OPC ToolWorX – Adding Runtime Configuration Support

APPLICATIONS NOTE

October 2013

Description: Guide to adding runtime configuration support to existing OPC Servers.
OS Requirement: Win 2000, XP Pro, Server 2003, Vista, Server 2008, Windows 7
General Requirement: An OPC server that is already generated using the ICONICS OPC Configurator Wizard.

Introduction

Online configuration is a new feature in OPC ToolWorX v3.1 which allows the user to make changes to the OPC Server configuration database while the OPC server is running. It is now unnecessary to stop and restart the server after the changes are made; the OPC server will be updated automatically. You will only need to add this feature if your server was generated with versions of ToolWorX prior to version 3.1. OPC servers that are generated with OPC ToolWroX 3.1 Wizards already have this support.

Please keep in mind that using this feature is not required. You should consider your project needs before continuing. This document will detail the steps necessary for you to enable runtime configuration of your server.

> **NOTE:** We will assume that you have a configurator project name MyConfigurator in this document

Configurator Project

Open your Configurator project in windows explorer and open the YourConfiguratorProjectDefinitions.cpp file, in this example it would be MyConfiguratorDefinitions.cpp. Here you will find all the table definition maps. Every table definition map is enclosed between the macro commands: OPCTK_DAB_BEGIN_MAP_EX, and OPCTK_DAB_END_MAP.

For all tables where you want to support Online Configuration add the following line at the end of each table map definition (just before OPCTK_DAB_END_MAP command):

DEFINE_SEQUENCE_FIELD(x, m_Sequence)

In the line above, x is the number of the last record in the map incremented by 1. You will need to define the m_Sequence variable in the Accessor classes if it is not already defined. For each table in MyConfiguratorDefinitions.cpp to which you have added the m_Sequence line, you will need to declare the public variable, for example "LONG m_Sequence". Then you will also need to add this to the COLUMN_MAP in the position that it will appear in the database table, for example: COLUMN_ENTRY(4, m_Sequence). You may need to upgrade the configuration database first, and then modify the COLUMN_MAP with the appropriate position.

Configuration Database

In case the OPC server uses a Microsoft Access database (*.mdb) as its configuration storage, the database should also be migrated to OPC ToolWorX Version 3.1. There are two ways to do this:

1. You can start a configurator (built with the 3.1 ToolWorX Configurator libraries) and open the database file in the new configurator. This will do the conversion automatically, by prompting you to upgrade the database format.

2. You can use the OnlineChangesWizard.exe utility to upgrade the database for you. The OnlineChangesWizard utility is installed with OPC ToolWorX 3.1 in the Tools subdirectory.

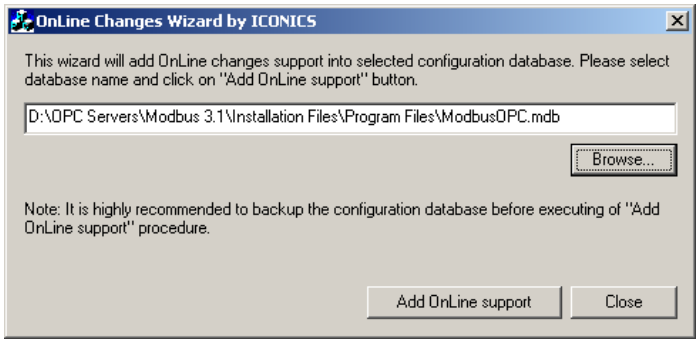

Figure 1 - Online Changes Wizard

Testing Online Configuration

After rebuilding your server, it should now be ready to test the Online Configuration support. A simple test that you can do is to connect to the OPC server using OPC DataSpy, and browse the configured data items. Then open the OPC server configurator and add a new data item, and press Apply. Go back to DataSpy and press the Refresh button until you see the new data item appear. Note that there may be a small delay before the item appears.

Server's Internal Settings

OPC ToolWorX sometimes provides several implementations (internal algorithms) to handle some aspects of server's operation. In these cases, you can select the optimal algorithm for your server by defining some specific registry settings and their values. This section covers all the important setting and

values that can be set, with some explanation of the settings and their alternative values.

The internal registry settings can be defined under the key HKEY_LOCAL_MACHINE\SOFTWARE\companyname\application name.

By default, most of the setting do not exist, but they can be created either manually or with the OPCAdmin application (please refer to the OPCAdmin application section in our help files for more information). If a key does not exist it means that the toolkit uses default value for it.

All the settings are considered to be highly internal. Changing the values may result in unexpected server operations, and should be done with caution.

PeriodicConfigurationUpdate

Registry value type: REG_DWORD
Description: Specifies whether the server periodically checks for the configuration changes (this feature is also referred as Online Configuration)
Values:
* 0: the server doesn't check for configuration updates.
* 1 (default): the server checks for configuration updates.

ConfigurationUpdateRate

Registry value type: REG_DWORD
Description: if the PeriodicConfigurationUpdate is set to 1, this value specifies the period at which the server checks for configuration updates. Values: in milliseconds, default value is 10000 (10 seconds)