AssetWorX
Scalable Distributed S95 Asset Architecture

Description: Guide to designing a distributed AssetWorX structure.

Introduction

AssetWorX enables users to organize all enterprise and equipment data into reusable equipment (asset) classes that can be easily instantiated for all like assets to construct a system. Pumps, heat exchangers, well heads, gas fields, turbines, chillers, buildings, building zones, manufacturing cells and plants can all be defined as Asset Classes. The AssetWorX approach greatly reduces engineering efforts needed to configure a system and delivers a very consistent system organization. Assets are defined in an ISA S95-compliant asset tree, constructed to represent the enterprise.

In GENESIS64 version 10.8 ICONICS introduced a concept of distributed AssetWorX which means that you can merge multiple independent AssetWorX trees into one global AssetWorX tree. It is now easy to provide a view of your multi-site company to central management while keeping the maintenance of the individual sites on local levels.
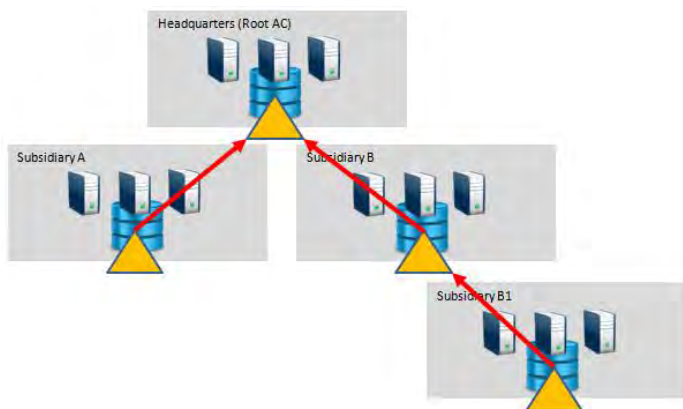

Figure 1 - Composing a Global AssetWorX Tree from Separate Machines

Distributed AssetWorX

The goal of this section will be to visualize the AssetWorX tree of SUBSIDIARY B machine as part of the AssetWorX tree on HEADQUARTERS machine.

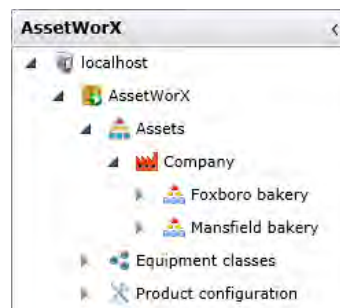1. Create an AssetWorX Tree on SUBSIDIARY B machine such as the one in the following figure.

Figure 2 - Tree which will become part of Global AssetWorX

2. Switch to the HEADQUARTERS machine and create new equipment which will represent the root item of the asset tree from SUBSIDIARY B machine.
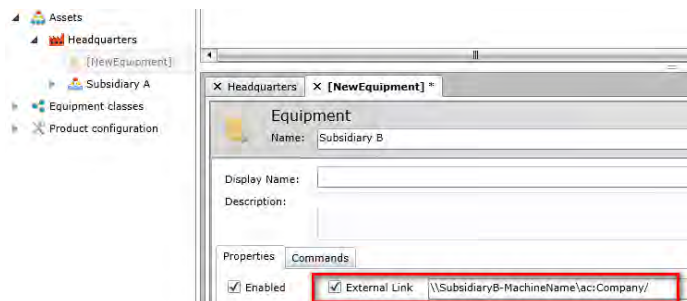

Figure 3 - New Equipment Linked to Subsidiary B AssetWorX

3. Note that this equipment will be only a link to the remote AssetWorX. Check the External Link checkbox and open the Data Browser.
4. Via the FrameWorX Network, browse for the Assets on the SUBSIDIARY B machine and select the equipment you want to visualize under this equipment. For this example, choose the equipment *Company*.
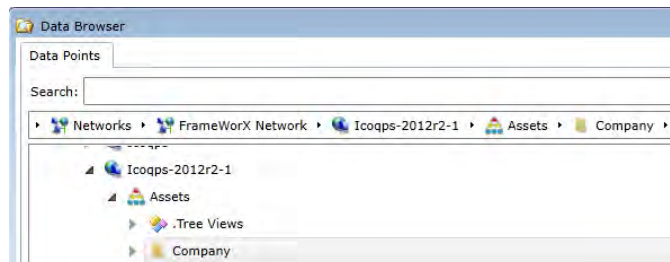

Figure 4 - Selecting the remote Equipment in Data Browser

5. Insert the AssetWorX Navigator into GraphWorX64 on the HEADQUARTERS machine in order to check the result. In runtime you should see your SUBSIDIARY B in your tree similarly to the following figure.

Figure 5 - Headquarters AssetWorX Tree containing Equipments from Subsidiary B

NOTE: You may not configure the assets from Headquarters because at Headquarters level you create only an external runtime link.

Exposing Remote Global AssetWorX

You may want to connect to the composed global AssetWorX from the SUBSIDIARY B machine or any other remote machine. In order to show the global AssetWorX on the SUBSIDIARY B machine you need to follow the steps below.

1. Open Other settings in the AssetWorX provider on SUBSIDIARY B machine.
2. Check the Expose global catalog checkbox and fill in the Global catalog root computer field with the name of the HEADQUARTERS computer.
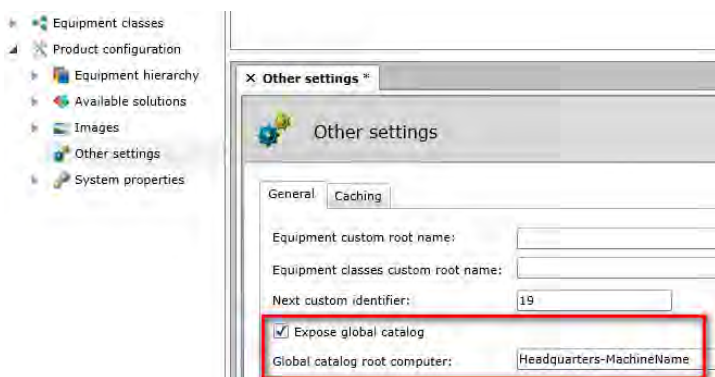
3. If you now open Data Browser in a client such as GraphWorX64 you can browse the Global Root next to the local AssetWorX as shown in the following figure. Under the Global Root you will find the merged global AssetWorX tree i.e., the same you can browse on the HEADQUARTERS machine.
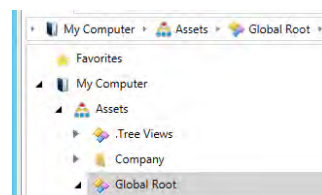

Figure 6 - Global AssetWorX next to the Local AssetWorX in the browser

Note: Items requested via Global Root are indicated by a dollar sign after the *ac:* prefix e.g. *ac:$/Headquarters/*

Note: It is not possible to show the remote global AssetWorX in AssetWorX Navigator, but can only connect individual process points.

Licensing of Global AssetWorX

The Global AssetWorX itself is not licensed. Equipments which have no data inputs are not counted at all either. However if the remote equipments contain OPC inputs, they are counted towards a license. Such inputs are counted towards license of its FrameWorX server source. For example, in our case, if in HEADQUARTERS we request five equipments from SUBSIDIARY B with local inputs, five license points will be requested in SUBSIDIARY B and no license points in HEADQUARTERS. In other words, the points are counted on the server which the equipments belong to unless these points are requested from another FrameWorX Server. In that case they would be counted towards the other FrameWorX Server.

Security in Global AssetWorX

When the Global AssetWorX retrieves data from remote AssetWorX servers, it uses FrameWorX to FrameWorX communication. If you enable security on the SUBSIDIARY B machine, you have to specify username and password for FrameWorX to FrameWorX communication in HEADQUARTERS Platform Services configuration. This user account, e.g. Bob, which must exist in the SUBSIDIARY B security configuration, will be used when the FrameWorX Server on the HEADQUARTERS machine communicates with the FrameWorX Server on SUBSIDIARY B machine. All limitations of Bob's account will be applied to the HEADQUARTERS machine as if the HEADQUARTERS machine logged in to the SUBSIDIARY B security server as Bob himself.

If you enable security on the HEADQUARTERS machine as well, limitations of the local security user who is currently logged in (e.g., Alice) will be applied on top of Bob's limitations. In other words, Alice will never be able to access more data than Bob, but she can be even more restricted.