

Tech Note 543

Configuring DASABCIP V4.0 for Redundant Hardware And Software Support

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Introduction

This *Tech Note* is the first in a series describing new features of DASABCIP version 4.0. It describes new supportability of Hardware and Software redundancy in DASABCIP 4.0.

The following Redundancy support features are included with this release.

1. **Support for Allen Bradley Redundant Hardware.**
2. **Support for Software Redundancy.**

These 2 features are independent of each other. For example,

- When you use only OEM hardware redundancy, no DASABCIP software redundancy configuration is needed.
- When you use only a DASABCIP software redundant configuration, no OEM hardware redundancy is utilized.
- You can use both features at the same time for the double redundancy.

Application Versions

- Wonderware DASABCIP 4.0
- ControlLogix Firmware version 16

Allen Bradley Redundant Hardware Support

This release now provides support for Allen Bradley's System Redundancy Module (SRM) hardware. Since the SRM is a hardware redundancy module, it handles all the Primary/Backup configuration and failover procedures internally. Configuring your DAServer to interface with the SRM is straightforward.

To configure a connection to the SRM

1. Assign the IP address used by the SRM in the ENB object.
2. Add the backplane object, then add the ControlLogix PLC object under the backplane object.
3. Add the device group.

In a nutshell, you are treating the SRM as a ControlLogix PLC, and as long as this "PLC" is providing data continuously, you don't care that the data comes from the Primary or Backup data source.

The SRM is configured by the OEM provided software, where you will provide the primary and secondary PLC IP addresses. The SRM Runtime monitors the health of the Primary PLC. In case of primary failure, the SRM reassigns the IP address from the Primary to the secondary PLC, and the same IP address is used with the current data source. There is minimum disturbance to our DASABCIP, and the failover is transparent.

The SRM module hardware configuration is fairly complicated. It requires ControlNet network and an Address Keeper in the ControlNet. For vendor information about setting up and troubleshooting their redundancy hardware for ControlLogix, refer to the Allen-Bradley ControlLogix System Redundancy User's Manual (**1756-UM523F-EN-P**) from the [Rockwell Automation site](#).

You can also contact Rockwell Technical Support directly for details.

Configuring DASABCIP Software Redundancy

DASABCIP version 4 includes a new software redundancy feature which provides another method of ensuring the consistency of communications. This new feature not only supports redundancy using the same protocol, but also supports cross-protocol redundancy.

Prior to configuring the Redundancy Device, configure all the objects under the DASABCIP port, and determine which candidates are your Primary and Backup data sources.

The following section describes the configuration sequence for software redundancy.

1. Open the System Management Console (SMC) and right-click the DASABCIP **Configuration** object.
2. Click **Add Redundant_Device Object**.

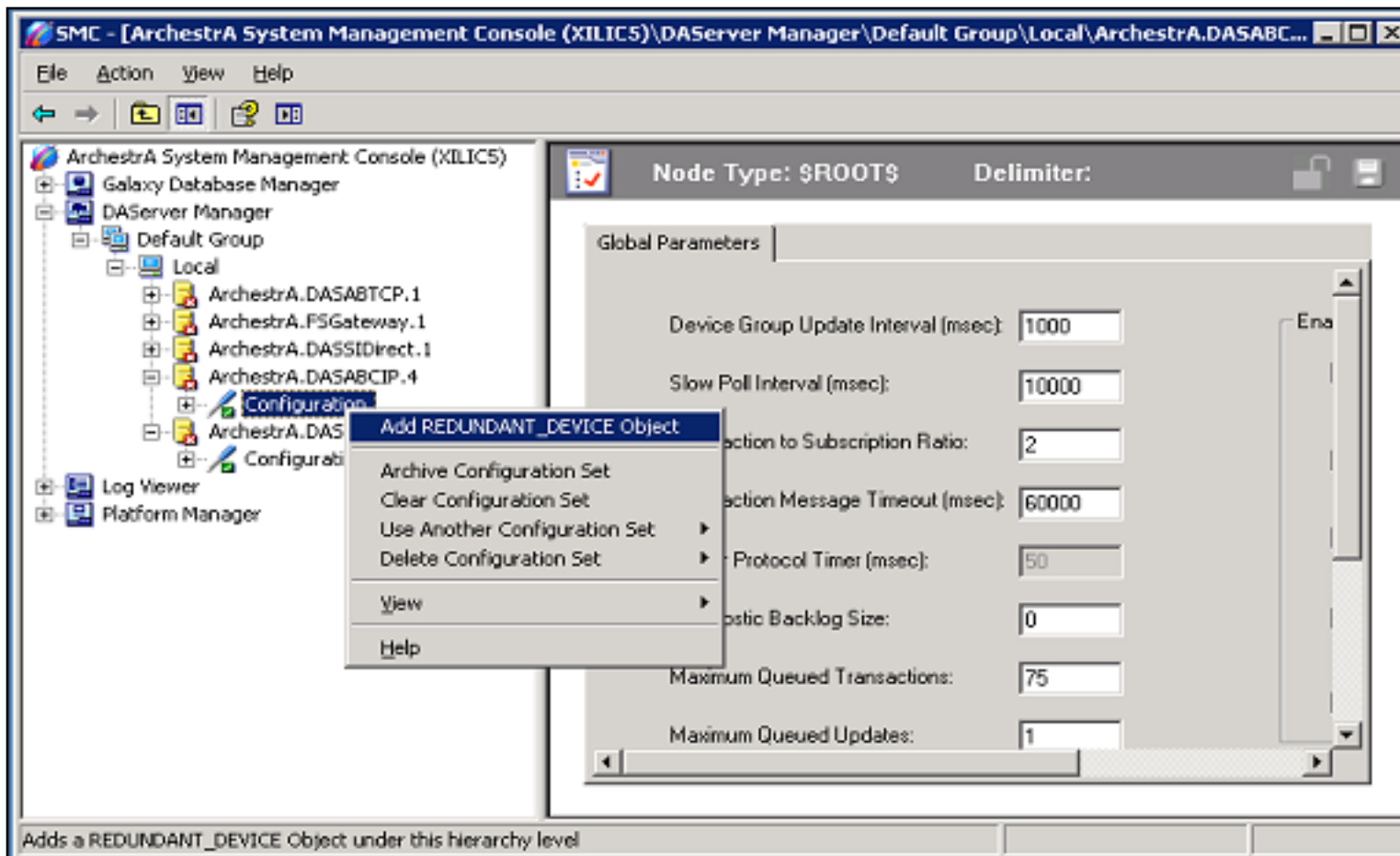


Figure 1: Add REDUNDANT_DEVICE Object

3. The following figures show the same object types: both are **ControlLogix** PLCs for the Redundancy sources.

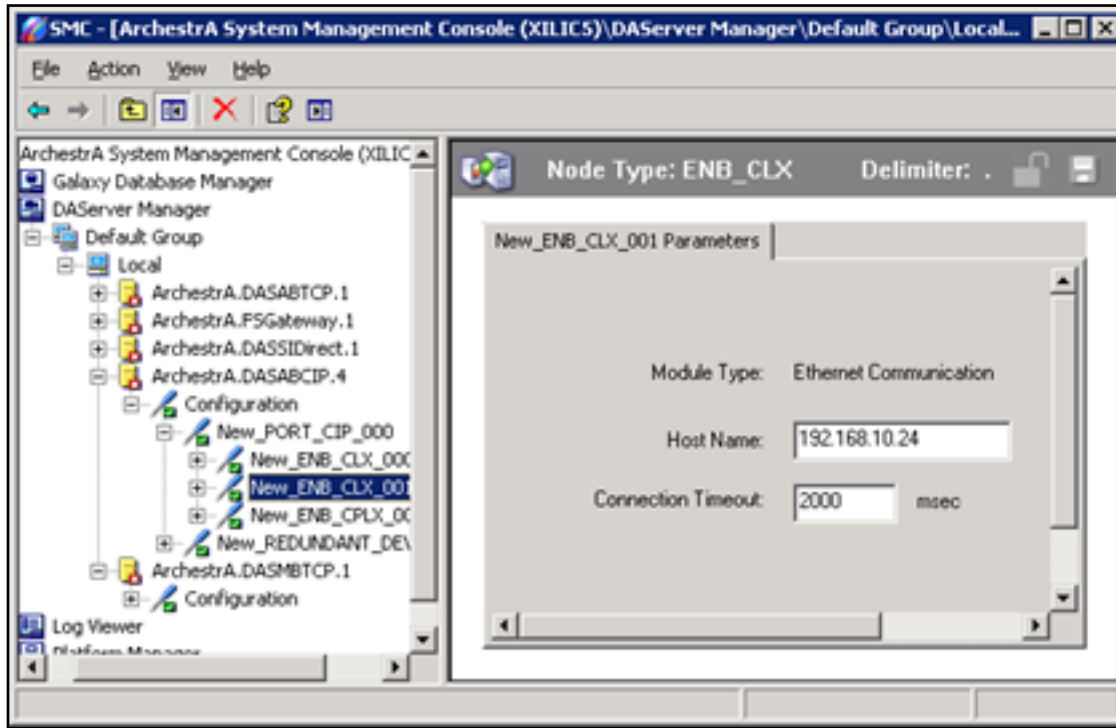


Figure 2: Primary PLC Object

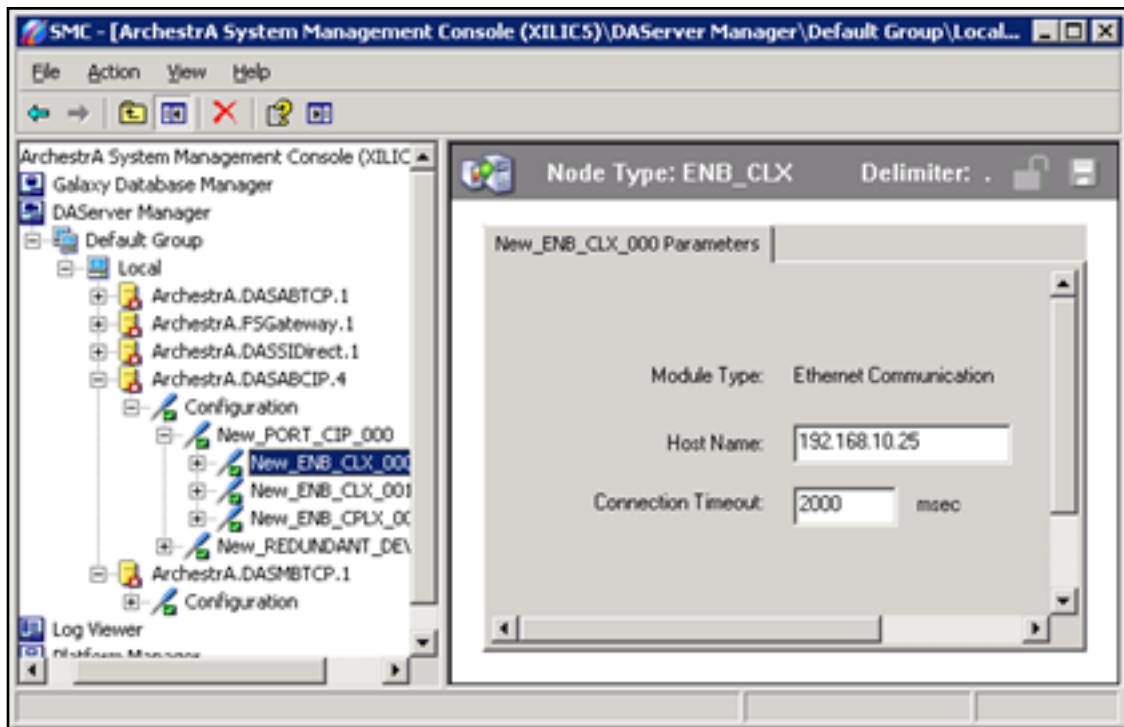


Figure 3: Secondary PLC Object

You can also configure different PLC object types to support redundancy. The **New DASABCIP** redundancy feature provides flexible options to select entirely different object types as your redundancy pair – for instance a **ControlLogix** PLC as the Primary source and **CompactLogix** (Figure 3) as the Backup PLC source.

Note: You must make sure both PLCs contain the exact same databases. This means that every item in the entire item advice list from the DASABCIP server must exist in both the Primary and the Backup PLCs' databases.

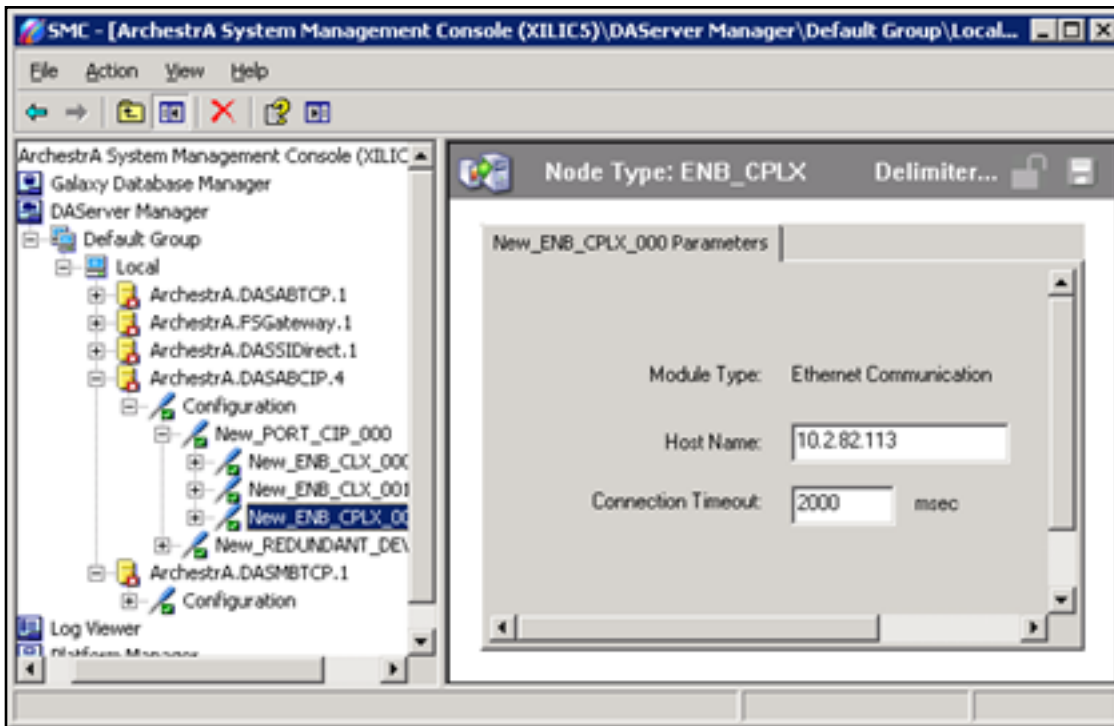


Figure 4: CPLX Secondary PLC Object

After you configure the redundant objects, the actual redundant device object configuration is fairly straightforward, as shown in Figure 5 (below).

4. Use the **Device Browser** to click and select the Primary and Backup source objects.

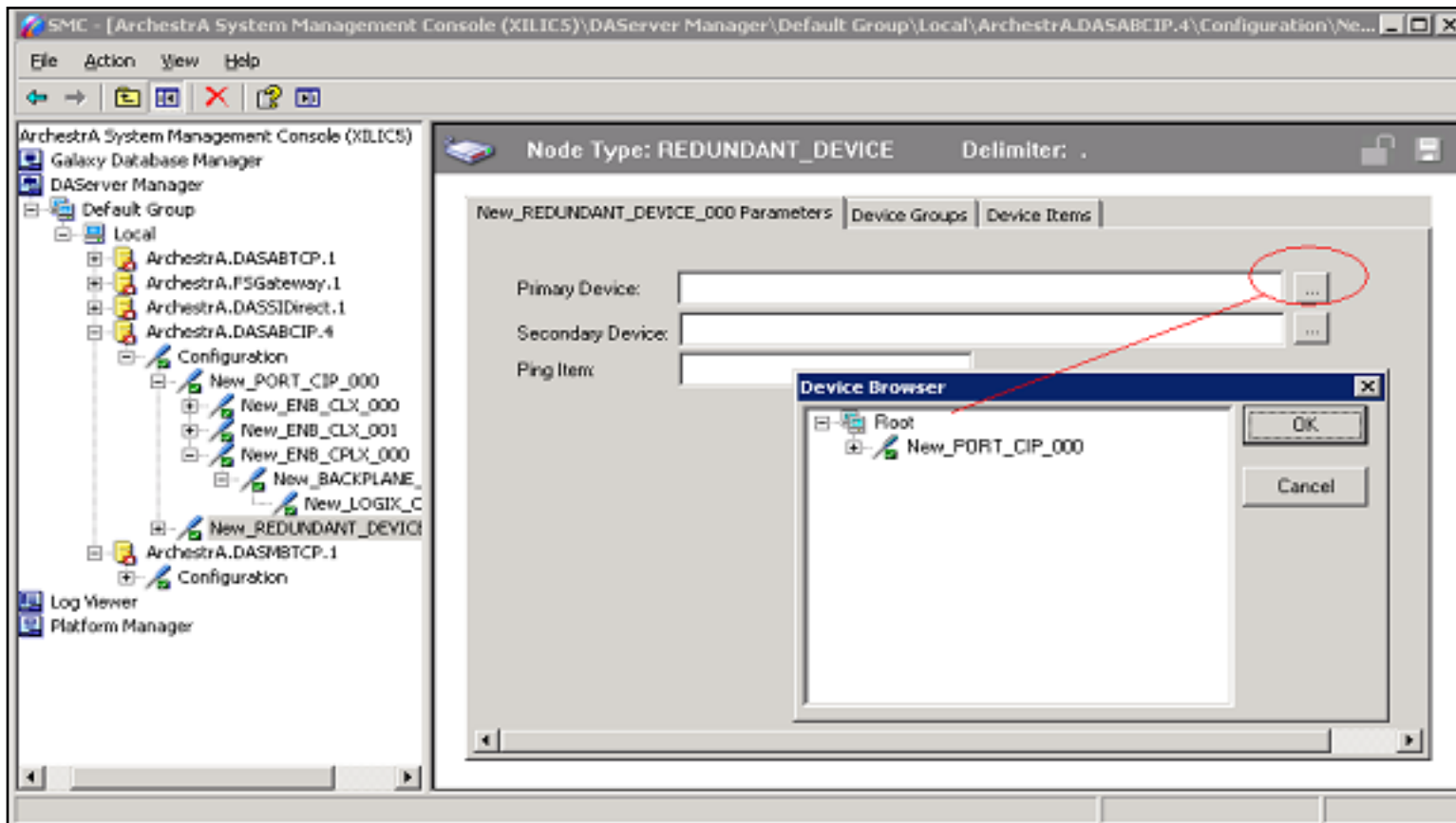


Figure 5: Select Primary and Backup Data Sources Using the Device Browser

For this *Tech Note*, different object types are selected as our redundant source objects: a ControlLogix PLC (Figure 6) and **CompactLogix** PLC (Figure 7).

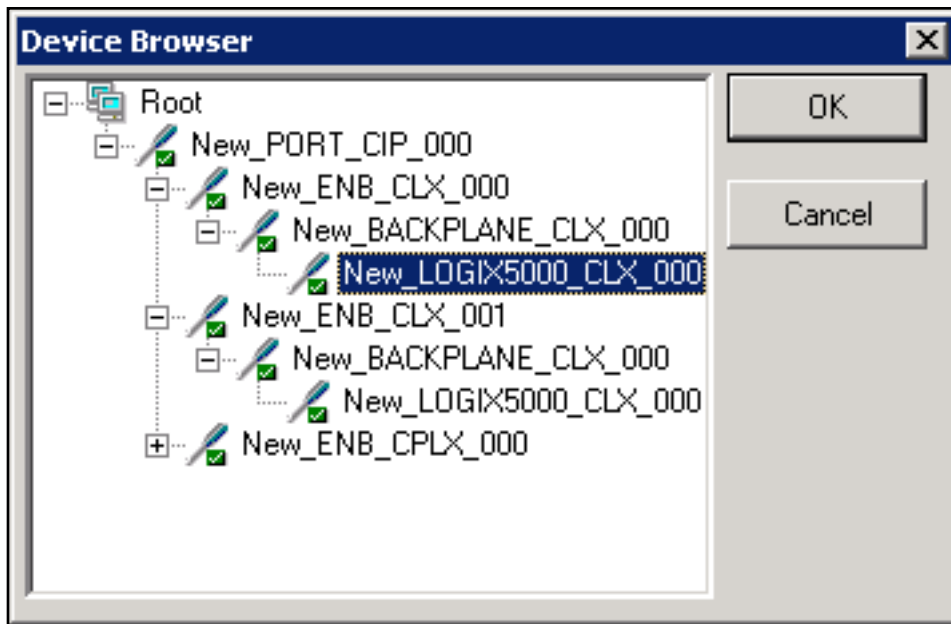


Figure 6: CLX Object

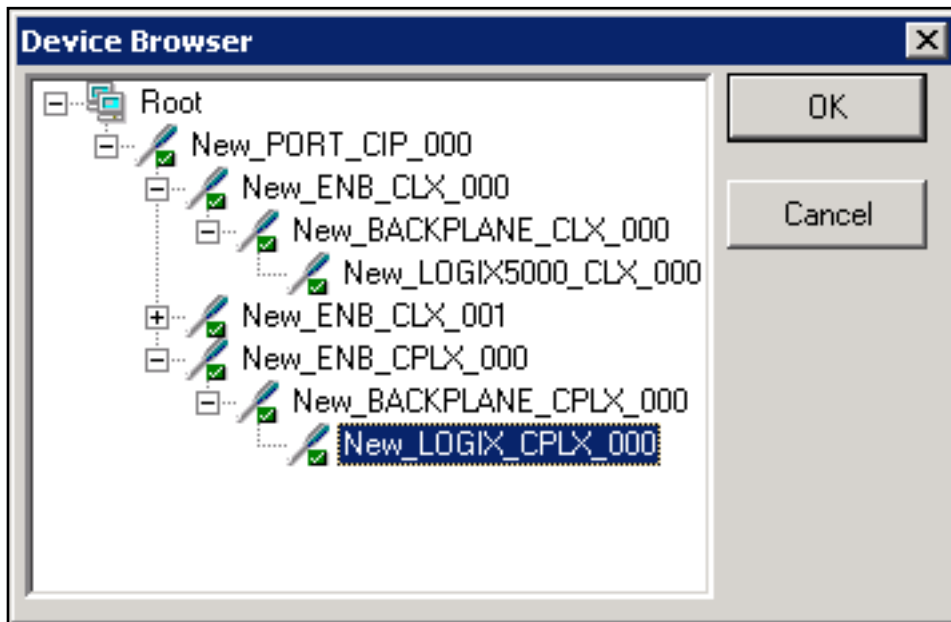


Figure 7: CPLX Object

5. After selecting the proper Primary and Backup objects, you must define a Ping item. Refer to the [Ping Item Section](#) in this technote for details regarding this functionality.

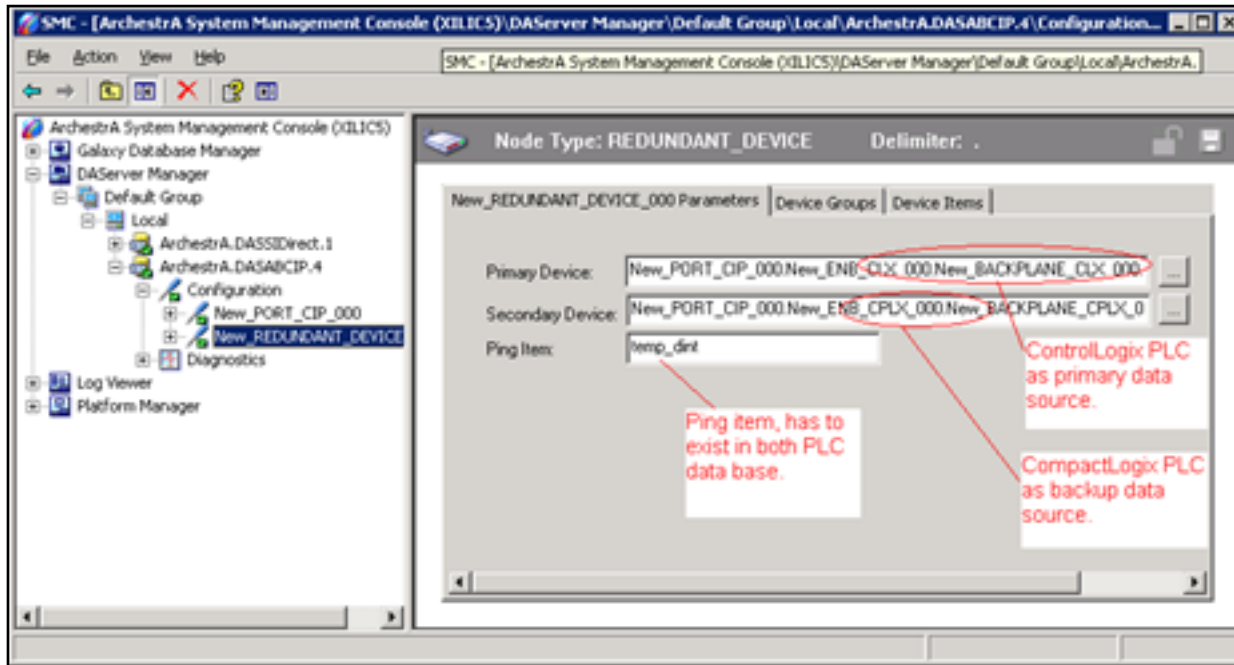


Figure 8: Defining a Ping Item

- The last step in configuring the Redundancy Object is to define the Device Group(s). The Device group is used in the client application (InTouch®) as Topic Name for the Access Name configuration (Figure 9 below).

Note: The **Device Item** tab will not be described in detail in this *Tech Note*, since it is not necessary to populate the device item for the DAServer to work. The purpose of the device item list is for OPC browsing and for customizing items with aliases.

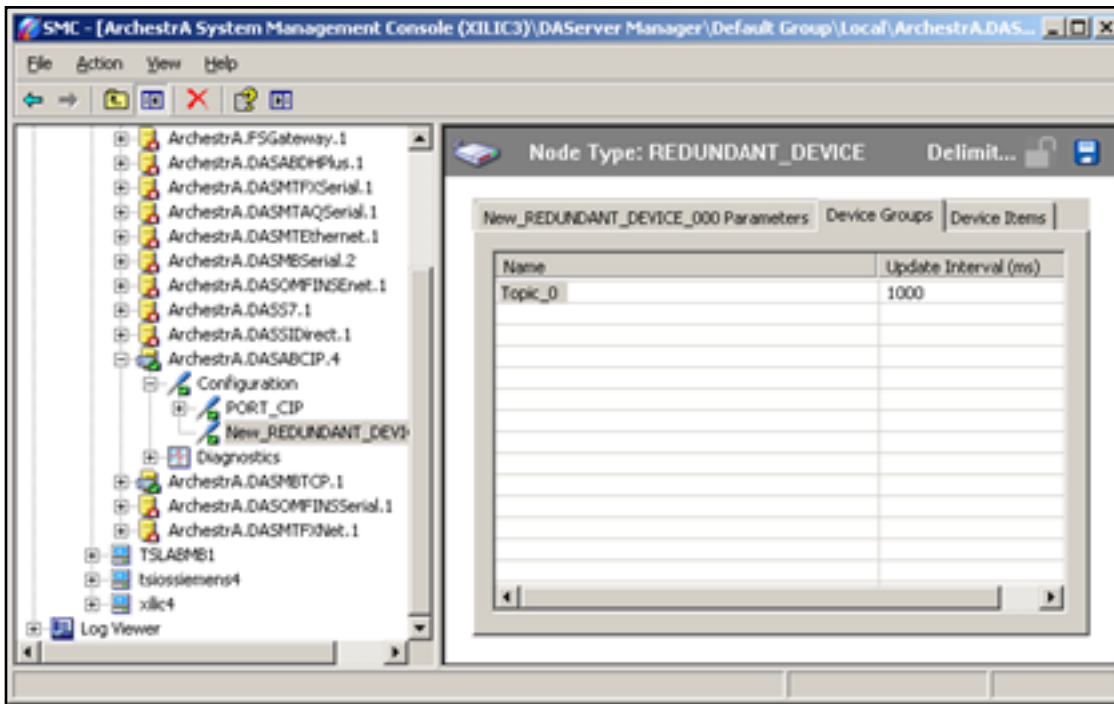


Figure 9: Defining the Device Groups

The Ping Item

The purpose of a ping item is to keep the connection status current for both Primary and Backup PLCs. A ping item can be any valid item in the PLC, or a server system item that requires an update from the PLC.

Without the Ping item, the failover to the Backup device cannot occur. For example, let's assume the Primary PLC is currently active, and the Backup PLC is in standby mode (inactive). If no Ping item is configured, only the Primary PLC connection status shows **Connected** because by default, all the items are polled from the active PLC. Since no items are polled from the backup PLC (inactive side), the connection status for the Backup PLC shows **Disconnected**, so it is not ready and nothing can failover to it.

Figure 10 (below) shows a **wwclient** test. The Primary PLC is **ControlLogix** with device group called **Test1** and the Backup PLC is **CompactLogix** with a device group called **CPL**.

The Redundant object is configured with a device group called **topic_0**, and the ping item is called **Temp_dint**, where **Temp_dint** exists in both PLC databases.

File	Script	Connections	Item	Help
IOT	\\localhost\dasabcip\cpl	0x003d5850	1	
temp_dnt		777	08:54.34.0390	05/22/2008 0x00c0
IOT	\\localhost\dasabcip\test1	0x003d6c10	285	
temp_dnt		30000	09:07.36.0343	05/22/2008 0x00c0
IOT	\\localhost\dasabcip\topic_0	0x003d76a0	272	
temp_dnt		30000	09:07.36.0343	05/22/2008 0x00c0

Current ping item value in backup plc.

Current ping item value in primary plc

Redundant data source is currently pointing the ControlLogix as primary data source, so the ping item value is reflecting the value in ControlLogix.

Figure 10: wwClient Test with Different PLC Devices

Please notice that if a Redundant Device object is used, redundant device group **Topic_0** is the only one used for the client application interface. The device groups in the **Controllogix** and **Compactlogix** objects are not required.

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