



# **Top Server V6**

## **Getting Started Guide**

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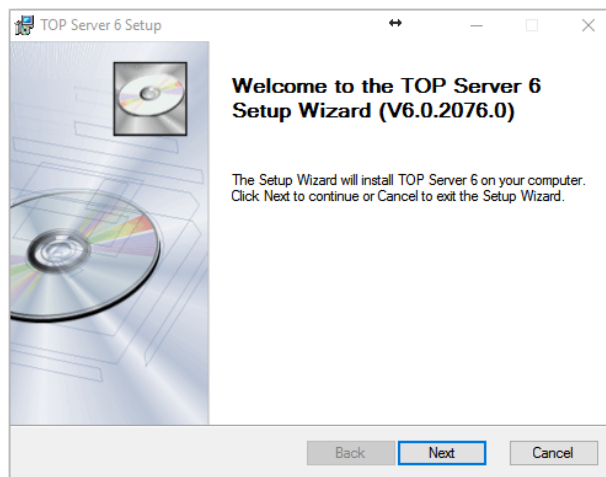


## Introduction

The following document outlines the basic functionality of TOP Server V6. The following sections will show a detailed view at installing the TOP Server V6, as well as creating a channel, device and tag. Finally, the guide will show you how to test a tag with the built in OPC Quick Client to ensure device connectivity.

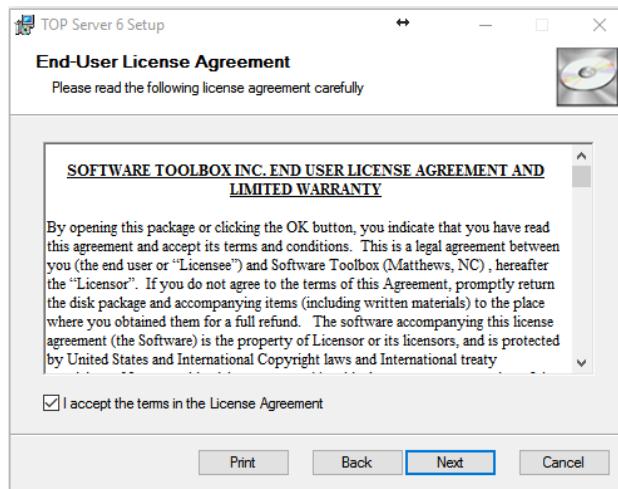
## Step 1: Install TOP Server V6

Double click on the **topserverv6demo.exe** to open the TOP Server V6 installer.

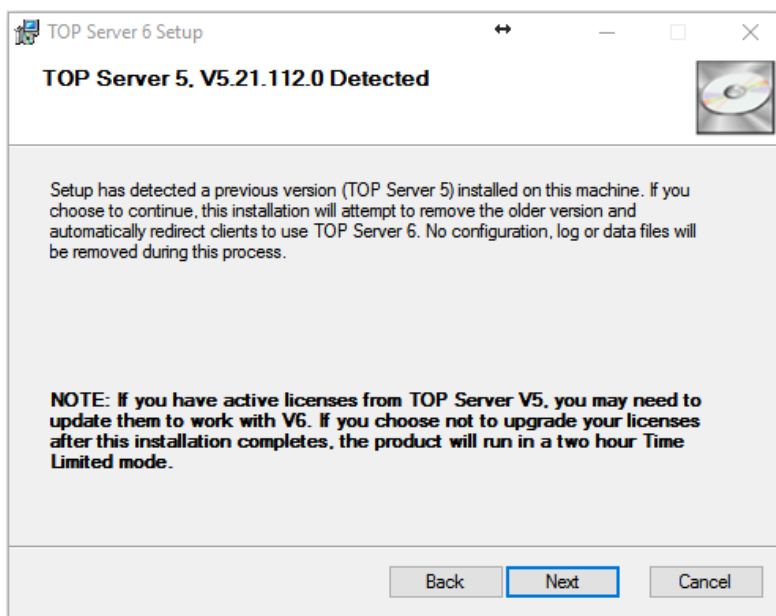


Click **Next** to begin the install of the TOP Server 6.



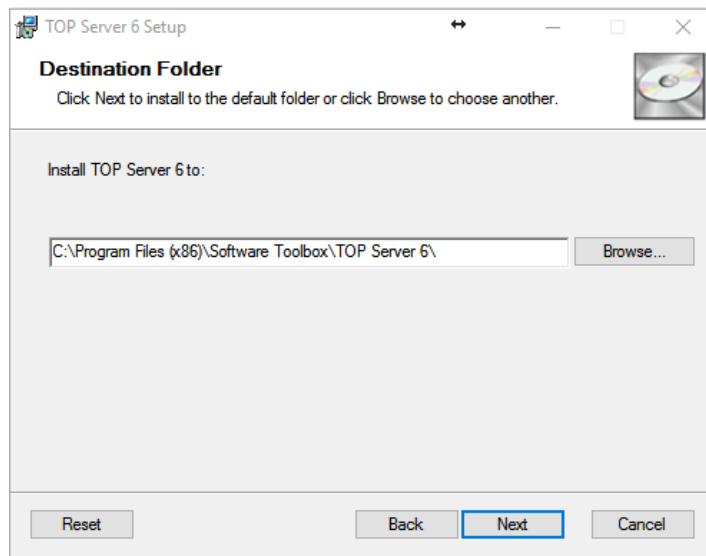


Read the **End User License Agreement** then check the box to accept the terms and click **Next**

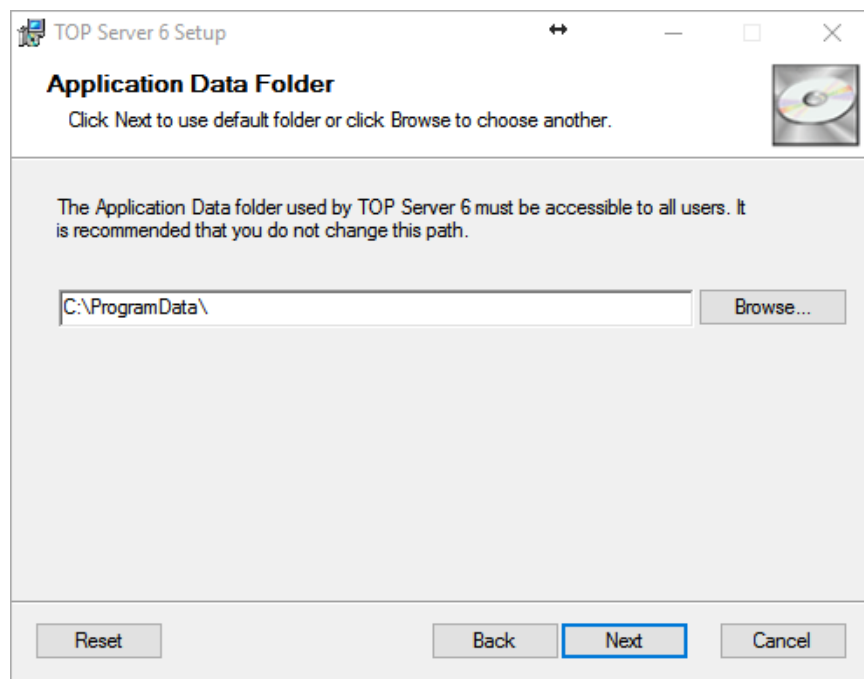


If you already have TOP Server 5 installed on the machine it will remove the older version and automatically redirect your clients to use TOP Server 6.



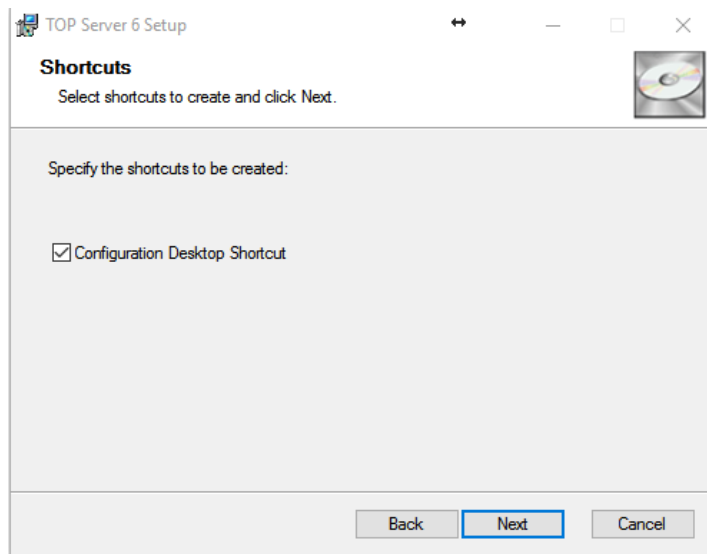


In the next step, you will select the Destination folder that the TOP Server V6 will install too. We recommend leaving this at the default location. Click **Next**.

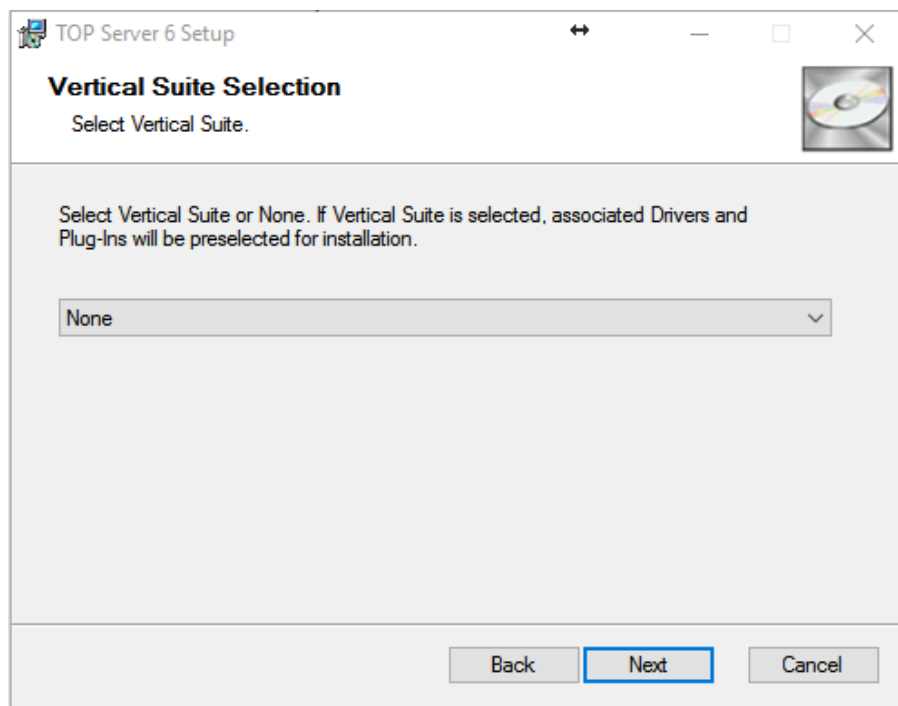


Select the Application Data Folder. By default, this is set to the C Drive's Program Data folder. We recommend that you do not change this path. Click **Next**



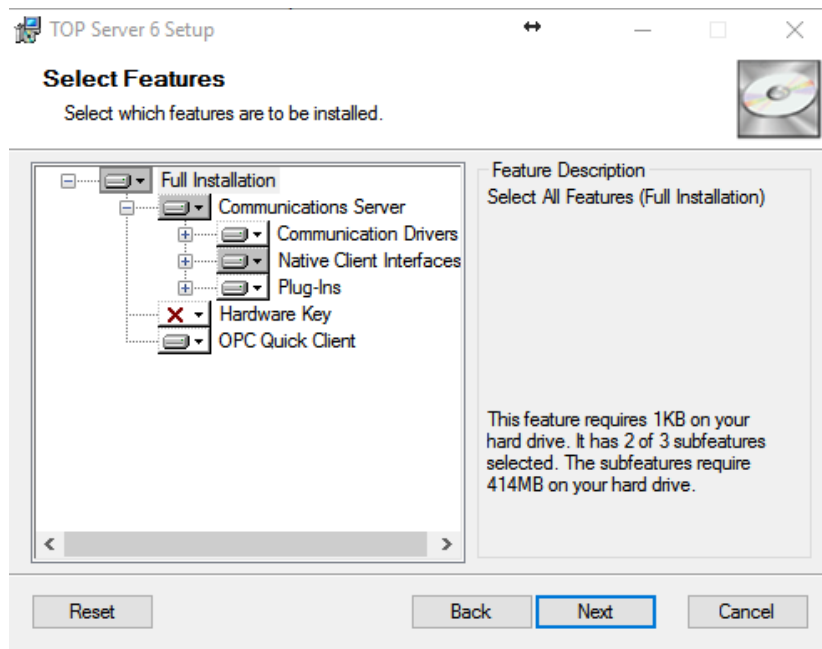


Leave the box checked if you want a desktop shortcut to the TOP Server configuration. Click **Next**.

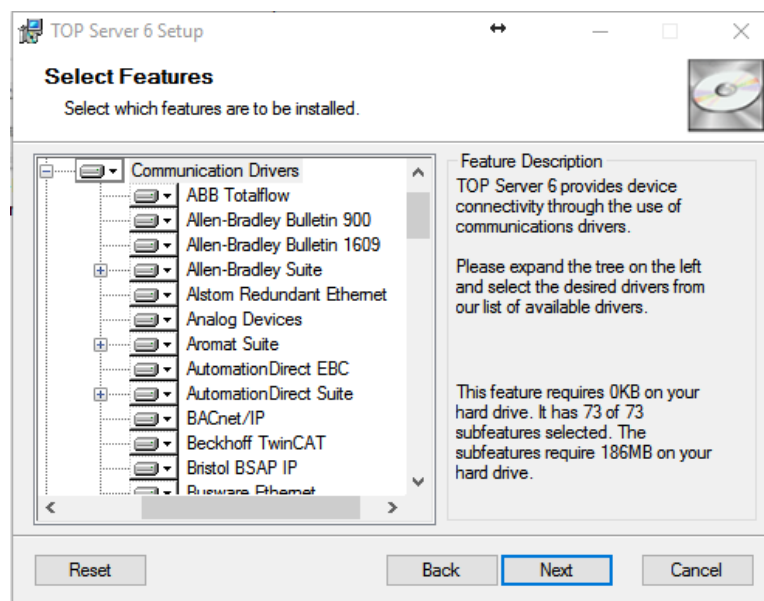


TOP Server V6 offers Vertical Suite license packages. If you purchased one of the vertical suites you can select the suite from the drop-down list. This will automatically select your drivers for install in the next step. If you are unsure, or did not purchase a vertical suite, select **None** and click **Next**.



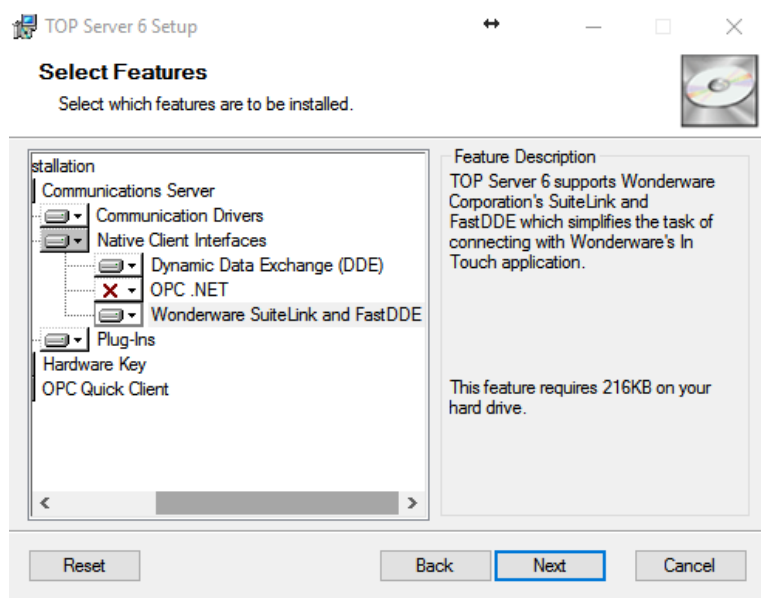


You will now select the features that you want to install with the TOP Server V6. If you are evaluating the software you may want to install the Full Installation.



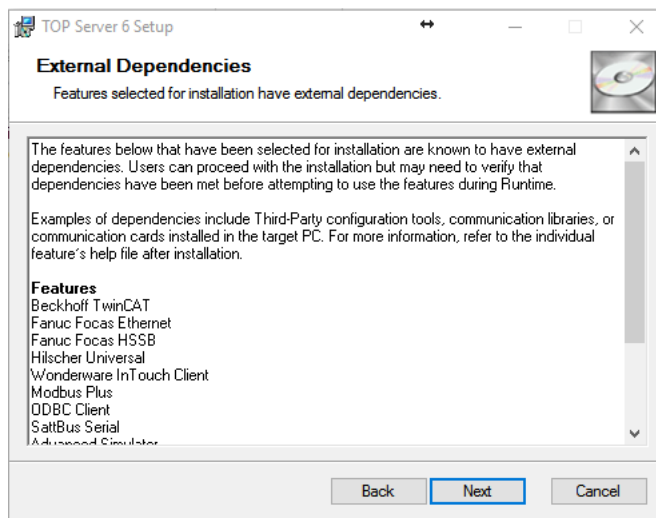
The TOP Server has hundreds of communication drivers in a single install package. You may individually select which drivers you want to install under the Communication Drivers tree.





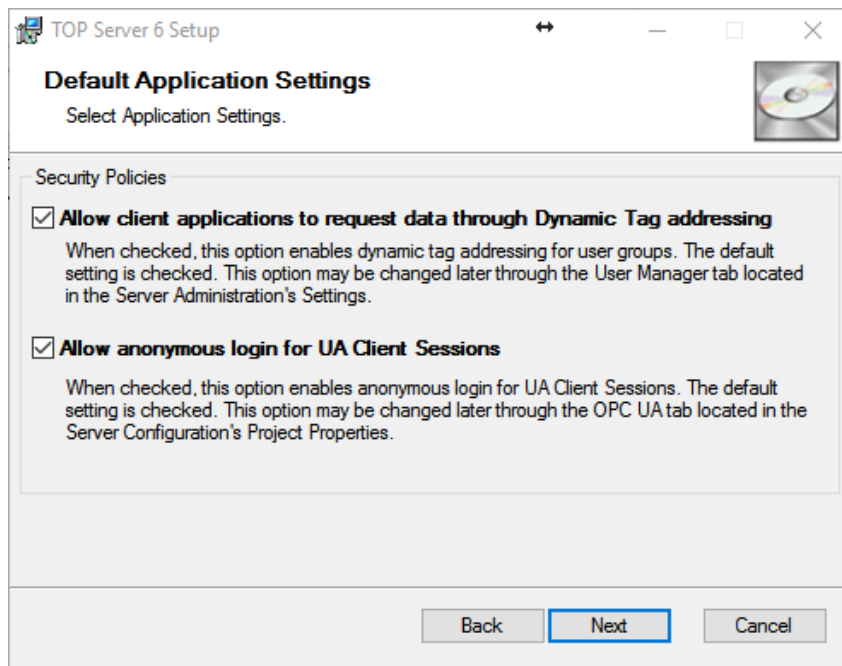
If you plan on using Wonderware InTouch with the TOP Server you will want to install the **Wonderware SuiteLink and FastDDE** components under **Native Client Interface**. You will also find **DDE** and **OPC.NET** drivers under this branch.

Once you have selected all your needed drivers click **Next**.

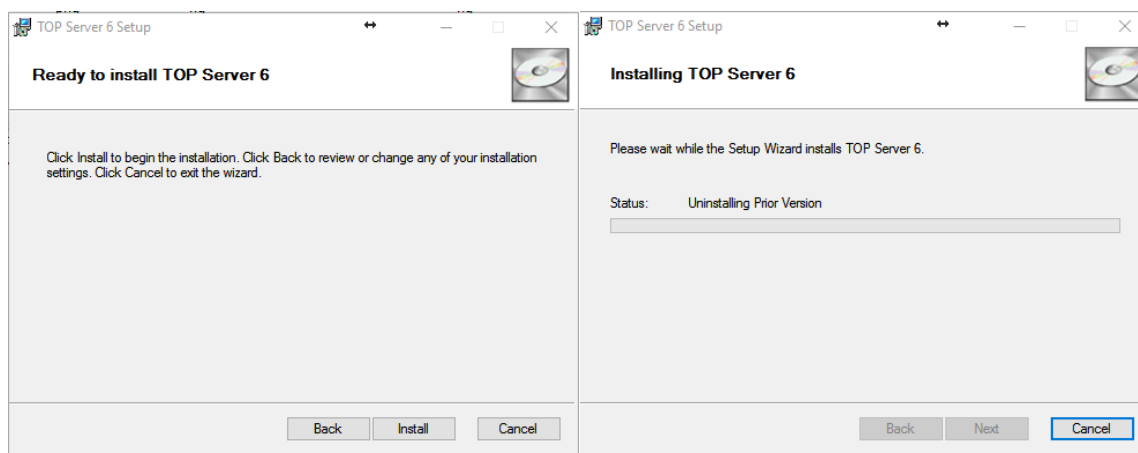


The next screen will show a list of External Dependencies. Please contact your vendor for configuration tools, communication libraries, or communication cards if needed.



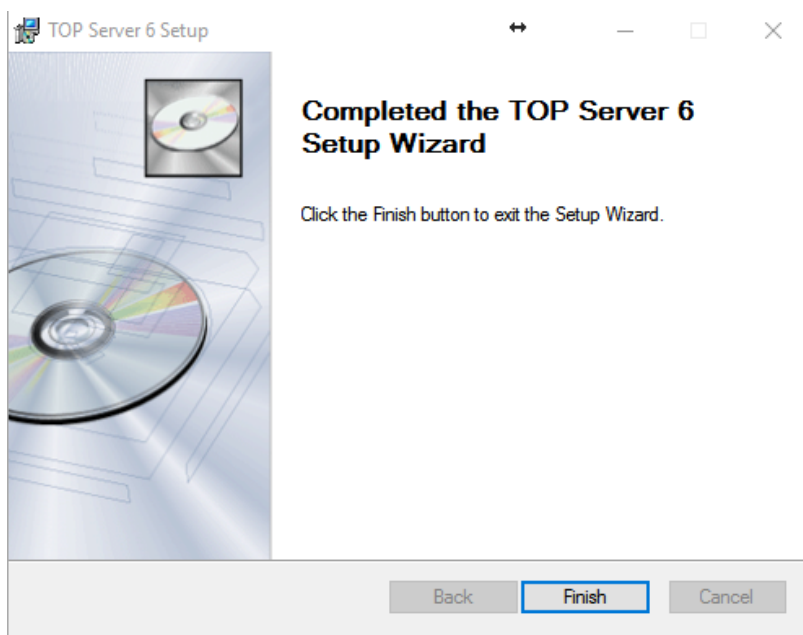


The default security policy, **Allow client applications to request data through Dynamic Tag Addressing**, should be left checked if you intend to Dynamically address your tags through your client application, such as Wonderware InTouch. The other security default is **Allow anonymous login for UA Client Sessions**. You may change either of these options later in the TOP Server configuration. Click **Next**.



You are now ready to Install the TOP Server 6. Click **Install**. If the TOP Server version 5 is installed it will uninstall at this time as well.



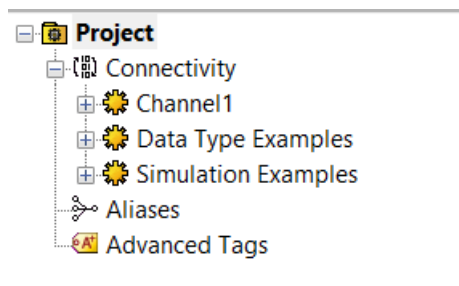


You have finished installing the TOP Server 6.

## Step 2: Configuration

The TOP Server will open loaded with a sample simulation project by default.

If the sample configuration is not loaded on the TOP Server, you can click on **File** then **Open** and navigate to C:\Program Files (x86)\Software Toolbox\TOP Server 6\Projects and open the **simdemo.opf**



When the file is open, the TOP Server screen will show the above in the tree view. By default, the configuration is connected to the Runtime – as seen up at the title bar. Any changes made are committed to the runtime as soon as you make them.





To work offline and then update the runtime after all changes have taken place click on **Runtime** then **Disconnect** on the TOP Server menu. To commit changes to runtime, click **Runtime** and then **Connect**. TOP Server will then prompt for changes to be saved and ask to update the Runtime with the changes.

In the Simulation project under **Connectivity** there are 3 channels configured with a total of 4 devices.

Channel Na...	Driver	Connection	Sharing	Virtual Network	Description
Channel1	Simulator	Other	N/A	N/A	
Data Type Exa...	Simulator	Other	N/A	N/A	
Simulation Ex...	Simulator	Other	N/A	N/A	

Date	Time	Source	Event
12/9/2016	12:54:31 PM	TOP Server\...	Runtime performing exit processing.
12/9/2016	12:54:54 PM	TOP Server\...	Toolbox OPC Power Server 6.0 Started
12/9/2016	12:55:01 PM	TOP Server\...	Simulator device driver loaded successfully.
12/9/2016	12:55:01 PM	TOP Server\...	Runtime service started.
12/9/2016	12:55:01 PM	TOP Server\...	Starting Simulator device driver.
12/9/2016	12:55:01 PM	Simulator	Simulator Device Driver 'V6.0.2076.0'
12/9/2016	12:55:01 PM	TOP Server\...	Advanced Tags Plug-in V6.0.2076.0
12/9/2016	12:55:01 PM	TOP Server\...	Connection Sharing Plug-in V6.0.2076.0

Ready Default User Clients: 0 Active tags: 0 of 0

A **Channel** corresponds to a communications port for serial connections or a single thread of execution for Ethernet connections. Under each channel, provided the PLC protocol being used supports multi-drop, multiple devices can be configured. For example, there are two devices configured under the **Data Type Examples** channel. A **Device** is a PLC or piece of hardware.

When clicking on a device name, such as **Functions**, the right-hand pane will populate with a list of tags. In the simulation project example, some tags are pre-configured.

TOP Server 6 [Connected to Runtime]

File Edit View Tools Runtime Help

Project

- Connectivity
  - Channel1
    - Device1
      - Data Type Examples
        - 8 Bit Device
        - 16 Bit Device
        - Simulation Examples
          - Functions**
      - Aliases
      - Advanced Tags

Tag N...	Address	Data Type	Scan Rate	Scaling	Description
Ramp1	RAMP (120, 35, 100, 4)	Long	100	None	Value increments by 4 from 35 to 1...
Ramp2	RAMP (300, 150.750000,...	Float	100	None	Value decrements by 0.25 from 200...
Ramp3	RAMP (250, 0, 1000, 1)	Long	100	None	Value increments by 1 from 0 to 10...
Ramp4	RAMP (250, 0, 1000, -5)	Long	100	None	Value decrements by 5 from 1000 t...
Random1	RANDOM (30, -20, 75)	Long	100	None	Random values from -20 to 75 that...
Random2	RANDOM (100, 0, 1000)	Long	100	None	Random values from 0 to 1000 that...
Random3	RANDOM (100, -1000, 0)	Long	100	None	Random values from -1000 to 0 th...
Random4	RANDOM (1000, -999, 9...	Long	100	None	Random values from -999 to 999 t...
Sine1	SINE (10, -40.000000, 40...	Float	100	None	Sine values between -40 and 40 at ...
Sine2	SINE (10, -40.000000, 40...	Float	100	None	Sine values between -40 and 40 at ...
Sine3	SINE (10, -40.000000, 40...	Float	100	None	Sine values between -40 and 40 at ...
Sine4	SINE (10, -40.000000, 40...	Float	100	None	Sine values between -40 and 40 at ...
User1	USER (1000,Hello,world...	String	100	None	Sequential string values that chang...
User2	USER (250,1.25,100.56,2...	Float	100	None	Sequential float values that change...
User3	USER (200,1,0,1,0,1,0,1...	Boolean	100	None	Sequential Boolean values that cha...

Date	Time	Source	Event
12/9/2016	12:54:31 PM	TOP Server\...	Runtime performing exit processing.
12/9/2016	12:54:54 PM	TOP Server\...	Toolbox OPC Power Server 6.0 Started
12/9/2016	12:55:01 PM	TOP Server\...	Simulator device driver loaded successfully.
12/9/2016	12:55:01 PM	TOP Server\...	Runtime service started.
12/9/2016	12:55:01 PM	TOP Server\...	Starting Simulator device driver.
12/9/2016	12:55:01 PM	Simulator	Simulator Device Driver 'V6.0.2076.0'
12/9/2016	12:55:01 PM	TOP Server\...	Advanced Tags Plug-in V6.0.2076.0
12/9/2016	12:55:01 PM	TOP Server\...	Connection Sharing Plug-in V6.0.2076.0

Ready

Default User Clients: 0 Active tags: 0 of 0

Each tag corresponds to a single memory location in the PLC or device. Tags can be added by right clicking on the device name and selecting **New Tag**. Tags may also be added by right clicking in the window pane, where tags are shown, and selecting **New Tag**.

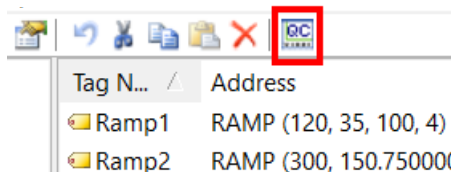
#### Valid memory addresses for the Simulation Driver:

- **K0 to K9999** - tags that users can read/write values to - can be configured as any memory type except Boolean. Attach a .Bit Number suffix to create a Boolean tag - for example K0.03 is the 4th bit (bits numbered 0 to 15) in the word 0 in the K memory area.
- **R0 to R9999** - tags that users can read/write from that is constantly updated with incrementing integer data so you have data that changes - can be configured as any memory type except Boolean. Attach a Bit Number suffix to do a Boolean tag - for example R0.03 is the 4th bit (bits numbered 0 to 15) in the word 0 in the R memory area
- **S0 to S999** - String tags - you can read/write strings from these tags
- **Ramp, Sine, Random, User** - tags that can be configured to simulate data based on configuration.



### Step 3: Launching the Quick Client

Launch the OPC Quick Client at any time by clicking on the Quick Client button on the toolbar of the TOP Server.

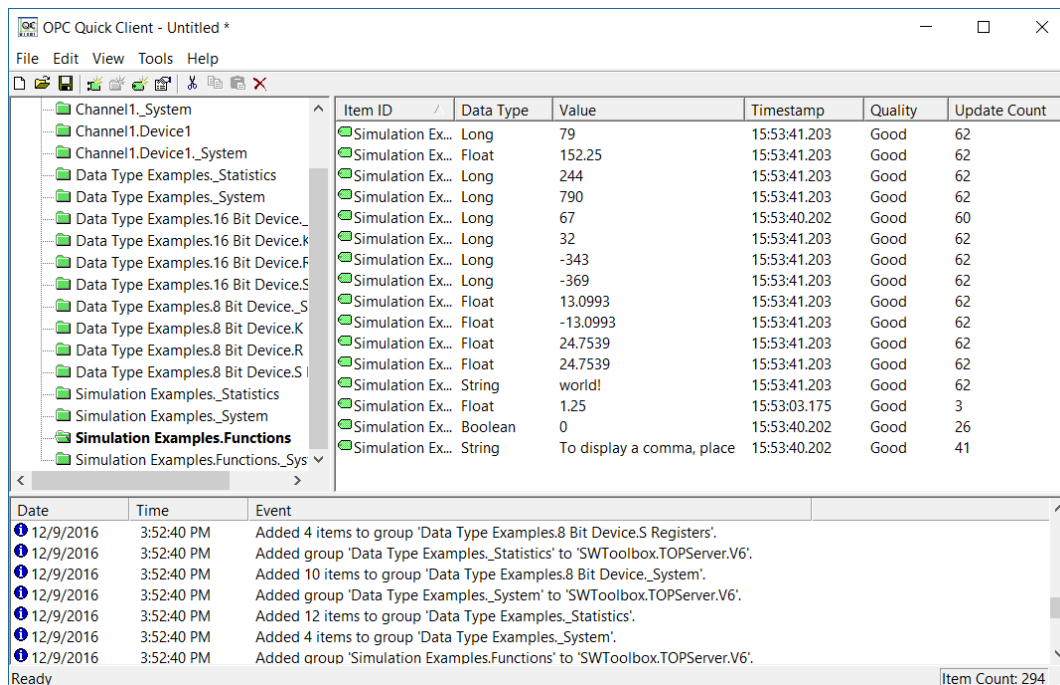


When the Quick Client launches, it will automatically connect to the TOP Server, browse for available tags, subscribe to tags, and start displaying the live data.

Once launched, the Quick Client icon will show on the taskbar.

- **Caution:** Each time the Quick Client icon is clicked, another instance of the Quick Client is launched as there is no hard-coded limit on the number of clients you can have simultaneously connected to the TOP Server 6. Quick Client automatically connects to TOP Server 6 with a 1000 ms update rate. Change the default group update rate in Quick Client by clicking **Tools -> Options**.
- **Note:** The Quick Client can also be started directly by clicking Start->Programs->Software Toolbox->TOP Server 6->Quick Client. Quick Client can connect to any OPC Sever, create a group, and browse for tags - a great tool for troubleshooting!





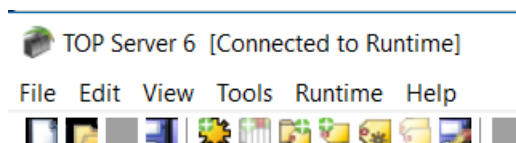
After the Quick Client is launched, different values can be written to a tag by right clicking and choosing from **Synchronous Write** or **Asynchronous 2.0 Write**. The value for tags that reference the **R** register in the simulation driver is over-written by the simulated data as soon as the new value is written. For example, if the tag original value is 2359 when a 0 is written the simulator will automatically keep counting from 0 after the write is performed.

To control how fast individual groups are polled right click on one of the folders in the left-hand pane then click **Properties**. This can be a key adjustment when connected to a physical device.

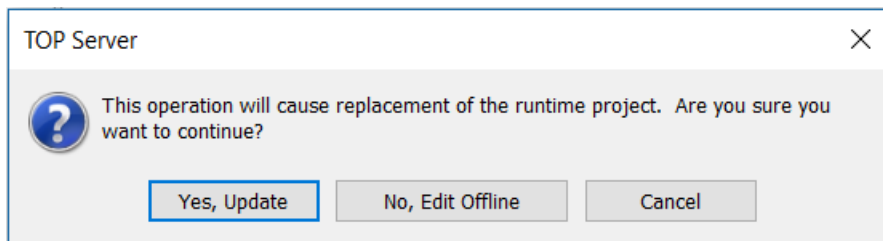
## Step 4: Configuring a Channel

After seeing the simulation demo most users are ready to configure a channel and create a project tailored to their specific devices.

The TOP Server 6 title bar will show **TOP Server 6 [Connected to Runtime]** when connected to the runtime service. This indicates that any changes are made live in the server. The following steps will create a project *offline* and then upload the new configuration to the runtime.

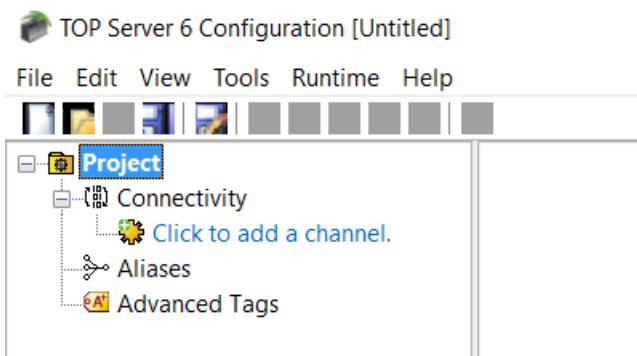


Click **File > New** to from the TOP Server 6 menu. A prompt will appear with the option to update the current runtime project or to edit offline.



For this guide, click **No, Edit Offline** to create a new configuration without uploading to the current runtime. By clicking **Yes, Update** the runtime project is immediately replaced with the new configuration and all changes are made in an Online Configuration Mode.

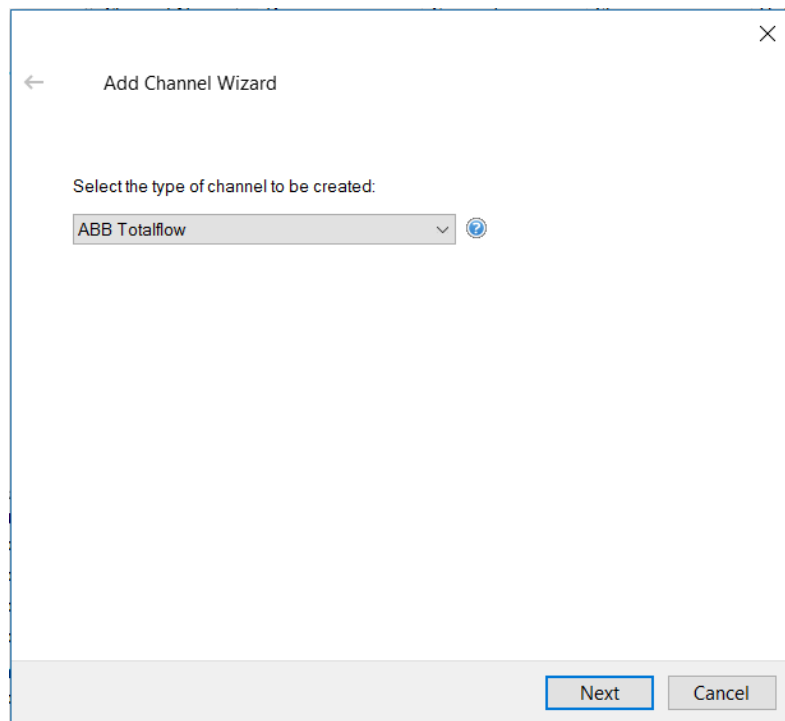
The TOP Server 6 title bar will now change to read **TOP Server 6 Configuration [Untitled]**.



Once the new project is created, click **File > Save** to save with a specific filename. The project file will end in **.opf**

1. Click on **Click to add a channel**. This will open the **Add Channel Wizard**
2. Select the type of channel to be created by selecting the device driver. The device driver is the protocol being used to connect to the device. The drop down box will only display the device drivers that were installed. If no device drivers exist, then the TOP Server 6 installer will need to run again and the device drivers will need to be selected and installed.






← Add Channel Wizard

Select the type of channel to be created:

ABB Totalflow

Next Cancel

3. Specify a name for the channel



← Add Channel Wizard

Specify the identity of this object.

Name:

Channel1

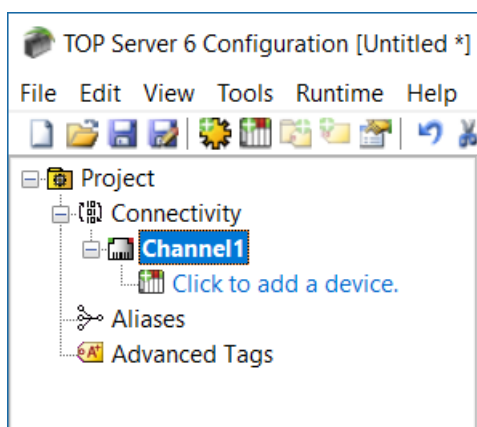
4. Depending on the channel type selected the channel property options will vary. These channel properties should be configured to communicate with the device per the hardware specification, and serial/Ethernet connection. Once the channel is created these properties can be modified. The TOP Server 6 help files go into further detail on channel properties specific to device drivers.
5. Review the summary for the new channel and choose **Back** to make changes or **Finish** to close.



## Step 5: Configuring a Device

In Step 4 above, a channel was configured to speak the language of the device. In Step 5 a new device will be created in TOP Server 6. This device creation allows communication to a specific device on a channel. Please view the specific device driver help file to see if multiple devices per channel are supported. When using an Ethernet channel, communications can be optimized by only creating one device per channel.

1. Click, **Click to add a device** located underneath the created channel.



2. Specify a name for the device



3. Select the specific type of device – see the help file for the specific device driver for further detail on which device model to choose.
4. Specify the devices driver-specific station or node ID. For most Ethernet communications, the device IP Address will be used. The device driver specific help file will contain further detail on formatting the address for the device.



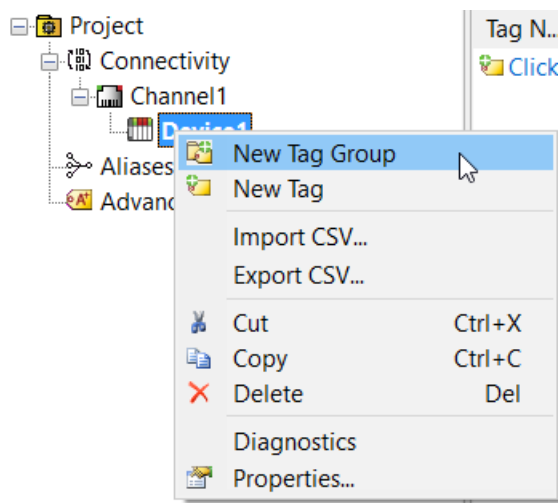
5. Each device has specific settings which are explained in more detail in the device driver help file. The section of the help file can be accessed directly by clicking the question mark located in the blue circle.
6. Once finished, look through the summary of the device and click, **Finish**.

## Step 6: Configuring a Tag

TOP Server provides the ability to configure optional groups and subgroups to provide for multi-level organization of tags. Tag groups allow you to tailor the layout of OPC data in logical groupings that fit the needs of your application.

Using tag groups allows multiple sets of identical tags to be added under the same device. This can be very convenient when a single device handles several similar machine segments. From an OPC client standpoint, the use of tag groupings allows you to segregate your OPC data into smaller tag lists, which can make finding a specific tag easier when browsing the server.

To add a new tag group to your project, right click on either an existing device or tag group branch and select "New Tag Group" from the context menu.



Once opened, a properties window will display. Enter a name for the tag group, and how many tags in the tag group.



Property Editor - Channel1.Device1

Property Groups <b>General</b>	<b>Identification</b>	
	Name	Group1
	Description	
	<b>Tag Counts</b>	
	Tags in Group	0
	Tags in Branch	0
<b>Name</b> Specify the identity of this object.		

OK Cancel Help

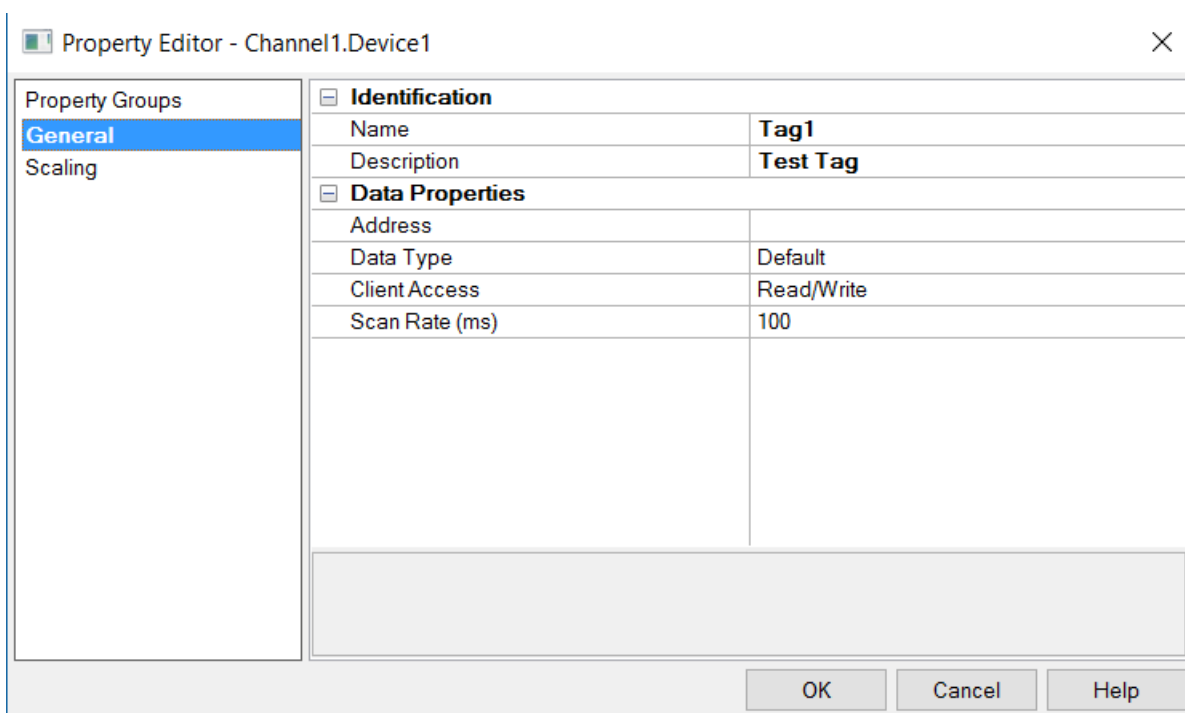
A single static tag may also be created.

Please note that Tags are not required if your Client can support the device memory address in its tag database. TOP Server supports dynamic tags. More information can be found regarding Aliases and static and dynamic tags in the server help file.

It is recommended that at least one valid tag is configured for each device so that communications may be confirmed with the OPC Quick Client.

Right click on Device 1 and click **New Tag** or click in the right-hand pane where the text reads “Click to add a static tag.”





Property Editor - Channel1.Device1

Property Groups

- General
- Scaling

**Identification**

Name	Tag1
Description	Test Tag

**Data Properties**

Address	
Data Type	Default
Client Access	Read/Write
Scan Rate (ms)	100

OK Cancel Help

1. Enter a tag **Name** and **Address**. The tag name can be any meaningful name while the address must be the correct syntax for the device memory address.
2. You may click on “...” in the Address row to see the possible accepted syntax for the device addresses. To access the “...” click in the address box to the right of Address.
3. It is recommended to leave the Data Type at Default unless a device that uses multiple Word or Byte addresses to support larger data types such as float is being used.
4. The Scan Rate is only used with DDE type connectivity and does not need to be set if you’re not using DDE.
5. If the tag needs to be scaled click on the **Scaling** item under Property Groups to set the scale of the tag.

Once a tag is created, the Quick Client can be opened to see the tag in action.

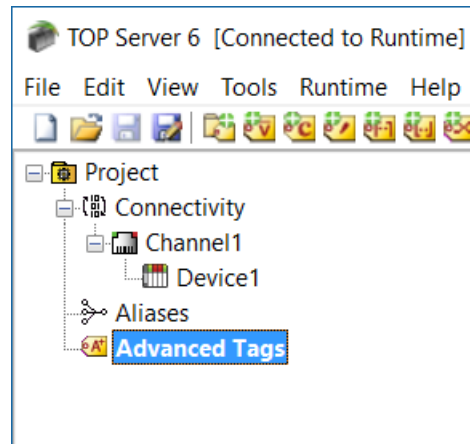
## TOP Server Plug-In Configurations

TOP Server offers several optional Plug-Ins, in addition to drivers. These Plug-Ins are displayed under the Project and are listed after **Aliases**.





Plug-Ins, just as in drivers, must be installed during the installation process. For this guide, **Advanced Tags** is the only Plug-In shown in the below screenshot.



Currently we offer Advanced Tags, OPC Alarms & Events, Data Logger, EFM Exporter, Local Historian, Scheduler Plug-In and an SNMP Agent plug-in

To configure a Plug-In, right click on the name of the Plug-In and select a feature to configure. Each Plug-In has specific settings which can be read in more depth in the Plug-In help file.

