



Universal-Adapter documentation

INSTALLING AND USING ANYVIZ UNIVERSAL-ADAPTER

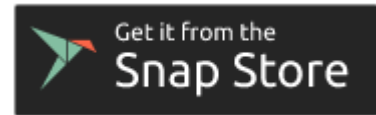
VERSION 0.9.0.0

CONTENT

Target specifications	2
Install Cloud Adapter on Linux	2
Easy guided installation.....	2
Using snap	3
Manually download package.....	3
Uninstall Cloud Adapter on Linux.....	3
Via install script	3
With dpkg packet manager	3
With IPKG packet manager	3
Using Cloud Adapter in Docker container	3
Install Cloud Adapter on Windows.....	4
Install using winget.....	5
Config Cloud Adapter	5
Configuration paramter.....	6
Status display	6
Managing Connections.....	6
Create OPC-UA connection	6
OPC-UA Encryption.....	6
Create Modbus TCP connection:.....	7
Create Modbus RTU connection:	7
Create Siemens TCP Connection	8
Create Beckhoff ADS connection	10
Create EtherNet/IP connection	11
Create BACnet Connection.....	11
Create M-Bus connection.....	12
Create M-Bus over TCP connection.....	12
Connection confirmation	13
AnyViz VPN.....	13
Diagnostics	13

USING SNAP

AnyViz Cloud Adapter is available in Canonical's snap store. Follow [these](#) instructions to install the snap on your system.



MANUALLY DOWNLOAD PACKAGE

Alternatively, you can download the cloud adapter as one of the following packages and install it manually.

Debian packages

X86	https://download.anyviz.io/anyviz_x86.deb
X64	https://download.anyviz.io/anyviz_x64.deb
ARM	https://download.anyviz.io/anyviz_ARM.deb
ARM64	https://download.anyviz.io/anyviz_ARM64.deb

Itsy packages

X86	http://download.anyviz.io/anyviz_x86.ipk
X64	http://download.anyviz.io/anyviz_x64.ipk
ARM	http://download.anyviz.io/anyviz_ARM.ipk
ARM64	http://download.anyviz.io/anyviz_ARM64.ipk

The download link is available with http and https. After successful installation, the AnyViz cloud adapter starts automatically.

UNINSTALL CLOUD ADAPTER ON LINUX

For uninstalling AnyViz cloud adapter enter the following command:

VIA INSTALL SCRIPT

```
wget -qO - http://install.anyviz.io | sh -s remove
```

WITH DPKG PACKET MANAGER

```
sudo dpkg -r anyvizcloudadapter
```

WITH IPKG PACKET MANAGER

```
sudo ipkg remove anyvizcloudadapter
```

USING CLOUD ADAPTER IN DOCKER CONTAINER

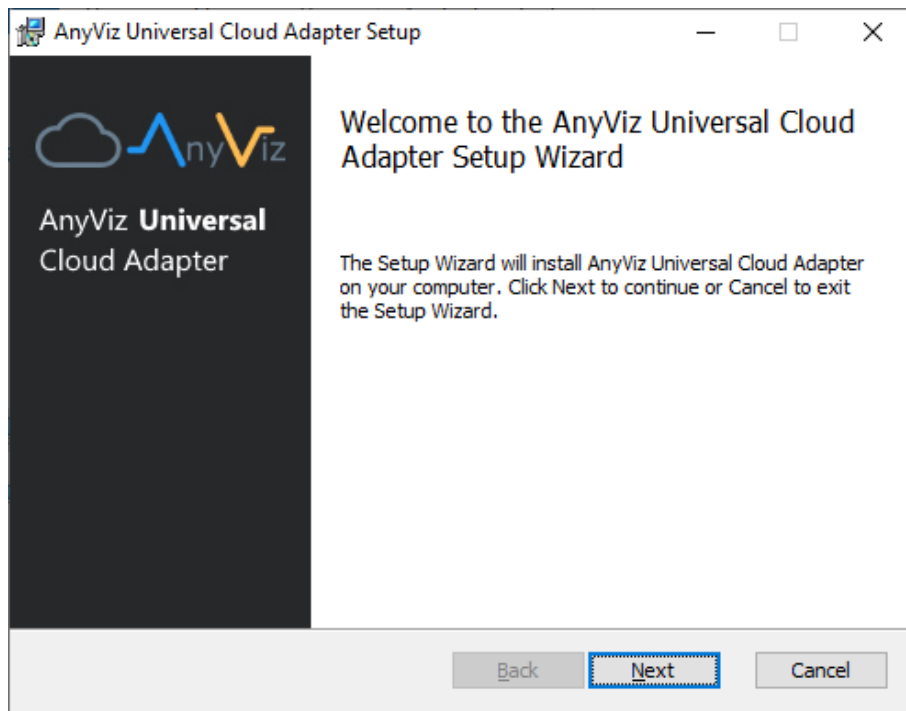
AnyViz Cloud Adapter is also available on [Docker Hub](#). Enter the following command to run AnyViz cloud adapter on a docker system:



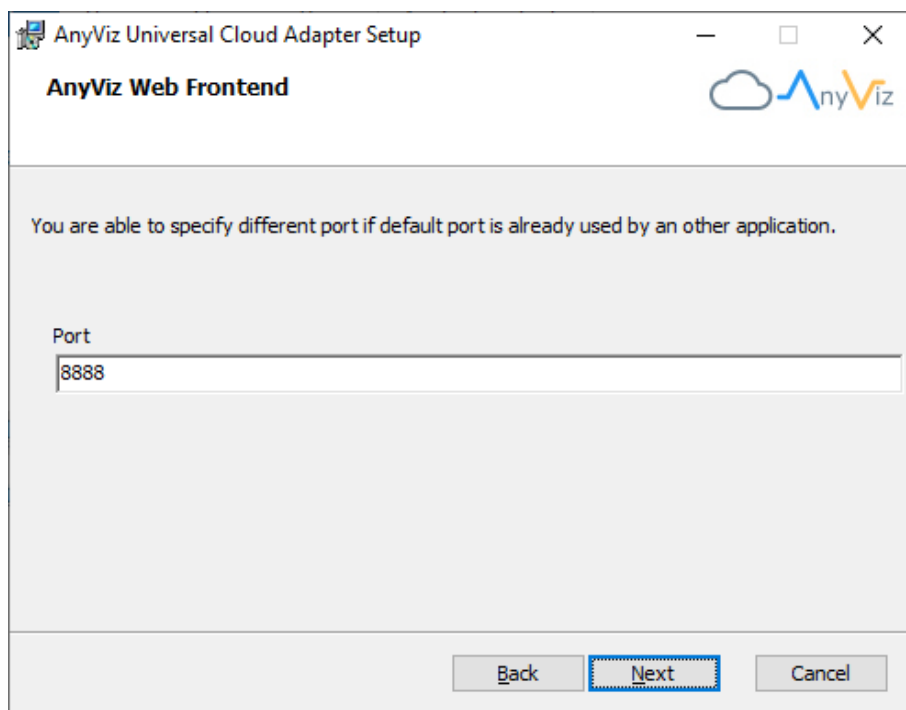
```
docker run -d -p 80:8888 anyviz/cloudadapter
```

INSTALL CLOUD ADAPTER ON WINDOWS

Download Setup file from <https://download.anyviz.de/AnyVizUniversalCloudAdapter.msi> and follow the instructions of the setup wizard.



The Cloud Adapter has a WEB frontend accessible via port 8888. If this port already exists on your system, you can specify an alternative port here.



INSTALL USING WINGET

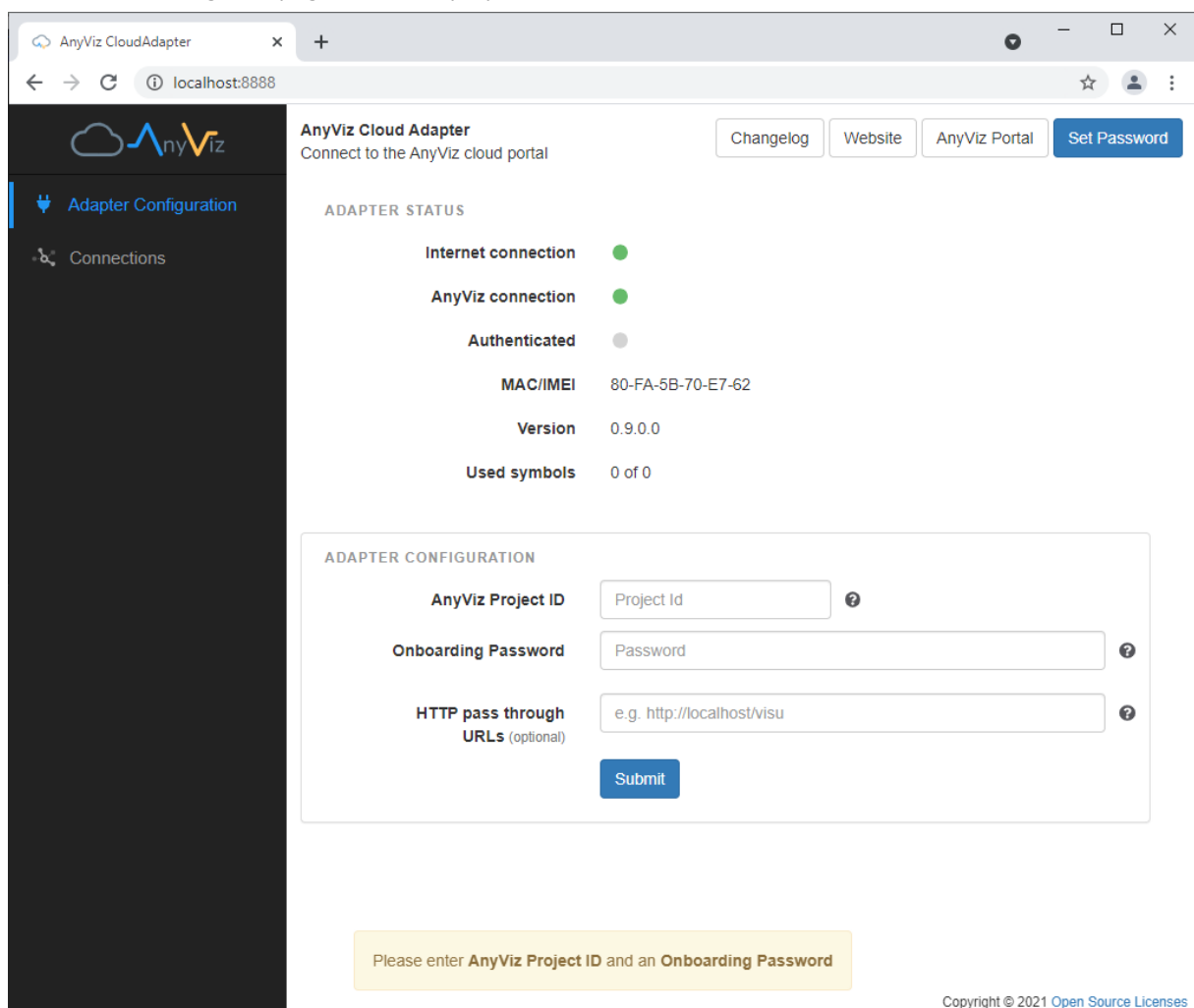
As an alternative to the MSI installer package, you can use the new Windows Package Manager called “winget”. For more information see [AnyViz Cloud Adapter pkg for winget](#).

```
winget install anyviz
```

CONFIG CLOUD ADAPTER

The cloud adapter comes with a web server. Enter the following URL to get to the configuration interface: [http://\[host\]:8888](http://[host]:8888)

Then the following web page will be displayed:



The screenshot shows a web browser window displaying the AnyViz Cloud Adapter configuration interface. The browser address bar shows `localhost:8888`. The interface has a dark sidebar on the left with the AnyViz logo and two menu items: "Adapter Configuration" (selected) and "Connections". The main content area is titled "AnyViz Cloud Adapter" and includes a subtitle "Connect to the AnyViz cloud portal" and four buttons: "Changelog", "Website", "AnyViz Portal", and "Set Password".

ADAPTER STATUS

Internet connection	●
AnyViz connection	●
Authenticated	●
MAC/IMEI	80-FA-5B-70-E7-62
Version	0.9.0.0
Used symbols	0 of 0

ADAPTER CONFIGURATION

AnyViz Project ID	<input type="text" value="Project Id"/>	?
Onboarding Password	<input type="password" value="Password"/>	?
HTTP pass through URLs (optional)	<input type="text" value="e.g. http://localhost/visu"/>	?

Please enter **AnyViz Project ID** and an **Onboarding Password**

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CONFIGURATION PARAMETER

AnyViz Project Id	Project ID generated by AnyViz portal: Open the project settings at the top right of the AnyViz Portal
Onboarding Password	Password for secure Adapter communication: The password must be entered in AnyViz Portal once the connection has been established
HTTP pass through URLs	Specify URL(s) for pass-through to the server, to display local websites in AnyViz Portal (e.g., http://localhost/visu). Multiple URLs can be separated with a semicolon. Limitations: No https support
Allow incoming VPN	Allow AnyViz Administrators to establish a secure VPN connection to this device (only displayed on Linux devices with TUN driver available)
Allow access to local network	If VPN is enabled, you can allow access to the local network and connect to individual devices (only display if VPN is enabled and iptables is available)

Please click submit after changing configuration parameter.

STATUS DISPLAY

Internet connection	Green if the address of the AnyViz portal can be resolved by the DNS server.
AnyViz connection	Green if the connection to AnyViz portal can be established.
Authenticated	Green if the adapter password matches the password entered in Portal
MAC Address	Address of the network adapter which is used by the cloud adapter
Used endpoints	Gives the number of tags used in AnyViz and the number of symbols which are sent to the AnyViz portal

MANAGING CONNECTIONS

The universal cloud Adapter can handle several different connections. Switch to "Connections" and click on "New Connection" for a selection. You can then set up the connection as described below.

CREATE OPC-UA CONNECTION

Name	Enter a name to appear later in the AnyViz portal
Server url	Enter the URL of your OPC-UA server (e.g. opc.tcp://server:48010)
User name	If your OPC-UA-Server requires authentication, enter the username. Otherwise leave blank.
Password	If your OPC-UA-Server requires authentication, enter the password. Otherwise leave blank.

OPC-UA ENCRYPTION

The Universal Cloud Adapter automatically generates an OPC-UA client certificate valid for 20 years. By clicking on "Download client certificate", the certificate can be fetched and stored in the server as a trusted client certificate.

CREATE MODBUS TCP CONNECTION:

Name	Enter a name to appear later in the AnyViz portal
Hostname	Enter the hostname or IP address of the device
Port	Enter the TCP port number. Default for Modbus is 502
Byte order	Typically, the values of the Modbus registers are placed in Big Endian format. If the values do not appear as expected, try another "Byte order" to retrieve the values in Little Endian (or with swapped bytes) format.

Now click on "New row" to create one or more new symbols. The following parameters can be entered.

Name	Enter a name to appear later in the AnyViz portal
Unit ID	Enter the unit ID (also known as slave ID) of your device
Function Code	The Modbus function code
Data type	Choose a data type from the list
Address	Enter the Modbus register address (zero based). If the registers in your device documentation start at 1, they may be register numbers. In this case, subtract the register number by 1.
Length	Only needed in the case of data type String and specifies the length in bytes.

Note: Some device descriptions are using the *Modicon convention*. If you see the first register on the list having a number 40001, that really tells you register #1, and it is a holding register (function code 3)

CREATE MODBUS RTU CONNECTION:

Name	Enter a name to appear later in the AnyViz portal
Port	The Cloud Adapter lists all serial ports of your system. Select the port to which your Modbus device is connected.
Stop bits	Number of the stop bits (see description of the Modbus device)
Parity	Parity bit (see description of the Modbus device)
Baudrate	Baud rate (see description of the Modbus device)
Byte order	Typically, the values of the Modbus registers are placed in Big Endian format. If the values do not appear as expected, try another "Byte order" to retrieve the values in Little Endian (or with swapped bytes) format.

Now click on "New row" to create one or more new symbols. The following parameters can be entered.

Name	Enter a name to appear later in the AnyViz portal
Unit ID	Enter the unit ID (also known as slave ID) of your device
Function Code	The Modbus function code
Data type	Choose a data type from the list
Address	Enter the Modbus register address (zero based). If the registers in your device documentation start at 1, they may be register numbers. In this case, subtract the register number by 1.
Length	Only needed in the case of data type String and specifies the length in bytes.

Note: Some device descriptions are using the *Modicon convention*. If you see the first register on the list having a number 40001, that really tells you register #1, and it is a holding register (function code 3)

CREATE SIEMENS TCP CONNECTION

You can read and write values from Siemens PLCs like (S7-300, S7-400, S7-1200 or S7-1500) via the RFC1006 protocol.

Name	Enter a name to appear later in the AnyViz portal
Hostname	Enter the hostname or IP address of the device
Port	Enter the TCP port number of the device (Default is 102)
Rack	Rack number of communication processor (Default is 0)
Slot	Slot number of communication process (Mostly 0 or 2)

Now click on "New row" to create one or more new symbols. The following parameters can be entered.

Name	Enter a name to appear later in the AnyViz portal
Area	Choose a supported area from the list
DB	DB-Number (only required if area is DB)
Data type	Choose a data type from the list
Address	Enter the byte address (or bit address if datatype is BIT)

Bit addressing

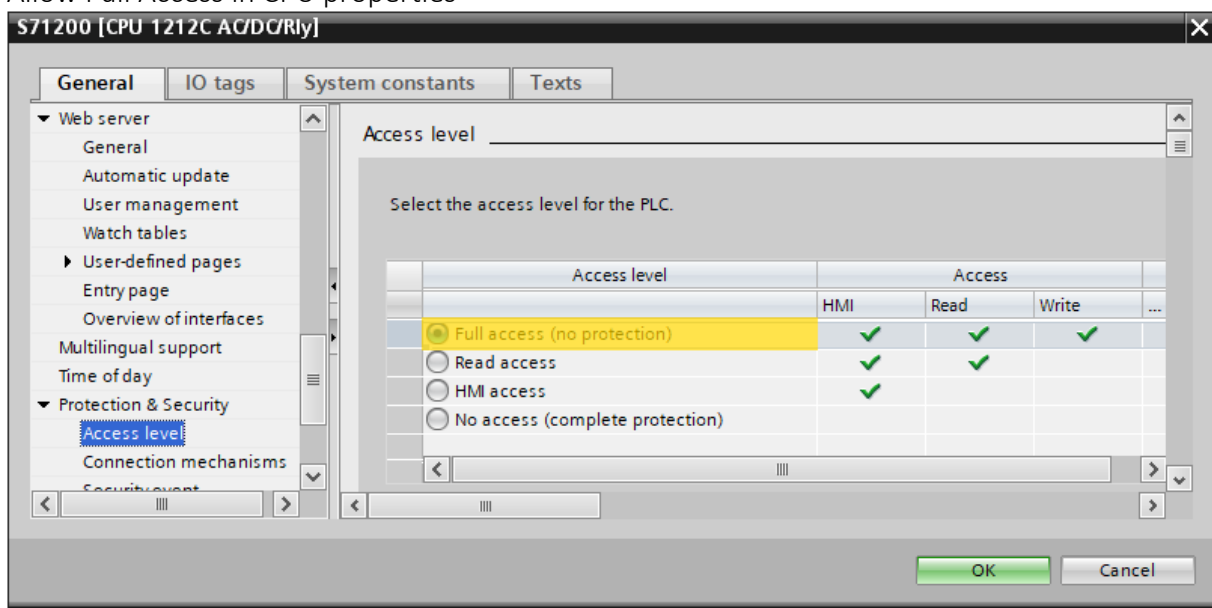
Siemens TCP allows to read or write single bits. In Siemens notation the 21th input bit is labeled with address [2.4], which means bit index 4 of byte 2. In AnyViz cloud adapter the zero-based index is needed instead. In this example data type **BIT** is specified with address **20**.

Name	Area	DB	Data type	Address	Value
Input 2.4 (input #21)	Inpi ▾		BIT (enter bit inc ▾)	20	false

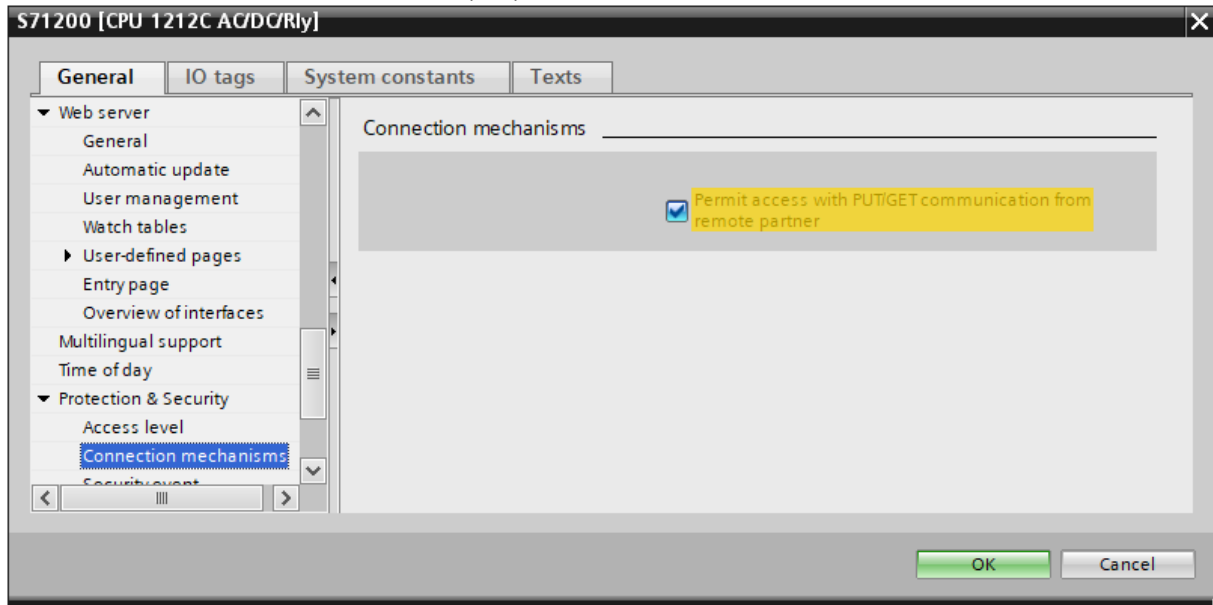
System requirements

To be able to communicate with a Siemens PLC via the RFC1006 protocol, the following settings must be made in the TIA Portal.

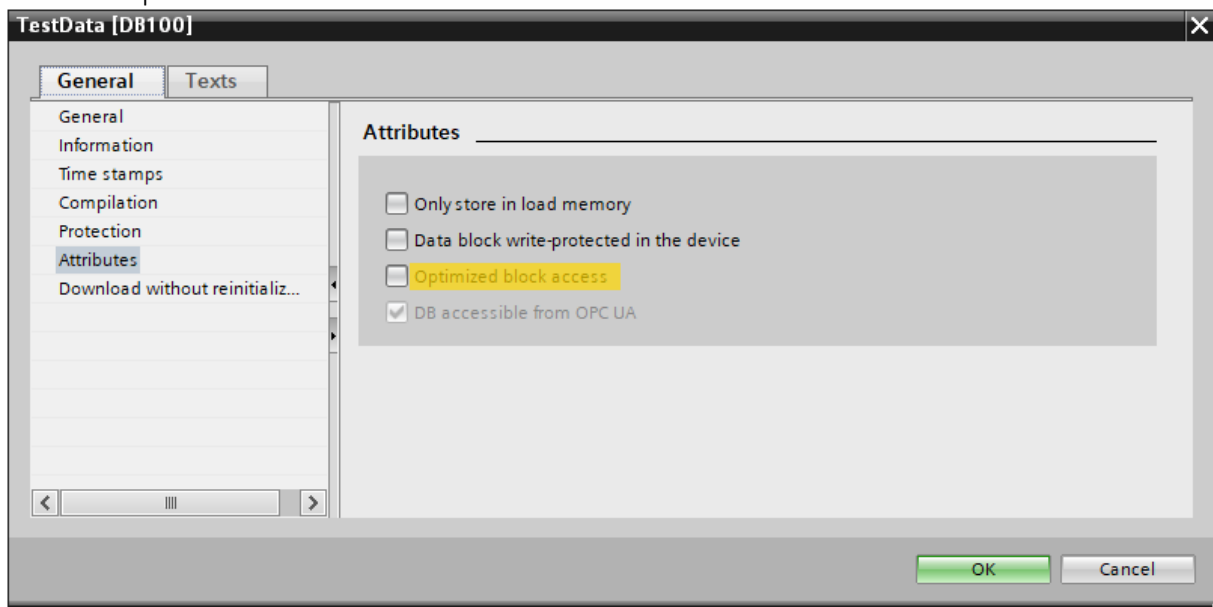
Allow Full Access in CPU properties



Permit access with PUT/GET in CPU properties



Disable "Optimized block access" in attributes of DBs



CREATE BECKHOFF ADS CONNECTION

TwinCAT ADS protocol is supported by Universal Cloud Adapter. The implementation is tested with TwinCAT 2 and TwinCAT 3 devices.

Name	Enter a name to appear later in the AnyViz portal
AMS NetId	The AMS Net Id is the address of the target PLC in the TwinCAT network. The AMS Net Id consists of 6 bytes and is represented in dot notation (e.g., 192.168.0.1.1.1)
Hostname	Enter IP address or hostname of PLC (e.g., 192.168.0.1)
Port	Port of TwinCAT runtime. These are the default ports of Beckhoff PLCs: <ul style="list-style-type: none"> • TwinCAT version 2: 801 • TwinCAT version 3: 851
Filter	Optional: If a filter is defined, only those variables of the PLC program are transmitted which have a comment containing the specified text
Local AMS NetId	Optional: Enter AMS NetId of the device where the Cloud Adapter is installed (used if this device has multiple addresses or is behind a NAT). The AMS NetId must match the route of the target device.

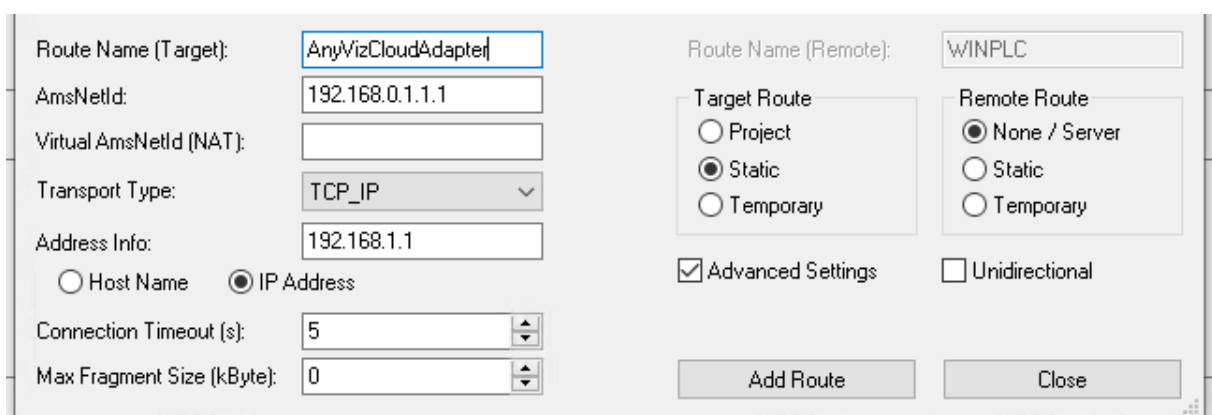
TwinCAT Routing

To enable communication between the cloud adapter and the PLC, a route must be created. Routes can be configured by several possibilities:

- TwinCAT Engineering: Go to the tree item SYSTEM/Routes and add a static route.
- TwinCAT Systray: Open the context menu by right click the TwinCAT systray icon. (not available on Windows CE devices)
 - TwinCAT 2: Go to Properties/AMS Router/Remote Computers
 - TwinCAT 3: Go to Router/Edit routes.
- TcAmsRemoteMgr: Windows CE devices can be configured locally (TC2/TC3). Tool location: /Hard Disk/System/TcAmsRemoteMgr.exe
- IPC Diagnose: Beckhoff IPC's provide a web interface for configuration ([more information](#))

Example Routing configuration

Assuming the cloud adapter has the IP address "192.168.0.1", a static route must be created with the Ams NetId "192.168.0.1.1.1"



CREATE ETHERNET/IP CONNECTION

Use EtherNet/IP protocol to connect PLCs with following types to AnyViz Cloud:

- PLC/5
- SLC 500
- Logix-class
- Micro8xx
- MicroLogix
- ControlLogix/CompactLogix
- OMRON NJ/NX Serie

Name	Enter a name to appear later in the AnyViz portal
Hostname	Enter IP address or hostname of PLC
Path	Enter CIP Path (e.g. "1,0") to define rack and slot. Leave blank on Micro PLCs
CPU	Choose the matching CPU type of the list

Now click on "New row" to create one or more new symbols. The following parameters can be entered.

Name	Name of the PLC variable (must exactly match the name in your PLC program)
Data type	Choose a data type from the list

CREATE BACNET CONNECTION

AnyViz Cloud Adapter is able to browse all BACnet IP devices in your subnet. All supported objects will be displayed in AnyViz.

Name	Enter a name to appear later in the AnyViz portal
Adapter	Choose the network adapter which is connected to your BACnet devices
Instance Number	Enter a unique BACnet instance number that will be assigned to the Cloud Adapter (Default: 269849)

Note that only one BACnet connection per cloud adapter can be created.

Currently the following BACnet objects are supported:

- Analog Input
- Analog Output
- Analog Value
- Binary Input
- Binary Output
- Binary Value
- Multi-state Input
- Multi-state Output

After the click on "Submit" a WHO-IS request is sent on the network. Afterwards the objects for each responding device will be scanned. When the scan completes, the results are available in AnyViz.

CREATE M-BUS CONNECTION

Create a M-Bus connection to browse all M-Bus devices on a serial line. Be aware that in most cases an M-Bus level converter is needed.

Name	Enter a name to appear later in the AnyViz portal
Port	The Cloud Adapter lists all serial ports of your system. Select the port to which your Modbus device is connected.
Stop bits	Number of the stop bits (see description of the Modbus device)
Parity	Parity bit (see description of the Modbus device)
Baudrate	Baud rate (see description of the Modbus device)
Min. primary address	Enter the range of primary addresses used in your environment. Enter a smaller address range to reduce time for scanning devices.
Max. primary address	
Timeout (ms)	Enter the timeout in milliseconds to wait for a device response (Default: 2000ms)

After the click on “Submit” all devices of the given address range will be read out. The values of each device will be displayed in AnyViz once the scan operation is completed. Press Submit again after adding, removing, or changing a device on the line.

CREATE M-BUS OVER TCP CONNECTION

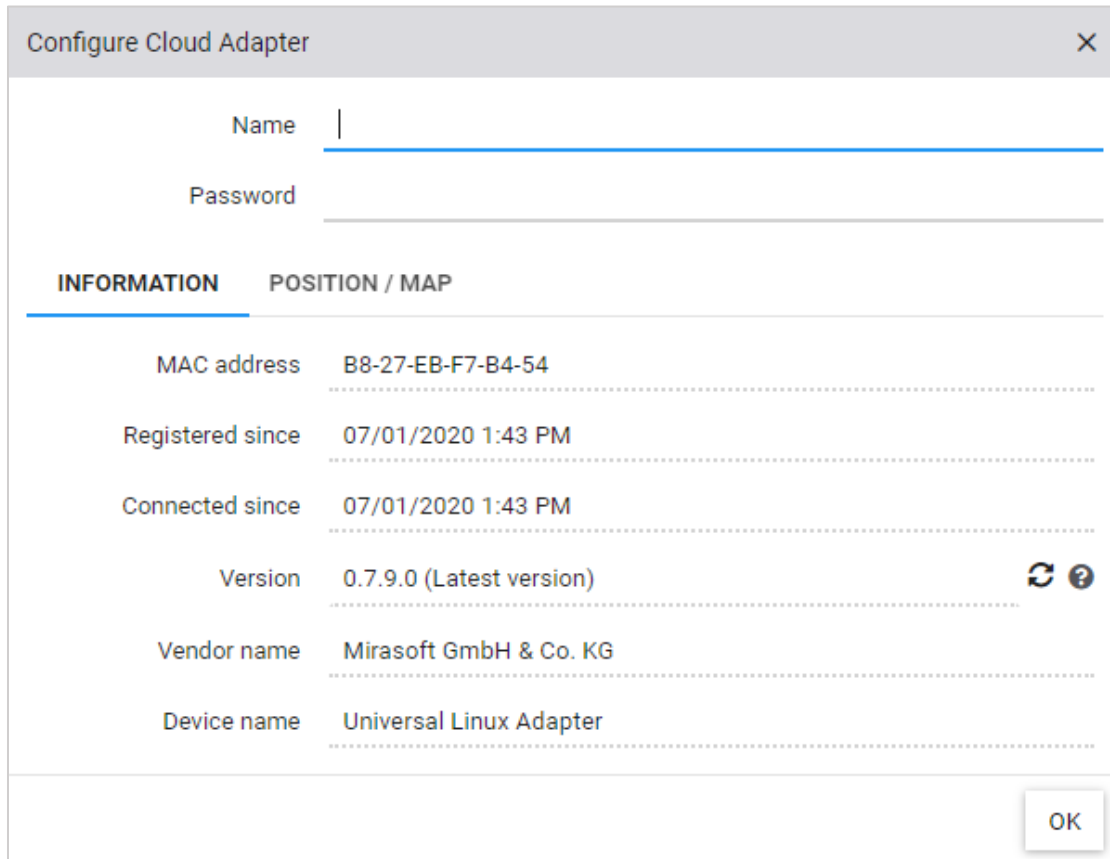
When using an M-Bus level converter with an Ethernet interface, an M-Bus over TCP connection can be created.



Name	Enter a name to appear later in the AnyViz portal
Hostname	Enter the hostname or IP address of the device
Port	Enter the TCP port number.
Min. primary address	Enter the range of primary addresses used in your environment. Enter a smaller address range to reduce time for scanning devices.
Max. primary address	
Timeout (ms)	Enter the timeout in milliseconds to wait for a device response (Default: 2000ms)

After the click on “Submit” all devices of the given address range will be read out. The values of each device will be displayed in AnyViz once the scan operation is completed. Press Submit again after adding, removing, or changing a device on the line.

CONNECTION CONFIRMATION

Once the connection to the AnyViz portal has been established, a new entry will appear in the AnyViz user interface. Move your mouse over the entry and click on the gear symbol. The cloud adapter dialog opens.



INFORMATION	POSITION / MAP
MAC address	B8-27-EB-F7-B4-54
Registered since	07/01/2020 1:43 PM
Connected since	07/01/2020 1:43 PM
Version	0.7.9.0 (Latest version)  
Vendor name	Mirasoft GmbH & Co. KG
Device name	Universal Linux Adapter

For verification, the same password must be entered, which was previously set in the cloud adapter configuration interface. Optionally, a name can be assigned, which will then be used for display.

ANYVIZ VPN

By enabling the “Allow incoming VPN” feature, you can use the universal cloud adapter to remotely access your device. Users who are logged in to the AnyViz Portal as an administrator can connect via the context menu in the cloud adapter Tree.

On some target systems, access to a local network can also be activated. If one of the available networks is selected, access to the entire network is possible via VPN.

A virtual network adapter is created on the cloud adapter system that connects to AnyViz Cloud. Administrators can connect to your device through a separate AnyViz VPN client.

DIAGNOSTICS

In the case of an error, a log file is created. The log file is available at [http://\[host\]:8888/Log.txt](http://[host]:8888/Log.txt).