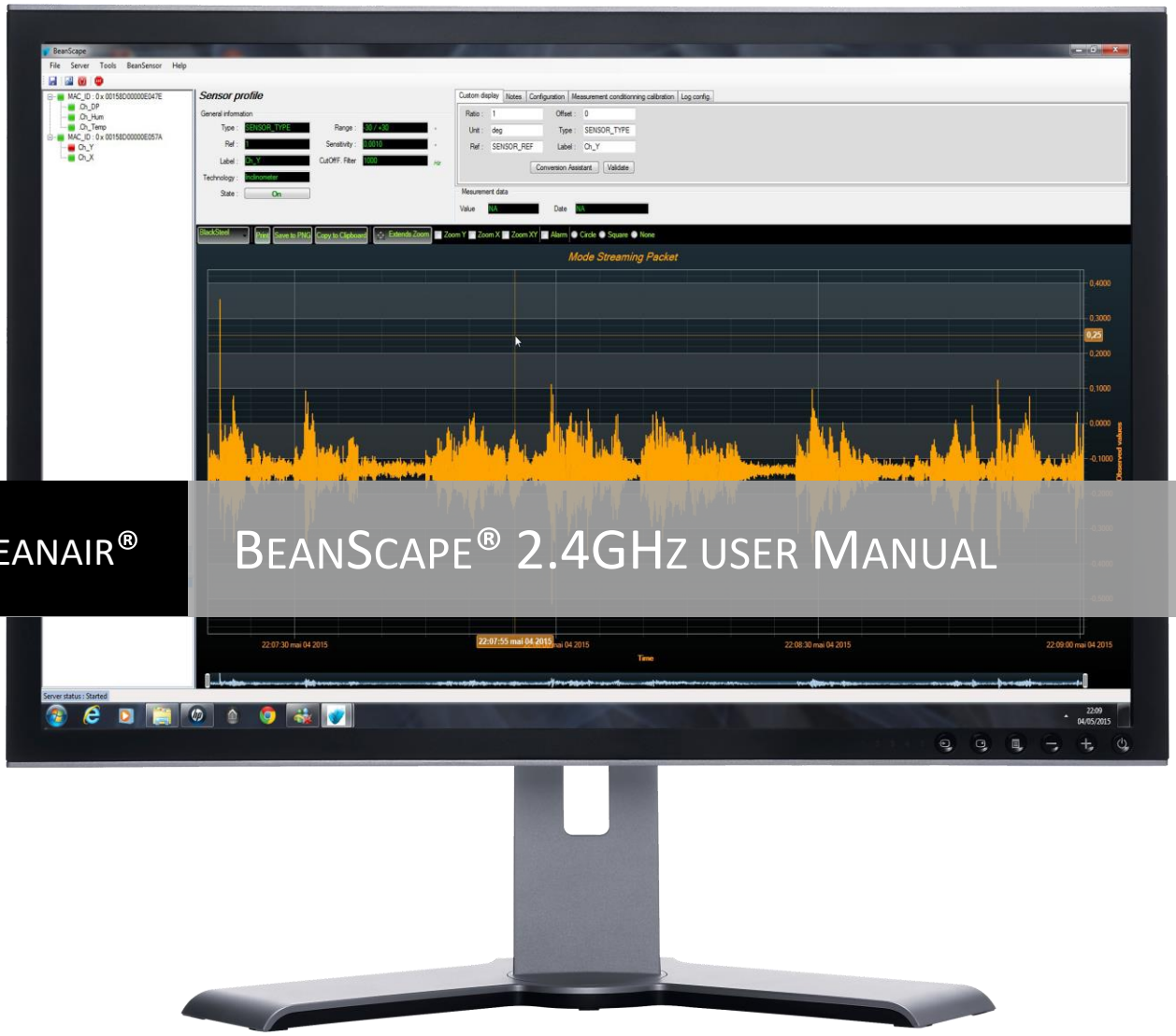
BeanScape®

Version 1.5



BEANAIR®

BEANSCAPE® 2.4GHZ USER MANUAL

BeanAir

Rethinking Sensing Technology

2.4 GHz

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Writer	Youssef Shahine	✓	
Reader	Mohamed-Yosri Jaouadi	✓	
Validation	Antje Jacob		✓

DIFFUSION			
Function	**Destination**	**For action**	**For info**
Reader n°1	Antje Jacob, Production Manager	✓	
Reader n°2	Mohamed-Yosri Jaouadi., Embedded software engineer	✓	

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1. TECHNICAL SUPPORT

For general contact, technical support, to report documentation errors and to order manuals, contact ***Beanair Technical Support Center*** (BTSC) at:

tech-support@Beanair.com

For detailed information about where you can buy the Beanair equipment/software or for recommendations on accessories and components visit:

www.Beanair.com

To register for product news and announcements or for product questions contact Beanair's Technical Support Center (BTSC).

Our aim is to make this user manual as helpful as possible. Keep us informed of your comments and suggestions for improvements.
Beanair appreciates feedback from the users of our information.

2. VISUAL SYMBOLS DEFINITION

Symbols	*Definition*
	***Caution or Warning** – Alerts the user with important information about Beanair wireless sensor networks (WSN), if this information is not followed, the equipment /software may fail or malfunction.*
	***Danger** – This information MUST be followed if not you may damage the equipment permanently or bodily injury may occur.*
	***Tip or Information** – Provides advice and suggestions that may be useful when installing Beanair Wireless Sensor Networks.*

3. ACRONYMS AND ABBREVIATIONS

AES	Advanced Encryption Standard
CCA	Clear Channel Assessment
CSMA/CA	Carrier Sense Multiple Access/Collision Avoidance
GTS	Guaranteed Time-Slot
kSps	Kilo samples per second
LLC	Logical Link Control
LQI	Link quality indicator
LDCDA	Low duty cycle data acquisition
MAC	Media Access Control
PAN	Personal Area Network
PER	Packet error rate
RF	Radio Frequency
SD	Secure Digital
WSN	Wireless sensor Network

4. RELATED DOCUMENTS & VIDEOS

In addition to this User manual, please consult the related application notes, technical notes and videos:

4.1 APPLICATIONS NOTES

Document name (Click on the weblink)	Related product	Description
AN_RF_007- "Beanair_WSN_Deployment"	All BeanAir products	Wireless sensor networks deployment guidelines
AN_RF_006 - "How to extend your wireless range "	All BeanAir products	A guideline very useful for extending your wireless range
AN_RF_005 - BeanGateway ® & Data Terminal Equipment Interface	BeanGateway ®	DTE interface Architecture on the BeanGateway ®
AN_RF_003 - "IEEE 802.15.4 2.4 GHz Vs 868 MHz"	All BeanAir products	Comparison between 868 MHz frequency band and a 2.4 GHz frequency band.
AN_RF_002 – "Structural Health monitoring on bridges"	All BeanAir products	The aim of this document is to overview Beanair® products suited for bridge monitoring, their deployment, as well as their capacity and limits by overviewing various Data acquisition modes available on each BeanDevice®.

4.2 TECHNICAL NOTES

Document name (Click on the weblink)	Related product	Description
TN_RF_013 – « OPC configuration »	BeanScape® Premium+	The aim of this document is to help deploying the OPC DA and all associated services.
TN_RF_012– « BeanDevice® battery life in streaming mode »	All the products	The aim of this document is to describe the autonomy performance of the BeanDevice® SmartSensor® and ProcessSensor® product line in streaming and streaming mode.
TN_RF_011 – « Coexistence of Beanair WSN at 2.4GHz »	All the products	This document aims to highlight the issues affecting co-existence of Beanair WSN (IEEE 802.15.4) in the presence of interference.
TN_RF_010 – « BeanDevice® Power Management »	All the BeanDevice®	This technical note describes the sleeping & active power mode on the BeanDevice®.
TN_RF_009 – « BeanGateway ® management on LAN infrastructure »	BeanGateway ®	BeanGateway ® integration on a LAN infrastructure
TN_RF_008 – "Data acquisition modes available on the BeanDevice®"	All the BeanDevice®	Data acquisition modes available on the BeanDevice®
TN_RF_007 – "BeanDevice® DataLogger User Guide"	All the BeanDevice®	This document presents the DataLogger feature on the BeanDevice®
TN_RF_006 – "WSN Association process"	All the BeanDevice®	Description of the BeanDevice® network association
RF_TN_003- "Aggregation capacity of wireless sensor networks"	All the products	Network capacity characterization of Beanair Wireless Sensor Networks
RF_TN_002 V1.0 - Current consumption in active & sleeping mode	BeanDevice®	Current consumption estimation of the BeanDevice in active and sleeping mode
RF_TN_001 V1.1- Wireless range benchmarking	BeanDevice®	Wireless range benchmarking of the BeanDevice®

4.3 RELATED VIDEOS

All the videos are available on our YouTube channel

BeanAir video link (YouTube)	Related products
Company Presentation	All
BeanGateway ® - Ethernet Outdoor version introduction	BeanGateway ® - Ethernet Outdoor version introduction
BeanGateway ® – Ethernet Indoor version presentation	BeanGateway ® Ethernet Indoor version
BeanDevice® AN-XX wireless range demonstration	BeanDevice® AN-XX & BeanDevice® AN-XX Extender
BeanDevice® AN-XX presentation	BeanDevice® AN-XX & BeanDevice® AN-XX Extender
BeanDevice® AX-3D presentation	BeanDevice® AX-3D
BeanDevice® HI-INC presentation	BeanDevice® HI-INC
BeanDevice® AX-3DS presentation	BeanDevice® AX-3DS
BeanScape® – WSN supervision software	BeanScape®
BeanGateway ® Ethernet/LAN Configuration, directly connected to the Laptop/PC	BeanGateway ®
Wireless sensors profile deletion from the BeanGateway ® Database	All

5. SYSTEM OVERVIEW

Figure 1: Overview of BeanScape® software

BeanScape® software is suitable for monitoring and configuring BeanAir wireless sensor networks. It is designed to provide a high level of flexibility and efficiency.

BeanScape® provides the following features:

- ✓ ***Monitoring wireless sensor networks.***
- ✓ ***Displaying configured alarms of different wireless networks.***
- ✓ ***Sensors calibration and configuration***
- ✓ ***OTAC (Over-the-air-configuration)***
- ✓ ***Data and diagnosis analysis through curves and statistics***
- ✓ ***Ability to store measurements and diagnostic information in a database as a LOG file***
- ✓ ***Tools for optimizing the installation of wireless sensor networks***

5.1 DIFFERENT VERSIONS OF BEANSCAPE 2.4 GHZ SOFTWARE

The BeanScape® is a powerful software tool with client/server architecture. This implies that the network sensor communicates with the BeanScape® through a wireless coordinator called BeanGateway®. The BeanScape® acts as the server and the BeanGateway® acts as the client.

Beanair ® network is comprised of a network coordinator (BeanGateway ®) and wireless sensors (BeanDevice®).

Features	BeanScape 2.4GHz MANAGER	BeanScape 2.4GHz BASIC	BeanScape 2.4GHz PREMIUM	BeanScape 2.4GHz PREMIUM+	BeanScape 2.4GHz Multiview
Number of managed BeanDevice® 2.4GHz	35	35	Unlimited	Unlimited	Unlimited
Period technical assistance (e-mail)	1 month	1 year	1 year	1 year	1 year
OPC Server DA	No	No	No	Yes	Yes
Free of cost ?	Yes	No	No	No	No
Real time data base	Yes	Yes	Yes	Yes	Yes
GUI (Graphical User Interface)	No	Yes	Yes	Yes	Yes
Alarm notification by email	No	Yes	Yes	Yes	Yes
Streaming with Event-Trigger (S.E.T.) mode	No	Yes	Yes	Yes	Yes
NTP client	No	Yes	Yes	Yes	Yes
Real-Time FFT, Real-Time Velocity	No	No	Yes	Yes	Yes
Automatic Reports (Waveform , FFT, PPV, Velocity)	No	Only Waveform report	Yes	Yes	Yes
Multi-user access	No	No	No	No	Yes

Figure 2 : the different versions of BeanScape® software

BeanScape® manager is not provided with a real-time graph display.

See “Overview of our BeanScape Basic” YouTube video

5.2 ABOUT SYNCHRONOUS MULTICASTING

Synchronous multicasting is only available on the following BeanDevice®:

- **BeanDevice® AX-3D**
- **BeanDevice® AX-3D Xrange**
- **BeanDevice® INC (not available on the Xtend version)**
- **BeanDevice® HI-INC (not available on the Xtend version)**
- **BeanDevice® HI-INC Xrange (not available on the Xtend version)**
- **BeanDevice® AN-V/AN-mV/AN-420**

For more information about Synchronous Multicasting, please read the Data acquisition mode available on the BeanDevice® technical note

6. HOW THE BEANSCAPE® LICENCE IS WORKING?

The BeanScape® license is related to the BeanGateway® device, i.e. user can install the BeanScape® on different PC and asynchronously connect it to the same BeanGateway®.

If a new BeanGateway® is acquired, there will be two applications cases:

- The BeanGateway® works independently; a new BeanScape® Basic should be acquired.
- The BeanGateway® is connected to the same PC (multi-WSN management), BeanScape® Premium/Premium+/Multiview should be considered.

7. HARDWARE & SOFTWARE COMPATIBILITY

7.1 COMPATIBLE OPERATING SYSTEMS

Operating Systems	*Compatibility*	*Tested/Certified*
Windows XP	*Yes*	*Yes*
Windows Vista	*Yes*	*Yes*
Windows 7 (32-bit)	*Yes*	*Yes*
Windows 7 (64-bit)	*Yes*	*Yes*
Windows 8 (32-bit/64-bit)	*Yes*	*Yes*
Windows 8.1 (32-bit/64-bit)	*Yes*	*Yes*

The BeanScape® is compatible with many operating systems:

Table 1: Compatible operating systems

The BeanScape software license is linked to the BeanGateway. Therefore, it can be installed on a different PC/Laptop.

7.2 RECOMMENDED MINIMUM CONFIGURATION

Operating Systems	*BeanScape® Manager (Streaming mode not enabled)*	*BeanScape® Basic (Streaming mode not enabled)*	*BeanScape® Basic (Streaming mode enabled)*	*BeanScape® Premium+*	*BeanScape® Premium*
CPU	*2.33GHz or faster x86-compatible processor*				
RAM memory	*1 GB*	*2 GB*	*4 GB*		
Disk Space	*5 GB*	*5 GB*	*10 GB*		
Graphic card	*128 MB*	*128 MB*	*1 GB*		

Table 2: Recommended minimum configuration

8. INSTALLING/UNINSTALLING YOUR BEANSCAPE® SOFTWARE

Installing the BeanScape® software is very easy:

- ✓ Double click on "setup.exe" file (shown below) to launch BeanScape®
- ✓ Follow the different stages of installation
- ✓ When installing the software, a location for the log files is requested. These files are used to store all the data coming from the Wireless Sensor Network (information about the Network diagnostic, data acquisition of different wireless sensors, network acknowledgment etc.).
- ✓ Click Finish to complete the installation of **BeanScape®**.
- ✓ The installation is now complete; the **BeanScape®** shortcut icon is now available on your desktop.
- ✓ BeanScape requires administrator privilege level, to allow this once and for all:
  - Right click on your BeanScape icon and select properties
  - Go to Compatibility tab
  - Check on **Run this program as an administrator** and click **Apply**

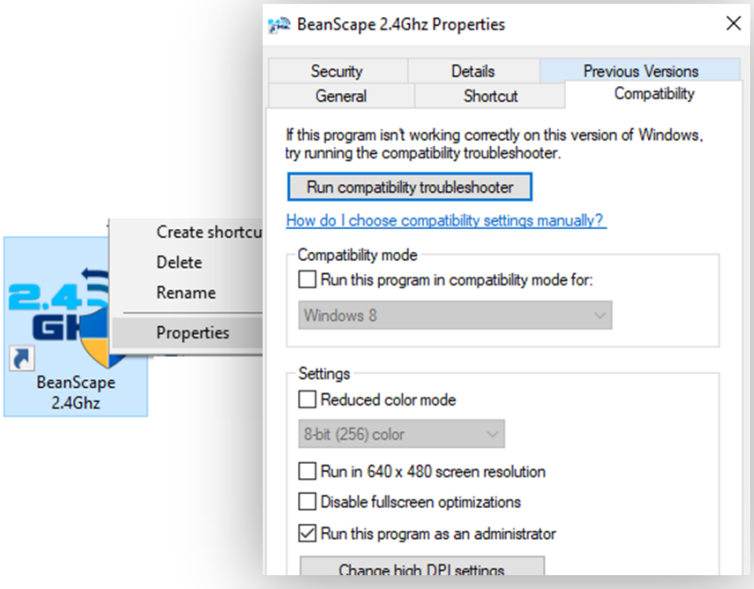


Figure 3: Run BeanScape as an Administrator

To uninstall BeanScape®, go to settings then select the menu **Apps.** A list of installed applications will be displayed, go to BeanScape and select uninstall.

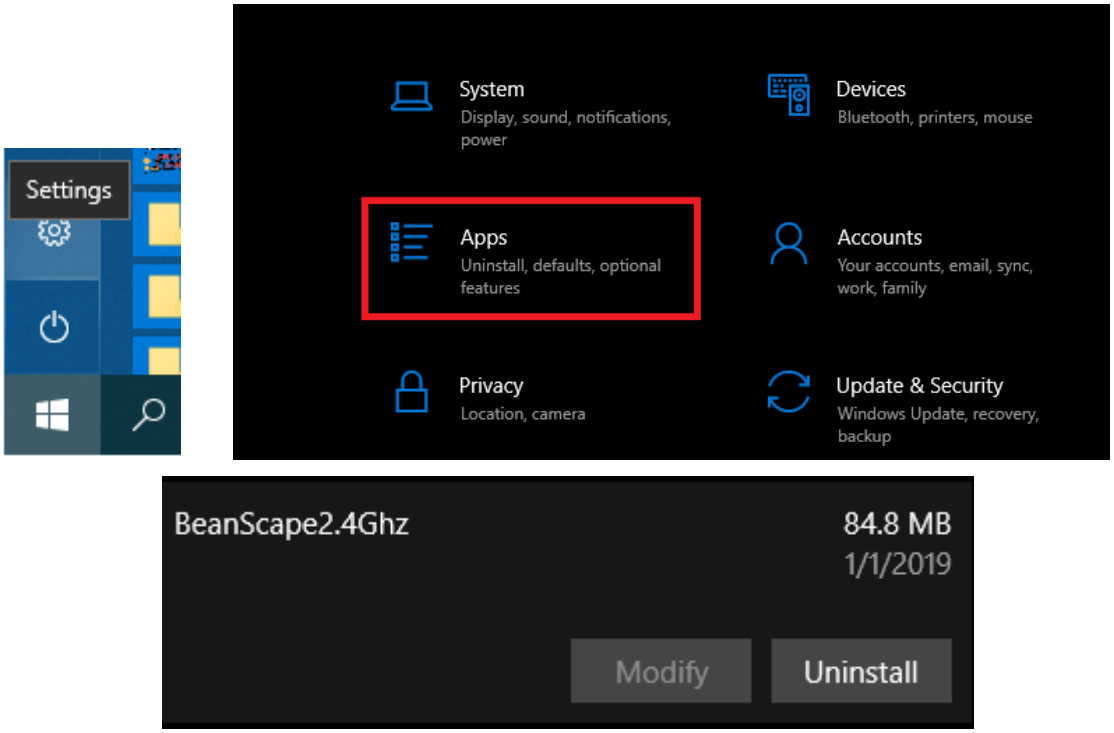


Figure 4: Uninstall BeanScape

9. START YOUR APPLICATION

For further information on LAN Network configuration:

- *Read the following technical note: TN_RF_009 – « BeanGateway® management on LAN infrastructure »*

Related video: BeanGateway® Ethernet/LAN Configuration, directly connected to the Laptop/PC

9.1 ETHERNET CABLE CONNECTION

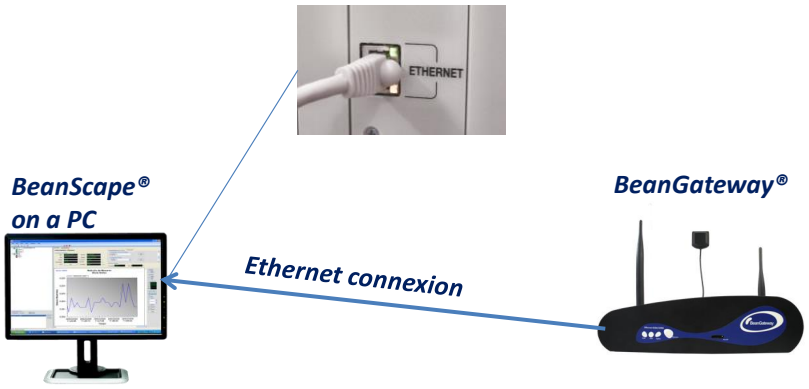


Figure 5: Typical LAN connection

To view the entire wireless sensor network from your ***BeanScape®***, you must firstly connect your ***BeanGateway®*** to a PC where the ***BeanScape®*** is installed. Connection is established through an Ethernet cable.

- ✓ Make sure the Ethernet cable is connected to both your PC and ***BeanGateway®***
- ✓ Make sure your ***BeanGateway®*** is powered and in "ON" position.
- ✓ Make sure that your ***BeanScape®*** is installed on your PC

9.2 CONFIGURING LAN SETTINGS ON YOUR PC/LAPTOP

To configure the network on your computer/workstation (Windows 10):

1. Click on Settings

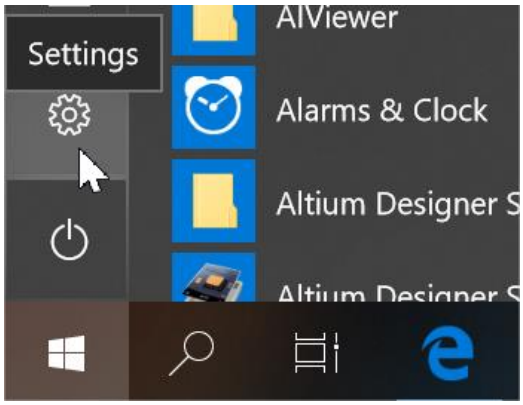


Figure 6: Windows 10 settings

2. Windows Settings will appear:

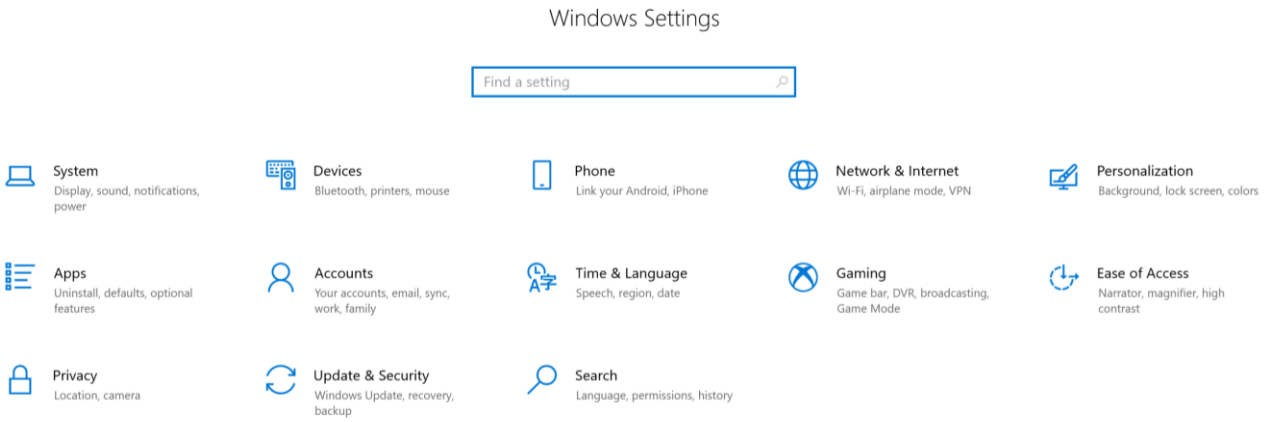


Figure 7: Windows 10 control panel

3. Click on **Network and Internet** then **Change adapter options**

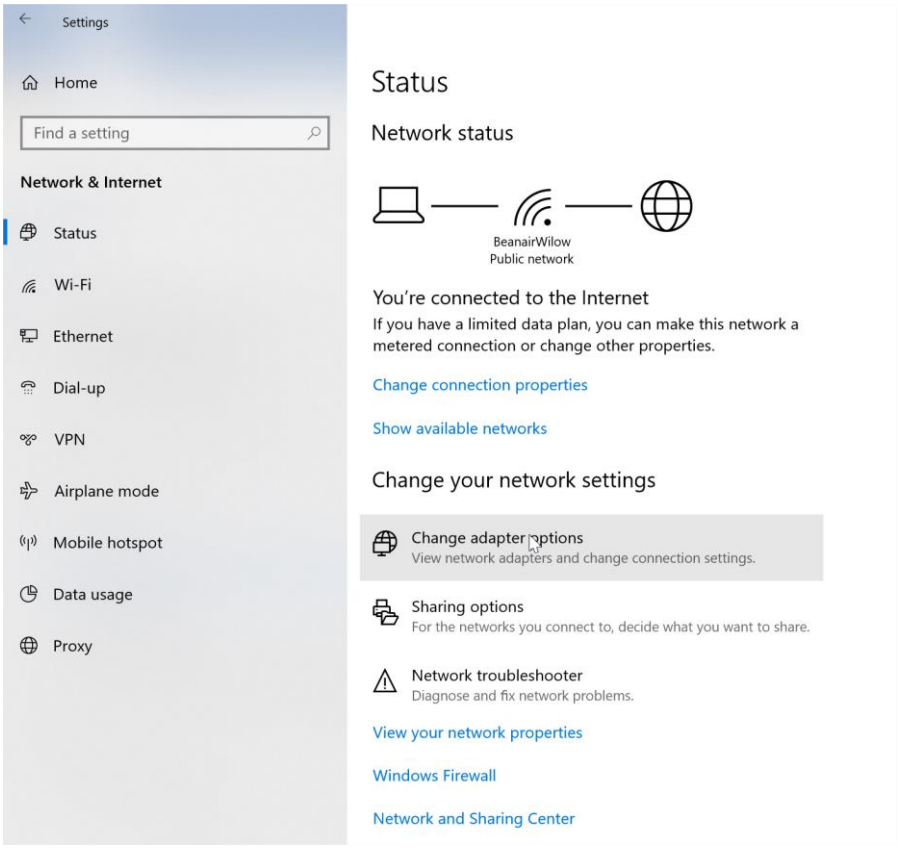


Figure 8: Network status window

4. Select the **Ethernet socket** connected to your **BeanGateway®**

Figure 9: Ethernet adapter

5. Right-click then select **Properties**:

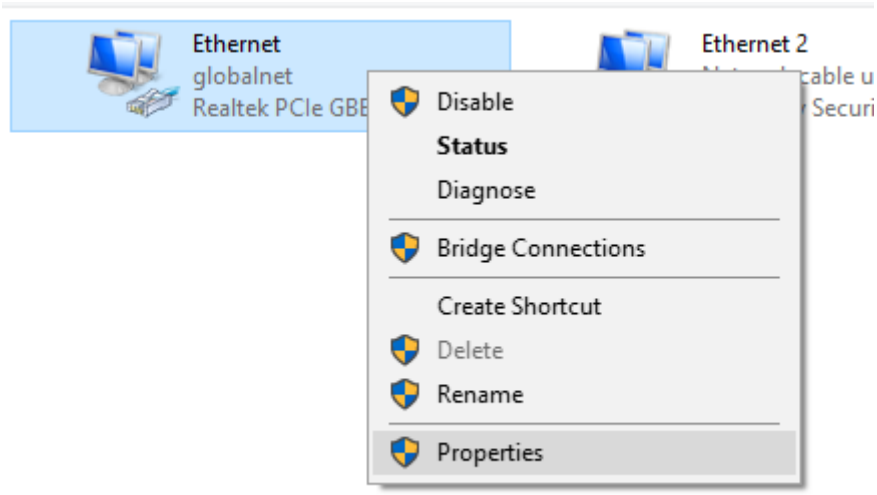


Figure 10: Ethernet adapter options

6. Ethernet Properties Window will open, select **"Internet Protocol Version 4 (TCPv4)"** then click OK

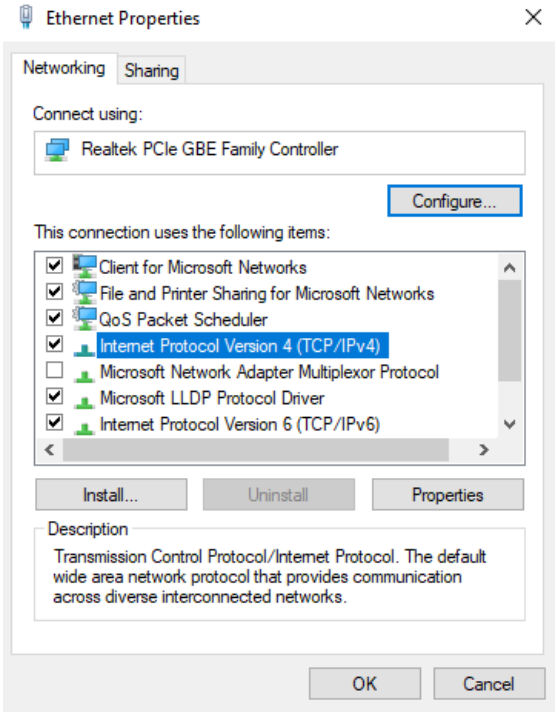


Figure 11: Ethernet IP Proprieties

7. **If your DHCP is enabled** (BeanGateway® is connected to an Ethernet Router), make sure that the option **Obtain an IP address automatically** is selected

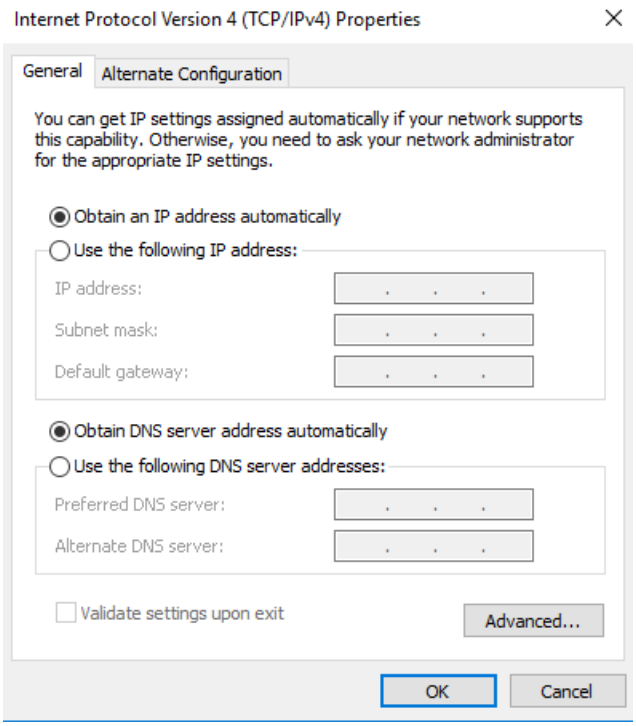


Figure 12: IP settings window

8. If the DHCP option is not enabled, you should enter a static IP **192.168.4.2** on your PC with a subnet mask: **255.255.255.0** Click "OK" to confirm and safeguard your work.

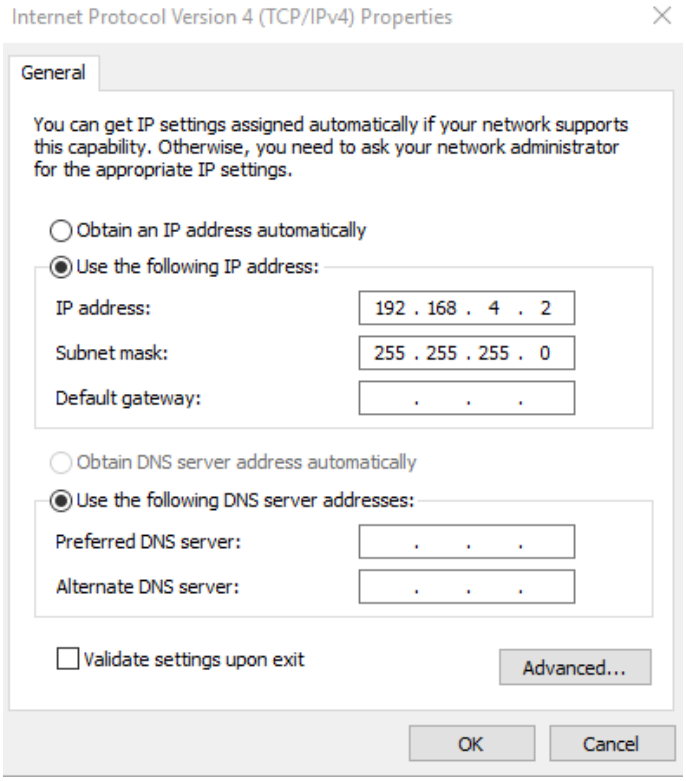


Figure 13: IP settings

Your computer is now connected to your wireless sensor networks. In order, facilitate these exchanges you must give commands from BeanScape®.

To have an overview on IP address and the network status of your computer, click on the computer icon on the bottom of the windows taskbar

On the displayed menu select the profile of your ethernet connection then select again the ethernet profile on the new window that will be opened to show your network information.

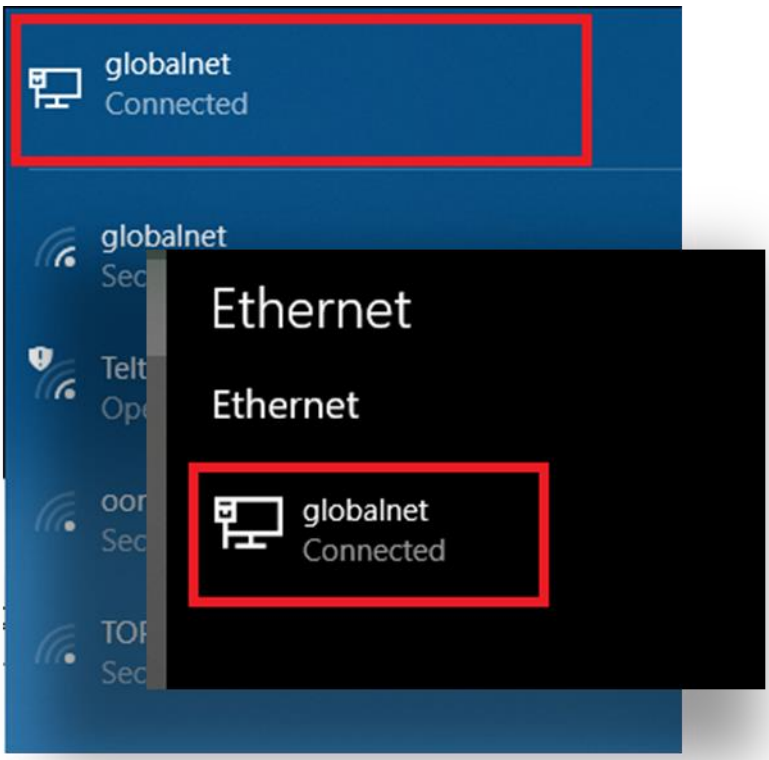


Figure 14: LAN connection icons

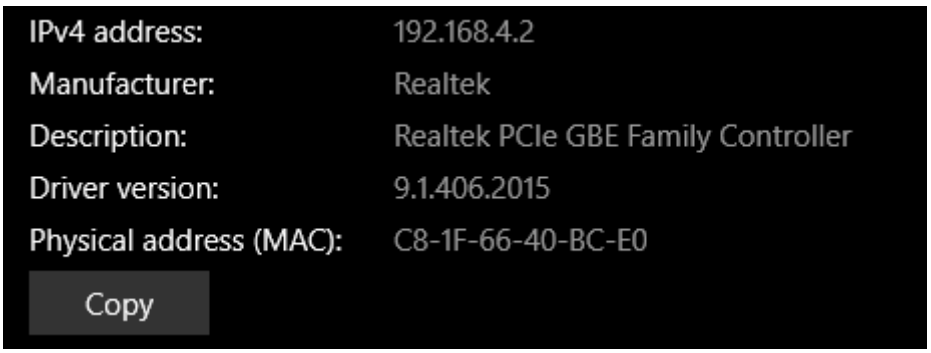


Figure 15: LAN information

By default, the BeanGateway® IP address is set at 192.168.4.123 with the DHCP disabled. The BeanGateway is considered as a client by the BeanScape ® (server) having the IP address by default set to 192.168.4.2.

9.3 FIREWALL COMPATIBILITY

Some firewalls will not permit applications such as BeanScape® (or any applications you have not specifically allowed) to access your BeanGateway®. Generally, the first time the BeanScape® or another application tries to access the BeanGateway®, you will be asked if you would like to allow that application access. If you accidentally clicked **No** on that message (or if your firewall never asked for permission to allow the BeanScape® access), you will not be able to use the BeanScape® until you configure your firewall to allow BeanScape® to access your BeanGateway®.

With most firewalls, this is easy to do. Keep in mind that all firewalls are a bit different, but the process is usually as follows:

1. Make sure that your BeanScape® is not running;
2. Open your firewall. If you cannot find your firewall application, check the System Tray (at the bottom-right corner of the screen) for an icon. Usually, you can right-click this icon and select to open the firewall;
3. Your firewall maintains a list of applications installed on your computer (usually under a heading like Settings or Program Control). In this list, locate the entry for BeanScape®;
4. Configure the BeanScape® entry to allow it to connect to the BeanGateway®;
5. Save your modifications;
6. Restart the BeanScape® software

If you are not familiar to configure a firewall exception, you can directly from BeanScape® add this rule automatically.

On the BeanScape® menu select Tools, then Advanced Settings then click on validate to add BeanScape® to the Firewall.

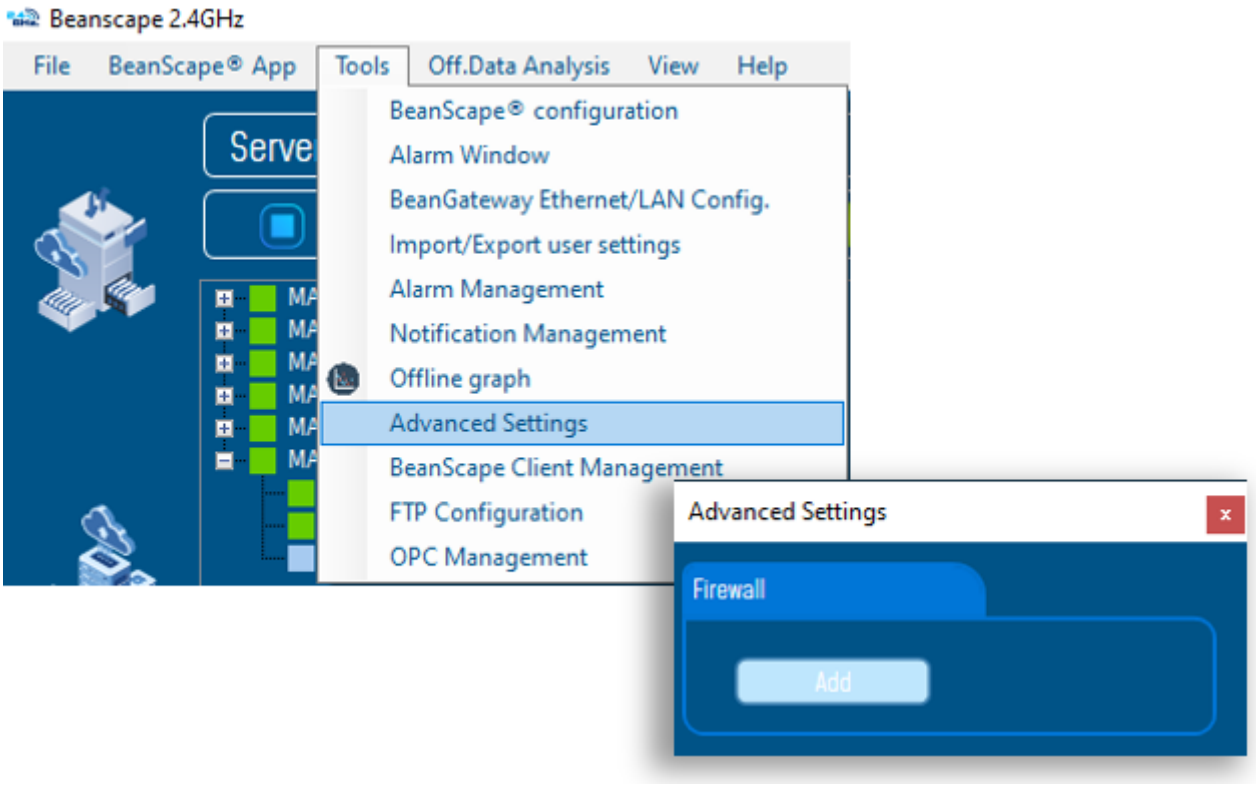


Figure 16: Firewall auto exception

9.4 START THE BEANSCAPE®

To start BeanScape®, please follow the instructions:

- Start BeanScape ®by double-clicking the icon

- You get the following screen:

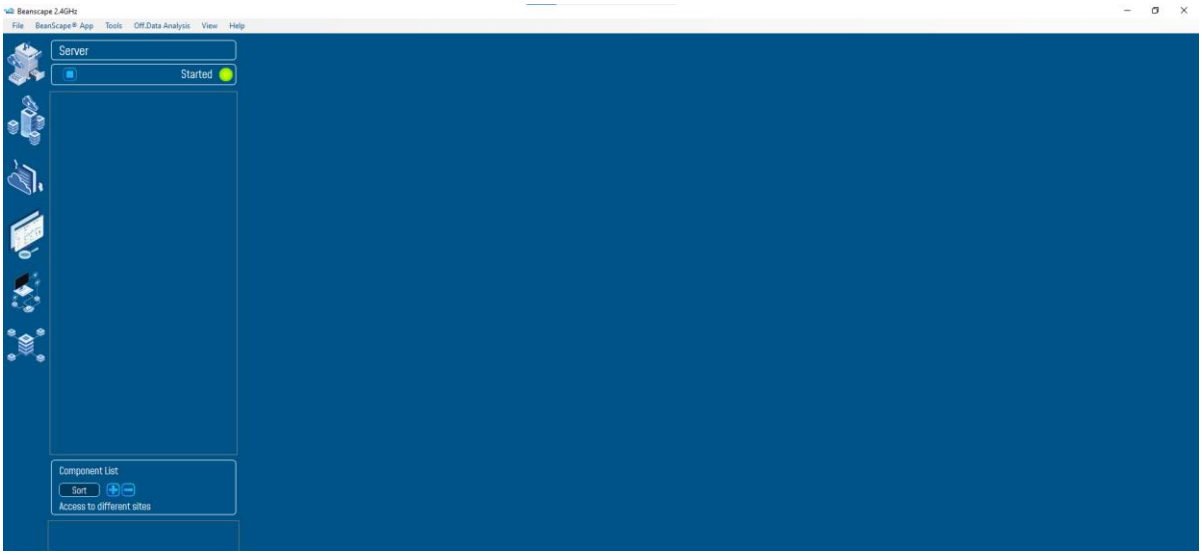


Figure 17: BeanScape main window

- To start the server, select Server menu on the menu bar then choose **Start the server** or click directly on the Start button

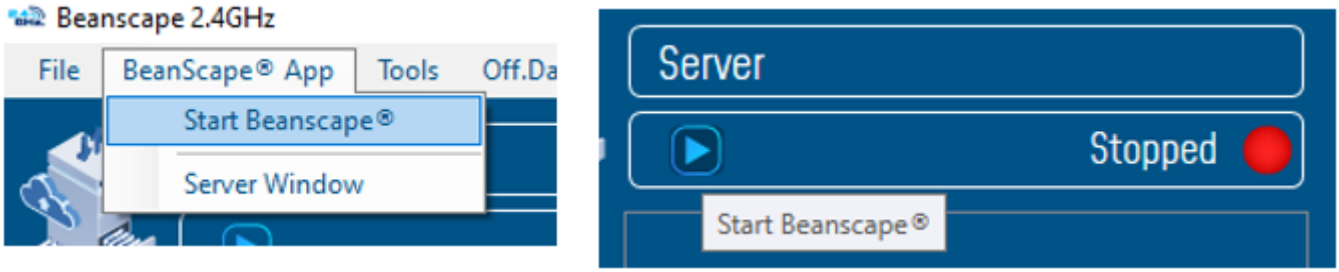


Figure 18: Start server menu

The BeanScape® server starts and creates the BeanDevice® mapping based.

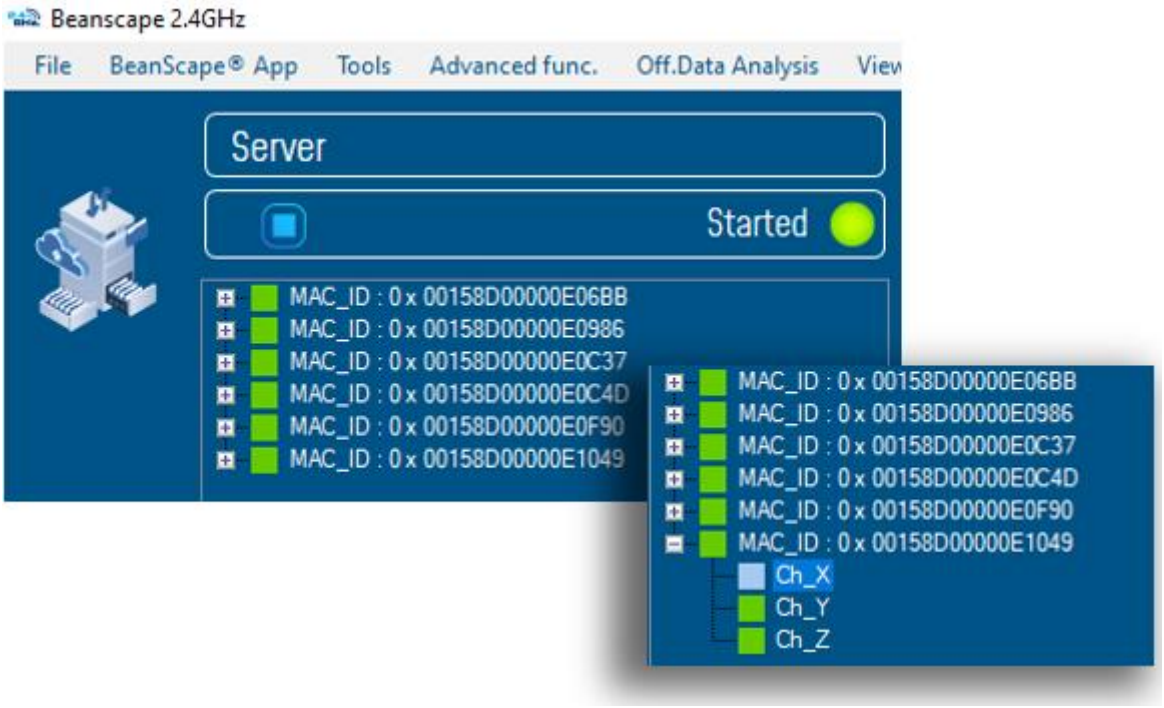
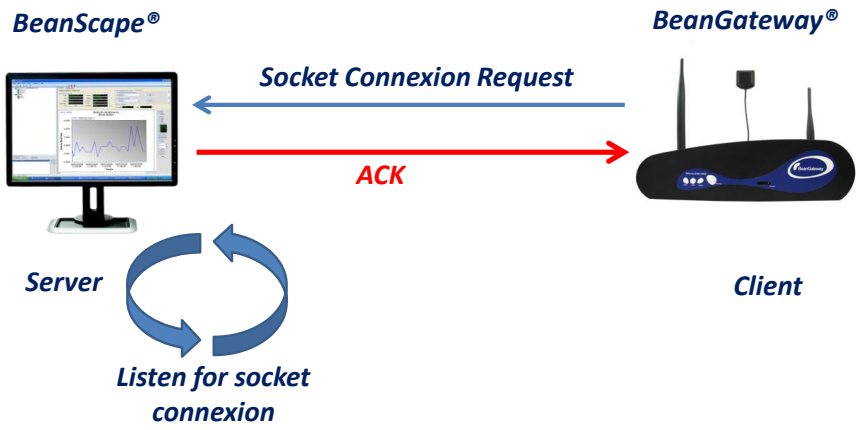


Figure 19: BeanDevices® profiles

9.5 HOW THE CONNECTION IS ESTABLISHED BETWEEN THE BEANGATEWAY® AND THE BEANSCAPE® ?

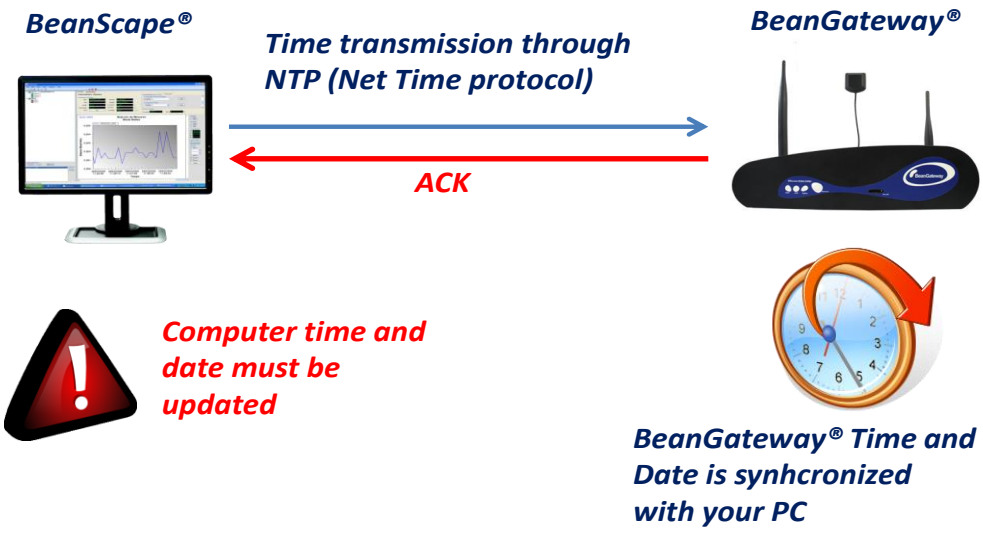
Step 1: Socket connexion

- When the BeanScape® is launched , as a server it starts with listening for a socket connexion
- When you power up the BeanGateway®, a request for socket connexion is established between the Beanscape® and the BeanGaterway®
- If this request is accepted by the BeanScape®, an ACK is transmitted to the BeanGateway®



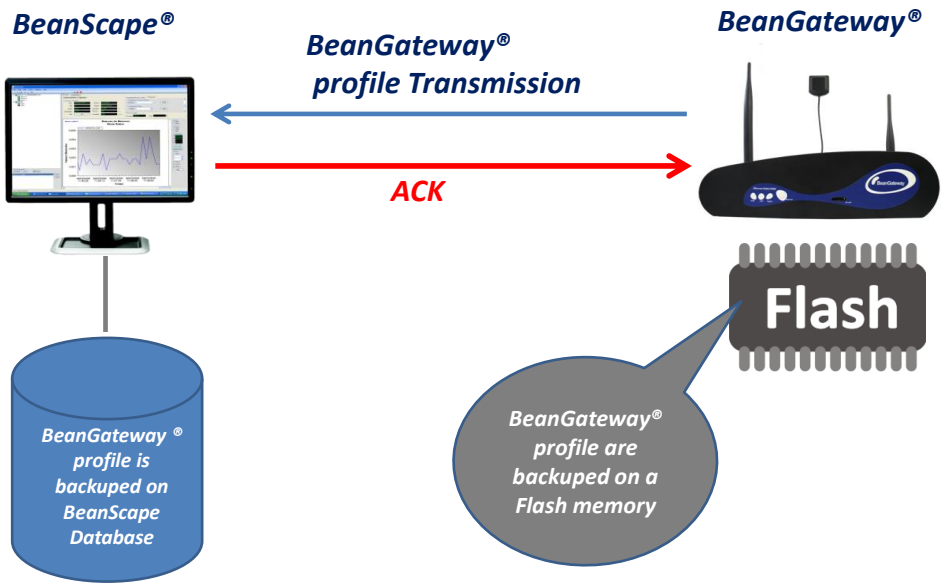
Step 2: Time & Date update

- Date transmission by NTP (Net-Time Protocole)
- Time & Date are updated on the BeanGateway instantly
- The BeanGateway integrates a Real-Time-Clock directly powered by th internal battery which allows to maintain the Time and Date if the BeanGateway® is power donw



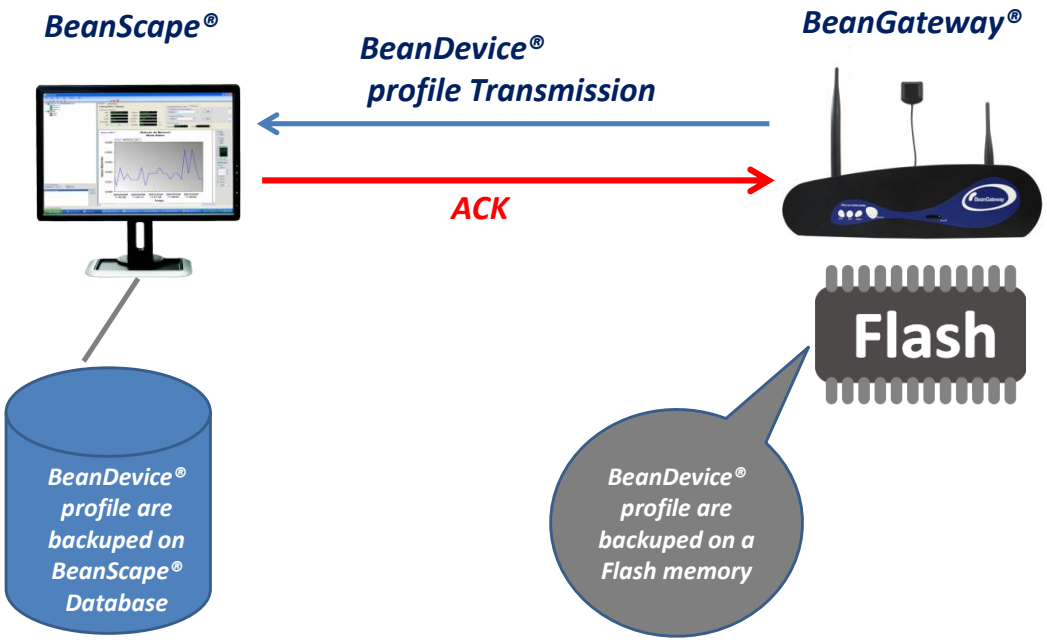
Step 3: BeanGateway® Profile Transmission

- The ***BeanGateway®*** profile is retained on its flash memory. This profile contains are the informations about the BeanGateway® ID (NWK Add, PAN ID, MAC ID, IP...) , versions ID (Hardware, embedded software, stack...), Radio Management parameters (Radio channel, TX Power, ...)
- The ***BeanGateway®*** profile is transmitted to the BeanScape®



Step 4: WSN Mapping transmission

- The WSN mapping concerns all the Beandevice® profile. The WSN mapping is backuped on the BeanGateway® flash memory. When a new BeanDevice® joins a WSN, its profile is transmitted to the BeanGateway® and the BeanScape®.
- The BeanScape® displays the WSN Mapping with the BeanDevice® profile;
- WSN Mapping is backuped on the BeanScape® Database.



The WSN Time & Date is synchronized with your PC. The User must make sure that the Time & Date on his computer is updated.

9.6 CONFIGURING THE LAN ON YOUR BEANGATEWAY®

Click on the following weblink to see the video: BeanGateway® Ethernet/LAN Configuration, directly connected to the Laptop/PC

Please check your Network settings before you make any changes.

By default, the BeanGateway® is configured with a static IP address: **192.168.4.123**. This allows the user to quickly connect the BeanGateway® to a PC.

If you want to set the BeanGateway® IP on your business network and get a dynamic IP address (via DHCP), you can configure the BeanGateway® via a serial port or via the Ethernet.

Go on your BeanGateway® profile and click on **Tools | BeanGateway Ethernet/LAN Config.**

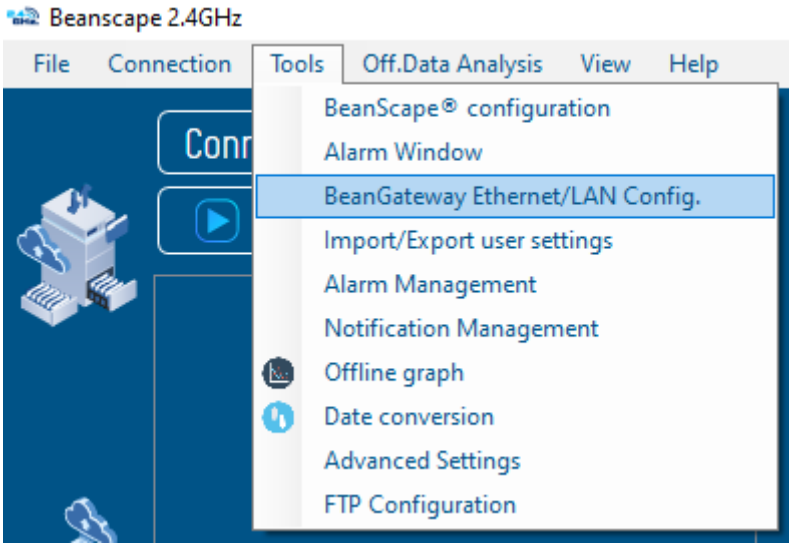


Figure 20: BeanGateway configuration menu

A new window will open called “BeanGateway® configuration”

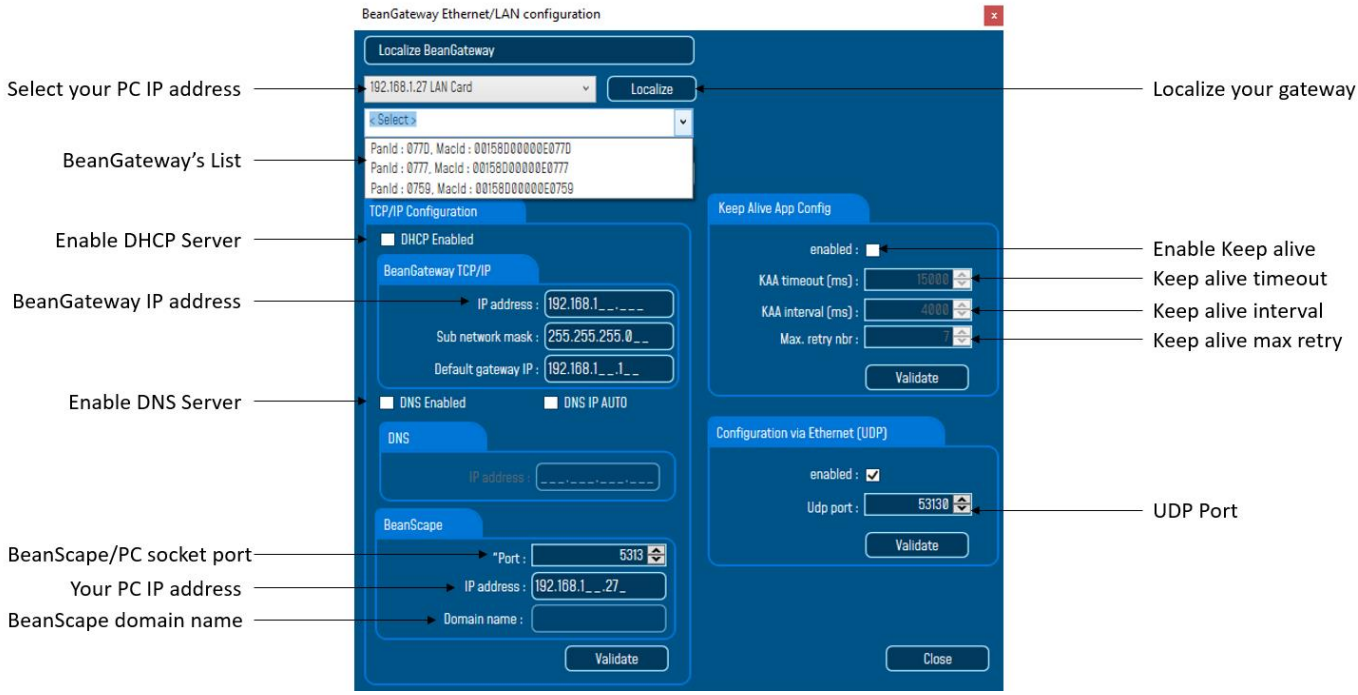


Figure 21: BeanGateway configuration window on BeanScape

- ✓ ***DHCP Enabled***: Check this case if you want to enable the DHCP. For further information about DHCP read the ***Technical Note "BeanGateway® management on your Local Area Network infrastructure".***
- ✓ ***If DHCP is not activated, the user must configure the BeanGateway® IP parameters:***
  - ***IP Address:*** BeanGateway IP Address. The BeanGateway® IP address should have the following form: "X.Y.Z.B". With A, B, X, Y and Z numbers between 0 and 255
  - ***Subnet Network mask:*** The subnet mask is set to "255.255.255.0" by default
  - ***Gateway IP Address:*** Subnet network mask
- ✓ ***DNS Enabled***: Check this case if you want to enable the DNS. For further information about DNS read the ***Technical Note "BeanGateway® management on your Local Area Network infrastructure".***
- ✓ The gateway IP address subnet is the default "X.Y.Z.1"
- ✓ ***Port***: By default, the communication port used is «5313". This port is generally free, if not choose another Socket Port.

For further information, please read the following technical note – TN_RF_009 – « BeanGateway® management on LAN infrastructure »

9.7 DEVICE PROFILE

9.7.1 BeanGateway® profile

The BeanGateway® is identified by its PAN ID and is located on the lower left window.

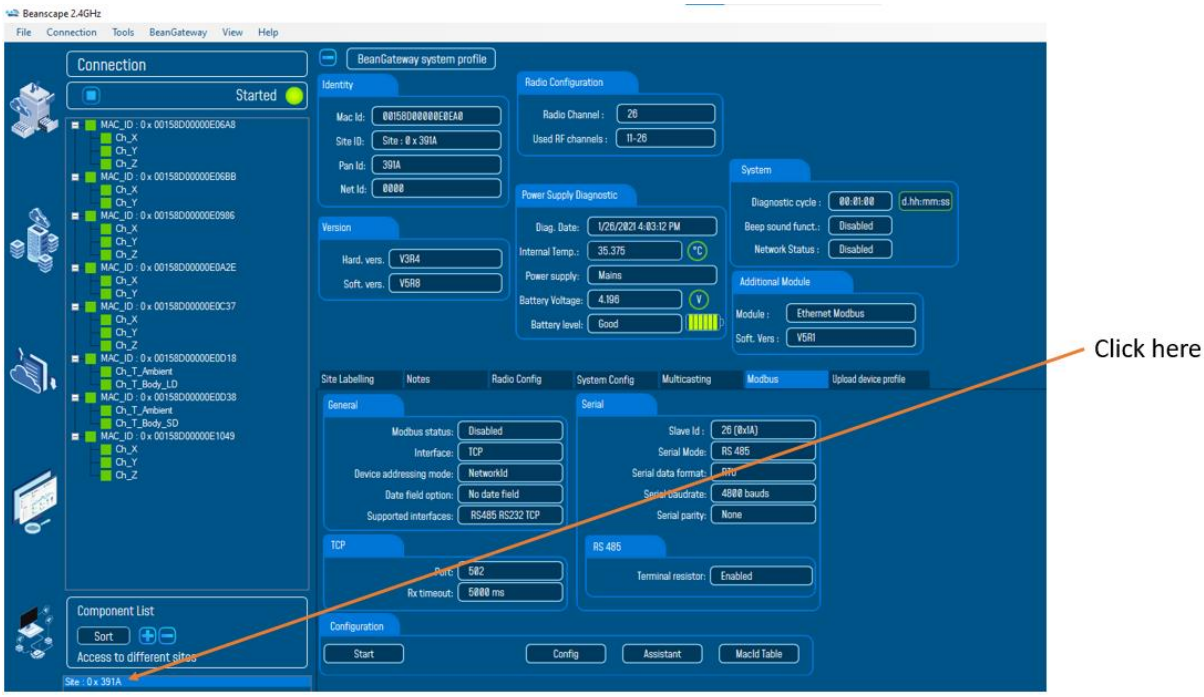


Figure 22: BeanGateway PAN ID on BeanScape

✓ You will see the following window:

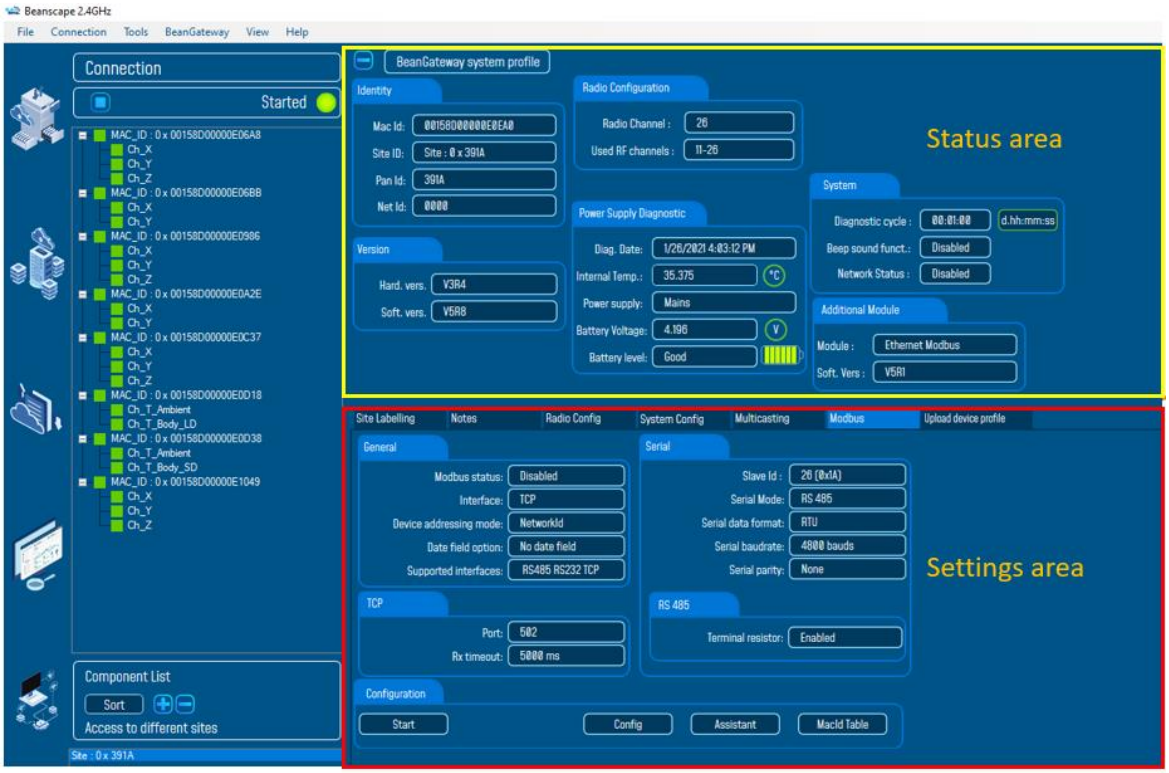


Figure 23: BeanGateway Profile on BeanScape

For further information about the BeanGateway®, please read the BeanGateway® user manual.

9.7.2 BeanDevice® profile

Click on the BeanDevice® folder tree on the left side pane, you will obtain all the information about your BeanDevice® connected to your network.

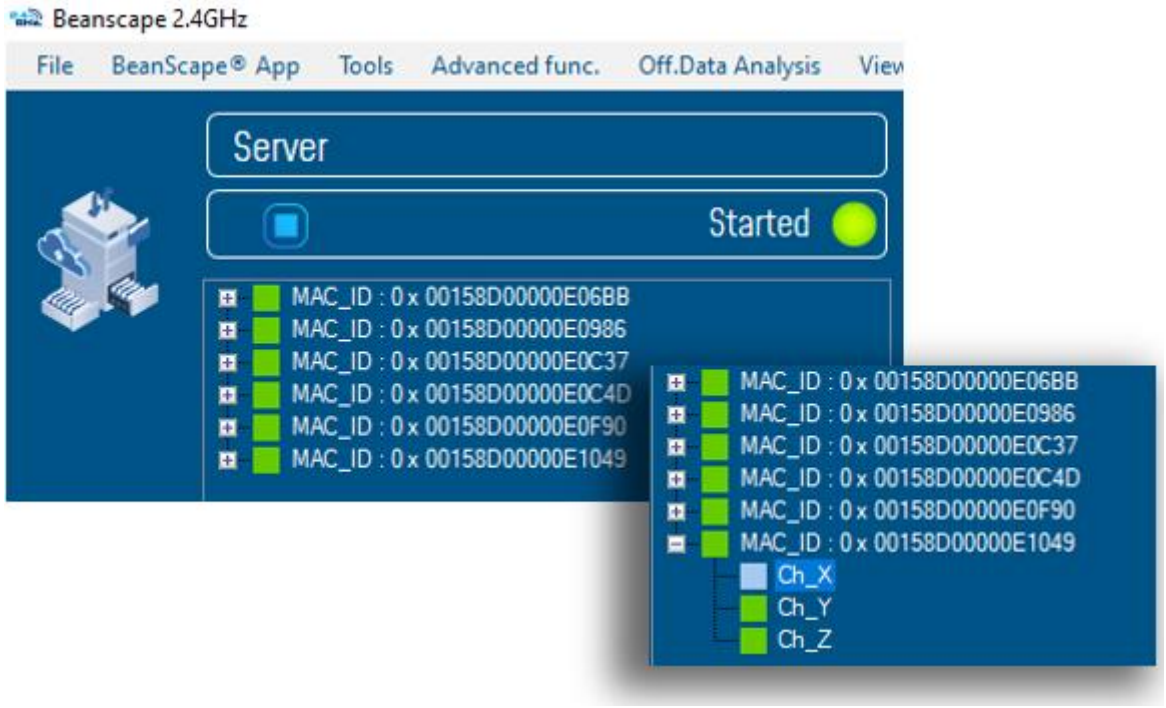


Figure 24: BeanDevices profiles

You can Rename, restart or remove the BeanDevice® quickly by using the right button of your mouse, without using the advanced options.

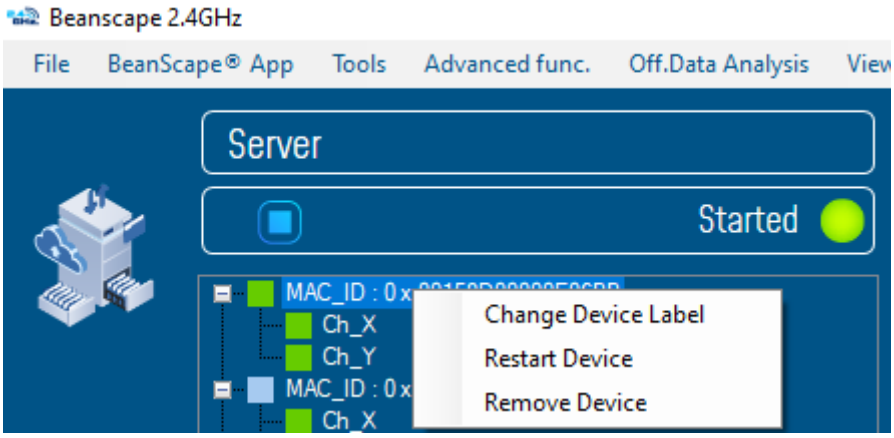


Figure 25: Right click on BeanDevice profiles

For further information about your BeanDevice®, please read the BeanDevice® user manual.

10. SYSTEM CONFIGURATION (FOR ADVANCED USER ONLY)

The following procedure applies only for advanced users

Click on the tab Tools then BeanScape configuration to configure advanced settings in ***BeanScape®***:

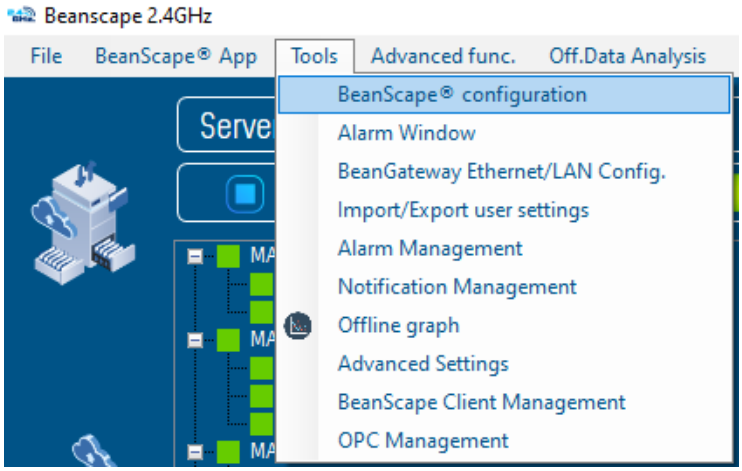


Figure 26: BeanScape Configuration menu

This window lets you configure the logs, data cache and Ethernet/LAN link between the BeanDevice® and the BeanGateway®.

- ✓ A second window will appear:

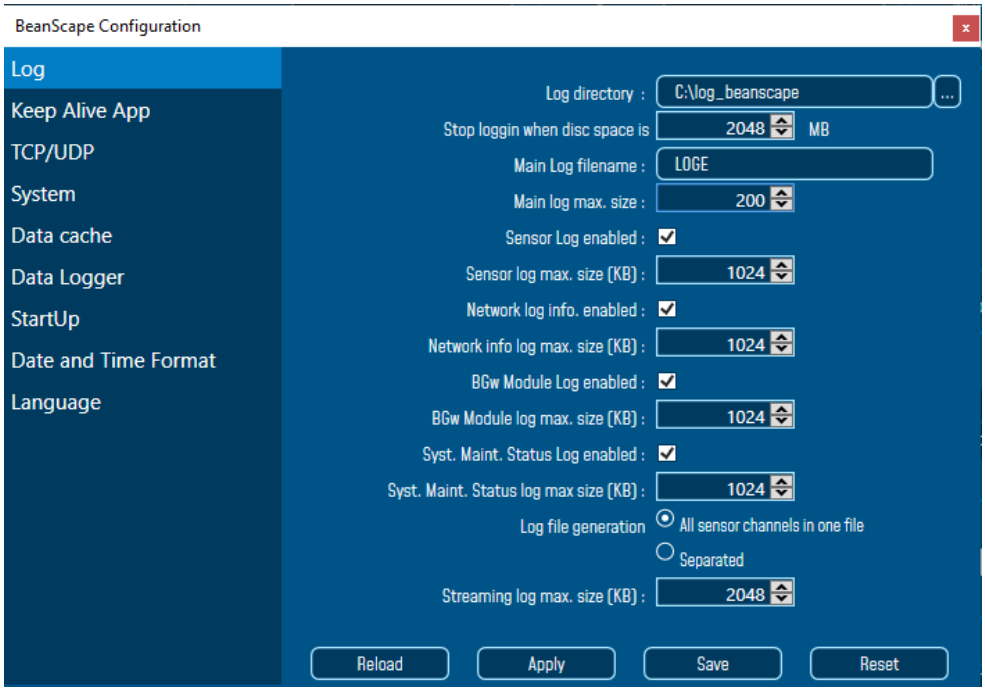


Figure 27: BeanScape configuration window

✓ Clicking the button Reset reverts to its original configuration.

✓ Logs & data cache configuration are described in the ***BeanDevice® user manual***.

10.1 TCP/IP CONFIGURATION

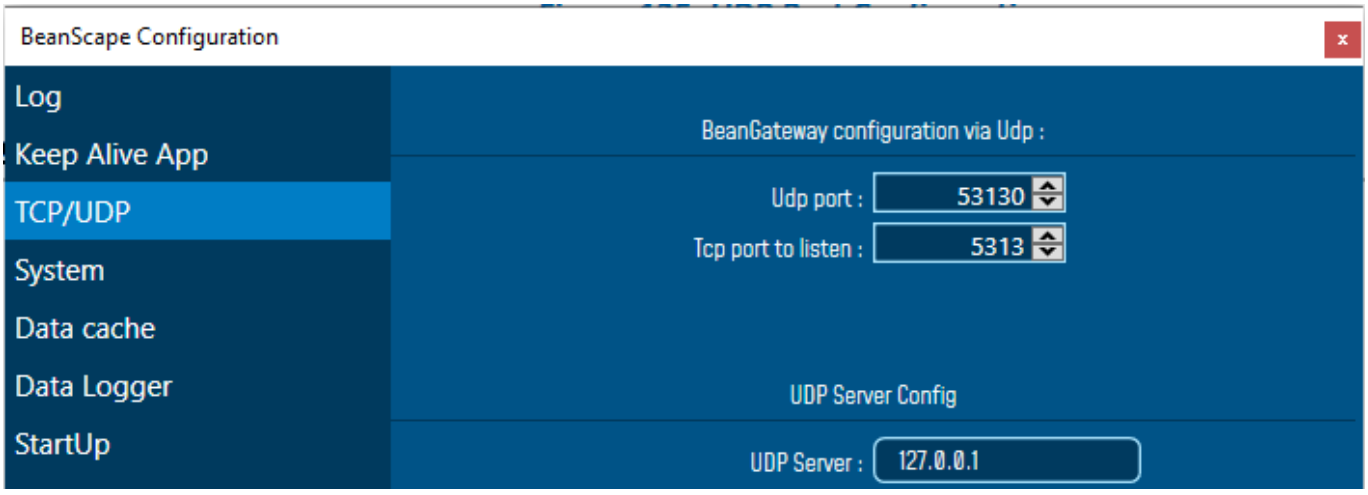


Figure 28: TCP/UDP tab

Configure the TCP port number, by default to 5313 in order to listen.

10.2 KEEP ALIVE APPLICATION

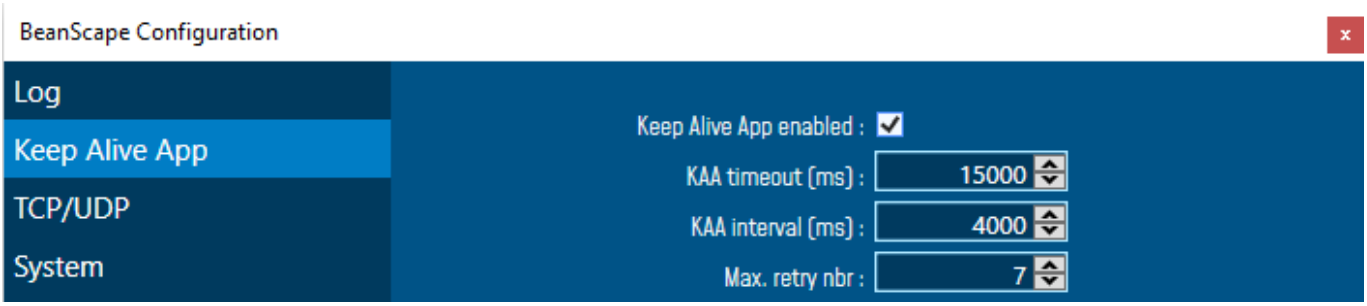


Figure 29: Keep alive tab

Three parameters related to keepalive are available:

- **Keep alive timeout** is the duration between two keep alive transmissions in idle condition. TCP keepalive period is required to be configurable and by default is set to no less than 2 hours.
- **Keep alive interval** is the duration between two successive keep alive retransmissions, if acknowledgement to the previous keep alive transmission is not received.
- **Max retry** is the number of retransmissions to be carried out before declaring that remote end is not available.

Keepalive packet contains null data. In a TCP/IP over Ethernet network, a keepalive frame is of 60 bytes, while acknowledge to this also null data frame and is of 54 bytes.

10.3 BEANGATEWAY® CONFIGURATION VIA UDP

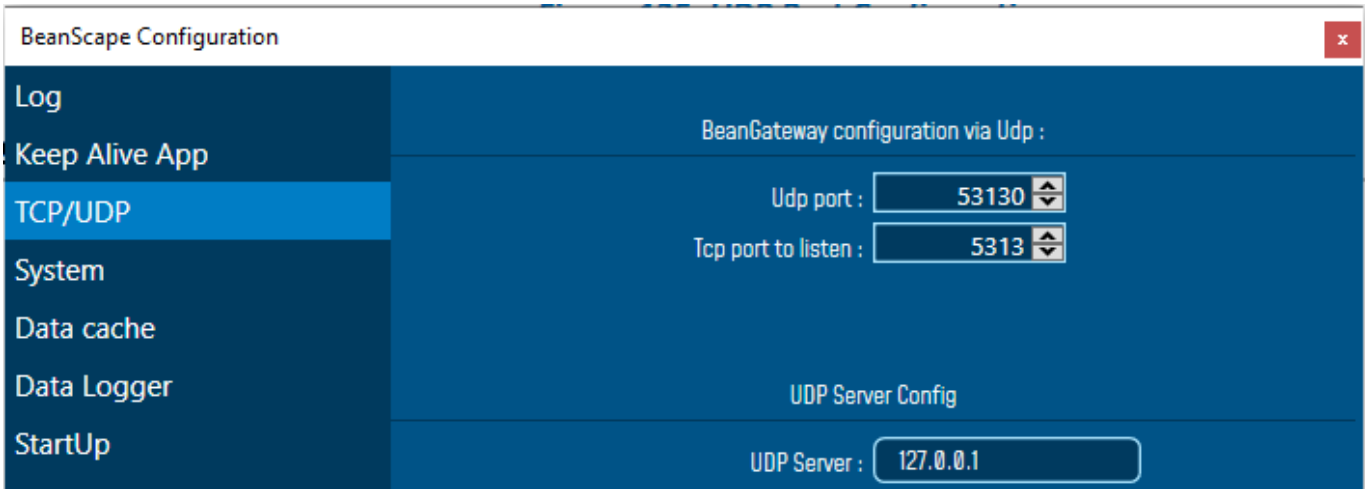


Figure 30: TCP/UDP tab

Configure the UDP port number, by default to 53130 in order to listen.

10.4 LANGUAGE CONFIGURATION

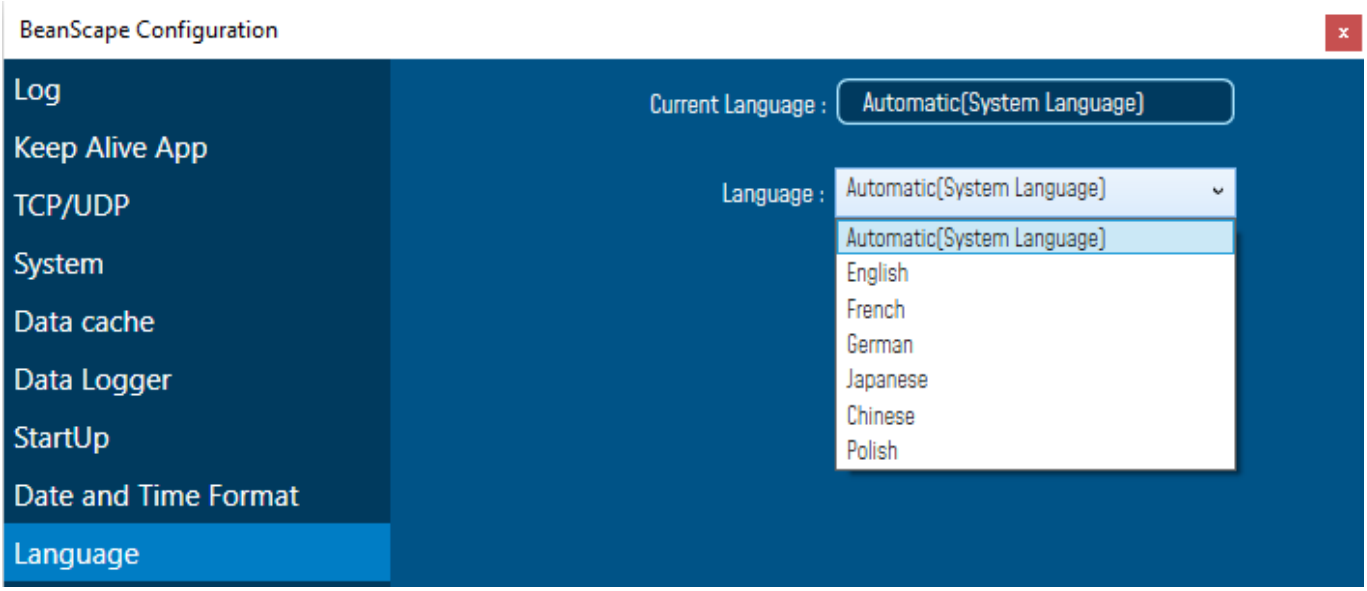


Figure 31: Language configuration

- ✓ ***Auto***: The BeanScape® will use the OS language by default
- ✓ ***English***: select English language
- ✓ ***French***: select French language
- ✓ **Japanese**: Select Japanese language

✓ **Chinese**: Select Chinese language

This configuration will be updated when the BeanScape® is restarted.

10.5 SYSTEM CONFIGURATION

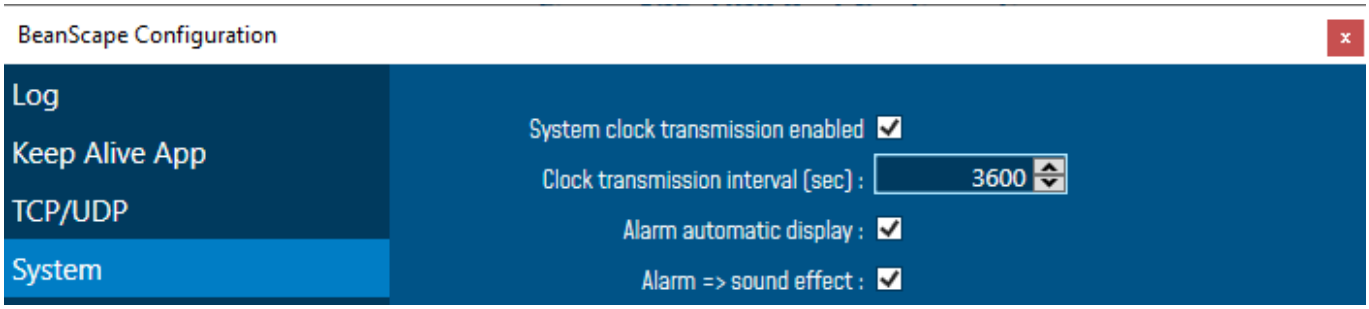


Figure 32: System configuration

✓ ***Alarm automatic display:*** Check this box if you want to see an alarm window displayed automatically when a window alarm threshold is exceeded.

✓ ***Alarm ➔ Sound Effect:*** Check this box if you want to hear a sound effect when a threshold is exceeded.

10.6 DATA CACHE CONFIGURATION

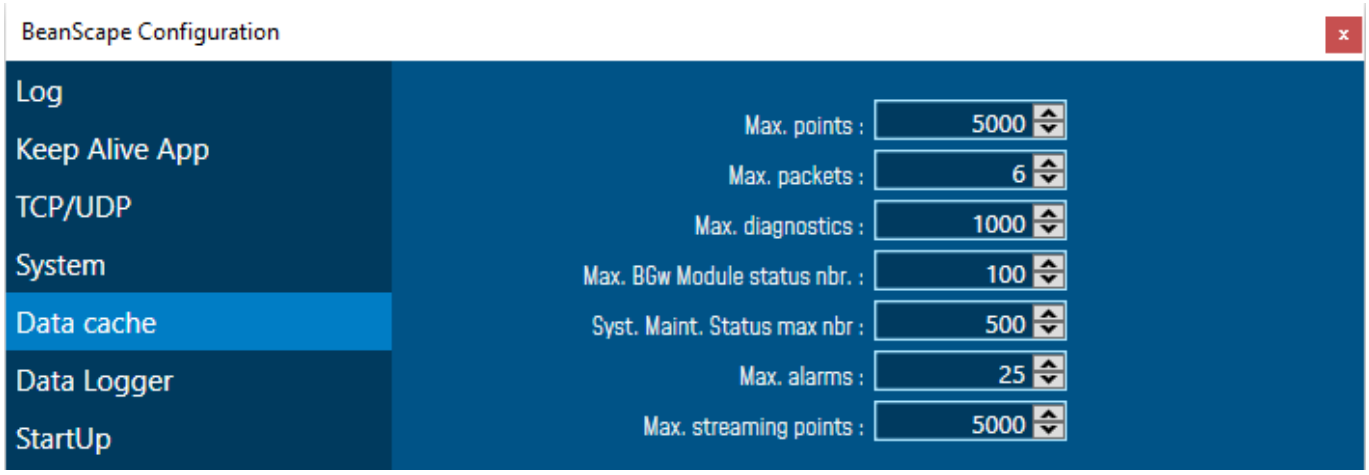


Figure 33: Data configuration

- ***Maximum number of points:*** Set here the maximum number of points displayed on the BeanScape® Wilow® graph
- ***Maximum number of packets:*** Set here the maximum number of packets displayed on the BeanScape® Wilow® graph
- ***Max number of diagnostics:*** Set here the maximum number of diagnostics displayed on the BeanScape® Wilow® graph

- ***Max number of alarms:*** Set here the maximum number of alarms displayed on the BeanScape Wilow® graph
- ***Maximum streaming points:*** Set here the maximum number of points displayed in Streaming on the BeanScape® Wilow® graph

Please note that the values backed up by the BeanScape® may affect the memory capacity of your computer depending upon the size of every file.

10.7 G VALUE

Because there are slight variations in the G value about earth's surface within the value of G dependent upon location, user have the possibility to set the corresponding G value from BeanScape Configuration option.

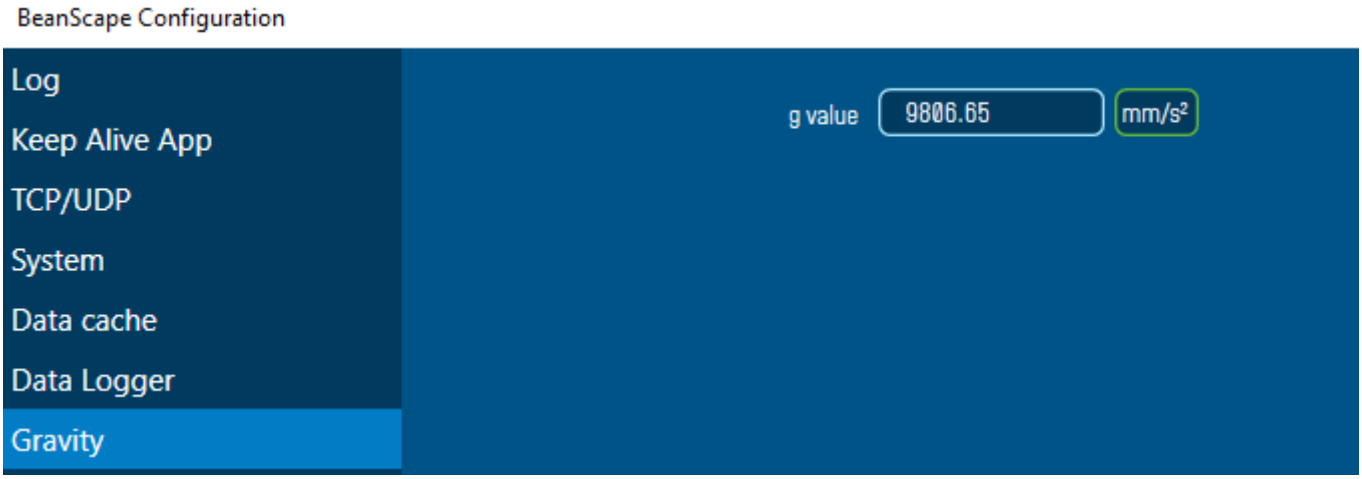


Figure 34: G value configuration

11. EXPORT/IMPORT USER SETTINGS (FOR ADVANCED USER ONLY)

11.1 CUSTOM USER CONFIGURATION

11.1.1 Export Function

Click on the tab ***Tools*** then "***Export/Import user settings***"

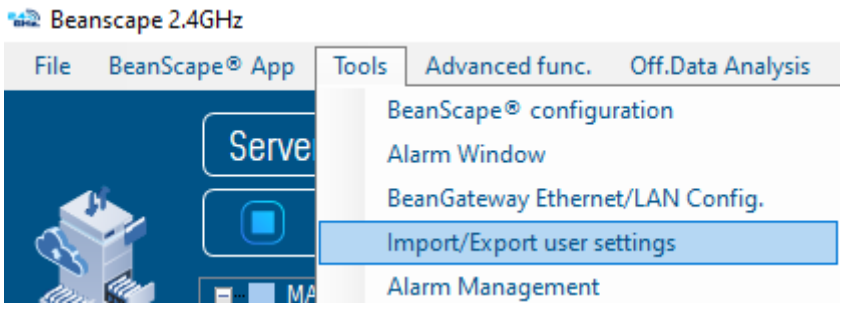


Figure 35: Export/Import user settings menu

A new window will appear, which contains the **Custom User Configuration** and the **BeanScape Configuration**,

- **Custom User Configuration** represent the settings that have relationship with the BeanGateway and the BeanDevices.
- **BeanScape Configuration** is related to BeanScape settings.

Under Custom User Configuration click on ***Export***:

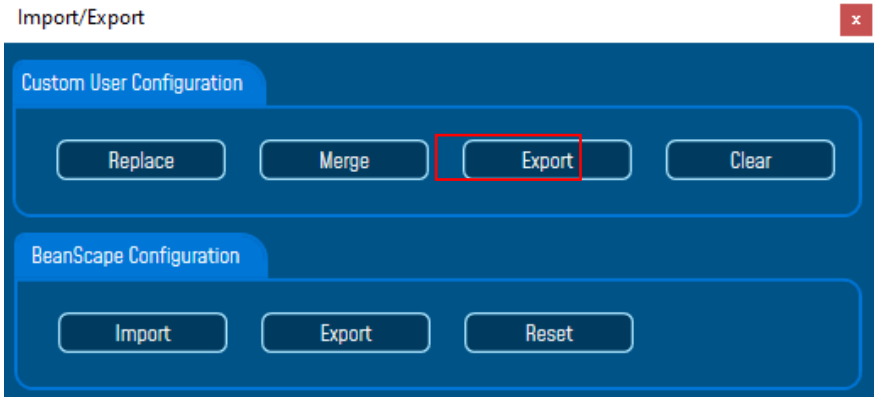


Figure 36: Custom user configuration window

User configuration is exported in XML format:

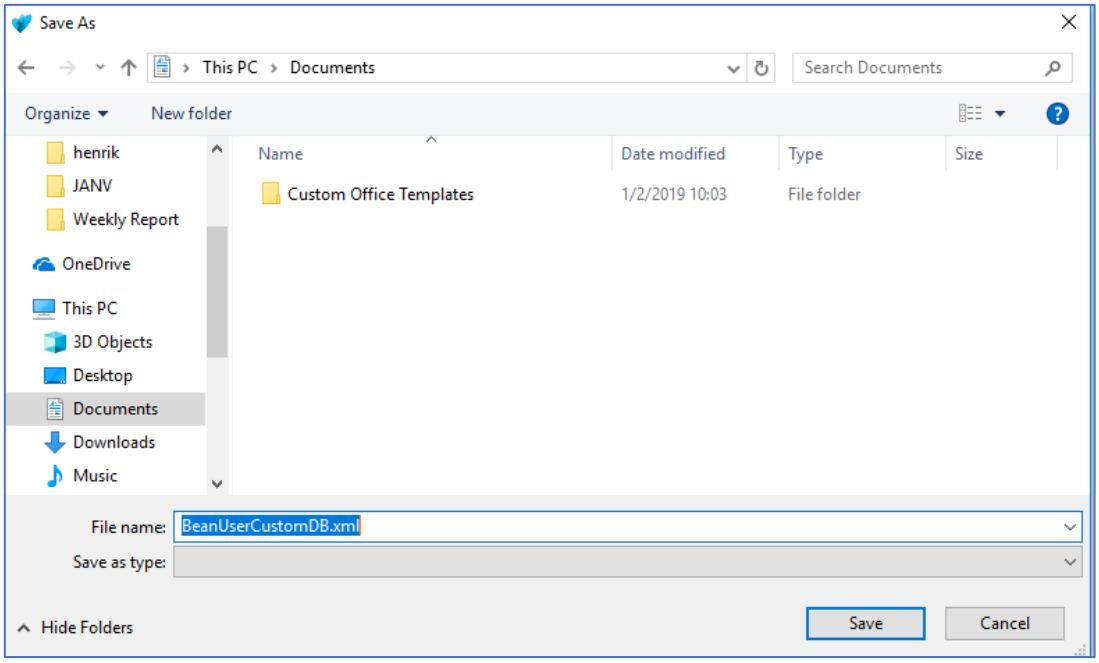


Figure 37: User export

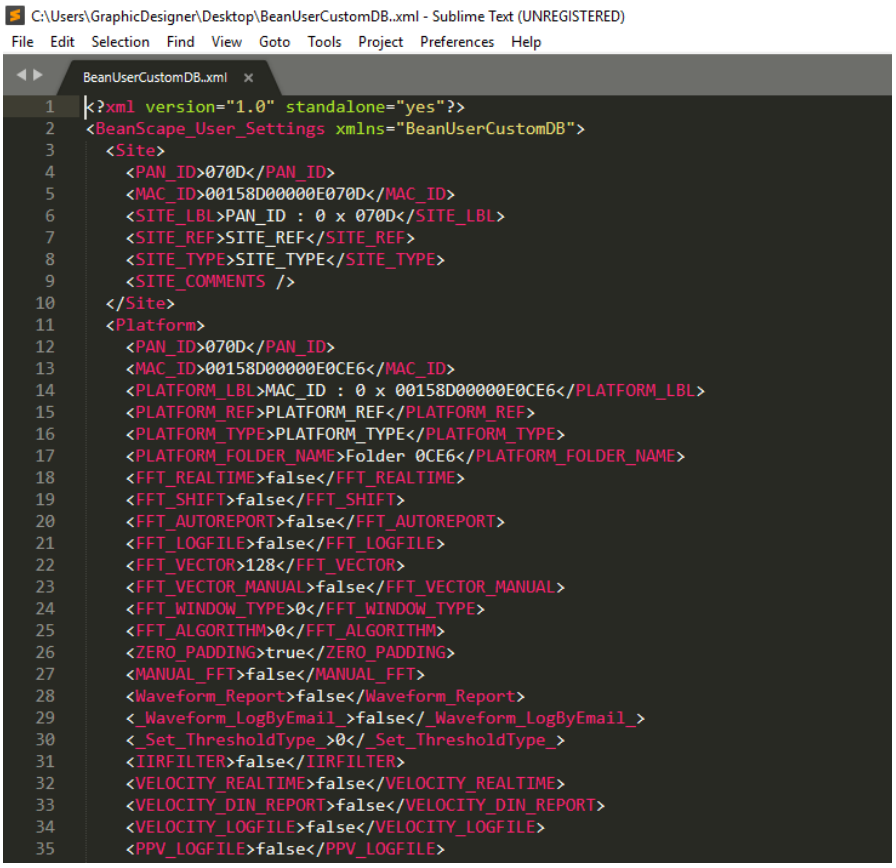


Figure 38: Custom_DB example

11.1.2 Import Function

Click on ***Replace*** to import user configuration, by choosing replace function the old Custom_DB will be replaced with the new one.

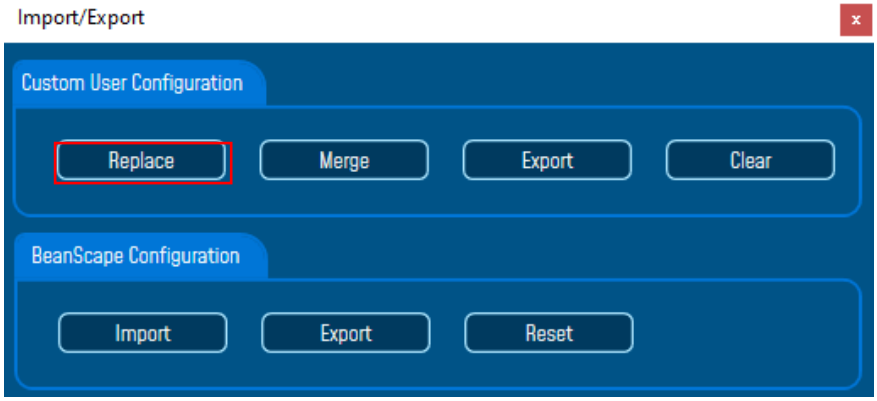


Figure 39: Custom user configuration window

By choosing ***Merge*** function the old Custom_DB will be merged with the new one.

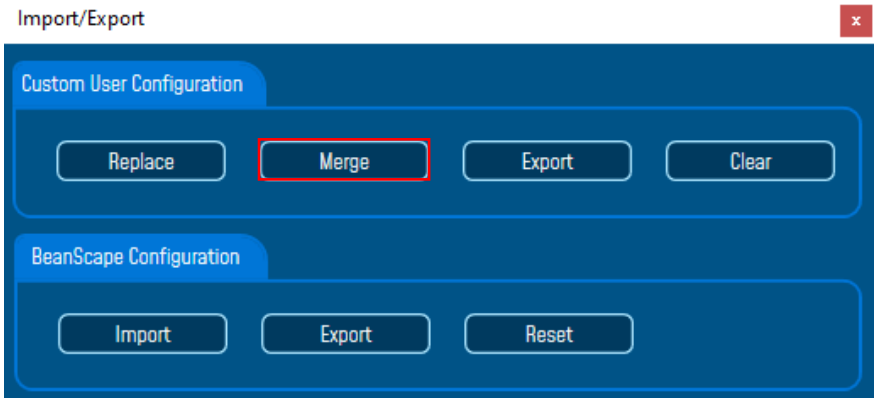


Figure 40: Custom user configuration (merge)

Click on **Clear** to clear the Custom_DB.

Don't try to change manually the XML file, there is a high risk to corrupt it.

11.2 BEANSCPAE CONFIGURATION

11.2.1 Export Function

Click on ***Export*** to export BeanScape configuration

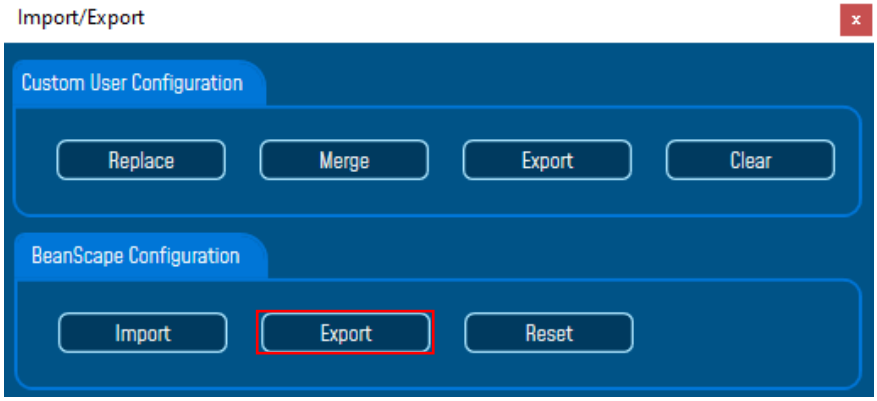


Figure 41: Export window for BeanScape Config

BeanScape configuration is exported in XML format:

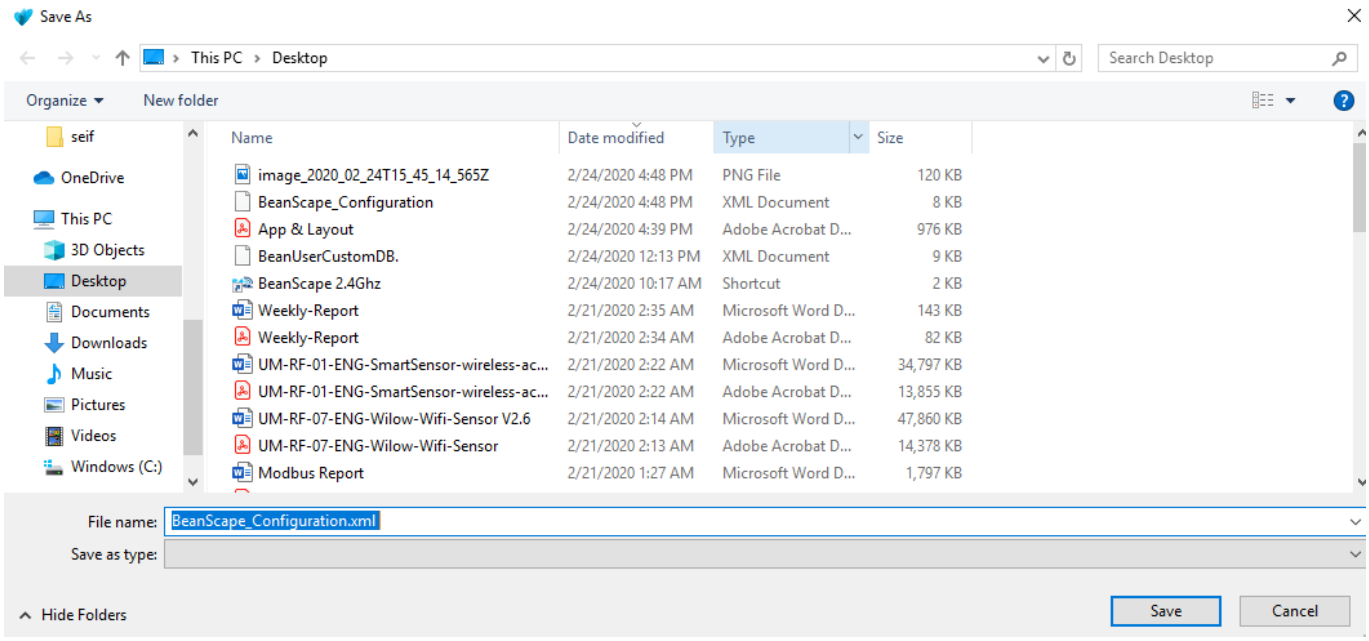


Figure 42: BeanScape Config exportation

11.2.2 Import Function

Click on ***Import*** to import BeanScape configuration

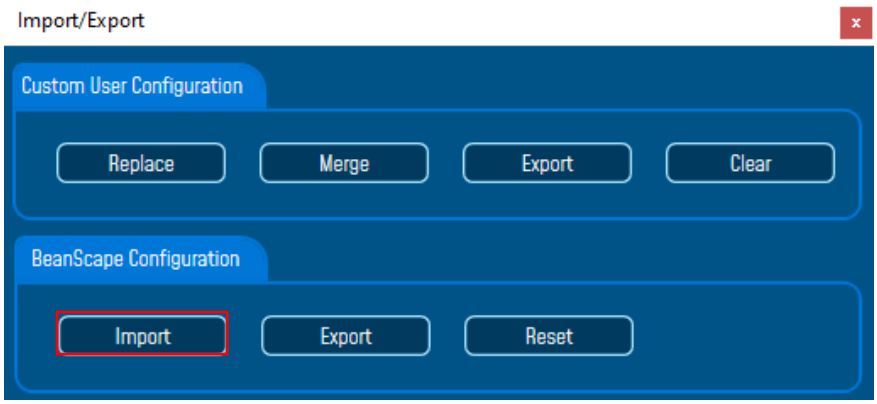


Figure 43: Import function for BeanScape Config

Click on **Reset** to reset the BeanScape configuration.

12. ADVANCED SETTINGS

Navigate to **Tools** and click on Advanced settings.

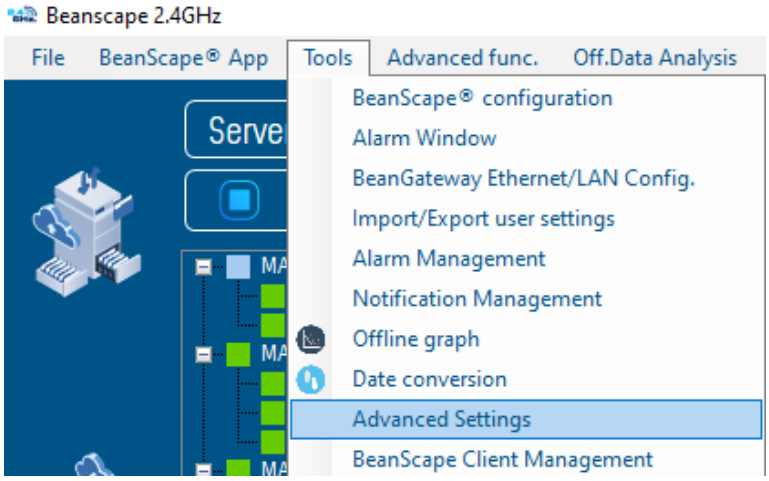


Figure 44: Advanced Settings option

A new window will pop up in which user can find several settings

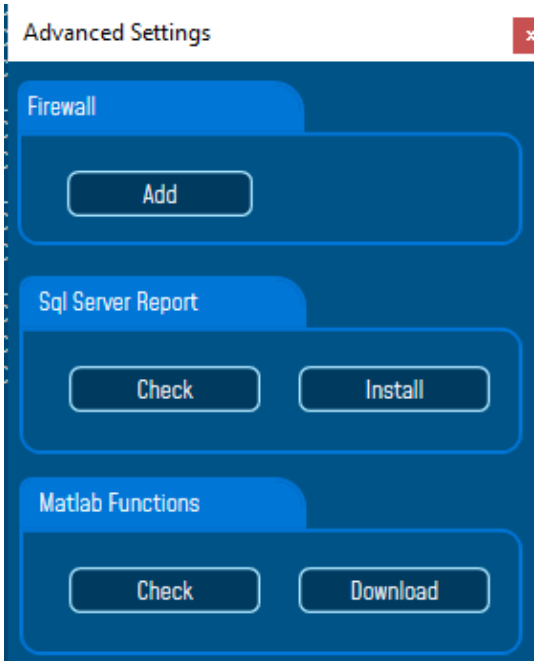


Figure 45: Settings Options

12.1 FIREWALL

Click on **Add** button in order to add BeanScape on firewall, with that user will be sure that the firewall will not interrupt the connection between BeanScape software and the BeanGateway.

Figure 46: Add BeanScape to Firewall

Right after clicking on Add a notification message will be displayed on the screen saying that BeanScape was added to firewall successfully.

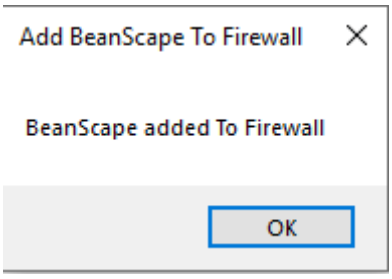


Figure 47: Notification message

12.2 MATLAB FUNCTIONS

In this section user can check if MATLAB is installed with BeanScape software otherwise he has the possibility to download it.

Click on **Check** to check if the MATLAB function is installed or not.

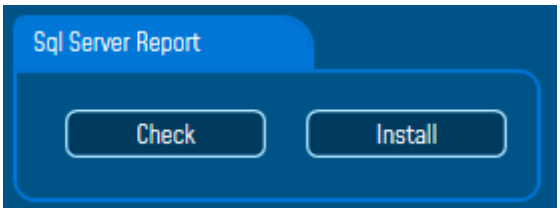


Figure 48: check MATLAB installation

If it's already installed a pop-up window will appear telling that MATLAB is installed on your PC.

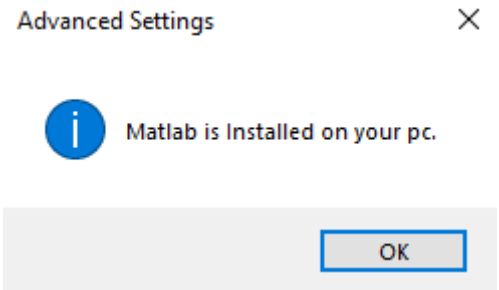


Figure 49: Pop-up window for MATLAB installation

Otherwise if not user can download the MATLAB-MCR just by hitting the **Download** button.

12.3 SQL SERVER REPORT

Click on Check to check if the SQL Server was installed on your PC.

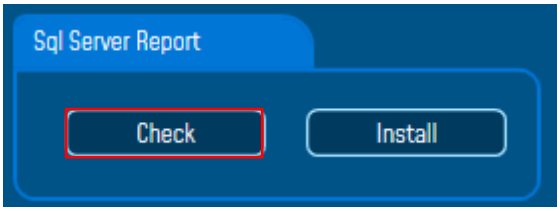


Figure 50: SQL Server installation

If the SQL Server is installed a pop-up notification will be displayed on the PC screen saying that the SQL Server is already installed.

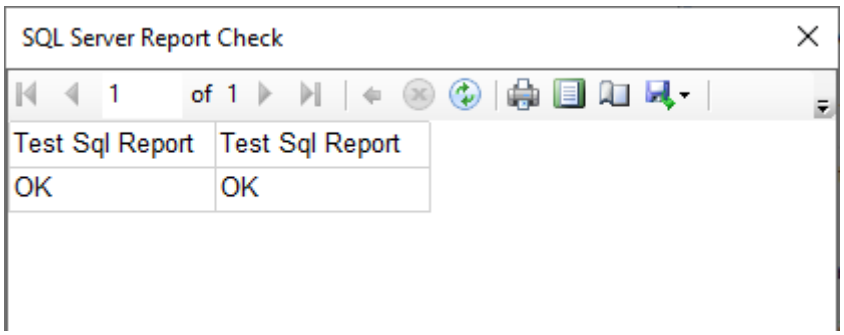


Figure 51: installation notification for SQL Server Report

If it is not the case just click on Install button to install it.

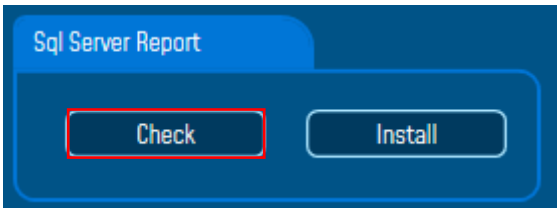


Figure 52: SQL Server Report Installation

13. BEANSCAPE® MULTIVIEW

BeanScape® Multiview version offers a multi-user interface. It enables real time remote access from a BeanScape® Client to the network configuration performed on BeanScape Server.

This new version of BeanScape software can be installed in two PCs, configured as a server in one of them and configured as Client in the other.

The BeanGateway must be connected with an Ethernet cable (directly or via a switch) to the PC where BeanScape is configured as Server.

13.1 SET BEANSCAPE® ON SERVER OR CLIENT

- Go to tools-> BeanScape Configuration
- Go to the tab: Enable/Disable BeanScape Client
- Check or Uncheck IsBSCClient

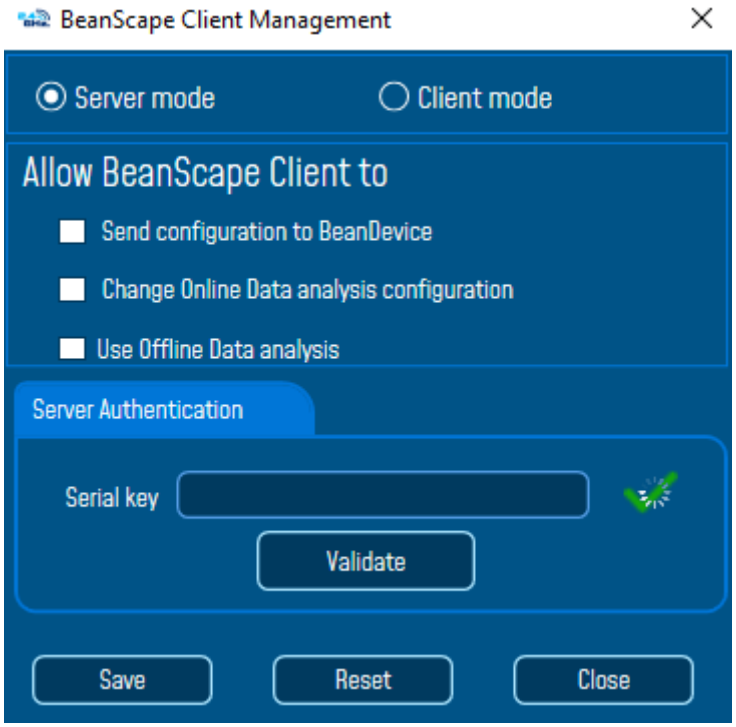


Figure 53: BeanScape Enable/Disable Client tab

- Check Allow BeanScape® Client to send OTAC to activate this option.

You must restart BeanScape® after configuring it as a Client.

13.2 LOCALIZE BEANCAPE® SERVER

After restarting BeanScape the new configuration will take place and you will figure out that the Server menu become Client.

- Go to tools and click on Localize BSC srv to localize the BeanScape® server that you like to connect to.

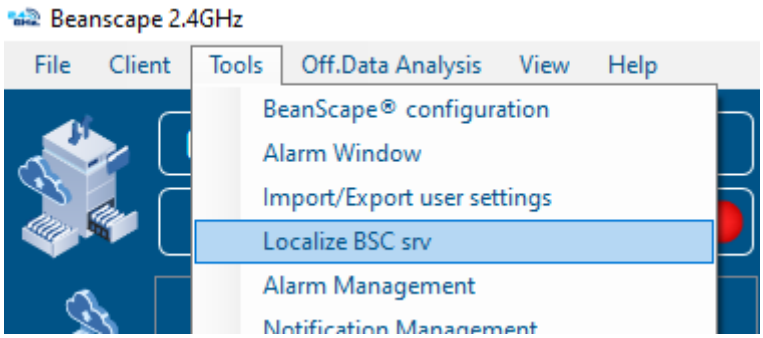
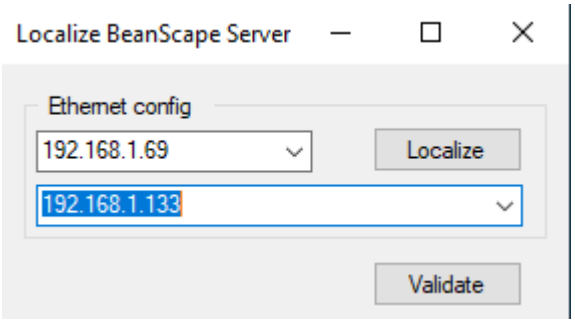


Figure 54: Localize BeanScape Server option

The following window will appear.



- In Ethernet Config, select the IPv4 address of the PC where the BeanScape Client is installed.
- Click Localize
- Select the IP address which corresponds to BeanScape Server
- Click validate
- Go to Client and click on Start Client

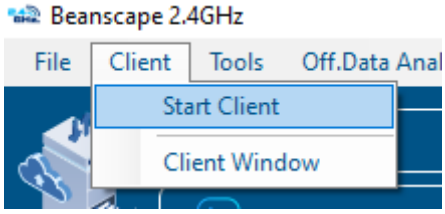


Figure 55: Start Client option

13.3 BEANSCAPE® SERVER

The user has access to all the profile details of the BeanDevice and the BeanGateway as well as all the configuration tabs of the BeanDevice (data acquisition configuration, Datalogger, power mode management…) and of the BeanGateway (Radio Config, System Config, Modbus, Multicasting…).

13.3.1 BeanDevice® profile

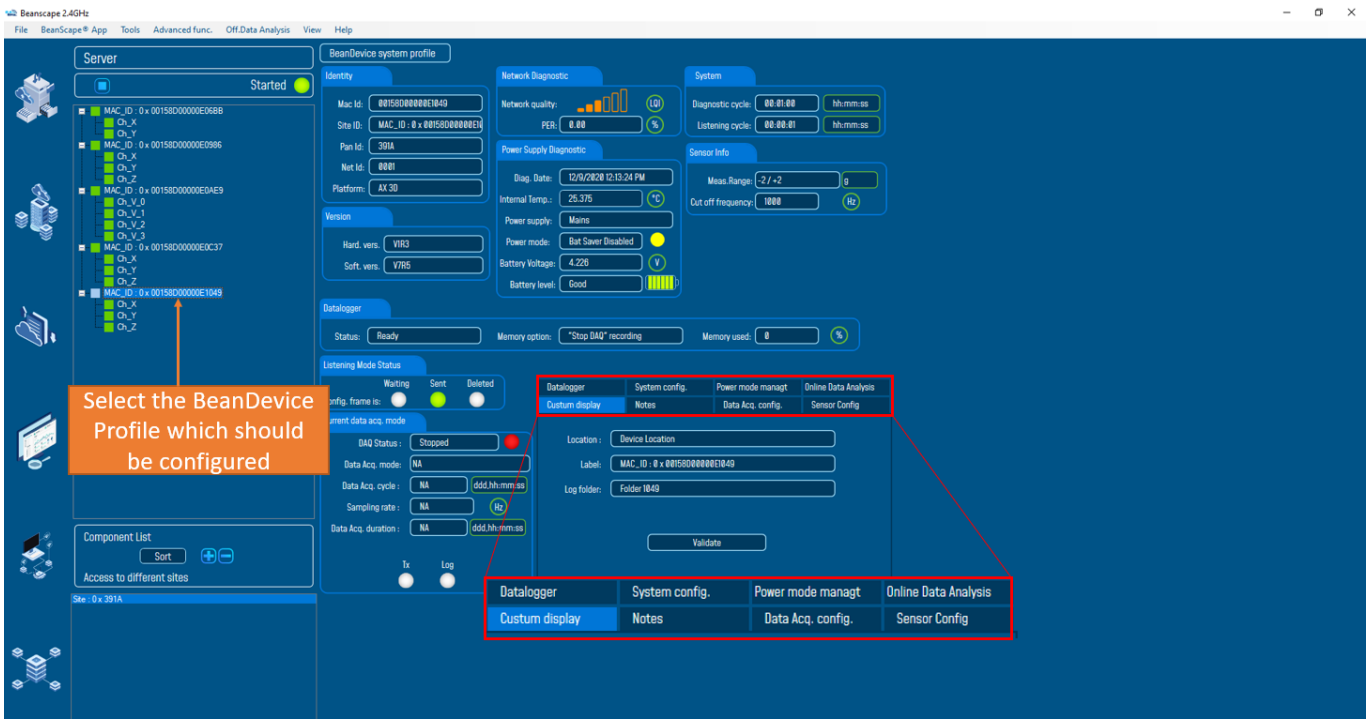


Figure 56: BeanScape Server overview

13.3.2 BeanGateway® profile

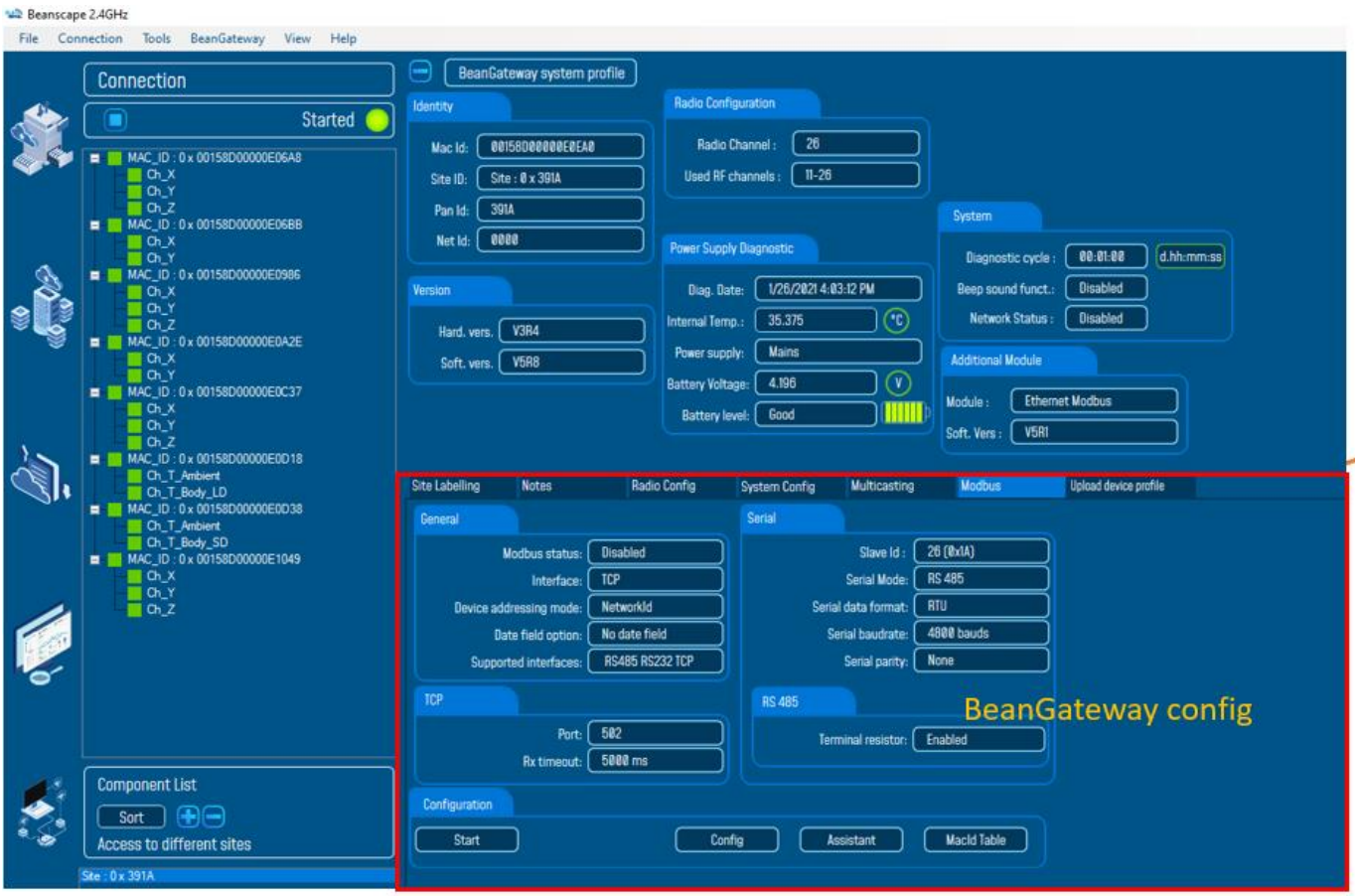


Figure 57: BeanGateway profile

13.4 BEANSCAPE® CLIENT

The BeanScape® configured as Client gives access only to the profile details of the BeanDevice and the BeanGateway®.
To allow to the Client to change the configuration and to send OTACs you must Enable this option on BeanScape® Configuration.

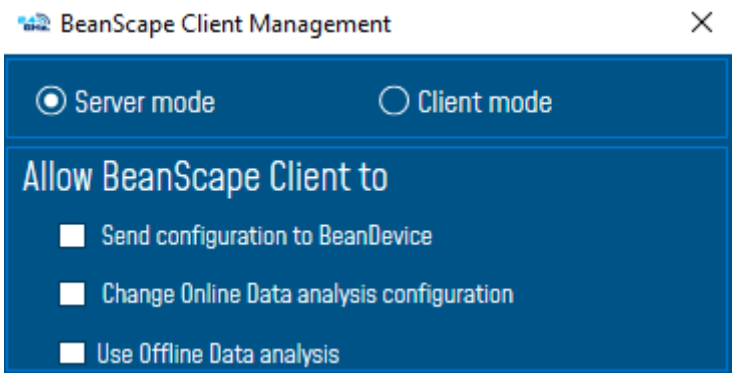


Figure 58: Enable/ Disable BeanScape Client

13.4.1 BeanDevice® profile on BeanScape® Client

The BeanDevices® will be shown in the same way like on BeanScape® server, but in this case all the configuration option will be disactivated if not allowed to the client.

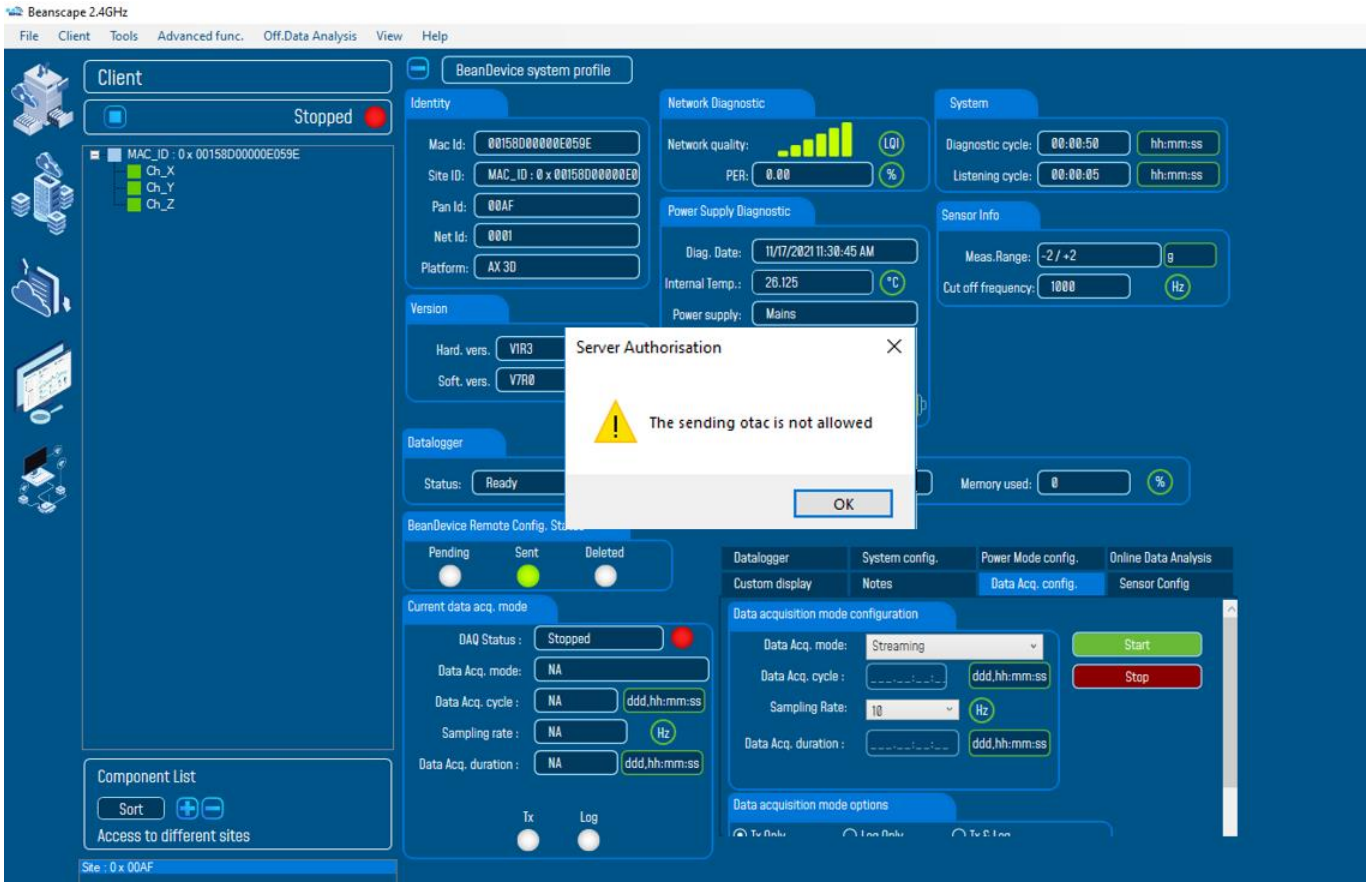


Figure 59: Limited Access in BeanScape Client

13.4.2 BeanGateway® profile on BeanScape® Client

The access to the BeanGateway options will be limited from a BeanScape Client.

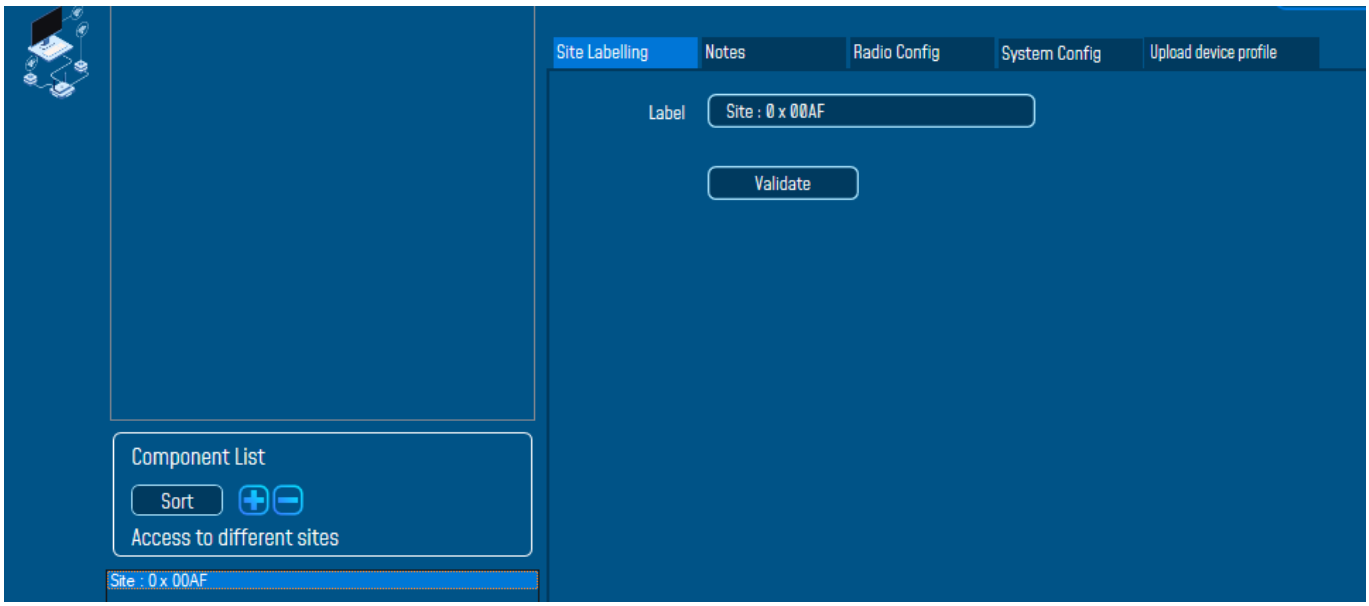


Figure 60: BeanGateway limited access on BeanScape Client

14. APPENDIX

14.1 APPENDIX 1: CREATING A REMOTE ACCESS WITH BEANSCAPE® MULTIVIEW

14.1.1 VPN Server Configuration

On the server side, hosting the BeanScape® Multiview, you should setup a VPN server, which let the distant Client localize it remotely.

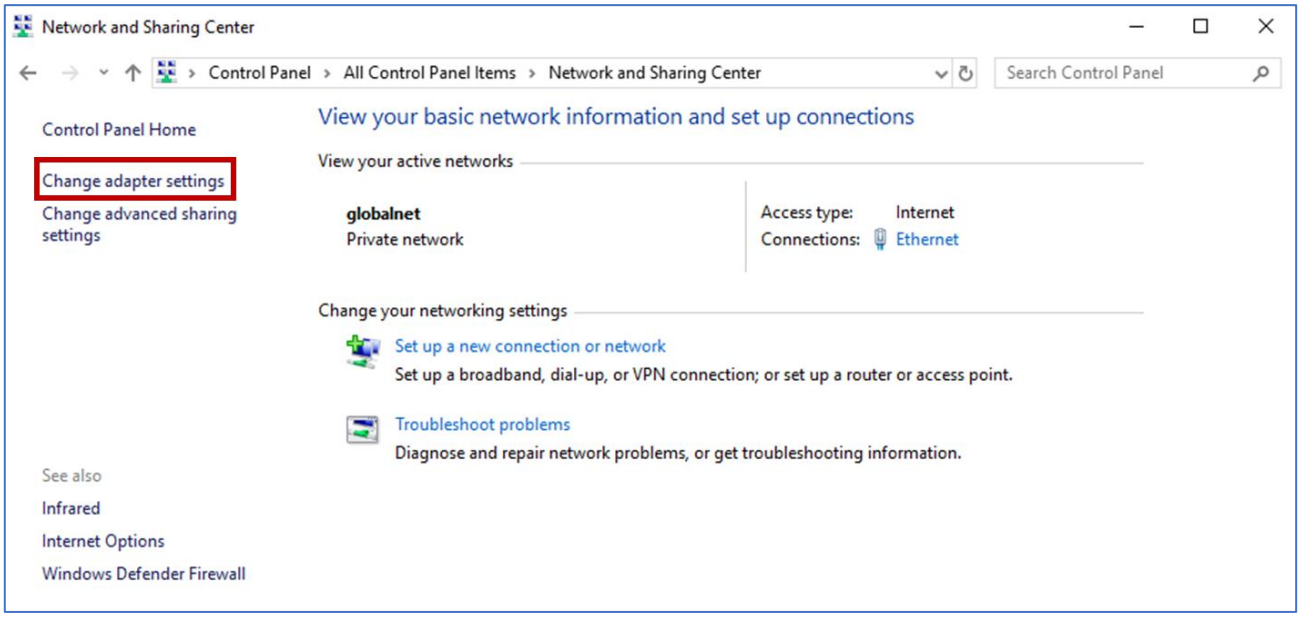
To configure an Incoming VPN connection, please follow the next steps.

14.1.1.1 VPN Server

1) Open Control Panel.

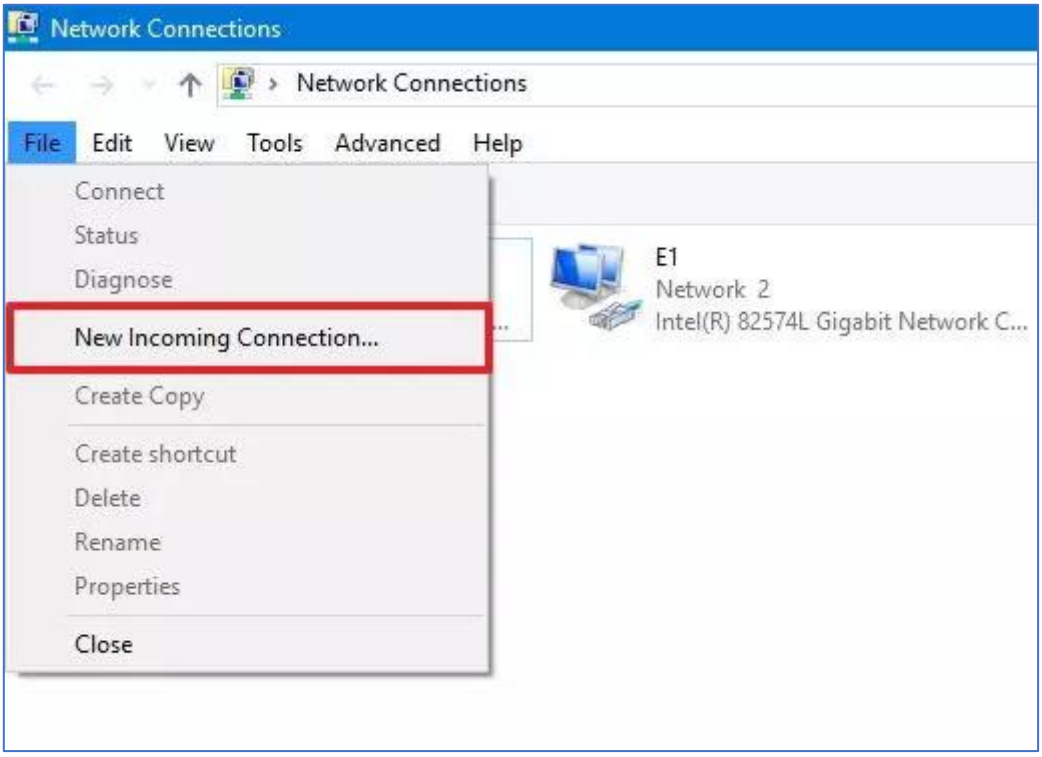
2) Click on Network and Sharing Center.

3) Using the left pane, click the Change adapter settings link.

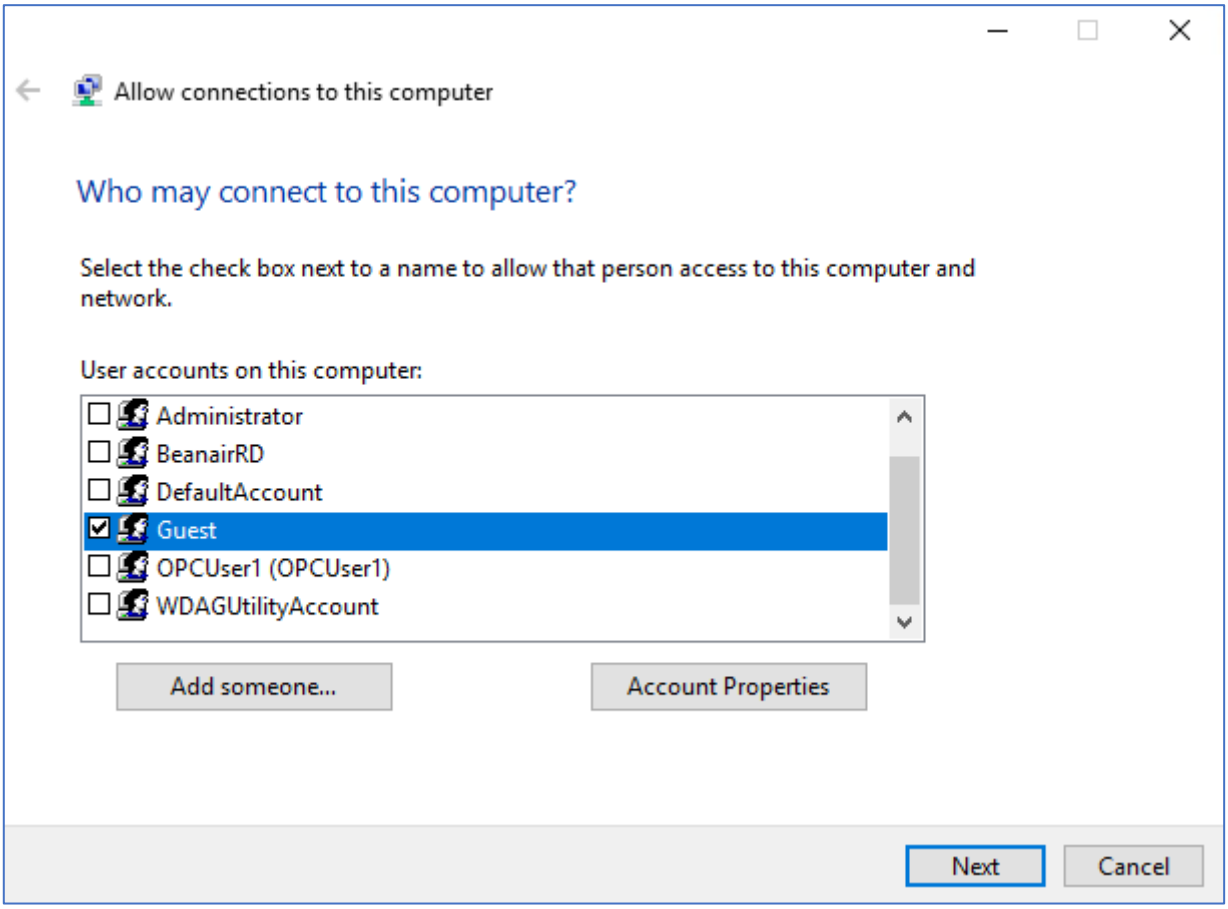


4) On “Network Connections,” open the File menu pressing the Alt key, and select the New Incoming Connection option.

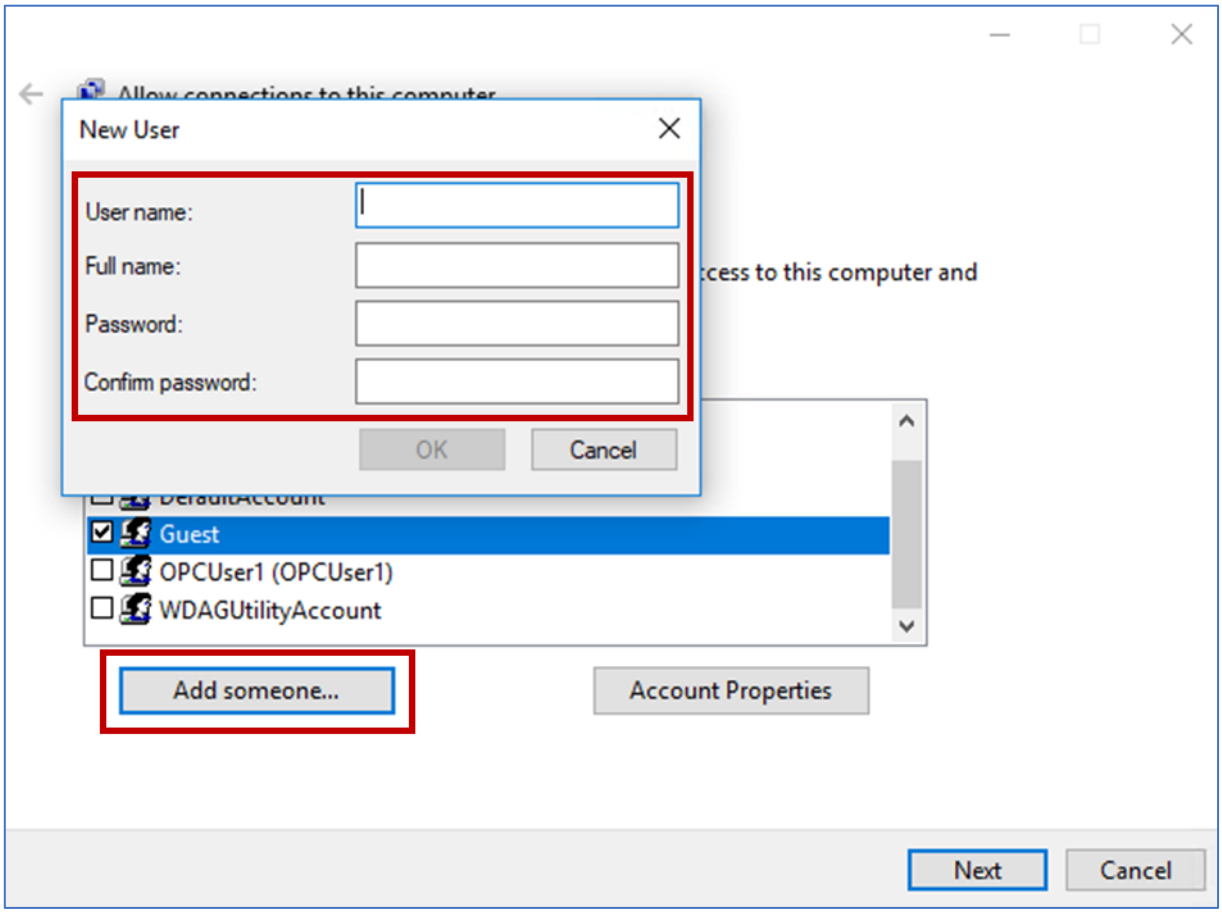
5) Check the users you want to VPN access to your computer and click the Next button.



6) Check the users you want to VPN access to your computer and click the Next button.

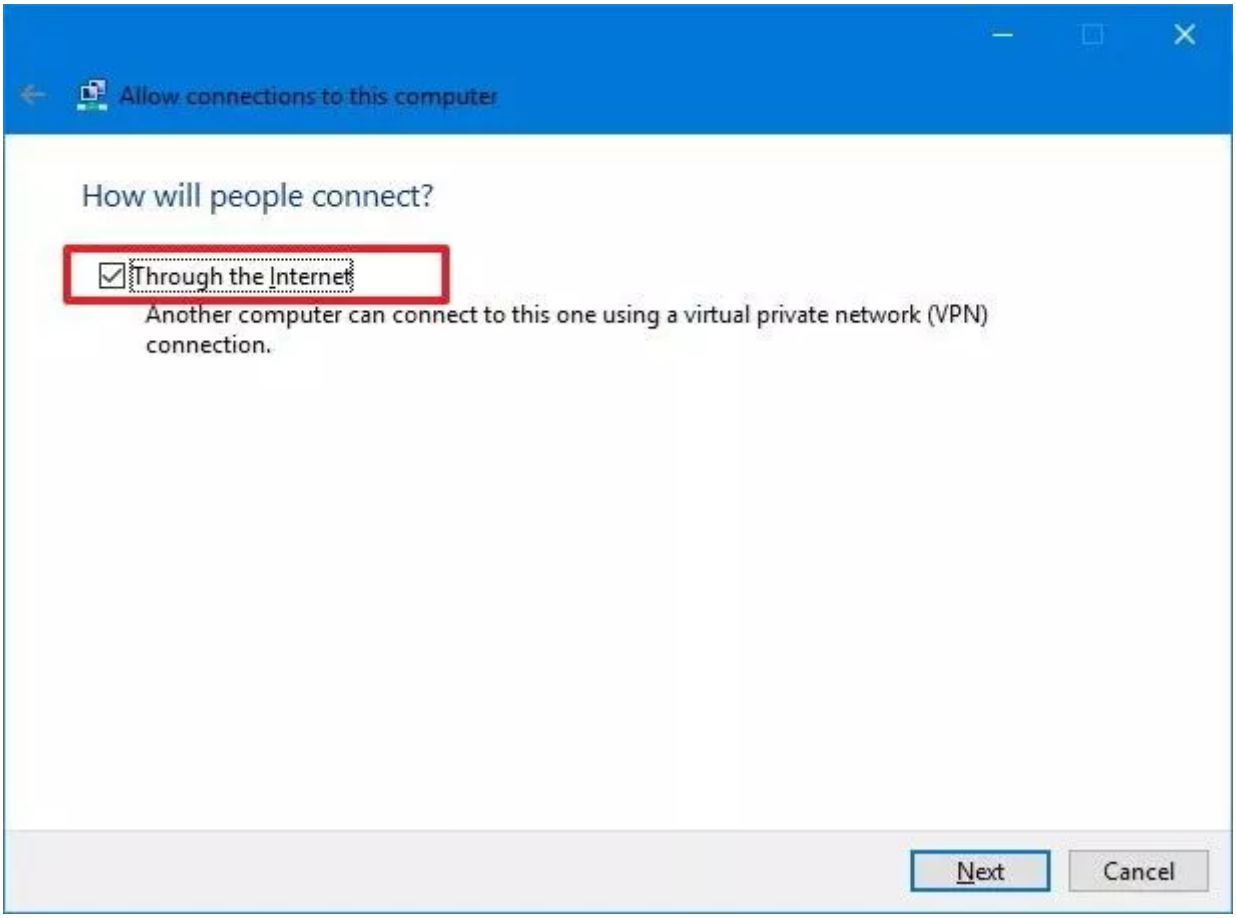


7) Alternatively, you can click the Add someone button to create a new VPN user:



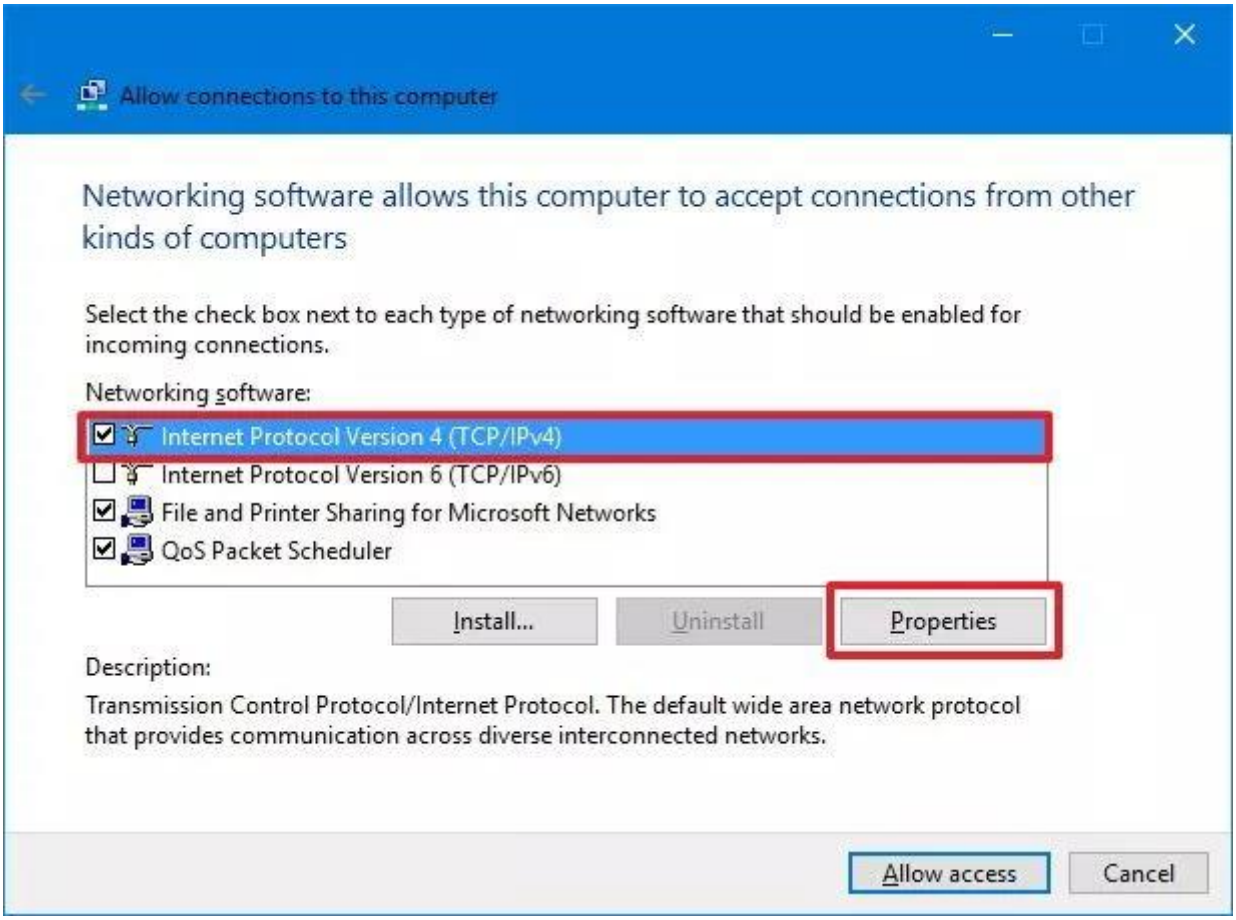
8) Check the Through the Internet option.

9) Click the Next button.

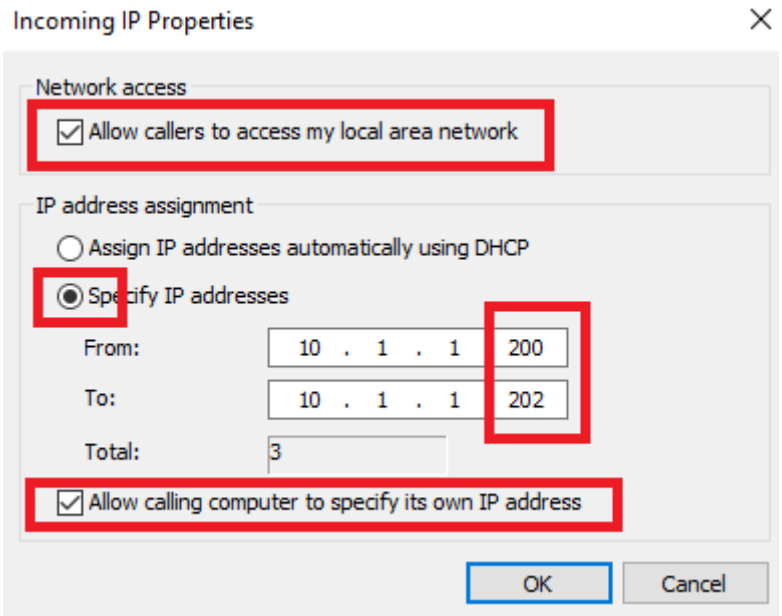


10) In the networking software page, select Internet Protocol Version 4 (TCP/IPv4) option.

11) Click the Properties button.



12) Under "IP address assignment," click Specify IP addresses, and specify the number of clients allowed to access using a VPN connection. (You will do this by specifying an IP address range, and it's recommended that you use high-order range of IP addresses to help avoid conflicts in the network with the IPs distributed by your router.

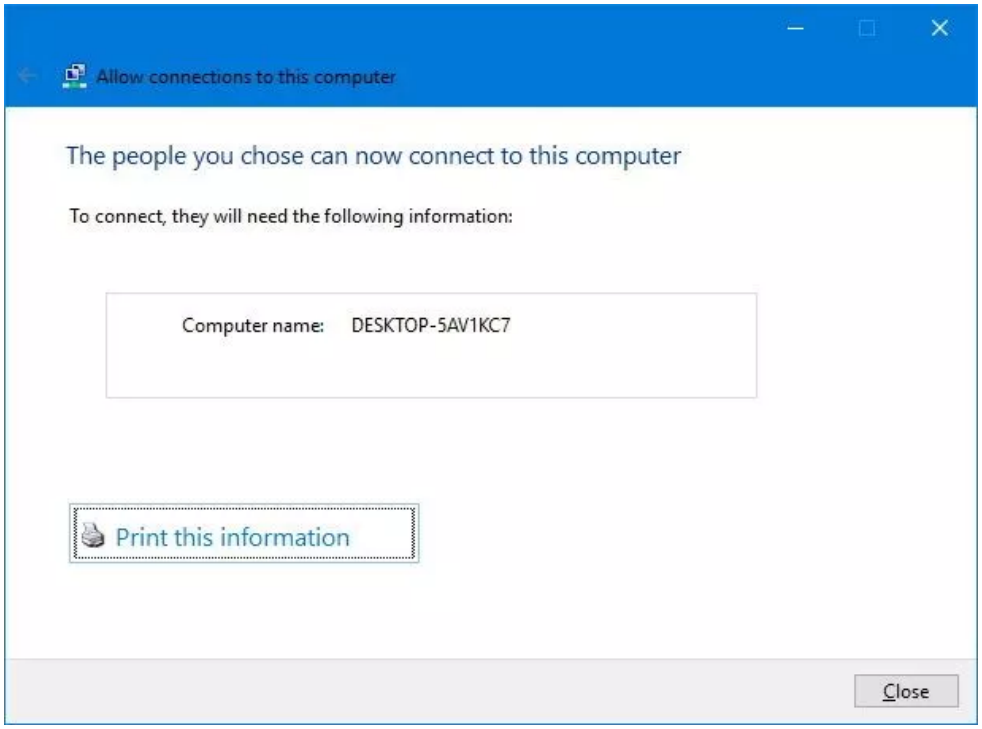


13) Click the OK button.

14) Click the Allow access button.

15) Click the Close button to complete setting up the VPN server on Windows 10.

16) Enable “Allowing calling computer to specify its own IP address”



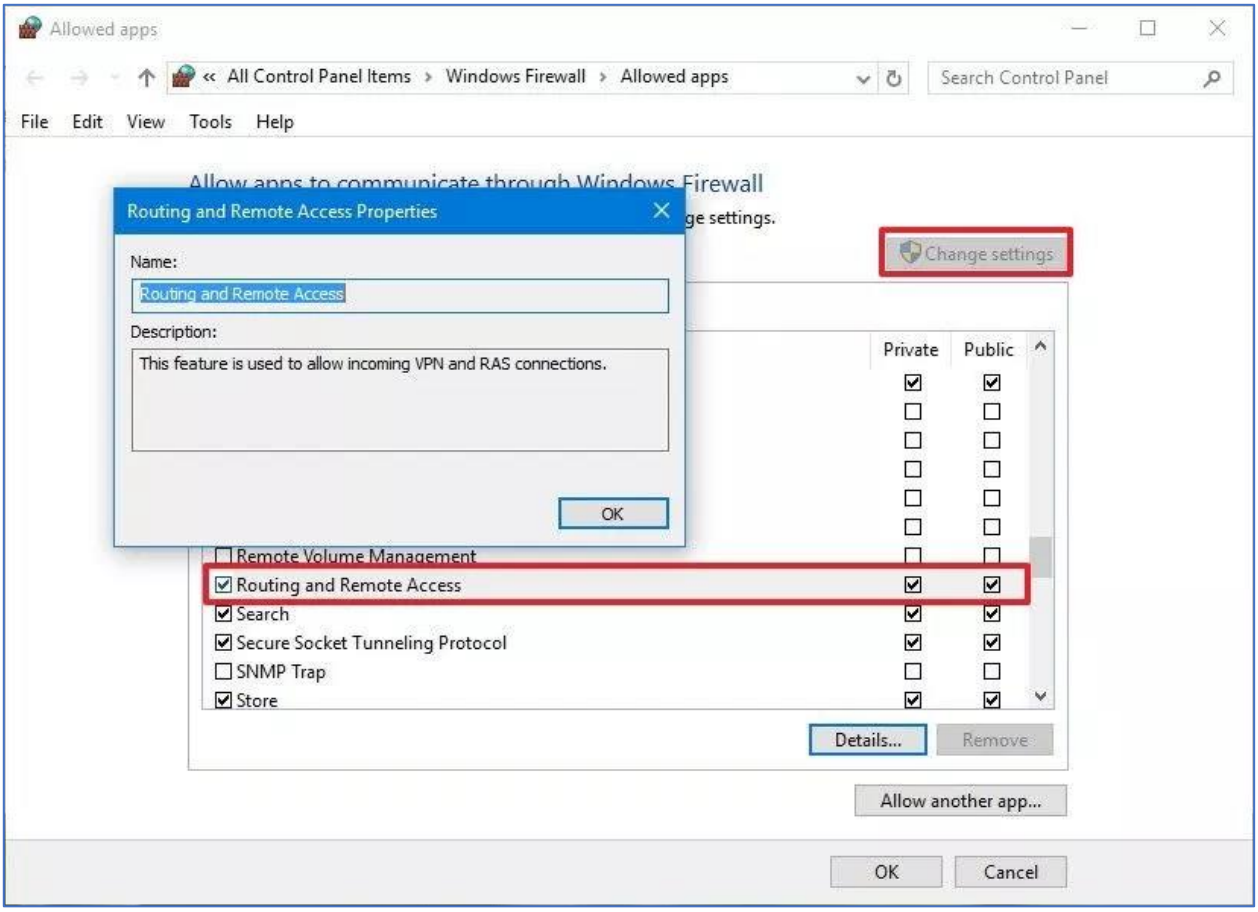
14.1.1.2 Firewall Configuration

1) Open Start.

2) Search for Allow an app through Windows Firewall and click the top result to open the experience.

3) Click the Change settings button.

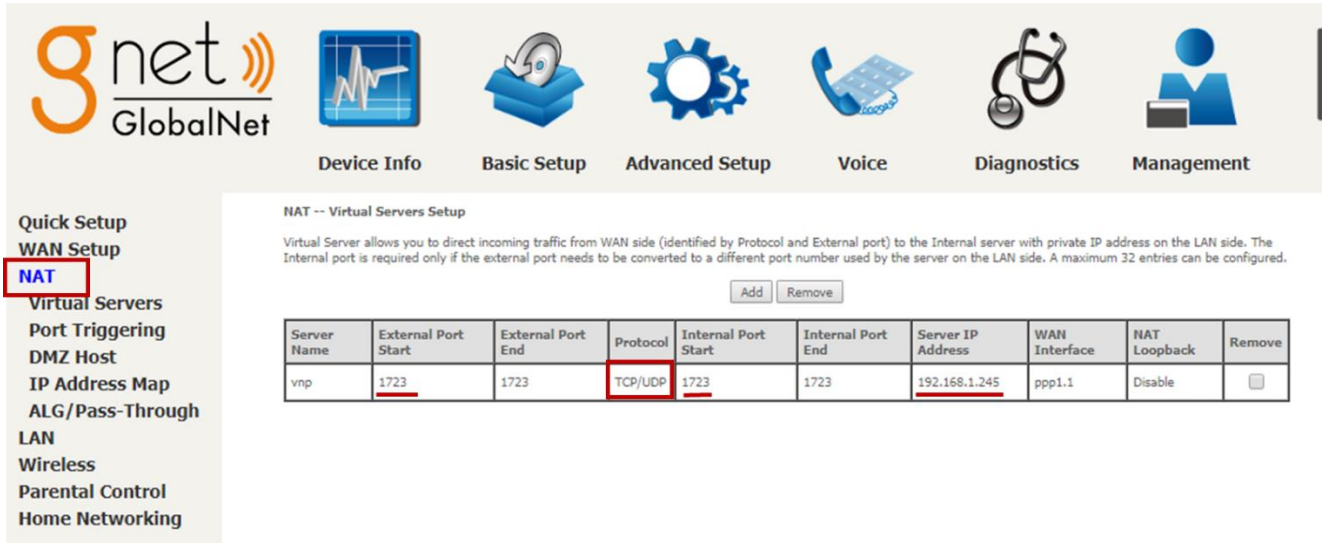
4) Scroll down and make sure Routing and Remote Access is allowed on Private and Public.


Allowed apps
« All Control Panel Items › Windows Firewall › Allowed apps
Search Control Panel
File Edit View Tools Help
Allow apps to communicate through Windows Firewall
ge settings.
Change settings
Routing and Remote Access Properties
Name:
Routing and Remote Access
Description:
This feature is used to allow incoming VPN and RAS connections.
OK
Private
Public
Remote Volume Management
Routing and Remote Access
Search
Secure Socket Tunneling Protocol
SNMP Trap
Store
Details...
Remove
Allow another app...
OK
Cancel

14.1.1.3 Router Configuration

On the BeanScape® Multiview Server side, open the Router dashboard and open the Port 1723 for both TCP and UDP.

To authorize this port, go to NAT setting or Firewall setting (it depends du router) and add new rule related to the IP address assigned to the PC hosting the BeanScape Server.

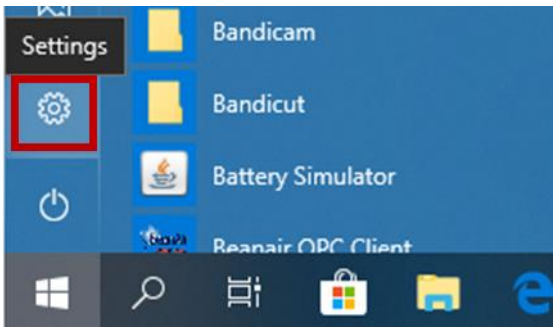


14.1.2 VPN Connection (Client)

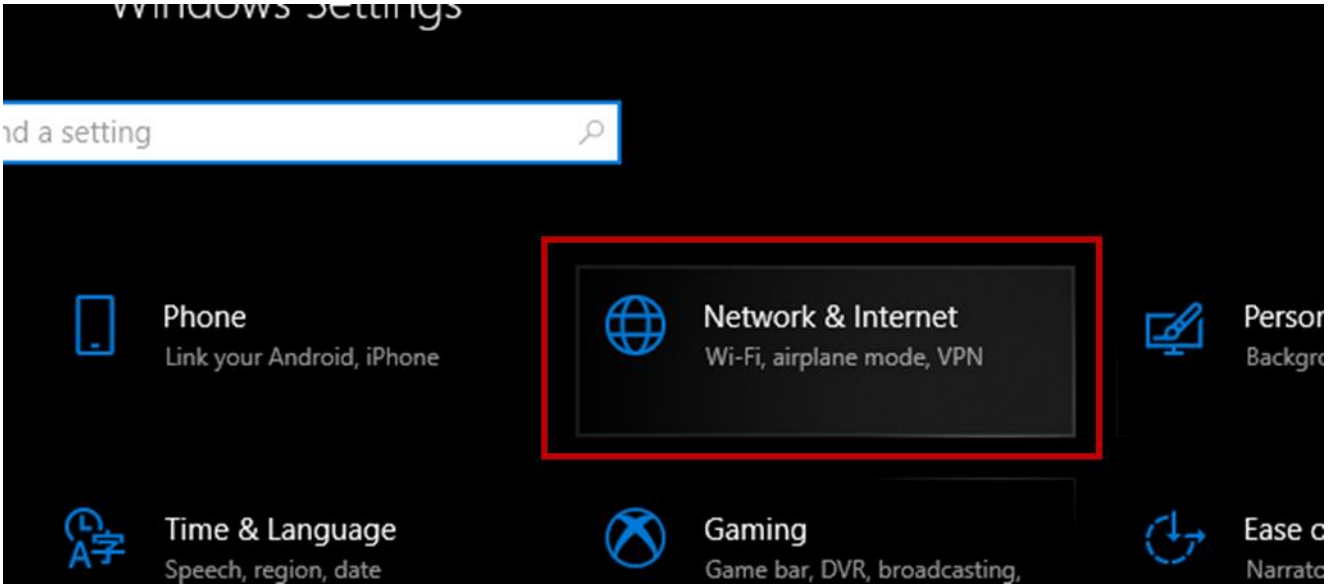
On the Client side, before installing BeanScape® Client, user have to setup a VPN connection to establish the link with the distant BeanScape Multiview Server.

To create a new VPN connection:

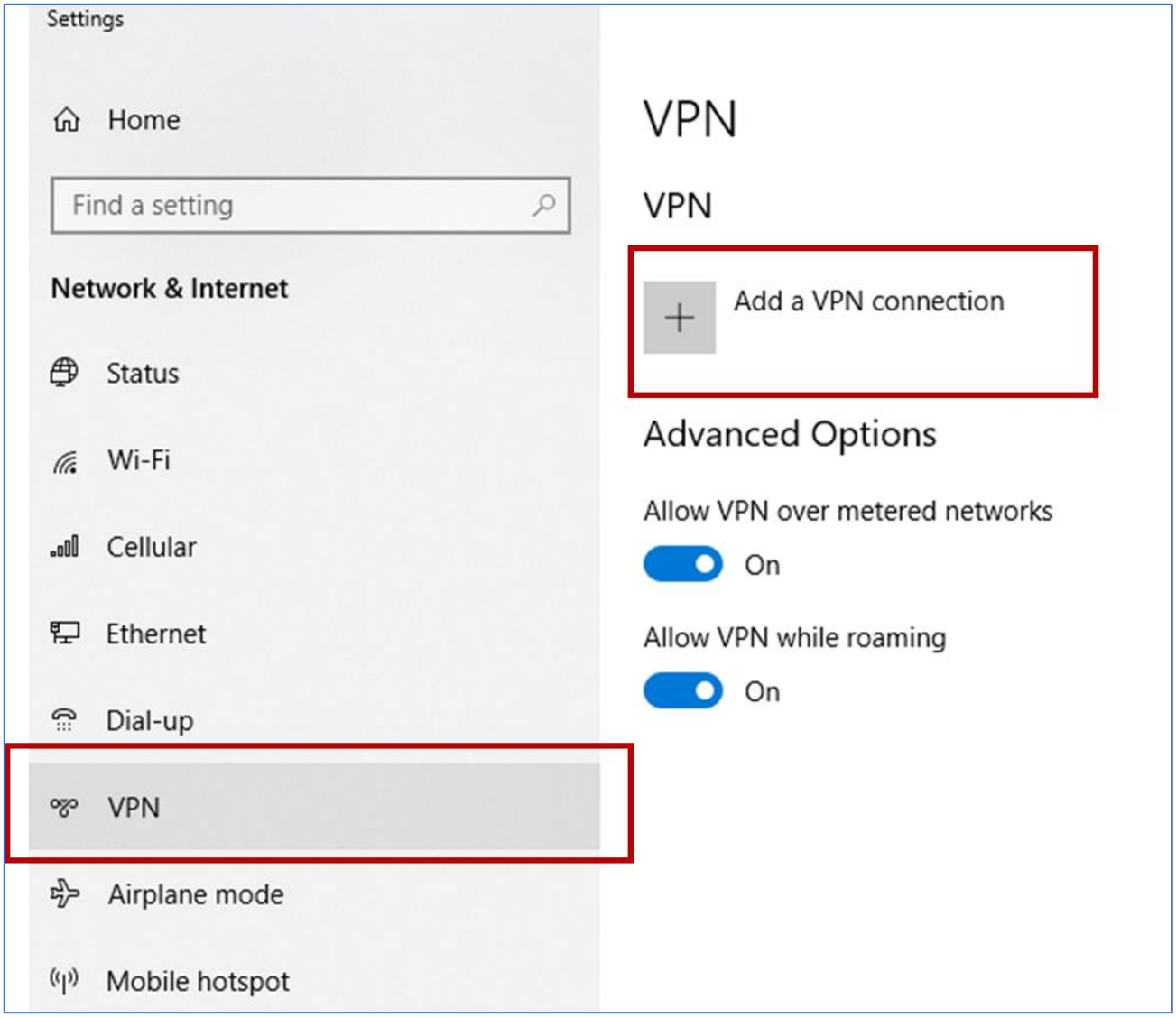
1) Go to setting



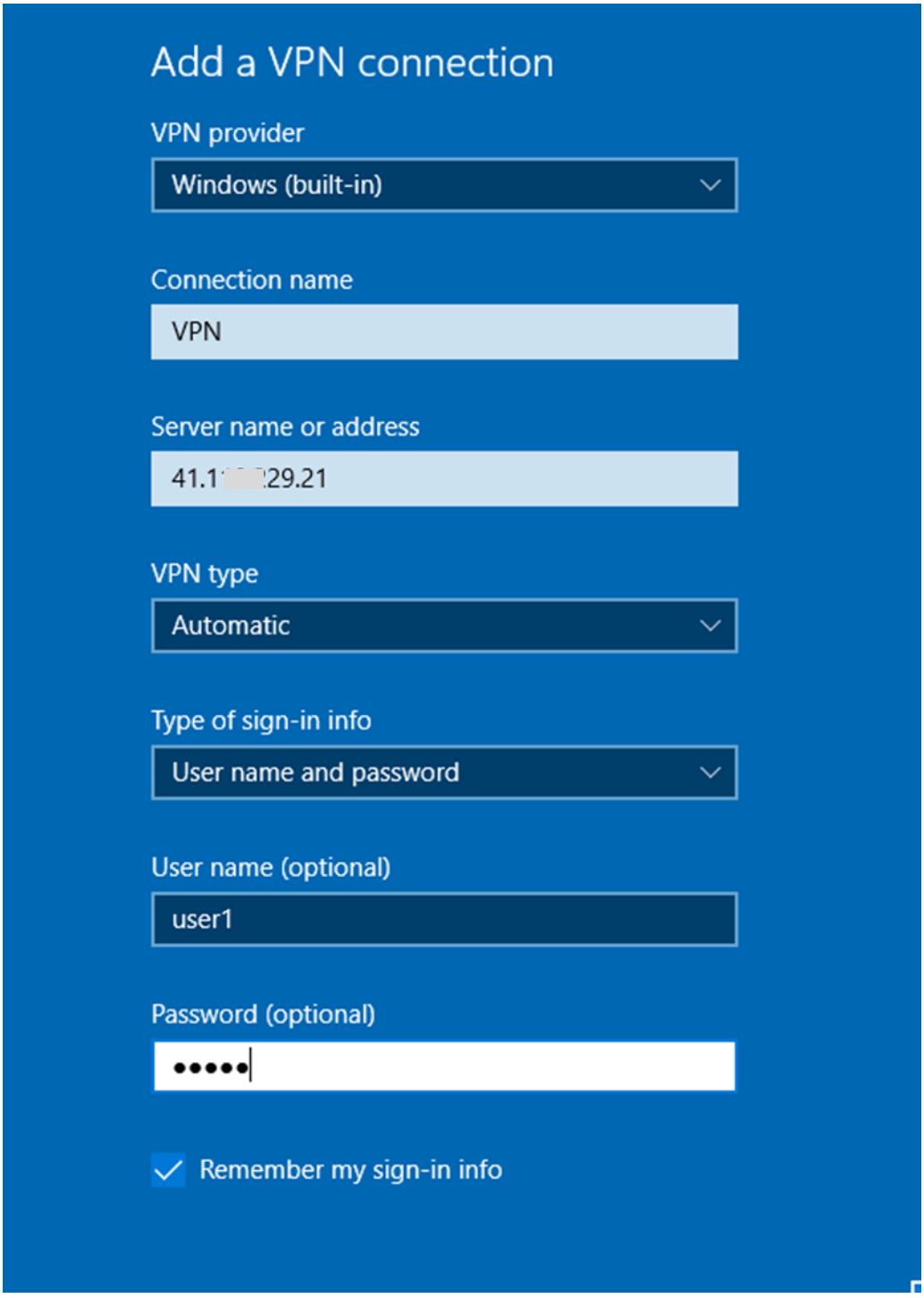
2) Select Network & Internet



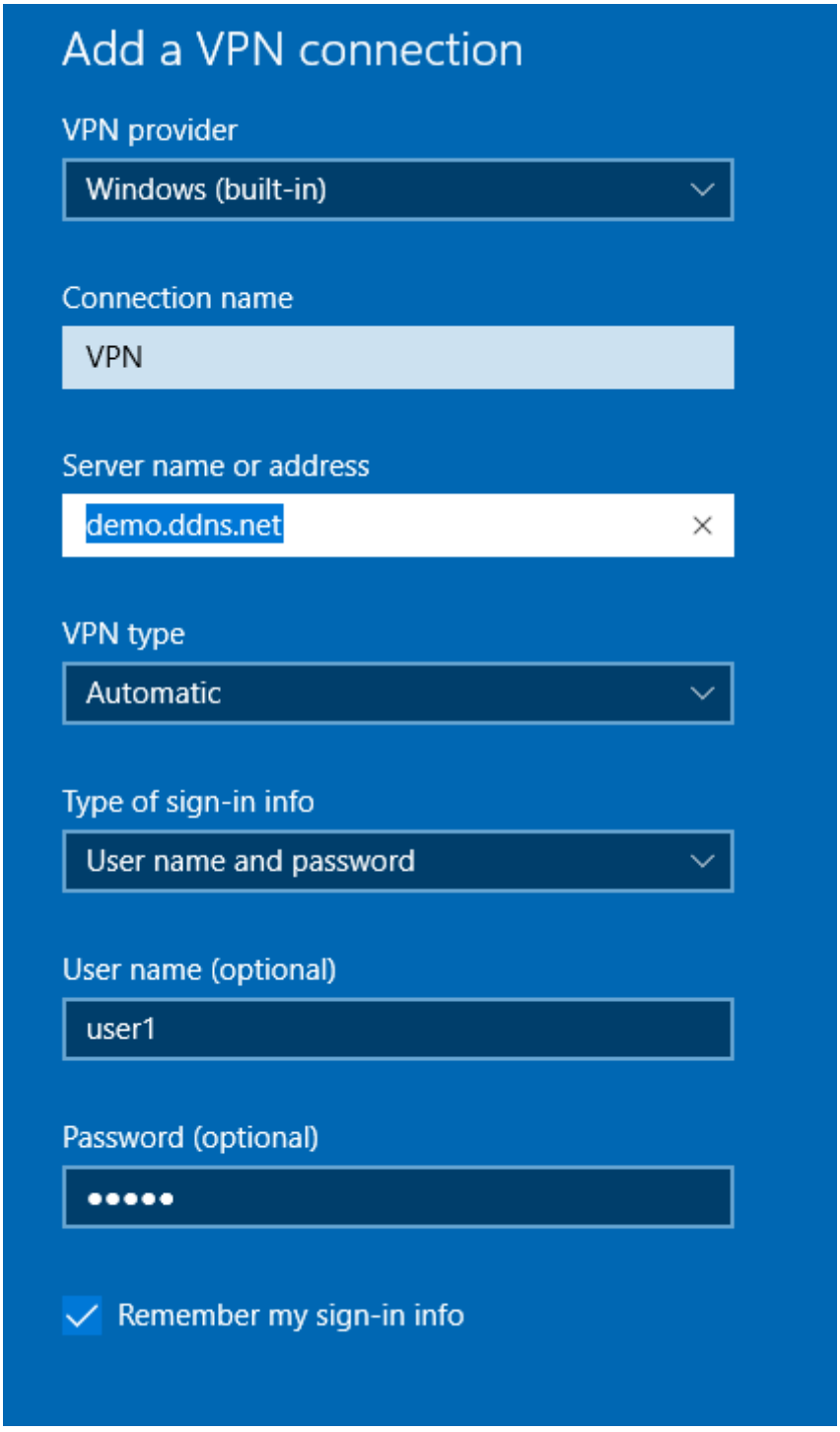
3) On the Left panel, click on VPN then select “Add a VPN connection”



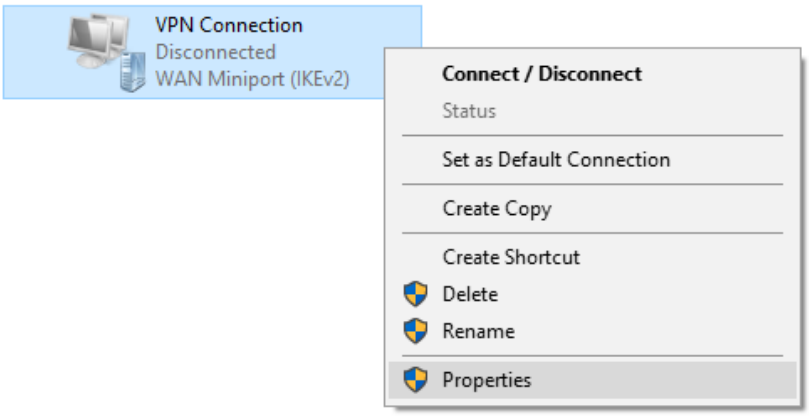
4) Tape the Public Ip of your VPN and use the Login parameters already created



If you are using a Public Dynamic IP, tape the DDNS address instead of the IP (see Case of Dynamic IP)

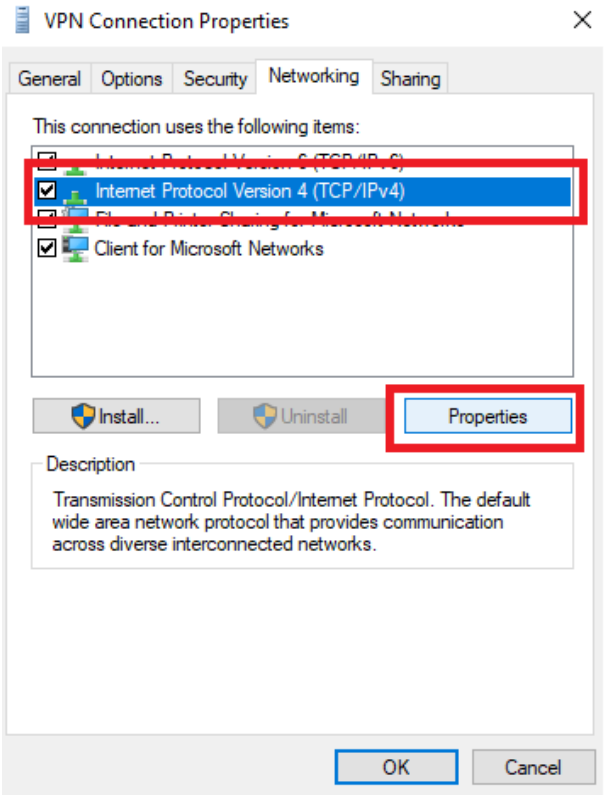


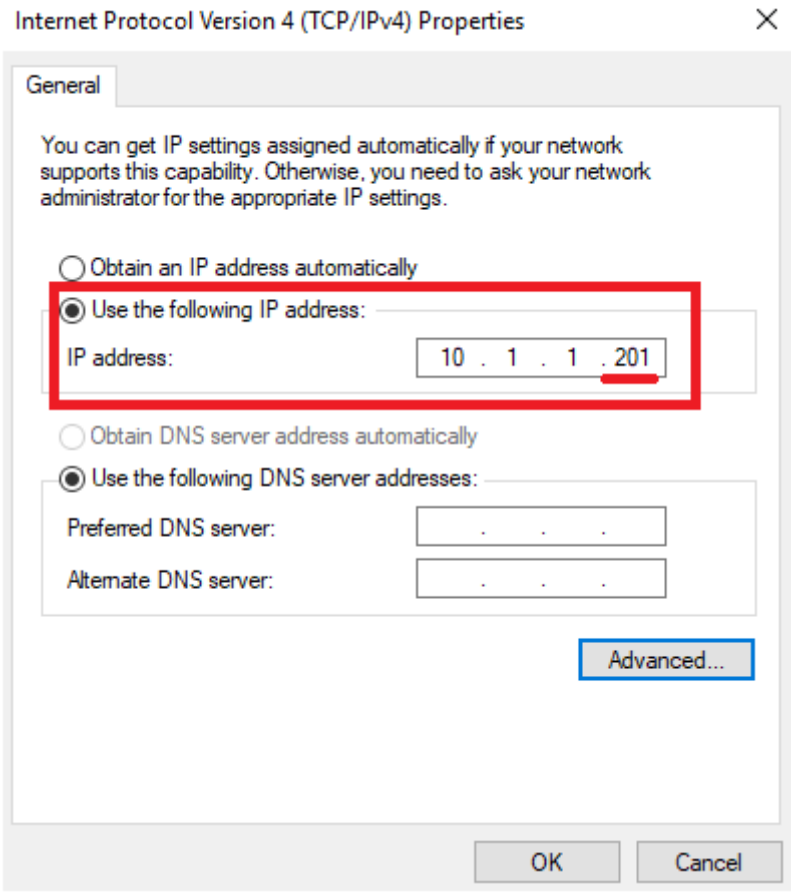
5) Go the Network Adapter Settings and Right click on the VPN Connection Profile



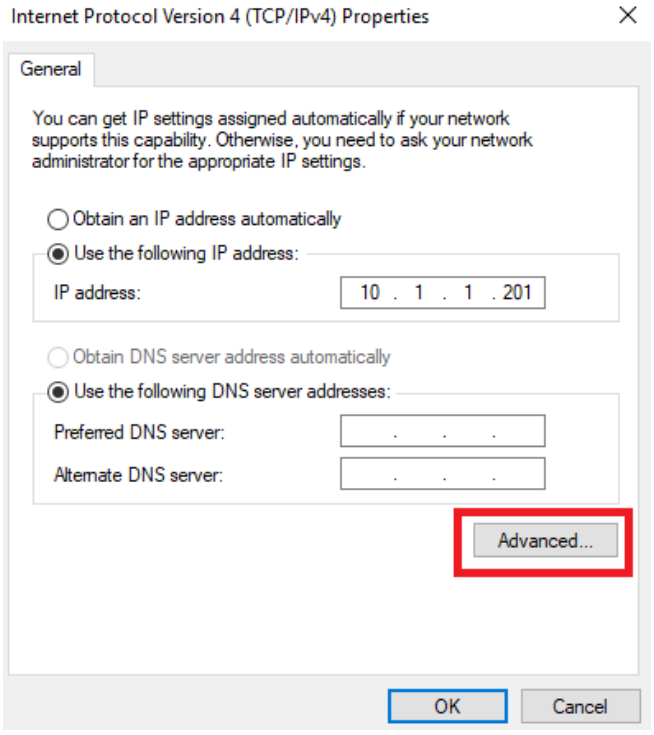
On Properties go to Networking tab and edit the Internet Protocol Version 4 Parameters by assigning to the VPN Client the First IP address on the VPN Range.

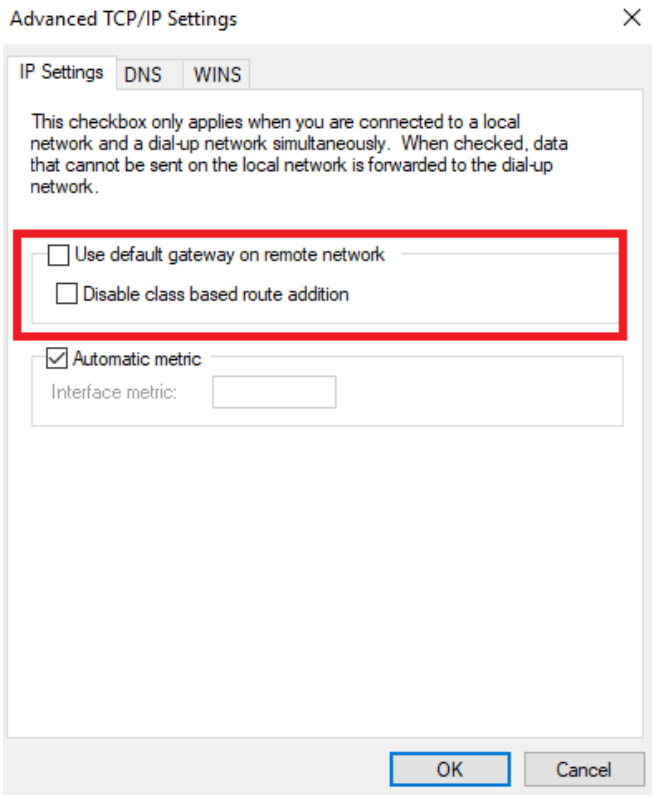
In our example the VPN server address is 10.1.1.200, the Client should be configured : 10.1.1.201 to receive the first IP of the range.



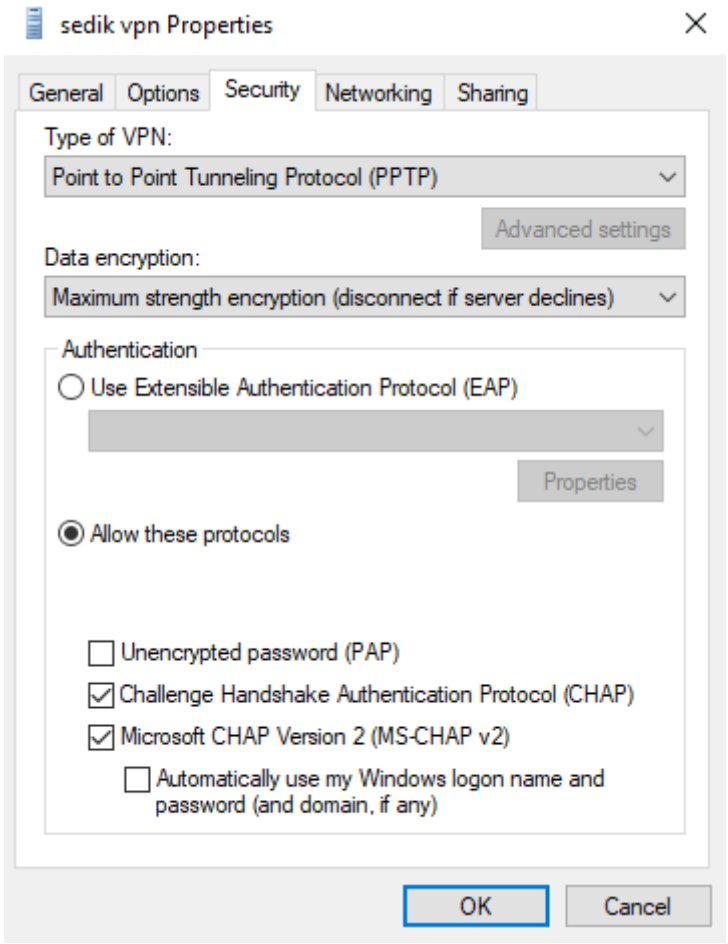


Go to Advanced and Disable using the Default gateway by the VPN Client



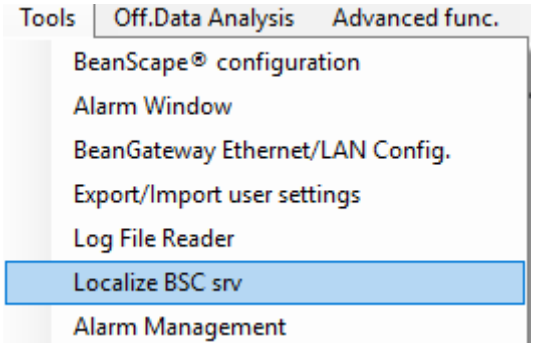


6) On the Security tab, Please make sure that following options are respected

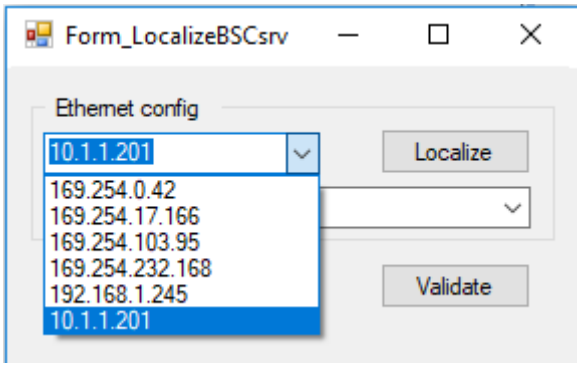


14.1.3 Localizing Multiview Server

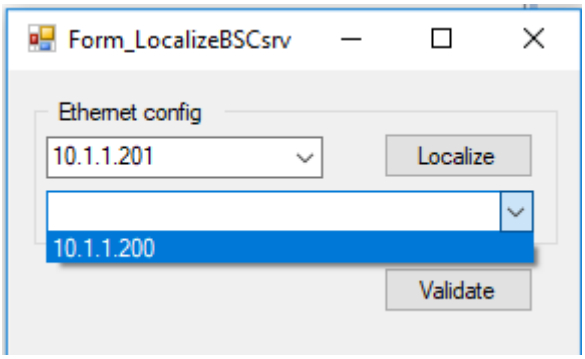
1) On the BeanScape Client, Go to Tools and select BSC srv to localize the distant Multiview server.



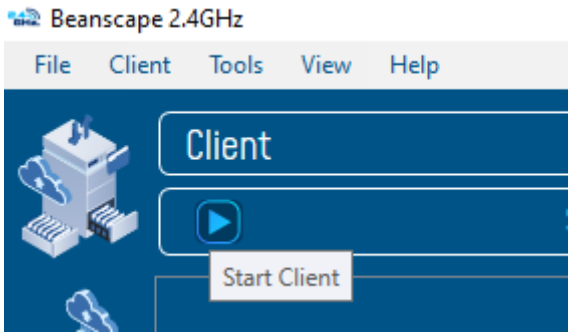
2) Select the IP address assigned to your computer by the VPN connection and click on Localize



3) Select the IP address of the VPN server



4) Click on Start Client

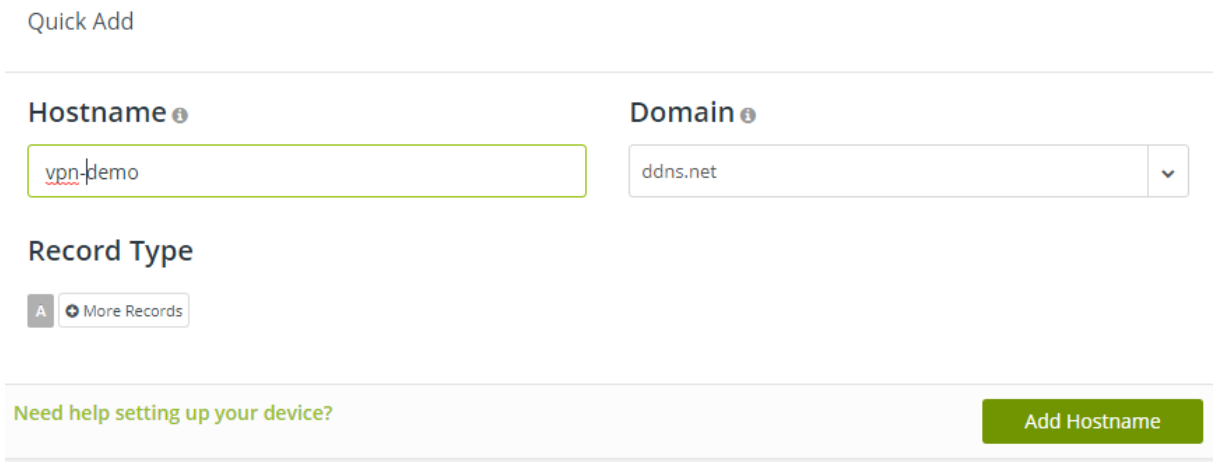


14.1.4 Case of Dynamic IP

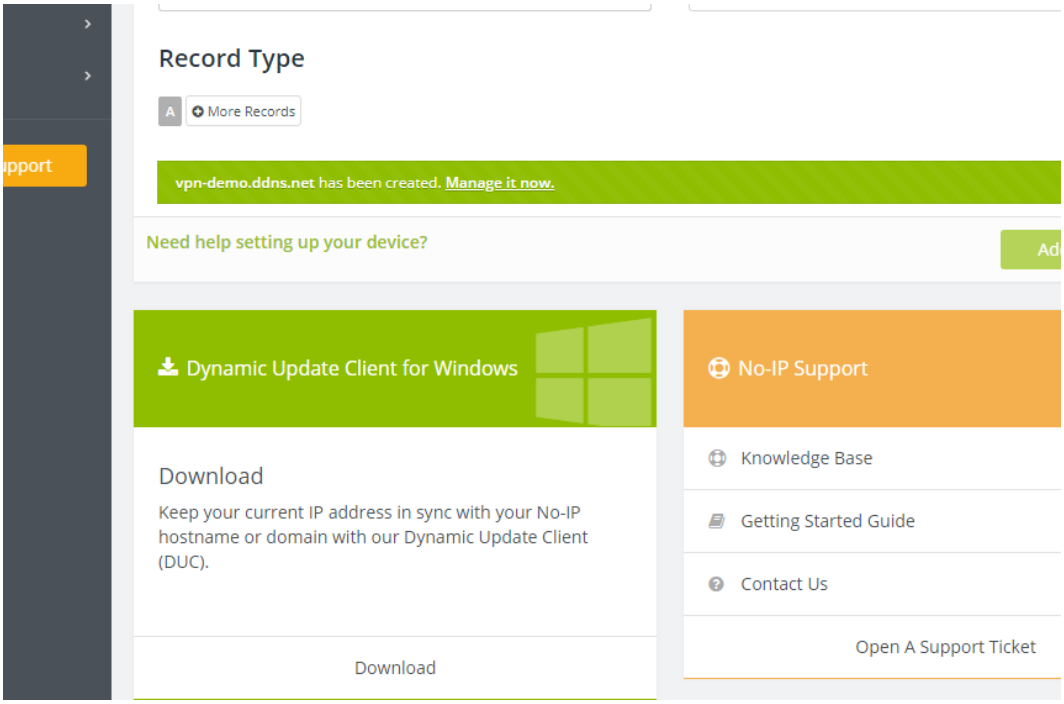
In case of Public Dynamic IP on the VPN server side, it is recommended to use NO-IP/Dynamic DNS. Using a DDNS will solve the issue of dynamic IP and keep your VPN Client connected to the VPN server.

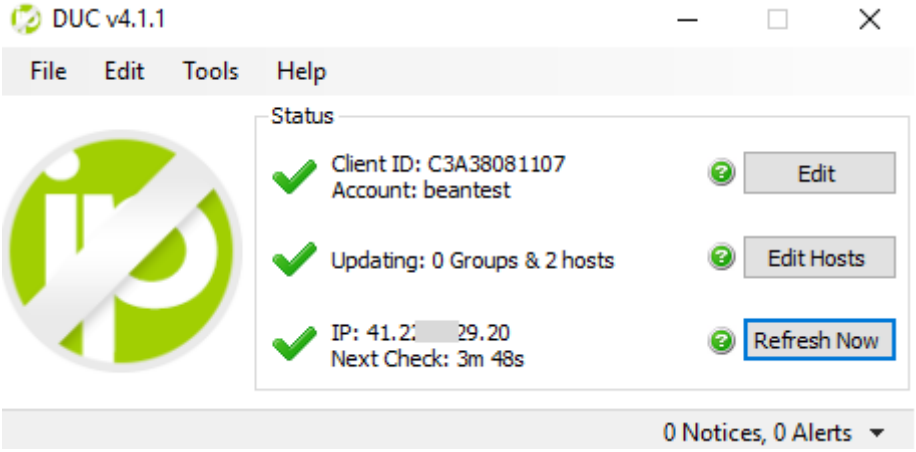
To configure your DDN:

1) Go to an online DDNS provider like noip.com
2) Create your account
3) Create a Hostname

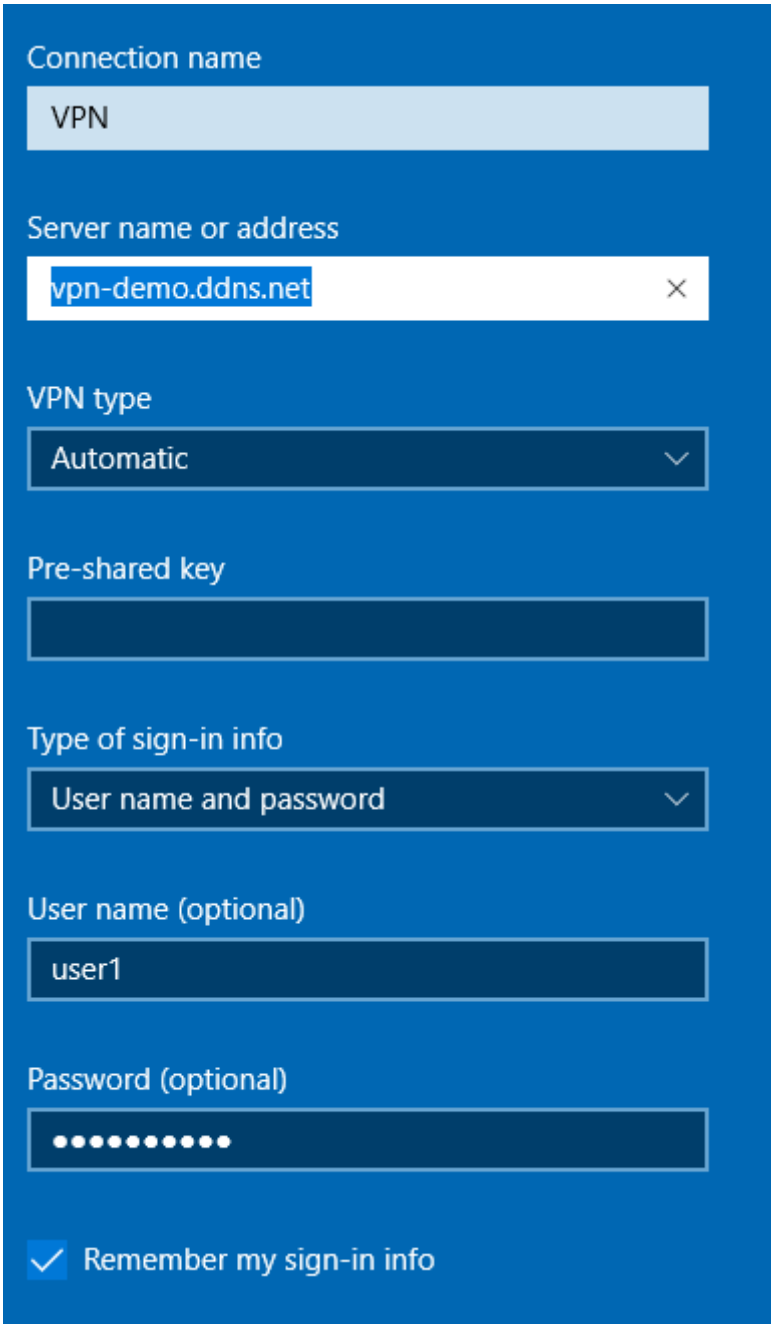


4) Install the NO-IP Agent on the Computer hosting the VPN server to update automatically the state of Public IP





5) On the VPN Client Side use the DDNS address to configure your VPN connection


Connection name
VPN
Server name or address
vpn-demo.ddns.net
VPN type
Automatic
Pre-shared key
Type of sign-in info
User name and password
User name (optional)
user1
Password (optional)
Remember my sign-in info

14.2 APPENDIX 2: AUTO-START BEANSCAPE®

Auto-starting BeanScape® monitoring software is highly recommended for users who need to run test on times of the day with no human intervention. For example, when you need to take temperature measures during the night and no employee is available to open the software and run the server.

Here we provide a quick solution:

14.2.1 Auto-start software

- On BeanScape, click: Tools -> Options

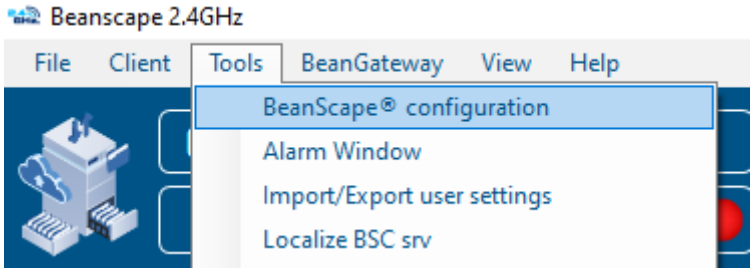


Figure 61: BeanScape Configuration menu

- Check “AutoStart BeanScape” box. This will start automatically the software.

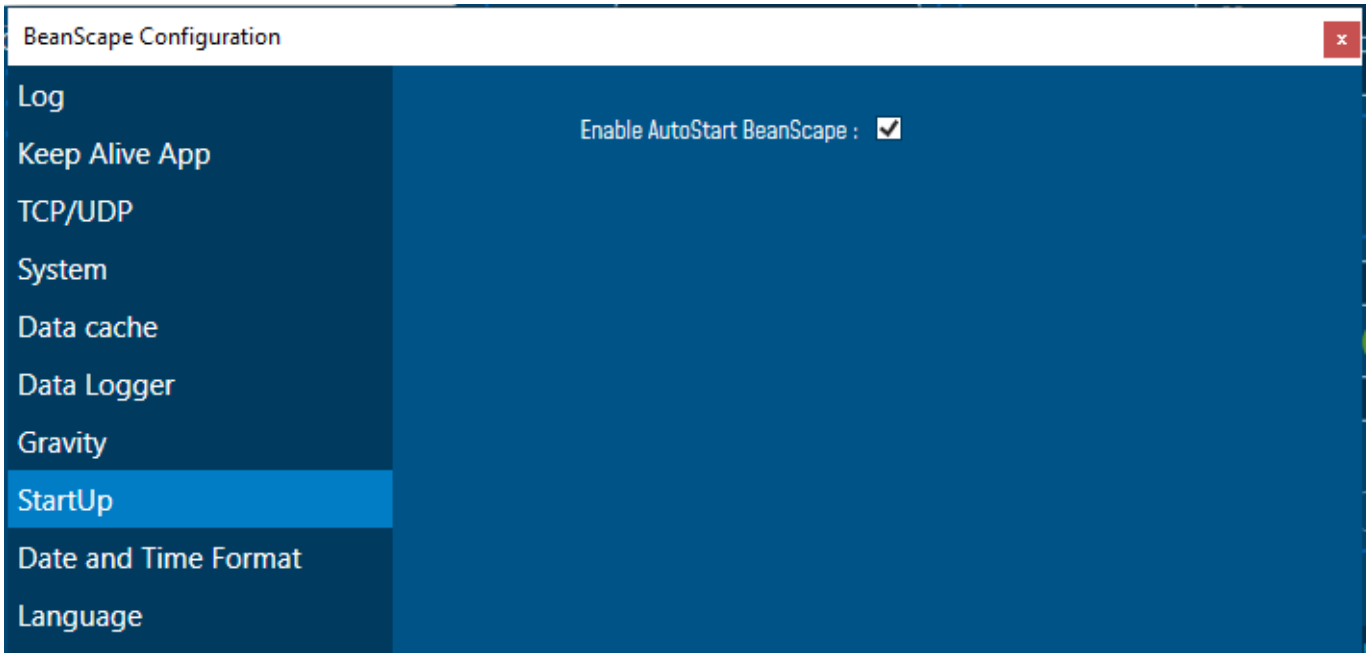


Figure 62: Auto Start option

14.3 APPENDIX 3 : FIREWALL EXCEPTION FOR BEANSCAPE®

By default, firewall blocks all unknown network traffic coming in to the network. To permit traffic through the firewall we create exceptions (or rules) that allow certain traffic on the network. In our case the rules are defined by the software which is BeanScape.

Usually when launching BeanScape for the first time your Windows OS will ask you to add an exception and to allow the software to use your network resources, however in case this doesn't occur or rejected, manually adding BeanScape to exceptions list is possible through these following steps:

1. Use your Search bar at the windows launcher and look for "Allow an app through Windows Firewall"

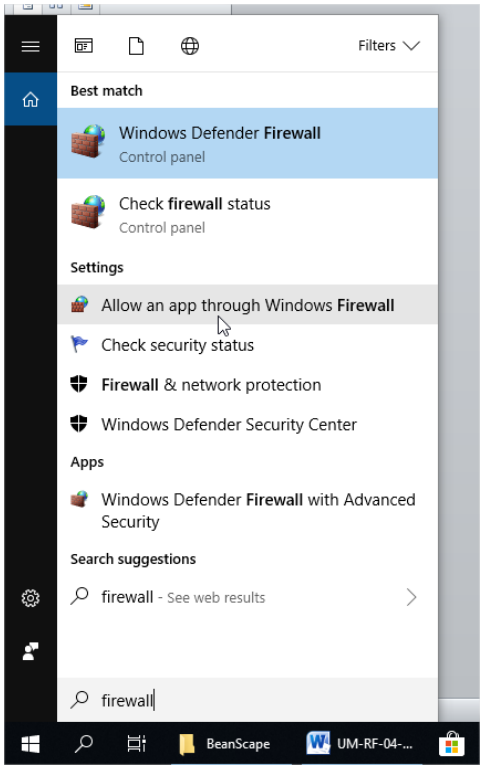


Figure 63 :Windows search for firewall screenshot

2. Look for BeanScape in the list and check its box, check Private if you are only willing to use BeanScape in your LAN or Public for allowing remote access from outside the LAN.Validate and your BeanScape will be allowed in your network.

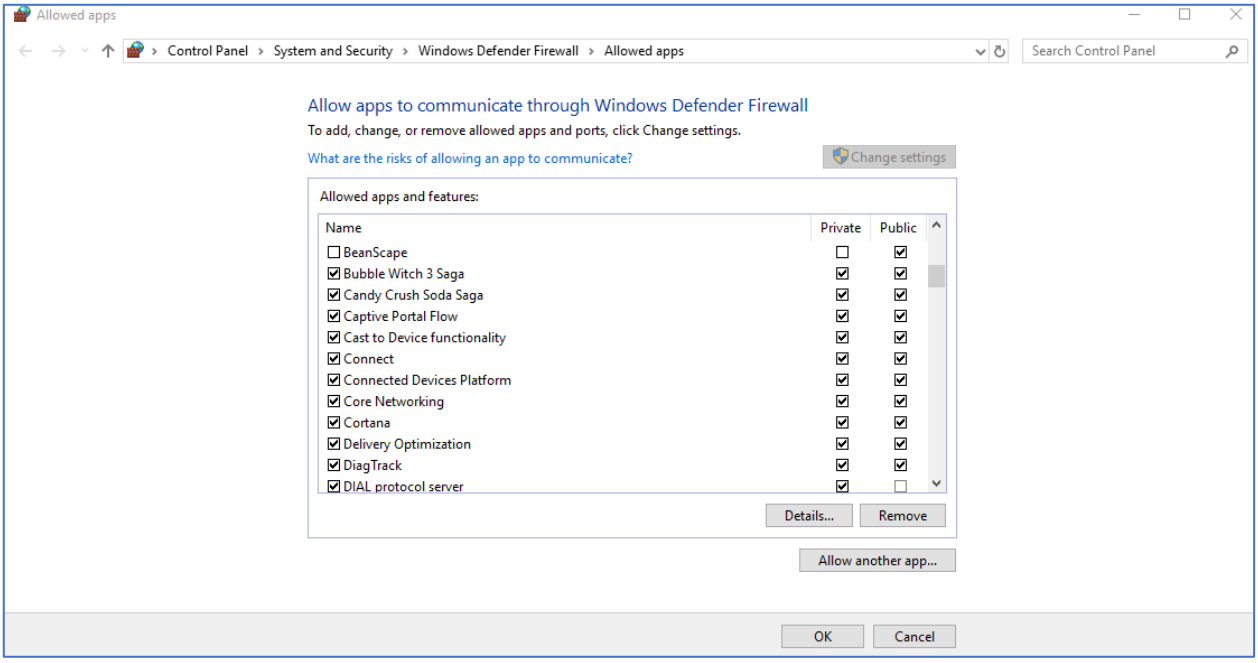


Figure 64: allowed apps window

If you are not familiar to configure a firewall exception, you can directly from BeanScape® add this rule automatically.

On the BeanScape® menu select Tools, then Advanced Settings then click on validate to add BeanScape® to the Firewall.

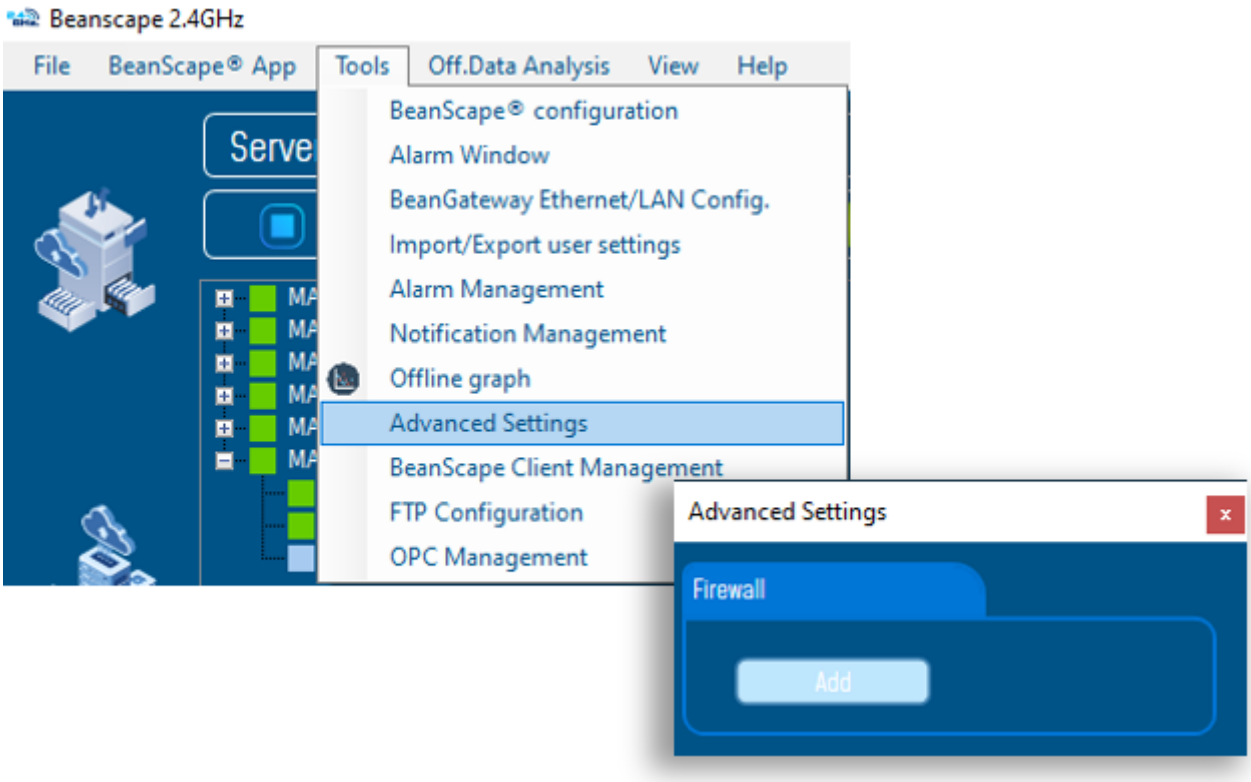


Figure 65: Firewall auto exception