Configuring an Irisys Vector 4D for Xenometric Collection

Contents

1 Introduction

The Irisys Vector 4D was released in 2018 and is Irisys' latest and most advanced people counter.

The document doesn't cover the configuration of the sensor for accurate people counting. It covers how to configure the Vector's settings to identify the count lines, site details, localisation (time zone) and how the Vector will communicate with the Xenometric software on a private or public network. This includes Xenometric installations on private servers and the Xenometric Cloud.

Irisys counters can be linked together to form a single view of a wide entrance. The configuration necessary for Xenometric needs only be applied to the master counter. Xenometric's software sees the wide entrance of *n* cameras as a single counting device.

Each Irisys Vector can monitor multiple lines. Count lines are used to count pedestrians in one direction from one zone to another. A simple bi-directional counter would have two lines that form the boundary between two zones, e.g. from the outside world zone to an internal zone within a retailer's property.

To connect to a Vector 4D unit you can use a web browser or Irisys' RIFT tool. The RIFT software is available at http://partnerportal.irisys.co.uk.

Xenometric collects data from many sources and aggregates this data in our SQL Server database. We then offer web reporting from your server or on our cloud. Email reports and direct data access is also available.
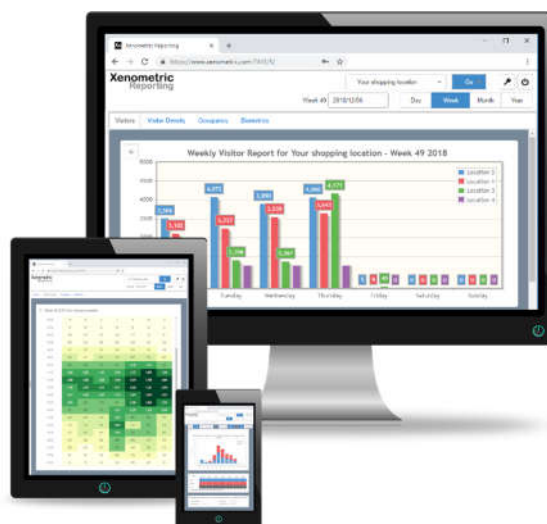
2 Principles of device and count-line naming

In order for Xenometric's software to understand the location of counters and the relationships between counters, it is necessary for identifiers to be applied in the Vector's settings. There are 4 location identifiers that have to be set. These are, Site ID, Device ID, Site Name and Device Name. There are strict rules for the Site ID and Device ID, but the Site Name and Device Name can be any text you choose.

The two key identifiers, Site ID and Device ID, are used to uniquely identify which building (site) the counter belongs to and the counter's location within the building.
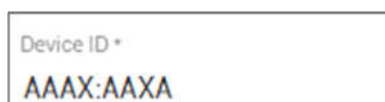
2.1 Site ID

The **Site ID** represents the building or wider location. For example, the building could be a shopping centre, transport hub, casino, town centre square or street within a city. It is important that the Site ID is unique. Site IDs are usually written in uppercase and contain no spaces. For example, a shopping centre in the Great Britain with counters managed by Acme Ltd. might have a unique Site ID of GBRACME0001. You can use your own naming scheme, so long as the Site ID is unique for the Xenometric software installation. If you are using the Xenometric Cloud, please ask Xenometric to assign you a unique Site ID.

Site ID *

GBRACME0001
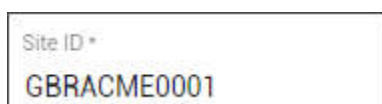
2.2 Device ID

The **Device ID** represents 2 different aspects of the counter's location wrapped into one code. The simplest codes are for counters with two count lines, which usually represent the IN and OUT directions. More complicated Device IDs can be generated for multiple lines (3+ lines) on one camera.

Device ID *

AAAX:AAXA

The Device ID scheme is complicated (due to historic compatibility issues), so please contact Xenometric if you are unsure of the Device IDs to apply to each counter. We are always happy to help provide Site ID and Device ID codes to ensure that the counters talk seamlessly with the Xenometric software.

2.2.1 Two-line example (IN and OUT)

The example below shows a simple retail store with one counter. The counter has been configured with two lines (Line 1 and Line 2). The pedestrians entering the store are recorded by line 1, whilst the pedestrians exiting the store are captured by line 2. Pedestrians outside the store are labelled as being in Zone X, whilst pedestrians inside the store are labelled as being in Zone A.
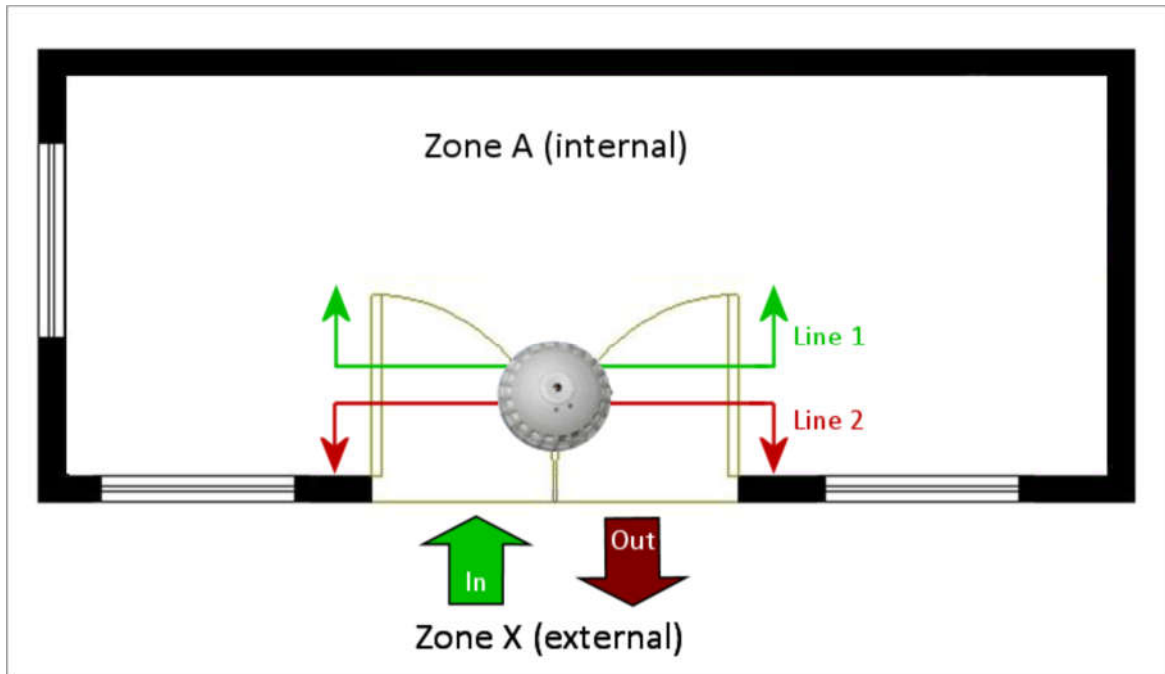
In order to represent this scenario, we will need to program the counter with the correct IDs for each line. To do this we will allocate a 2-character ID to the entrance. Both lines belong to the same entrance, as one counts the IN direction and the other the OUT direction.
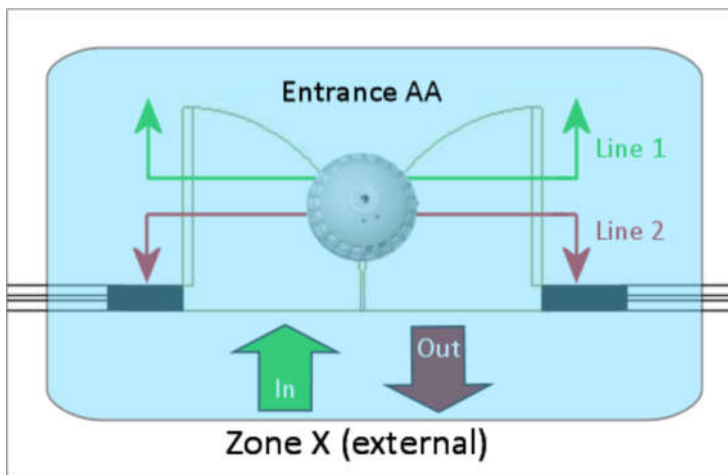
The entrance has and ID of AA. Consequently, both lines 1 and 2 will also have AA as a component of their ID.

The complete ID for each of the lines comprises of the entrance component (AA) and a 2-character zone direction descriptor.

The zone direction descriptor for line 1 is based on the direction of travel for a pedestrian entering (In) the store. The pedestrian travels into Zone A from Zone X. Line 1's zone direction descriptor is AX.

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The zone direction descriptor for line 2 is based on the direction of travel for a pedestrian exiting (Out) the store. The pedestrian travels into Zone X from Zone A. Line 2's zone direction descriptor is XA.
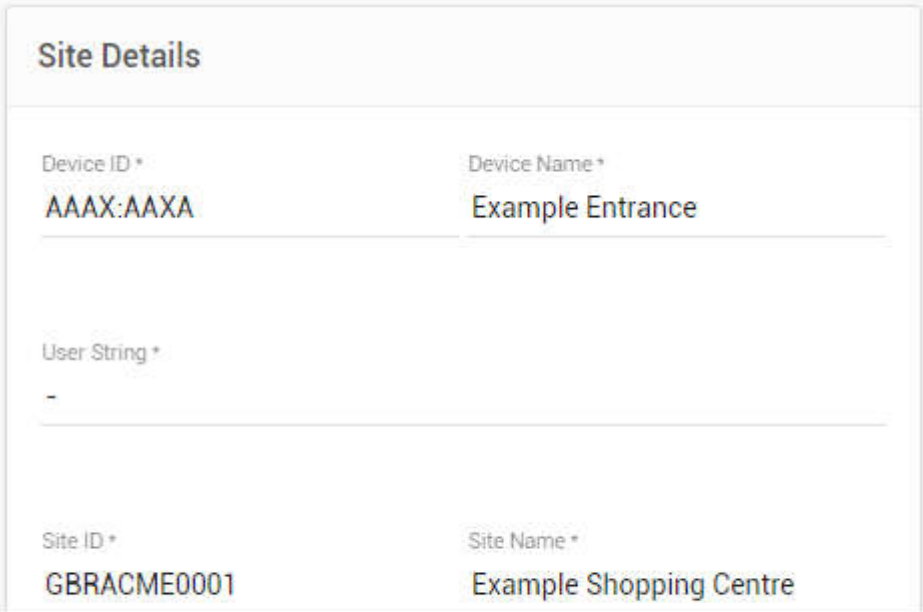
Combining the Entrance ID with the zone direction descriptors gives the following IDs for lines 1 and 2.

Line 1: AAAX

Line 2: AAXA

When recording these IDs in the Site Details form the IDs are entered in the Device ID field and are separated by a colon **:** Each ID is entered in numerical order for each line number.

For example, the two line example would be entered as AAAX:AAXA

The two fields that must be completed correctly to unique identify each line are the Site ID and Device ID. The combination of these IDs unique identifies each entrance. The Device Name on the Irisys form will become the default Device Name and Entrance Name in the Xenometric software.

2.2.2 Multiple Line Example

This example illustrates the use of 8 count lines on one Irisys counter. As before, it is possible that the view represents several counters covering a wide entrance. Only the master counter communicates with Xenometric's software, so it is this counter that is configured with the details of all count lines.
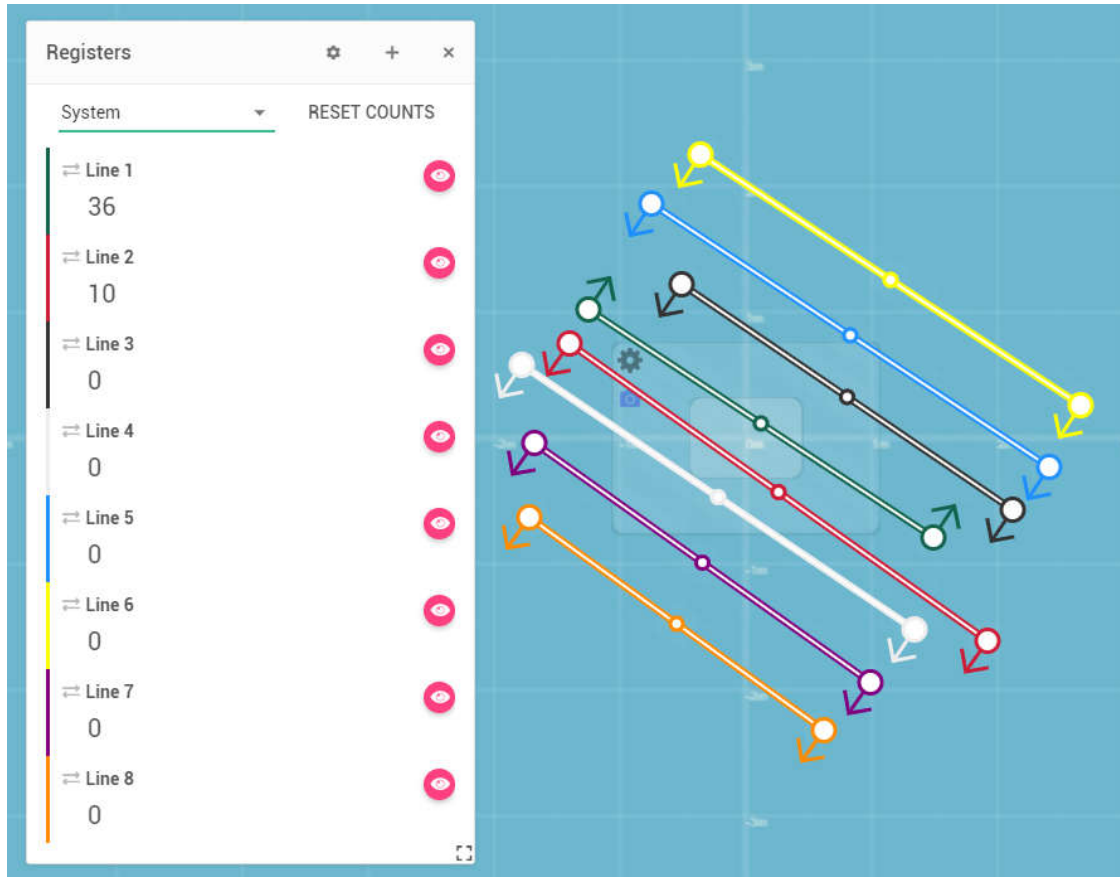
Each line must be given a code that allows the Xenometric software to uniquely identify the line and its counts.

The unique identifier per line is combination of the Site ID and part of the Device ID.

The Device ID string contains the individual code for each of the lines present. Each line's code is delimited by a colon **:**

For example, the following Device ID string represents 8 lines.

AAAX:ABAX:ACAX:ADAX:AEAX:AFAX:AGAX:AHAX

This can be decoded as

Line	Device ID code	Device ID	Zone ID
1	AAAX	AA	AX
2	ABAX	AB	AX
3	ACAX	AC	AX
4	ADAX	AD	AX
5	AEAX	AE	AX
6	AFAX	AF	AX
7	AGAX	AG	AX
8	AHAX	AH	AX

For each line created there must be a Device ID code applied. If lines are deleted the Device ID string must be amended to reflect the new order of the lines.

No two lines can be given the same Site ID and Device ID, as this is the unique code for each line in the Harvester, unless they are treated as a line pair (bi-directional device).

The 8 line example above will be resolved as 8 mono-directional devices in the Harvester. Each line will form its own device which will only have an IN or OUT count. Each device will be configured to represent pedestrians travelling from Zone X (outside) to Zone A.

It is possible to provide a Device ID string for 8 lines that represent 4 bi-directional devices in the Harvester. For example,

AAAX:AAXA:ABAX:ABXA:ACAX:ACXA:ADAB:ADXA

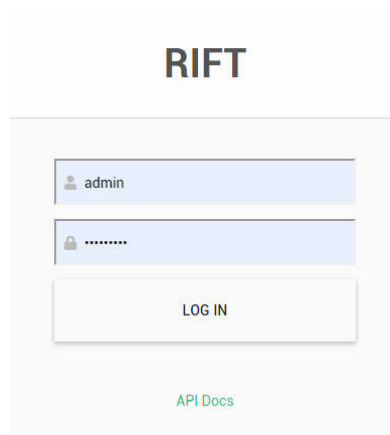This string can be split into four constituent devices.

The first two Device ID codes (for line 1 and line 2) are AAAX and AAXA. Since both of these codes share the same Device ID component (AA) they can be considered part of the same device. The Zone IDs are mirrored for these two lines, AX and XA. This indicates that Line 1 will provide the IN counts for device AA and Line 2 will provide the OUT counts for the same device.

The fourth pair (lines 7 and 8) has the codes ADAB and ADBA. These lines will form device AD. The 7th line's counts measure pedestrians from zone B to zone A and the 8th line's counts measure pedestrians from zone A to B. In this scenario the pedestrians moving from zone B to zone A (line 7) will be considered the IN counts and the OUT counts will come from line 8.

Line	Device ID code	Device ID	Zone ID
1	AAAX	AA	AX
2	AAXA		
3	ABAX	AB	AX
4	ABXA		
5	ACAX	AC	AX
6	ACXA		
7	ADAB	AD	AB
8	ADBA		

3 Site Details and Localisation
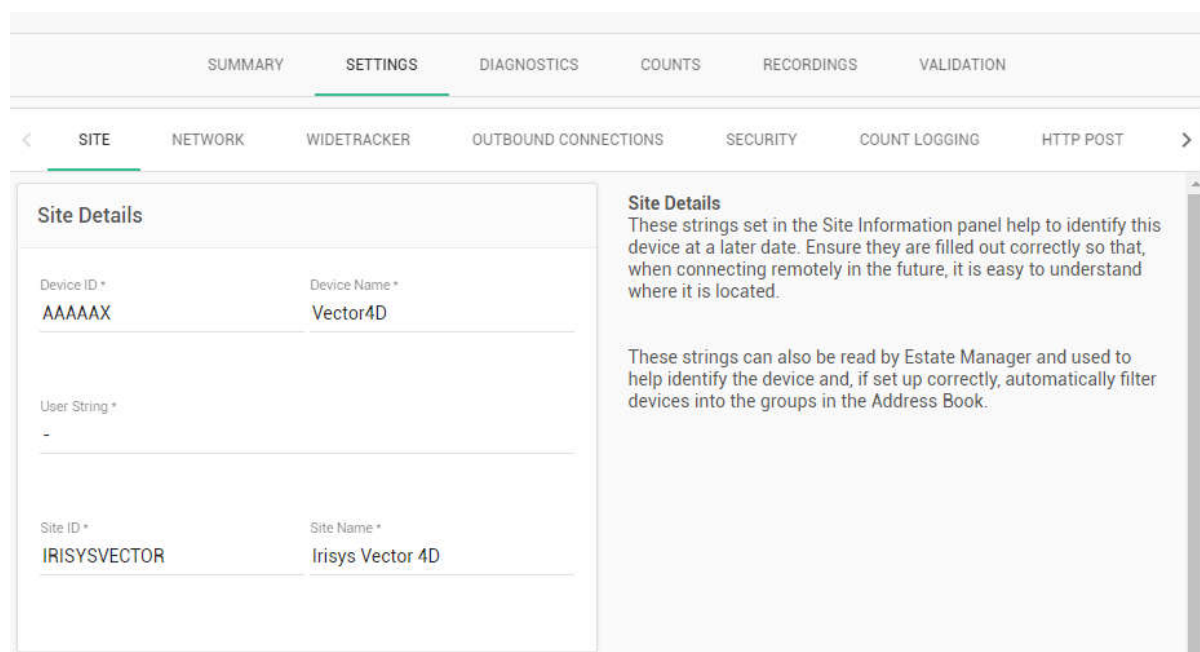
Login to the Irisys Vector 4D unit using a browser or the RIFT tool. The default login username is admin and the default password is installer.

3.1 Site Details

Navigate to the Settings page and then choose Site to view the Site Details.

Based on the rules defined in section 2 of this document, you can apply the Site ID and Device ID that you or Xenometric has chosen. The Site Name and Device Name fields can be completed with any text of your choosing. The Site Name would usually be the name of the building and the Device Name would be the name of the entrance into the building.

Remember to click the Save button after any changes have been applied.

3.2 Localisation

Localisation allows the counter to tell Xenometric which time zone it is located within.

Select the correct time zone from the dropdown. It is not necessary to tick the 'Automatically adjust for DST' checkbox, as the Xenometric software will apply any daylight-saving rules. It does not matter if the checkbox is ticked or unticked.

If the time on the counter is incorrect, you can click the Sync Time button to apply your computer's time to the counter.

Remember to click the Save button after any changes have been applied.

3.3 Summary

A summary of the Site Details and Localisation can be found on the Summary page of the counter.

4 Data Delivery

Data can be delivered to Xenometric's software using several different mechanisms. These are,

1. Collection on a private network using the REST API. This is a pull mechanism, where the Xenometric software initiates the connection to the counters. This mechanism works best when the counter is not behind a firewall, as the Xenometric software needs to initiate the conversation.

2. Delivery from a private network to the Internet using HTTP Post. This is useful to deliver data to Xenometric's Cloud or to send data to a server that is not on the same network as the counter. This is a push mechanism where the counter initiates a connection to the Xenometric software. This is how the communication can avoid being blocked by the firewall local to the counter.

3. Communication between Xenometric and Irisys' Estate Manager. If your Irisys counters deliver their data to an Estate Manager, it is possible for Xenometric to collect data for all your counters directly from Estate Manager. This is useful if you want to benefit from Xenometric's reporting and database.

If you are using the Xenometric Cloud, there are two options for data collection from Irisys Vector counters. The counter can be configured to deliver using HTTP Post or the Xenometric Cloud can collect your count data from the Irisys Estate Manager.

4.1 Private Network Data Collection (X-Pull)

This mechanism requires the Xenometric X-Server software to be running on the same network as the counter(s). It is possible for the server and counters to be on different networks, but this will require network rules to bypass an firewalls and NAT routers. The default port for all communication is 4505, but this can be changed in the counter's Network configuration page.
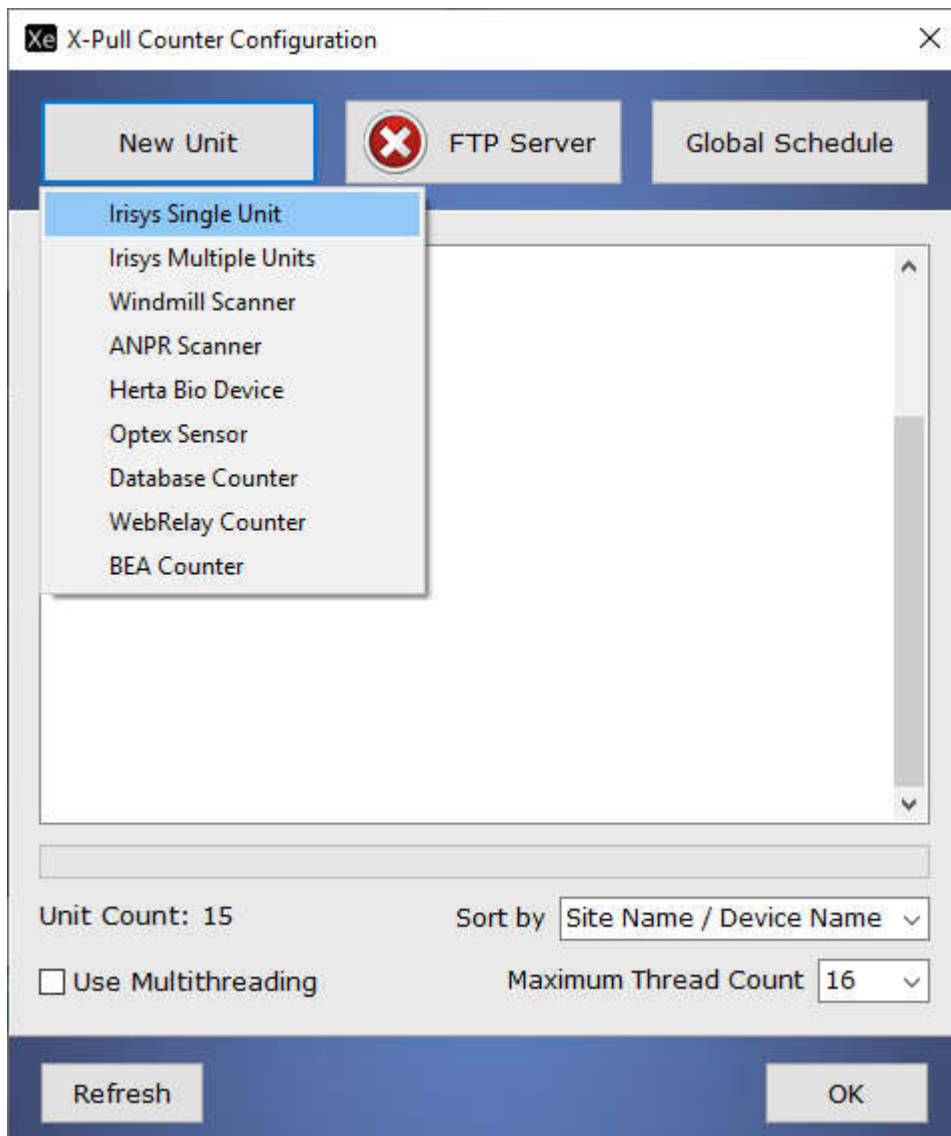
Before you configure the connection to a counter in the X-Control application, you will need the Irisys Vector 4D's Device Web API Key. This can be found on the counter's Security page.

SUMMARY	SETTINGS	DIAGNOSTICS	COUNTS

WIDETRACKER	OUTBOUND CONNECTIONS	SECURITY
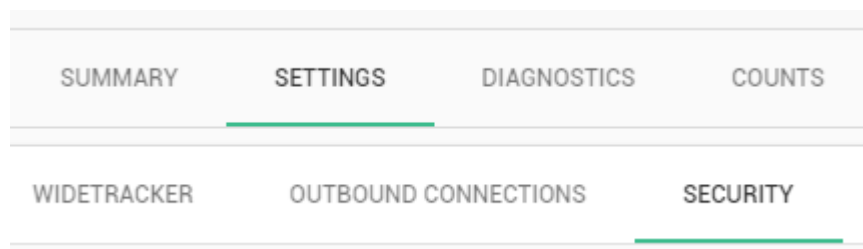
Copy the Device Web API Key, as you will need to paste this key into the X-Control. Once you have made a copy of the key, do not regenerate the key (ever) as this will invalidate the key that is used in the X-Server.
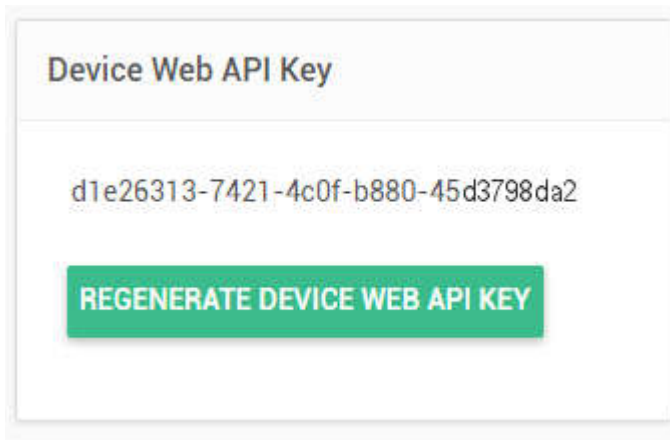
Launch the X-Control and then navigate to the X-Pull form. Click on the New Unit button and choose Irisys Single Unit.

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Choose Vector 4D (REST) from the choices at the top of the form. You can then provide the IP address of the counter, the port (default 4505) and the API Key that was copied from the counter earlier.

Click on the Retrieve Settings button and wait for the form to be filled.

Click OK to save the configuration.

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You should be able to view the new Vector in the list of counters to be collected by the X-Pull service.
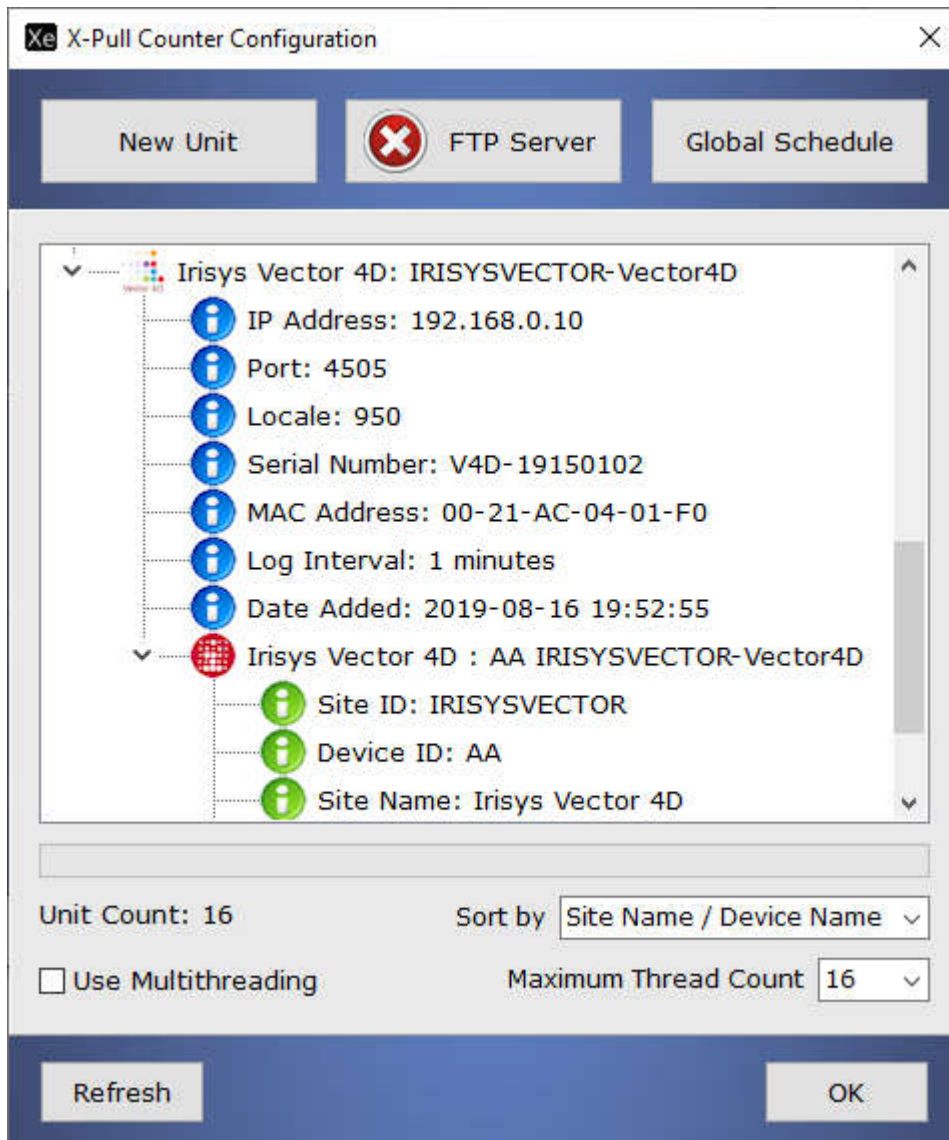
Once you have added all the counters, you will need to stop and then restart the X-Pull service. This can be done from the X-Control's main form.

4.2 Public Network HTTP Post

This mechanism requires the X-Server's X-Push service to listen on a specified port. All the Vector counters will connect to the server on this port and deliver their data.

To configure the X-Server, you will need to open the X-Push form in the X-Control.

On this form you will need to add a port to listen on. If you already have a port specified, then you can skip adding a new port.

Click on the Add button to launch the X-Push Listening IP form.

If you specify the IP address as 0.0.0.0, the X-Server will listen on all local IP addresses. This is recommended.

Choose a port that is not currently in use on the server, i.e. avoid low number ports.

Navigate to the Vector's HTTP Post page. This is on the settings menu.

If your Vector's HTTP Post page looks different to the one above, you may need a firmware upgrade from Irisys.

Click the Enable checkbox in the top-right corner and then apply the following settings.

URL   Choose an HTTP destination. This can be an IP address, host name or domain name.
             e.g. http://192.168.0.3:443 for deliver to a server with IP 192.168.0.3 on port 443.
             Alternatively, http://www.xenometric.com:6000 to connect to Xenometric's cloud
             server on port 6000.

Timeout   Set at 30 seconds

Max Attempts   Set as 3

Max History   Set as 10000

Max Logs Post Set as 100

Authentication Token   Leave blank

Authorization Token   Leave blank

Choose the following options from the Format checkboxes

Value, Log Period Value, Timestamp, Start Timestamp, MAC, IPV4 Address, Device Name, Device ID, Site Name, Site ID, Time Zone and Local Time.

Format (12)

☑ Value	☑ Log Period Value	☑ Timestamp	☑ Start Timestamp	☐ UUID
☐ Tags	☑ MAC	☐ Authentication	☐ Authorization	☑ IPV4 Address
☐ IPv6 Address	☑ Device Name	☑ Device ID	☑ Site Name	☑ Site ID
☑ Time Zone	☐ Enable DST	☐ User String	☐ Histograms	☐ Log Period Histograms
☑ Local Time				

Click on the Test Connection button.

Test Connection

If the test succeeds, you will see a message like this one.

HTTP Post Test (http://192.168.0.3:443)

Resolving address...

192.168.0.3 resolved successfully   Remember to click   **SAVE**

Connection on port 443 successful.

OK

If the test fails, you will see a message like this one. Check the local and remote firewallss.

HTTP Post Test (http://192.168.0.3:444)

Resolving address...

192.168.0.3 resolved successfully

Connect failed on port 444.

OK

4.3 Estate Manager Collection

This can be achieved from within the X-Server's X-Pull settings. The exact configuration will be dependent on the details provided by Irisys. Please contact Xenometric for more details on collecting your data from the instance of Estate Manager that you are licensed to use.