Quickstart

Installation and Configuration Guide
OPC Unified Architecture Products

- **CPP Demo Server – Evaluation Version**
- **ANSI C Server SDK – Evaluation Version**
- **UA Expert – Free Software**

Document Revision 0.10.2

Setup

Windows Setup (CPP Demo Server and UaExpert):
- Administrator rights required
- Follow the setup procedure
- No reboot required

ZIP-file (ANSI C Server SDK for Win32 x86):
- Unpack the files
- Do not change the folder structure
- Use with Microsoft Visual Studio 2005 SP1

Linux Setup (UaExpert only):
- Unpack the files
- Login as root in a terminal window and execute: sh ./uademoserver_installer.run

Windows Firewall

The setup procedure is not modifying any security settings on your computer. After successful setup the UA Demo Server must be included in the exceptions list of the Firewall. To use computer's name instead of IP address the Network Discovery must be enabled in the firewall.

Problem: *Windows Security Alert*
When starting the UA Demo Server the first time the Firewall may ask you the to unblock the application.
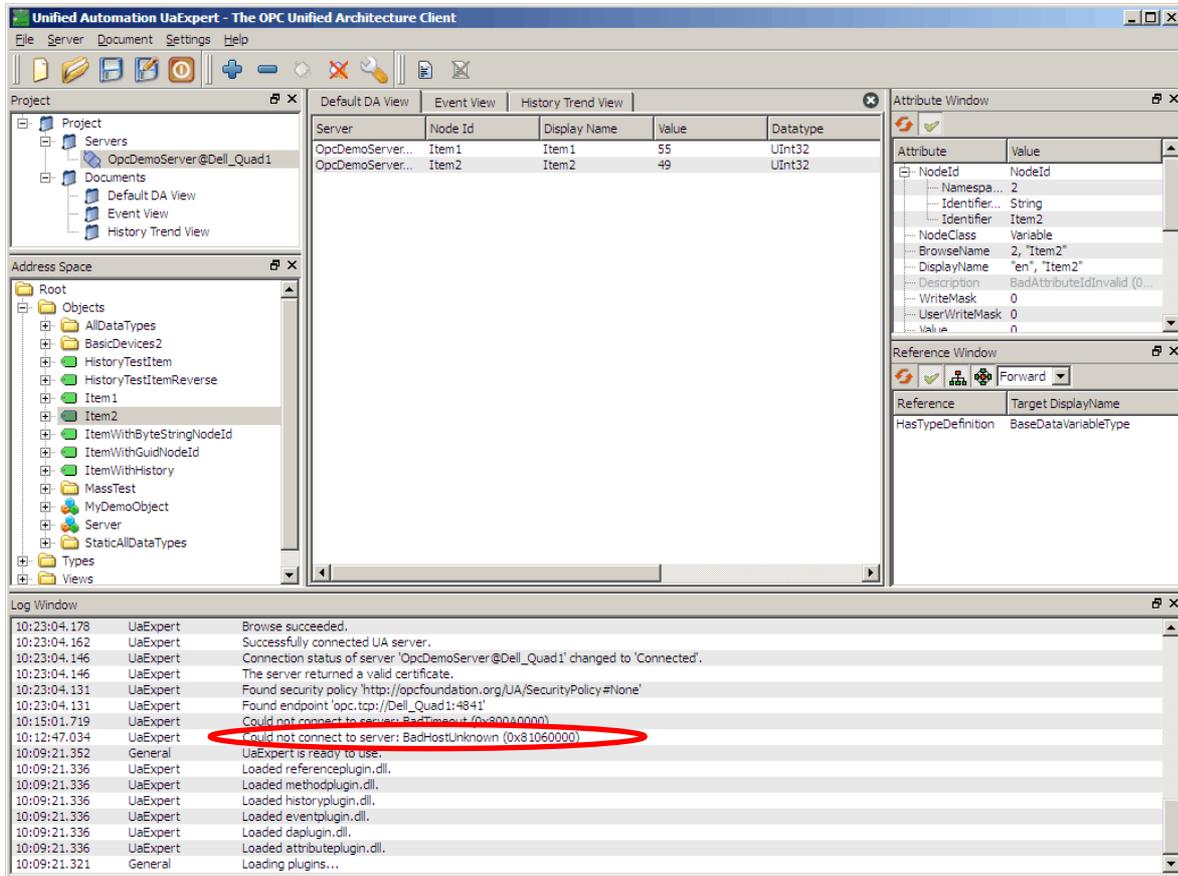

Solution:
Press the "Unblock" button to add the UA Demo Server application to the Windows Firewall and to enable this entry in the exception list.
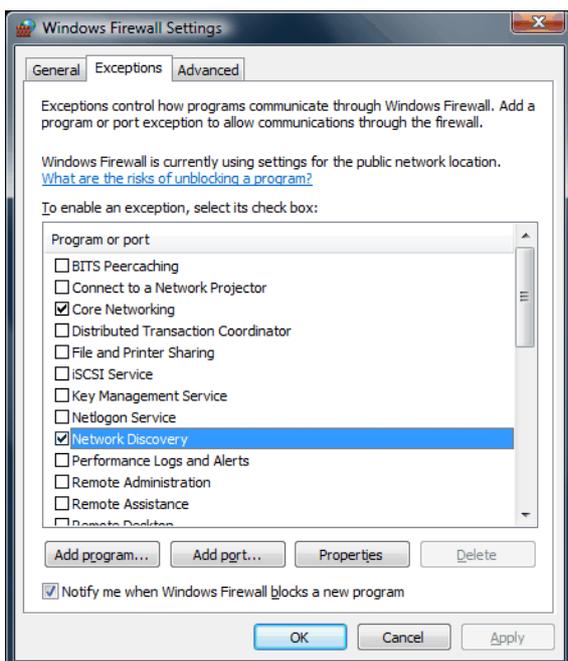
Problem: *BadHostUnknown*

When connecting a remote UA Client (e.g. the UA Expert) and getting error BadHostUnknown (0x81060000) the server's machine name could not be resolved.
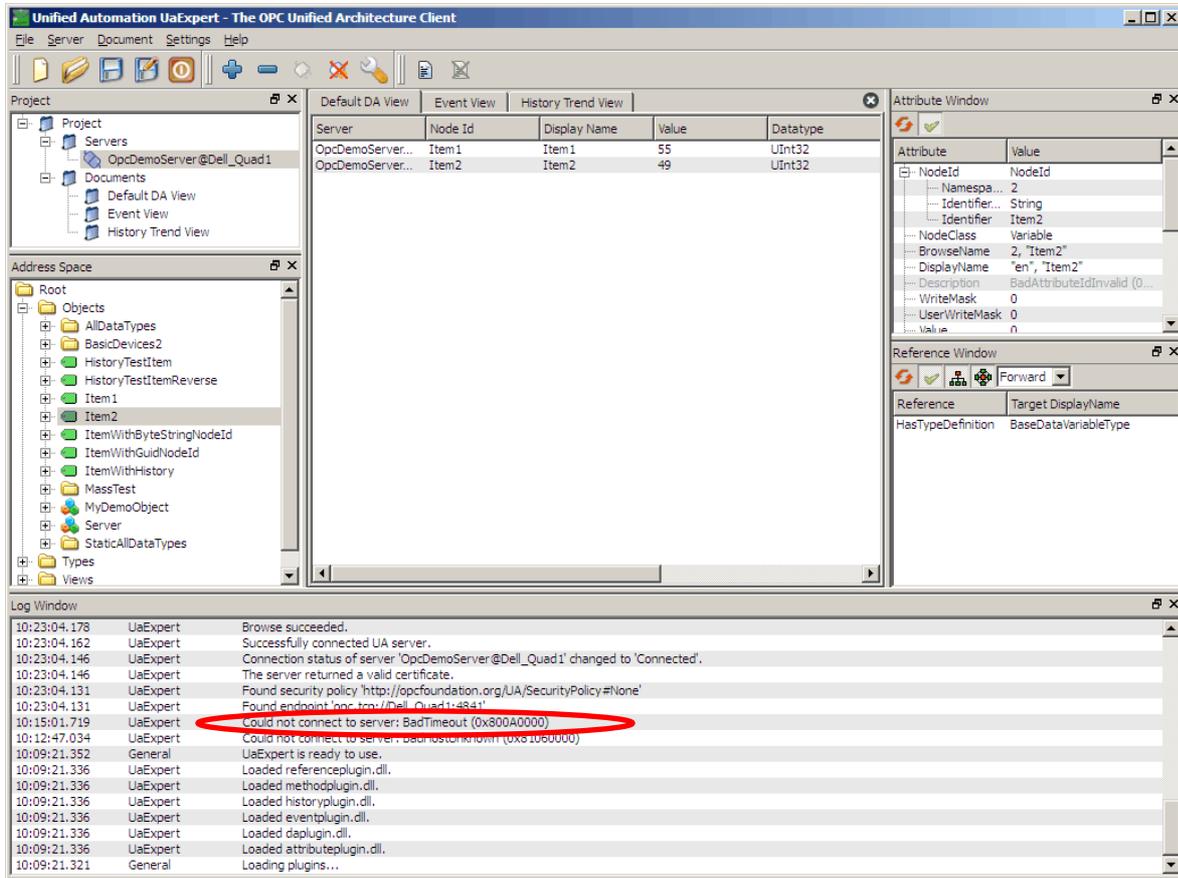

Solution:

Include the "Network Discovery" in the exception list of the Windows Firewall on the Server machine.

Problem: *BadTimeout*

When connecting a remote UA Client (e.g. the UA Expert) and getting error BadTimeout (0x800A0000) the server could not be reached because the Firewall bocks the incoming call.


Solution:

Include the "uademoserver" in the exception list of the Windows Firewall on the Server machine.
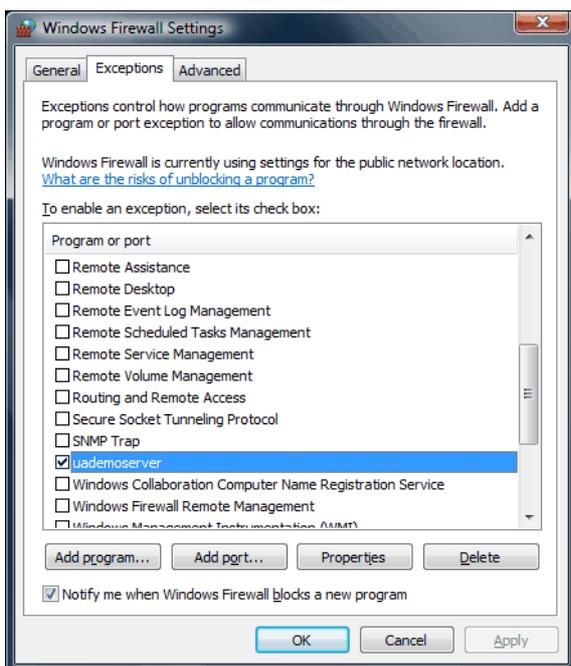
Certificate Handling

Certificates are required for secure transmission of data between UA Server and Client. Both the Client and the Server must know and trust each other's certificate. The UA Demo Server has it's own certificate store located in the installation folder.

- Public Server Certificate:
  %programfilesfolder%\unifiedautomation\uademoserver\pki\ca\certs
- Revocation List:
  %programfilesfolder%\unifiedautomation\uademoserver\pki\ca\crl
- Private Certificate:
  %programfilesfolder%\unifiedautomation\uademoserver\pki\ca\private
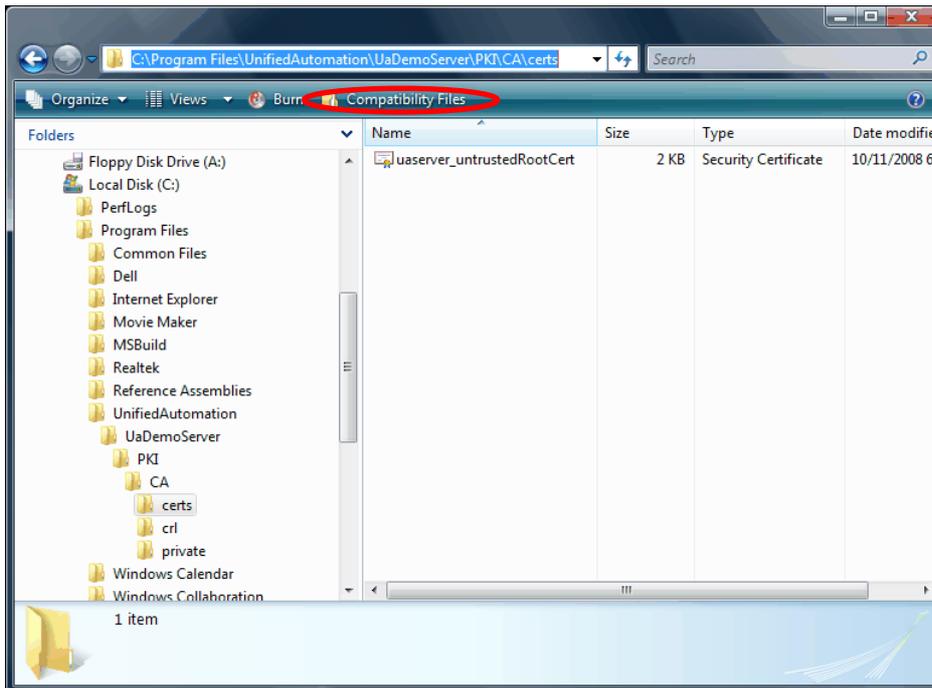
How to trust Certificates:
The UA Demo Server has no GUI and thus can not ask the user for acceptance of certain certificates. For security reasons the Server will store all certificates transferred by new unknown clients to the revocation folder. An administrator must manually copy the client certificates from the revocation folder (\rejected) to the certificate folder (\certs) to enable secure connection with these clients. The public server certificate might be copied to the certificate store of the client, if the client can not do this on its own.

Access to Certificate Store:
The UA Demo Server needs read access rights for the certificate store and read/write access to the revocation folder. The PKI and all its subfolders must grant appropriate access to the context the UA Demo Server is running under. When the UA Demo Server is started (double clicked) by a USER the process may not have sufficient rights to write to the certificate store, thus Windows (Vista / 2008 Server) virtualization will be enabled and the Server will not find the files after reboot or re-logon. In the Windows Explorer click on "Compatibility Files" and you will directly jump to the user specific virtual store.

General Server Settings (CPP Demo Server)

All general settings and parameters are configured in an XML file. The Server reads in this file on startup. Only experienced users should change settings in this file. Most of the settings made here are default settings anyway, others might become subject to change. By default the XML file (ServerConfig.xml) is located in the application path of the UA Demo Server.

- Server uses Port 4841
- Enable UA Stack Trace
- Enable UA Server Trace

General Server Settings (ANSI C Server SDK)

All general settings and parameters are configured in a .c file. This file is compiled into the Server. Only experienced users should change settings in this file. Most of the settings made here are default settings anyway, others might become subject to change. By default the .c file (demoserver.c) is located in \\sdk\examples\demoserver\.

- Server uses Port 4842
- Enable UA Stack Trace
- Enable UA Server Trace

General Client Settings (UaExpert)

On the first start up or when the certificate store was emptied the UA Expert asks for creation of an instance certificate. The dialog must be filled with useful values to create a valid certificate. On Windows (Vista / 2008 Server) virtualization will not be enabled. The UaExpert will generate user specific folders containing the PKI structure on first startup. Every user must generate his own instance certificate for the UaExpert. The certificate will be located in the user's profile:

- WinXP: \Documents and Settings\John\Application Data\unifiedautomation\
- Vista: \Users\John\AppData\roaming\unifiedautomation\

General settings will be preconfigured and can be changed in the menu bar "Settings >> Configure UaExpert". All values are given in milliseconds (ms).

- ConnectTimeout = 3000
- SessionTimeout = 1200000
- SecureChannelLifetime = 3600000
- GeneralCallTimeout = 3000
- BrowseTimeout = 3000
- MaxReferencesToReturn = 100

Connecting an UA Server:
Click the "AddServer" button and choose a server from the list. If no servers are displayed you can enter new server pressing the "New" button. In the "Server Properties" dialog the default discovery URL pre selected (opc.tcp://localhost:4840). Exchange "localhost" with the host name or IP Address of a remote computer if you want to discover a remote node. Press the "Reload" button to connect to the discovery server and to read out all server specific information. Select the Server's URL and the supported security policy you want to use and finish the dialog with "OK". The Server's parameters needed to connect are now stored in the server list.

Problem: *BadTimeout*
When discovering on the default port 4840 and getting BadTimeout (0x800A0000) there might be no connection possible (physically hardware related) or the discovery server does not exist on the target machine.

Solution:
Install a discovery server on that computer and insure that all UA Server register at that server.
Alternative: If there is no discovery server available, directly use the port of the target UA Server to discover (discover on itself). If you have no discovery server installed use the UA Demo Server URL opc.tcp://localhost:4841. The Demo Server will return it's available end points and supported security policy.

Problem: *BadCommunicationError*
When discovering on the UA Server's port 4841 and getting BadCommunicationError (0x80050000) there might be no connection possible (physically hardware related) or server exists but was not started on the target machine.

Solution:
Start the UA Demo Server by clicking the Windows Startmenu entry "Start >> Programs >> UnifiedAutomation >> UaDemoServer >> UaDemoServer" Note: To avoid Windows virtualization problems, right click the UaDemoServer's start menu entry and select "execute as…" and start the Demo Server with administrator privileges.