AssetWorX
Quick Start

APPLICATION NOTE

October 2015

Description: An introduction to AssetWorX and using asset objects in GENESIS64 applications.

Introduction

AssetWorX is a convenient way to access your data and organize it into real-world structures (assets). It is also a way to aggregate, load-balance, and cache your data. This document will introduce you to AssetWorX, walk you through creating an asset, and mention some of the beneficial features of AssetWorX.

Performance Enhancement Features

Aside from the organizational benefits of AssetWorX, it can provide these features as well.

Aggregation – AssetWorX can provide a central server for clients to talk to when requesting data. Instead of multiple clients each talking to multiple OPC servers, all clients can talk to AssetWorX and AssetWorX talks to all OPC servers. This can reduce the load on an OPC server, because from the OPC server's point of view it only has a single client.

Load Balancing – AssetWorX can take advantage of GENESIS64 Load Balancing to distribute clients among multiple AssetWorX engines. For more information on how to configure Load Balancing, see the application note entitled *GENESIS64 - Load Balancing*.

Caching – AssetWorX can cache values from the OPC server, providing faster updates for new clients. Updates from the OPC server will be stored in the AssetWorX database. When a new client connects to an asset, AssetWorX will look for data both in the database and from the OPC server and the first available update will be sent to the client.

Caching settings can be configured in Workbench-SL's AssetWorX provider under Product Configuration → Other Settings → Caching tab.

Creating Equipment Classes

Equipment classes are like templates for assets. You can optionally create an equipment class for a "type" of asset, and then easily create assets from that equipment class.

1. Go to Start → ICONICS → Workbench-SL to open Workbench-SL in Internet Explorer.
2. In the AssetWorX provider, expand localhost → AssetWorX → Equipment classes.
3. Right-click on Equipment classes and select "Add Equipment class".
4. Name the new Equipment class "Tank/?TankNum?/", set the level to "Unit", and hit Apply.

   NOTE: The /? and ?/ symbols designate an alias within this equipment class. When you instantiate (create an instance of) this class later you will be given the opportunity to replace this alias with another value.

5. Right-click on the newly created Equipment class and choose "Add Equipment class property".
6. Name the new Equipment class property "Temperature".
7. For "Real time data tag", browse to My Computer → Data Sources → OPC Data Access → Simulations → Float → Sine → FastL000. Click OK. Replace the last 0 in the tag with /?TankNum?/. The final tag name should look like this:

@sim64:Float.Sine(1,-50.0,50.0,/?TankNum?/).Value

8. Hit Apply.
9. Right-click on your Equipment class and choose "Add Equipment class property" again.
10. Name the new Equipment class property "Pressure".
11. For "Real time data tag", browse to My Computer → Data Sources → OPC Data Access → Simulations → Float → Ramp → FastL000. Click OK. Replace the last 0 in the tag with /?TankNum?/. The final tag name should look like this:

@sim64:Float.Ramp(1,-50.0,50.0,/?TankNum?/).Value

12. Hit Apply.

You have now created a very simple Tank class with two properties, which can be used to easily create multiple Tank assets.

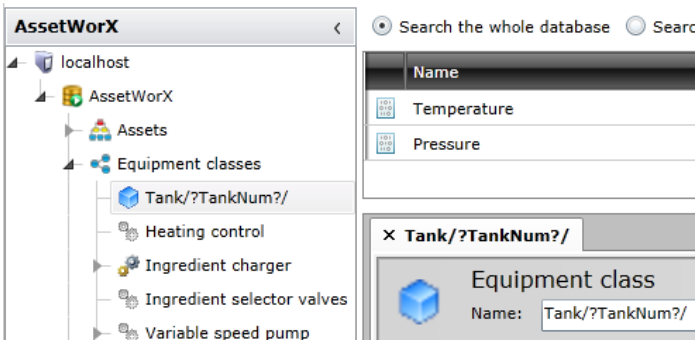

Figure 1 - Tank equipment class

Creating Assets

1. In Workbench-SL, expand Equipment classes, then Drag Tank/?TankNum?/ from Equipment classes to AssetWorX → Assets → Company → Foxboro bakery → North → Baking line.
2. In the "Value" column, type 5.
3. Click Instantiate. When the batch operation has ended, click Close.
4. Select the new Tank5 item. Note that the Temperature and Pressure properties exist in the new asset and they include the number 5 where /?TankNum?/ was in the equipment class property.

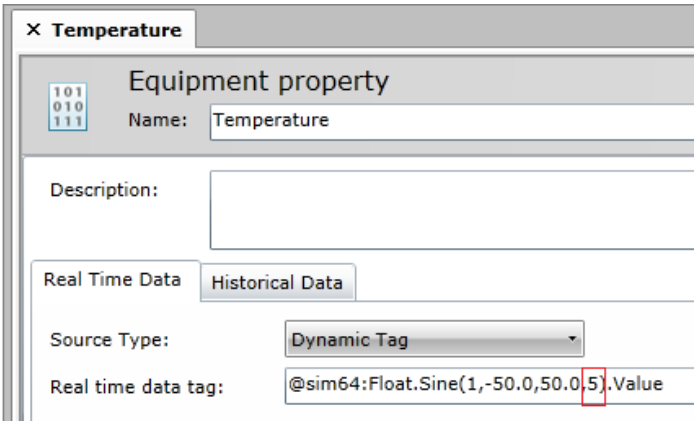

Figure 2 - Temperature property of Tank5

5. Drag Tank/?TankNum?/ into the Assets tree again, onto the "Baking line" item. This time replace the alias with 10. You should see a Tank10 asset get created with Temperature and Pressure properties that have a 10 in the tag name.

Viewing Assets in GraphWorX64

Asset properties can be viewed in GraphWorX64 or other OPC-DA or OPC-UA clients. Browsing for asset properties instead of for the direct OPC tag gives you all of the benefits of AssetWorX, like caching, aggregation, and load balancing, plus it gives you a central location to change your tags, if you need to change them later.

NOTE: If you are browsing from a third party OPC client you will want to look for the "Assets" folder of the FrameWorX OPC server (ICONICS.FwxServerOPC).

1. Go to Start → ICONICS → GENESIS64 → GraphWorX64 → GraphWorX64.
2. Add a new process point and browse for My Computer → Assets → Company → Foxboro bakery → North → Baking line → Tank5 → Pressure.
3. Put the display into runtime. You should see your simulated pressure value.

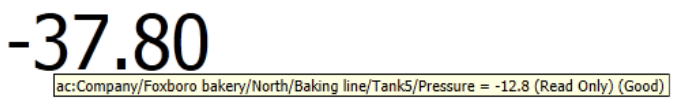

Figure 3 - Asset property in GraphWorX64

Commanding

When using the Asset Navigator control in GraphWorX64, PortalWorX, or Workbench-SL Runtime you can right-click on assets to execute specific commands. This can be used to quickly open pages based on a specific asset, change the context of an existing page, and many other things.

To configure a command, select an asset in Workbench-SL and go to the Commands tab.

For more information on how to configure and use Commands, see the application notes entitled *GENESIS64 - Commanding Introduction* and *GENESIS64 – Commanding Configuration and Runtime*.

Security

You can control which assets your users have permission to view and control using the Security Server provider in Workbench.

Users and groups can define a Root Asset and Default Asset. The Root Asset will be shown at the root of the Asset Navigator, and the Default Asset will be expanded in the Asset Navigator by default. These settings can be used to customize how the Asset Navigator looks for different users.

Users and groups also have a tab called Assets. This tab can allow or deny access to particular assets. Security can control whether users can visualize assets and execute Commands on assets. To prevent users from the "ac:" tags in GraphWorX64 and other GENESIS64 clients, you can uncheck the "Visualize" box on the Assets tab. This is similar to the "Read" checkbox on the Points tab, which is used for other (non-AssetWorX) tags.

For more information about the Security Server and securing assets, see the application notes entitled *GENESIS64 Security - Quick Start* and *AssetWorX – Security*.