiling with screws provided.

STEP 3 - Connect another Cat5e cable (Pink) from midspan to router and turn the power on.

Option 2 - Connect with Powered over Ethernet Switches



STEP 1 - Connect Cat5e cable (self-prepare) from counter to PoE switches.

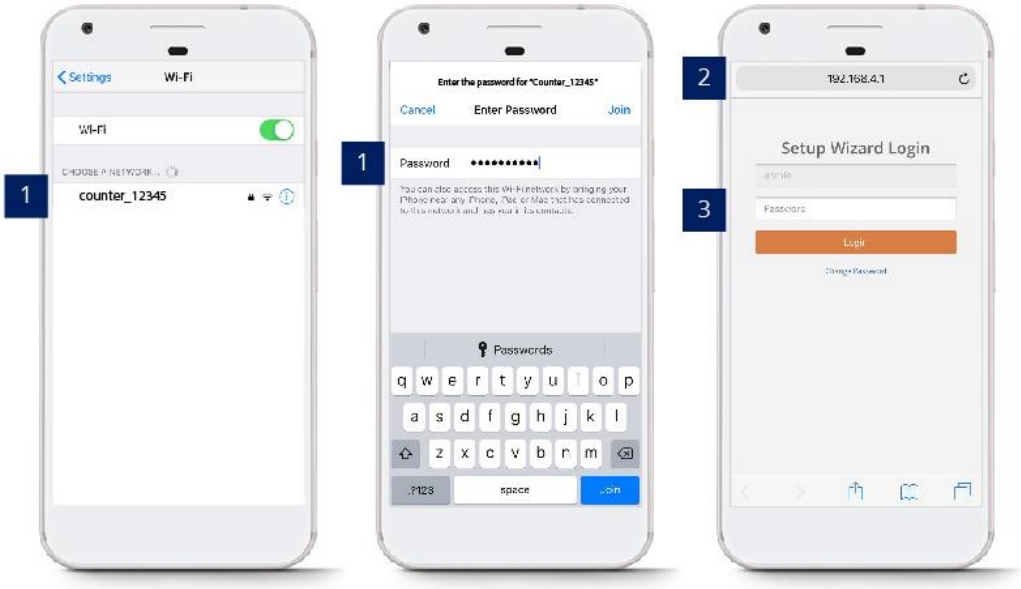
STEP 2 - Plug in the counter and secure it onto the ceiling with screws provided.

STEP 3 - Connect another Cat5e cable (Pink) from midspan to router and turn the power on.

3.3 Connect and Configure Counter Setting

3.3.1 Accessing the Counter - Setup Wizard Page

> **Note**
>
> Counter SSID defined as **counter_***** where ***** is the last 5 digits of counter serial.



STEP 1 - Connect counter SSID via Wi-Fi and login with password: **counter888**.

STEP 2 - Access to web browser (Safari, Google Chrome) and enter URL: http://192.168.4.1.

STEP 3 - Login with password: **123456**.

3.3.2 Reset Password - Setup Wizard Page

> **Note**
>
> User **MUST** keep his/her password confidential and FootfallCam sign-in system is designed not to know your password.

STEP 1 - Connect counter SSID via Wi-Fi and login with password: **counter888**.

STEP 2 - Access to web browser (Safari, Google Chrome) and enter URL: http://192.168.4.1.

STEP 3 - Click on **Change Password** and enter your preferred password.

STEP 4 - Complete the process and click on **Save**.

3.3.3 Configuring the Counter

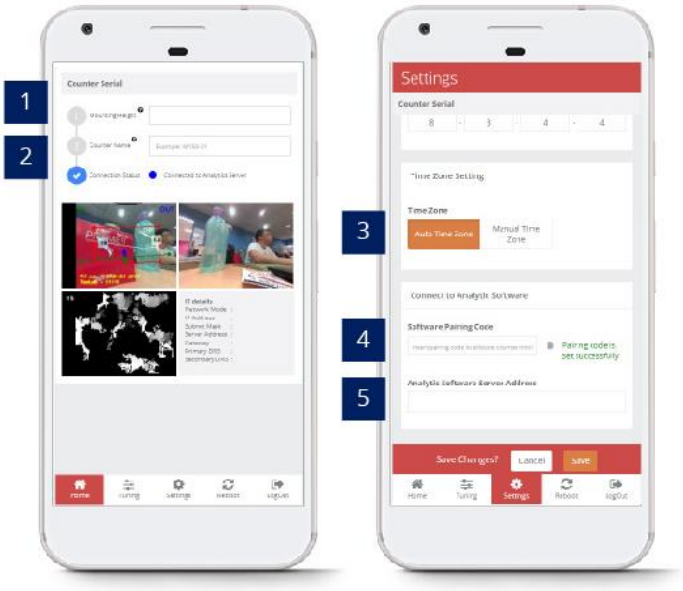
Step 1 - Counter Info	Step 2 - Basic Tuning	Step 3 – Walk Test
Refer to here.	Refer to here.	Refer to here.

Counter Info

Note

For more information on Time Zone Setting, please refer to **Appendix M**.

Pairing code is unique for all site(s). Please refer to Section **2.3 Share Pairing Code**.



STEP 1 - Access to Setup Wizard page

STEP 2 - Complete the process by entering all the required fields and click on **Save**.

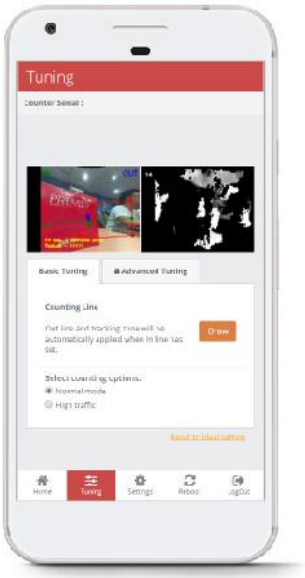
STEP 3 - Click on **Settings** tab.

STEP 4 - Complete the process by entering all the required fields and click on **Save**.

Item	Description
1. Mounting Height	Enter the measurement from floor to the camera mounting height.
2. Counter Name	Enter the name of counter location.
3. Time Zone Setting	Select the time zone. **(Info:** Time zone selected will be apply to report feature.**)**
4. Software Pairing Code	Enter the pairing code.
5. Analytic Software Server Address	Enter the server address if user is not using the FootfallCam Cloud Portal.

Basic Tuning

> **Note**
>
> Installer **MUST** perform basic calibration to indicate the entrance of the site.



STEP 1 - Access to Setup Wizard page

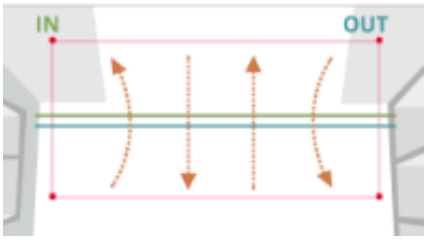
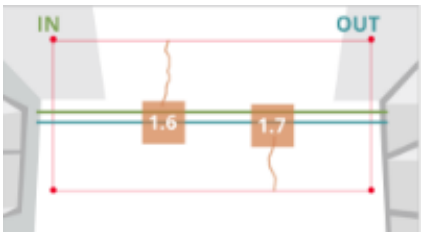
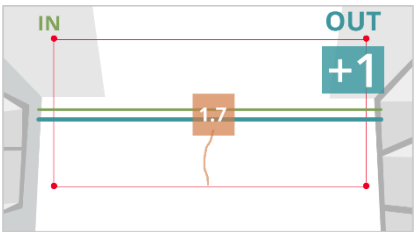
STEP 2 - Click on **Tuning** tab.

STEP 3 - Click on **Draw** in **Basic Tuning** tab.

STEP 4 - Complete the process by drawing line and click on **OK** to apply the changes**.**

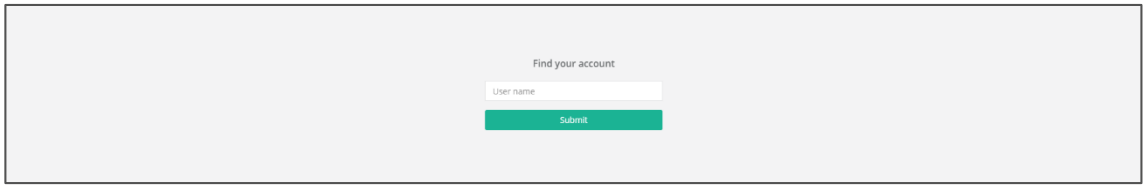
Walk Test

> **Note**
>
> For more information on Staff Exclusion Kit, please refer to **Appendix L**.

		
Try all possible ways that consumer would enter the premise.	Ensure that the tracker accurately measures the height of the individual in metre.	Ensure that counts are triggered when the person crossed the lines

Chapter 4: Software Administration

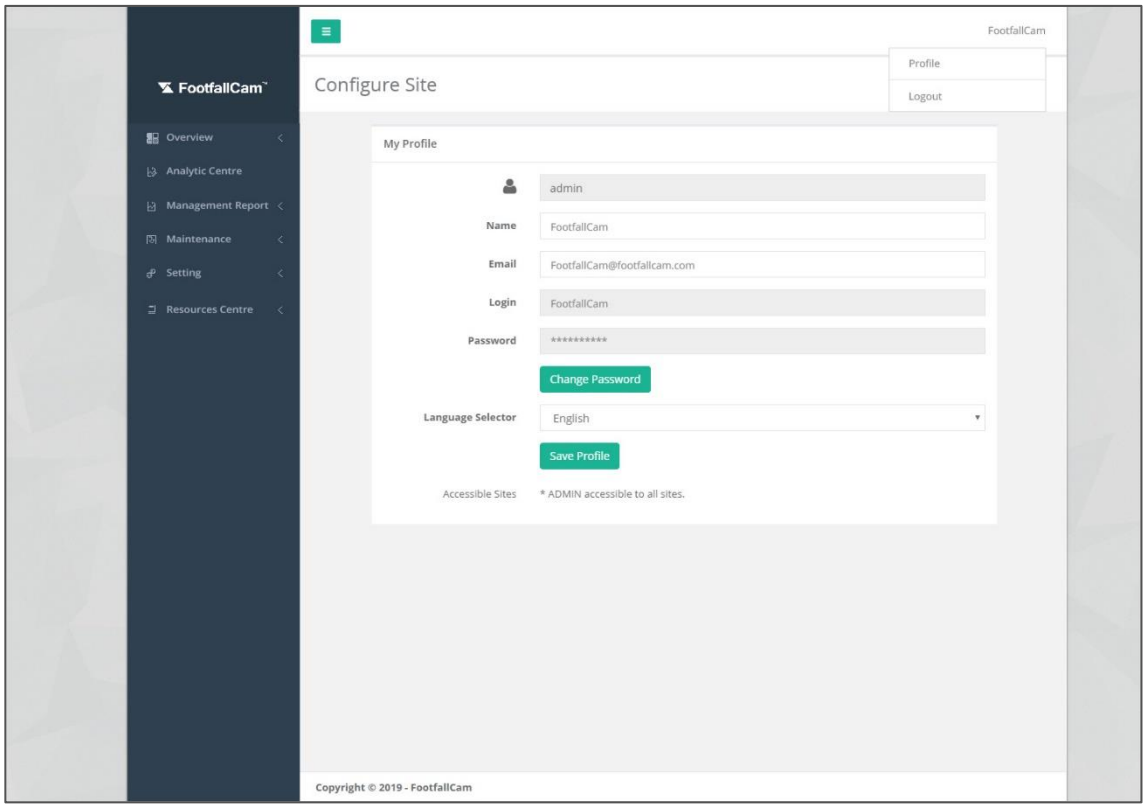
4.1 Forget Password



STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/ForgotPassword.

STEP 2 - Enter your username and click on **Submit**.

STEP 3 - Check your inbox for new password generated by FootfallCam server.



STEP 4 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login with new generated password.

STEP 5 - Click on your username on top right and select **Profile**.

STEP 6 - Click on **Change Password** and enter your preferred password.

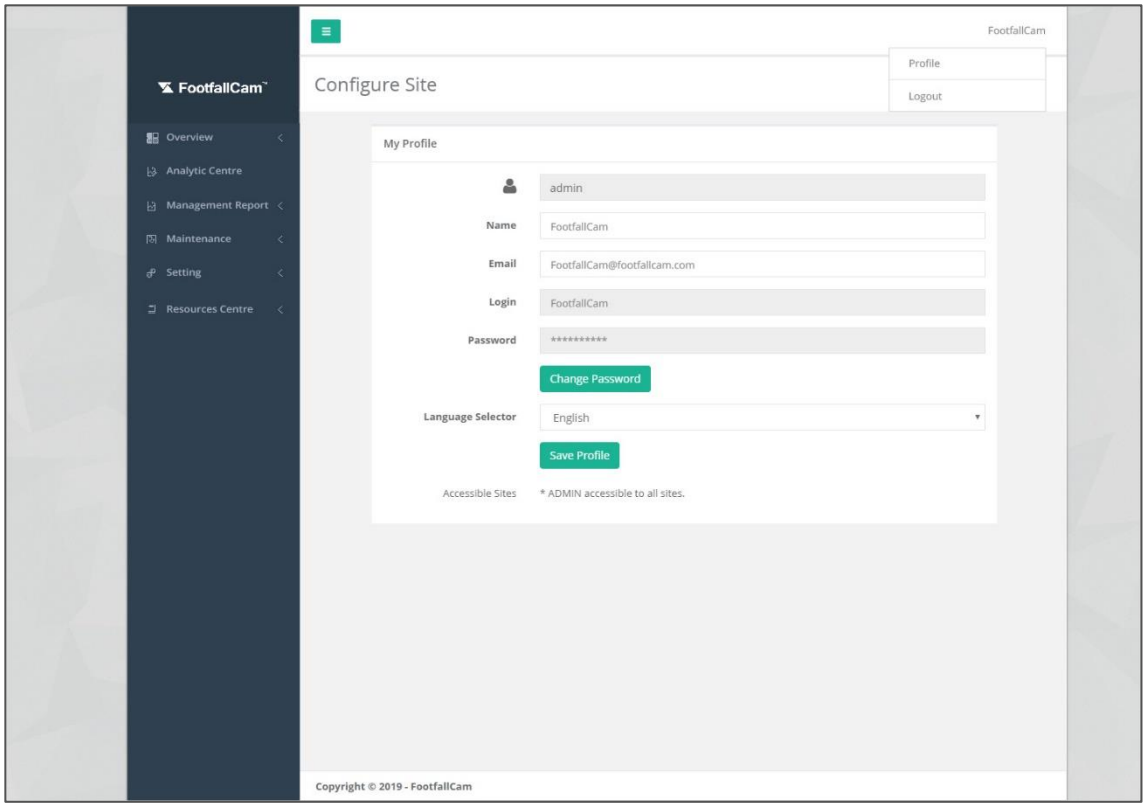
STEP 7 - Click on **Save** to complete the process.

4.2 Manage Profile Detail

STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login with new generated password.

STEP 2 - Click on your username on top right and select **Profile**.

STEP 3 - Update the required fields and click on **Save Profile**.



Item	Description
1. Branch Name	Enter a preferred branch name. **(Info:** Site name inserted will be apply to features in FootfallCam Analytic Manager V8™.**)**
2. Site Code	Enter a preferred branch code. **(Info:** Site code used to identify branch within a geographic region.**)**
3. Country	Select the country. **(Info:** Country selected will be apply to features in FootfallCam Analytic Manager V8™ for mapping the branch coordination.**)**
4. Time Zone	Select the time zone. **(Info:** Time zone selected will be apply to report feature.**)**
5. Operating Hour	Enter the operating hour for the branch. **(Info:** Click **Add Custom Hour** to configure operating hour for Public Holiday.**)**

4.3 Create Multiple Site via Bulk Import

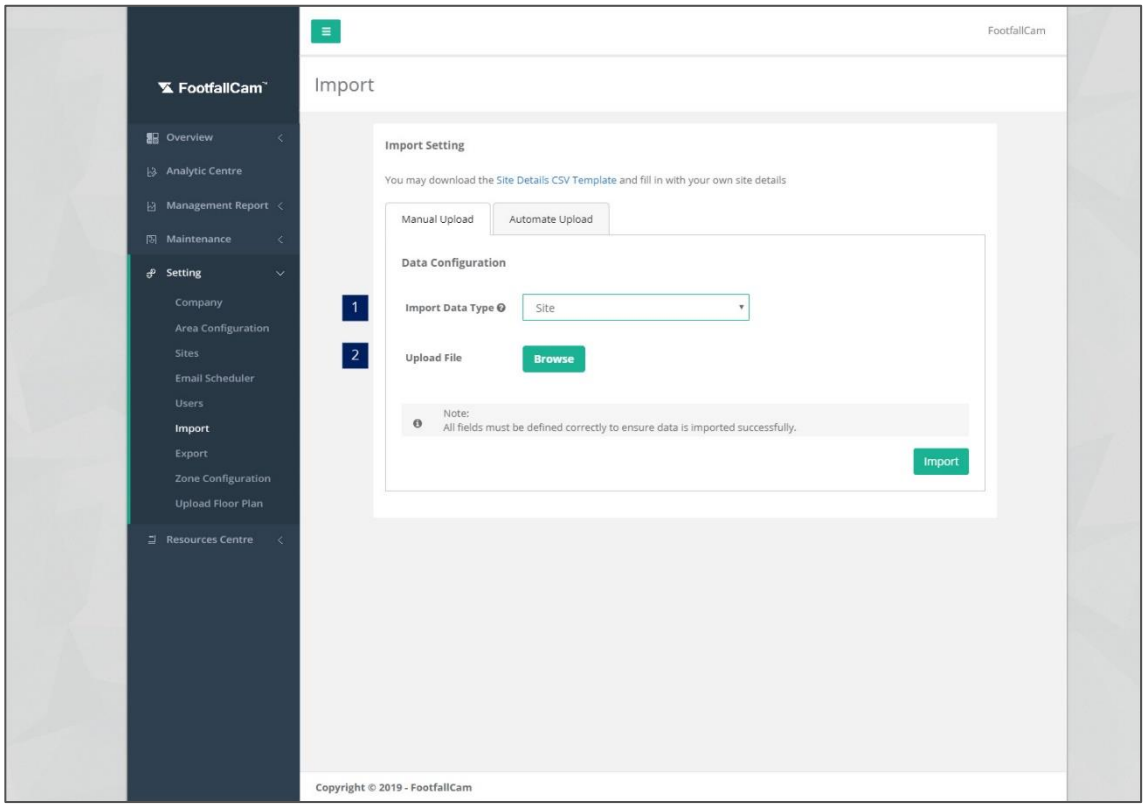
Note

Download the Site Details CSV template for Bulk Import and enter the required site detail(s).

STEP 1 - Click on **Setting > Import** to access the Import page.

STEP 2 - Click on **Manual Upload** tab to access the Manual Upload tab.

STEP 3 - Complete the process by entering all the required fields and click on **Import** button.



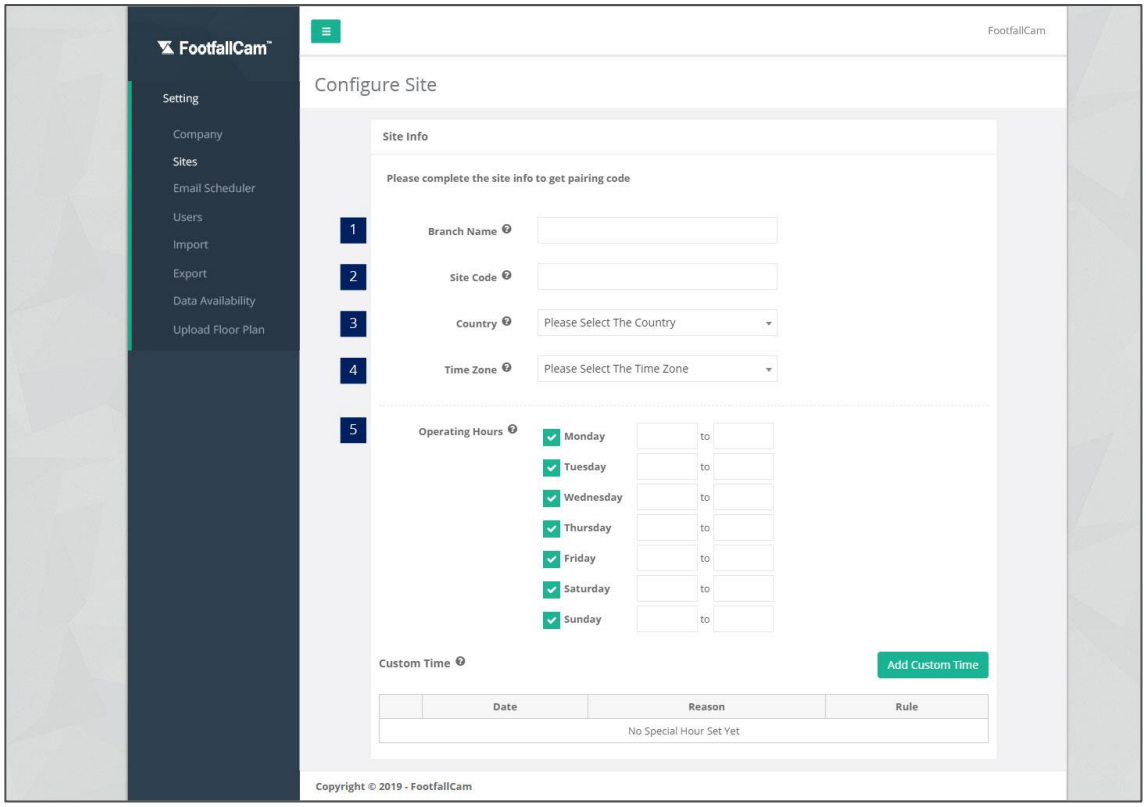
Item	Description
1. Import Data Type	Select the **Site** as the import data type.
2. Upload File	Browse and upload the CSV template with site detail(s).

4.4 Manage Site Detail

STEP 1 - Click on **Setting > Sites** to access the Counter Management page.

STEP 2 - Select the site to manage and click on **Setting.**

STEP 3 - Update the required fields and click on **Save Changes**.



Item	Description
1. Branch Name	Enter a preferred branch name. **(Info:** Site name inserted will be apply to features in FootfallCam Analytic Manager V8™.**)**
2. Site Code	Enter a preferred branch code. **(Info:** Site code used to identify branch within a geographic region.**)**
3. Country	Select the country. **(Info:** Country selected will be apply to features in FootfallCam Analytic Manager V8™ for mapping the branch coordination.**)**
4. Time Zone	Select the time zone. **(Info:** Time zone selected will be apply to report feature.**)**
5. Operating Hour	Enter the operating hour for the branch. **(Info:** Click **Add Custom Hour** to configure operating hour for Public Holiday.**)**

4.5 Manage User Profile

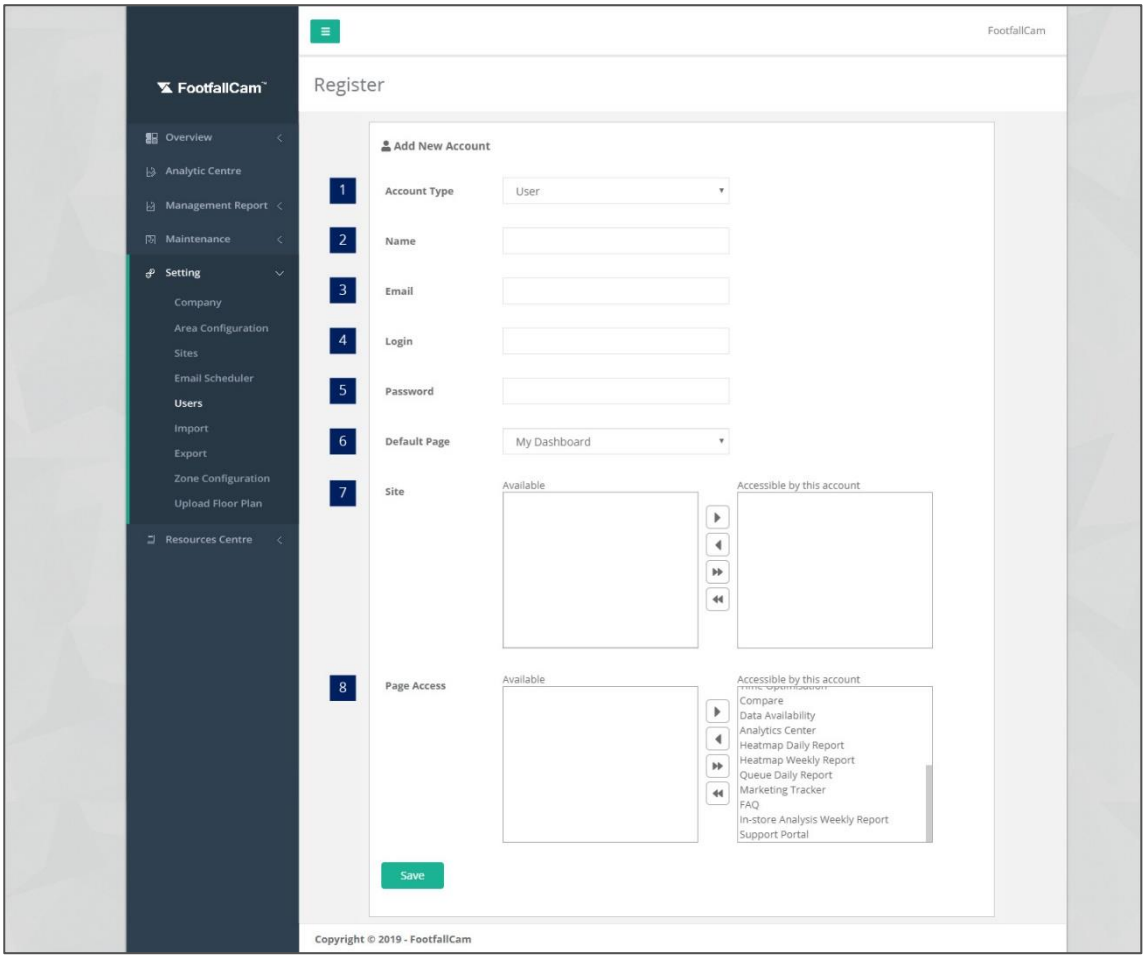
4.5.1 Create New User Profile

STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login.

STEP 2 - Click on **Setting > Users** to access the User Account page.

STEP 3 - Click on **Add User** button to access the Register page.

STEP 4 - Complete the process by entering all the required fields and click on **Save** button.



Item	Description
1. Account Type	**Admin:** Can create more accounts and remove unwanted accounts. **User:** Limited access in account creation and removal.
2. Name	Enter a preferred name.
3. Email	Enter a preferred email address. **(Info:** Confirmation email will be sent to the email address.**)**
4. Login	Enter a preferred username.
5. Password	Enter a preferred password.
6. Default Page	Select the default landing page upon user login.
7. Site	Select the list of sites that allow user to access.
8. Page Access	Select the list of pages that allow user to access.

4.5.2 Remove User Profile

> **Note**
>
> A deleted user account cannot be recovered.

An Admin account type user has the authority to delete other registered users.

1) To delete a registered user, click on **X** under the **Delete User** column.
2) A confirmation message will appear. Click on **Delete User** to proceed.

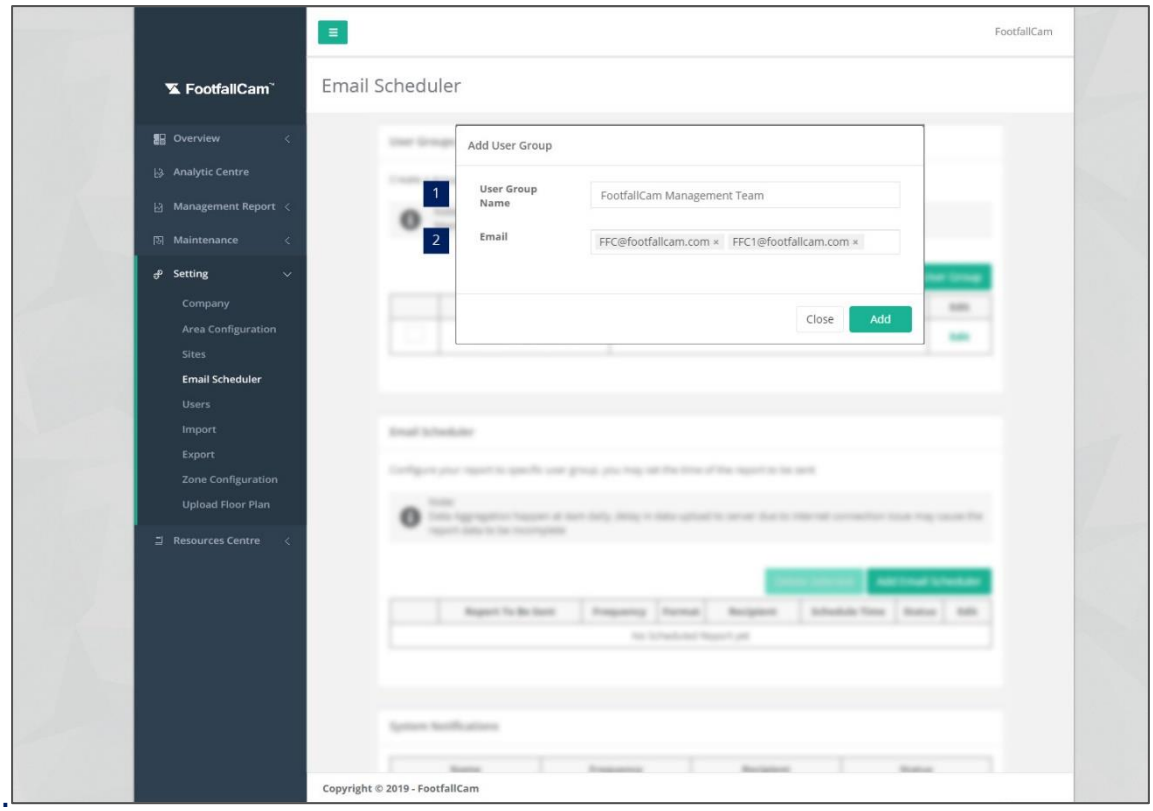
4.6 Create an Email Scheduler

Step 1 - Create New User Group	Step 2 - Create an Email Schedule	Step 3 – Email Schedule History
Refer to here.	Refer to here.	Refer to here.

STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login.

STEP 2 - Click on **Setting > Email Scheduler** to access the Email Scheduler page.

4.6.1 Create New User Group



STEP 1 – Click on **Add User Group** button to access the Add User Group page.

STEP 2 - Complete the process by entering all the required fields and click on **Add** button.

Item	Description
1. User Group Name	Enter a preferred user group name.
2. Email	Enter the email address. **(Info:** Multiple email address can be added.**)**

4.6.2 Creating an email schedule

1) To create a new email scheduler, click on the button **Add Email Scheduler** in the Email Scheduler page.

Item	Description
1. Report	The desired report to be automatically sent via email
2. Site	The number of sites to include in the scheduled report (This field is only applicable if site level reports are selected in field 1.
3. Recipient	The user group to receive the report
4. Schedule Time	The time the report will be sent. All weekly report will be sent every Monday at the specified time.
5. Status	Active or inactive status of the schedule. Set this setting to inactive to temporarily pause the schedule

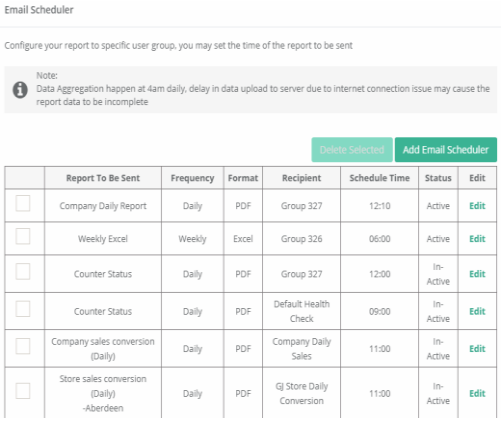
Note:
An existing schedule may be edited by clicking on **Edit**

4.6.3 History log

A recorded history log will be displayed in the email scheduler page to showcase the status of each scheduled status. To access the history log on the email scheduler, navigate to the email scheduler page from the menu on the left and scroll to the bottom section.

4.6.4 Deleting an existing email schedule

Users that would like to delete an existing email schedule for their created automated reports may choose to do so from the email scheduler page.



	Report To Be Sent	Frequency	Format	Recipient	Schedule Time	Status	Edit
	Company Daily Report	Daily	PDF	Group 327	12:10	Active	Edit
	Weekly Excel	Weekly	Excel	Group 326	06:00	Active	Edit
	Counter Status	Daily	PDF	Group 327	12:00	In-Active	Edit
	Counter Status	Daily	PDF	Default Health Check	09:00	In-Active	Edit
	Company sales conversion (Daily)	Daily	PDF	Company Daily Sales	11:00	In-Active	Edit
	Store sales conversion (Daily) -Aberdeen	Daily	PDF	Gj Store Daily Conversion	11:00	In-Active	Edit

1) Navigate to the **Email Scheduler** page from the menu on the left
2) Scroll down to the second section of **Email Scheduler**
3) Tick the specific email schedule that you would like to delete
4) Select the option "**Delete Selected**"
5) Once a schedule has been deleted, it cannot be recovered.

Note:
A schedule may be temporarily disable by **Editing** an existing schedule instead.

4.7 Advanced calibration for FootfallCam

The below parameter settings yield the best results under normal circumstances. Please ensure they are all enabled before you proceed with further advanced tunings.

Note:
Advanced tuning should only be done by users that have experience with people counter calibrations or have received training from FootfallCam personnel.

Parameter	Description	Status
Start End Mode	Calculate in and out base on people's first and the last point in live view	Enabled
Background Removal	To remove static backgrounds like shelves, pedestal or booth	Enabled
Ideal Setting	Best setting is calculate based on ceiling height	Enabled
Legacy Tracking	For 2D (pixel based) tracking	Enabled
Static Noise Filter	To remove all the static noise caused by floor reflection, object with depth, static fixture etc.	Enabled

The below parameter settings are additional tuning settings that will only be required when the user determined that the current basic tuning parameters are unable to achieve a satisfactory accuracy.

Parameter	Description
3D Algorithm	Normal (lower quality in image (depth map) but higher framerate) Turbo (higher quality in image (depth map) but lower framerate)
Noise Filter	Growth rate (the rate that the static point recorded to become noise to filter) Maintain rate (the rate that the noise filter to maintain the noise filter effect) Threshold (the amount over rate of static point for noise filter to take effect)
Environment Learning	Image (learning environment based on image point) Object point (learning environment based on real world point that calculated by using 3D algorithm)
Tracking Mode	Image (Tracking people based on image point) Object point (Tracking people based on real world point calculated by using 3D algorithm)
Filter Zone	Mode to calculate people in or people out based on line counting algorithm combine with the algorithm people going into the zone or people going out from the zone)
Human Height	Min and max allow height human to be calculated
Image Settings	Brightness: (brightness of camera, higher the brighter) Contrast: (contrast of camera image)
Depth Map Display	Original (normal depth map that shows height based on intensity of the grey colour depth map, higher intensity meant higher value of the depth) Coloured (use colour represents different height value of the depth: black (unknown height or infinity), blue (not human height range), red to orange to yellow to green (human height range, red highest, green lowest) 3D (top down view of real world object point)
Refreshed Period	Rate (in minute) to refresh camera to ensure the sync of the stereo camera)
Ideal Setting	Setting to do 3D algorithm calculation and some image processing, turn onto auto calculate base on ceiling height and camera degree, turn off to modify) SAD Window (block size for 3D algorithm to match) Disparity (maximum value to allow for match point for 3D algorithm, higher meant allow further match point) Min Disparity (minimum value to allow for match point for 3D algorithm, recommend use zero, higher meant higher minimum distance for match point) Uniqueness Ratio (Margin in percentage by which the best (minimum) computed cost function value should "win" the second-best value to consider the found match correct, higher to reduce the number of found match correct) Pre-Filter Cap (Truncation value for the pre-filtered image pixels) Speckle Windows Size (Maximum size of smooth disparity regions to consider their noise speckles and invalidate. Set it to 0 to disable speckle filtering. Otherwise, set it somewhere in the 50-200 range.) Speckle Range (Maximum disparity variation within each connected component. If you do speckle filtering, set the parameter to a positive value, it will be implicitly multiplied by 16. Normally, 16 or 32 is good enough.) Disp12MaxDiff (Maximum allowed difference (in integer pixel units) in the left-right disparity check. Set it to a non-positive value to disable the check. Texture Threshold (value to filter out areas that don't have enough texture for reliable matching

The settings below should be used as a diagnosis method after a calibration to identify the cause of an inaccurate counter.

Problem	Reason	Actions
Cannot detect the person within tracking zone	1. Wrong ceiling height 2. People stay too long within live view	1. Change the “Ceiling Height”. The live view roughly corresponds your actual height when you walk under the camera. 2. Camera Control “Reset Period” Set to under 10 3. “Upper Trigger” set higher value
Multiple blobs when people walk pass	1. Ceiling height parameter is set too low 2. Wrong setting to Calculate Depth Map	1. Increase the value of “Ceiling Height” 2. Camera Control “Reset Period” Set to under 10 3. Turn on “Ideal Setting” 4. “Upper Trigger” set higher value
Swinging door creating count	Swinging door perceived as 3D object	1. Enable “Filter Zone” to filter out the noise 2. “Tracking Zone” avoid the swinging path
Random Noise	Some reflective service may be perceived as random noise	1. Turn on “SGBM” mode 2. Make sure “Background Removal” is turned on
Noise on the 3D depth map	Floor reflection	1. Adjust “SAD window” to larger value 2. Increase “Uniqueness Ratio”; reduce “speckle range”
Noise caused by permanent fixtures such as shelves and EAS pedestal	In the depth map, it is an object more than 1.3m height	1. Check if “Background Removal” has enabled 2. Adjust “Tracking Zone” to avoid the noise
Two people counted as one	Two Blob centres are too close and considered as one	1. Reduce “Shoulder Width” value 2. Reduce “SAD window”,” Gaussian value”
People coming IN counted as OUT	Nearby noise is affecting the position of the centre of the blob	Enable “Start-end Mode”
Wandering People	-	“Mask” specific areas as non-counting area

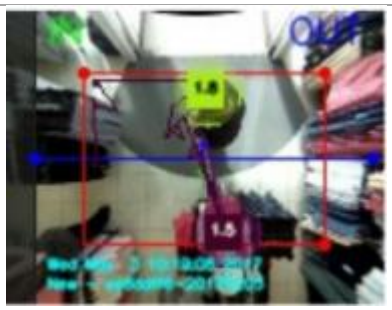
4.7.1 Standard 3D algorithm

Under normal circumstances, FootfallCam™ uses a standard 3D algorithm to count at its optimal level. The most optimal height for FootfallCam™ is 2.5m to 4.5m.

Standard 3D Algorithm works by:

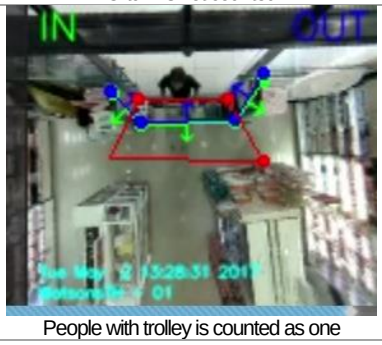
- Differentiating between human’s head and shoulder point, and a trail line and forms a 3D blob that tracks their movement.
- It will detect a person that makes a U-turn and did not enter the store using a start-end zone.
- It will differentiate between kids, adults, inanimate objects through height detection and form a depth map.
- It can work well in cases of high traffic since the blob and head point will be clear.
- It may apply an exclusion line to avoid the counting of staffs.
- It uses a single entrance that will clearly indicate the In and Out line.

Standard live view



U-turn is not counted

Kids are not counted

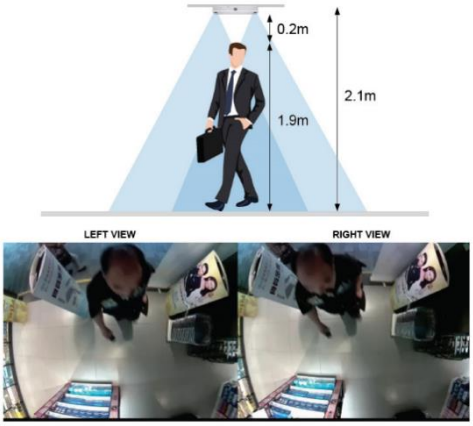


People with trolley is counted as one

4.7.2 Low ceiling algorithm

For stores with a lower ceiling height of 2.1m to 2.4m, it is difficult to form a 3D depth map that can accurately track the direction of travel for visitors. As a result, it is not capable of differentiating between the head and shoulder points.

The low ceiling algorithm uses two tracking area to track the background changes and define the direction of travel. The low ceiling algorithm functions by if a person passes through Tracking Area A and then B, then there would be background changes in Area A and then Area B and the person would be considered as out.



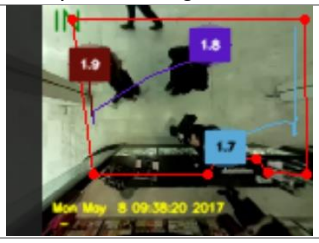
Limitation of Low Ceiling Algorithm

- The tendency to undercount in high traffic conditions since the background changes detection will only be detected one at a time.
- The tendency to over-count in areas when there are stock displays and the visitor is hovering around the entrance, caused by people selecting an item and triggering of background changes.
- Does not detect U-turn behaviour since it does not use 3D blob for tracking purposes.
- Does not differentiate between children and inanimate objects since it does not use height detection.
- Does not apply exclusion line since it does not use counting lines.

Low Ceiling Tracking Area	High Traffic	Stock displays in the entrance

4.7.3 Area counting algorithm

The Area Counting algorithm functions by using 3D Blob Tracking Technology to trace every individual person in an area to support multiple counting when more than one person enters the zone. It also prevents over counting of an individual. The algorithm automatically tracks the duration (adjustable) a person enters the zone and once the person exceeds the threshold of duration, the person will be considered as In, if the person leaves the zone, it will be considered as Out.

Staying for a certain duration	Multiple Counting in an Area
	
Random Pattern in Movement	No Specific Entrance

Area Counting is mostly suitable for

- Stores with no specific entrances. This means that any visitor can enter and exit from any direction of the store.
- Stores where the visitor would walk in a random pattern rather than just In and Out. This is usually caused by the stock displays near the counting area, causing visitors to interact with the displays.

Limitation of Area Counting

- Does not apply exclusion line as it does not use counting line.

4.8 Configuring operating hour and setting custom operating hours

Users that would like to change their current store operating hour may do so from the counter management page. When a counter is operating out of its operating hour, it will enter a standby mode to preserve data and will not be counting during the time. This will prevent the counter from counting when the store is closed due to the store environment or condition.

Note:
Only users with an Admin access account may configure store operating hour.

4.8.1 Updating the operating hour

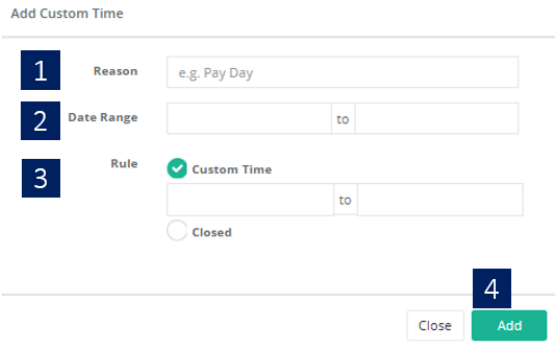
Users that would like to update their operating hour in their existing store may do so with an Admin account.

1) Select **Sites** from the menu on the left
2) Select **Settings** for the site that you would like to adjust operating hours for
3) Edit the operating hours for each of the days that you would like to amend
4) Click **Save Changes** at the bottom of the page to update the operating hours

4.8.2 Setting custom operating hours

Users that would like to update their custom operating hour in their existing store may do so with an Admin account. Custom operating hours is mostly used for seasonal holidays for the counter to remain in operation and counting if a store extends their operating hour specifically for a holiday, or if it closes earlier than usual.

1) Select **Sites** from the menu on the left
2) Select **Settings** for the site that you would like to adjust operating hours for
3) Select the option of **Add Custom Time**



4) Input all relevant fields in the pop up
5) Click on **Save** to update the selection

Item	Description
1. Reason	The occasion for the need of a custom time
2. Date range	The set of date for the custom time option to be applied to
3. Rule	Select whether the store will be closed during the dates specified, or if a custom time is needed

Note:
An existing custom time configuration may be removed by ticking the box, and selecting **Remove Selected**

Users that would need to set custom operating hour may be configuring for several reasons. Some reasons are:

- Holiday festivities – When there is a holiday, store managers may choose to extend the operating hour for that store to accommodate the traffic and consumer behaviour. Users may set a custom operating hour instead of adjusting the normal operating hour, only to readjust it again after the end of the holiday. Likewise, this will apply for users that would like to close shop early for the day as opposed to extending the hours.

4.9 Miscellaneous configuration

Users can configure their FootfallCam Analytic Manager on three different levels. The following table will describe the different options that the user will be able to configure as well as the page they will have to navigate to for such configuration:

Level	Configurations	Description
Account Section 4.8.1 Account level configurations	Account details	Account name, language, account type
	Date settings	First day of the week and date format
	Email server	Only required if the user would like to use personal email server
	Export raw data from counter	Directly export data from the counter
Site Section 4.8.2 Site level configurations	Site details	Redefine previously initialised settings
	Operating hours and custom hours	Adjust the operating hours of the store and set custom hours for holidays
	Advanced settings	Specify region tag for cluster reporting
	Configuring IT details	Redefine previously initialised settings
	Visit duration threshold	Adjust the point in which a visitor is co
Counter Section 4.8.3 Counter level configurations	Firmware upgrade	Upgrade the firmware to the latest version
	Wifi threshold	Adjust the wifi detection radius
	Counter status	Temporarily disable the counter
Updating corporate network Section 4.8.4	Updating IP settings	When the user wants to update the IP details of their corporate network

4.9.1 Account level configurations

Users may adjust the configuration details after the initial registration for an account. To adjust the details, users will need to navigate to:

1) Under the Administration tab on the left, click on **Configurations**.
2) Navigate to the desired setting and update the field as necessary.

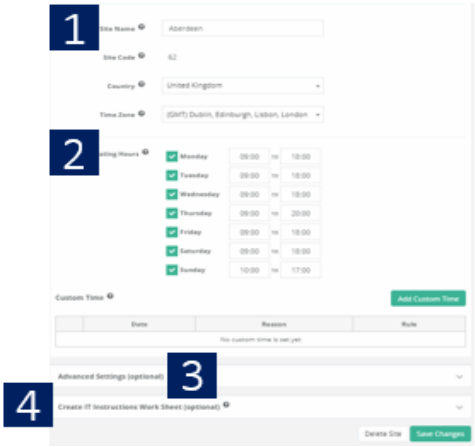
Category	Setting	Description
Account details	Company name	Name of the company
	Company logo	Company logo to be displayed on the top left
	Account type	Type of account according to industry
Date setting	First day of week	Starting day of a new working week
	Date format	Format of date to display in reports
	Start of financial week	First day of financial week
Email server	Personal SMTP details	Only required if you are currently using a personal email server
Export raw data	FTP export from counter	Directly export raw data from FootfallCam counter without using Export Centre
	Grab from SQL data	Directly export raw data from counter through an SQL query

Note:
Raw data directly exported from counter does not go through data integrity checking.

4.9.2 Site level configurations

Users are required to configure the site level details prior to the start of the installation and the retrieval of the allocation code. If users would like to adjust their initially specified settings:

1) Under the Administration tab on the left, click on **Counter Management**.
2) Select the specific site that you would like to configure and click **Settings**



3) Navigate to the specific setting that you would like to configure

4) If the user would like to adjust the visit duration threshold, the user will need to select **Advanced Settings (Optional)** and adjust the lower and upper limit of both in *seconds interval*.

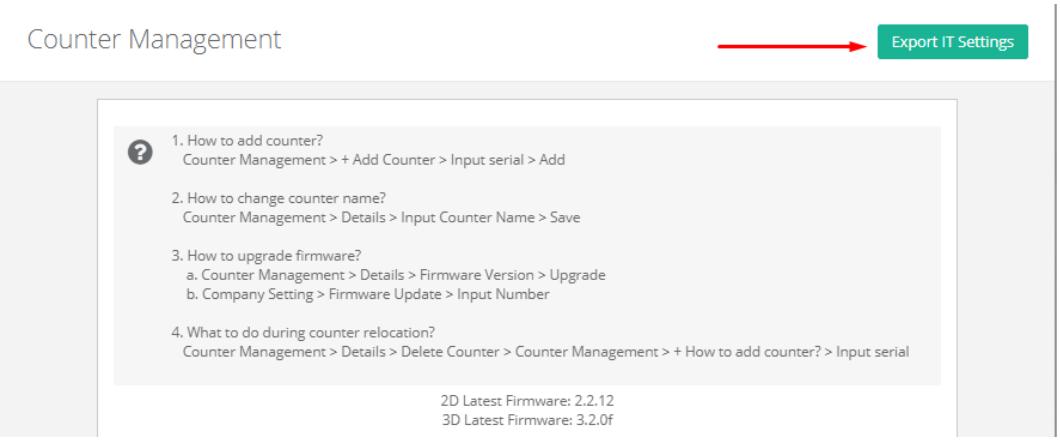
Item	Description
Site details	Redefine the settings configured in section 2.1 Create a site
Operating hour	Adjust the hour of operation for the store or define a custom operating hour for the store
Advanced settings	Adjust region tag settings for the store
IT Settings	Redefine the settings configured in section 2.2 Configure site details
Region tag	Set a "tag" category to group multiple sites into one
Custom operating hour	Set a special operating hour time for seasonal event

Note:
For information on configuring custom operating hour, please refer to section 4.6 Operating hour configuration.

4.9.3 Export your Branch List

Users that would like to export the list of sites they have created may choose to do so via the Counter Management page on the FootfallCam Analytic Manager.

1) Go to Counter Management page, there is a button, 'Export IT settings 'on top right of the page.



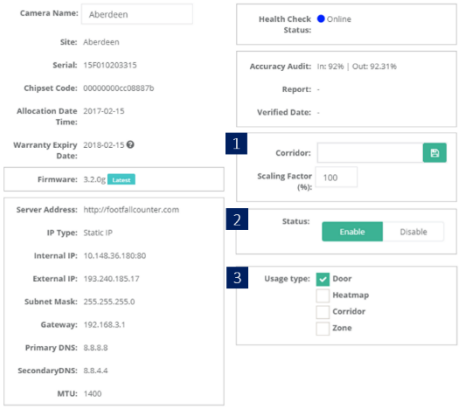
2) Click the button and you will be able to obtain an excel file with all the details for all branches:

Item	Description
Site name	The name of the branch to display for reporting purposes
Site Code	Store ID displayed in the reports and used to identify each store when there are multiple stores within a geographic region
IT settings	i. Pairing code ii. Server address ii. DNS settings
Country	Country used for mapping of coordinate to display within the reports
Time zone	Time zone setting for when reports can be updated to the server
Operating Hours	Normal: hour of operations for the store. Special / Custom: custom hour configuration may be set for holidays.

4.9.4 Counter level configurations

Users may configure the details of each individual counter by navigating to the following:

1) Under the Administration tab on the left, click on **Sites**.
2) Navigate to the specific site that you would like to configure counters for and identify the counter.
3) Click on **Details** once the counter to configure has been specified.



4) Select the specific detail that you would like to edit.

Item	Description
Corridor	This option should only be used if the usage type is set to Corridor
Status	Option to disable the counter temporarily
Usage type	Type of counting method that should be use with this counter 1. Door (default counter for counting visitor) 2. Heatmap (counter used for in store traffic analysis) 3. Corridor (use for shopping mall to determine customer journey) 4. Zone (use for shopping mall to determine level occupancy)

4.9.5 Updating corporate network

When users want to change their IP settings on their corporate network, the IP details inputted on the FootfallCam device must be updated as well. If the IP details is not updated on the FootfallCam counter prior to the change of the corporate IP network settings, the counter will not be able to upload visitor counting data to the FootfallCam Analytic Manager.

> **Note**
> The user **must follow the steps below in the sequential order** if they wish to remotely access into the FootfallCam from their internal network.

1) Access the device
   To start and update the IP, the user must first login to the FootfallCam device remotely.
   a. Go to the list of available Wi-fi network on your device and select the counter's specific SSID and connect with the password **counter888**.
   b. Go to the internet browser on your device and type in the URL http://192.168.4.1
   c. Login with the password **123456**

> **Note**
> A user may do this remotely if they can replicate the stores' internal network.

2) Update the IP setting
   Once the user has access into the FootfallCam device, the user will need to overwrite the existing IP detail with their new setting.

1) The user will need to navigate to the **Settings** tab on the bottom of the page.
2) Select the option **Static IP**.
3) Once the user has inputted the new IP settings, click **Save** to update the settings.
4) When the new IP setting is applied, the FootfallCam device will appear as offline due to unmatched IP setting between the device and the corporate network.

> **Note**
> If the new IP setting is **inputted incorrectly and saved,** the user will not be able to remotely access the FootfallCam to update it.

3) Update internal network settings

Once the FootfallCam device has been configured for the new IP setting, the FootfallCam will appear as offline and will be unavailable for remote access. The user can then configure their corporate IP settings to match the settings inputted into the FootfallCam device.

> **Note**
> If the user updated their internal network settings prior to the change in FootfallCam device, the user must visit the site to change the IP setting.

4.9.6 Redirecting the server address

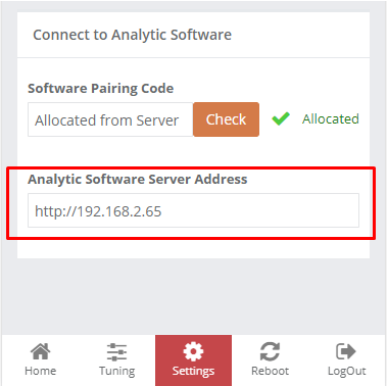
When users would like to use a new server for data access from the FootfallCam, the FootfallCam device manager must be logged in onsite to update the new server address. Once the server address is updated, the device must be re-allocated on the new server prior to data display.

> **Note**
> This guide **does not** include the migration of existing data, all existing data will not be displayed on the new server.

1) Access the device
   To start and update the server address, the user must first login to the FootfallCam device.
   a. Go to the list of available Wi-fi network on your device and select the counter's specific SSID and connect with the password **counter888**.
   b. Go to the internet browser on your device and type in the URL **http://192.168.4.1**
   c. Login with the password **123456**

> **Note**
> A user may do this remotely if they can replicate the stores' internal network.

2) Update the server address
   Once the user has access into the FootfallCam device, the user will need to overwrite the existing server address with the new detail.



   1) The user will need to navigate to the **Settings** tab on the bottom of the page.
   2) Under the option **Connect to Analytic Software,** enter the desired address of the new server where data will be streamed to. To use FootfallCam cloud server, please enter www.footfallcounter.com.
   3) Once the server address is updated, **Reboot** the counter.

3) Allocate the devices on the new server
   Once the server address is updated, the counter must be allocated again on the FootfallCam Analytic Manager, whether on a private corporate server, or on FootfallCam cloud server.
   1) Click on **Setting > Sites** to enter the counter management page.
   2) Click on **+Add Site** to enter the configuration page.
   3) Fill in the following information as required

Item	Description
Site name	The name of the branch to display for reporting purposes
Site code	Store ID displayed in the reports and used to identify when there are multiple stores within a geographic region
Country	Country used for mapping of coordinate to display within the reports
Time zone	Time zone setting for when reports can be updated to the server
Operating hours	Hour of operations for the store. Custom hour configuration may be set for holidays.

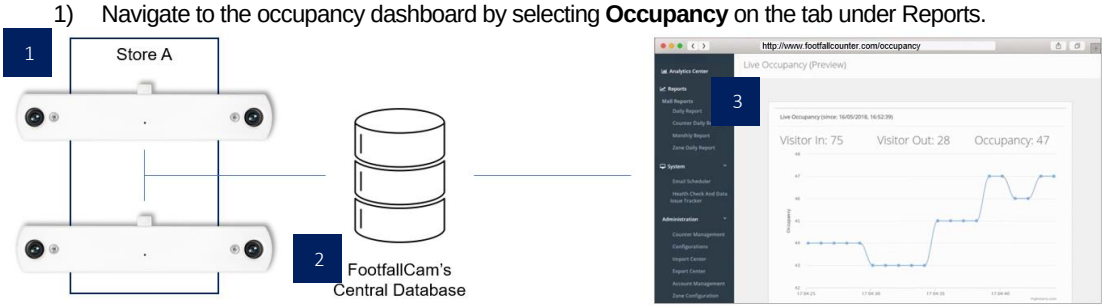
> **Note:**
> Users that are installing multiple counters in a site may use the bulk import option instead. Refer to section 4.1 Bulk import site details for more details.

   4) Click on **+Add Counter** on the newly created site
   5) Insert the serial number of the device.

4.10 Occupancy dashboard

Users that are interested in reviewing the current occupancy count of visitors in a compound will be able to access the occupancy dashboard available from the FootfallCam Analytic Manager to review the current occupancy in the confined area. The occupancy dashboard will be updated on seconds basis. For users to access the occupancy dashboard:

1) Navigate to the occupancy dashboard by selecting **Occupancy** on the tab under Reports.



4.8.1 How does occupancy counting works?

The occupancy dashboard works by performing three steps within a time frame of one second to showcase the data from what the counter retrieve and into the FootfallCam Analytic Manager. The three steps are as follow:

1) Data will be streamed from the FootfallCam into the FootfallCam central database every second.
2) Data streamed to the FootfallCam central database will be aggregated before it will be displayed in the occupancy dashboard. This step is crucial as it will aggregate the visitor counts if there are multiple counters installed in one store.
3) Once all visitor counts have been aggregated, the current occupancy will be live and available in the **Occupancy dashboard**. Users may choose to connect the dashboard to an external monitor or display by copying the URL link provided and pasting it to the video wall.

Note:
Users can choose what form of occupancy data they would like to display on the configurations tab.

Chapter 5: Support requests

The Support Portal can act as a dedicated hub for users to manage their support request. User can manage and raise new ticket through the Support Portal. To access the support portal:

1) Navigate to the menu bar on the left and open the Maintenance tab
2) Select the **Support Portal** option
3) A new window to the support portal will open

5.1 Assessments to be made before reporting an issue

Stores that are found to have an inaccuracy in the data may raise an alarm for FootfallCam personnel to investigate. However, the user must ensure that the data issue raised to FootfallCam personnel is not caused by false alarms. To investigate whether a site have data issues and its legitimacy:

Step 1
Self-diagnosis on issues and eliminate possibilities of false alarm reporting

Please refer to 5.1.1 Identifying false alarms

Step 2
Inform FootfallCam team and investigation by FootfallCam personnel

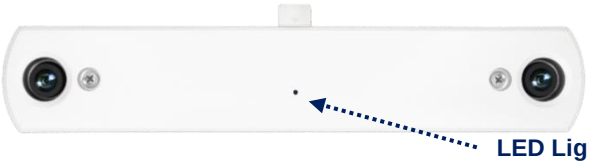
Please refer to 5.1.2 Dealing with inaccurate counters

Step 3
FootfallCam conclusive findings and reporting to client

Please refer to 5.1.3 Solutions to data issues

5.1.1 Identifying false alarms

Store staff personnel within retail chains or shopping mall personnel will be require to troubleshoot the FootfallCam device to ensure the network connection to the counter has not been lost. FootfallCam uses a single LED lighting from the device to convey the issue the counter is currently facing.



LED Light
Singular LED light use to diagnose issues if the counter is not functioning as proposed

LED Colour	Diagnosis
No Light	**Counter is not powered up** Check the connection between the Cat5 cable and the power cable that is connected between the counter and the midspan
Yellow	**Network Cable is not connected** Check the cable connection and re-crimp the cable following the correct colour sequence as indicated in Chapter 3.1.2
Green	**Network or Gateway Issues** Caused by no proxy settings, incorrect IP, or the port is blocked
Red	**Cannot Boot Up** Reboot the counter by powering it off and turn it back on after **(5)** minutes has passed
Blue	**No issue**

Once the counter LED light has been identified by the store staff, please refer to **Appendix F** for a complete list of causes of issues and resolutions.

Checking for accuracy issues

Prior to the user requesting for a reverification from FootfallCam, the user is expected to check for the current accuracy of the counter to determine whether a verification request will be necessary, or whether it will be approved or not.

> **Note:**
> For a guide on how to schedule a video to check the accuracy, please refer to Section 8.3 Accuracy Audit.

Once a user has scheduled a video and is ready to review the accuracy of the counter, the user must bear the following in mind:

1) Children are **meant to be excluded** from the counting by FootfallCam
2) Individuals are **only counted** if they cross either the IN line, or the OUT line.
3) Individuals are **meant to be excluded** if they cross the exclusion line.
4) An individual is counted as soon as they exit the tracking zone.
5) If multiple visitors are entering and have crossed the IN or OUT line, each of the user will be counted.
6) Visitors that are hovering over an entrance will only be counted once.
7) Each line drawn will have different accuracy. While we cannot guarantee that the accuracy for both lines will be the same, we can guarantee they will be above 90%.

When the user has scheduled the video and review its accuracy according to the specifications above, the user can request for a reverification by tagging it as “Not accurate” from the Health Check and Data Issue Tracker page if it is found to be inaccurate. Please note that following circumstance when FootfallCam personnel will consider the reverification

1) The reviewed accuracy is below 90%.
2) The reviewed sample size is above 20.

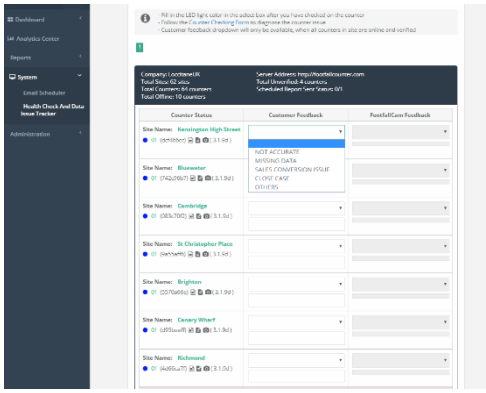
If the sample size of the scheduled video is 2 and there is a miss count of 1, it will affect in an accuracy of 50%. Under this condition, FootfallCam will not perform the reverification as there is insufficient sample size to reach the conclusion that the counter is inaccurate. The following table highlights the conditions in which a reverification will be approved and whether a surcharge will be apply or not.

Approval	Situations
Approved	1) Verification report video was detecting static objects 2) FootfallCam™ does not cover the whole entrance 3) FootfallCam™ has been replaced or swapped 4) Change of store environment (Surcharge Applied) 5) Repositioning of FootfallCam™ (Surcharge Applied)
Disapproved	1) Dissatisfaction with accuracy achieved 2) Comparison to manual counting with another camera

5.1.2 Dealing with inaccurate counters

When the user has communicated with FootfallCam the intention, FootfallCam will use the following process in approving re-verification requests.

By default, a filter will be set to show all counters that are not uploading data. Users can communicate with FootfallCam **(Refer to section 5.2)** on the issues that they are facing in terms of data and hardware through the **Health Check and Data Issue Tracker**.



Item	Description
2. Not accurate	Footfall data is inaccurate and over counting or under counting on many occasions
3. Missing data	There are hours of the day with no counts
4. Sales conversion issue	There is abnormally high sales rate or abnormally low sales rate that conflict with transaction occurred.
5. Close case	There are no further actions that can be done by the customer
6. Others	Issues that are not listed in the fields specified

Once the issue has been identified and labelled in the tracker, the user is recommended to send supporting materials for FootfallCam to investigate. Users may update the remark column with screenshot or email a supporting document to FootfallCam support team.

Type of issue	First line diagnosis	Required supporting materials
Not accurate	Schedule a video recording and review the system count against manual count	Inform FootfallCam support personnel of the recording that you had reviewed by notifying the "Date/Time/Length of video recording. For a guide on scheduling video recording, please refer to Section 8.3 Accuracy Audit. For a guide on how to check whether a counter is inaccurate, please refer to Section 5.5 How to check for accuracy?
Missing data	Ensure that the cause of missing data is not due to non-powered counters	Please report the date and time period of missing data and attach a copy of the missing report, including the Data Integrity Report for the specific site
Sales conversion	Ensure that the sales conversion data is uploaded to the correct format	Please provide FootfallCam personnel with the sales data of the date in issue for investigative purpose for FootfallCam personnel

5.1.3 Solutions to data issues

FootfallCam personnel will first check for **missing data** from the FootfallCam counter. If the counter is found to have missing data, then there are two possible causes of missing data.

Causes	Action plan
No network supplied to the counter	Store staff will need to check if the internet connection is supplied to the counter by reviewing the steps in Chapter 5: Monitoring data availability the data is stored within the counter and is recoverable.
Counter is not turned on	Store staff will need to supply power to the counter and ensures that it remains on. The data are not recorded and thus, cannot be recovered.

If the missing data is not the cause of the issue, then FootfallCam personnel will check for discrepancies and spikes in the counter by scheduling a video via Accuracy Audit.

Causes	Action plan
Counter has been repositioned or store layout has changed	When a counter has been relocated or reuse, the verification calibration will not apply to the new layout of the store and requires a new calibration. Surcharge will apply.
Counter is inaccurate	FootfallCam verification specialists will conduct a re-verification for the counter free of charge.

5.2 Support Portal

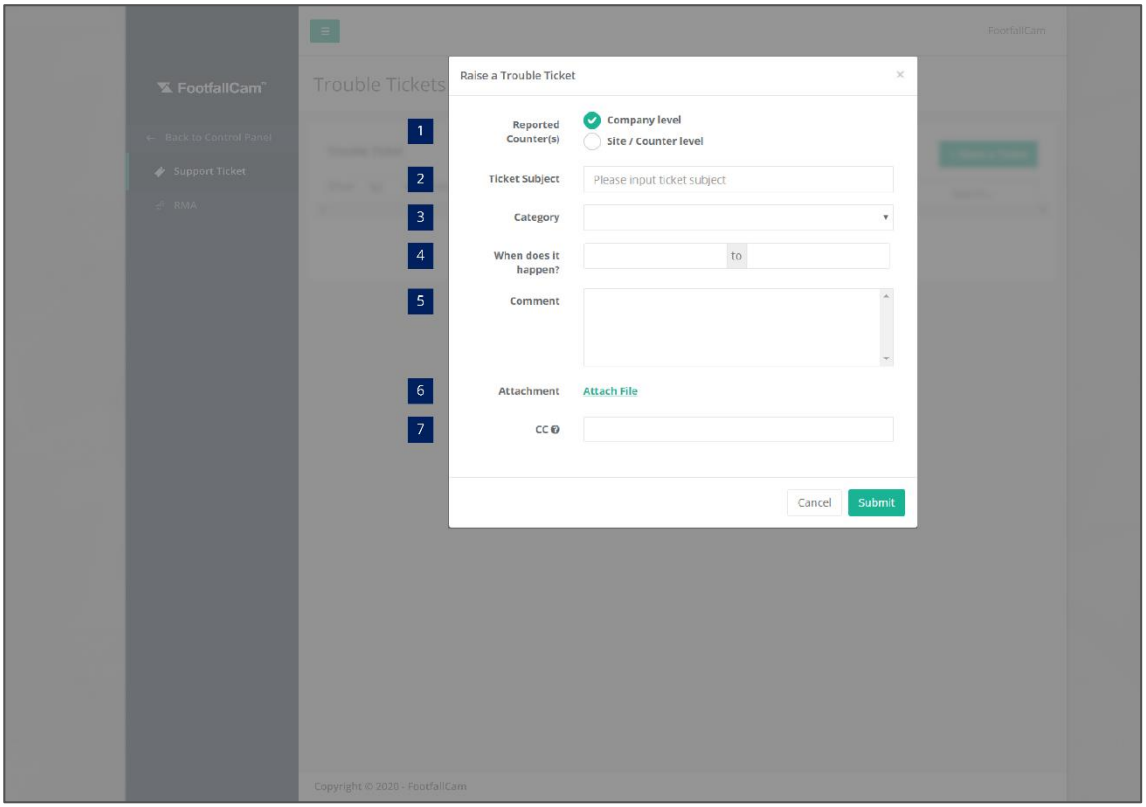
5.2.1 Raising an Issue

STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login.

STEP 2 - Click on **Maintenance > Support Portal** to access the Support Portal page.

STEP 3 - Click on **+Raise a Ticket** button to access the Raise a Trouble Ticket page.

STEP 4 - Complete the process by entering all the required fields and click on **Submit** button.



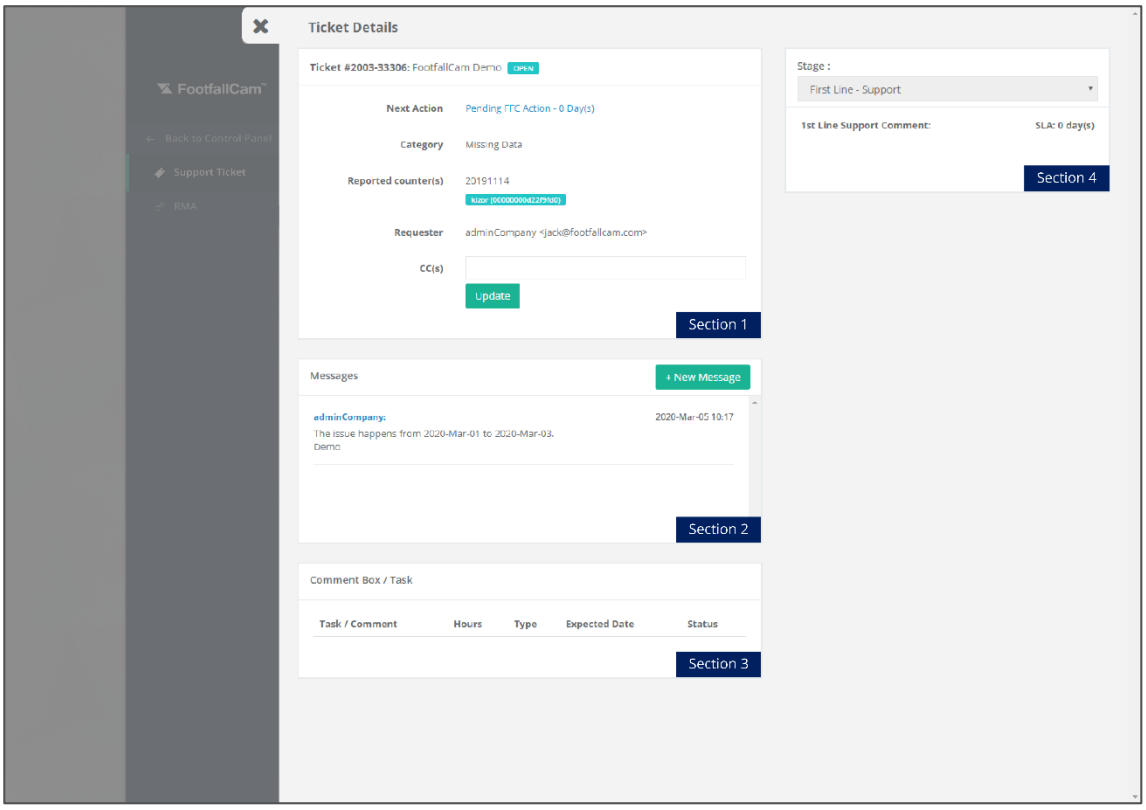
Item	Description
1. Reported Counter(s)	Select the level of report issue. **(Info:** User allow to select the specific counter in **Site / Counter Level.)**
2.Ticket Subject	Enter the subject of issue faced.
3. Category	Select the category of issue faced. **(Info:** Choose **Others** for issues not listed and specify the issue in the extra field.**)**
4. When does it happen?	Enter the duration of issue faced. **(Info:** Choose same dates if the issue only happened in a day.**)**
5. Comment	Enter the remark as applicable.
6. Attachment	Upload the supporting documents. **(Info:** The maximum allowed size is 20 MB per attachment and file type allowed are doc, docx, docm, dotx, dotm, docb, xls, xlsb, xlsm, xlsx, xltm, ppt, pot, pps, pptx, pptm, potx, potm, ppam, ppsx, sldx, sldm, zip, csv, json, txt, pdf, jpg, png, jpeg, mp4, h264.**)**
7. CC	Enter the email address to receive latest ticket updates. **(Info:** Multiple email address can be added.**)**

5.2.2 Manage Existing Ticket

STEP 1 - Access to FootfallCam Analytic Manager V8™: https://portal.footfallcam.com/Account/Login.

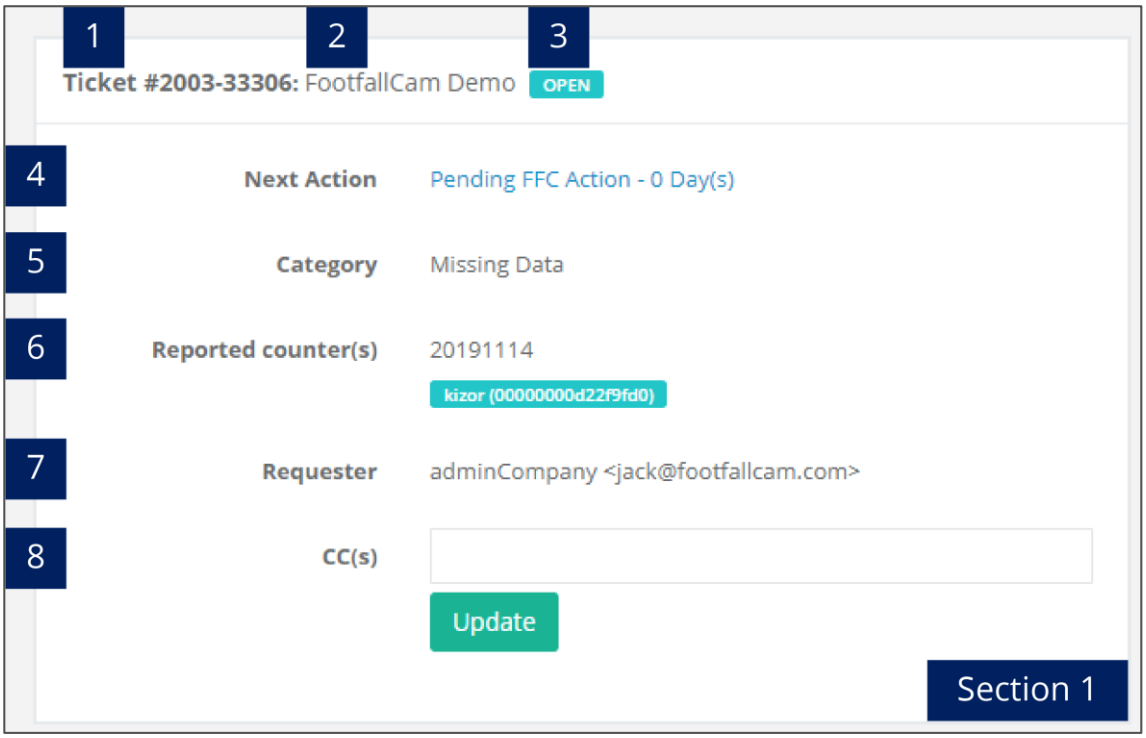
STEP 2 - Click on **Maintenance > Support Portal** to access the Support Portal page.

STEP 3 - Click on the ticket to manage**.**



Section	Description
1. Ticket Info	Section 1 shows the ticket details.
2. Message	Section 2 shows the conversation between user and FootfallCam Support Team.
3. Category	Section 3 shows the progression of task created for FootfallCam.
4. Stage	Section 4 shows the current status of ticket.

5.2.2.1 Section 1 - Ticket Info



Item	Description
1. Ticket ID	To indicate the issue reference number.
2.Ticket Subject	To indicate the subject of issue faced.
3. Ticket Status	**Open:** Issue submitted by user and being investigated by the FootfallCam Support Team.
	Re-verification Approved: Ongoing re-verification process.
	Difficult to Tune: Verification process stuck due to certain limitation.
	Proposed to Close: Issue is waiting for closure.
	Close: Issue closed.
4. Next Action	To indicate the action is pending for customer or FootfallCam Support.
5. Category	To indicate the category of issue faced. **(Info:** FootfallCam Support might change the category if there is any more precise category.**)**
6. Reported Counter(s)	To indicate the counter serial with issue.
7. Requester	To indicate the person in contact.
8. CC	To indicate the second person in-contact.

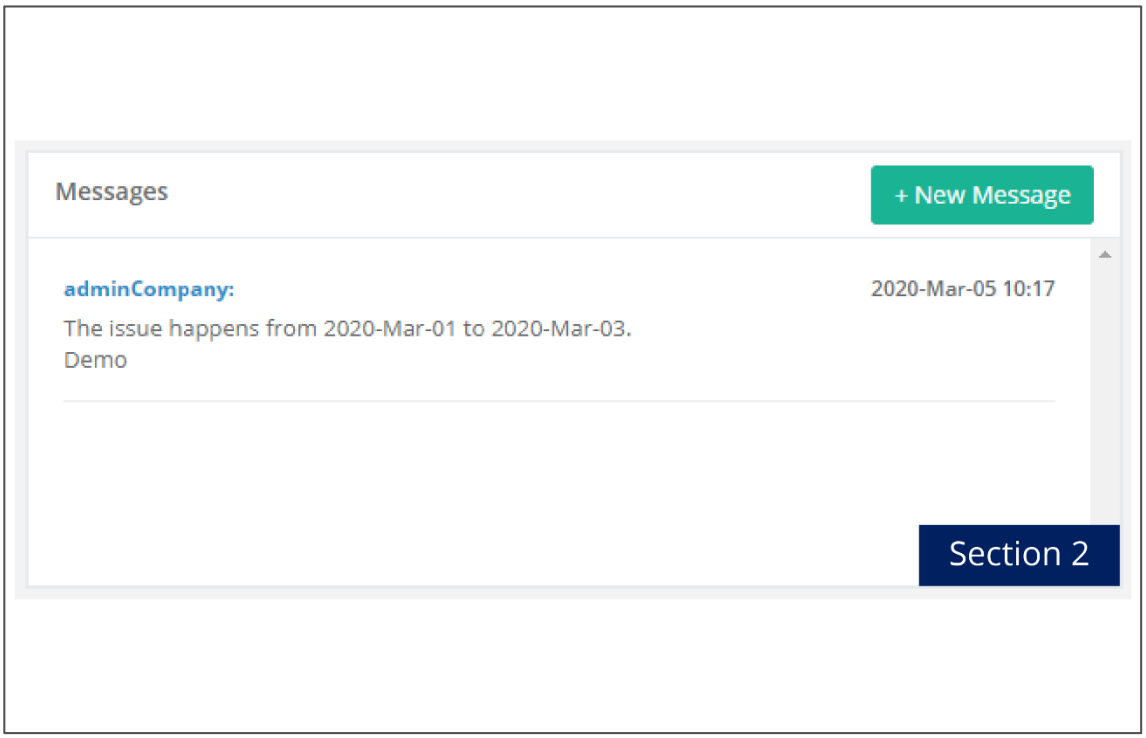
5.2.2.2 Section 2 - Messages

> **Note**
>
> Email regarding on **New Message Added** or **Ticket Status Update** will be received by user.

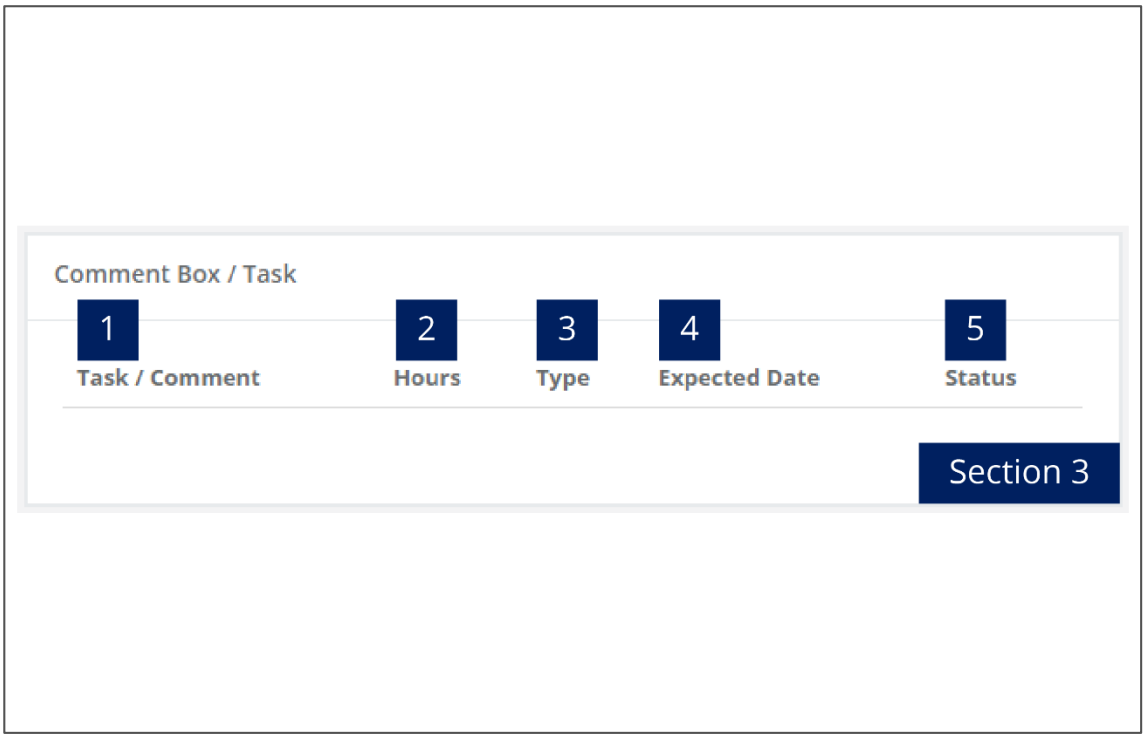
Follow the steps as below to reply the messages:

STEP 1 - Click on **+ New Message** button.

STEP 2 - Filling in the comment and click on **Send** button to complete the process.



5.2.2.3 Section 3 - Comment Box



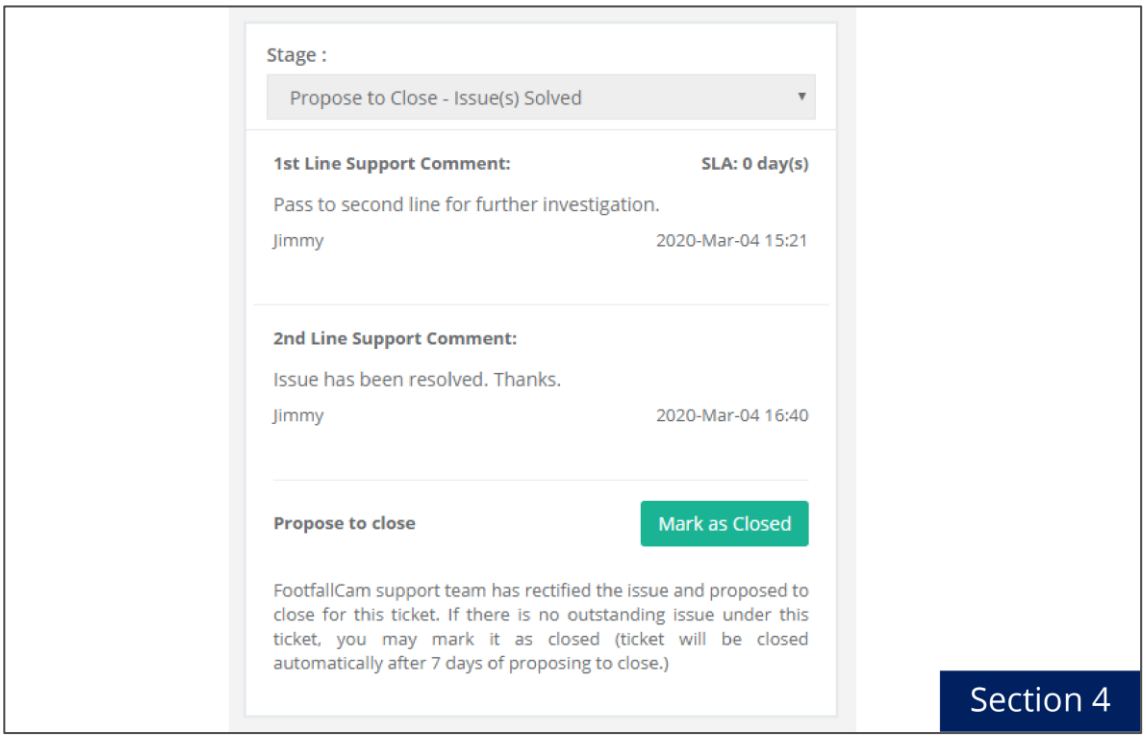
Item	Description
1. Task / Comment	To indicate action task created for FootfallCam Support Team.
2. Hours	To indicate the time needed.
3. Type	To indicate type of the action task. **(Info:** Type of action task included Support Operation, Software Comment, Business Comment, Customer Request, Firmware Comment or Internal Comment.**)**
4. Expected Date	To indicate the deadline of action task.
5. Status	To indicate the current status of action task.

5.2.2.4 Section 4 - Stage

Note

Email regarding on **Ticket Status Update** will be received by user.

User will receive a **Ticket Propose to Close** email when a FootfallCam support personnel have resolved the issue. Ticket will be closed automatically within **seven (7) days**. For users with additional issues after the ticket has been closed, please raise a new ticket.



Stage	Description
First Line Support	1st Line Support Info from FootfallCam Support Team included **Action / Status, Comment, Person In-Charge, Date and Service-Level Agreement (SLA).**
Second Line Support	2nd Line Support Info from FootfallCam Support Team included **Comment, Person In-Charge and Date**.
Propose to Close	**Comment** from FootfallCam Support Team after FootfallCam team has diagnosed the issue and resolve it. If there is no outstanding issue(s) in the ticket, user should click on **Mark as Closed** or drop a message to the FootfallCam Support Team in the ticket if further follow up is required.

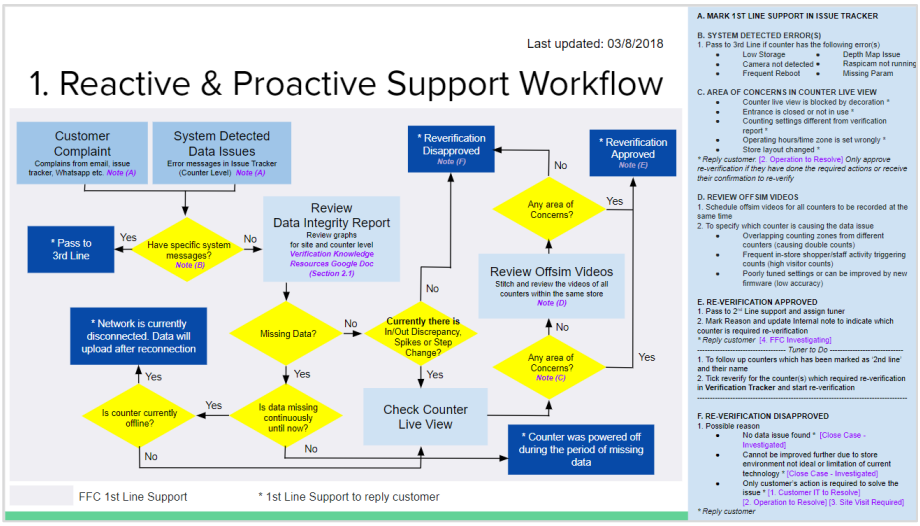
5.3 FootfallCam support workflow

All support services and communications are conducted via the Support Portal module within the FootfallCam Analytic Manager. All users are provided with access into the Issue Tracker to report the current issues with their people counting devices. Once a user has reported their issues via the Issue Tracker, FootfallCam support personnel will diagnose the issue and reply directly for customer to act. The Issue Tracker facilitates the communicate between the user and FootfallCam support personnel.

> **Note:**
> To access the support portal, please refer to Chapter 5: Support requests.

1.4.1 General support enquiries

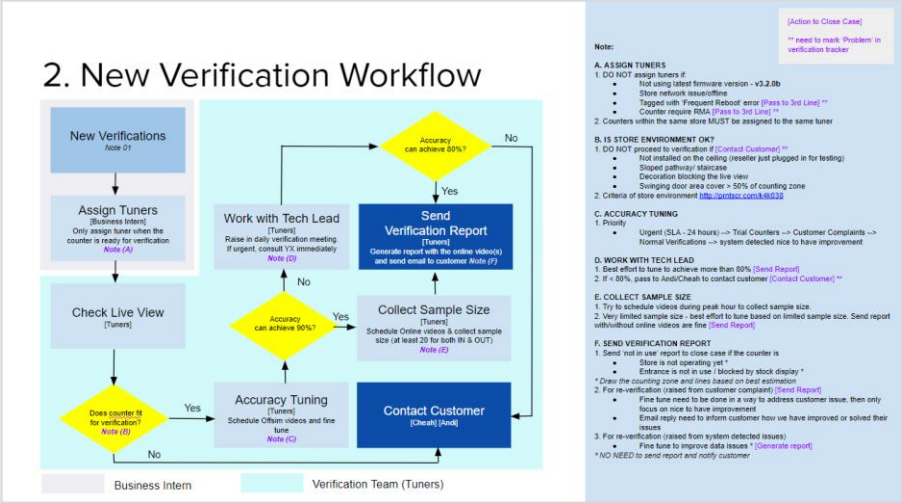
The flowchart below is used to showcase the process of support from FootfallCam and how are issues reviewed. The flow chart will be reviewed every three months to ensure that it properly addresses all concerns the management has raised.



The control panel process in place to ensure that the agreed KPI service level is meant with a built-in workflow and contingency plan should unexpected issues arises. From the issue tracker, the management will have an overview of outstanding issues, each issue being tracked and with a defined action plan going forward.

1.4.2 Accuracy audit workflow

FootfallCam will perform an accuracy audit to verify the integrity of the data generated by the FootfallCam counter. Accuracy audit allows you to capture a short video clip, do a manual count and cross check it with the system count for this period.

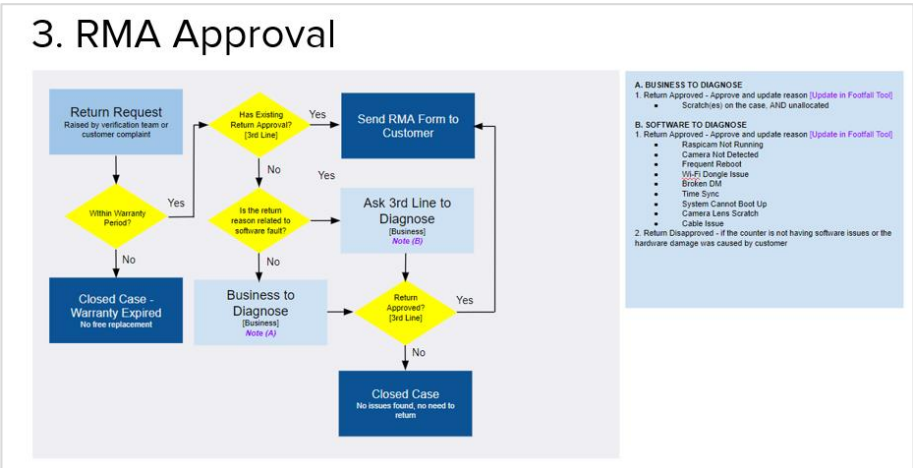


All calibration from the device will be done by the FootfallCam verification personnel and we will ensure that the accuracy of all devices is at least 95% with enough sample size to prove the accuracy level of the footfall. Once FootfallCam team have completed the accuracy audit and observed enough sample size, an accuracy certification will be generated and sent to the user.

> **Note:**
> Users that would like to review the accuracy of their FootfallCam, please refer to Chapter 8.3: How do I know the accuracy of my FootfallCam?

1.4.3 Returned merchandise authorisation

To minimize the disruption and loss of counting data when a FootfallCam is defective, FootfallCam have established a returned merchandise authorisation process in place to hasten the process. With the RMA process, FootfallCam can ensure that the user devices will be properly diagnose and rectify remotely, prior to resorting to swapping out the device for a new one.



Users may make a request for an RMA unit through the FootfallCam Analytic Manager issue tracker. From there, FootfallCam personnel will perform the necessary diagnosis prior to approving the return for the unit and shipping out a new device to the user.

> **Note:**
> For more information on terms of RMA, please refer to Returns and RMA Terms and Conditions.

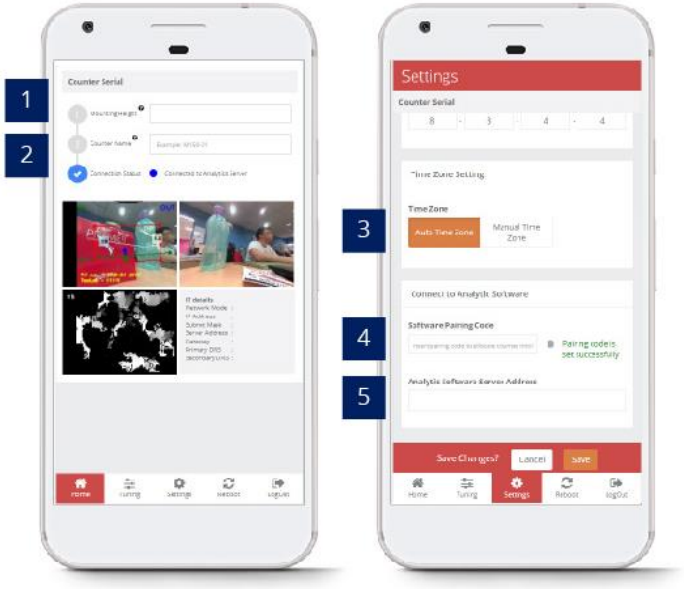
Chapter 6: Adding and Removing Counter

6.1 Allocate New Counter

Note

There are **TWO** options for new counter allocation are available.

Option 1 - Counter Allocation on Setup Wizard Page



STEP 1 - Access to Setup Wizard Page

(Info: For more information on Access to Setup Wizard Page, please refer to Section 3.3.1 Accessing the Counter - Setup Wizard Page.**)**

STEP 2 - Complete the process by entering all the required fields and click on **Save**.

STEP 3 - Click on **Settings** tab.

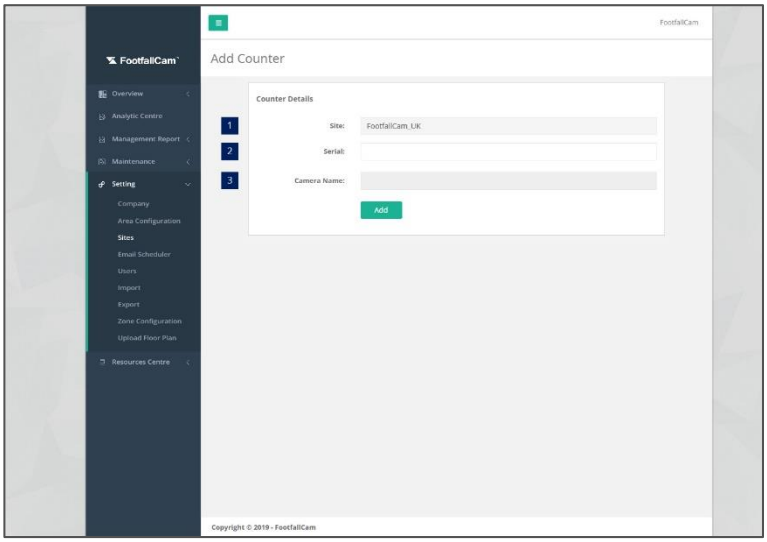
STEP 4 - Complete the process by entering all the required fields and click on **Save**.

Item	Description
1. Mounting Height	Enter the measurement from floor to the camera mounting height.
2. Counter Name	Enter the name of counter location.
3. Time Zone Setting	Select the time zone. **(Info:** Time zone selected will be apply to report feature.**)**
4. Software Pairing Code	Enter the pairing code. **(Info:** For more information on Pairing Code, please refer to Section 2.4 Share Pairing Code.**)**
5. Analytic Software Server Address	Enter the server address if user is not using the FootfallCam Cloud Portal.

Note

For more information on **New Counter Allocation**, click here to view the video.

Option 2 - Counter Allocation on FootfallCam Analytic Manager V8™



STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login.

STEP 2 - Click on **Setting > Site** to access the Counter Management page.

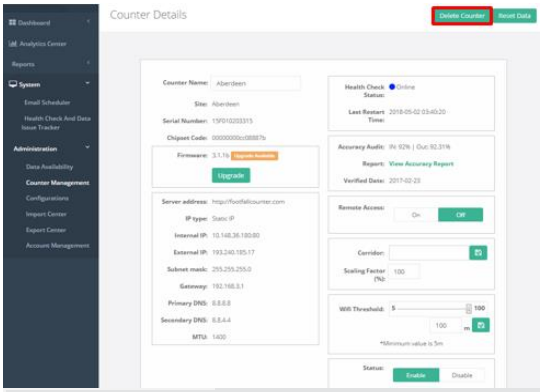
STEP 3 - Select the site to allocate counter and click on **+ Add Counter**.

STEP 3 - Complete the process by entering all the required fields and click on **Add** button.

Item	Description
1. Site	Display the name of selected site.
2. Serial	Enter the counter serial.
3. Camera Name	Enter a preferred camera name.

6.2 Swapping a faulty counter

When an existing counter needs to be replaced due to the failing hardware of an existing counter, or if the existing counter has been externally damaged.

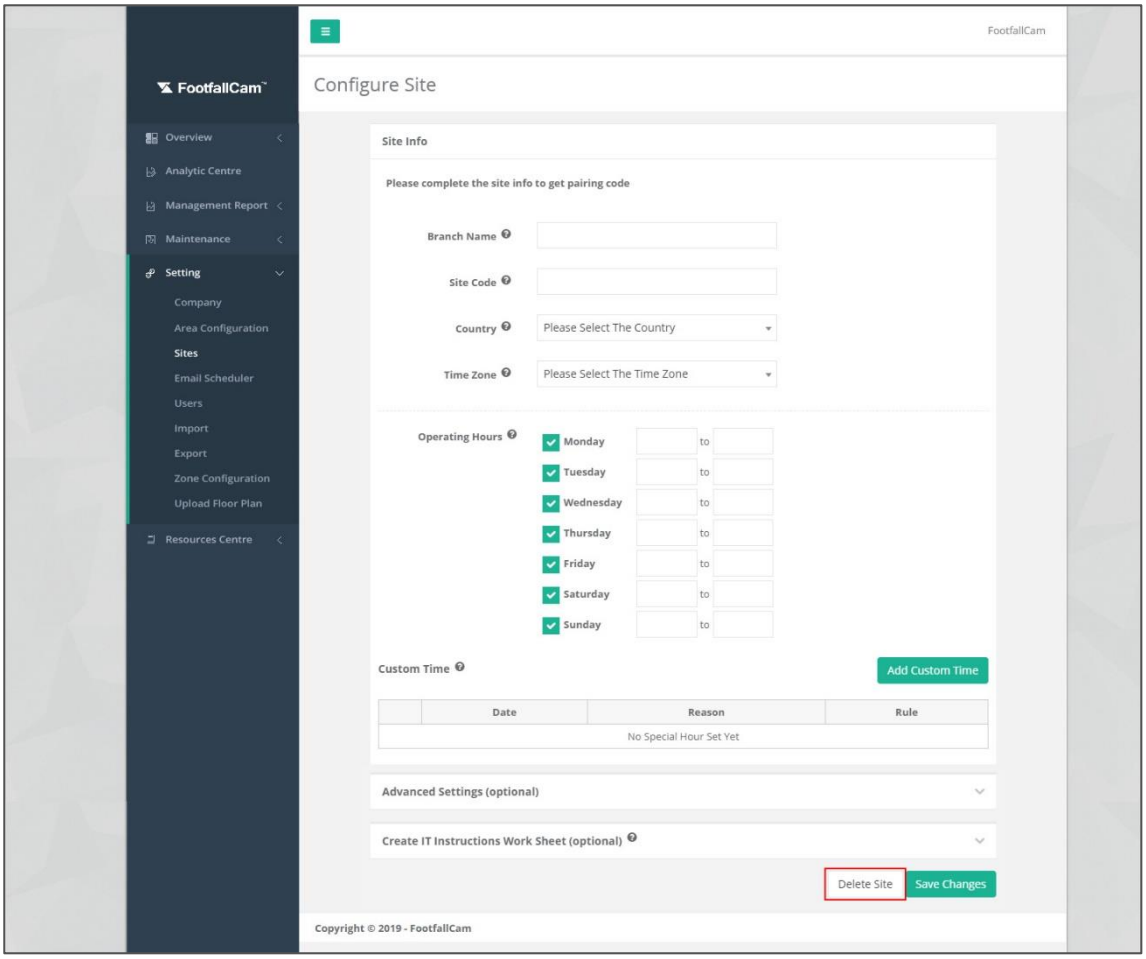


1) After accessing counter management, click on **Details** of the existing counter.
2) Once you are within the counter details page, click on **Delete Counter**.
3) Proceed to retrieving the pairing code by clicking on **Settings** of the site.
4) Share the **pairing code** with the installer.
5) When the installer is inputting the configuration details, the installer may use the pairing code shared. Please refer to section 3.4 Allocate via Installation Code for more details.

Note:
The historical data of the store will be retained even if the counter is deleted.

6.3 Delete Site

> **Note**
>
> Counter allocated MUST be deleted before delete the site.
>
> Site deleted will permanently delete entire historical data recorded by counter.



STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login.

STEP 2 - Click on **Setting > Sites** to access the Counter Management page.

STEP 3 - Navigate to the site that require to delete and click on **Details** of counter allocated to access the Counter Details page**.**

STEP 4 - Click on **Delete Counter** to delete the counter and repeat as necessary for multiple counters.

(Info: For more information on Delete Counter, please refer to Section 3.3.4 Delete Counter.**)**

STEP 5 –Click on **Settings** of the site once the counter allocated has be remove.

STEP 6 – Complete the process by click on the **Delete Site** button at the bottom of the page.

6.4 Relocating a counter to a new site

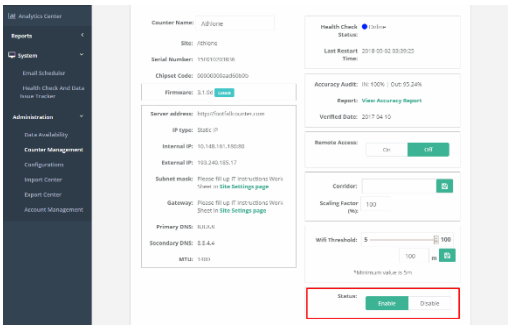
Users that would like to reuse an existing FootfallCam may remove the counter from the existing store and install it into the new location. As all data are stored on a server level and not within the counter, this requires site details to be edited in the counter management page.

1) After accessing counter management, click on **Details** of the existing counter.
2) Once within the counter details page, click on **Delete Counter**. Repeat as necessary for multiple counters.
3) Return to the counter management page and click on **Settings** of the site you want to delete.
4) Click on the **Delete Site** button at the bottom of the page.
5) Create a new site by following the steps listed in Section 3.1 and share the pairing code of the new branch with the installer.

Note:
If the older site is not deleted prior to the relocation, the data will be pushed to the old store on the FootfallCam Analytic Manager.

6.5 Temporarily disable a counter

FootfallCam™ counters may be temporarily disabled if it is not in used. The counter will be essentially turned on and connected to the network so it will not raise health check alert, however it will not collect any data for the time while it is disabled.



1) After accessing counter management, click on **Details** of the existing counter.
2) Click on **Disable** under the status field.

Note:
Once a counter has been disabled, the new status will be reflected in the counter immediately.

6.6 Removing a counter from site

FootfallCam™ counters may be temporarily removed from the installed location if the store requires any form of refurbishment. The counter will be dismantled from the physical store and removed from the site in FootfallCam Analytic Manager to prevent health check alert from being raised. To begin:

1) After accessing counter management, click on **Details** of the existing counter.
2) Once within the counter details page, click on **Delete Counter**. Repeat as necessary for multiple counters.

Note:
Counters deleted from the FootfallCam Analytic Manager will not retain their data.

3) The counters can then be removed or uninstalled from the site.
4) Once the counter is ready to be reinstalled in the site, retrieve the pairing code by entering counter management and click on **Settings** of the site.
5) Input the pairing code in the FootfallCam counter setting page.

Note:
The user must not delete the site from FootfallCam Analytic Manager as it will delete all data and IT settings registered.

Chapter 7: Upgrading your FootfallCam

7.1 Firmware beta version

FootfallCam will release a beta version to a customer who opts into our beta program. They have the option to implement it in designated trial stores of their choice. This gives the customer the opportunity to test the stability of the new firmware and to confirm the new firmware could achieve the expected results. The user has up to **30 days** to provide feedback. The beta version process for firmware upgrade will be done through the following if the user has been accepted into the firmware.

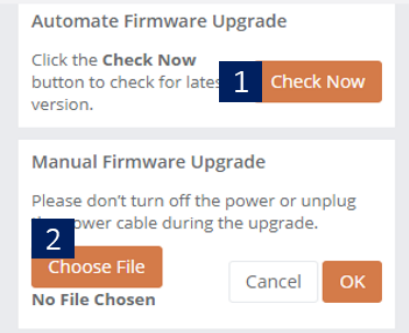
Perform By	Status	Action
FootfallCam	Open	Provide Roadmap document to interested customers.
User	Open	Identify up to 5 stores as trial sites for the beta version.
User	Open	Appoint a point of Contact for firmware compliance.
FootfallCam	Done	Draft firmware rollout plan for the customer to review.

Note:
For a guide on the deployment of firmware versions, please refer to Appendix I.

7.2 Upgrading your firmware (Onsite)

Users may upgrade the firmware of their counter in three simple steps. A firmware upgrade is released occasionally and includes new features to ensure that the counting algorithm of the people counter is up to the advertised standards and to enhance the overall user experience of the usage of our counters.

1) Access into the counter by following the steps listed in section 3.4 Accessing the counter.
2) Once you have accessed into the counter, click on **Upgrade** on the top of the page.
3) Select Check Now if you would like to perform the automated upgrade.



Item	Description
1. Check now	Automatically searches for the newest firmware version of FootfallCam 3D Plus™.
2. Choose file	If you have received a specific firmware file from FootfallCam personnel, click this and specify the directory to upload it to the counter.

Note:
Users that are running firmware version 3.1.7 and below may refer to **Appendix H** to upgrade their firmware before the process may be automated.

7.3 Upgrading your firmware (Remotely)

Users may choose to upgrade the firmware of their counter remotely via the FootfallCam Analytic Manager. A firmware upgrade is released occasionally and includes new features to ensure that the counting algorithm is up to the advertised standards and enhance the overall user experience.

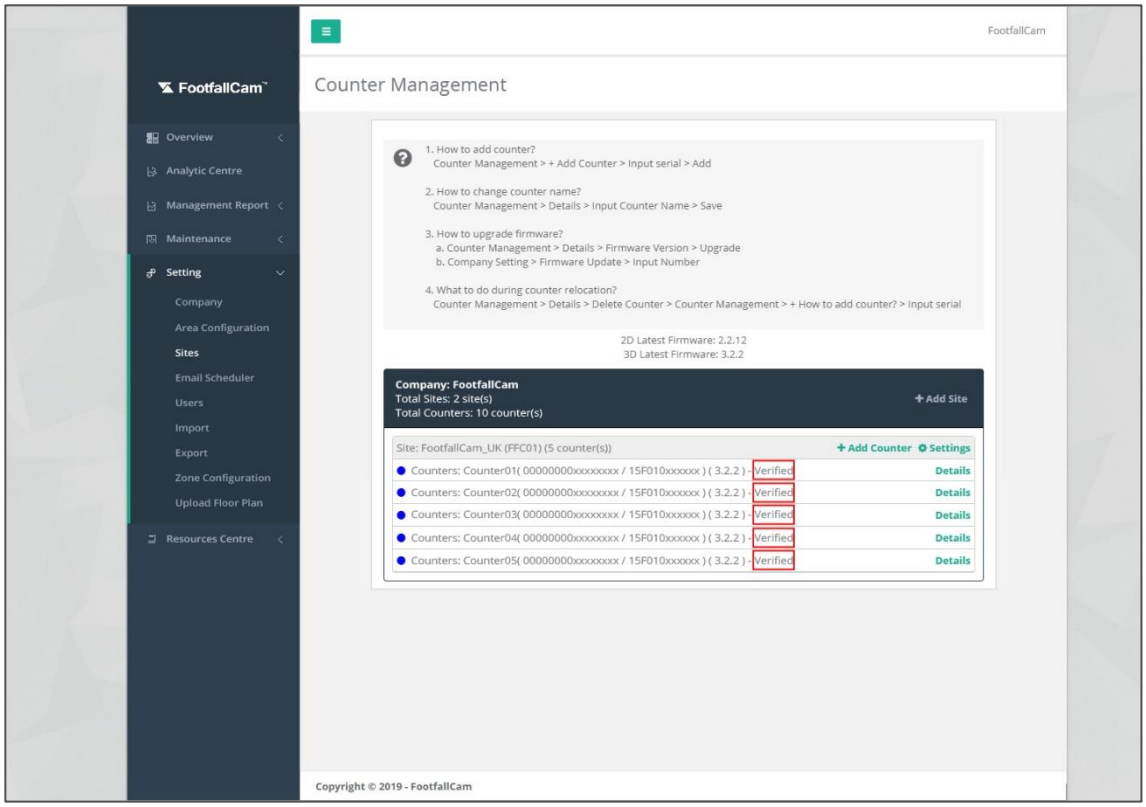
1) Access the counter by entering Counter Management on the tab on the left
2) Locate the specific site and click on the specific counter you would like to upgrade.
3) Click on Update on the page.

Note:
The firmware upgrade will not impact the function of the FootfallCam counter.

Chapter 8: Counter Accuracy Audit

> **Note**
>
> Device **MUST** allocated successfully. For more information on counter configuration, please refer to 3.3.3 Configuring the Counter
>
> Device **MUST** have stable network connectivity and power supply during the verification process.

8.1 Accuracy Audit

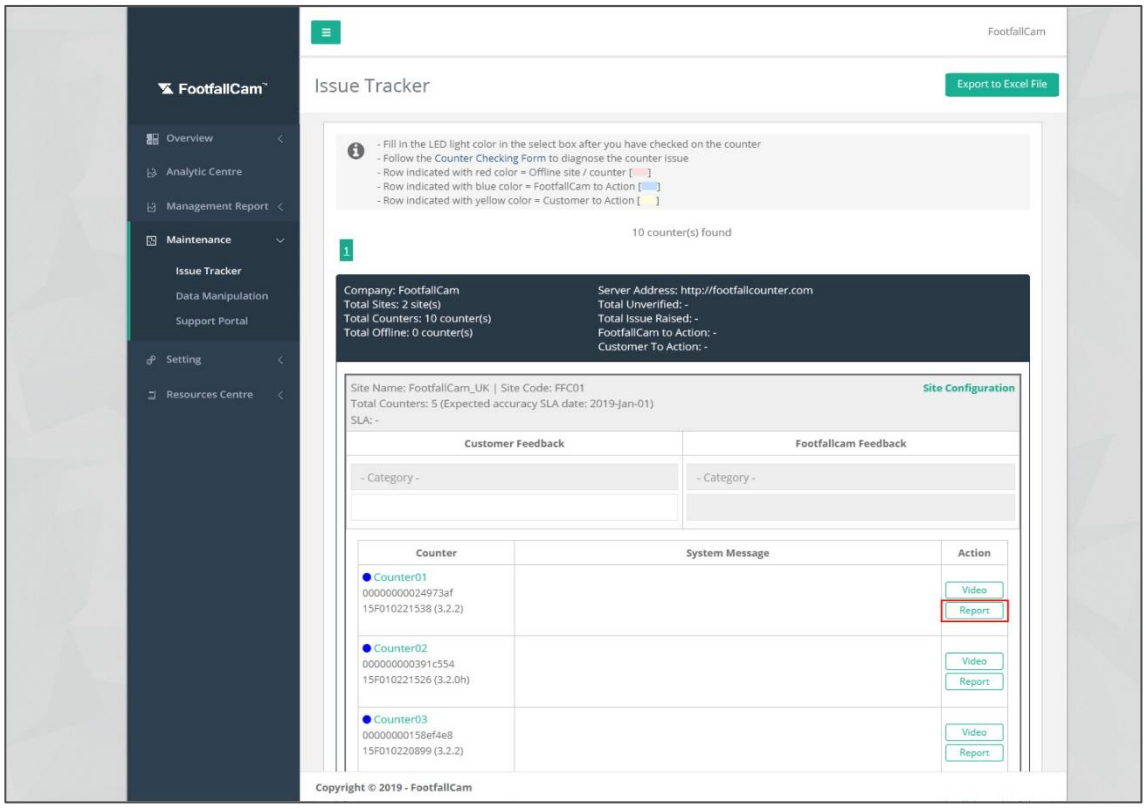


Accuracy Audit	
Completed By	FootfallCam Verification Specialist Team
Process Duration	Within **fourteen (14) working days** • 3 working days - Device configuration completed and device counting function as per standard. • 4 - 14 working days - Collect sample size and generate Accuracy Audit Report. **(Info:** Process duration might be increase due to lack of sample size or environment circumcircle issue.**)**
Scope of Work	• First-time verification for new device **ONLY.** • Define size of tracking zone. • Define counting line configuration. • Define masking zone to filter inanimate objects. • Schedule video recordings for manual verification. • Manual video verification. • Generate Accuracy Audit Report.
Result	• Over **90%** counting accuracy with at least **20** sample size. • Receive Accuracy Audit Report via email.

8.1.1 Download Accuracy Audit Report

Note

Download the sample of Accuracy Audit Report is available.



STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login.

STEP 2 - Click on **Maintenance > Issue Tracker** to access the Issue Tracker page.

STEP 3 - Select the Counter Accuracy Audit Report to download and click on **Report.**

8.2 Self Manual Re-Verification

Note

Video recorded **ONLY** temporally stored for **maximum 7 day(s)**.

Video verified **ONLY** temporally stored for **maximum 30 day(s)**.

Video included in report **ONLY** will stored permanently.

Step 1 - Create New Recording

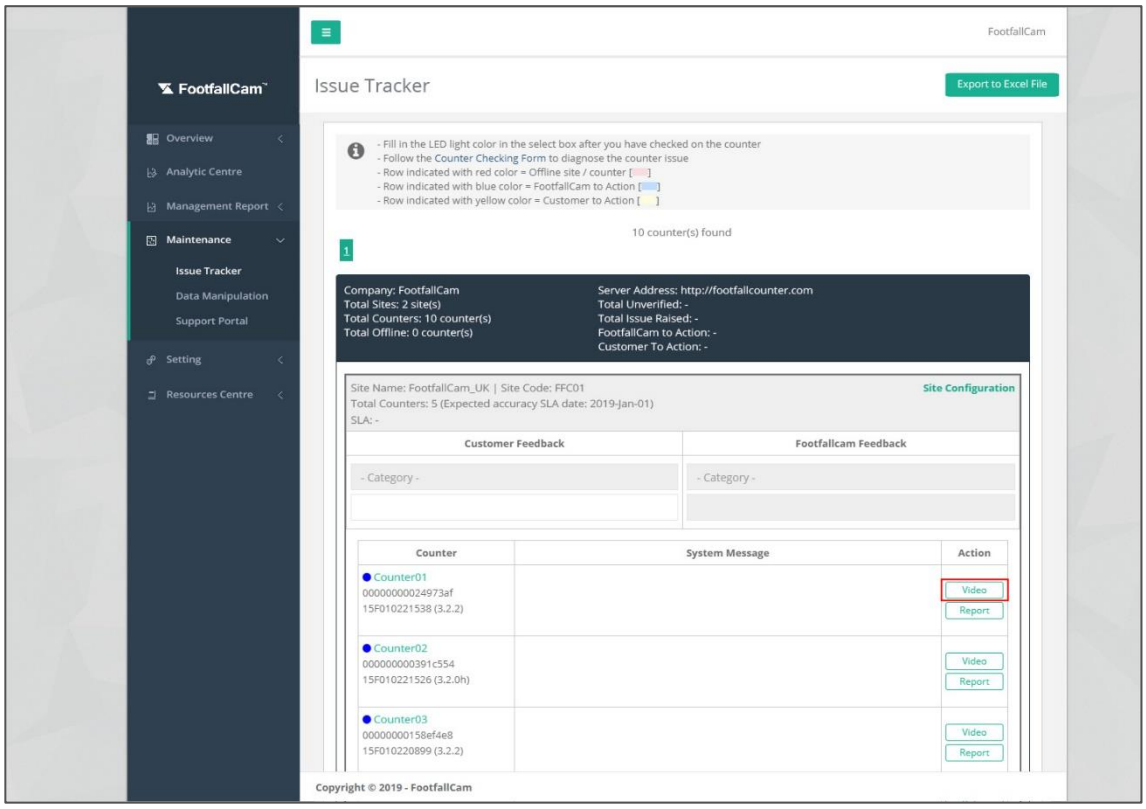
Refer to here.

Step 2 - Perform Manual Count

Refer to here.

Step 3 – Generate Accuracy Audit Report

Refer to here.



STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login.

STEP 2 - Click on **Maintenance > Issue Tracker** to access the Issue Tracker page.

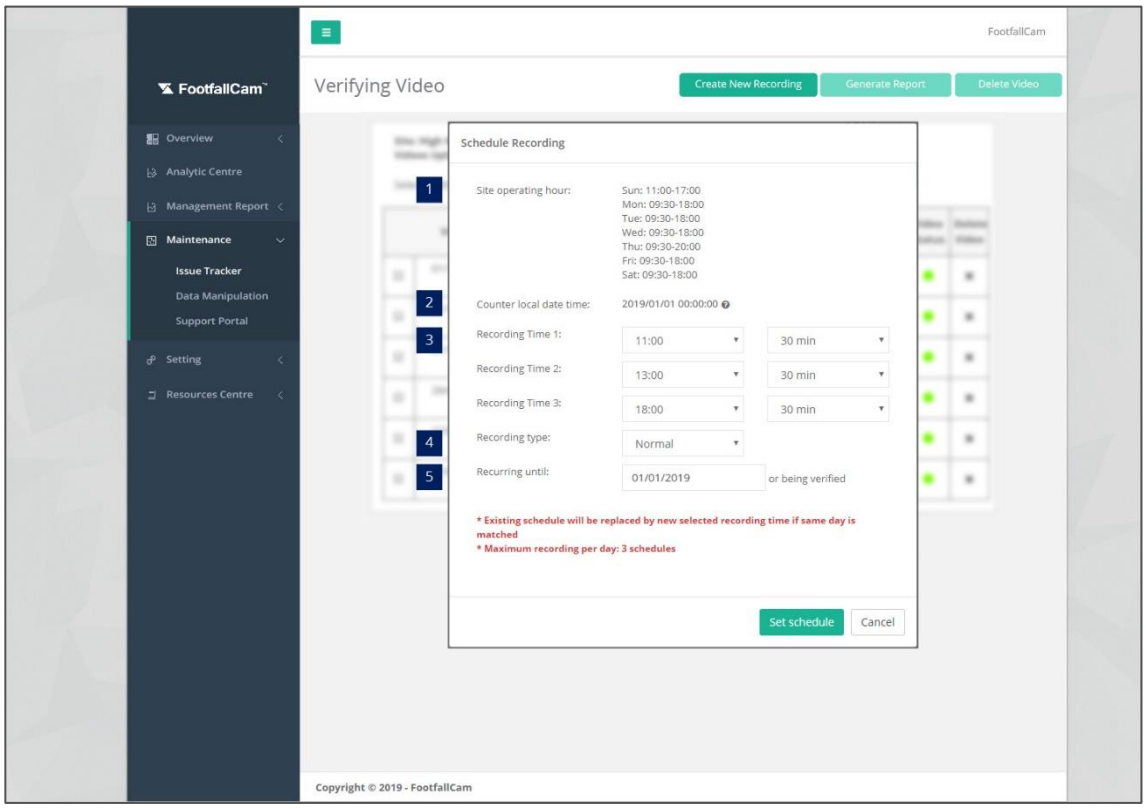
STEP 3 - Select the counter requires for re-verification and click on **Video.**

8.2.1 Create New Recording

Note

Maximum **ONLY** 3 recording video per day.

Existing schedule recording will be replaced by latest schedule recording if date selected is matched.



STEP 1 - Click on **Maintenance > Issue Tracker** to access the Issue Tracker page.

STEP 2 - Select the counter requires for re-verification and click on **Video.**

STEP 3 - Click on **Create New Recording** to access the Schedule Recording page.

STEP 4 - Complete the process by entering all the required fields and click on **Set Schedule** button.

Item	Description
1. Site Operating Hour	Operating hour for the branch. **(Info:** For more information on Site Operating Hour, please refer to Section 4.5 Manage Site Detail.**)**
2. Counter Local Date Time	Current date time for the device.
3. Recording Time	Select the time and duration to record.
4. Recording Type	Select the type of recording. **(Info:** Normal used for re-verification purpose.**)**
5. Recurring Until	Select the last date for recording.

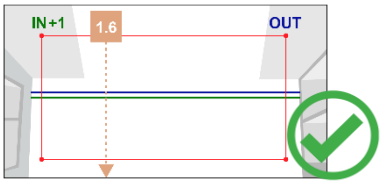
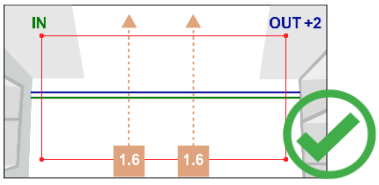
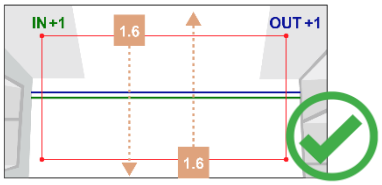
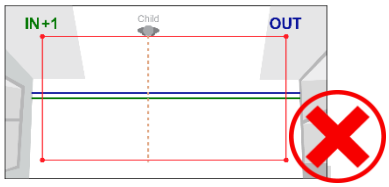
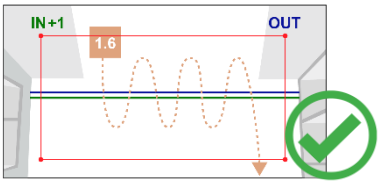
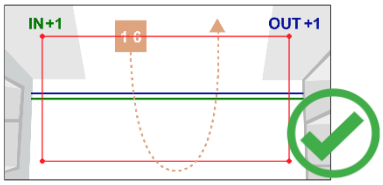
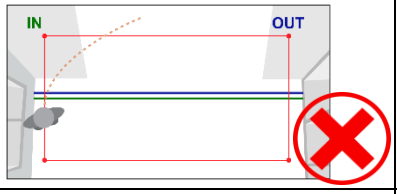
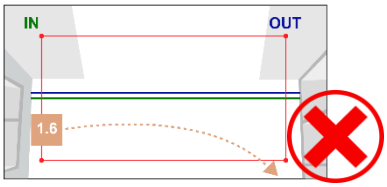
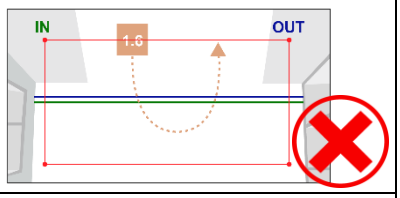
8.2.2 Perform Manual Count

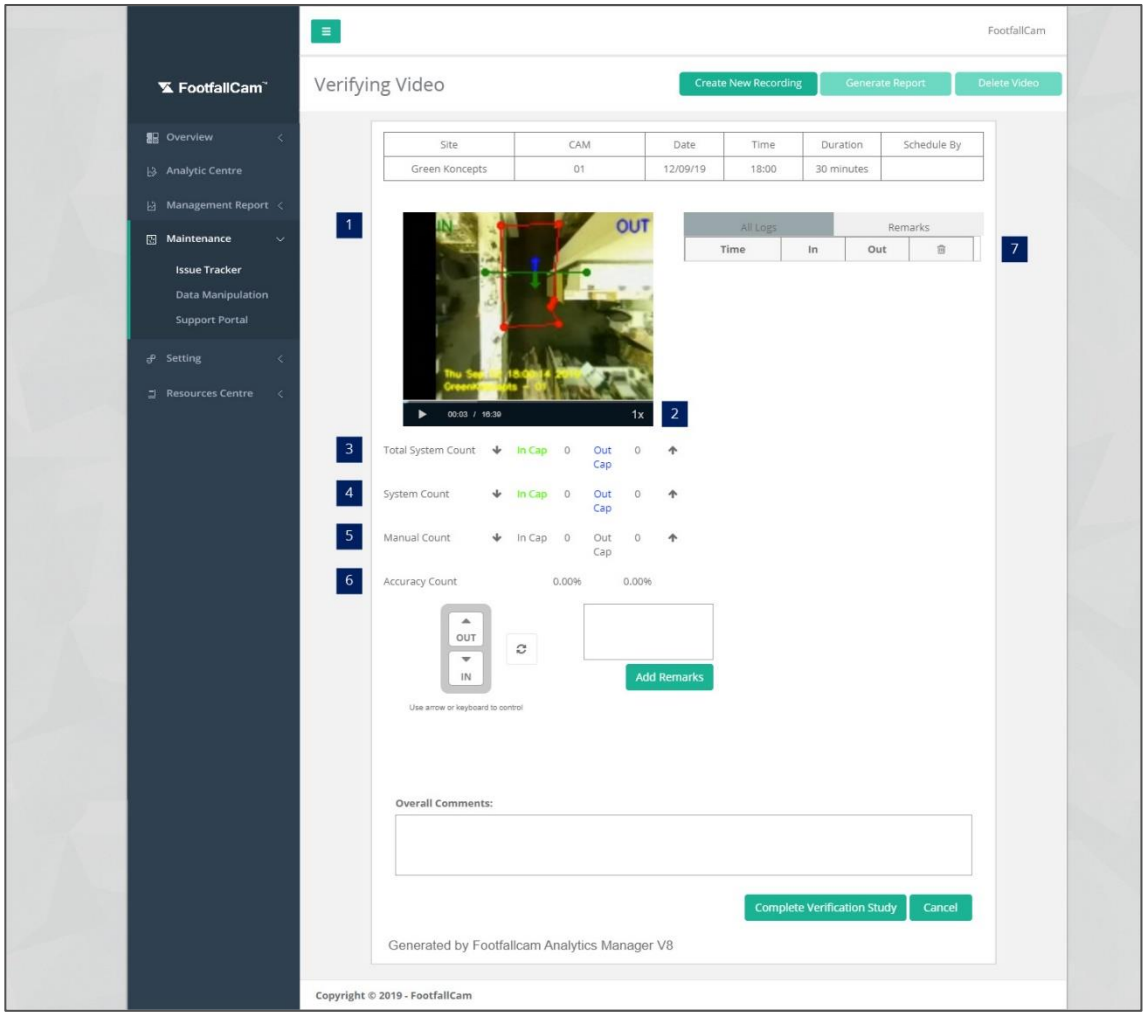
> **Note**
>
> Video status in **Green** is ready for verification purpose and **Red** is pending for verification purpose.

STEP 1 - Click on **Maintenance > Issue Tracker** to access the Issue Tracker page.

STEP 2 - Select the counter requires for re-verification and click on **Video.**

STEP 3 - Click on **Verify** to perform manual count by referring the guideline as below.

		
Visitor must go through the start-end of tracking zone **(Red)** and pass-by the In line **(Green)** then only will be counted as **IN +1**.	If two visitors go through the start-end of tracking zone **(Red)** at the same time and pass-by the Out line **(Blue)**, both will be counted and **OUT** will be showing **+2**.	If two visitors go through the start-end of tracking zone **(Red)** at the same time and pass-by the In line **(Green)** or Out line **(Blue)**, both will be counted as **IN +1** and **OUT +1** respectively.
		
Children (height < 1.3m) and inanimate objects will **NOT** be counted.	Visitor that make multiple U-turn within start-end of tracking zone **(Red)** and pass-by the In line **(Green)** will be counted as **IN +1** only when he exits the tracking zone.	Visitor who go through the start-end of tracking zone **(Red)** and pass-by the In line **(Green)** but make a U-turn after exiting the tracking zone and pass-by the Out line **(Blue)** again will be counted as **IN +1** and **OUT +1**.
		
Visitor (Head) that walk outside of start-end of tracking zone **(Red)** will **NOT** be counted.	Visitor that go through the start-end of tracking zone **(Red)** only without passing-by the In line **(Green)** or Out line **(Blue)** will **NOT** be counted.	Visitor that make U-turn within start-end of tracking zone **(Red)** will **NOT** be counted.



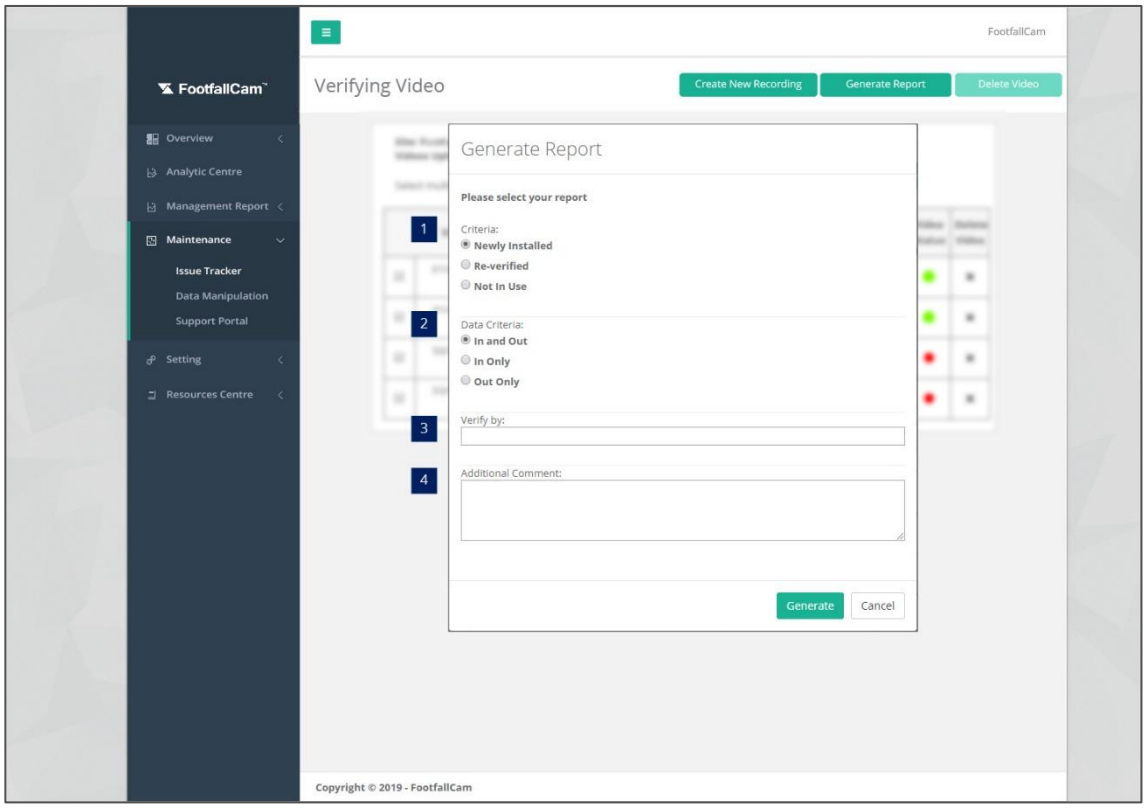
STEP 4 - Perform manual count with **Keyboard Shortcut**.

STEP 5 - Complete the process and click on **Complete Verification Study** button.

Item	Description
1. Video Recorded	The footage recorded to perform verification study. **Red Line (Mandatory):** Tracking zone. **Blue Line (Mandatory):** OUT line. **Green Line (Mandatory):** IN line. **Yellow Line (Optional):** Staff exclusion zone.
2. Playback Speed	To adjust the playback speed of the video.
3. Total System Count	To show the total visitor IN and visitor OUT counted in the video recorded.
4. System Count	To show the live counting when playback through the video recorded.
5. Manual Count	**UP ARROW:** Manual Count as OUT. **DOWN ARROW:** Manual Count as IN.
6. Accuracy Count	To show the accuracy of counting based on System Count vs. Manual Count.
7. Manual Count Log	To show the manual count triggered with timestamp of the video recorded.

8.2.3 Generate Accuracy Audit Report

> **Note**
>
> Existing Accuracy Audit Report will be replaced by new Accuracy Audit Report.



STEP 1 - Click on **Maintenance > Issue Tracker** to access the Issue Tracker page.

STEP 2 - Select the counter requires for re-verification and click on **Video.**

STEP 3 - Select the verified video requires for re-verification and click on **Generate Report.**

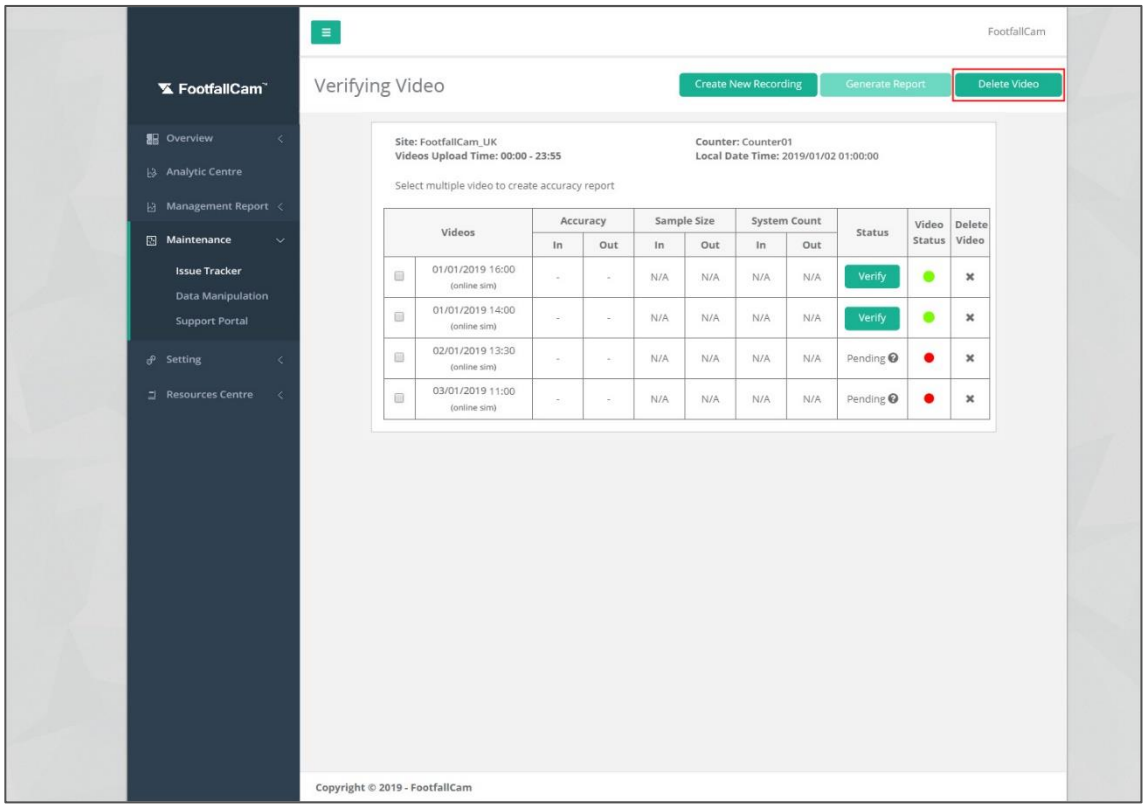
STEP 4 - Complete the process by entering all the required fields and click on **Generate** button.

Item	Description
1. Criteria	Select the 'Re-verified' as the criteria of generate report.
2. Data Criteria	Select the data criteria.
3. Verify By	Enter the name of person in-charger.
4. Additional Comment	Enter the additional remark.

8.2.4 Delete Recording

Note

Recording deleted may **NOT** be recovered and unable to overwrite Accuracy Audit Report generated.



STEP 1 - Click on **Maintenance > Issue Tracker** to access the Issue Tracker page.

STEP 2 - Select the counter requires for re-verification and click on **Video.**

STEP 3 - Select the video recorded requires to delete and click on **Delete Video.**

Chapter 9: Importing your Sales Data

Step 1 - Prepare Import File	Step 2 - Import File Option	Step 3 – Import File History
Refer to here.	Refer to here.	Refer to here.

9.1 Prepare Import Sales File

Note

Download the Sales Conversion Template for import sales data and enter the required site detail(s).

The requirements MUST adhered to the imported file are listed as below:

Item	Description
File Format	Comma-separated values (.csv)
1. StoreCode	StoreCode must match with Site Code in FootfallCam Analytic Manager V8™. **(Info:** For more information on Site Code, please refer to Section 4.5 Manage Site Detail.**)**
2. DateTime	The format of DateTime must be **DD-MM-YYYY hh:mm**.
3. TotalTransactionQty	TotalTransactionQty is the number of transactions made by customer and the format must be **Whole Number** and without any special character.
4. TotalTransactionValue	TotalTransactionValue is the amount of payment received and the format must be **Numeric** up to 2 decimal places and without any special character.

The TotalTransactionQty and TotalTransactionValue can be aggregated in hour according to the sample as below:

Before Aggregation

	A	B	C	D
1	StoreCode	DateTime	TotalTransactionQty	TotalTransactionValue
2	FFC001	1/1/2019 10:00	5	57.90
3	FFC001	1/1/2019 10:05	7	78.2
4	FFC001	1/1/2019 11:12	10	112.5
5	FFC001	1/1/2019 11:31	3	35.9
6	FFC002	1/1/2019 10:05	6	67.50
7	FFC002	1/1/2019 10:15	8	88.7
8	FFC002	1/1/2019 11:12	5	56.3
9	FFC002	1/1/2019 11:45	9	98.1
10				

After Aggregation [Optional]

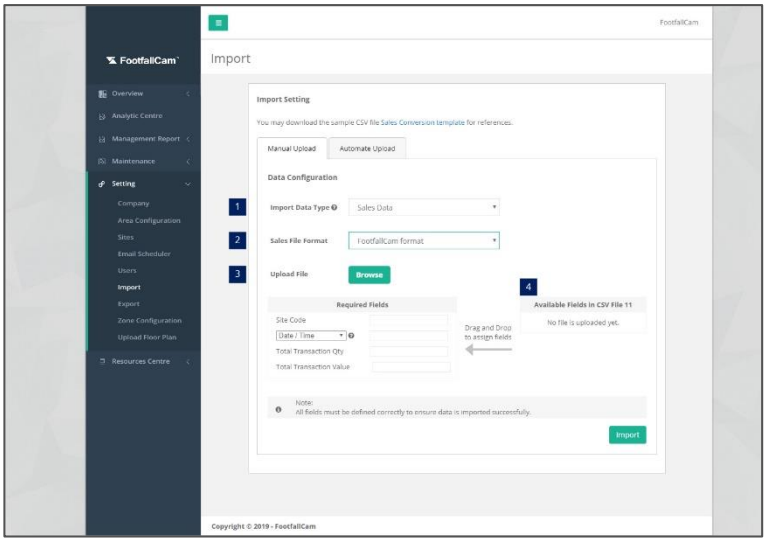
	A	B	C	D
1	StoreCode	DateTime	TotalTransactionQty	TotalTransactionValue
2	FFC001	1/1/2019 10:00	12	136.10
3	FFC001	1/1/2019 11:00	13	148.4
4	FFC002	1/1/2019 10:00	14	156.2
5	FFC002	1/1/2019 11:00	14	154.4
6				
7				
8				
9				
10				

9.2 Import Sales File Option

Note

There are **TWO** options for import file are available.

Option 1 - Manual Import



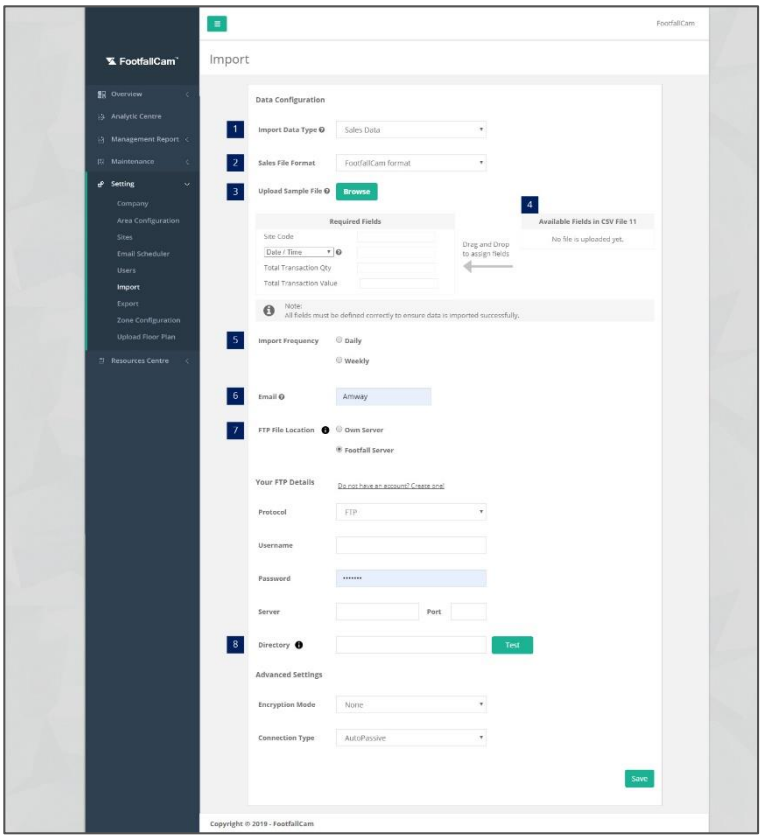
STEP 1 - Click on **Setting > Import** to access the Import page.

STEP 2 - Click on **Manual Upload** tab to access the Manual Upload tab.

STEP 3 - Complete the process by entering all the required fields and click on **Import** button.

Item	Description
1. Import Data Type	Select the **Sales Data** as the import data type.
2. Sales File Format	Select the import file format.
3. Upload File	Browse and upload the file in Comma-separated values (.csv) format.
4. Available Fields in CSV File 11	Drag and drop the specified field according to the header in **Required Fields**.

Option 2 - Automate Import



STEP 1 - Click on **Setting > Import** to access the Import page.

STEP 2 - Click on **Automate Upload** tab to access the Automate Upload tab.

STEP 3 - Click on **Configure** to access the Configure Automate Import Setting page.

STEP 4 - Complete the process by entering all the required fields and click on **Test** button to ensure the process run successfully.

STEP 5 - Click on **Save** button to complete the process.

Item	Description
1. Import Data Type	Select the **Sales Data** as the import data type.
2. Sales File Format	Select the import file format.
3. Upload Sample File	Browse and upload the sample file in Comma-separated values (.csv) format.
4. Available Fields in CSV File 11	Drag and drop the specified field according to the header in **Required Fields**.
5. Import Frequency	Select the import frequency.
6. Email	Enter an email address to receive import fail notification alert.
7. FTP Details	Enter the information required for FTP. **(Info:** For more information on FTP account, please refer to Section **4.5 Manage Site Detail**.**)**
8. Directory	Location of the sales data file.

9.3 Import Sales File History

> **Note**
>
> Import File History **ONLY** contains file uploaded via Automate Upload.

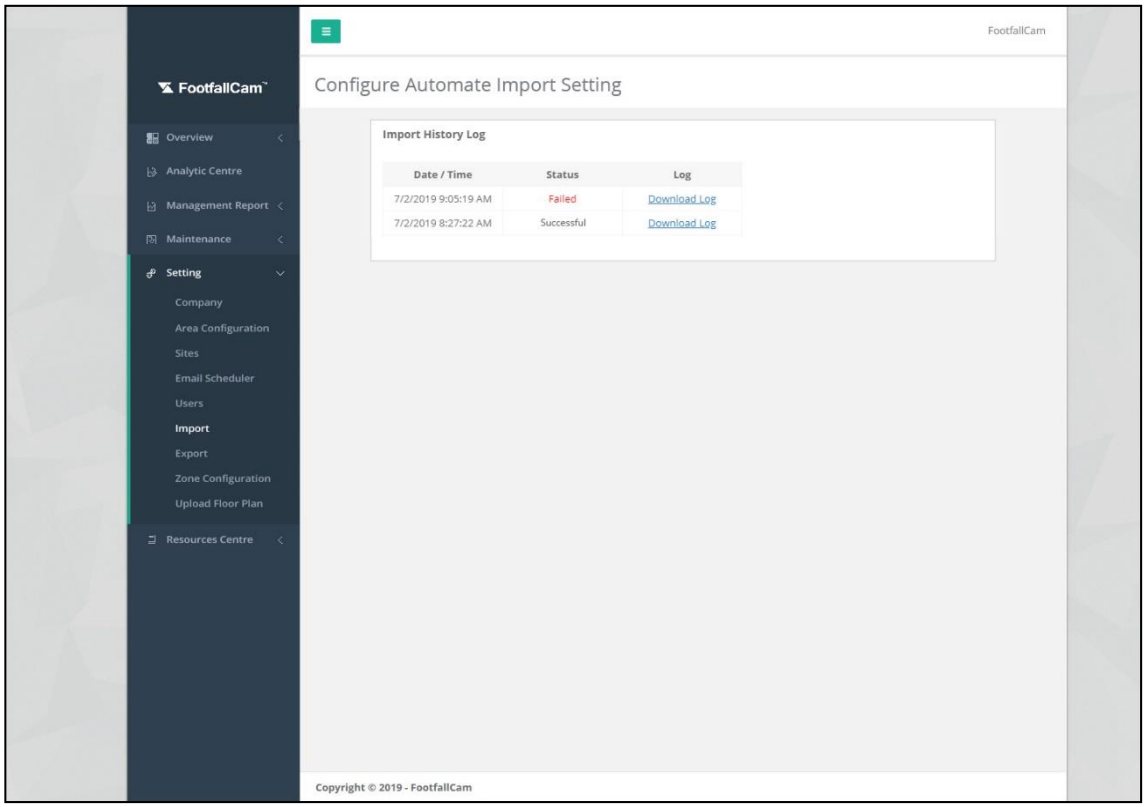
STEP 1 - Click on **Setting > Import** to access the Import page.

STEP 2 - Click on **Automate Upload** tab to access the Automate Upload tab.

STEP 3 - Select the Import Data Type to manage and click on **Edit**.

STEP 4 - Navigate to Import History Log at the bottom of the page.

STEP 5 - Click on **Download Log** to view the import status in details.



Import Successfully	Import Failed
Automate Import Function started. Connected To Client FTP server. Copying CSV Files... Copied.. Processing Files... Renaming FTP Server CSV Files... Renamed... Processing CSV Files... total of 19 csv files need to be processed... Done	Automate Import Function started. Connected To Client FTP server. Copying CSV Files... Copied.. Processing Files... NO CSV Files,Skip... Processing CSV Files... total of 0 csv files need to be processed... Done

Chapter 10: Exporting your Footfall Data

10.1 Export via API

> **Note**
>
> **ONLY** available for counter with IP Type in **Static**.
>
> Long-lived access token will be provided.

STEP 1 - Generate URL: http://**[insert Internal IP]**/cgi-bin/access_token.cgi?username=**[insert Username]**&password=**[insert Password]**

Item	Description
Internal IP	Retrieve the Internal IP. **(Info:** For more information on Internal IP, please refer to Section 3.3.3 Update Counter Detail.**)**
Default Username	admin **(Info:** Case sensitive.**)**
Default Password	123456

STEP 2 - Run the URL and access token received will be shown as below.

Sample URL	Sample Access Token
http://192.168.2.123/cgi-bin/access_token.cgi?username=Admin&password=123456	{"status": "OK", "data": {"username": "Admin", "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c2VybmFtZSI6IkFkbWluIiwic2VyaWFsIjoiTnpVd01EQXdNREI3WkRnM05qUmpadz09IiwicGFzc3dvcmQiOiIxMjM0NTYifQ.0fhypDovKDrEG3WIRNnXqlT9CArFPSsuZbi0R1RRvGw", "created_date": "2019-08-08 11:28:46"}}

STEP 3 - Retrieve data using access token received. Generate URL with the selected parameter listed as below: http://**[insert Internal_IP]**/cgi-bin/apiCount_cgi?data_type=**[insert_Data_Type]**&data_format=**[insert_Data_Format]**&resolution_min=**[insert Resolution_Minutes]**&date_start=**[insert Date_Start]**&date_end=**[insert Date_End]**&time_start=**[insert Time_Start]**&time_end=**[insert Time End]**&access_token=**[insert Token]**

Parameter	Description	Value	Sample
Data Type	Type of the data.	json, xml	data_type=xml
Data Format	Format of the data.	hour, minute, second	data_format=second
Resolution Minutes	The minutes data's resolution.	1, 5, 10, 15, 30, 60	resolution_min=15
Resolution Second	The second data's resolution. **(Info: ONLY** available for counter version 3.2.0 and above.**)**	1, 5, 10, 15, 30, 60	resolution_sec=1
Date Start	Start date of the data.	YYYYMMDD	date_start=20181231
Date End	End date of the data.	YYYYMMDD	date_end=20190131
Time Start	To set the start time range of the API	HHmmss	time_start=103000
Time End	To set the end time range of the API	HHmmss	time_end=223300

Sample 1 - Counting Data in Minute	
http://**192.168.2.123**/cgi-bin/apiCount.cgi?data_type=**json**&data_format=**second**&resolution_sec=**30**&date_start=**20181231**&date_end=**20190131**&time_start=**083000**&time_end=**183000**&access_token=**eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c2VybmFtZSI6IkFkbWluIiwic2VyaWFsIjoiTnpVd01EQXdNREI3WkRnM05qUmpadz09IiwicGFzc3dvcmQiOiIxMjM0NTYifQ.0fhypDovKDrEG3WIRNnXqIT9CArFPSsuZbi0R1RRvGw**	{ "data": { "date_requested": "2019-02-01 08:37:29", "offset": "GMT +8", "output": [{ "datetime": "2018-12-31 10:00:00", "invalue": "0", "outvalue": "0", "timestamp": 1565229600 }, { "datetime": "2018-12-31 10:00:30", "invalue": "0", "outvalue": "0", "timestamp": 1565225700 }, ... , { "datetime": "2019-01-31 18:29:30", "invalue": "2", "outvalue": "33", "timestamp": 1565258400 }], "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c2VybmFtZSI6ImFkbWluIiwic2VyaWFsIjoiTnpVd01EQXdNREI3WkRnM05qUmpadz09IiwicGFzc3dvcmQiOiIxMjM0NTYifQ.DFVVq4hND1GcifEAXBxPcfVc61gmDmfPX_oHrMSbK7o" }, "status": "OK" }

Sample 2 - Counting Data in Minute	
http://**192.168.2.123/**cgi-bin/apiCount.cgi?data_type=**json**&data_format=**minute**&resolution_min=**1**&date_start=**20181231**&date_end=**20190131**&time_start=**083000**&time_end=**183000**&access_token=**eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c2VybmFtZSI6IkFkbWluIiwic2VyaWFsIjoiTnpVd01EQXdNREI3WkRnM05qUmpadz09IiwicGFzc3dvcmQiOiIxMjM0NTYifQ.0fhypDovKDrEG3WIRNnXqIT9CArFPSsuZbi0R1RRvGw**	{ "data": { "date_requested": "2019-02-01 08:37:29", "offset": "GMT +8", "output": [{ "datetime": "2018-12-31 10:00:00", "invalue": "0", "outvalue": "0", "timestamp": 1565229600 }, { "datetime": "2018-12-31 10:01:00", "invalue": "0", "outvalue": "0", "timestamp": 1565225700 }, ... , { "datetime": "2019-01-31 18:29:00", "invalue": "2", "outvalue": "33", "timestamp": 1565258400 }], "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c2VybmFtZSI6ImFkbWluIiwic2VyaWFsIjoiTnpVd01EQXdNREI3WkRnM05qUmpadz09IiwicGFzc3dvcmQiOiIxMjM0NTYifQ.DFVVq4hND1GcifEAXBxPcfVc61gmDmfPX_oHrMSbK7o" }, "status": "OK" }

Sample 3 - Counting Data in Hour	
http://**192.168.2.123/**cgi-bin/apiCount.cgi?data_type=**json**&data_format=**hour**&date_start=**20181231**&date_end=**20190131**&time_start=**083000**&time_end=**183000**&access_token=**eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c2VybmFtZSI6IkFkbWluIiwic2VyaWFsIjoiTnpVd01EQXdNREI3WkRnM05qUmpadz09IiwicGFzc3dvcmQiOiIxMjM0NTYifQ.0fhypDovKDrEG3WIRNnXqIT9CArFPSsuZbi0R1RRvGw**	{ "data": { "date_requested": "2019-02-01 08:37:29", "offset": "GMT +8", "output": [{ "datetime": "2018-12-31 10:00:00", "invalue": "0", "outvalue": "0", "timestamp": 1565229600 }, { "datetime": "2018-12-31 11:00:00", "invalue": "0", "outvalue": "0", "timestamp": 1565225700 }, ... , { "datetime": "2019-01-31 18:00:00", "invalue": "2", "outvalue": "33", "timestamp": 1565258400 }], "token": "eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJ1c2VybmFtZSI6ImFkbWluIiwic2VyaWFsIjoiTnpVd01EQXdNREI3WkRnM05qUmpadz09IiwicGFzc3dvcmQiOiIxMjM0NTYifQ.DFVVq4hND1GcifEAXBxPcfVc61gmDmfPX_oHrMSbK7o" }, "status": "OK" }

10.2 Export via SQL

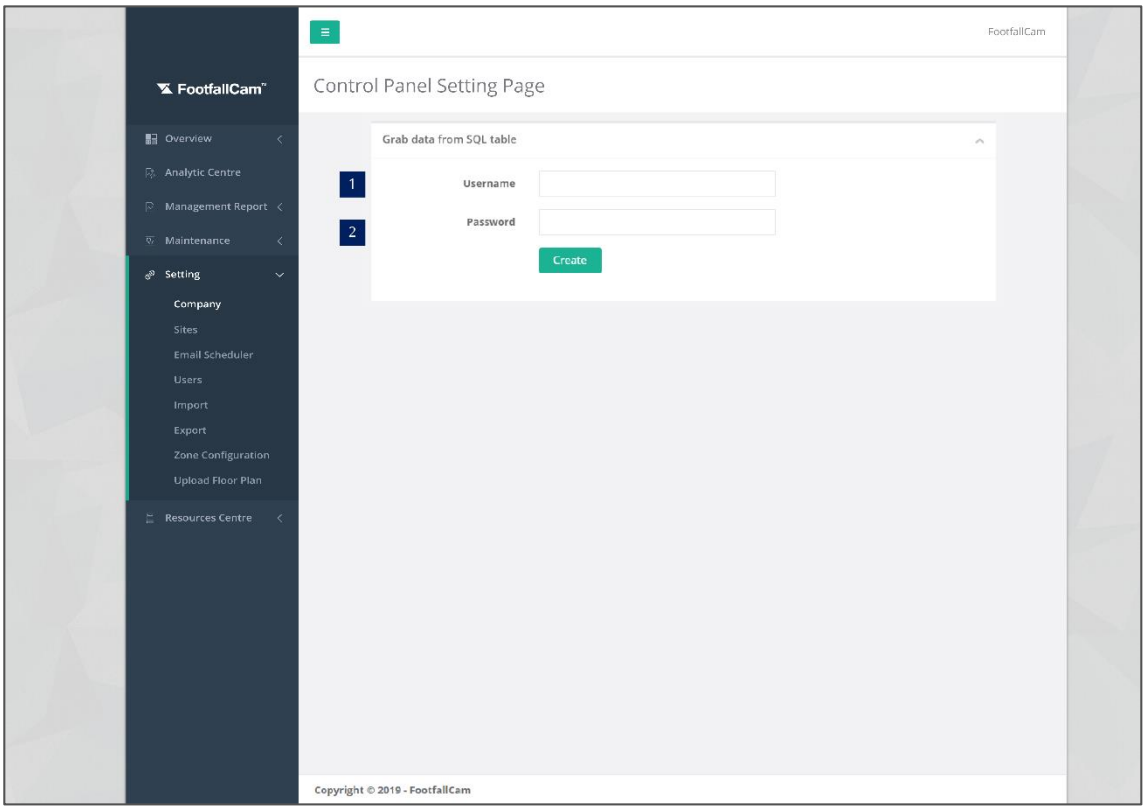
> **Note**
>
> **Microsoft SQL Server Management Studio** or equivalent is required.
>
> Use **dbcontent6848.footfallcam.com (Port: 41433)** or **own server address** as the server name in the SQL software.

STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login.

STEP 2 - Click on **Setting > Company** to access the Control Panel Setting page.

STEP 3 - Navigate to section **Grab Data from SQL Table**.

STEP 4 - Complete the process by entering all the required fields and click on **Create** button.



Item	Description
1. Username	Username used to access FootfallCam Analytic Manager V8™.
2. Password	Password used to access FootfallCam Analytic Manager V8™.

Sample 1 - How to get Site List

Description	To retrieve site list and site info include BranchCode, BranchName, Region, City, Country, StoreType, Latitude, Longitude and Floorsize.
Function Name	GetBranchList
Data Params	Username [nvarchar]; Password [nvarchar]
Sample SQL	SELECT * FROM GetBranchList('username','password');
Sample Result	

	ID	BranchCode	BranchName	Region	RegionAbbr	City	CityAbbr	Country	CountryAbbr	Timezone	StoreType	Latitude	Longitude	FloorSize
1	299	TestLab	TestLab	NULL	NULL	NULL	NULL	United Kingdom	GB	Asia/Kuala_Lumpur	Outlet	0	0	0

Sample 2 - How to get Counter List

Description	To retrieve counter list and site info include ID, CameraName, IP, Port, Serial.
Function Name	GetCounterByBranch
Data Params	Username [nvarchar]; Password [nvarchar]; Branchid[bigint]
Sample SQL	SELECT * FROM GetCounterByBranch('username', 'password', 37);
Sample Result	

	ID	CameraName	BranchID	IP	Port	Serial
1	22441	SaiHoeTest	18471	192.168.3.91	80	00000000a8c98cd3

Sample 3 - How to get Hourly Counting data by Site

Description	To retrieve site hourly counting data include Branchid, ValueIn, ValueOut, OutsideTraffic, TurnInRate.
Function Name	GetBranchHourly
Data Params	Username [nvarchar]; Password [nvarchar]; BranchCode [bigint]; StartDate [datetime]; EndDate [datetime]
Sample SQL	SELECT * FROM GetBranchHourly('username', 'password', -1, '20150320', '20150321');
Note	-1 refer to the company which means all site(s).
Sample Result	

	Date	BranchId	ValueIn	ValueOut	OutsideTraffic	TurnInRate	Verification Status	Aggregation Status	Serial	CompanySerial
1	2020-02-22 00:00:00.000	18801	0	0	0	0	Not Verified	N/A	00000000d64a7afe	NULL

Sample 4 - How to get Daily Counting data by Site

Description	To retrieve site daily counting data include Branchid, ValueIn, ValueOut, OutsideTraffic, TurnInRate.
Function Name	GetBranchHourly
Data Params	Username [nvarchar]; Password [nvarchar]; BranchCode [bigint]; StartDate [datetime]; EndDate [datetime]
Sample SQL	SELECT * FROM GetBranchDailySummary('username', 'password', 410, ‘20140120’, ‘20140121’);
Note	-1 refer to the company which means all site(s).
Sample Result	

	Date	Timestamp	BranchId	BranchCode	ValueIn	ValueOut	OutsideTraffic	TurnInRate	LessThanFifteen	LessThanThirty	OverThirty	NewCustomer	ReturnInWeek	AvgVisitDuration	Verification Status	Aggregation Status	Serial	CompanySerial
1	2020-01-30 00:00:00.000	1580342400	18471	washrooma	274	305	0	0	0	0	0	0	0	0	Unverified	Partial Due To Power Off	00000000a8c98cd3	NULL

10.3 Manual Export

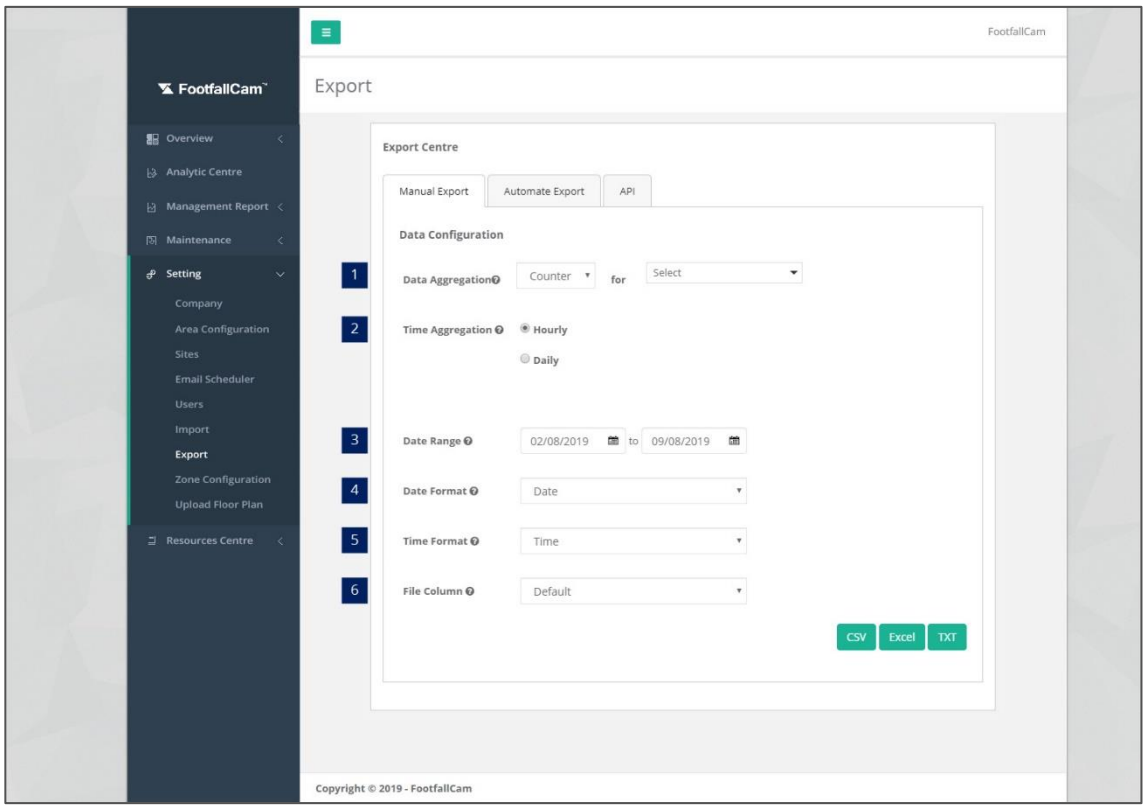
> Note
>
> Download the sample of Manual Export is available.

STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login.

STEP 2 - Click on **Setting > Export** to access the Export page.

STEP 3 - Click on **Manual Export** tab to access the Manual Export tab.

STEP 4 - Complete the process by entering all the required fields and click on **CSV / Excel / TXT** button.



Item	Description
1. Data Aggregation	Select the site / counter.
2. Time Aggregation	Select the length of data.
3. Date Range	Select the start date and end date.
4. Date Format	Select the format of the date.
5. Time Format	Select the format of the time.
6. File Column	Arrangement of column in download file. **(Info:** User able to re-organize the data column if user selected **custom** mode.**)**

10.4 Export via Websocket (Live Data)

10.4.1 Websocket Client

Note

Please **expect dummy data** to be sent until we can confirm the connection between the counter and your server. After, there should be no dummy data sent to your server unless we have to perform debugging on the connection. In this case, the message's topic name will be "**generic-test-topic**". You must still configure your server to accept this but you can ignore the data.

Requirement	
Websocket Server Address	Data **MUST** be acknowledged with **OK** upon receiving them, otherwise, FootfallCam counter will assume the sending has failed and keep re-sending the same data.
Basic Authentication (Optional)	Username and Password

Parameter	Description	Value
Topic	Name of the payload which IN / OUT data will send to server.	ffc-eventrawdata
CameraSerial	Unique ID. **(Info:** You may obtain the CameraSerial by getting the Chipset Code from Home page.**)**	00000000xxxxxxxx
EventStartUTCTime	Start of Event in UTC Timezone.	YYYY-MM-DD HH:MM:SS
EventEndUTCTime	End of Event in UTC Timezone.	YYYY-MM-DD HH:MM:SS
EventStartTime	Event Start Time in Linux Timestamp	YYYY-MM-DD HH:MM:SS
EventEndTime	Event End Time in Linux Timestamp	YYYY-MM-DD HH:MM:SS
EventStartLocalTime	Event Start in Local Time.	YYYY-MM-DD HH:MM:SS
EventEndLocalTime	Event End in Local Time.	YYYY-MM-DD HH:MM:SS
UploadedUTCDateTime	UTC Time of when the Data is published to be sent.	YYYY-MM-DD HH:MM:SS
UploadedLocalDateTime	Local Time of when the Data is published to be sent.	YYYY-MM-DD HH:MM:SS
MetricId	To indicates kind of event triggered such as Value IN or Value Out.	1 = ValueIN 2 = ValueOut
PeopleTypeId	To indicate which kind of people were detected.	1 = Visitor 2 = Staff
RoiId	Temporarily ONLY for Internal Use.	N / A
PeopleId	To indicate the people are being tracked. Example, multiple people will be indicate with different IDs.	numeric

Sample 1 - Value IN Data

{'Topic': 'ffc-eventrawdata', 'Data': {'EventStartUTCTime': '2020-06-17 03:16:41', 'EventEndLocalTime': '2020-06-17 11:16:41', 'EventStartTime': 1592363801, 'MetricId': 1, 'RoiId': 1, 'CameraSerial': '000000006afce315', 'PeopleId': 1, 'EventEndUTCTime': '2020-06-17 03:16:41', 'UploadedLocalDateTime': '2020-06-17 11:16:45', 'EventEndTime': 1592363801, 'EventStartLocalTime': '2020-06-17 11:16:41', 'UploadedUTCDateTime': '2020-06-17 03:16:45', 'PeopleTypeId': 1}}

Sample 2 - Value OUT Data

{'Topic': 'ffc-eventrawdata', 'Data': {'EventStartUTCTime': '2020-06-17 03:20:18', 'EventEndLocalTime': '2020-06-17 11:20:18', 'EventStartTime': 1592364018, 'MetricId': 2, 'RoiId': 1, 'CameraSerial': '000000006afce315', 'PeopleId': 1, 'EventEndUTCTime': '2020-06-17 03:20:18', 'UploadedLocalDateTime': '2020-06-17 11:20:21', 'EventEndTime': 1592364018, 'EventStartLocalTime': '2020-06-17 11:20:18', 'UploadedUTCDateTime': '2020-06-17 03:20:21', 'PeopleTypeId': 1}}

10.4.2 Websocket Server (Optional)

Requirement	
Service	Npm Node.js

STEP 1 - In an empty directory, type out the command in a command line.

```
npm install ws
```

Step 2 - With a word editor, create the file server.js with the following contents. Port can be specified according to your needs.

```
const WebSocket = require('ws')
const port = 8080

console.log("Reader is now listening on " + port)

const wss = new WebSocket.Server({ port: port })

wss.on('connection', ws => {
  ws.on('message', message => {
    console.log(`Published => ${message}`)
    console.log("- - - - - - ")
    ws.send("OK")
  })
})
```

Step 3 = In the same directory, type out in the command line:

```
node server.js
```

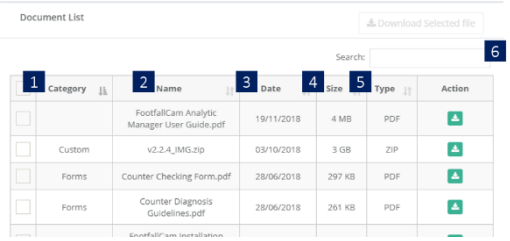
For example, if your websocket server is in a local network, your websocket address will be: **ws://192.168.2.109:8080**

Chapter 11: Knowledge based centre

Users can access the **resource centre** on the menu bar on the left to access internal documents from FootfallCam, training manuals, and webinars. From the resources centre, users will be able to access general support assistance. The resources centre modules, both the FAQ and Download centre will be updated on a weekly basis.

11.1 Download centre

FootfallCam download centre are updated on a weekly basis with all the latest information regarding the FootfallCam 3D Plus and the FootfallCam Analytic Manager. To access the download centre, users will need to:



1. Select the option of **Download Centre** under the **Resources Centre** tab.
2. Click on the download icon to proceed with downloading the specific document.

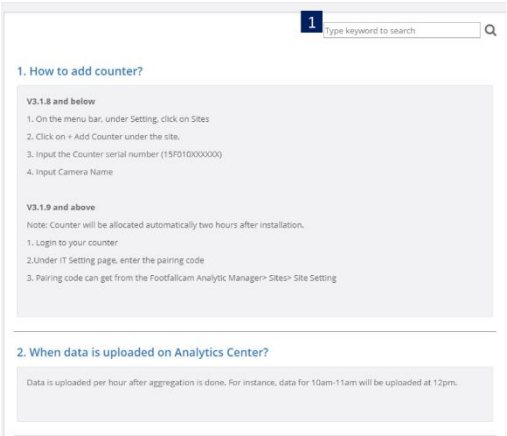
Each of the heading within the **Download Centre** refers to the following:

> **Note:**
> Multiple documents may be downloaded by ticking the respective checkboxes, then select **Download Selected.**

Item	Description
Category	The type of document
Name	Name of the available document
Date	Last updated date of the document
Size	Total size of the document
Type	File format of the available document
Search	Search bar to look for a specific document based on its name

11.2 FAQ

FootfallCam team regularly updates the FAQ section for basic support enquiries for all users to have an immediate point of reference, when they require assistance. To access the FAQ section of the FootfallCam Analytic Manager, users will need to:



1. Select the option of **FAQ** under the **Resources Centre** tab.
2. Specific keywords may be searched for through the search bar.

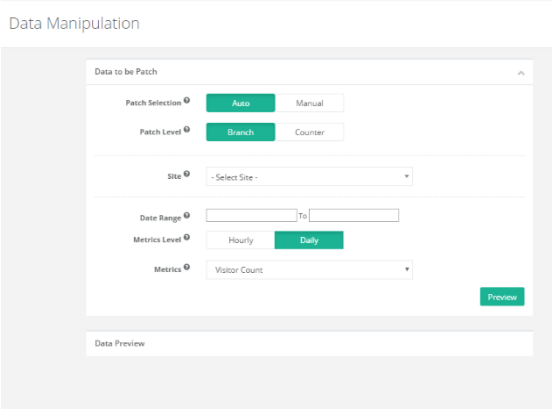
Chapter 12: Data manipulation module

Users can access the **data manipulation module** on the menu bar on the left to edit the counting values of visitors generated by the FootfallCam. Users that are using this module to adjust the counting values must understand that changes of any data are permanently made to the database and will display as such on all affected reports which the adjusted dates.

Note:
Only users with **Administrator** access may access this module.

12.1 Automatically manipulate data

The data for the date chosen will be manipulated based on the data from last three weeks on the same day.



1) Go to Data Manipulation page from the menu on the left.
2) Fill in all the fields based on the data that the user wishes to manipulate and select **Auto** for Patch Selection.
3) Click the Preview button and it will display the preview of the data with the details of the branch that the users wish to manipulate.
4) After checking the preview data, click on the apply button on the bottom right of the table to manipulate the data.
5) Users will need to agree with the terms and conditions first before they are able to manipulate the data.

12.2 Manually manipulate data

The data for the date chosen will be manipulated based on numerical figures manually inputted by the user.

1) Go to Data Manipulation page from the menu on the left.
2) Fill in all the fields based on the data that the user wishes to manipulate and select **Manual** for patch selection.
3) Click the Preview button and it will display the preview of the data with the details of the branch that the users wish to manipulate.
4) Manually fill in each of the field to the data you would like. An edited field will appear in red.
5) Once the desired data have been edited, click on the Apply button on the bottom right of the table.
6) Users will need to agree with the terms and conditions first before they are able to manipulate the data.

12.3 Reset edited data

The data will be reverted to the original data observed by the FootfallCam. All edited data done through the data manipulation module will be reset for the chosen dates.

1) Go to Data Manipulation page from the menu on the left.
2) Fill in all the fields based on the data that the user wishes to manipulate and select either **Manual or Auto** for patch selection.
3) Click on the preview button and it will display the data for the selected date.
4) After confirming, click on the **Reset** button on the bottom right of the table.
5) Users will need to agree with the terms and conditions first before they are able to manipulate the data.

Chapter 13: How does wi-fi counting work?

13.1 Wi-Fi Data Processing Method

Smartphones which do not have their Wi-Fi capabilities switched off are either connected to a Wi-Fi access point or searching for one to connect to. To do so, they emit Wi-Fi messages — if connected, transmitting data messages, and if searching, probe messages that signal an access point to respond. The frequency of these signals varies, depending on smartphone vendor and device status, but in general, they average two to nine signals each minute.

13.2 Raw Data Collection

The data has been collected into our database, including counter ID, signal strength, Mac address and timestamp.
Below is the data collection method of Wi-Fi data
The Wi-Fi data will be collected from the crowd around the location where the counter is installed.
Wi-Fi dongle plugged in the counter will be the module that constantly grabs the Wi-Fi signal sent by the Wi-Fi enabled devices such as smartphones, tablets etc.
Mac ID is processed in the counter with the signal strength and time stamp as the table shown:

Hashed Wi-Fi Mac Address	Detected Time	Signal Strength
aaa	12/2/2017 1:00pm	-65
bbb	12/2/2017 1:03pm	-66
ccc	12/2/2017 2:09pm	-100

The raw MAC address of these devices will be stored in the database and constantly uploaded to the central server (every hour) for further aggregation in the reporting. FootfallCam gathers this data, and then forwards it securely to the FootfallCam Cloud in hourly basis for processing and analysis.
The hashing algorithm for MAC address used is PBKDF2WithHmacSHA256, which is designed for password hashing hence it is a slow algorithm. This is good for password hashing as it reduces the number of passwords by second an attacker could hash when crafting a dictionary attack. Having a salt added to the password reduces the ability to use precomputed hashes for attacks, and means that multiple passwords have to be tested individually, not all at once. The standard recommends a salt length of at least 64 bits. The US National Institute of Standards and Technology recommends a salt length of 128 bits, and FootfallCam is using 256bits in this instance.

13.3 Data Processing and Classification

As data streams into the FootfallCam Cloud hourly, all detected devices are classified in a time series database, with robust algorithms applied to profile all detected devices and further classified the data in a few values:

i. Differentiate the Mac ID collected as “walk by” and “entered into store” by the signal strength Wi-Fi probes and confidence level.
ii. Further map “visit duration” by get the “first seen” and “last seen” with the condition highest signal strength detected from probes received at 2 different time stamps.

13.4 Method of Classification

Signal strength alone is a crude approximation method and is inaccurate, as Wi-Fi signals tend to vary in different environmental settings. Additionally, signal strength is dependent on many real-time environmental conditions.

Adding with the number of probes, timestamp, confidence level, and the threshold will increase the accuracy of the Wi-Fi data. There are two Wi-Fi thresholds: threshold 1 filter weak signal that far away from the counter. Threshold 2 capture strong signal strength which is in store traffic. All probe request details below threshold 1 will be stored in a raw mac database table in the device. Server side will process the mac address list to calculate dwell time and returning customer values by aggregate the daily data to the analytics.

13.5 Wi-Fi Data Coverage

The Wi-Fi module can collect the Wi-Fi signals emitted by the Wi-Fi-enabled devices within the radius of 100m. However, the actual working range might be reduced due to the setup of the internal walls in the stores.

Note
Users that would like to adjust the threshold of the Wifi counting may request FootfallCam personnel to adjust it directly.

The Wi-Fi module in Footfall Counter works like any other Wi-Fi-enabled device as it can pick up Wi-Fi signal from other Wi-Fi enabled device nearby.

Chapter 14: KPI Metric Definition

14.1 Outside Traffic

Smartphones which do not have their Wi-Fi capabilities switched off are either connected to a Wi-Fi access point or searching for one to connect to. To do so, they emit Wi-Fi messages — if connected, transmitting data messages, and if searching, probe messages that signal an access point to respond. The frequency of these signals varies, depending on smartphone vendor and device status, but in general, they average two to nine signals each minute.

> **Note**
> Signal strength threshold is configurable by FootfallCam personnel only.

14.1.1 Formula

Several people with Wi-Fi enabled smartphones detected based on the signal strength from the unique identifier (MAC ID probes) outside your location who did not enter into the site.

Outside Traffic	Total unique Wi-Fi detected with signal strength (default: -85 dBm) − number of people entered the site

14.1.2 Aggregation

Aggregation of outside traffic	**Hourly Outside Traffic** = Total unique Wi-Fi detected per hour with signal strength (default: -85 dBm) − number of people entered the site
	Daily Outside Traffic = Total unique Wi-Fi detected whole day with signal strength (default: -85 dBm) − number of people entered the site

> **Note**
> Signal strength threshold is set at (x= -85) by default and will auto tune based on the Auto Tuning Algorithm

14.1.3 Aggregation of Multiple Counters in One Site

Large venues (e.g. shopping malls, museums and airports etc.) usually will have multiple counters installed. Counters are classified into 2 types: i) Door Counter and ii) Zone Counter.
Outside traffic of a large venue is the summation of the unique outside traffic of all Door Counters.
Unique Outside traffic is defined as the summation of the Outside Traffic of the counters minus the duplicated MAC address.

14.1.4 Normalisation Factor

Outside traffic number may not be accurate if only using Wi-Fi detected the device, as there will have some assumption on the static office devices or multiple devices carried by a person. Hence, combining with video count result, we use the normalised factor as follow to ensure the accuracy of Wi-Fi counts:
a. Percentage of people with Wi-Fi devices
b. Percentage of people walk close by but not entering- Cross normalisation between video and Wi-Fi counting

14.1.5 Turn in Rate

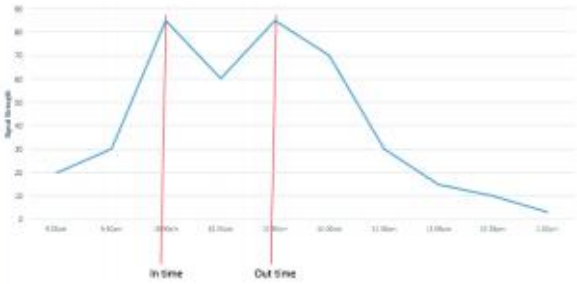
$$\frac{\text{Total Number of IN within the Hour}}{(\text{Outside Traffic within the Operating Hours} + \text{Total Number of IN})} \times 100$$

14.1.6 Aggregation of Turn in Rate

Hourly Turn in Rate $\frac{\text{Total number of IN within the hour}}{(\text{Outside traffic within the hours} + \text{Total Number of IN within the hour})} \times 100$
Daily Turn in Rate $\frac{\text{Total Number of IN within the operating hour}}{(\text{Outside traffic within the operating hours} + \text{Total Number of IN within the operating hour})} \times 100$

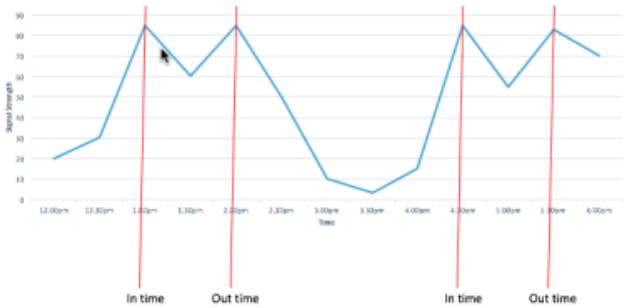
14.2 Visit Duration

Visit Duration is the average time the visitor stayed within the area (e.g. site or zone)
By analysing the Wi-Fi signal strength profile of the MAC address. If the profile has two peaks that are above a defined signal strength threshold. They are identified as the IN time and the OUT time of the visitor.



Maximum visit duration - Some visitors may visit the site multiple times in the same day. Maximum visit duration is the maximum reasonable visiting a visitor can expect to stay on the site for one single visit. The default value is 2 hours.

> **Note**
> Users may configure the threshold of visit duration, for a complete guide, please refer to Section 4.7.2 Site level configurations



For example,
Visitor A: first visit => 1:05pm to 1:30pm second visit => 4:05pm to 5:43pm
Result: 2 visits. The first visit is 25 minutes. The second visit is 98 minutes.

14.2.1 Formula

Measure visit duration based on unique identifier (MAC ID probes) from user's smartphone.

Visit Duration	Time (In) − Time (out)

Condition: a. Defining the boundary of Wi-Fi tracking

b. Excluded Staff list and Device List

> **Note**
> **Time (In):** Wi-Fi signal profile of all surrounding smartphones at the time (first seen) visitor is being counted by video counting
> **Time (out):** Wi-Fi signal profile of all surrounding smartphones at the time (last seen) visitor is being counted by video counting

14.2.2 Aggregation of Average Visit Duration

Aggregation of Average Visit Duration	$\frac{\text{Summation of Time IN} - \text{Time OUT}}{\text{Number of unique MAC ID that has IN and OUT timestamp}}$

Hashed Wi-Fi Mac Address	Duration
aaa	35 min
bbb	37 min
ccc	5 min
ccc	3 min
Average Visit Duration	20 min

14.2.3 Aggregation of Visit Duration Categories

FootfallCam further classified the visit duration data collection into 3 categories. By default, there are 15 minutes below, within 15 minutes to 30 minutes and above 30 minutes.

Aggregation by Visit Duration Category	% of each visit duration category $\frac{\text{Number of unique MAC ID (same category)}}{\text{number of unique MAC ID (total)}} \times 100\%$ No. of traffic count= % of each visit duration category × video count (IN)

Note
The categories can be easily tuned by the retailer in the server portal setting page based on their business needs and business objective.

14.2.4 Visit Duration for Sites with Multiple Counters

By uploading the Wi-Fi tracking information of all DOOR counters to a central server, the server would carry out the analysis and estimate the IN and OUT times of the Wi-Fi devices.

Note
Although not every person would carry a Wi-Fi device such as a smartphone, normalization is not required because the system calculates the average visit duration over a large sample data. Please see Statistical Sampling section for more details.

14.2.5 Visit Duration for Zone Analytics

The average time the person is staying in a zone.

Visit Duration for Zone Analytics	Time of Last Seen Wi-Fi signal −Time of First seen Wi-Fi signal

Condition: Signal strength must be above the certain threshold. It is tunable per counter. The default is -99 dBm.
A zone could have one or more counters. The system would aggregate the Wi-Fi tracking information from all counters within the zone.

14.3 Returning Customer

The number of visitors who had previously visited the site over a defined period of time (e.g. 1 month or 3 months).

14.3.1 Formula for New Visitors

The number of new visitors entered the site that had not been previously visited the site in the last 1 or 3 months.

New Visitors	Unique Mac Device entered the site over defined period (1 month or 3 Months) × Normalization factor based on statistical model
Aggregation	**Hourly** = Num. of unique Mac devices in that hour over 1 month or 3 months period
	Daily = Num. of unique Mac devices in that day over 1 month or 3 months period
	Weekly = Num. of unique Mac devices in that week over 1 month or 3 months period

14.3.2 Formula for Returning Rate

Percentage of people has returned to the site in a defined period (within 1 month or 3 months).

Returning Rate	$\left(1 - \frac{\text{Number of New Visitors}}{\text{Total Number of Wi} - \text{Fi Devices}}\right) \times 100\%$

14.3.3 Frequency of Returning Customers

Frequency of Returning Customers	the number of visits by the same Wi-Fi device in the last 1 or 3 months

Output Sample:

Frequency	Returned Within 1 Month	Returned Within 3 Months
New Visitors (0)	45%	55%
1 Time	40%	29%
2 Times	13%	10%
More than 2 Times	2%	1%

Note
Returning rate could be configuring to within 1 or 3 months' period. (visits by visitors who had > 0 prior visits) / (all visits)

14.4 Cross Shopping

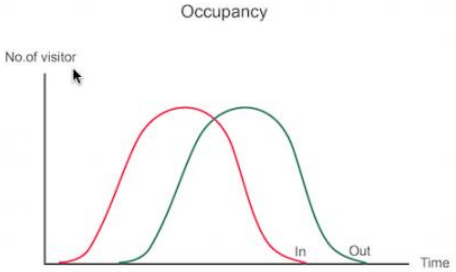
The percentage of a visitor who had visited more than one site of the same company within 1 or 3 months.

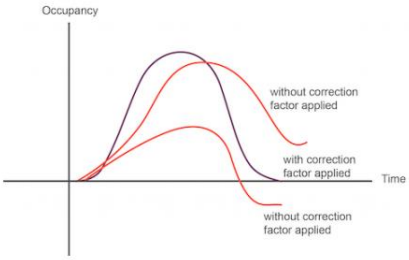
Percentage of Cross Shopping	$\frac{\text{Total Number of MAC ID appeared in more than 1 site in a given period}}{\text{Total number of unique MAC ID of all sites}} \times 100\%$
Between 2 Sites	$\frac{\text{Total Number of MAC ID appeared in both sites A and B in a given period}}{\text{Total number of unique MAC ID of all sites}} \times 100\%$
Over a number of sites	$\frac{\text{Total Number of MAC ID appeared in } \alpha \text{ number of sites in a given period}}{\text{Total number of unique MAC ID of all sites}} \times 100\%$
Average number of sites visited	$\frac{\text{Sum} \times (\text{Number of sites visited per Wi} - \text{Fi devices in a given period}}{\text{Total number of unique MAC ID in a given period}}$

Note
Although not all visitors carry a Wi-Fi device such as smartphones, the above formulae do not require normalization because it uses a statistical model of a large sample size to give a percentage value.

14.5 Occupancy

The number of people stayed in a site at a given time.





Occupancy × Hour	(IN (accumulative at x hour) − OUT (accumulative at x hour)) + correction factor (x hour)

IN (accumulative) is the summation of all IN data from the start of the operating hour to the current hour

Correction_Factor is required because no counter is 100% accurate. It would have accumulative errors as the day goes on. The graph above highlights the possible accumulative errors using conventional method. By learning from previous days IN and OUT traffic patterns, the system would automatically adjust the Correction_Factor to correct the accumulative error.

Correction Factor (x hour)	$(\text{IN(day)} - \text{OUT(day)}) \times \frac{\text{IN(accumulative at x hour)}}{\text{IN(day)}}$
Average hourly occupancy	$\frac{\text{Sum of all hourly occupancy within the operating hours}}{\text{Total number of operating hours}}$

Note

For occupancy of previous day data, the system uses the end of the day discrepancy for its auto-correction. For real-time hourly occupancy reporting, the system would build a correction factor statistical model based on previous 28 days data.

14.6 Sales conversion

Sales Conversion is a simple matter of dividing the number of transactions that are made within a period of time by the visitor for the store in that same time period. This result allows the manager to see a deeper insight of the store performance. For example, high footfall will mean the store is attracting a lot of customers from outside traffic but a low conversion rate will indicate that it is not doing a good job of maximising sales opportunities.

14.6.1 Formula for sales conversion

Sales Conversion is defined as how many percentages of the visitor (which has entered on the site) has converted into actual sales.

Percentage	$\frac{\text{Number of Transactions}}{\text{Number of IN Visitors}} \times 100\%$

14.6.2 Formula for revenue per visitor

Average spending of each unique visitor in your site at the specific time.

Revenue per Visitor	$\frac{\text{Sales Volume}}{\text{Number of IN visitors}}$

Note

To obtain the sales conversion report and data, the retailer would need to import or integrate the sales data from their EPoS System to the server.

14.7 Zone Analytics

Zone Analytics is the measure of the number of people in the different zones of a site, how long they stay in the zones and the movement of the people from one zone to the next.

14.7.1 Formula

Stayed in a Zone	more than 5 Wi-Fi signals, each probe has a signal strength greater than X dBm within A minutes
Passed by a Zone	more than 2 Wi-Fi signals, each probe has a signal strength greater than Y dBm within B minutes.
Duration in a Zone	last time stamp - first timestamp, of Wi-Fi probe that had a signal strength greater than Z dBm within C minutes.

Note
Condition: Excludes Staff List and Stationary Devices List

14.7.2 Traffic Flow Between Zones

Traffic Flow is the measure of unique MAC address from one zone to the next.

By combining the MAC address of “number of people stayed in a zone” of each zone together and sort by timestamp, the system could identify the traffic flow of each unique MAC address, and present it in the Sankey Diagram.

Note

To obtain the sales conversion report and data, the retailer would need to import or integrate the sales data from their EPoS System to the server.

Chapter 15: Other KPIs

15.1 Staff and Device List

Wi-Fi counting is designed to track Wi-Fi signals emitted from visitors' personal devices. However, it requires excluding stationary Wi-Fi devices. Wi-Fi device list can be classified into 2 categories:

- Stationary devices - Wi-Fi Access Points, office equipment such as printers and fax machines etc.
- Personal devices - smartphones, tablets etc.

15.1.1 Stationary Device List

Exclude MAC address from stationary Wi-Fi device manufacturers:
The first 6 characters of the MAC address a Wi-Fi signal probe can be used to identify the manufacturer of the Wi-Fi device. Our Wi-Fi tracking algorithm will automatically exclude tracing of Wi-Fi signals belonging to devices from manufacturers such as Cisco™, D-Link, Xerox, Nintendo.

```
(host)# show wms ap stats
AP Stats Table
----------------
```

Monitor-MAC	BSSID	RSSI	TxPkt	RxPkt	TxByte	RxByte	HTRates-Rx
00:0b:86:c1:af:20	00:0b:86:9a:f2:00	12	1575675	65	173239998	9340	0
00:0b:86:c1:af:20	00:0b:86:9a:f2:08	12	1560559	0	162297938	0	0
00:0b:86:c1:be:56	00:0b:86:9b:e5:60	12	1683013	4188	184400159	257589	0
00:0b:86:c1:be:56	00:0b:86:9b:e5:68	12	1580152	105	164216336	1470	0
00:0b:86:c2:0a:98	00:0b:86:a0:a9:80	48	1608023	40596	166962148	568386	0
00:0b:86:c2:1c:08	00:0b:86:a1:c0:80	42	1587097	26236	164904668	453196	0
00:0b:86:c2:1c:28	00:0b:86:a1:c2:80	42	1573040	20511	174536514	654024	0
00:0b:86:c2:3e:a9	00:0b:86:a3:ea:90	48	1588204	34179	165017293	897431	0
00:0b:86:c4:0f:3c	00:0b:86:c0:f3:d0	48	1571202	14258	174338376	351148	0
00:0b:86:c4:4d:06	00:0b:86:c4:d0:70	48	1598423	56198	182267018	3808826	0
00:1a:1e:c0:88:82	00:1a:1e:88:88:30	18	1717310	247532	394461405	14998234	8
00:1a:1e:c0:88:82	00:1a:1e:88:88:20	18	1092023	114722	242006054	2442917	10
00:1a:1e:c0:88:88	00:1a:1e:88:88:90	36	1783226	485620	460219125	27781563	16

Classification of Stationary devices
i) more than 1 Wi-Fi probes > -105dBm per hour
ii) in more than 4 hours within the same day
iii) for more than 20 days in the previous 30 days

15.1.2 Staff Device List

For personal Wi-Fi devices, it also needs to exclude devices belong to the staff of the site or its neighbouring sites.

Classification of Staff personal devices
i) more than 4 Wi-Fi probes > -90dBm per hour
ii) in more than 5 hours within the same day
iii) for more than 12 days in the previous 24 operating days

15.1.3 Collection and Processing Methods

For Wi-Fi signals which are in the Stationary Device List and Staff List, the Wi-Fi tracking algorithm would ignore it.
The Stationary Device List and Staff List would be reviewed and updated at the last operating hour of the day.

Note
A counter installed in a new Wi-Fi environment requires up to 28 days for it to auto fine tune its Stationary Device List and its Staff List.

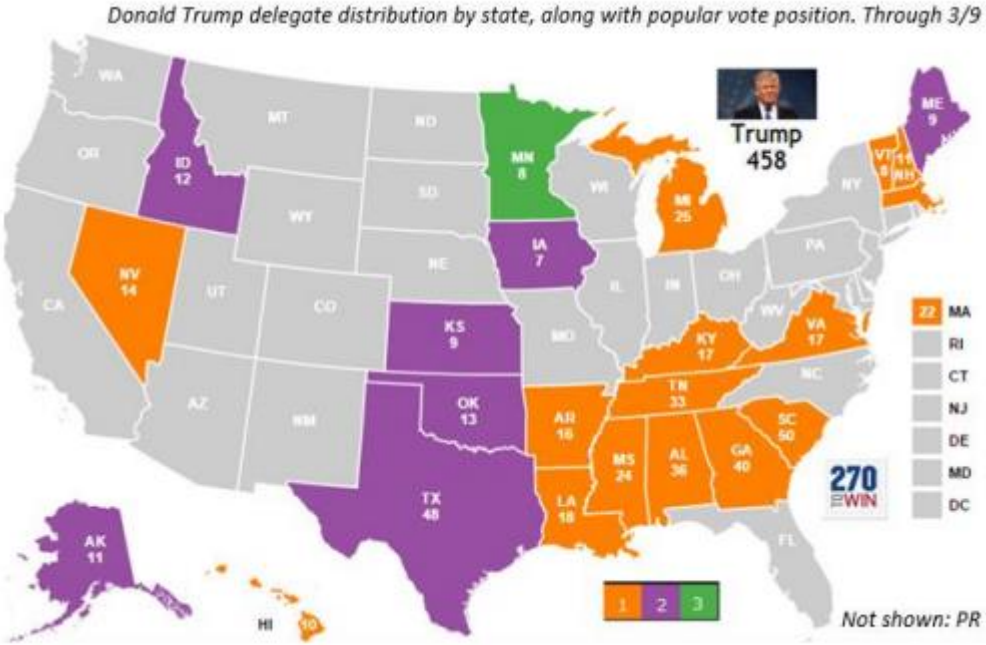
15.2 Statistical Sampling

The main function of Wi-Fi counting is to use Wi-Fi signals emitted from visitors' smartphones to approximate the traffic flow of people within a given area. However not every person carries a smartphone, and some people may carry more than one Wi-Fi devices such as iPads.

Our Wi-Fi counting algorithm can overcome the above limitations and provide an accurate traffic approximation by using Statistical Sampling. This ensures that even if not every visitor will contribute to Wi-Fi data since not every visitor will carry a mobile phone, these users are a small proportion of the total number of visitors and does not contribute to a large margin of error.

Statistical Sampling is widely used in many different industries such Television Rating and Election Polling. The Nielsen Company uses sophisticated sampling techniques to measure and report on ratings and viewership in the television industry around the world. In the United States, for example, the company selects homes in which to install small devices that monitor viewing habits.

Another example was used in election poll. Opinion polls for many years were maintained through telecommunications or in person-to-person contact. Methods and techniques vary, though they are widely accepted in most areas. Some polling organizations, internet survey, where a sample is drawn from a large panel of volunteers and the results are weighted to reflect the demographics of the population of interest.



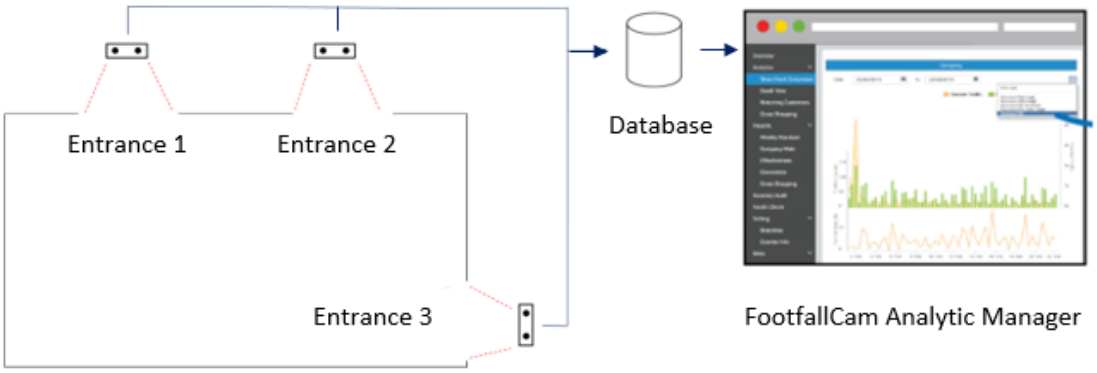
15.3 Normalisation

Normalisation is often used to convert the statistical data into real life numbers; for example, normalisation factor is applied to the number of Wi-Fi devices detected to convert it into the number of people in the area.

By correlating the number of people walking into the site using Video Counting and the number of Wi-Fi devices detected to have walked through the door, the counter uses the last two week's data to build a statistical profile, and approximate the percentage of people carrying smartphones.

This statistical model is counter based; that is each counter has its own statistical model which is auto tuned based on the demographics of the people and its surrounding Wi-Fi characteristics.

15.4 Multiple Counters Installed in a Store

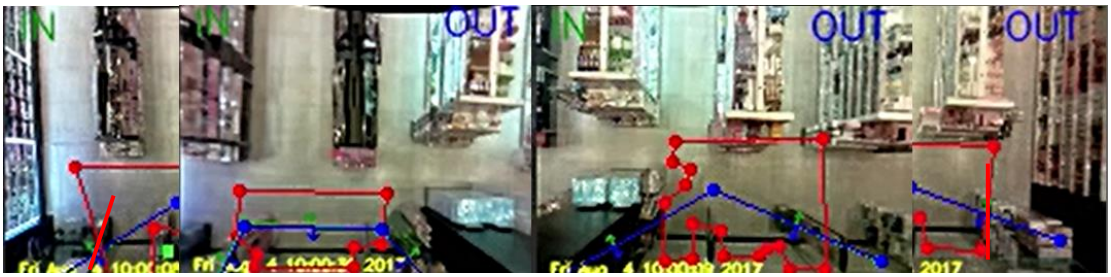


When there are multiple counters installed in a single store, the counting data from the counters will be uploaded into the database for further processed to prevent the over counting of a single individual. This process will ensure that the counting data generated by the FootfallCam will be genuine and ready for further analytical processing by the user's business intelligence system.

Counting Data	Counter 1 + Counter 2 + Counter 3

When there are multiple counters installed in a single store, the Wi-Fi counting data will be uploaded to the central database in order to filter out duplicate entries of MAC addresses. The duplicated MAC addresses will not be used in the aggregation of the data. This method prevents the over counting of a single MAC address from being counted twice.

Wi-Fi Data	Counter 1 + Counter 2 + Counter 3



When there are multiple counters installed in one wide entrance, the tracking zone and counting lines will need to be drawn conservatively. The tracking zone and counting lines drawn on one counter must not overlapped the counting zone and tracking lines drawn on another counter. This is necessary in order to prevent the over counting of visitor data, while can lead to inaccurate visitor count and falsified sales turn in rate data.

15.5 MAC Randomisation

Phones that are equipped with MAC Randomisation technology will not affect the counting accuracy of data generated through means of Wi-Fi analytics. The randomisation of the MAC Address will only affect mobile devices that are not connected to a mobile network, in addition, when the MAC Address is randomised, it is turned into a meaningless MAC Address that is different from genuine MAC Address.

FootfallCam has developed an advanced MAC Address filtration algorithm to filter the meaningless MAC Addresses that are picked up by the Wi-Fi sensor of the FootfallCam and exclude it from the counting data.

Chapter 16: Shopping mall configurations

Type	Counter	Purpose and Data Display	Configuration page
Type1	Entrance Counter	Collect total number of visitor from main entrance – Video counting	Counter Detail page
Type 2	Corridor Counter	Collect total number of visitor in corridor inside the mall – Video counting	Counter Detail page
Type 3	Zone Counter	Collect total number of visitor in the specific zone in the mall – Wi-Fi counting	Zone Configuration page, plotted on floorplan

Note
All counters listed above use the same physical counters that is configured under a different zone.

16.1 Configure a site

The user will first need to create a site to allocate all the data of that will be generated by the FootfallCam. To create a site for configuration, the user will need to complete the following:

1) Navigate to the Counter Management page
2) Click on **Create a Site**
3) Enter the basic details of the shopping mall as follow:

Parameter	Description
1. Branch name	Name of the shopping mall
2. Site code	If there are multiple shopping malls owned, input a unique identifier for this mall
3. Country	Country of the location of the shopping mall
4. Time zone	Time zone of the country
5. Operating hours	Operating hours of the shopping mall
6. Custom time	Set a custom operating hour for seasonal and festival occasions

4) Once the basic settings have been configured, select the advanced settings tab if you would like to configure the upper and lower limit of visit duration. This will allow you to determine the threshold to indicate how long should a person stay in the mall to be considered as a visitor.
5) Click **Save** in order to retrieve a pairing code

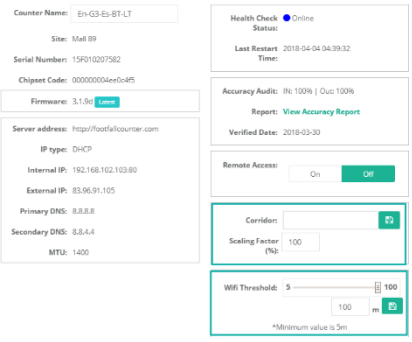
Note
Default collection time will be set at 30 minutes to 6 hours. Visitors that do not fall into the threshold will not be counted.

16.2 Add all counters under one site

Once you have retrieved the pairing code, it must be shared to your installer or any FootfallCam personnel for installation support. Once the installer has the pairing code, installation of the counter may begin. For a quick guide into the pairing code installation, please refer to section 3.5 Accessing the counter. Once the counter has been installed, continue with section 14.3 Configuring counter type and Wifi threshold.

16.3 Configuring counter type and Wifi threshold

Once all counter has been allocated to the server level, the user will need to create a corridor group for the device via the counter management page. This will ensure that each counter type will separate the counting for entrances and corridors. This is due to corridor counting is not the figure of visitors entering the shopping mall.



1) Enter the **Counter Management** page via the menu bar on the left.
2) Specify the counter and click on **Details**.
3) In the field **Corridor**, input the name of the entrance of corridor if it is not available from the list of drop down and click the **Save** icon
4) Adjust the threshold of the Wifi reception and click the **Save** icon

16.4 Zone configuration

After the corridors and entrances have been named, the user will be required to configure the zone of the counters installed. To do so, the user will first need to upload the floor plan of their shopping mall into the FootfallCam Analytic Manager, identify their zone and the distance, and finally, allocate the counter to the zone.
To upload the floor plan, the user will need to:

1) Select the **Zone Configuration** options from the menu on the left
2) Select the option **Add floor plan**
3) Specify the directory of the floor plan and upload

> **Note**
> When uploading the floor plan, only PNG files will be accepted.

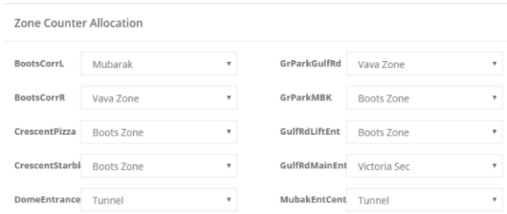
16.4.1 Identifying the zone

After the floor plan has been uploaded into the FootfallCam Analytic Manager, the user will be able to identify the zones within the shopping mall according to the FootfallCam counters that were installed.

1) Select the **Zone Configuration** page from the menu on the left
2) Select **Edit**
3) Click on **Add Zone**
4) Input the name of the zone
5) Click on **Create**
6) Drag and drop the created zone onto the floor plan from the FootfallCam Analytic Manager

16.4.2 Allocating the counter to the zone

When the floor plan has been uploaded to the FootfallCam Analytic Manager and the individual zones have been identified, the counters will need to be allocated to the zone in the floor plan. The user must be aware that only one counter can be allocated to one zone.



1) Select the **Zone Configuration** page from the menu on the left
2) Select **Edit**
3) Select the zone from the drop-down list for each of the counters
4) Click **Save**

> **Note**
> When relocating counters within a shopping mall, the historical data from the old zone will not be transferred to the newly allocated zone.

Chapter 17: Queue counting configurations

17.1 Overview

Queue counting enable users to identify the wait time of consumers, the duration consumers stay at the cashier, and the length of time it takes for a consumer to receive their order after placing it at the cashier. Queue data will help store managers to determine peak hours and whether more staff should be planned for deployment during peak times.

17.2 Function

The queue counting features uses three configurable zones:

- **Head zone**: This zone is used to define the area the consumer will be in when they are placing an order with the cashier. It Is used to calculate the duration consumers are detected while they are with the cashier and to determine the length of time it takes for a consumer to receive their order after placing it.
- **Tail zone**: This zone is used to track all the individuals in the queue and is made up of the head zone and a tail zone. The head zone is the connection between the cashier polygon and the tracking zone, while the tail zone is the opposite end. If an individual stand in the zone for a period exceeding the configured time, the queue is considered open. If the zone does not detect an individual for a period exceeding the configured time, the queue is considered closed.

17.2.1 Head zone

This zone is used to allows the system to determine where the consumer will go when they are conversing with the cashier. When an individual stand inside the cashier polygon, they will be tracked for the duration they stay in the zone.

17.2.2 Tail zone

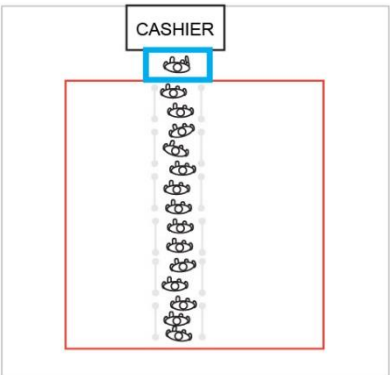
This zone will be used to track the consumers that enter the queue. For an individual to be counted within a queue, an individual must pass through the following constraints:

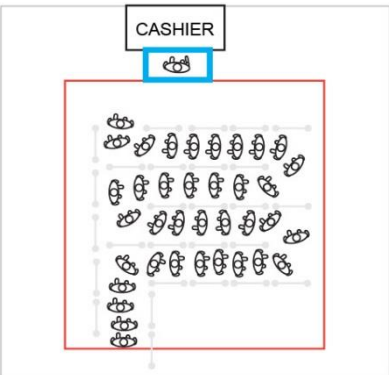
- They must enter the queue counting through the tail zone
- Must pass counting constraints (minimum height)
- Must be within the tracking zone for longer than the queue minimum time
- Everyone in the queue area must be within a specified distance from the previous individual tracked

17.3 How does it work?

17.3.1 Dynamic queue counting

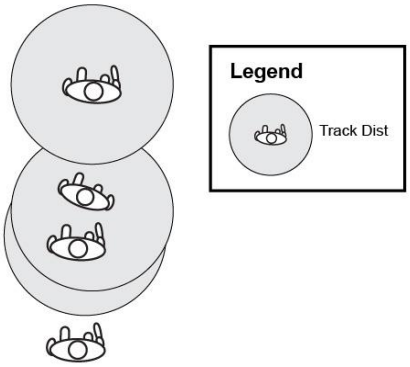
With dynamic queue counting zone configuration, FootfallCam can track individuals in a queue regardless of their queueing pattern.





Each queue counter must be configured with a tracking distance. The tracking distance is the maximum distance that an individual must be from another individual already in the queue to be tracked. If an individual who meets the tracking distance and meets the queue minimum time, the individual will be tracked and is considered as in queue. The tracking distance is a configurable threshold that can be adjusted based on each store's unique environment.

17.3.2 Excluding customers not in the queue

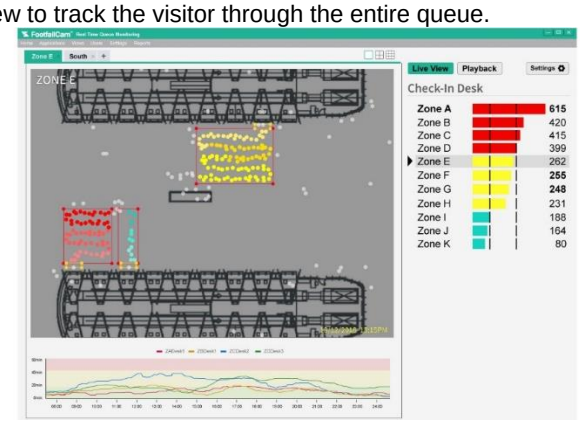


Consumers that are not within the configured tracking distance will be excluded from the queue. This is to ensure that outliers that are detected within the queue tracking zone are not mistakenly assumed as in queue by the device.

The tracking distance is calculated as a radius from the individual tracked.

17.3.3 Counting over a large area

When one counter is unable to cover the entire entrance, multiple counters may be required. In this case, the live view of multiple counters will be combined to create one complete view to track the visitor through the entire queue.



17.4 Queue duration

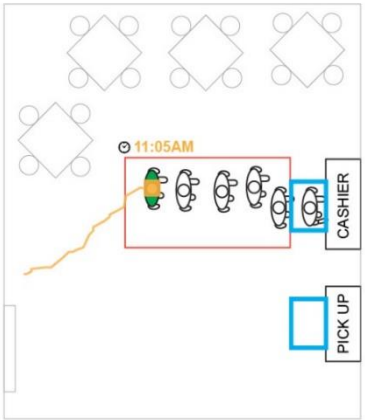
17.4.1 Average queue waiting time

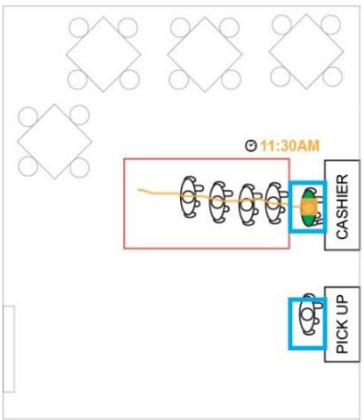
The queue wait time calculates the length of time a person enters the queue tracking zone and entering the cashier polygon. Though not all individual that enter the queue will have a queue wait time. For an individual to have a queue wait time, they must pass through the following constraints:

- Must pass counting constraint (minimum height)
- Be tracked continuously through the queue
- Enter the cashier polygon from within the queue tracking zone

Once the individual leaves the tracking zone and enter the cashier polygon, there will be a timestamp and the waiting time will be calculated based on the difference. The wait time will be calculated as follow:

Wait time	Time in (Logged into tail zone) – Time out (Logged into head zone)





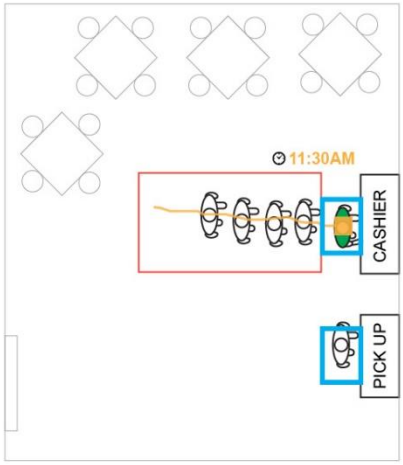
17.4.2 Average ordering time

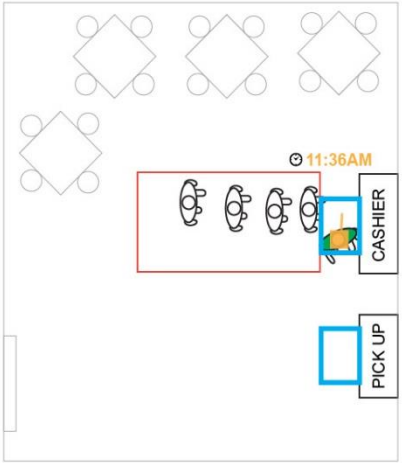
The ordering time calculates the length of time a person enters the cashier polygon through the queue tracking zone and leaving the cashier polygon. For an individual to have an ordering time, they must pass through the following constraints:

- Must pass counting constraint (minimum height)
- Enter the cashier polygon from within the queue tracking zone

When an individual meets the constraint, their time of entering the cashier polygon will be recorded and calculated against the time they leave the polygon. Their ordering time will be calculated as follow:

Ordering time	Time out (Leaving the tail zone) – Time in (Entering the head zone)

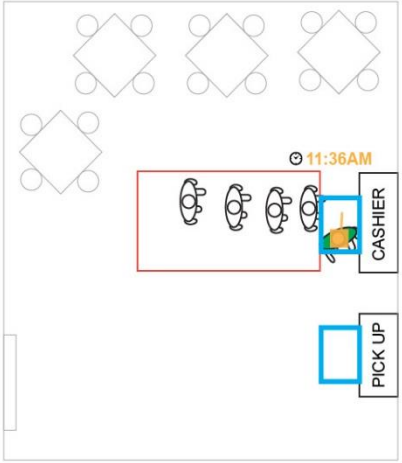


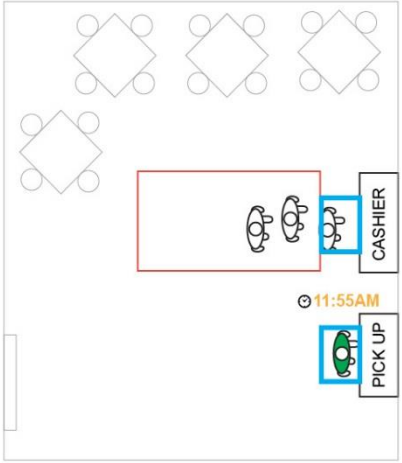


17.4.3 Average order fulfilment time

The order fulfilment time is used to calculate the length of time a person places an order from the cashier and receives their order from the pick-up area (if there is one). For stores without a pickup area, the duration of the order fulfilment will be based on the duration they are in the cashier polygon.

For stores with a pickup area, signature profiling with stereoscopic vision will be used. This is done by recognising the colour of their clothes, gender, body size, and skin tone and girth of an individual. In addition to signature profiling. With the recognition of signature profiling of every individual, FootfallCam can uniquely identify everyone that will pick up their order after placing it at the cashier within a certain time frame.





Through this, when a consumer enters the pick-up zone, it will be considered as their orders being fulfilled. However, the recognition of signature profiling will have a configured set time limit, all signature profile recognised from the cashier polygon that have not entered the pick-up zone will be automatically deleted.

Fulfilment time	Time in (Appearing in pick-up's head zone) – Time out (Leaving cashier's head zone)

Appendix A: Site Survey Form

FootfallCam™

Please note that all fields marked with an **asterisk (*)** are required.

Site Details	
Site Name*	
Site Code*	
Site Address*	
Person In-Charge*	
Contact Number*	
Installation Date Time*	Monday to Friday (9am – 6pm) or others

Counter Proposed Location	
Ceiling Height (metre)*	
Ceiling Composition*	Type of ceiling (plastered ceiling, glass ceiling or synthetic drop tile) and colour.
Door Width (metre)*	
Floor Slope*	
Head-end Distance (metre)*	Distance from the back-office comms cabinet with router and midspan to the counter head.
Remarks	
Sketch of Counter Position	

Counter Proposed Location [Optional]	
Ceiling Height (metre)*	
Ceiling Composition*	Type of ceiling (plastered ceiling, glass ceiling or synthetic drop tile) and colour.
Door Width (metre)*	
Floor Slope*	
Head-end Distance (metre)*	Distance from the back-office comms cabinet with router and midspan to the counter head.
Remarks	
Sketch of Counter Position	

Appendix B: Installation Checklist

Pre-Installation Checklist	
☐	Ensure the working permit is approved before the installation date.
☐	Prepare full installation schedule.
☐	Ensure the IT Instruction Work Sheet is correct.
☐	Ensure the pairing code is correct.
☐	Ensure the number of counter(s) is correct. **(Info:** Use FootfallCam Calculator to determine the number of counter(s).**)**
☐	Ensure the type of counter required is correct. **(Info:** Type of counter is determining based on ceiling height.**)**
☐	Prepare an extra counter in case of any unexpected situation.
☐	Prepare a PoE switch in case of not enough network port.
☐	Prepare a bracket in case of the ceiling is too high.

Onsite Installation Checklist	
Step 1: Arrive at Store	
☐	Inform FootfallCam Support Team once you arrive on site.
Step 2: Identify Location for Counter Install	
☐	Identify the type of entrance. **(Non-Swinging Door / Swinging Door / Wide Entrance)**
☐	Snap a photo of the entrance from an internal and external angle.
☐	Measure the ceiling height, entrance width and drop-down obstacle height. **(Info:** Use FootfallCam Calculator to determine the number of counter(s).**)**
☐	Request the IT Instruction Work Sheet or Pairing Code from HQ.
Step 3: Perform Basic Tuning and Walk Test	
☐	Draw the IN and OUT counting line until the edge of the pathway.
☐	Perform a walk test to ensure the counter is counting accurately.
Step 4: Prior to Leave the Site	
☐	Submit a screenshot on Live View page that shows Setup Completed to FootfallCam Support Team.
☐	Submit a photo of counter mounting location and midspan in the comms cabinet to FootfallCam Support Team.
☐	Ensure the outlying cables are properly covered by trunking.
☐	Ensure the cables are property labelled and running through the ceiling instead of floor.

Appendix C: Verification Request Form

FootfallCam™

Please note that all fields marked with an **asterisk (*)** are required.

Site Details	
Company Name*	
Site Name*	
Person In-Charge*	
Email*	
Remarks	

Counter Details	
Number of Counter Device* _____ **unit(s)**	
Counter Serial Number*	**1.** **2.** **3.** **4.** **5.** **6.** **7.** **8.** **9.** **10**
Ceiling Height (metre)*	
Is the entrance installed with Multiple Counter? ☐ Yes, please attach image for reference.	☐ No
Store Status* ☐ Store is in operation now.	☐ Store is under renovate and will re-open on _____.

Appendix D: Re-Verification Request Form

FootfallCam™

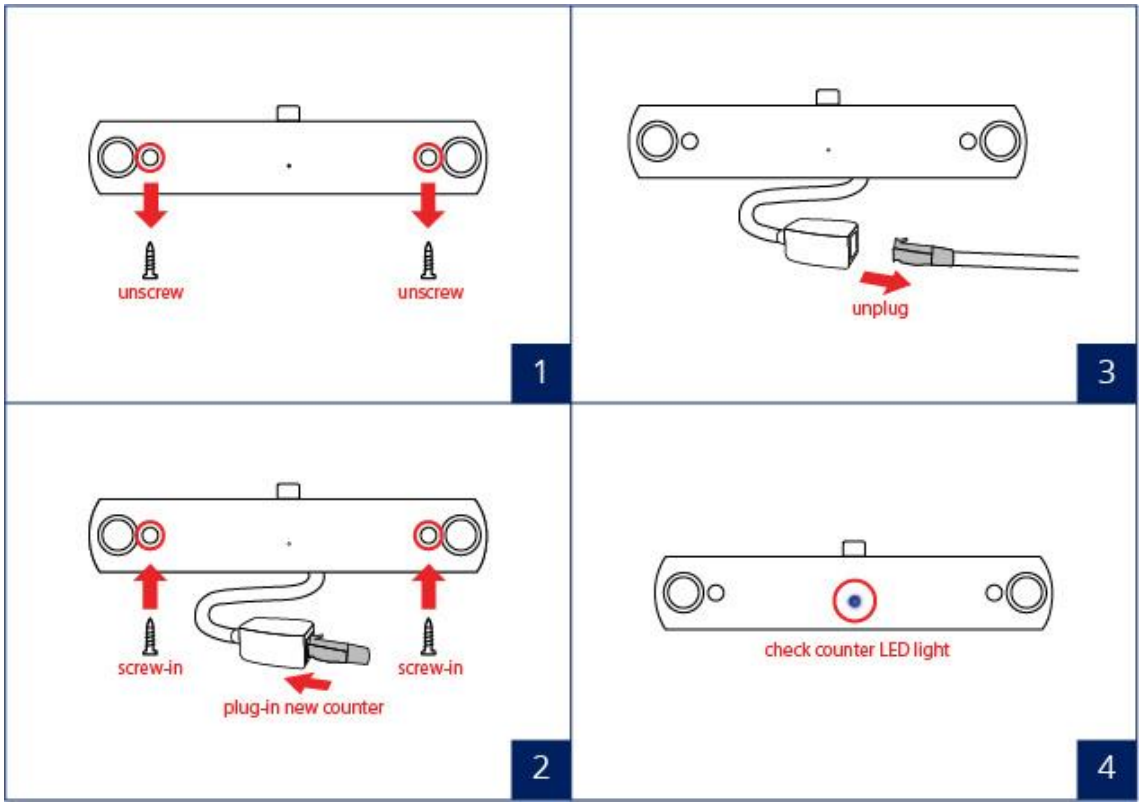
Please note that all fields marked with an **asterisk (*)** are required.

Site Details	
Company Name*	
Site Name*	
Person In-Charge*	
Email*	
Remarks	

Counter Details	
Counter Serial Number*	
Reason*	
Ceiling Height (metre) *	
Is the entrance installed with Multiple Counter? ☐ Yes, please attach image for reference. ☐ No	
Store Status* ☐ Store is in operation now. ☐ Store is under renovate and will re-open on _____.	

Request Approval [For FootfallCam Verification Team ONLY]	
Application Received Date	
Review By	
Date of Review	
Request Status ☐ Approved ☐ Disapproved	
Remarks	

Appendix E: Counter Replacement



STEP 1 - Unscrew the device from ceiling.

STEP 2 - Unplug the network cable.

STEP 3 - Plug in the new device with the network cable and screw it on the original position.

STEP 4 - Check the counter LED light, make sure it is turned to **Blue**.

Appendix F: Counter Troubleshooting Guideline - Store Staff

If below issue has occurred on the people counter, you may perform diagnosis based on below guidelines:

LED Light	Cause / Solution
Blue	**Counter is functioning.**
No Light	**No Power** Check: 1. Ensure switch to supply power is turned on. 2. Test power socket of Midspan/ PoE Switch with another device 3. Unplug cable from Midspan & router and plug it in again.
Yellow	**Cable Issue** Check: 1. Network cable is plugged in tightly to Midspan/ PoE Switch. 2. Light indicator on Midspan/ PoE Switch is on.
Green	**Network Issue** Check: 1. Ensure network availability with internet service provider. 2. Change the network cable from current port to another port.
Red	**System Error** Check: 1. Reboot camera by power off counter for 5 minutes.

Should the issue persist after above troubleshooting, please contact FootfallCam Helpdesk for further technical support: support.footfallcounter.com

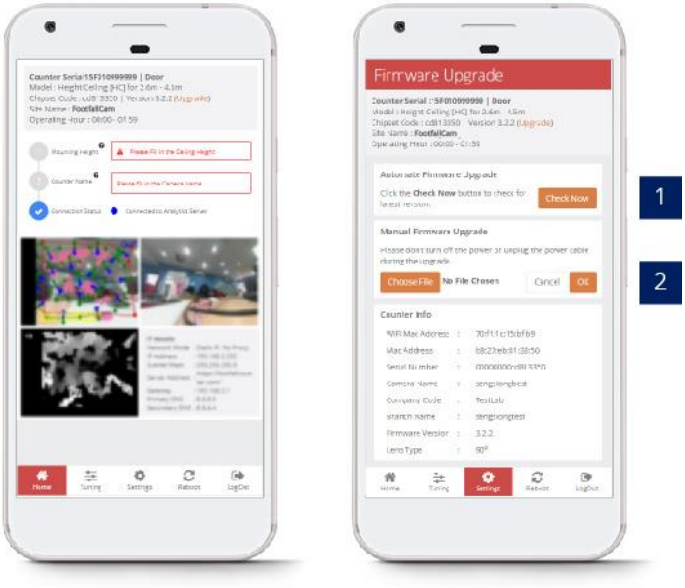
Appendix G: Counter Troubleshooting

LED Light	Cause / Solution
Blue Light	**No issues detected.** Counter is functioning and no solution is required.
No Light	**Switch to supply power is turned off.** Ensure the power cord is plugged in tightly to the midspan / PoE switch and emits both green and orange lights.
	Faulty power socket. Test the power socket with another device.
	Loose cable in midspan / PoE switch. Unplug cable from Midspan and plug it in again.
	Loose cable in router port. Unplug cable from router and plug it in again.
	External physical damage. Verify that the device is installed in a suitable environment that complies to the hardware operating standards. (**Info:** Please refer to **Product Specification**.**)**
Yellow Light	**Network cable is crimped incorrectly.** Ensure the cable is crimped in the correct sequence and wires are connected to the end of the pin. **(Info:** Please refer to Section **3.2.2 Installation Cable**.**)**
	Loose network cable. Ensure the network cable is plugged in tightly to the midspan / PoE switch and emits both green and orange lights.
Green Light	**No network.** Confirm the availability of network with internet service provider.
	IP address conflicts with another device. Enter the counter's IP address in an internet browser and ensure the user is redirected to the Counter Control Panel Login page. Check IT settings in the network page.
	Firewall blocked. Unblock Port 80, Port 22 and Port 443. Unblock FootfallCam server http://portal.footfallcounter.com, http://145.239.4.218, http://91.109.10.77 and http://54.85.80.97.
	DNS issue. Ensure the server address is entered correctly.
	Functionality of the router port. Change the Cat 5e network cable from the current port to another port.
	Proxy password expired. Check proxy server connectivity and whether the proxy has expired or not.
	Insufficient network bandwidth. Ensure other system resources are not using all the available bandwidth and ensure the device IP address assigned correctly.
	Incorrect network setting. Open smartphone Wi-Fi SSID to search for counter and login into the control panel to check IT Settings.
Red Light	**System error during bootup sequence.** Power Cycle - Power off device for 5 minutes, unplug both pink cable and grey internet cable from Midspan/ PoE switches, and plug it in again. Open smartphone Wi-Fi SSID to search for counter and login into the control panel again.

Appendix H: Firmware Upgrade

Note

The display of the interface differs based on the current firmware the device is running on. The information presented in this User Guide refers to the latest version at the time of writing.



STEP 1 - Connect counter SSID via Wi-Fi and login with password: **counter888**.

STEP 2 - Access to web browser (Safari, Google Chrome) and enter URL: http://192.168.4.1.

STEP 3 - Login with password: **123456**.

STEP 4 - Click on **Upgrade** on the top right and navigate to **Firmware Upgrade**.

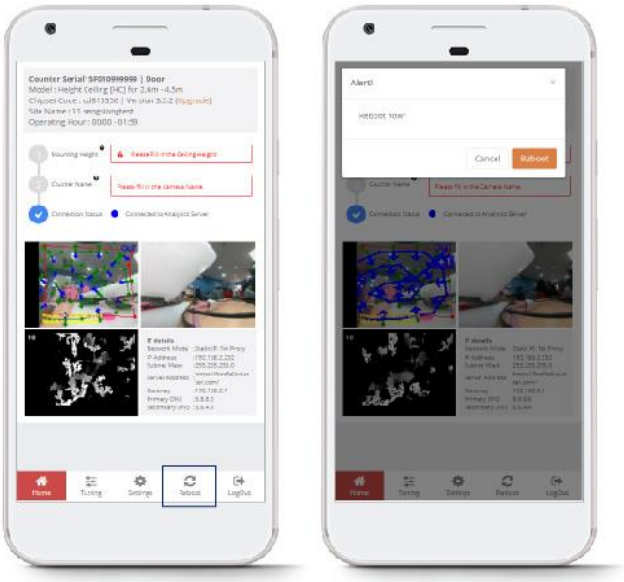
Item	Description
1. Automated Firmware Upgrade	Click on **Check Now** to retrieve the latest version and firmware will upgrade automatically.
2. Manual Firmware Upgrade	Click on **Browse** to upload the firmware file and click **Ok** to complete the process.

STEP 5 - Device will reboot automatically after 5 minutes once the upgrade is complete.

Appendix I: Counter Reboot

Note

Counter will not record any data while the device is rebooting.



STEP 1 - Connect counter SSID via Wi-Fi and login with password: **counter888**.

STEP 2 - Access to web browser (Safari, Google Chrome) and enter URL: http://192.168.4.1.

STEP 3 - Login with password: **123456**.

STEP 4 - Click on **Reboot** on the bottom.

STEP 5 - Click on **Reboot** in the pop-up message.

Appendix J: SQL Server Version Update & Migration Flow

Purpose	FootfallCam	Customer	Timeline
Install FootfallCam Analytic Manager V8™ in new server DB.	Perform new server DB installation with license provided by user.	User prepare new SQL server DB with license and propose method of transfer backup files from existing server DB to new server DB.	2 Days
To choose a pilot store to install new FootfallCam counter.	Perform database backup of existing server DB and restore on new server DB. Counter service require to PAUSE for an hour downtime for data backup purpose.	Select one store for pilot testing, inform FootfallCam when new device is installed.	1 Day
To point test FootfallCam counter to new server DB.	Confirm the new device is connected to FootfallCam Analytic Manager V8™.	Point server address in counter level to new server.	1 Day
To test the connection for counter and new server DB and ensure the data able to insert to new server DB.	Confirm the server and data are working fine.		3 Days
To begin backup data from existing server DB before migrating to new server DB.	PAUSE FootfallCam Analytic Manager V8™ in existing server DB before backup process.	Confirm the method of transfer backup files from existing server DB to new server DB.	-
To restore the backup files on new server DB.	Clean up the new server DB to avoid conflict before migration. Duration needed to restore the existing server DB to new server DB depends on the storage size of historical data.	User may retire out old server DB by pointing of the domain name to new server IP. If client pointing counter to DNS, there's no need to point the counter to new server IP address, DNS will handle that, user side have to ensure this can be done	-
Data audit in new server DB after migration is completed.	Restart FootfallCam Analytic Manager V8™, data will upload to new server DB.	user MUST standby for at least an hour for roll back the process if issue found after the migration.	-

Appendix K: Server Installation Form

Please note that all fields marked with an **asterisk (*)** are required. For further inquiries, please refer to FootfallCam IT Infrastructure documentation.

Contact Details		
User's Information*	**Company Name** **Email Address**	
Partner's Information (ONLY applicable if the end user is associated to a reseller.)	**Company Name** **Email Address**	

Server Details		
Operating System*	**Windows Server Edition** **Drive Location**	FootfallCam will install in the drive with minimum required storage space ONLY if this field is blanked.
Storage*	**Available Storage**	
Microsoft SQL Server*	**Is a database installed?** **If a database is installed -** **If a database is not installed – Please select one option for FootfallCam to install** **Credential(s)**	☐ Yes ☐ No ☐ Enterprise Edition ☐ Express Edition ☐ Enterprise Edition ☐ Express Edition Please provide license key: _____

Network Details		
Open Network	**IP Address**	
Close Network	**IP Address**	

Desktop Remote Access Details [ONLY choose one (1)]		
TeamViewer 11	**TeamViewer ID**	
	Password	
AnyDesk	**Address** **Password**	
Remote Desktop Protocol	**Host Address** **Username** **Password** **VPN Connection**	

Note

If Email Server Credential **NOT** provided, user **MUST** whitelist connection for https://portal.footfallcam.com (as default).

Email Server Credentials (for email sending purpose) *		
SMTP Server Address		
SMTP Port Number		
SMTP Authentication	☐ Yes	☐ No
SMTP Username		
SMTP Password		
SMTP Sender **Display Name / Email Address**		
SMTP use SSL	☐ Yes	☐ No

Appendix L: Staff Exclusion Kit

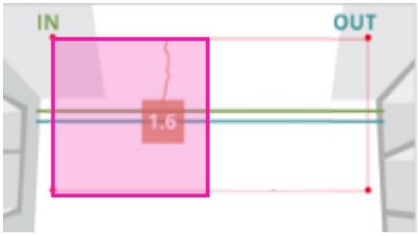
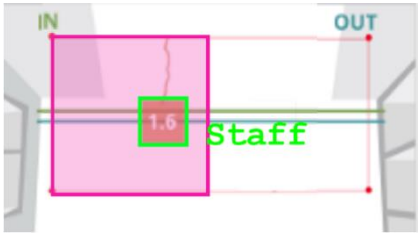
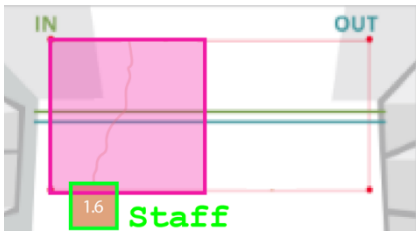
FootfallCam™

> **Note**
>
> Staff Exclusion Kit **ONLY** available for counter firmware version 3.2.0 and above.

Staff exclusion kit is an additional peripheral attached to the counter internal chipset accompanied by a remote button. User require to press the remote button within the Staff Exclusion Zone for excluding the counting of staff. Two (2) outcomes will be trigger once the remote button is pressed are listed as below:

OUTCOME 1 - LED light on counter will blink 3 (three) times in **Red** colour and remain in **Red** colour for 5 seconds to indicate that the staff has been excluded.

OUTCOME 2 - LED light on counter will blink 3 (three) times in **Red** colour before reverting to original colour.

		
Staff requires to press the remote button within the exclusion zone (pink).	Staff will automatically be detected as staff.	Staff can proceed to walk through the entrance as usual.

Option 1 - Automated Setup

STEP 1 - Connect counter SSID via Wi-Fi and login with password: **counter888**.

STEP 2 - Access to web browser (Safari, Google Chrome) and enter URL: http://192.168.4.1.

STEP 3 - Login with password: **123456.**

STEP 4 - Navigate to counter live view and ensure that no individual stand underneath the view of counter.

STEP 5 -User may stand underneath the view of counter and press the remote button for 5 seconds.

Option 2 - Manual Setup

STEP 1 - Connect counter SSID via Wi-Fi and login with password: **counter888**.

STEP 2 - Access to web browser (Safari, Google Chrome) and enter URL: http://192.168.4.1.

STEP 3 - Login with password: **123456.**

STEP 4 - Click on **Tuning** tab and follow by **Advanced Tuning** tab.

STEP 5 - Navigate to Staff Exclusion Kit and enable the option.

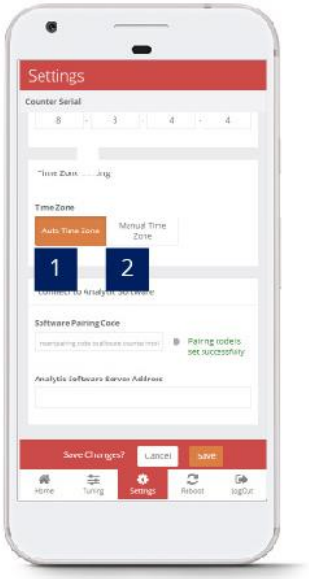
STEP 6 - Click on **Draw** to indicate a minimum of three (3) points on the live view.

STEP 7 - Complete the process by drawing line and click on **OK** to apply the changes.

Appendix M: Time Zone Setting

Note

Time zone setting **ONLY** available for counter firmware version 3.2.1 and above.



STEP 1 - Connect counter SSID via Wi-Fi and login with password: **counter888**.

STEP 2 - Access to web browser (Safari, Google Chrome) and enter URL: http://192.168.4.1.

STEP 3 - Login with password: **123456**.

STEP 4 - Click on **Settings** tab.

STEP 5 - Navigate to section **Time Zone Setting**.

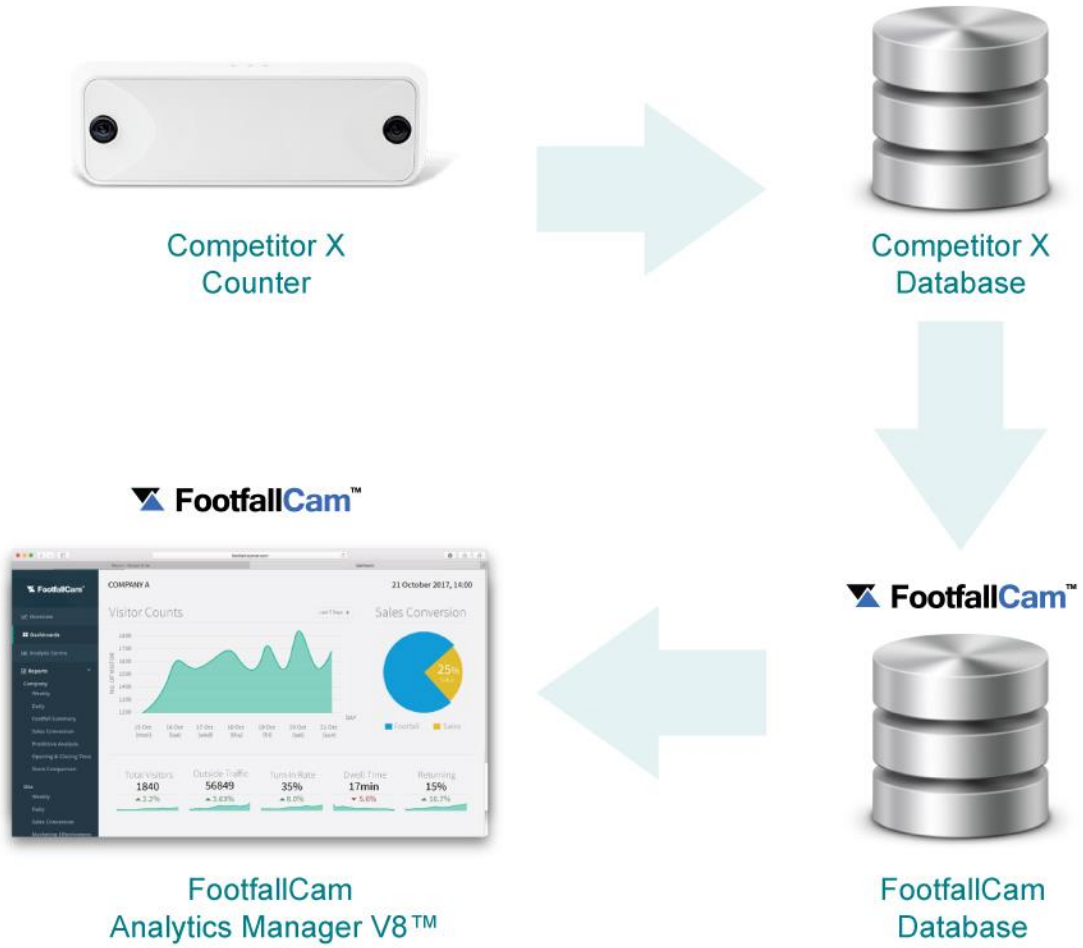
STEP 6 - Complete the process by entering all the required fields and click on **Save**.

Item	Description
1. Auto Time Zone	Time zone will be configure same with FootfallCam Analytic Manager server time.
2. Manual Time Zone	Select the time zone. **(Info:** Time zone selected will be apply to report feature.**)**

Appendix N: Integrate with Incumbent Counters

> **Note**
>
> User can ONLY migrate existing visitor count data.

User may choose to migrate historical data from incumbent device into FootfallCam Analytic Manager V8™. The process will take up to a week to generate reports based on the historical data.



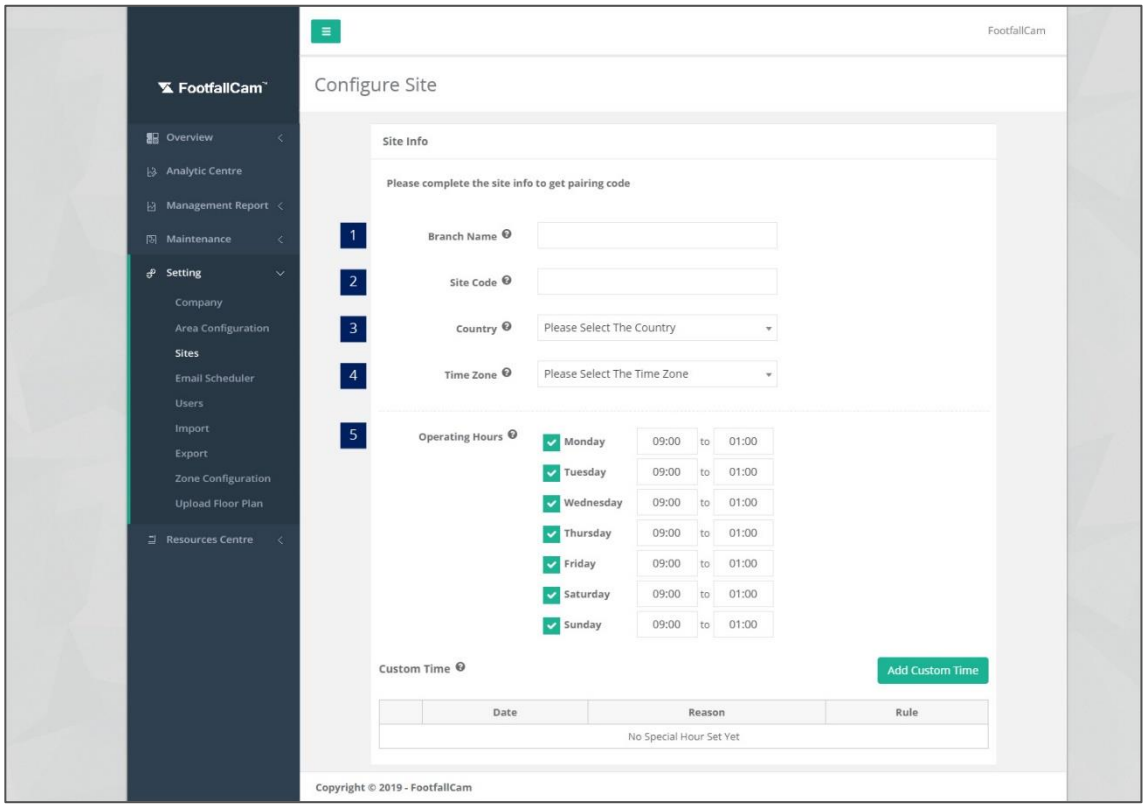
However, this function is currently not available for public release. If you would like to migrate your data from your existing counter, please email to FootfallCam Sales Team via sales@footfallcam.com.

Appendix O: Overnight Operating Hour

FootfallCam™

Note

Overnight operating hour setting ONLY available for counter firmware version 3.2.2 and above.



STEP 1 - Access to FootfallCam Analytic Manager V8™: http://portal.footfallcam.com/Account/Login.

STEP 2 - Click on **Setting > Sites** to access the Counter Management page.

STEP 3 - Select the site to manage and click on **Setting.**

STEP 4 - Update the required fields and click on **Save Changes**.

Item	Description
1. Branch Name	Enter a preferred branch name. **(Info:** Site name inserted will be apply to features in FootfallCam Analytic Manager V8™.**)**
2. Site Code	Enter a preferred branch code. **(Info:** Site code used to identify branch within a geographic region.**)**
3. Country	Select the country. **(Info:** Country selected will be apply to features in FootfallCam Analytic Manager V8™ for mapping the branch coordination.**)**
4. Time Zone	Select the time zone. **(Info:** Time zone selected will be apply to report feature.**)**
5. Operating Hour	Enter the operating hour for the branch. **(Info:** Click **Add Custom Hour** to configure operating hour for Public Holiday.**)**