

# Module 14

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Advanced Features:

IPFusion OPC and the Tag Database

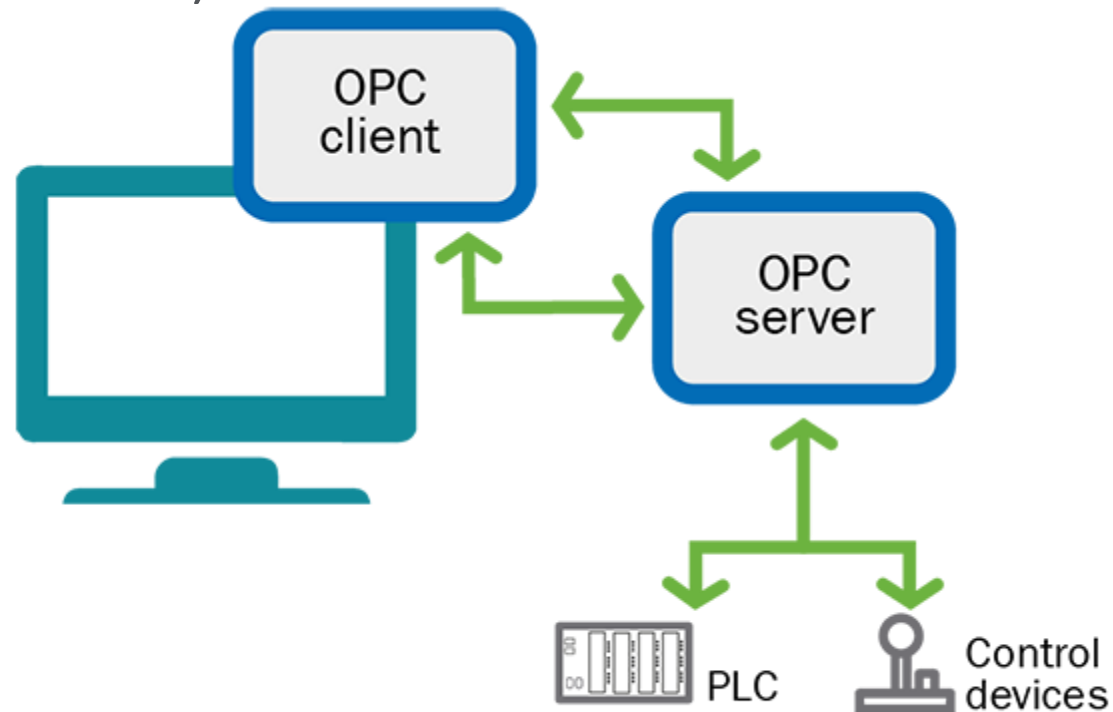
# OPC

- OPC (Open Platform Communications) specifies the communication of real-time data between control devices from different manufacturers.



# OPC DA

- OPC DA (Data Access) is a group of client-server standards that provides specifications for communicating real-time data from acquisition devices such as PLCs (Programmable Logic Controllers) to display and interface with an HMI (Human Machine Interface).



# IPFusion OPC

- IPFusion OPC Tag Database creates a connection to OPC devices by using **tags** — the representation of the OPC variable or datapoint.
- IPFusion OPC Tag Database provides the OPC Client ability for IPFusion Runtime.
- IPFusion OPC Tag Database can connect to many OPC Servers. A common one is **Industrial Gateway Server**.
- It enables the querying of states, and execution of commands locally or remotely.



IPFusion Tag Database Manager

File Help

Tags

Add Edit Delete ← Configure tag list

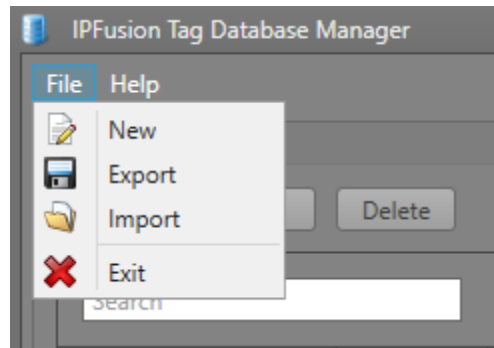
Search

Tag	Quality	Data Type	Current Value
Door Command	●	System.Int32	489
Door Status	●	System.Int32	110
Intercom Command	●		
Intercom Status	●	System.String	Online

↑ Tag connection states

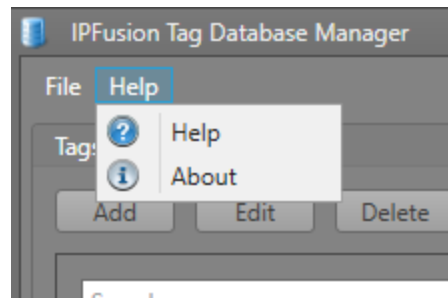
# OPC Tag Database Menu

- **New** — Create a new tag configuration
- **Export** — Export the current tag configuration to a file
- **Import** — Import tag configuration from a file



# OPC Tag Database

- **Help** — Access to User Manual
- **About** — View information about the application version



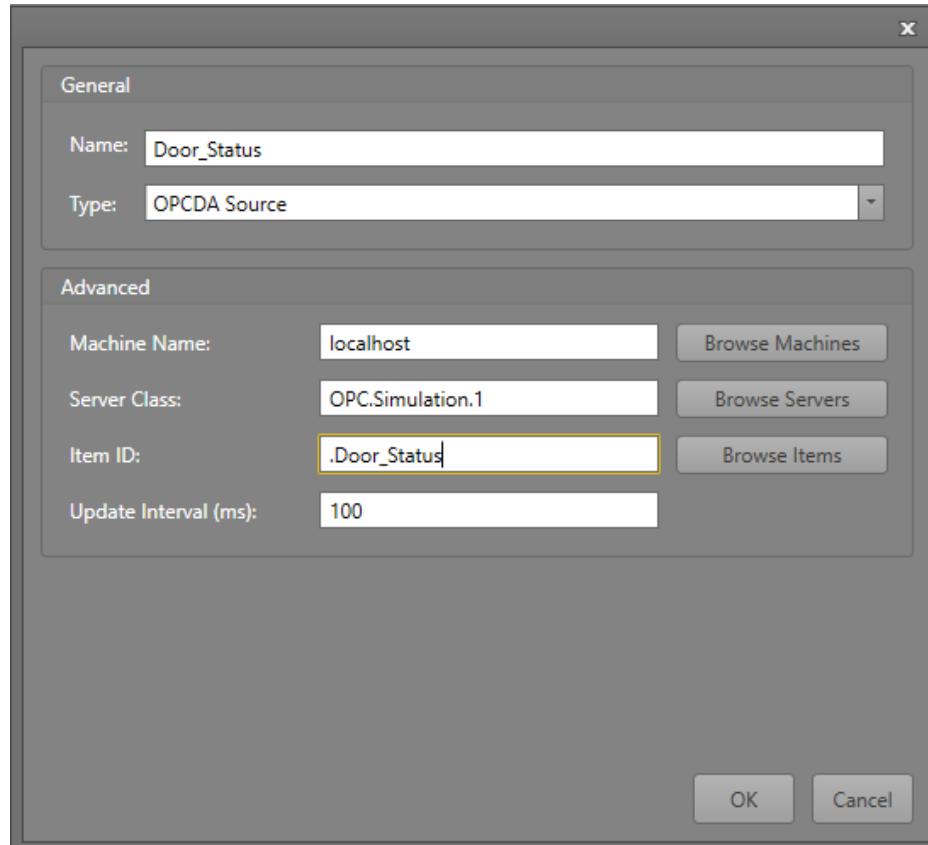
# Create a tag definition file

- **Tag Definition** XML file contains the collection of Tags added and configured in the **Tag Database Manager**.
- Users can only add tags when the **Tag Database Service** is running.
- When the **Add/Edit tag** window is brought up, you are presented with two main fields to fill
  - **Name** — The name of the OPC Tag that will be added. Runtime interfaces with this name.
  - **Type** — The tag type of the OPC Tag. There are two different tag types, and each have their own advanced settings to be filled: **OPCDA Source** and **Virtual**.



# OPCDA Source Tag Type

- Used to connect to an Open Platform Communications Data Access Server tag. It uses OPC technology to find the OPC servers that are running on the local computer.



The image shows a configuration dialog box for an OPCDA Source Tag Type. The dialog is divided into two sections: General and Advanced.

**General Section:**

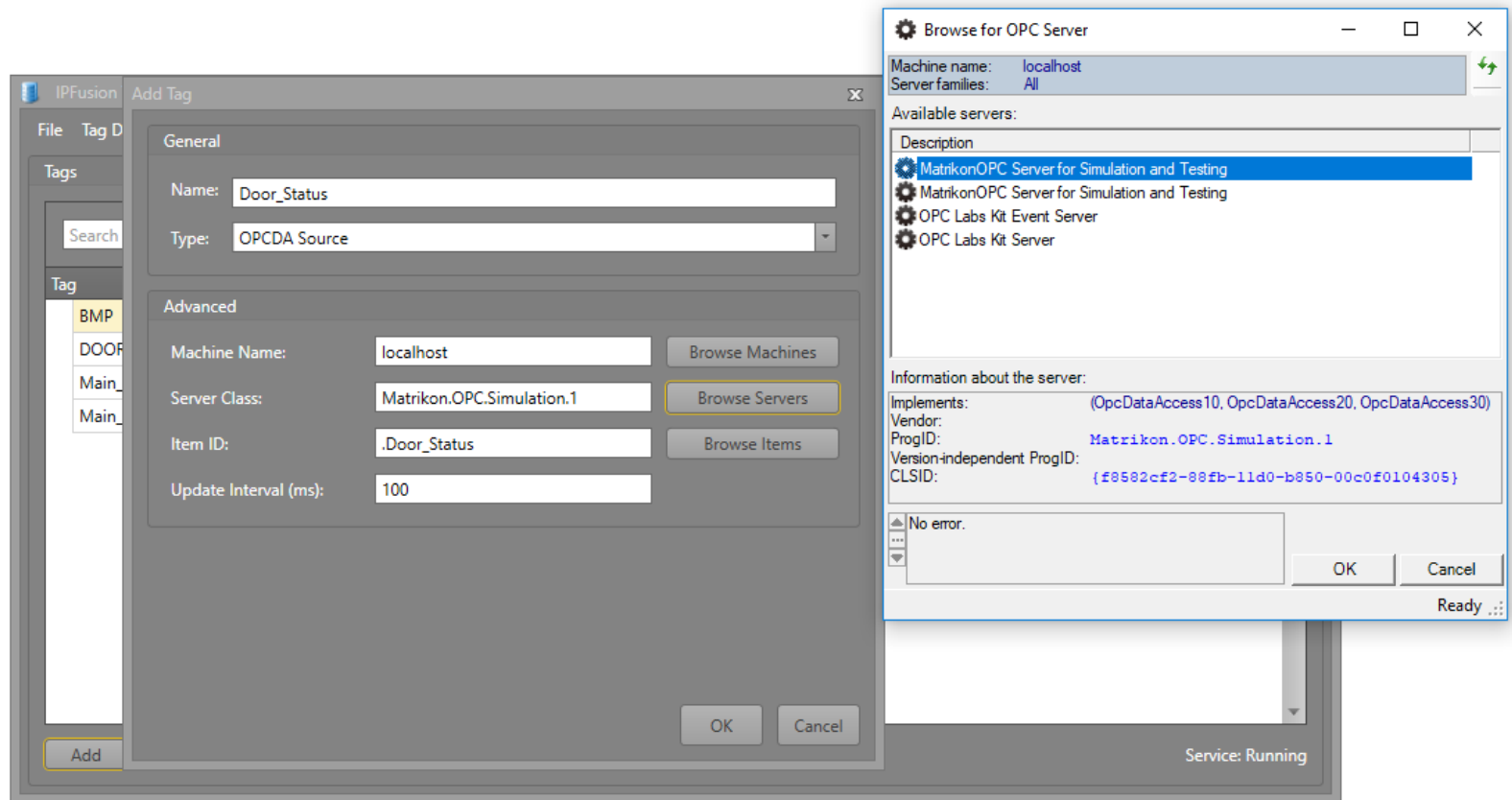
- Name: Door\_Status
- Type: OPCDA Source

**Advanced Section:**

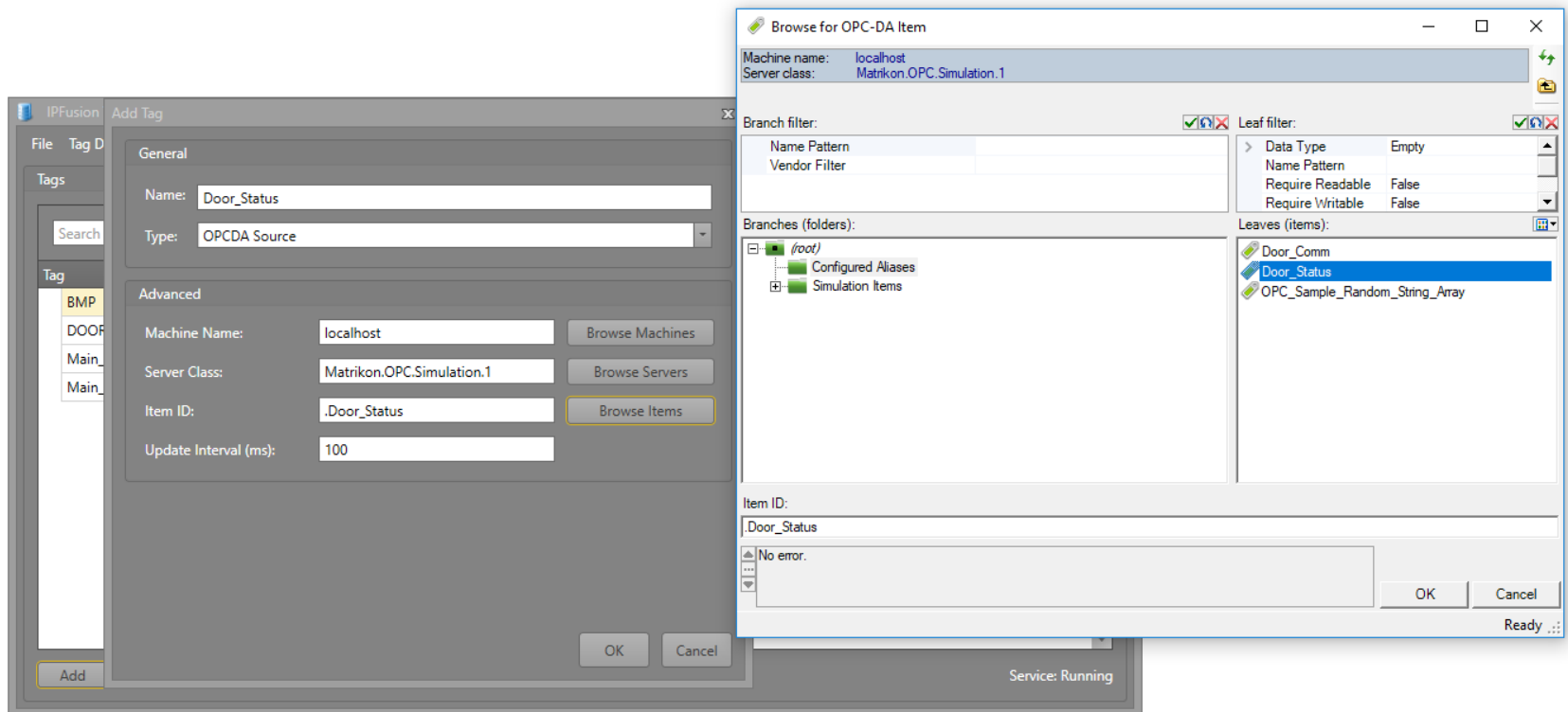
- Machine Name: localhost (with a "Browse Machines" button)
- Server Class: OPC.Simulation.1 (with a "Browse Servers" button)
- Item ID: .Door\_Status (with a "Browse Items" button)
- Update Interval (ms): 100

At the bottom right of the dialog are "OK" and "Cancel" buttons.

# OPCDA Source Tag Type

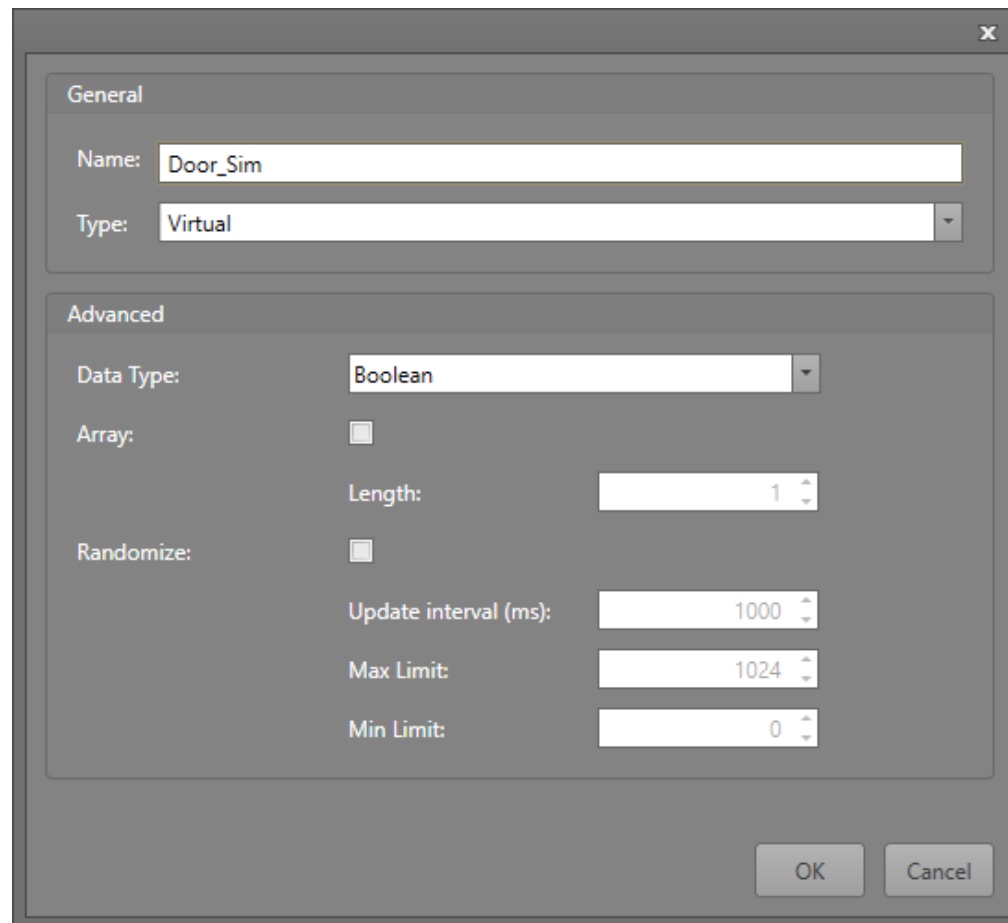


# OPCDA Source Tag Type



# Virtual Tag Type

- Used for creating simulated values that are not tied to any Tag Database/Server — primarily used for testing.



The image shows a configuration dialog box for a Virtual Tag Type. The dialog is titled "Virtual Tag Type" and has a close button (X) in the top right corner. It is divided into two sections: "General" and "Advanced".

**General Section:**

- Name: Door\_Sim
- Type: Virtual

**Advanced Section:**

- Data Type: Boolean
- Array:
- Length: 1
- Randomize:
- Update interval (ms): 1000
- Max Limit: 1024
- Min Limit: 0

At the bottom right of the dialog are "OK" and "Cancel" buttons.

# Virtual Tag Type

- **Data Type** — The type of data that the tag will be. It can be either an **Int**, **Boolean**, or **String**.
- **Array** — Check this box if the tag will contain multiple values. Uncheck for only a single value.
- **Length** — If the **Array** option is checked, this field indicates how large the array of values will be.
- **Randomize** — Check this box if you want the tag to continually update with random values. **Live Tag Updates** must be **on** to see this change.
- **Update Interval** — When **Randomize** is checked, this field is the time interval, in milliseconds, between each update of the value in the tag.
- **Max Limit** — The max value limit that the tag values can have when **Randomize** is checked and the integer type is selected. This is not used for **Boolean** types. For **String** types it is the length of the random string.
- **Min Limit** — The minimum value limit that the tag values can have when **Randomize** is checked and the **Integer** type is selected. It is not used for **String** and **Boolean** types.





# The Data Editor View

- Shows the values used by IPFusion to display the proper OPC asset statuses or to receive commands from the PLC and to write a new value to the database to signal to the PLC that a status change or command has been issued.
- Each value is located in a textbox. Depending on the settings of the tag data from the OPC Server/Tag Database and the PLC, users can manually write values into these to enforce sending a command or a status change.
- Type the value into the corresponding position. Click **Write**. The value must be the correct data type, and should be the meaningful value pertaining to an event in the PLC.



# The Data Editor View

Main\_Door\_Command

Write Close

Range	0	1	2	3	4	5	6	7	8	9	Range
0-9	0	15	10	12	0	0	0	0	0	0	0-9
10-19	0	0	0	0	0	0	0	0	0	0	10-19
20-29	0	0	0	0	0	0	0	0	0	0	20-29
30-39	0	0	0	0	0	0	0	0	0	0	30-39
40-49	0	0	0	0	0	0	0	0	0	0	40-49
50-59	0	0	0	0	0	0	0	0	0	0	50-59
60-69	0	0	0	0	0	0	0	0	0	0	60-69
70-79	0	0	0	0	0	0	0	0	0	0	70-79
80-89	0	0	0	0	0	0	0	0	0	0	80-89
90-99	0	0	0	0	0	0	0	0	0	0	90-99
100-109	0	0	0	0	0	0	0	0	0	0	100-109
110-119	0	0	0	0	0	0	0	0	0	0	110-119
120-129	0	0	0	0	0	0	0	0	0	0	120-129
130-139	0	0	0	0	0	0	0	0	0	0	130-139
140-149	0	0	0	0	0	0	0	0	0	0	140-149
150-159	0	0	0	0	0	0	0	0	0	0	150-159
160-169	0	0	0	0	0	0	0	0	0	0	160-169
170-179	0	0	0	0	0	0	0	0	0	0	170-179
180-189	0	0	0	0	0	0	0	0	0	0	180-189
190-199	0	0	0	0	0	0	0	0	0	0	190-199



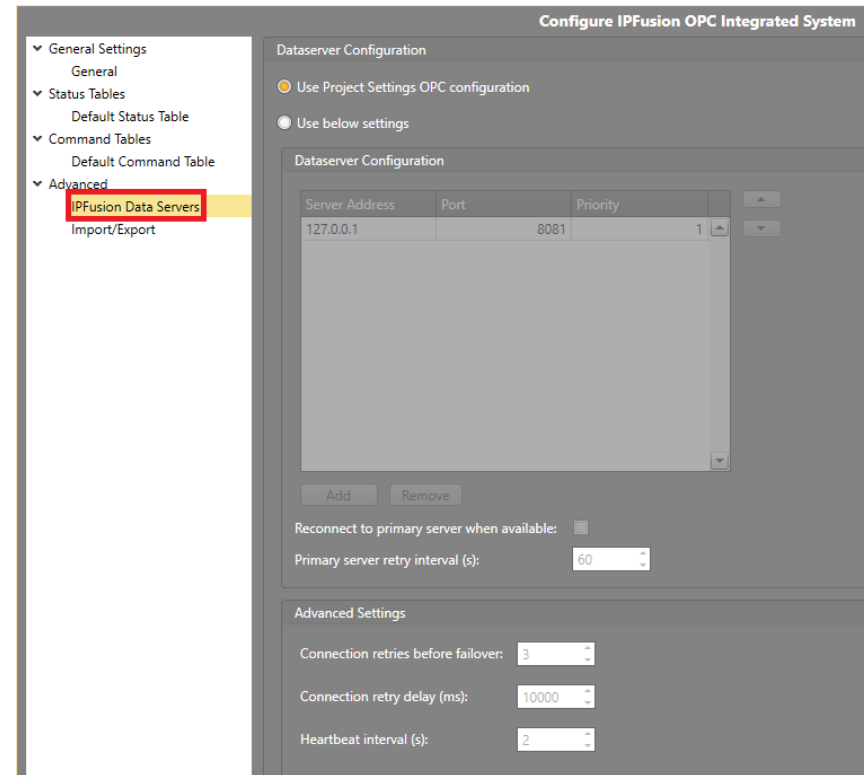
# toggling Live Updates

- Toggling the **Live Tag Update** option on or off will allow the Tags to automatically display their most recent values.
- The **OPC Tag Database Manager** service continues communicating between Runtime and the OPC Servers regardless of this checkmark.

# Connect IPFusion to Tag Database Manager

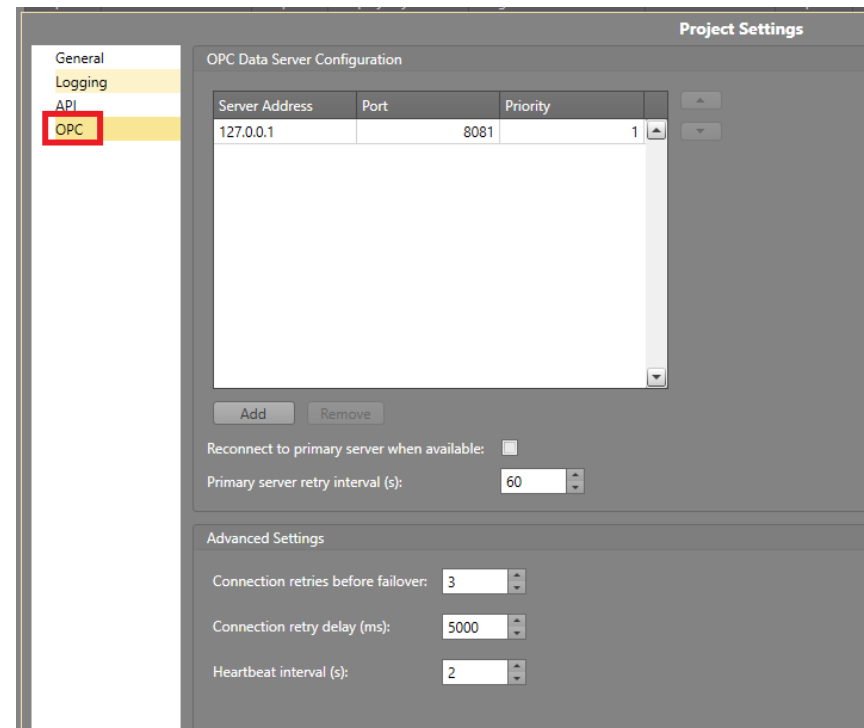
- The following steps will show how Designer can tie an **OPC Tag IO** Integrated System Asset to a specific tag:

1. In IPFusion, open the configuration view of the required OPC based Integrated System. Go to **Advanced > IPFusion Data Servers**. Select **Use Project Settings OPC Configuration** or **Use Below settings**.



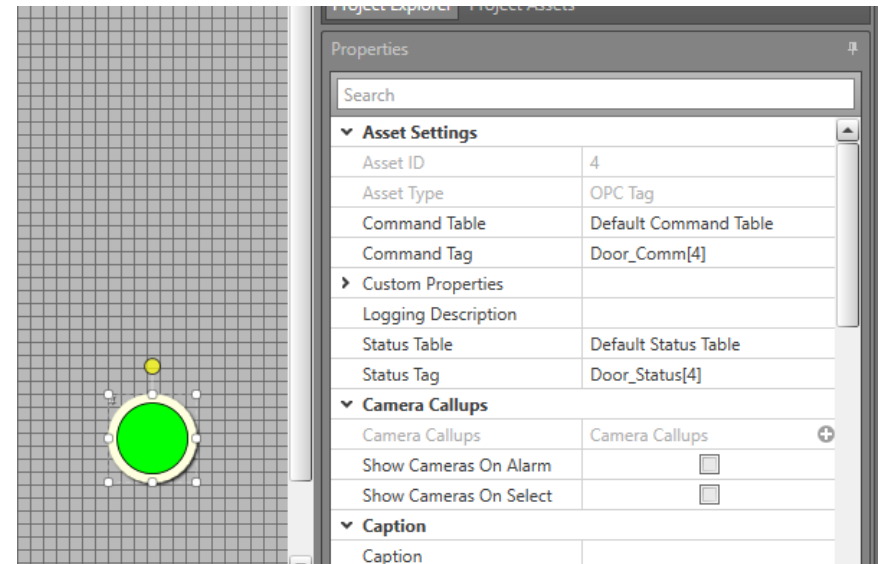
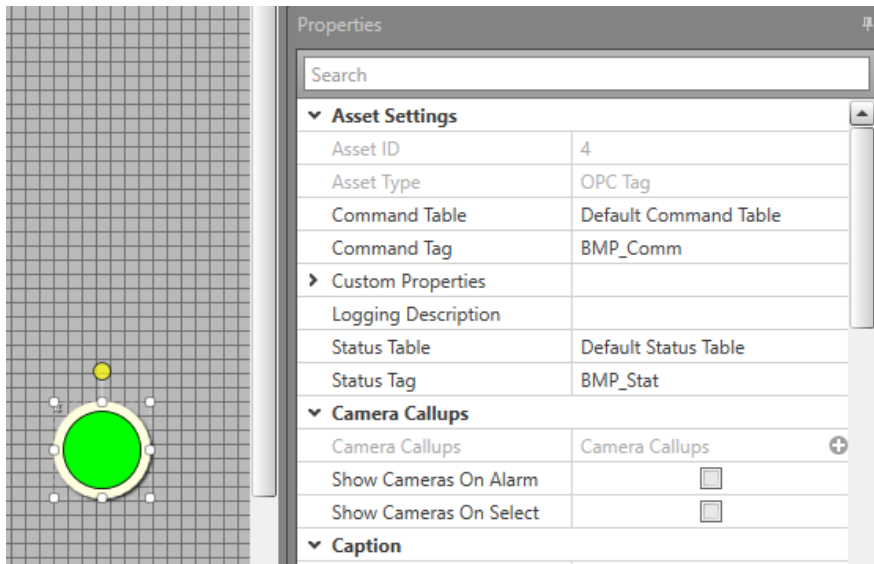
# Connect IPFusion to Tag Database Manager

2. The **Project Settings > OPC Dataserver** has the same configuration layout as the integrated system's **Dataserver** view. Type in the **IP Address** of the machine containing the **Tag Database Manager** in for IPFusion to connect to it. Optionally, use different settings located in these views as needed.



# Connecting OPC Tag Database Manager

3. Go to the corresponding asset that needs the tag. In the asset's **Properties > Asset Settings** in the **Command Tag** and **Status Tag** properties, type in the name of the corresponding tags, and if it is an array tag, follow the name with the proper index.



# Use Cases

- Correctional Facilities
  - Delco PLC Doors (PLC based Door Control)
  - OPC Tag IO (PLC based Door Control, Lights, Buttons, Television, Water, etc.)
  - Graphical Objects

# Module 14 Complete

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