

## **Tech Note 220**

# Configuring the S7 Server for MPI or Profibus Communications for Windows NT 4.0 to Access S7-400 PLCs via the Siemens CP5613 Card

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This document describes the necessary steps for establishing either MPI or Profibus communications for Windows NT 4.0, via the Wonderware® S7 I/O Server™ to an S7-400 PLC through a Siemens CP5613 card in the PC. It is broken down into two basic sections:

- Section 1 - Configuring the Siemens Simatic Net software, and
- Section 2 - Configuring the WW S7 I/O Server.

Throughout this document it is assumed that you have a basic working knowledge and understanding of the Siemens Simatic Net and Wonderware FactorySuite™ I/O Server software.

**Note:** This Tech Note uses examples from Siemens Simatic Net S7-5613 v2.1.

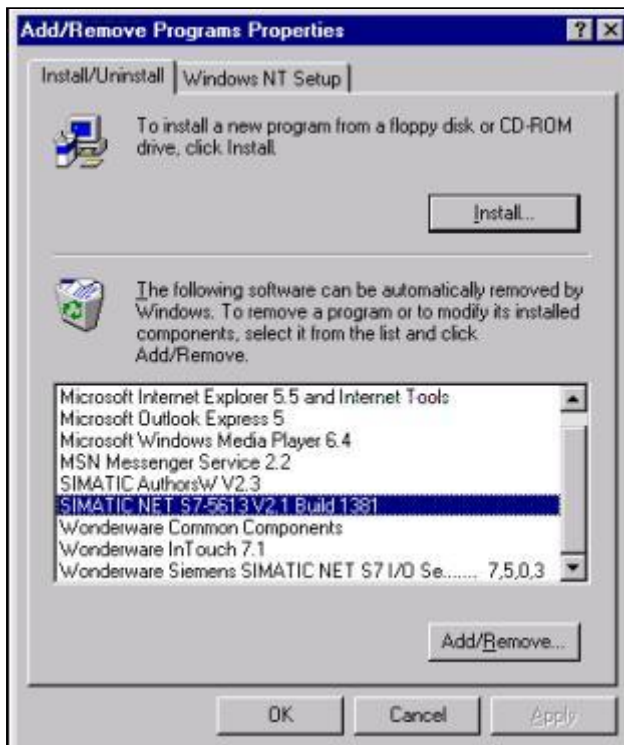
## Section 1 - Configuring the Siemens Simatic Net Software

This section describes the step-by-step procedure of installing and configuring the Siemens Simatic Net software.

### Installing the Siemens Simatic Net S7-5613 v2.1 Driver

In order to communicate through the Siemens CP5613 card, it is necessary to install the Siemens Simatic Net S7-5613 driver.

1. Obtain and install the S7-5613 driver from the Siemens Simatic Net CD.
2. Go to the Control Panel and select Add/Remove.
  - When the Add/Remove Programs Properties dialog box (Figure 1) appears, verify if the Siemens S7-5613 driver is installed, and if so what version of this driver is installed on your system.
  - It is suggested that you obtain and install the most current version available from Siemens.
  - For this Tech Note's example, the latest version of the driver available, v2.1, is used.



**FIGURE 1: THE ADD/REMOVE PROGRAMS PROPERTIES DIALOG BOX**

**Note:** If you do not have the most current version of the driver installed, contact your Siemens distributor or Siemens Technical Support to obtain the latest Siemens Simatic Net CD.

## Creating a Database Using COML S7 (v2.12)

The COML S7 program creates the .txt and .ldb files necessary for Simatic Net to interface the Siemens CP5613 card to either the MPI port on the S7-400 CPU, or the CP 443-5 Basic module on the S7-400 UR. The following steps illustrate the method to generate the .txt and .ldb files.

1. Go into COML S7 and create a .txt file as shown in Figure 2.

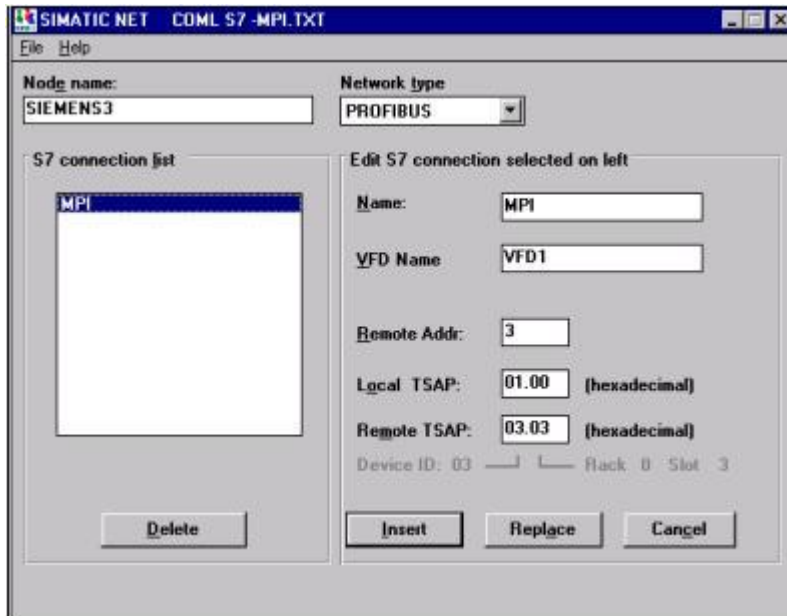


FIGURE 2: CREATING A .TXT FILE

2. Enter the following information in the fields when creating the COML S7 files.
  - a. **Node name:** The name of the PC station.
    - For documentation purposes, it is suggested that the name match the assigned PC name, however, this is not required for communications.
  - b. **Network type:** Select PROFIBUS as the Network type when using either MPI or Profibus communications.
  - c. **Name:** The symbolic name of the S7 connection (maximum 32 characters).
    - Can be freely chosen.
    - This name occurs again when you want to create topics in the S7 I/O Server.
  - d. **VFD Name:** The Virtual Field Device name.
    - Maximum 32 characters.
    - This name is used by an application to specify which S7 connection to use.
    - The VFD name is used during the topic configuration in the I/O Server.
  - e. **Remote Addr:** This is the address of either the MPI port on the S7-400 CPU or the Profibus address of the CP 443-5 Basic module on the S7-400 UR Universal Rack.
    - They should match the addresses defined in Step7 Project Hardware Configuration.
  - f. **Local TSAP:** The Transport Service Access Point for the local station.
    - The TSAP is the layer-4 address.
    - The first two digits specify the device.
    - The last two digits have to be zeros.
    - Recommended setting: 01.00

- g. **Remote TSAP:** The TSAP of the PLC. It consists of two parts:
- group: specifications of the device: 01 = PG, 02 = OS, 03 = others
  - group: addresses of the SIMATIC components: (Bit 0..2) = Rack (Subsystem), (Bit 3..7) = Plug in port
- Recommended setting: 03.0x, where x = the slot of the CPU (**Not** the CP).
  - Since the CPU is normally installed next to the power supply (which takes 2 slots), the usual setting here is 03.03.
  - If configuring to communicate to an S7-300 PLC, the settings would be 03.02.
3. When all field information has been entered, save the .txt file under the File/Save Text DB menu option.
  4. From the Save Text Database dialog box that appears, select the "\*.txt" option from the Save file as type: drop-down menu (Figure 3).

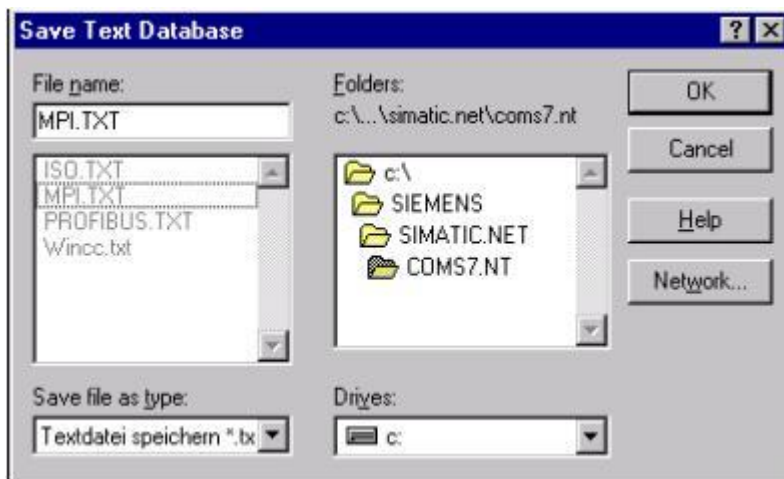


FIGURE 3: THE SAVE TEXT DATABASE DIALOG BOX

5. Then generate an .ldb file under the File/Generate Binary DB menu option.
6. Select the "\*.ldb" option from the Save file as type: drop-down menu in the Check and Save Binary Database dialog box that appears (Figure 4).

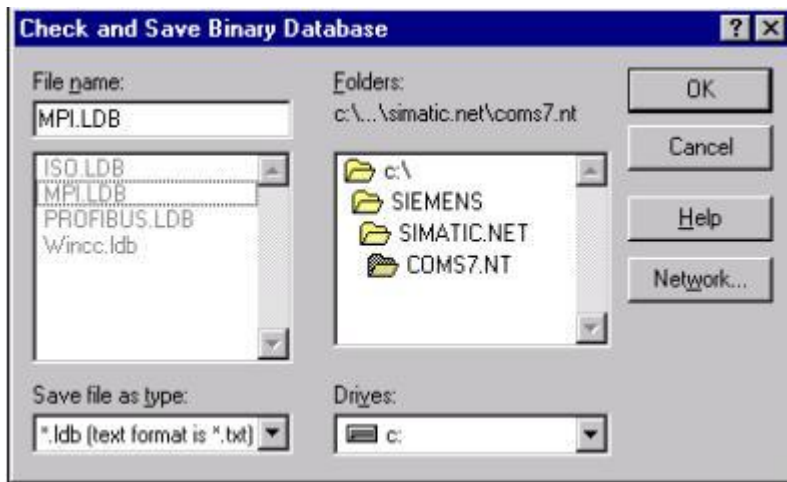
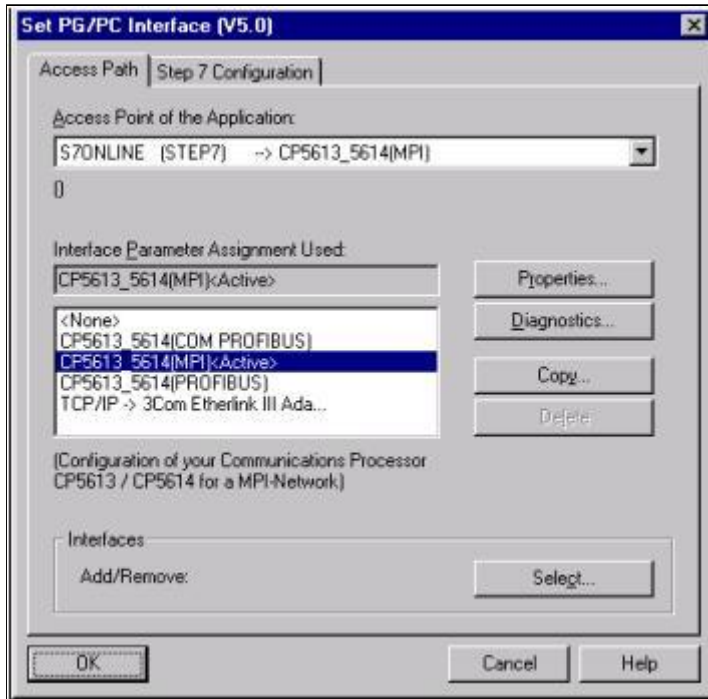


FIGURE 4: THE CHECK AND SAVE BINARY DATABASE DIALOG BOX

## Configuring the Siemens CP5613 Card with Siemens Simatic Net "Set PG-PC Interface"

Once the COML S7 .txt and .ldb files are created, it is necessary to configure and activate either the MPI or Profibus interface via the Siemens Simatic Net "Set PG/PC Interface" software. The following procedure illustrates how the configuration is done.

1. Start the Set PG/PC Interface (V5.0) software.
2. Under the Access Path tab, set the Access Point of the Application: drop-down menu to "S7ONLINE (STEP 7)" (Figure 5).
  - Normally the "S7ONLINE (STEP7)" is used for Siemens Step7 communications, but this access point is used as an example for this Tech Note.
  - It is possible for you to create and own your own unique "Access Point of Application."
  - Consult your Siemens documentation or Siemens Technical Support on how to do this.
  - Depending on which protocol (MPI or Profibus) is being used, highlight the appropriate interface so that the "Access Point of the Application:" points to the desired "Interface Parameter Assignment Used:."
  - For this Tech Note example, the MPI protocol is being configured.



**FIGURE 5: THE SET PG/PC INTERFACE (V5.0) DIALOG BOX - THE ACCESS PATH TAB**

**Note:** In the example above, the Interface Parameter Assignment Used: field shows "CP5613\_5614 (MPI)<Active>"; this will not be the case when initially setting up the interface, and most likely the CP5613\_5614 interface will need to be installed. The PC MPI address must be different from the S7-400 MPI address on the CPU. Consult your Siemens documentation for installing the Siemens CP5613\_5614 interface under the Install... button.

3. Once the "Access Point of the Application:" is defined correctly, as shown in Figure 5, click on the Properties button from the main Set the PG/PC Interface (V5.0) window.
  - o The Properties - CP5613\_5614(MPI) dialog box appears (Figure 6).
4. Click on the S7 Protocol tab.
5. Check the Activate S7 box and then populate the SAPI-S7 Database field by clicking on the Browse button.
6. Search the directory where the .txt and .ldb files were created and saved with the COML S7 software, as illustrated in Figure 6.
  - o Notice how the path in the SAPI-S7 Database field points to exactly where the .txt and .ldb files were saved to in the "Creating a Database Using COML S7 (v2.12)" section earlier.
  - o The MPI tab should be looked at to make sure it matches up to your network and PLC hardware configuration.
  - o This completes configuring Simatic Net's Set the PG/PC Interface (V5.0) for MPI communications.
7. Click OK.
  - o The main Set PG/PC Interface (V5.0) window returns.

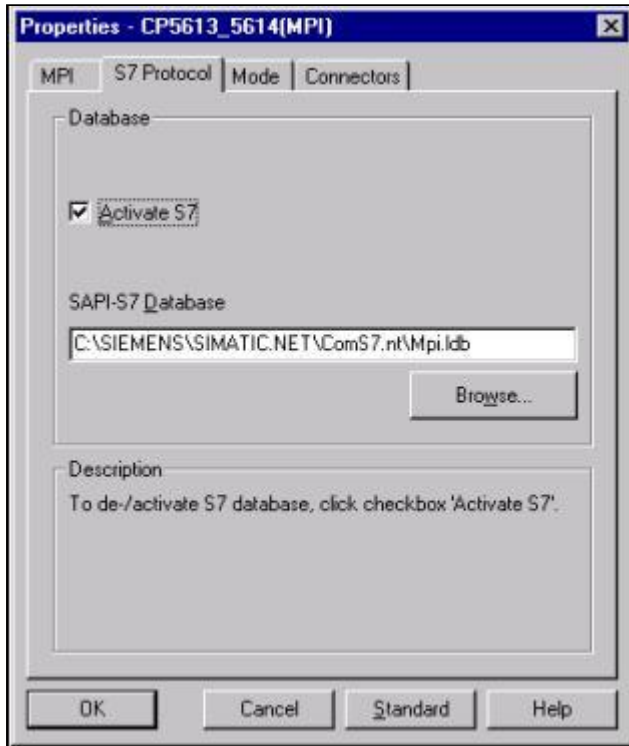


FIGURE 6: THE PROPERTIES - CP5613\_5614 (MPI) DIALOG BOX

8. With the "CP5613\_5614(MPI)<Active>" interface highlighted and the Access Point of the Application: drop-down menu reflecting "S7ONLINE (STEP7)," click OK (Figure 5).
  - o Simatic Net will now make "CP5613\_5614 (MPI)" the active interface.
  - o The Changed Simatic Net Settings dialog box (Figure 7) appears with a prompt.



FIGURE 7: THE CHANGED SIMATIC NET SETTINGS DIALOG BOX

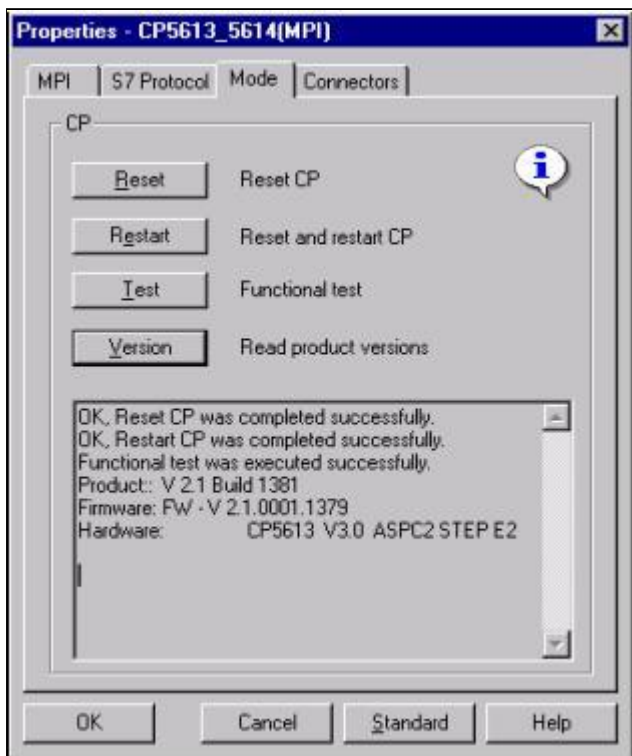
9. Click OK.
  - a. At this point, the main Set PG/PC Interface (V5.0) window will disappear and the Properties - CP5613\_5614 (MPI) window is now the active interface.

### Testing the CP5613 Configuration with the "Set PG/PC Interface"

Once the interface is active, it is possible, and advisable, to test the physical connection to the CP5613 card before trying to communicate with the WW S7 I/O Server. This can be done in one of two ways, or both, by following these steps:

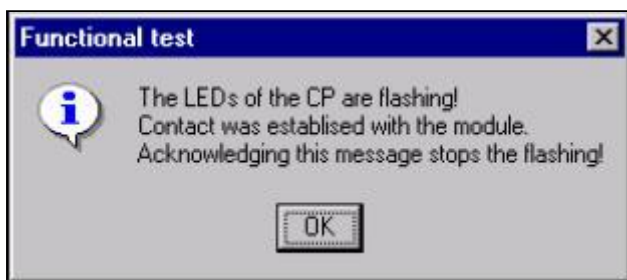
**Procedure 1**

1. First, restart the Set PG/PC Interface (V5.0).
2. From the main menu, click on either the Properties or Diagnostics button.
3. When selecting Properties, go to the Mode tab.
4. Then go through each of the listed buttons in the CP field, starting at the top.
  - o When finished clicking all of the buttons, the Properties – CP5613\_5614(MPI) dialog box will have the settings as shown in Figure 8.



**FIGURE 8: THE PROPERTIES - CP5613\_5614(MPI) DIALOG BOX**

- o After clicking on the Test button, the following Functional test window will pop up.

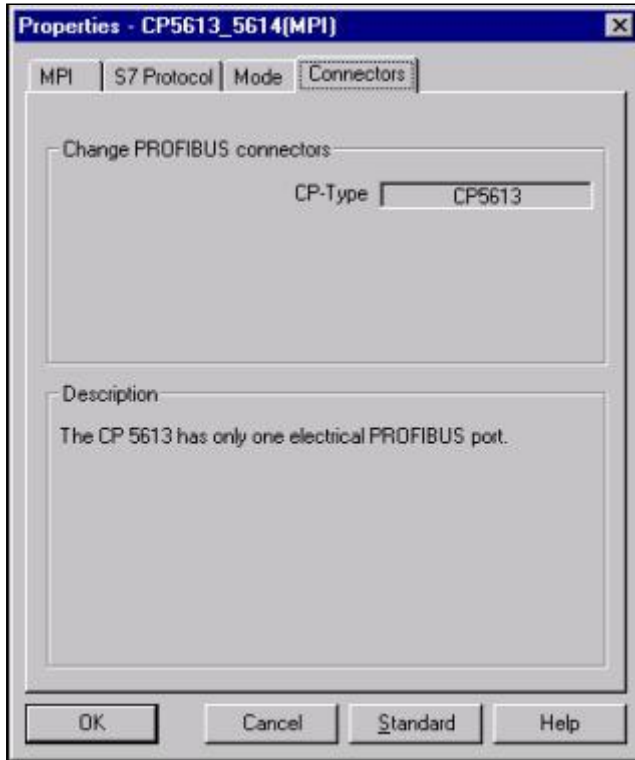


**FIGURE 9: THE FUNCTIONAL TEST WINDOW**

5. Verify that the LEDs on the CP5613 are flashing.
6. Once verified, click the OK button and the LEDs will stop flashing.
7. Continue with the last button.
  - o If these results are not seen, then go to the beginning of the Tech Note and verify the configuration.



- If the configuration is verified to be correct, then it may be necessary to contact Siemens Technical Support for further assistance.
8. Once all the buttons have been successfully passed, click on the Connectors tab.
- The following setting in the Properties dialog box will appear (Figure 10).



**FIGURE 10: THE PROPERTIES DIALOG BOX - THE CONNECTORS TAB**

## **Procedure 2**

The other option for testing the configuration is as follows:

1. Click the Diagnostics button after restarting the Set PG/PC Interface (V5.0) window.
2. Select the Profibus/MPI Network Diagnostics tab and click the Test button.
  - If all has been configured properly, Simatic Net will return an OK, as seen in Figure 11.
3. It is also advisable to click the Read button in the Bus Nodes section.
  - This will show all the connected nodes on the network that Simatic Net can detect through the CP5613 card.
  - If nodes that should appear do not appear, then there may be a hardware problem; or, there may be different parameters on the local and remote partner.

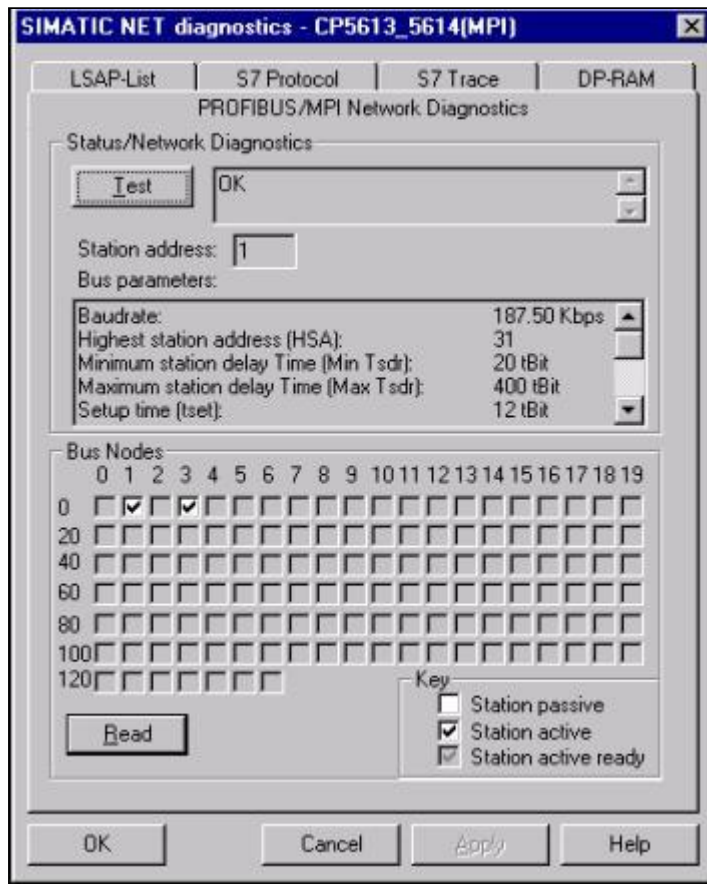


FIGURE 11: THE SIMATIC NET DIAGNOSTICS DIALOG BOX

## Section 2 - Configuring the WW S7 I/O Server

At this point, the Siemens Simatic Net software configuration should be complete. The next step will be to configure the WW S7 I/O Server.

1. Start the server and create a topic.
  - In the topic definition, the fields that will need to be populated are seen.
2. Create a topic name and click on the respective pull-down buttons for the CP-Name:, VFD:, and Connection: fields.
  - If COM1 S7 and/or Simatic Net "Set PG/PC Interface" are created/configured incorrectly, the appropriate options to select from are not displayed and are not available in the drop-down boxes for the CP-Name:, VFD:, and Connection: fields.
  - Figure 12 illustrates how all the fields would be filled in for a topic definition.
  - Note how all the user-input fields match up to the examples described throughout this Tech Note.

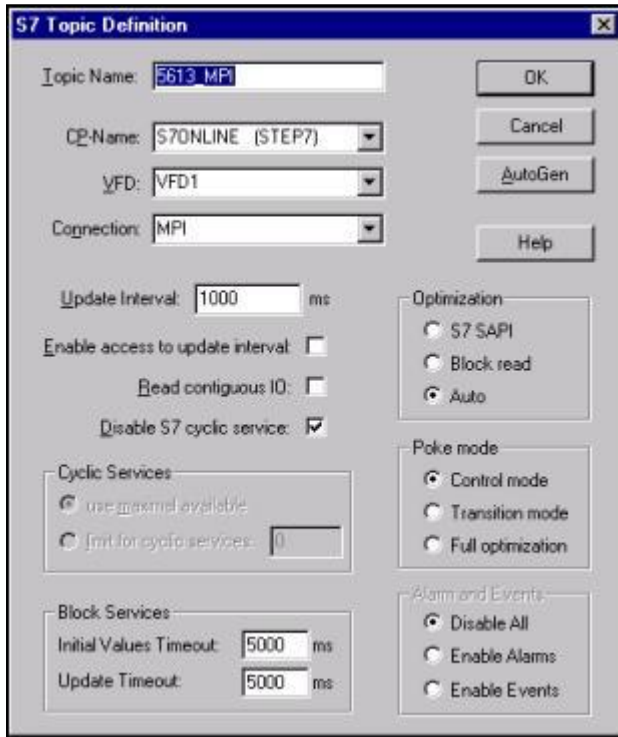


FIGURE 12: THE S7 TOPIC DEFINITION DIALOG BOX

### Testing the S7 MPI/Profibus Communications with the WW S7 I/O Server

With the Siemens Simatic Net software and the WW S7 I/O Server now configured, it is time to test either the MPI or Profibus communications with WWClient, through the Siemens CP5613 card in the PC, to either the MPI port on the S7-400 CPU or via a CP 443-5 Basic module in the S7-400 UR. Please see [Tech Note 132](#) for the information on how to use WWClient.

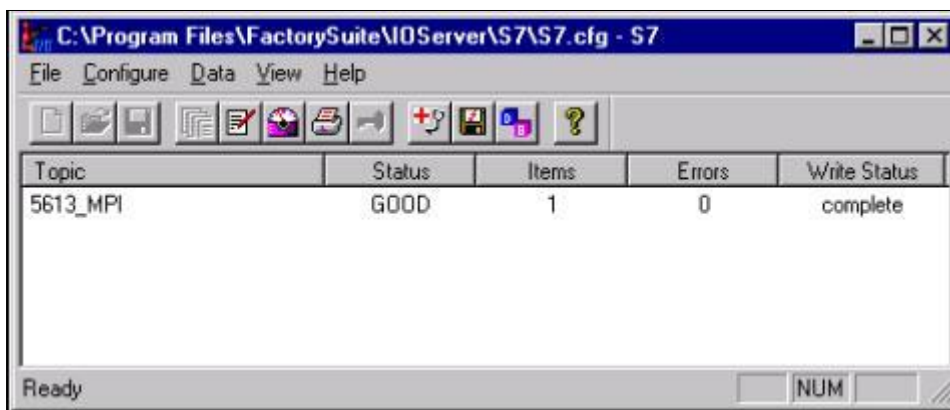


FIGURE 13: THE MPI COMMUNICATIONS THROUGH THE SIEMENS CP5613 CARD

- Figures 13 and 14 show an example of the S7 I/O Server and WWClient successfully advising item "MB90" from an S7-400 PLC, via the MPI protocol, based off the Siemens Simatic Net and WW S7 I/O Server settings configured throughout this Tech Note.



FIGURE 14: THE WONDERWARE CLIENT DIALOG BOX

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