Tech Note 494

Configuring OPCClient & SuitelinkClient Device Integration Objects for Use with Allen Bradley ControlLogix Controllers

Topic#: 002217
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Introduction

This *Tech Note* explains how to configure the IAS OPCClient & IAS SuiteLinkClient objects to talk to a DAServer. It explains how to configure both the DAServer and the IAS Clients. This example uses the DASABCIP server for the Allen Bradley ControlLogix family of PLCs. We will read the Time from the PLC.

Application Versions (Recommended)

- Wonderware DASABCIP 3.5 and later
- Wonderware Application Server 2.1 and later
- Wonderware InTouch HMI Software 9.5 and later
- Allen Bradley ControlLogix PLC Family

Use the following links to view specific sections:

- **Using the Example Files**
- **InTouch Application**

Configuring SuiteLinkClient Objects

DASABCIP Configuration Summary

After installing the DASABCIP Server it must be configured to talk to your PLC. The configuration of the DASABCIP is similar to building a path to the PLC.

The ControlLogix family is a little different in that you need to actually define all of the pieces needed to build the path to the PLC, since the Ethernet card is not actually located on the PLC. The basic concept is you come out of the DAServer with a CIP_Port. You then go into a ControlLogix Ethernet card, then down to the Backplane, then to the PLC itself.

Below is an example of the DASABCIP Model. **CIP_Port** is basically the computer the DAServer resides on. **CLX_Ethernet_Card** is a ControlLogix Ethernet Card. **CLX_Backplane** is the ControlLogix Rack that the Ethernet Card resides in. The **CLX_PLC** is the actual ControlLogix PLC.

Each of these pieces can be named whatever you want within the constraints of the system. The names chosen in this example are for demonstration purposes.

Note: The configuration can accommodate multiple Ethernet cards as well as multiple PLCs within a rack. If your system uses ControlNet, DHRIO, or DeviceNet modules, the system can be defined using them too.

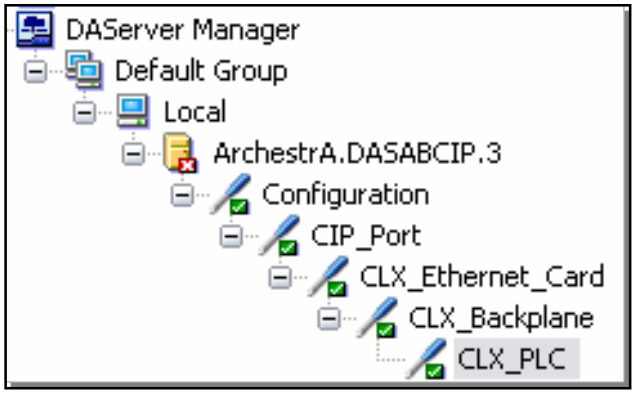

Figure 1: DASABCIP Model in the SMC

Configuring DASABCIP Device Groups

The Device Groups provide a path to each PLC for both the OPC & SuiteLinkClient objects. You can have multiple Device Groups for each PLC, but each Device Group must have a unique name. Additionally, if you have more than one PLC configured, no two Device Groups in any PLC can have the same name. For example, PLC1 has a Device Group named **FAST**. PLC2 can NOT have a Device Group named **FAST**.

This example shows three Device Groups for three different Update Intervals (Slow, Fast, Ultra).

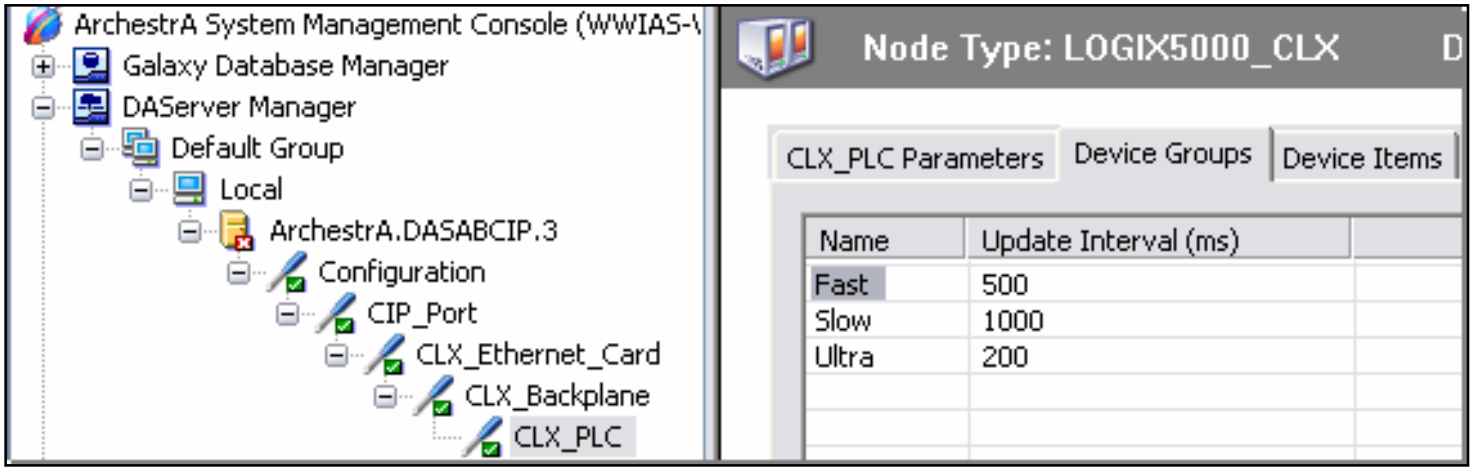

Figure 2: Device Groups with Unique Names

Configuring DASABCIP Device Items

The **Device Items** tab configuration is optional and depends on your application. This tab allows you to map an InputSource/Name to a PLC address. If your IO references in your objects use actual PLC addresses, you do not need to configure this tab.

For example, you have an IAS application that was originally developed to communicate with Allen Bradley PLCs, but later change to Modicon PLCs. Although the PLC program logic and IAS objects remain the same, the addressing architecture changes.

On this tab you would put the original AB PLC address in the name column and the corresponding Modicon PLC address in the **Item Reference** column. This way you would not have to modify the IAS application.

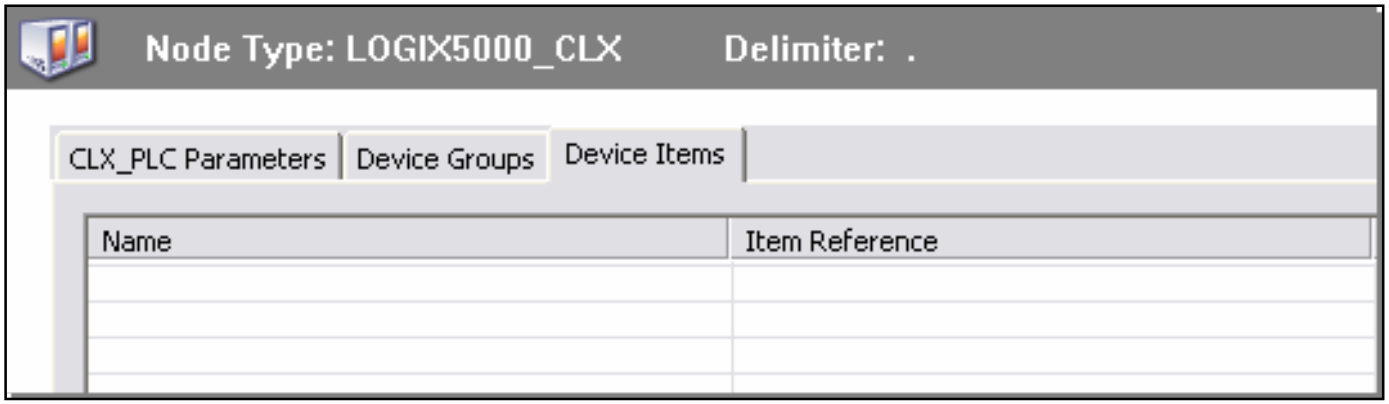

Figure 3: Device Items Tab

Configuring SuiteLinkClient General Attributes

The SuiteLinkClient must be configured to talk to the DASABCIP Server. This connection is how the IAS object talks to the outside world (IO). The SuiteLinkClient instance can be named whatever you want it to be. Ensure you are compliant with your particular naming convention.

Note: The name is included with the InputSource string. In this case, the SuiteLinkClient object name is **ABCIP_SL**.

The initial object configuration points it to the Computer (Server node) and the DAServer (Server name) you want to talk to. There is a one-to-one relationship between SuiteLinkClient objects and DAServers (One SuiteLinkClient for one DASABCIP Server, one SuiteLinkClient for one DASABTCP Server...etc.). The SuiteLinkClient only uses the middle part of the DAServer name (ArchestrA.DASABCIP.3). In this case, it is **DASABCIP**.

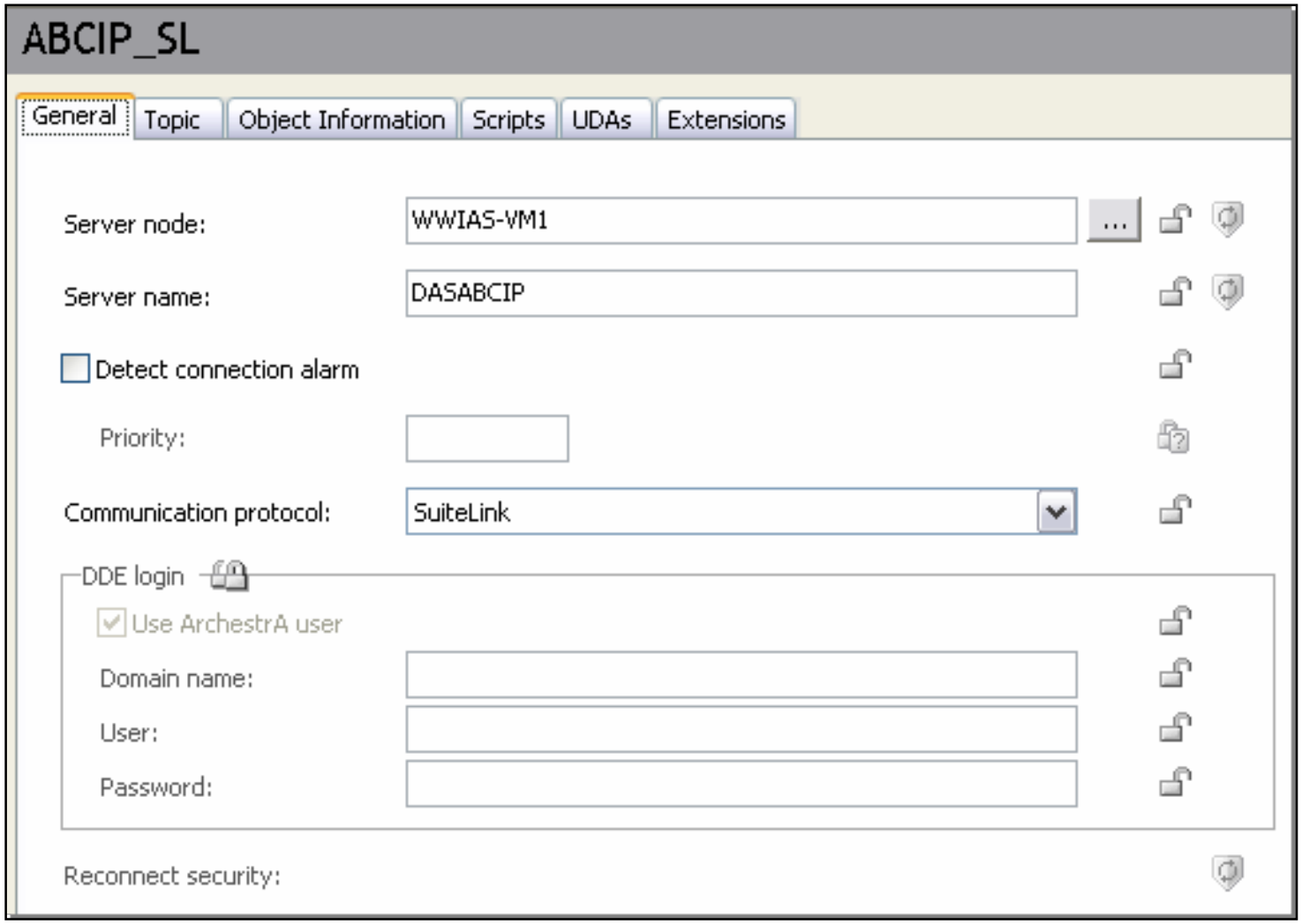

Figure 4: Server Name Connection String

Configuring SuiteLinkClient Topics

The next part of configuring the SuiteLinkClient is creating the topics. The topics are used to distinguish which Device Group in the DAServer you are going to talk to. Each Topic name must match a Device Group name in the DAServer.

This example shows three topics. Each of the topics represents a different Device Group with a different scan rate in the DAServer. Each PLC will need to have its own Topic or Topics.

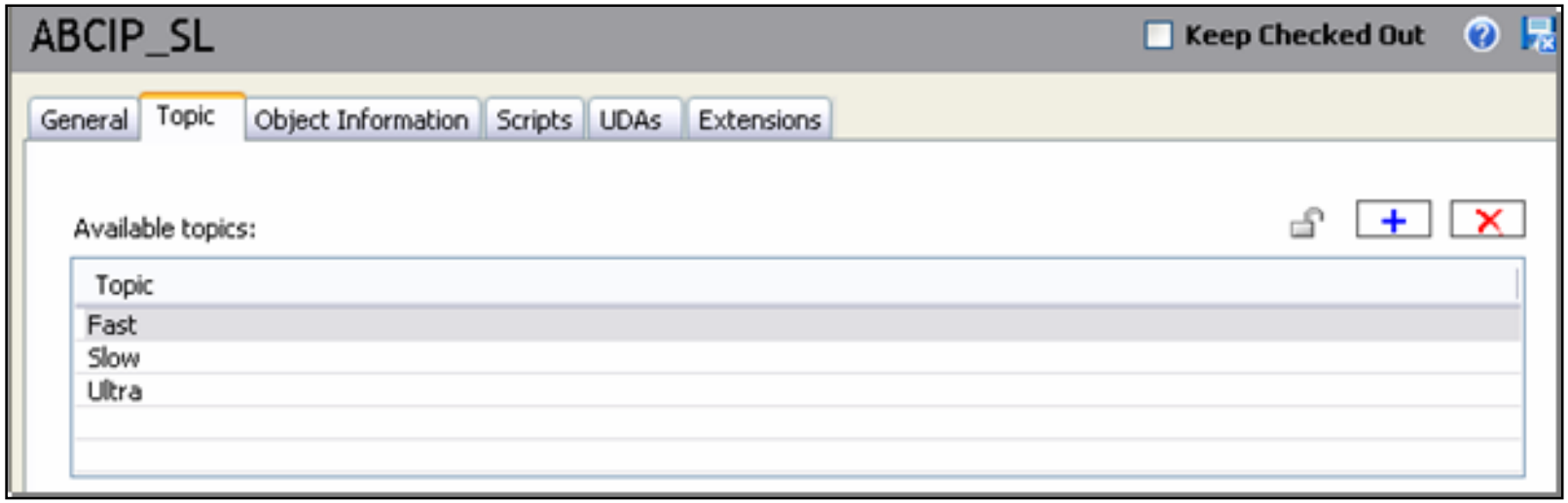

Figure 5: Topics

Configuring SuiteLinkClient Associated Attributes

This is very similar to the Device Items in the DAServer configuration. This allows you to map attributes to PLC Addresses. Configuration of this section is optional.

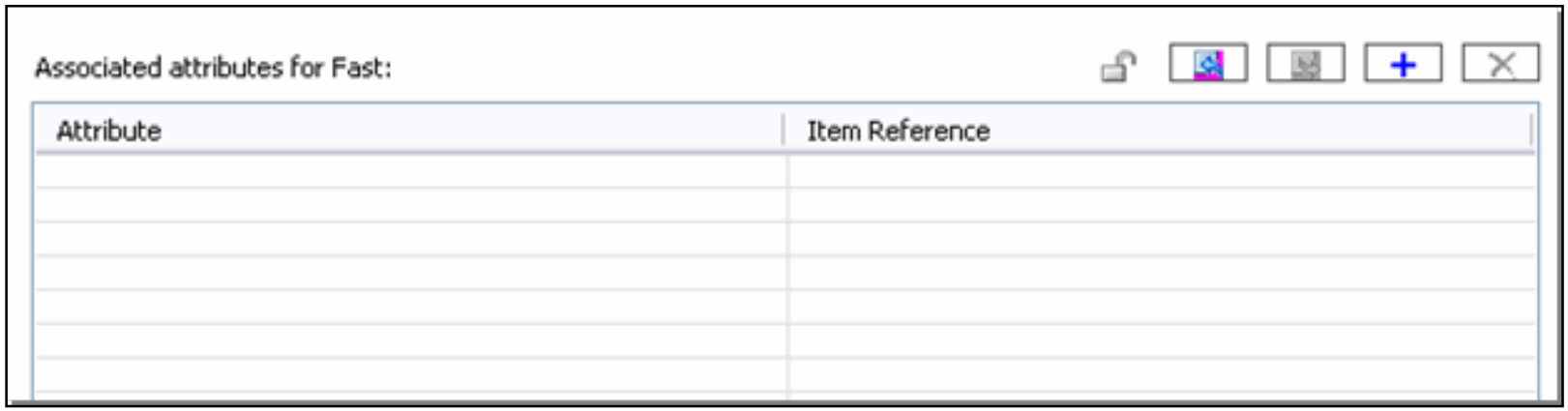

Figure 6: Optional Associated Attributes

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Configuring IAS Objects for SuiteLinkClients

The attributes within the IAS object must be configured to talk to the real world IO through the SuiteLinkClient and the DAServer.

Configuring the IAS Object .InputSource

Configuring the **.InputSource** consists of providing a path to the PLC. For the SuiteLinkClient the path consists of ***SuiteLink Client name.Topic name. IO address***.

For this example, we created three User-defined attributes (UDAs)in a UserDefined Object. The UserDefined object is called **SL_Example**. The three UDAs are **PLC_Hour**, **PLC_Minute**, and **PLC_Second**.

These attributes connect to the PLC through the (Fast, Slow, Ultra) topics. Each attribute could use any topic.

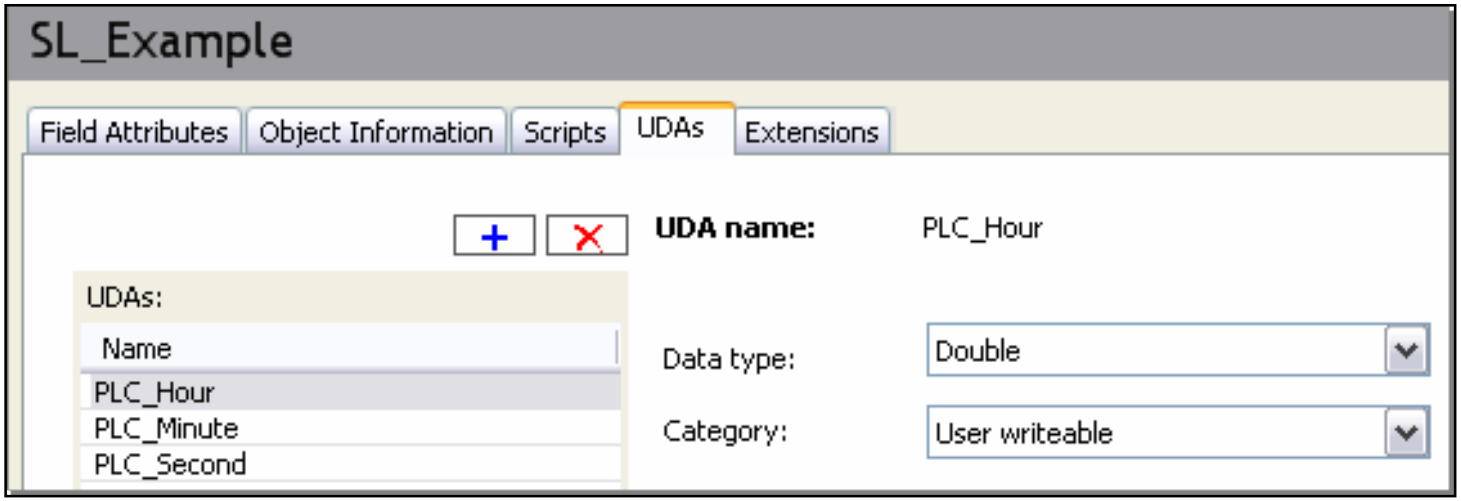

Figure 7: UDAs

The **.InputSource** for the (PLC_Hour) attribute uses the (Slow) topic with a PLC address of (Time[3]). The connection string is `ABCIP_SL.Slow.Time[3]` (Figure 8 below).

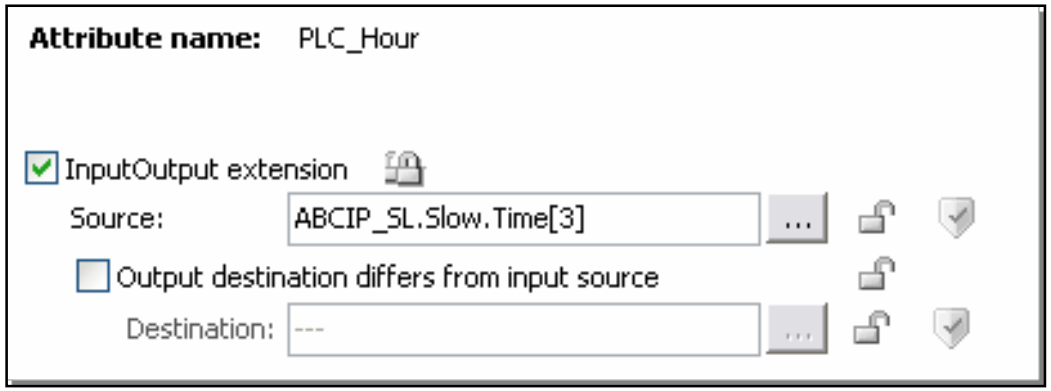

Figure 8: .InputSource for the Hour Attribute

The **.InputSource** for the (PLC_Minute) attribute uses the (Fast) topic with a PLC address of (Time[4]). The connection string is `ABCIP_SL.Fast.Time[4]` (Figure 9 below).

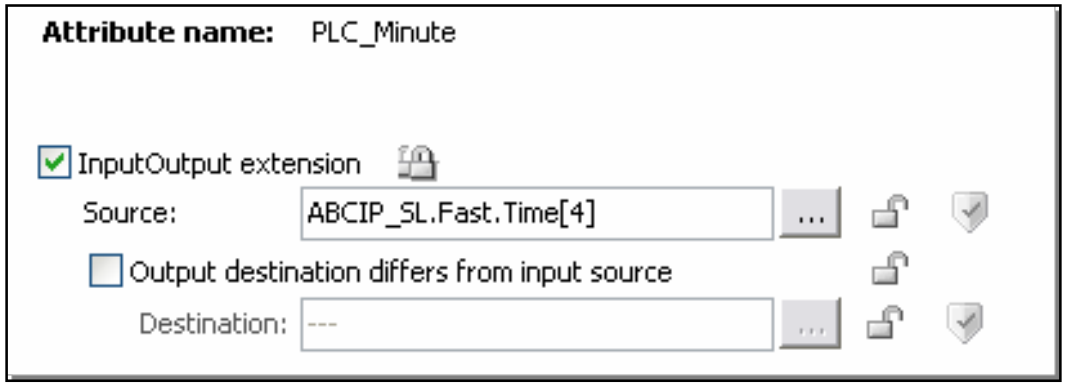

Figure 9: .InputSource for the Minute Attribute

The **.InputSource** for the (PLC_Second) attribute uses the (Ultra) topic with a PLC address of (Time[5]). The connection string is `ABCIP_SL.Ultra.Time[5]` (Figure 10 below).

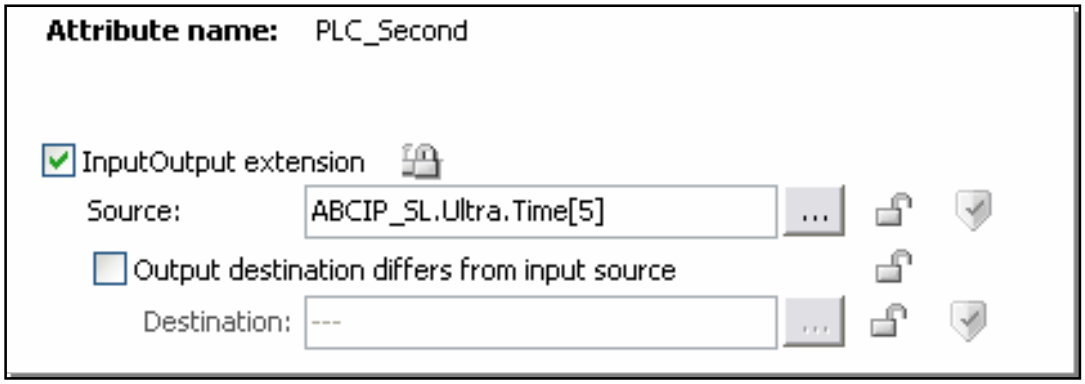

Figure 10: .InputSource for the Second Attribute

Deploy the SuiteLinkClient and IAS Objects. The three topics appear in the **DAServer Diagnostics / Device Groups** panel (Figure 10 below).

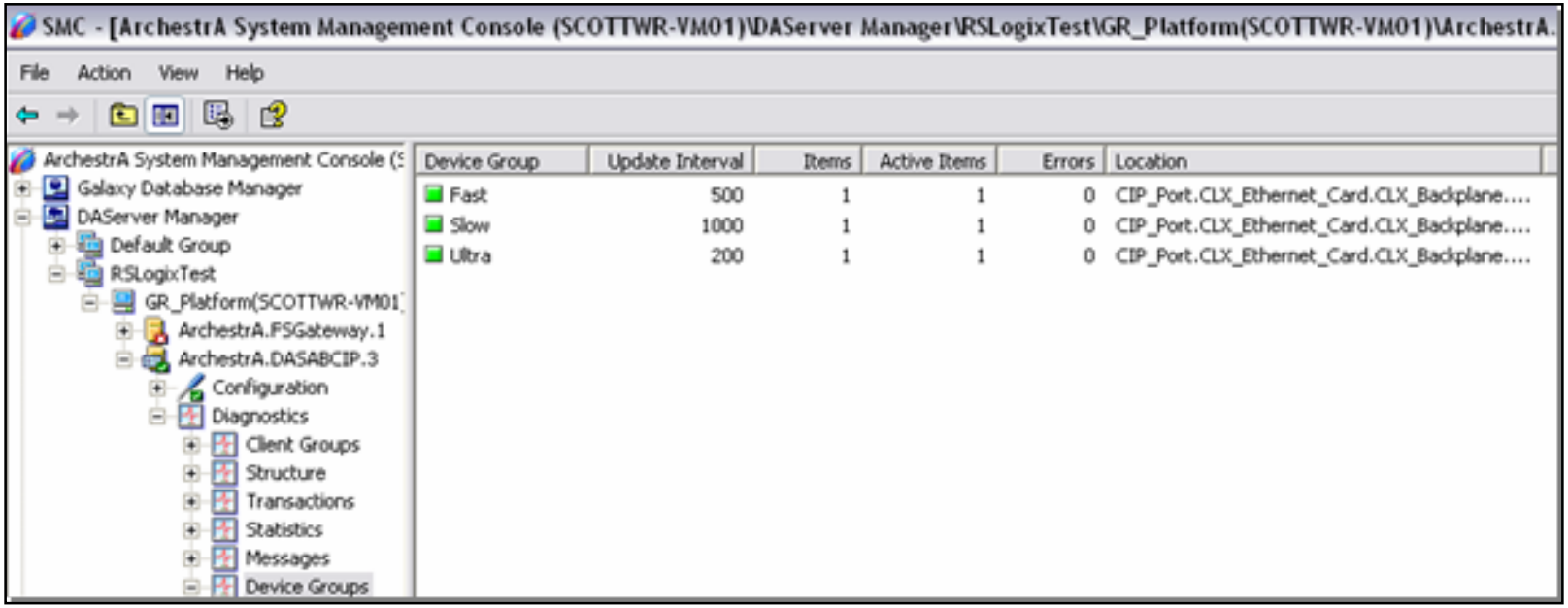

Figure 11: Device Groups Panel

When you select one of the specific topics you see the PLC addresses that the topic is looking for. In this case, under the Fast topic we see theTime[4] address.

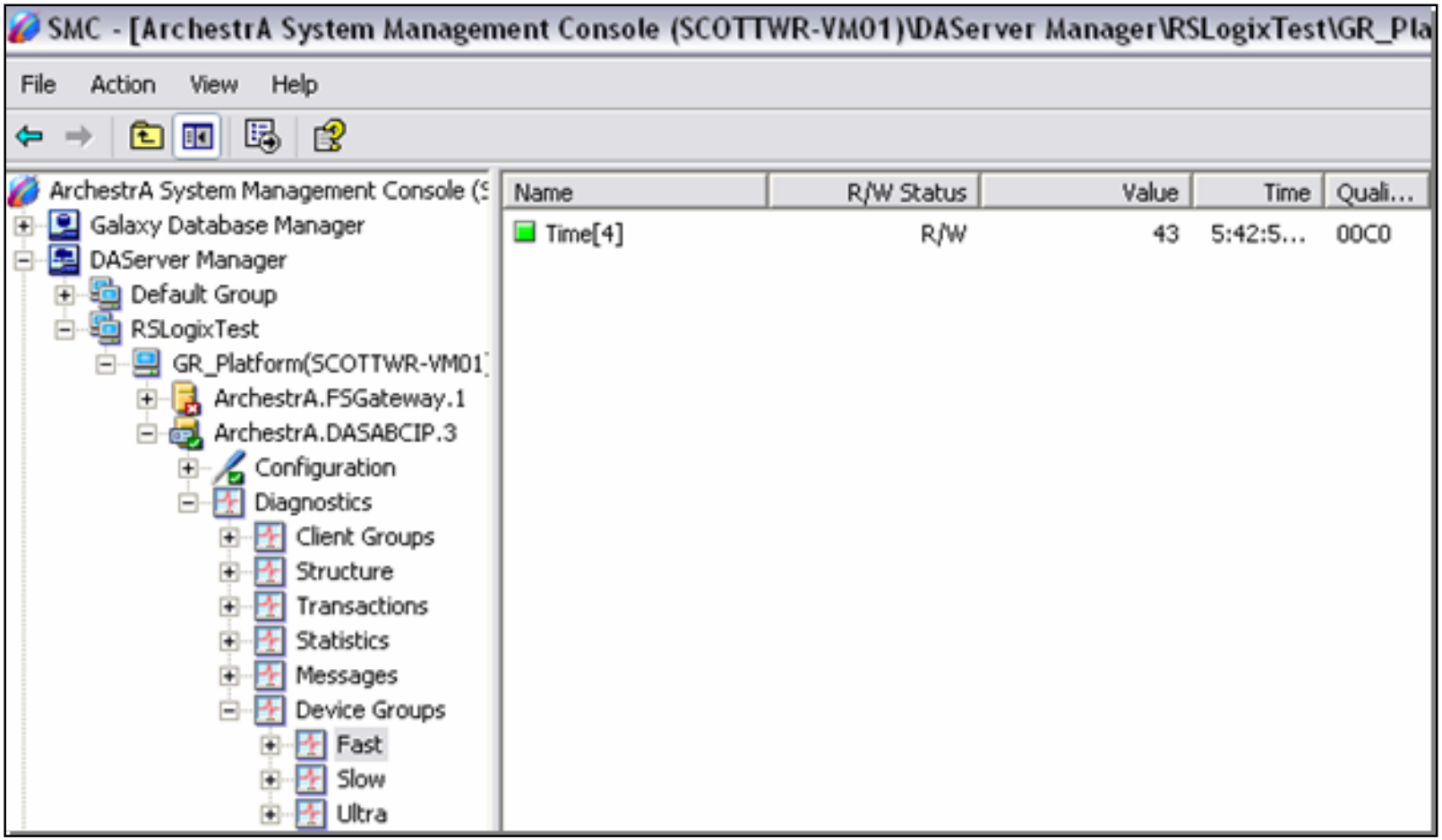

Figure 12: Topic Addresses

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Configuring OPCClient Objects

DASABCIP Configuration Summary

The Configuration of the DASABCIP Server is exactly the same as it is for use with SuiteLink except you do not need to configure the Device Groups.

Configuring OPCClient General Attributes

The OPCClient must be configured to talk to the DASABCIP Server. The OPCClient instance can be named whatever you want it to be. Ensure you are compliant with your particular naming convention.

> **Note:** The name is included in the InputSource string. In this case, the OPCClient object name is **ABCIP_OPC**.

The initial object configuration points it to the Computer and the DAServer you want to talk to. There is a one to one relationship between OPC Clients and DAServers (One OPC Client for one DASABCIP Server, one OPC Client for one DASABCIP Server...etc.). The OPCClient uses the *entire* DAServer name. In this case, it is **ArchestrA.DASABCIP.3**.

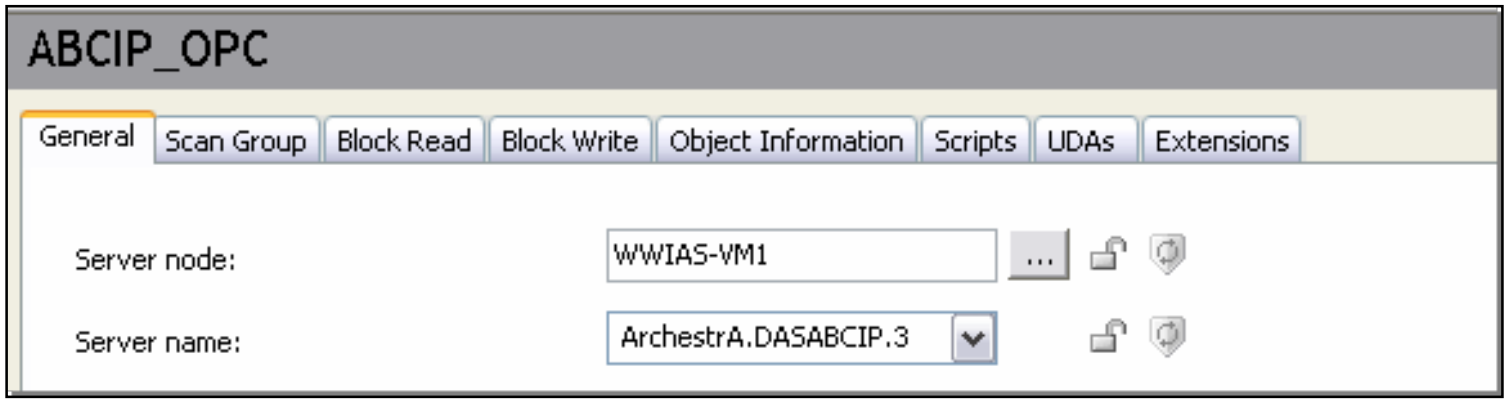

Figure 13: Server Name Connection String

Configuring OPCClient Scan Groups

The next part of configuring the OPC Client is the Scan Groups. The Scan Groups designate how frequently items are updated. In this example we have three Scan Groups.

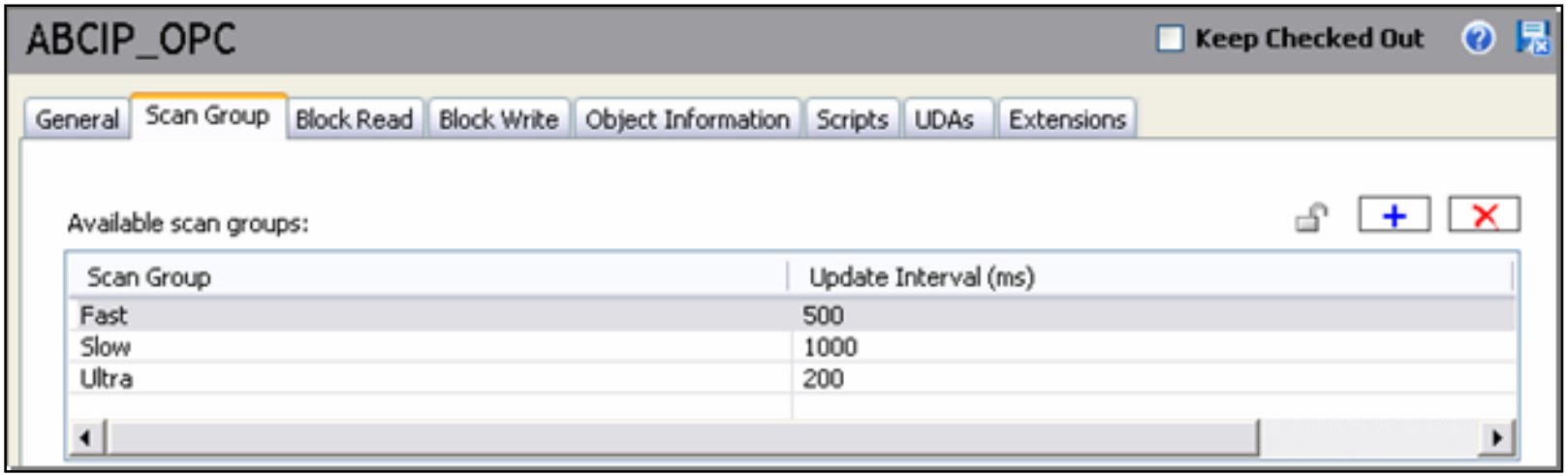

Figure 14: OPC Scan Groups and Update Intervals

Configuring OPCClient Associated Attributes

This configuration is very similar to the Device Items in the DAServer configuration. This allows you to map attributes to PLC Addresses. Configuration of this section is optional.

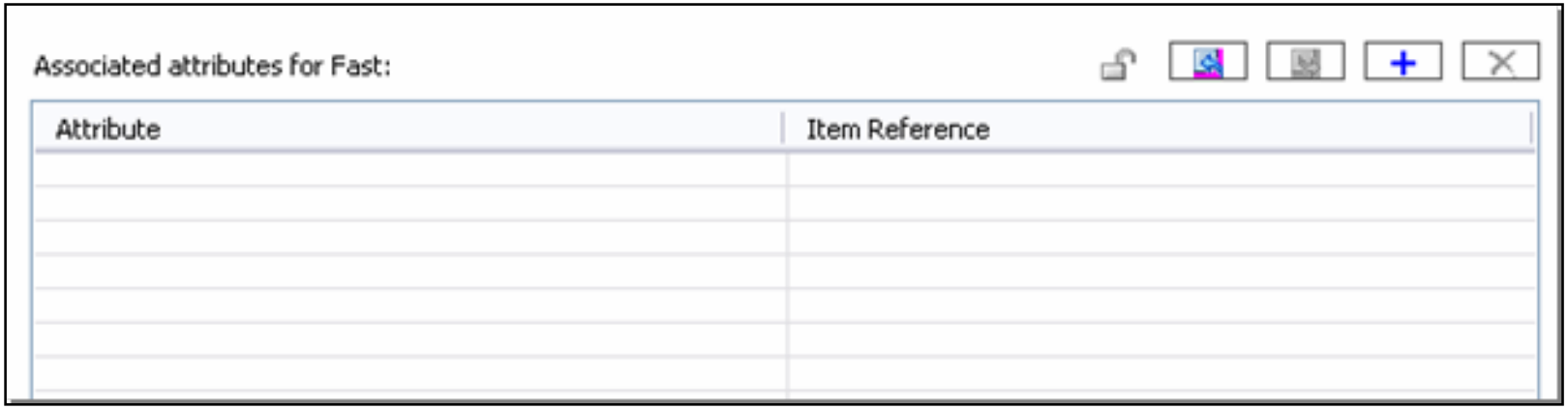

Figure 15: Optional Associated Attributes

Configuring IAS Objects for OPCClients

The attributes within the IAS object must be configured to talk to the real world IO through the OPCClient and the DAServer.

Configuring the IAS Object .InputSource

Configuring the .Input Source means that you supply a path to the PLC. For the OPC Client the path consists of ***OPC Client name.Scan Group name.<Entire DAServer path to the PLC>.IO address***.

For this example, we created three User-defined attributes (UDAs) in a UserDefined Object. The UserDefined object is called **OPC_Example**. The three UDAs are **PLC_Hour**, **PLC_Minute**, and **PLC_Second**. These attributes connect to the PLC through (Fast, Slow, Ultra).topics.

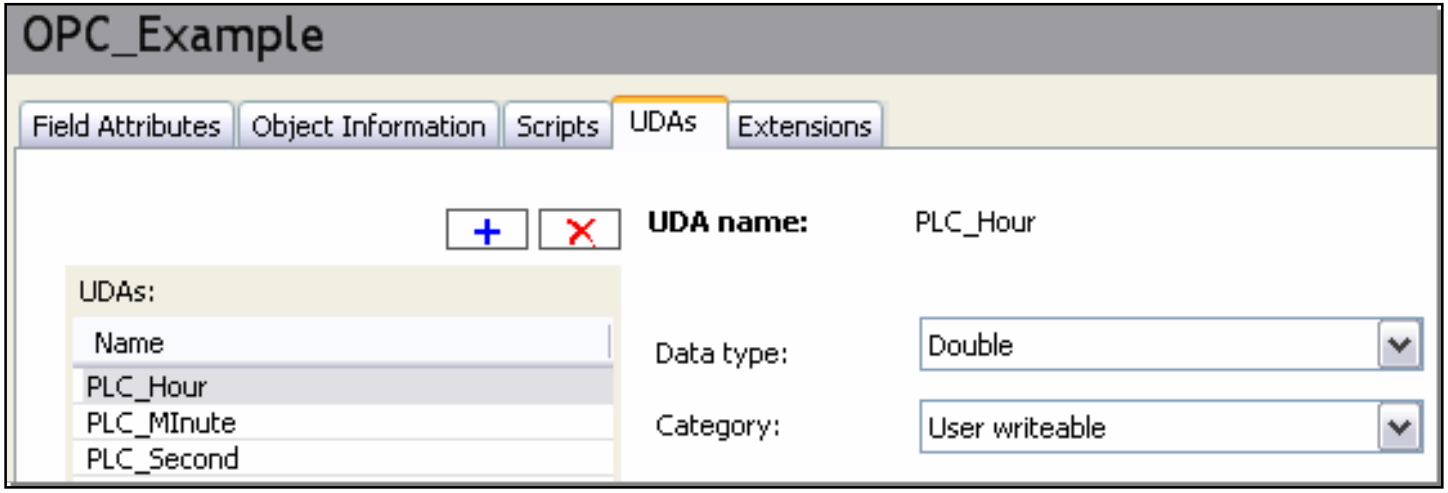

Figure 16: UDAs

The **.InputSource** for the (PLC_Hour) attribute uses the (Slow) Scan Group with a PLC address of (Time[3]). The connection string is `ABCIP_OPC.Slow.CIP_Port.CLX_Ethernet_Card.CLX_Backplane.CLX_PLC.Time[3]` (Figure 17 below).

Note: Only a partial **.InputSource** string is visible in the Figure 17 (below).

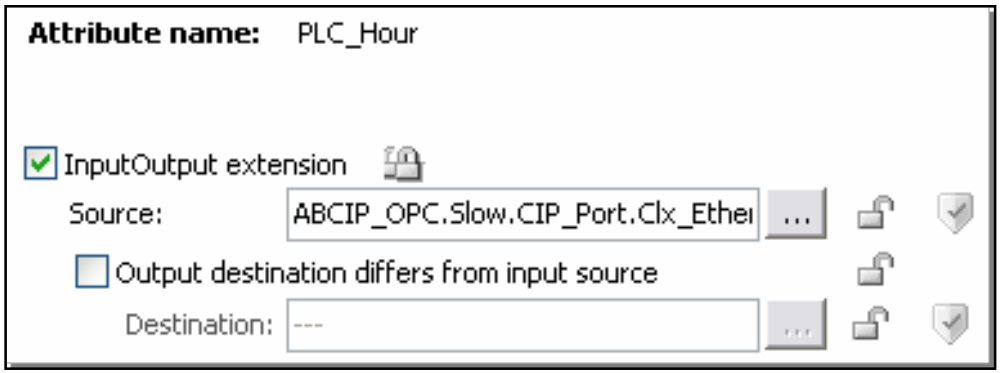

Figure 17: .InputSource String Configuration

The **.InputSource** for the (PLC_Minute) attribute uses the (Fast) Scan Group with a PLC address of (Time [4]). The connection string is `ABCIP_OPC.Slow.CIP_Port.CLX_Ethernet_Card.CLX_Backplane.CLX_PLC.Time[4]`.

The .InputSource for the (PLC_Second) attribute using the (Ultra) Scan Group with a PLC address of (Time [5]). The connection string is `ABCIP_OPC.Slow.CIP_Port.CLX_Ethernet_Card.CLX_Backplane.CLX_PLC.Time[5]`.

Deploy the OPCClient and IAS Objects. One topic **<Default>** appears in the DAServer Diagnostics/Device Groups, and all three PLC_Addresses are listed under that topic.

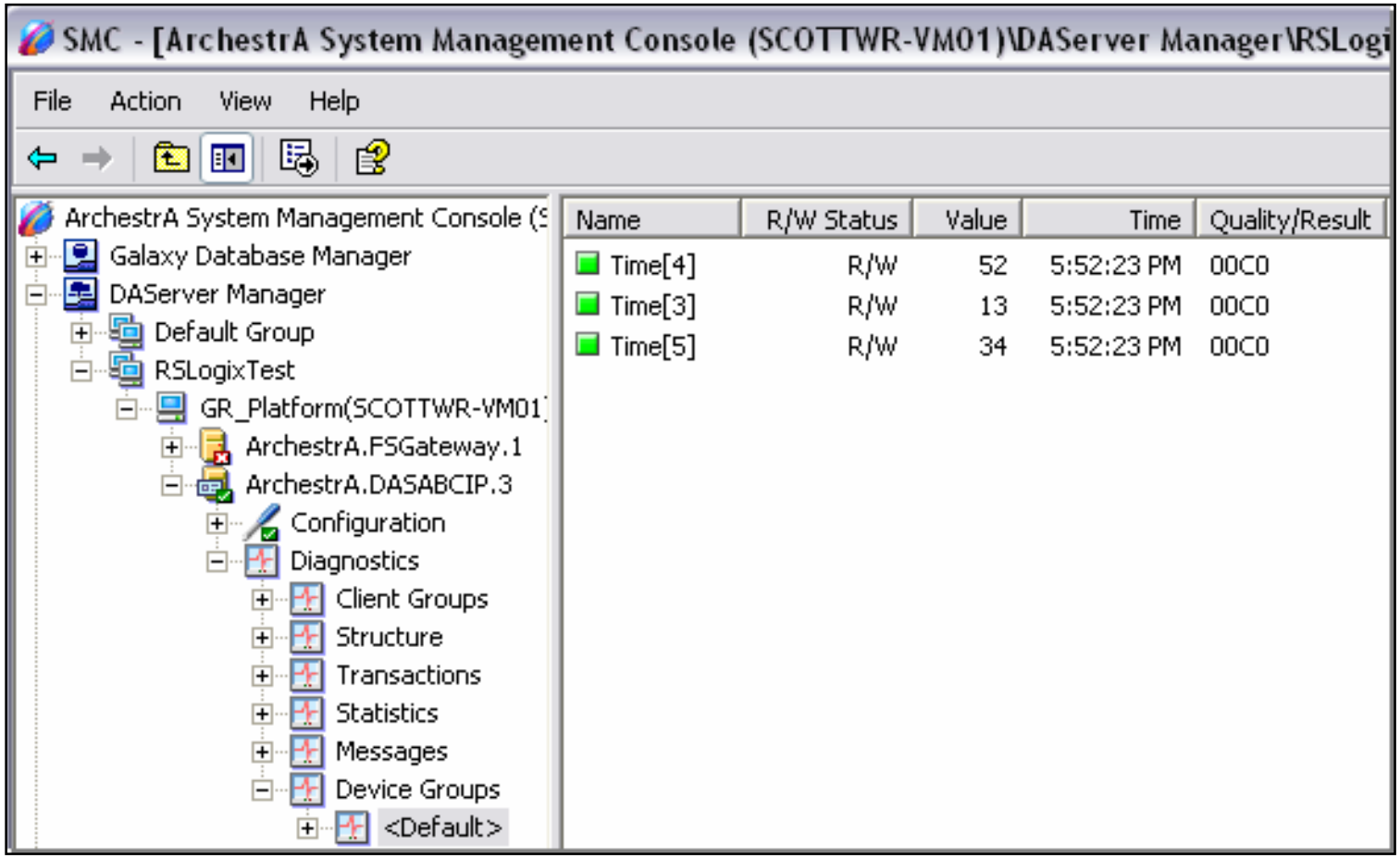

Figure 18: <Default> Topic with PLC_Addresses

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Using the Example Files

This *Tech Note* includes the following example file. The zip file includes IAS Objects, DAServer configuration, a sample InTouch application, and a sample PLC program.

Use the link below to download, save, and extract them to a location on your hard drive.

- **AB CL OPC and Suitelink supporting files.zip - InTouch Application and .aapkg file (10.8 MB)**.

Importing the IAS Object

Using the IDE, create a galaxy, then import the automation object file (**OPC and SuiteLink Object example.aapkg**).

Configure the DAServer

1. Copy the file (**OPCSL_Example.aacfg**) to the folder where DASABCIP was installed (default: C:\Program Files \Wonderware\DAServer\DASABCIP\bin).

2. Using the SMC, expand the local node to DASABCIP configuration.

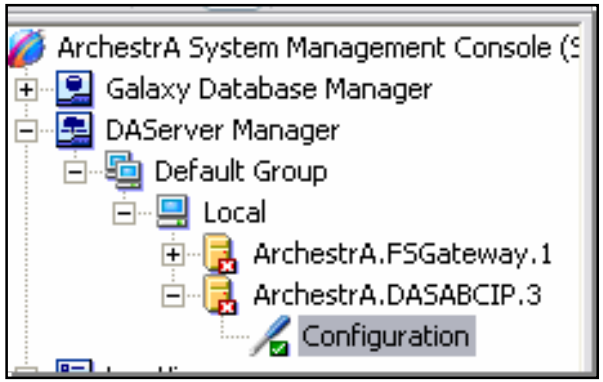

Figure 19: DAServer Configuration

3. Right-click **Configuration** and select **Use Another Configuration Set**, then **opcsl_example** (Figure 20 below).

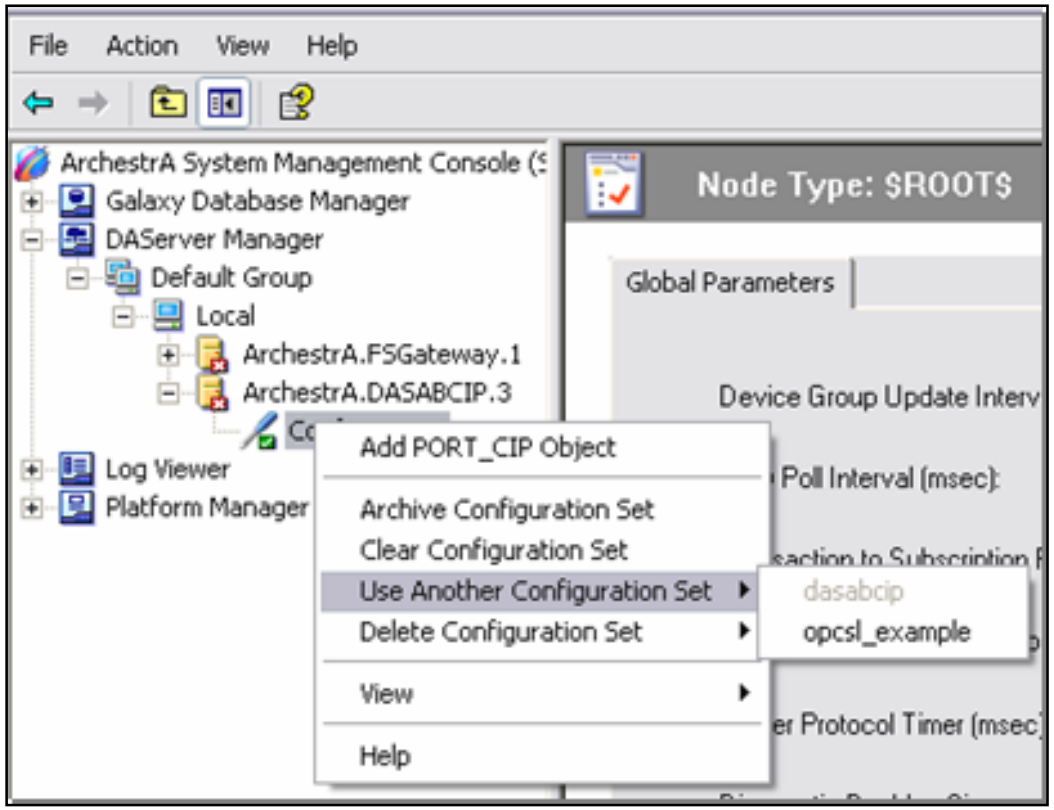

Figure 20: Other Configuration Set

4. Expand the configuration to **CLX_Ethernet_Card Parameters** and enter the IP address of your ControlLogix PLC in the **Host name** field (Figure 21 below).

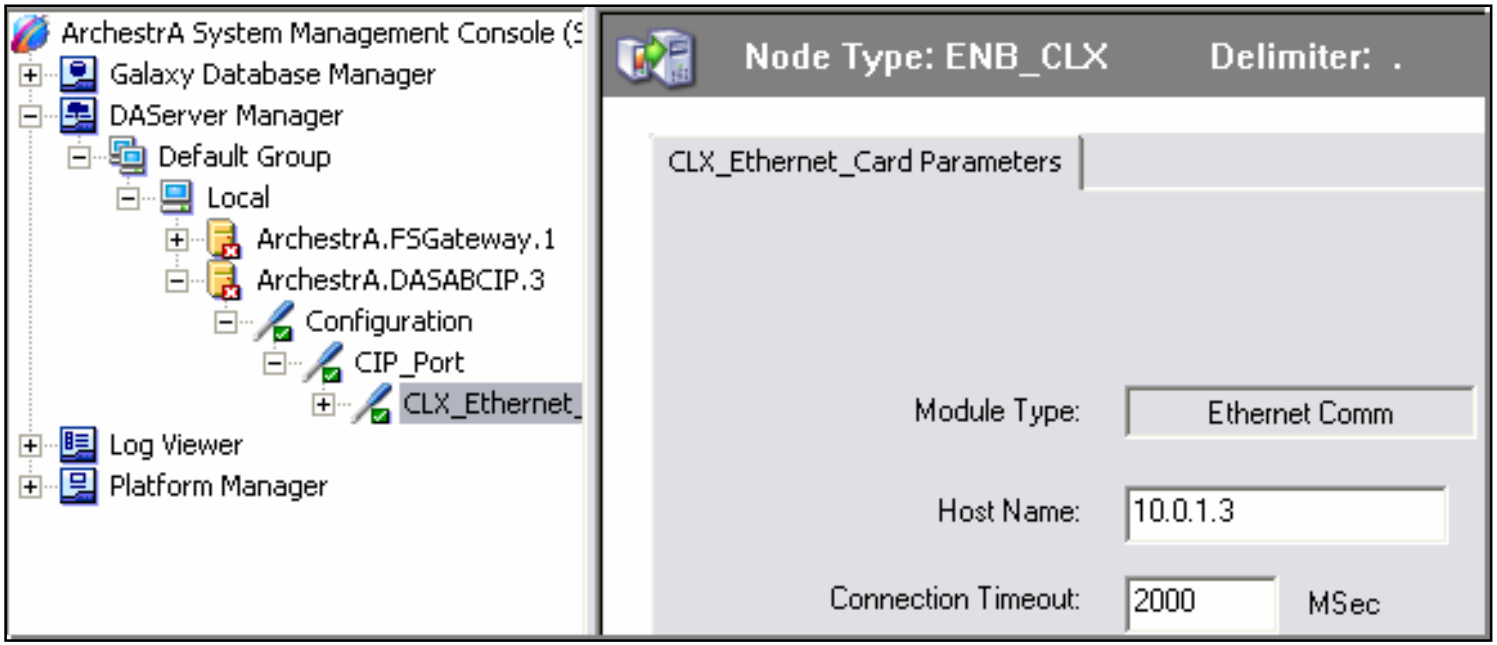

Figure 21: IP Address in Host Name Field

5. Save the Configuration.
6. Activate the Server by right-clicking **ArchestrA.DASABCIP.3** and selecting **Activate Server**.

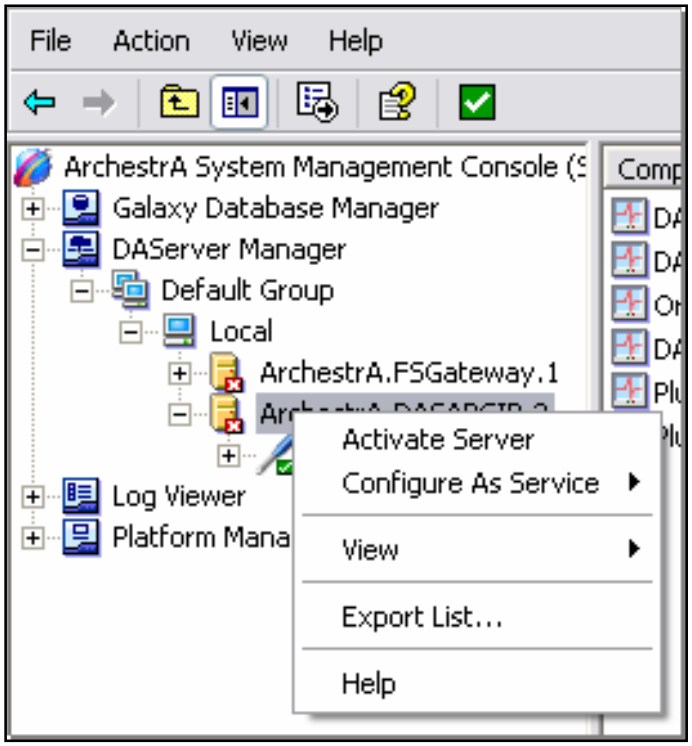

Figure 22: Activate Server

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InTouch Application

Unzip the InTouch application and copy it to My InTouch Applications (or wherever you want). Using InTouch Application Manager, find the application and open with WindowViewer.

S Wrobleski

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