Module 14

Advanced Features:

IPFusion OPC and the Tag Database





 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 N						x
File Help						
Tags						
Add Edit	Delete	— C	onfigure tag list			
Search						
Tag 🔺	Quality	Data Type	Current Value			
Door Command	•	System.Int32	489		1	1
Door Status	•	System.Int32	110			
Intercom Command	•					
Intercom Status	•	System.String	Online			
	Ta	ag conn	ection 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.

General		
Name: Door_Status		
Type: OPCDA Source		•
Advanced		
Machine Name:	localhost	Browse Machines
Server Class:	OPC.Simulation.1	Browse Servers
Item ID:	.Door_Status	Browse Items
Update Interval (ms):	100	
		OK Cancel



OPCDA Source Tag Type

				Browse for OPC Server
-				Machine name: localhost
IPFusion A			X	Available servers:
File Tag D	General			Description
Taos				MatrikonOPC Server for Simulation and Testing
- ago	Name: Door_Status			MatrikonOPC Server for Simulation and Testing
				OPC Labs Kit Event Server
Search	Type: OPCDA Source		*	OPC Labs Kit Server
Tag				
BMP	Advanced			
DOOR	Marking Name	In calls and	Denves Markinson	
	Machine Name:	localnost	Browse Machines	Information about the server:
Main_	Server Class:	Matrikon.OPC.Simulation.1	Browse Servers	Implements: (OpcDataAccess10, OpcDataAccess20, OpcDataAccess30)
Main_				Vendor: ProcID:
	Item ID:	.Door_Status	Browse Items	Version-independent ProgID:
	Update Interval (ms):	100		CLSID: {f8582cf2-88fb-11d0-b850-00c0f0104305}
				No error.
				OK Cancel
				Ready:
			OK Cancel	
Add				Service: Running



Select the OPC Server

OPCDA Source Tag Type

	🔗 Browse for OPC-DA Item	– 🗆 X
	Machine name: localhost	47
	Server class. Mauricon.or c. Jinitiation. I	<u>e</u>
IPFusion Add Tag	3 Branch filter:	Leaf filter:
File Tag D General	Name Pattern	> Data Type Empty
Tags Name: D. C. J.		Require Readable False
Door_Status	Demochan (feldere):	Require Writable False
Search Type: OPCDA Source 🔹		Door Comm
Tag	Configured Aliases	Door_Status
BMP Advanced		OPC_Sample_Random_String_Array
DOOF Machine Name: localhost Browse Machines		
Main Server Class: Matrikon.OPC.Simulation.1 Browse Servers		
Item ID: .Door_Status Browse Items		
Update Interval (ms): 100		
	Item ID:	
	.Door_Status	
	No error.	
		OK Cancel
		Ready:
OK Cancel		
Add	Service: Running	



Select the OPC Item

Virtual Tag Type

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

				x
General				
Name:	Door_Sim			
Туре:	Virtual			-
Advanced				
Data Type	2:	Boolean	*	
Array:		•		
		Length:	1 🗘	
Randomi	ze:			
		Update interval (ms):	1000 🏮	
		Max Limit:	1024 🏮	
		Min Limit:	0 🗘	
			ОК	Cancel



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.



Live Tag Display – Writing and Editing Data

- In the **Live Tag Display**, OPC Tags that have been added will display their current values and statuses.
 - **Tag** The name of a specific OPC Tag. The column to the right is the tag's data quality state.
 - **Data Type** The type of the OPC Tag.

• **Current Value** — The values associated with the OPC Tag. These change depending on the values in the tag's source.

Tag		Data Type 🔹	Current Value
Door Command	٠	System.Int32[]	[0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
Door Master Command	•	System.Int32	0
Lockdown Permissions	•	System.Boolean[]	[False, False, False, False, False, False, False, False, False]
Lockdown Master Permission	•	System.Boolean	False
Water Solenoid Status	•		
Water Solenoid Command	0		

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

M	Main_Door_Command x													
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	v



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:
- 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.

Properties		Р			·
Search				Properties	
 Asset Settings 				Search	
Asset ID	4			✓ Asset Settings	4
Asset Type	OPC Tag			Asset Type	4 OPC Tag
Command Table	Default Command Table			Command Table	Default Command Table
Command Tag	BMP_Comm			Command Tag	Door_Comm[4]
Custom Properties				 Custom Properties 	
Logging Description				Logging Description	
Status Table	Default Status Table			Status Table	Default Status Table
Status Tag	BMP_Stat		9	Status Tag	Door_Status[4]
✓ Camera Callups				✓ Camera Callups	
Camera Callups	Camera Callups	• • • • • • • • • • • • • • • • • • •	<u>}</u>	Camera Callups	Camera Callups
Show Cameras On Alarm				Show Cameras On Alarm	
Show Cameras On Select				Show Cameras On Select	
Cantion				✓ Caption	
· caption				Caption	



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

