

Tech Note 355

How to use DASSIDirect DAServer Together with Siemens S7-200 PLC

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Introduction

This technote will go over the steps necessary to setup communication between the new DASSIDirect DAServer and a Siemens S7-200 PLC.

The TechNote consists of 4 parts:

- **Configure the S7-200 PLC**
- **Configure the DAServer**
- **Test the Communication**
- **Memory Areas in the S7-200 PLCs and How to Access Them Via DASSIDirect**

Configure the S7-200 PLC

1. Start Step7-Micro/Win 32. Create a new project or load your existing one (Figure 1 below):

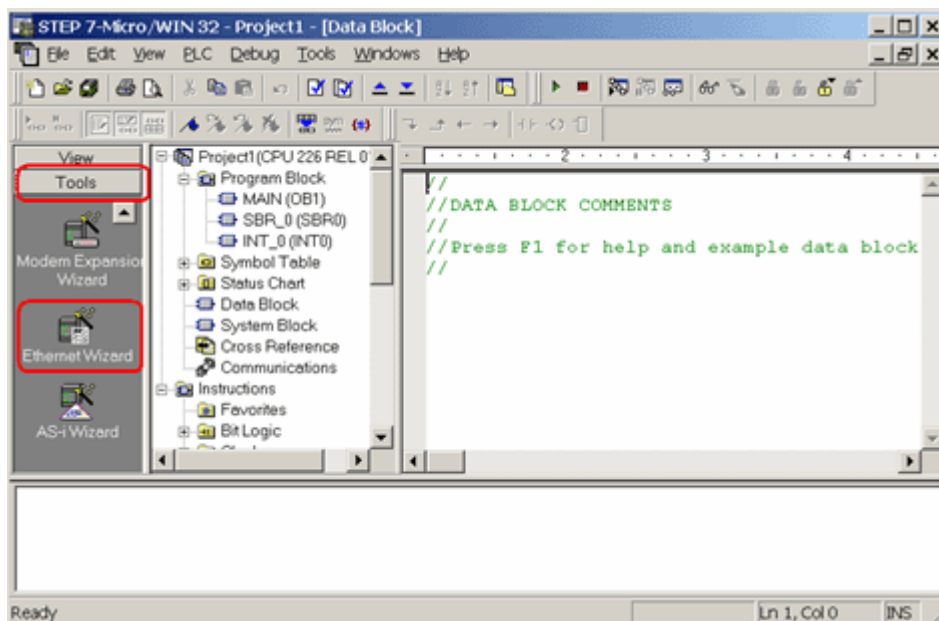


Figure 1: Step 7 - Micro/WIN32 - Project1 Dialog Box.

2. Click on **Tools** and then select **Ethernet Wizard**.
3. Step through the wizard:

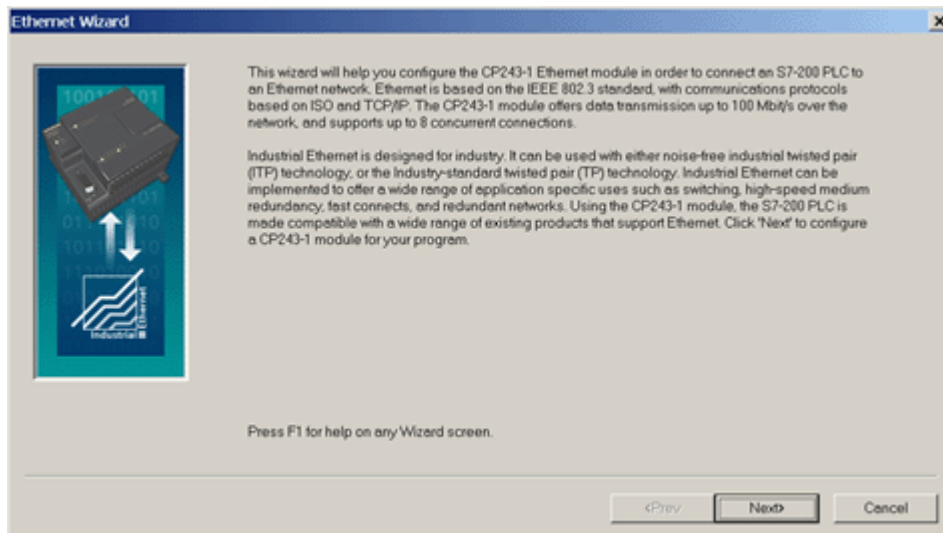


Figure 2: Ethernet Wizard.

- Click **Yes** when asked to use symbolic addressing. Otherwise the wizard cannot continue:

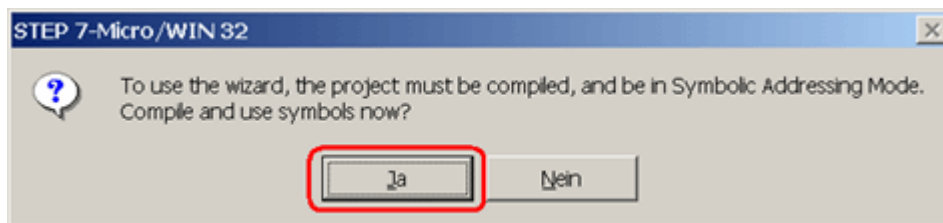


Figure 3: Click Yes.

- Enter the module position of the CP243-1.

If you are uncertain about the position, click the button **Read Modules**. Otherwise you can enter the number directly:

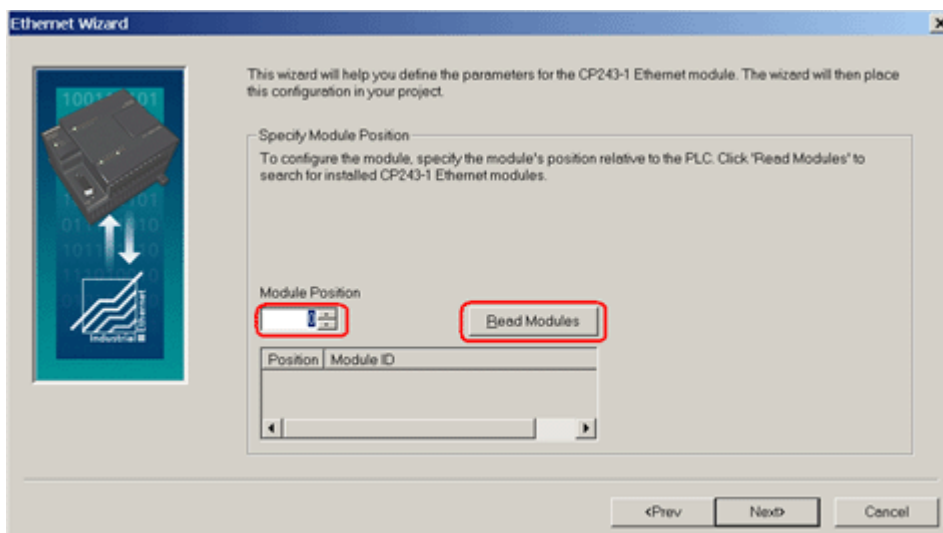


Figure 4: Specify Module Position Dialog Box.

- Enter the IP configuration of your CP243-1.

Especially during the startup phase of the project, I would recommend not to use a **BOOTP** server.

Let the module detect the connection type (Figure 5 below):

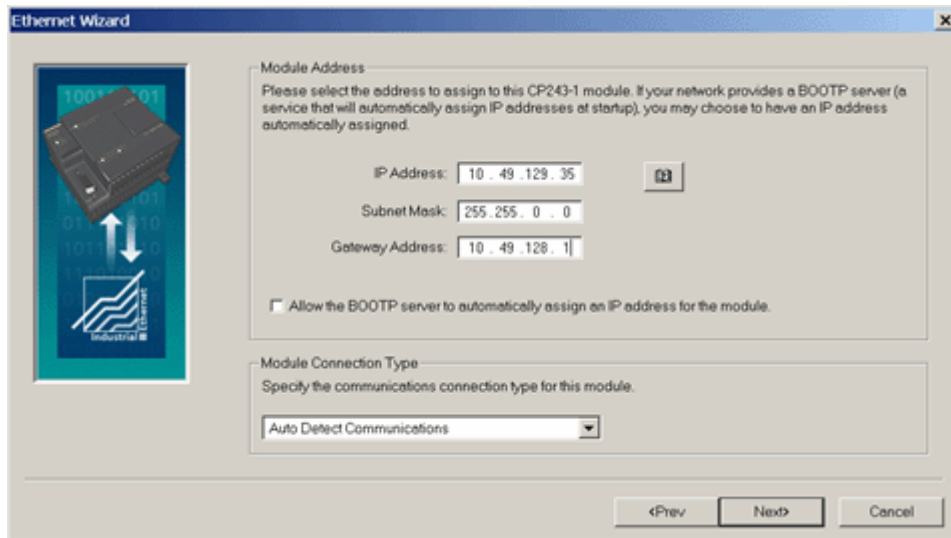


Figure 5: Module Address Configuration.

7. Enter the numbers of connections you want to configure for the CP243-1.

Default value is 0, which would not allow communication. In this example I will use 2 connections (Figure 6 below):

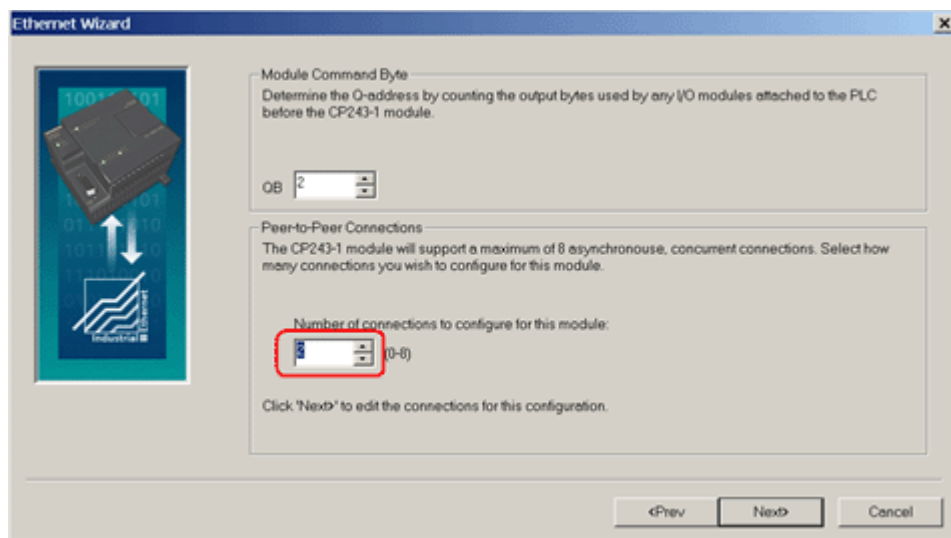


Figure 6: 2 Connections.

Now you have to configure the connections. Connection 0 (Figure 7 below) will accept all incoming client requests:

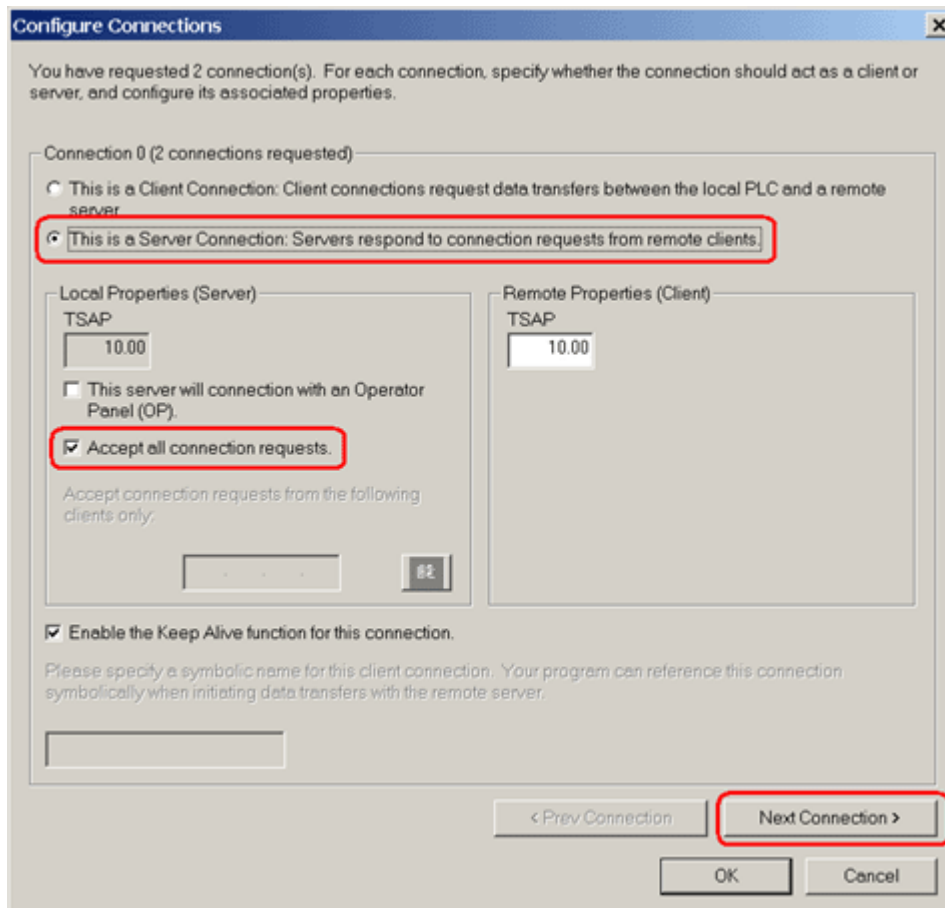


Figure 7: Connection Configuration.

8. Always select **This is a Server Connection**. I recommend using the default TSAP's as suggested by Step7-Micro/Win32.
9. Click **Next Connection** (or **Prev. Connection** if available) to step through all the connections to configure them.

Note: If you plan to use such a connection, be sure that only one client tries to connect to the PLC via this connection at the same time. All other connection tries will be rejected.

Connection 1 accepts only requests from the specified client:

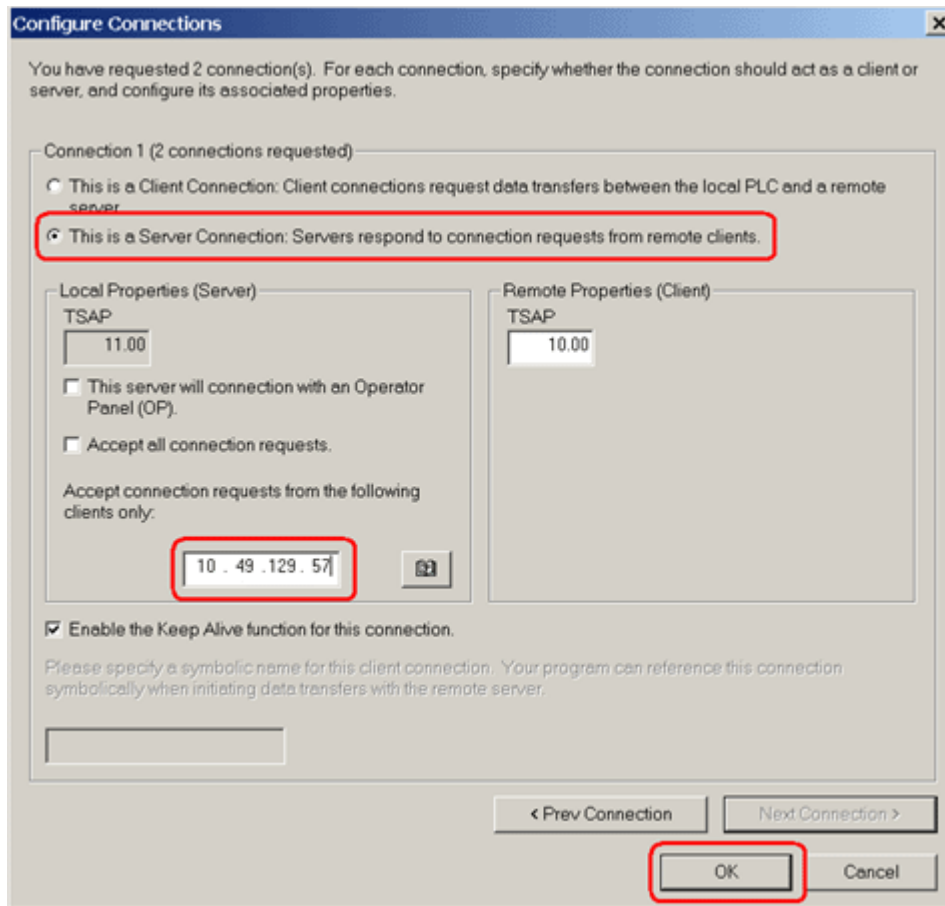


Figure 8: Specified Client Requests.

10. If all connections are configured click **OK**.

During the startup phase of a project I would recommend not to use a CRC protection:

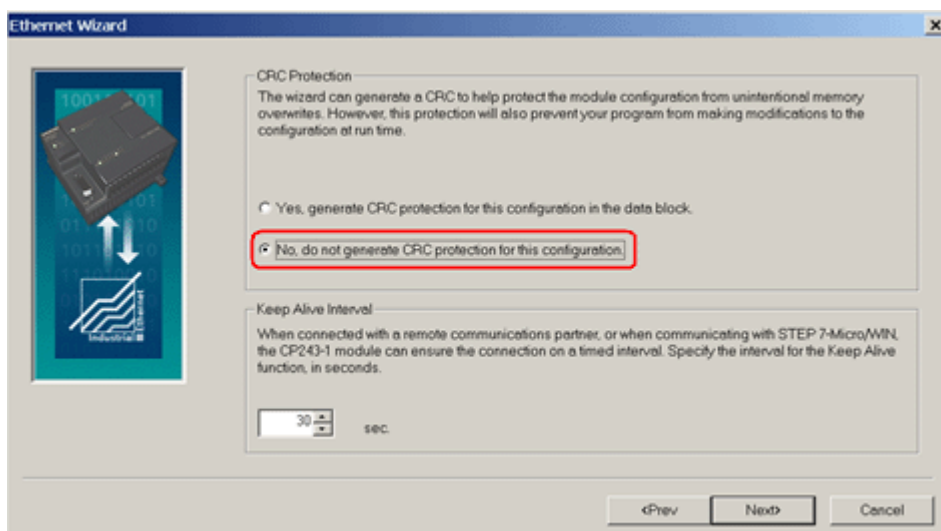


Figure 9: No CRC Protection.

The wizard now needs a range in the V-Memory where to store this information. Step7-Micro/Win32 will suggest a valid range.

11. Click on **Suggest Address** if you have planned to use this range for something else.

In this case Step7-Micro/Win32 will suggest another free range that has the correct size to hold this data:

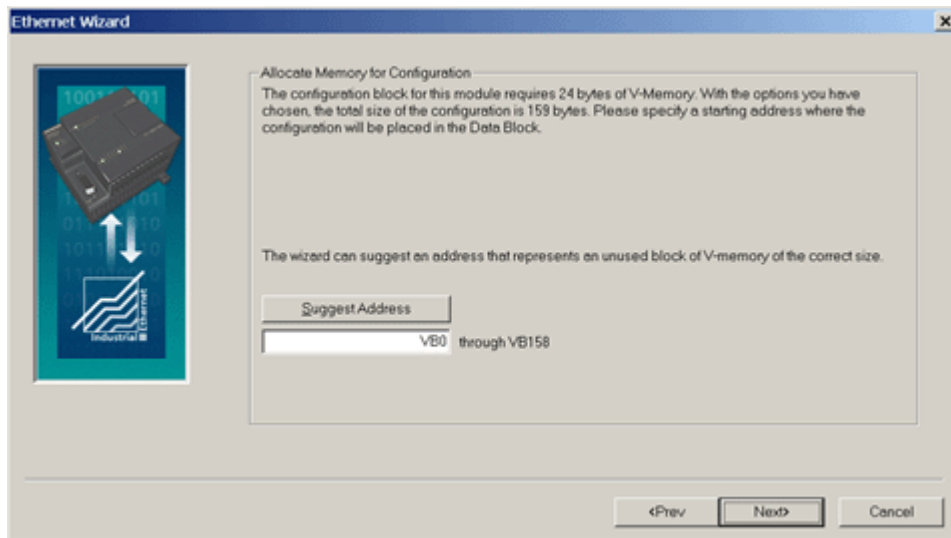


Figure 10: Store Memory Allocation for Address.

12. Click **Next**.

The program now has enough information:

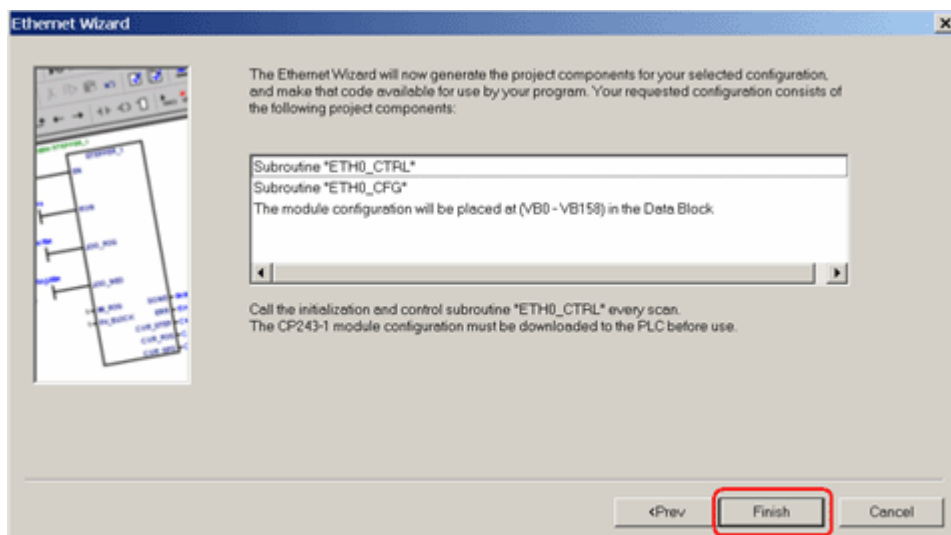


Figure 11: Generate Project Components.

13. Click **Finish** to complete the configuration:

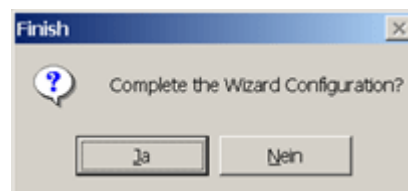


Figure 12: Complete the Wizard Configuration.

14. Click **Yes**.

In **Step7-Micro/Win32** you should now see something like the following figure:

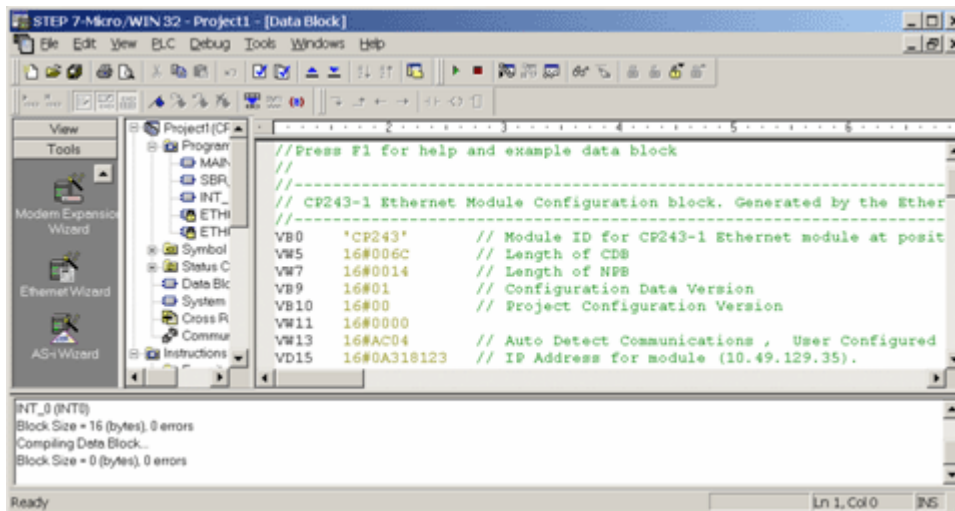


Figure 13: Step7_Micro/Win32 Window.

Step7-Micro/Win32 has created some new entries in the V-Memory, starting at the address as specified during the setup of the CP243-1.

15. Download the configuration to the PLC:

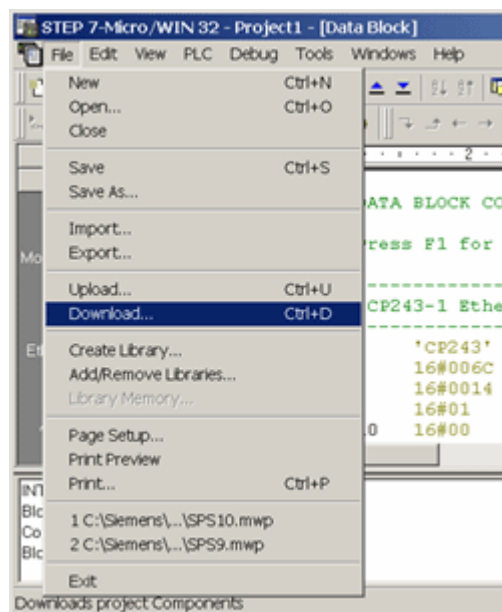


Figure 14: Download the Configuration.

16. Select all options and click **OK** (Figure 15 below):

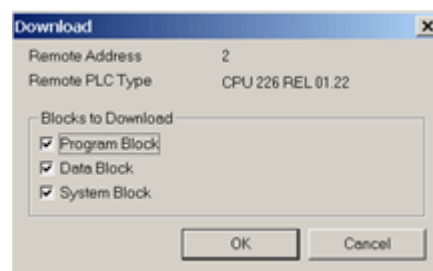


Figure 15: Download Options.

17. Set the PLC to **STOP** mode in order to be able to download a new configuration:

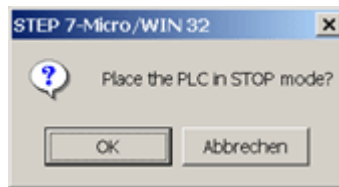


Figure 16: PLC STOP Mode.

18. After the download don't forget to set the PLC to **RUN** mode again. This will not be done automatically:

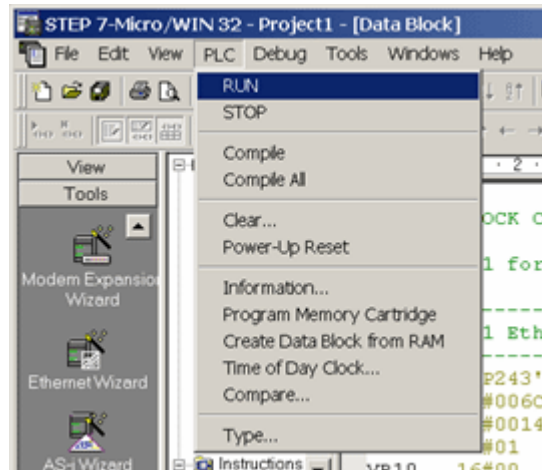


Figure 17: PLC RUN Mode.

The PLC side is now configured.

Configure the DAServer

Configuration of the DAServer is quite easy.

Since we have created two connections in the PLC, we will also create two connections in DASSIDirect DAServer.

Connection **0** will correspond to the connection as created in [Figure 7](#):

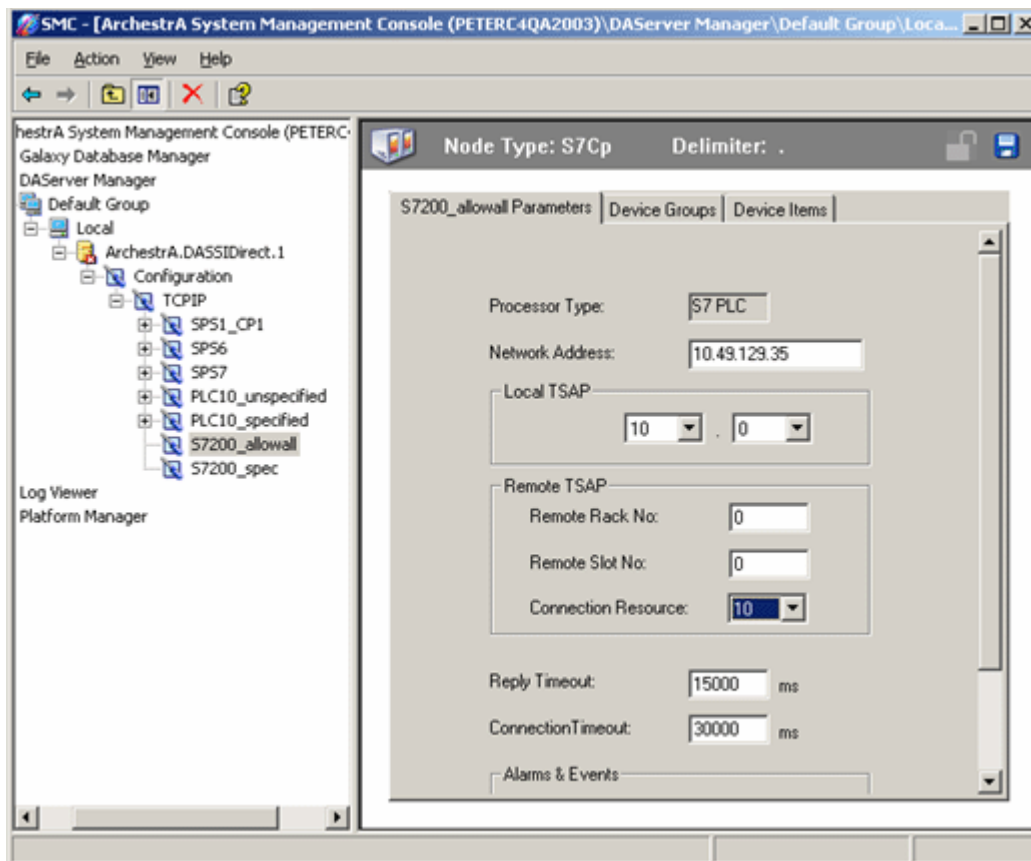


Figure 18: DASSIDirect Connection 0.

The Remote TSAP in DASSIDirect must be the Local TSAP in the PLC configuration, and vice versa.

Connection 1 shown in Figure 19 (below) will correspond to the connection as created in [Figure 8](#):

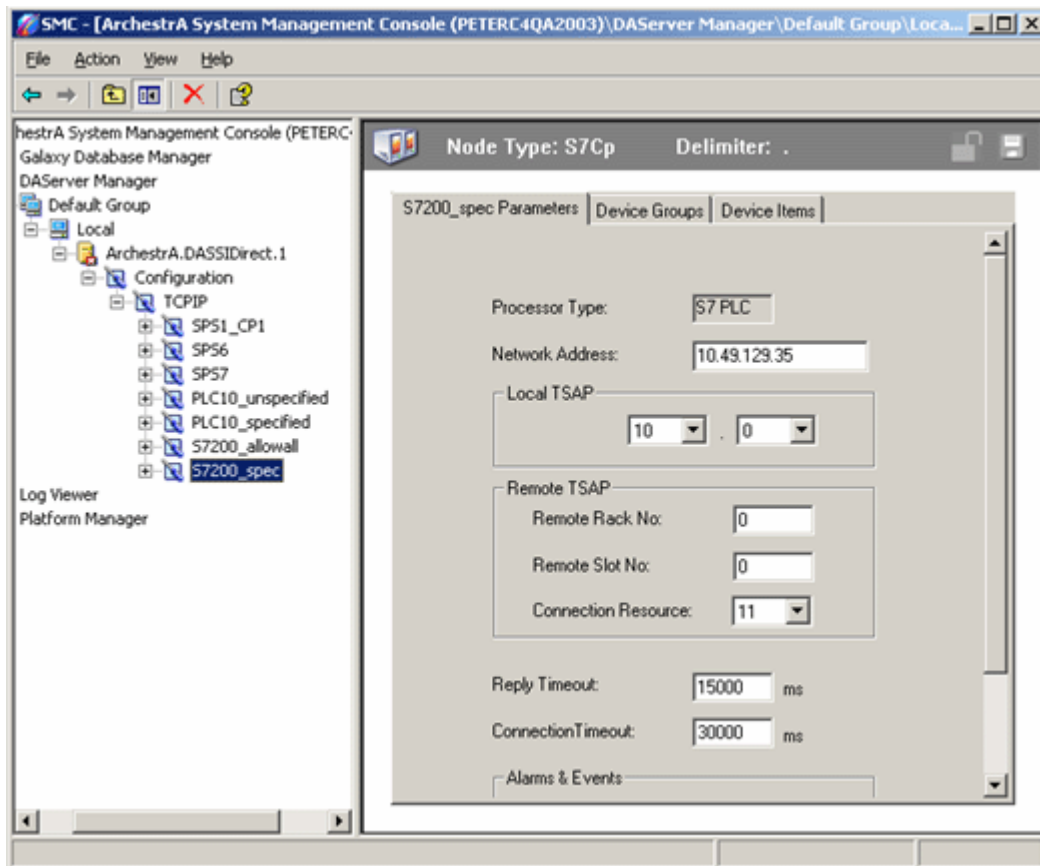


Figure 19: DASSIDirect Connection 1.

The single parts of the remote TSAPs in DASSIDirect are called **Remote Rack No**, **Remote Slot No** and **Connection Resource**. This naming convention was meant for S7-300 and S7-400 PLC's.

For S7-200 PLC's it is a little bit different. The **Remote Slot No** (which is the remote slot number of the CP, not the CPU) in the DASSIDirect configuration corresponds to the **Module Position** as seen in [Figure 4](#). The **Remote Rack No** should always be **0**.

Another way to figure out the correct values for the remote TSAP's in DASSIDirect is described in the following information:

Figure 20 (below) shows you how to figure out the meaning of the single parts of the remote TSAP in DASSIDirect from a local TSAP configuration in the PLC as seen in [Figure 7](#) or [Figure 8](#) (The TSAP in Figure 20 do not correspond to the TSAP's as used in the above example. I wanted to have different numbers for Rack and Slot in Figure 20!).



Figure 20: Remote TSAP.

The TSAP in Figure 20 would correspond to the remote TSAP value in [Figure 7](#) or [Figure 8](#).

In this example the value for **Connection Resource** in DASSIDirect would be **02**, the value for the **Remote Rack No** would be **0** and the **Remote Slot No** would be **3**.

Now create your device group(s), if necessary.

For a DDE/SuiteLink connection you need to have at least one device group per connection, for OPC it is not necessary. For to test the communication as described below, please enter a device group called **S7200**.

The connection between DASSIDirect and the S7-200 PLC should now be ready to test.

Test the Communication

In previous TechNotes we used **wwclient** for testing. This tool will no longer be installed when installing Archestra (A²) products like InTouch 8.0 or any DAServer. If you have InTouch 7.11 installed you will find this tool under **Program Files/Wonderware FactorySuite/Common** and you can use this tool.

1. Create a simple InTouch application with one tag.
2. Select **Special/Access Names** from the main menu.
3. Select **Add**.

The **Add Access Name** dialog box appears:

Figure 21: Add Access Name.

4. Enter a meaningful name in the **Access** field.
5. Leave the **Node Name** blank if you have InTouch and DASSIDirect on the same node.

Otherwise enter the nodename of the PC where DASSIDirect resides.

The **Topic Name** must match the **Device Group** name as configured in DASSIDirect.

6. Select **Special/Tagname Dictionary** and select **New**.

Figure 22: New Tagname.

7. Select **Type: I/O Integer** and the access name as created in the previous steps.
8. Use the item **MB1** because it always exists in all S7-200 PLCs.

Use this tag in the window you just created.

9. Activate DASSIDirect in the System Management Console (SMC).
10. Start WindowViewer.
11. Open the Diagnostic in the SMC to verify the communication:

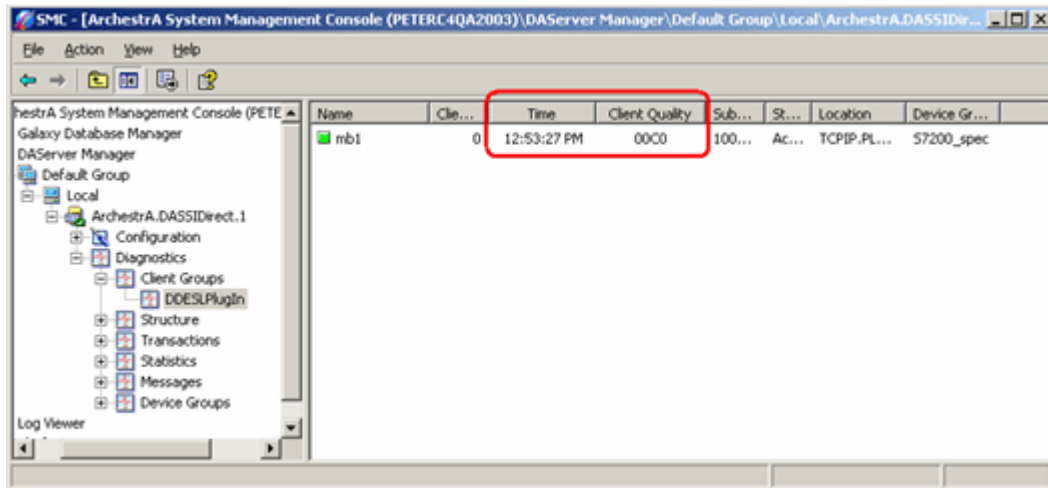


Figure 23: Check Communication from the SMC.

If you see a **Time** value that is changing, and a **Client Quality** of **00C0**, your communication is fine.

Memory Areas in the S7-200 PLCs and How to Access Them Via DASSIDirect

S7-200 PLCs have the following memory areas:

Memory area	Mnemonic in PLC	Item in DASSIDirect
Flags (Merker)	M, MB, MW, MD	Flag item syntax
V-Memory	V, VB, VW, VD	Datablock item syntax (only DB!)
Timer	T	Timer item syntax
Counter	C	Counter item syntax
Input	I, IB, IW, ID	Input item syntax
Output	Q, QB, QW, QD	Output item syntax

For more information about the detailed item syntax for DASSIDirect, please refer to the DASSIDirect online documentation.

Note: The following DASSIDirect items are NOT supported when connecting to a S7-200 PLC:

- Peripheral Input Bytes
- Peripheral Output Bytes
- Block Items
- Alarms & Events

Examples: If you want to read the memory area as seen in [Figure 13](#), you have (amongst other things) the following possibilities:

V-Memory	Value in PLC	DASSIDirect Item	Value in	Explanation
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Address		Syntax	Client	
VB0	'CP243'	DB1,S0,5	'CP243'	String with 5 characters, starting at byte 0
VW5	16#006C	DB1,W5	108	Unsigned Integer (2 bytes), starting at byte 5
VW7	16#0014	DB1,W7	20	Unsigned Integer (2 bytes), starting at byte 7
VB9	16#01	DB1,B9	1	Unsigned Integer (1 byte), starting at byte 9
VB10	16#00	DB1,B10	0	Unsigned Integer (1 byte), starting at byte 10
VW11	16#0000	DB1,W11	0	Unsigned Integer (2 bytes), starting at byte 11
VW13	16#AC04	DB1,W13 or DB1,X13.0 to DB1,X14.7	44036	Unsigned Integer (2 bytes), starting at byte 13 since this is some kind of bit-pattern, where each bit represents one special setting, you can also access the single bits directly.
VD15	16#0A318123	DB1,D15 or DB1,B15 DB1,B16 DB1,B17 DB1,B18	171016483 10 49 129 35	Unsigned Integer (4 bytes), starting at byte 15 since this is an IP address, it's probably better to access this value as four independent bytes, and concatenate them to a string like 10.49.129.35 in InTouch.

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