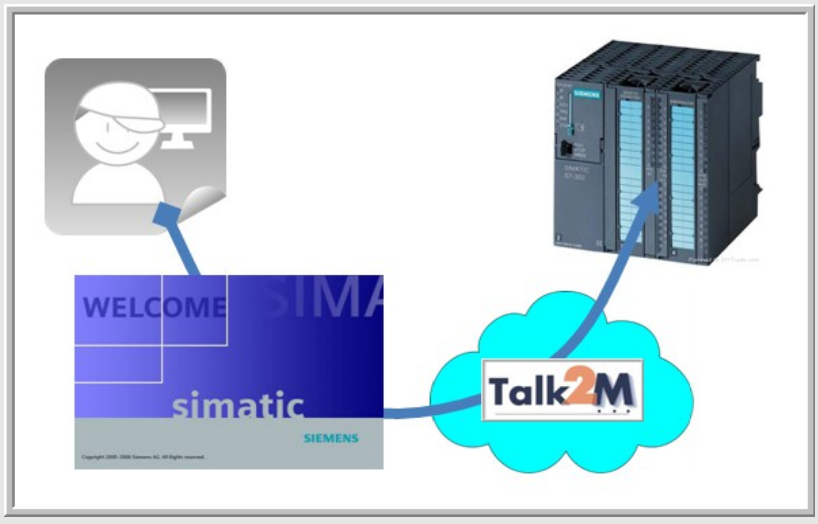
eWON Application User Guide

AUG 040 / Rev 1.1

Access Siemens PLCs and their VIPA equivalents through an existing Talk2M connection



Contents

This short guide explains how to access an Siemens PLC remotely through Talk2M and a pre-configured eWON. Applications include remote servicing of PLC-controlled equipment.

Table of Contents

1. Objective

The objective of this document is to access remotely a Siemens PLC assuming that configuration tasks have been done (*).

Accessing an existing setup remotely implies the following steps :

1. Opening the VPN tunnel
2. Mapping the PLC with your SIMATIC Step7®i software
3. Accessing your PLC through the Internet

(*) as per AUG-037-0-EN (Remote Access for Siemens® S7-300 & 400 PLCs, and their VIPA equivalents S300 - SPEED7.)
http://wiki.ewon.biz/@api/deki/files/909/=AUG-037-0-EN-(Remote_Access_for_Siemens_S7-300%2526400_PLCs).pdf

2. Hardware and software requirements

2.1 Hardware requirements

In order to follow this guide you'll need:

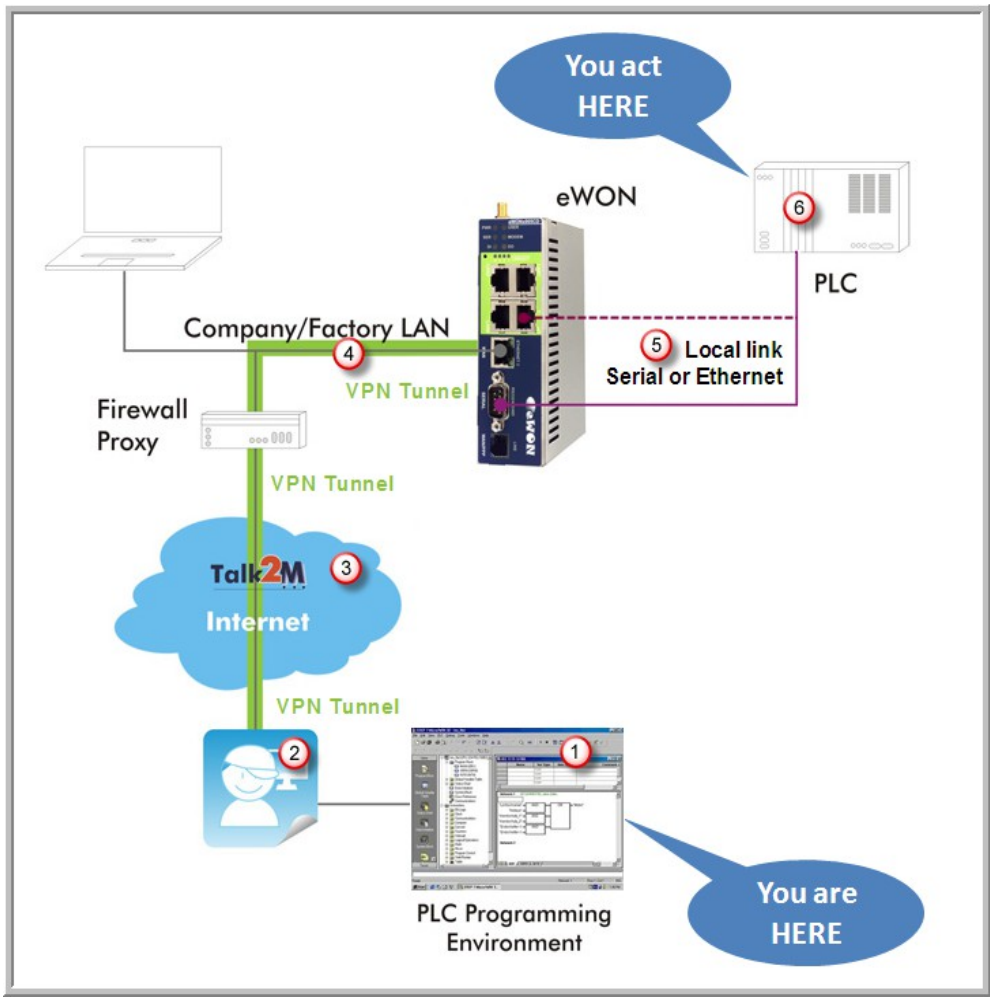
- PC suitable to connect to the Internet
- Internet connection
- Configured remote setup including eWON and Siemens PLC.

2.2 Software requirements

- **eCatcher** – VPN tunneling utility
  http://support.ewon.biz/softwares.htm
- **Talk2M** – have a valid user account at disposal
- **SIMATIC Step7®** software. The version of the SIMATIC Step7® software must allow the use of the TCP/IP interface (version 5.3 or higher).

  Note: for VIPA users, we assume the use in combination with SIMATIC Step7®. Achieving the same tasks in combination VIPA's software **WinPLC7** is feasible but not documented here.

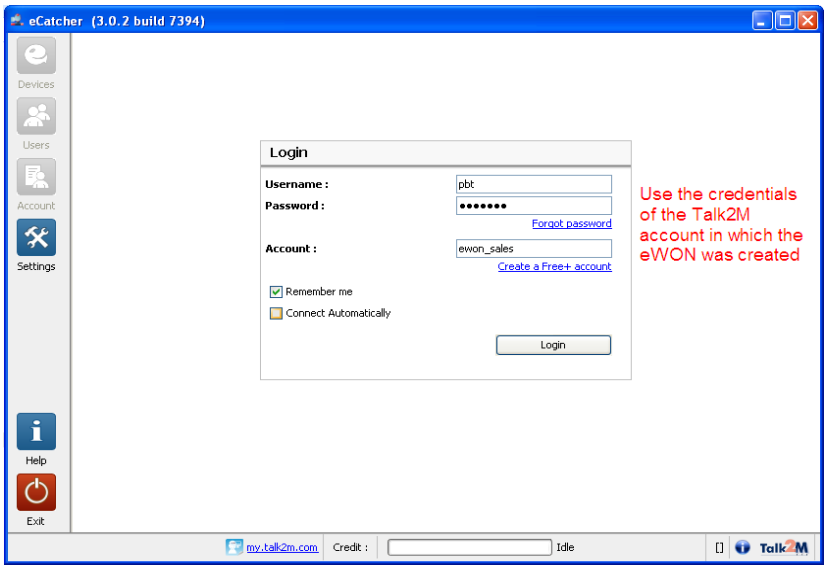
3. Network diagram



1. From a computer running your PLC programming software you will interact with a PLC in the field just as if you were using a point-to-point connection
2. Using the local gateway to Internet and the eCatcher software, you will “see” the eWON as part of your local network
3. You will create your VPN tunnel on the Internet using your Talk2M account
4. This will allow you to seamlessly pass the remote firewall and safely reach the eWON using the local LAN
5. The eWON will allow you to access the PLC transparently, indifferently whether it is hooked using the serial or the Ethernet link
6. You take control over the remote PLC

4. Opening the VPN tunnel

1. Make sure you have installed the eCatcher application from http://support.ewon.biz/softwares.htm.
2. Start your eCatcher application, login using the credentials of the Talk2M account in which the eWON was created:

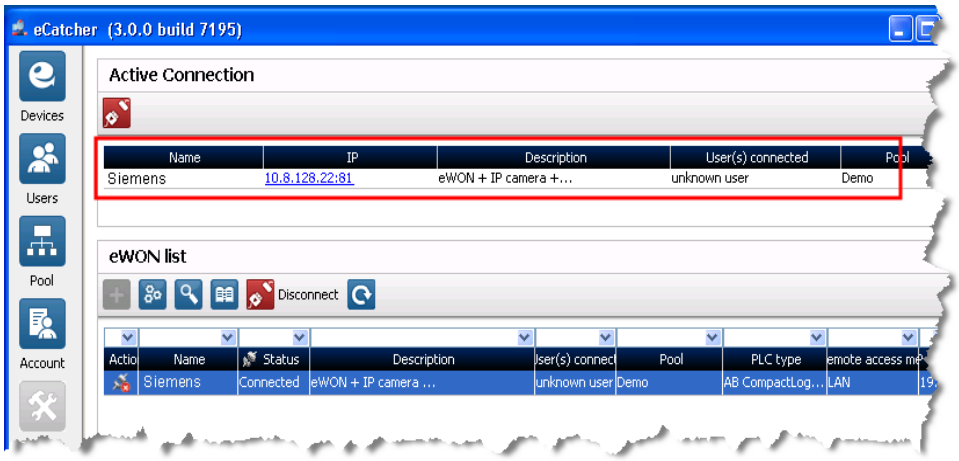


3. The application shows the eWON available for tunneling (*). At this point you only “see” the ones available on your account but you do not yet have the VPN connection required to access the PLC.

   (*) Only eWON that are “online” (green icon) are “ready” for tunneling. An eWON with no icon or with red icon is not online. It can be either a GPRS/EDGE device that first needs to be waked up or a device that is simply not available for the moment.

4. Make sure your eWON is “online”, select it and click ***Connect*** to create the VPN tunnel:

...wait a couple of seconds for Talk2M to create the route. As soon as the route is created, the connected eWON appears in the upper part of the window:



5. You are now connected to the eWON through the VPN tunnel.

5. PLC software mapping configuration

The objective of this step is to configure the PLC communication driver to use the remote connection instead of (or in addition to) the local connection.

- Tips -

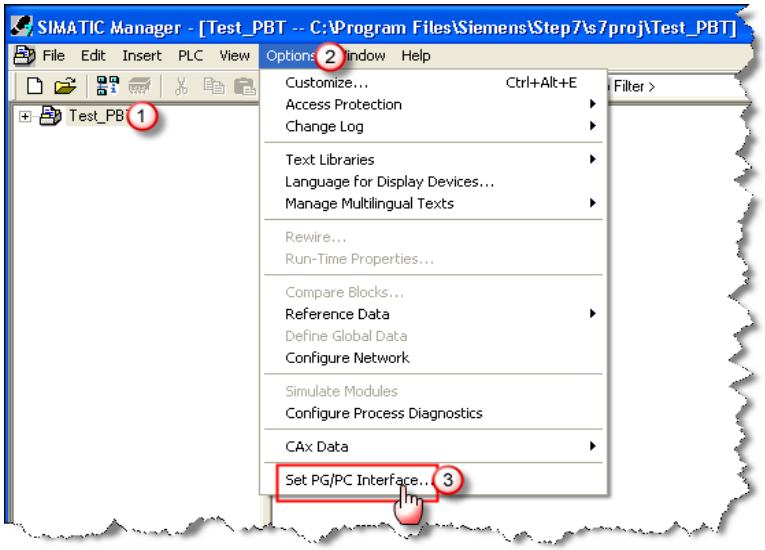
As of firmware v12, there is a PLC Discovery feature inside the eWON. This allows the automatic discovery of PLC (ISOTCP linked to the eWON) on the network while you are connected through Talk2M. No need to set the IP of the PLC in the same range than the IP of the eWON.

For more information, please refer to AUG-070: PLC Discovery through Talk2M

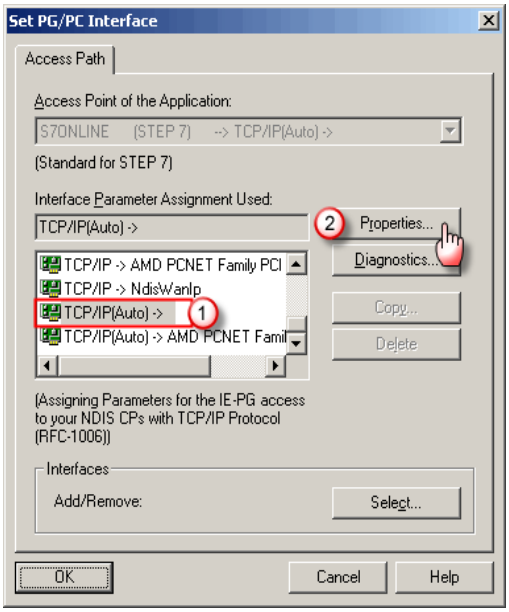
If firmware version is lower than 12, please follow the procedure hereunder.

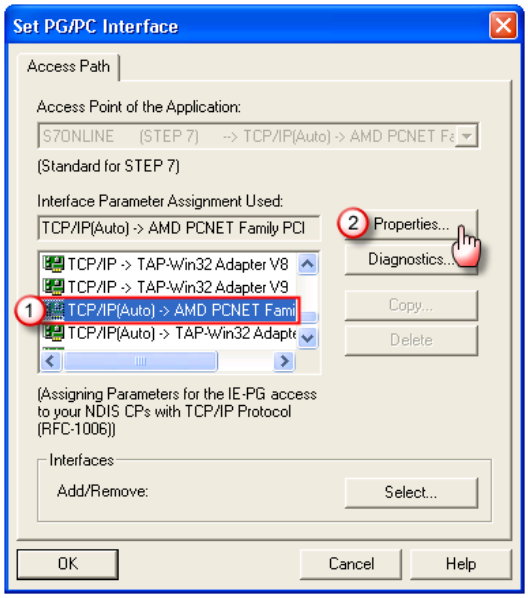
5.1 Common steps for MPI and Ethernet ISOTCP link

2. Start SIMATIC Step7® and open your existing or new PLC project. Select ***Options***, ***Set PG/PC Interface...***

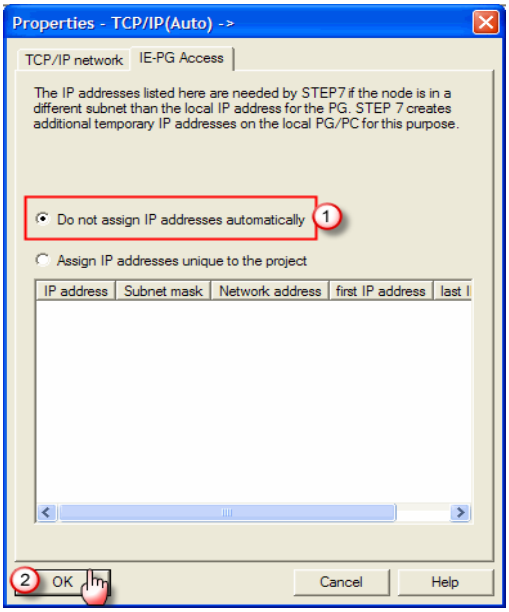


3. Select the TCP/IP interface that you are using on your PC and click OK.
   In the first example below we chose the TCP/IP(Auto) interface, but depending on your machine, you might have to select TCP/IP(Auto) →+ hardware identifier (2d example).

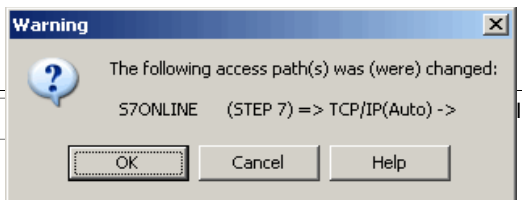




4. Click on the Properties... button to show up the properties of the selected interface. Open the ***IE-PG Access*** tab and select ***Do not assign IP addresses automatically***.
5. Click ***OK*** to close the properties page. Back on the ***Set PG/PC Interface*** window, click ***OK*** to set the PC/PG interface.



6. Click ***OK*** to accept the changes.



Note: For MPI go ahead with the steps below. For ISOTCP Link, end of PLC mapping.

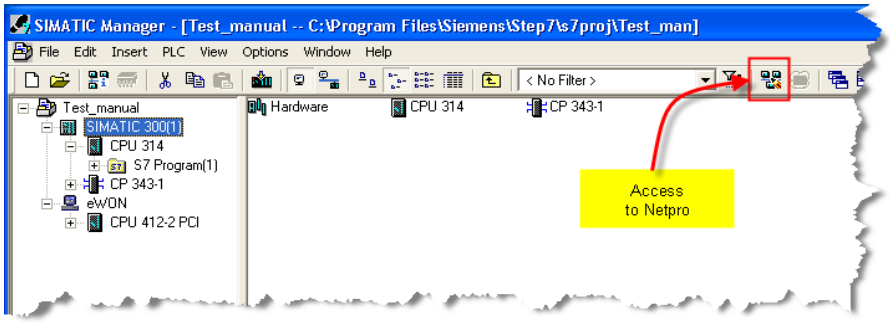
5.2 Additional steps for MPI local link only

If you use an Ethernet connection between the eWON and your PLC, then the PLC software mapping configuration ends here. You can directly establish the remote connection as explained in the chapter 8.
If you connect to the PLC using the MPI or Profibus link, then follow the steps explained hereunder:

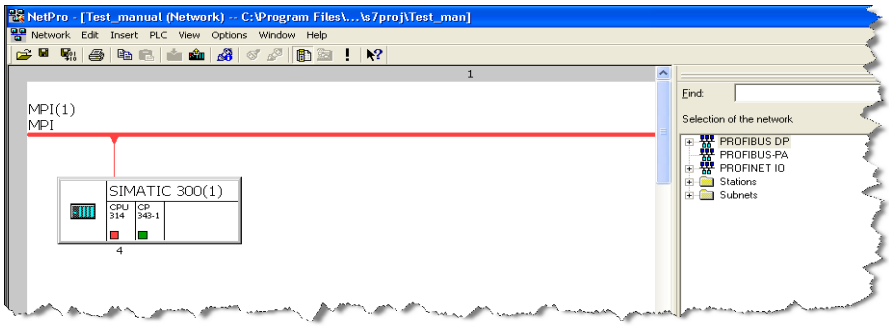
7. Download one of the following config files from our support web site (http://support.ewon.biz/ewon_cfg.htm).
   - eWON.cfg - eWON gateway station file for Step7®
     if you run SIMATIC on a PC that does not feature WinCC.
   - eWON_WinCC.cfg - eWON gateway station file for Step7® (with WinCC installed)
     if you run SIMATIC on a PC that features WinCC.

8. Open the Network Configuration ***NetPro*** utility of your Step7® project.

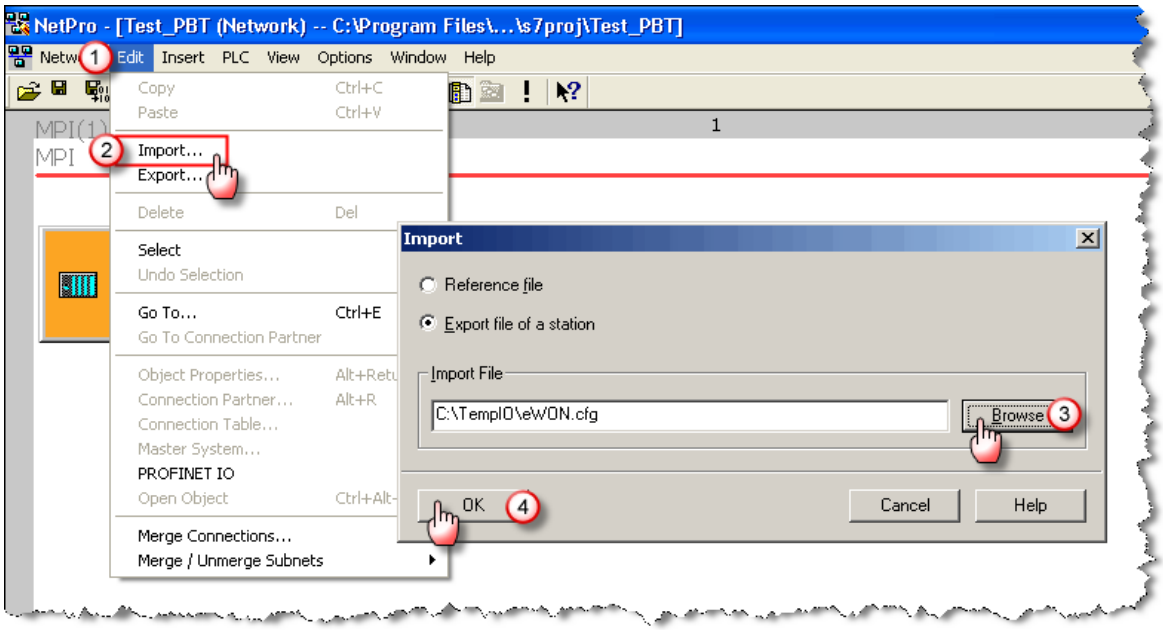
   You can access NetPro either by clicking the icon....



   … or by selecting the menu options ***Options*** → ***Configure Network***... you obtain the NetPro network layout window shown below:

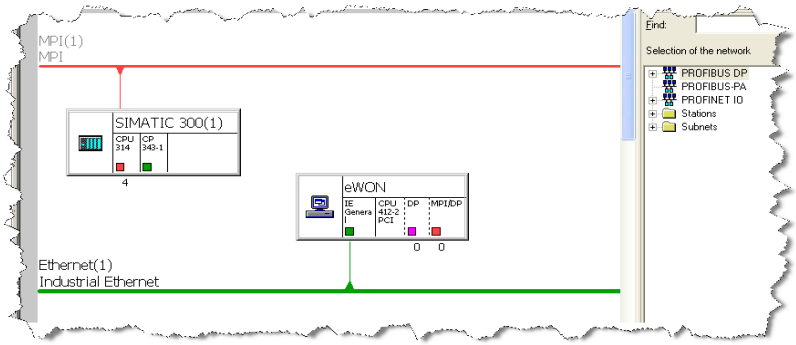


9. Import the eWON gateway station file you downloaded just before. Access path is ***Edit*** and ***Import***. Browse to select either the eWON.cfg file (without WinCC) or eWON_WinCC.cfg (with WinCC) and click ***OK***.



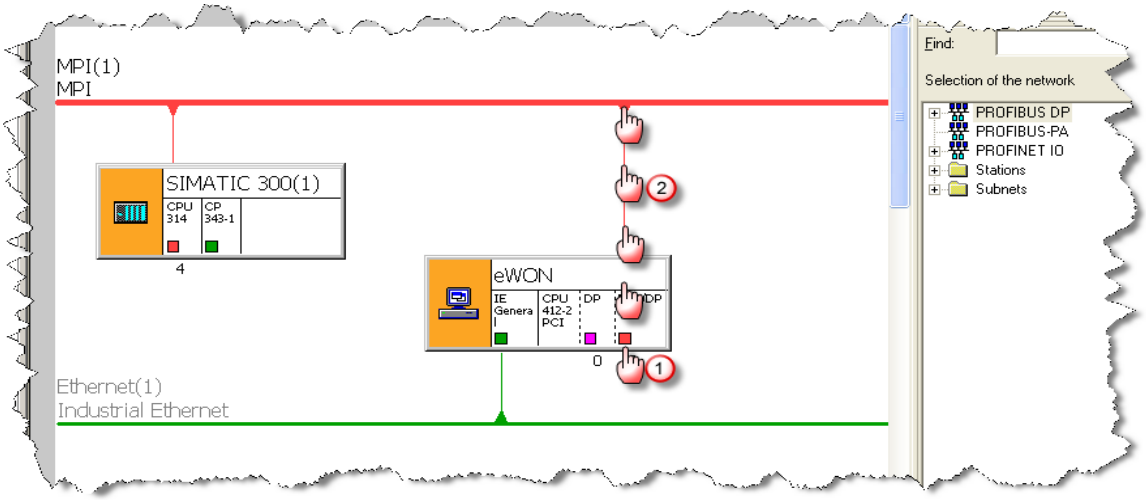
   Note: the ***Export file to a station*** needs to be selected, though the notion of export is confusing while you will actually be importing a device configuration.

10. The eWON gateway will now be displayed in your network layout:

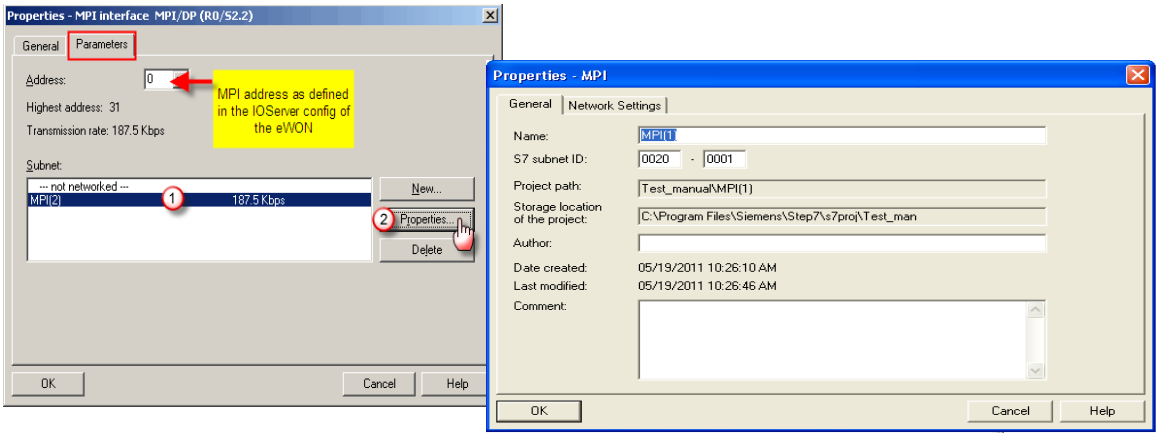


Note: *If you have problems importing one of the config files, refer to appendix 1 of Technote 29 explaining how to create the* **eWON gateway station file for Step7®** *with NetPro from scratch.*

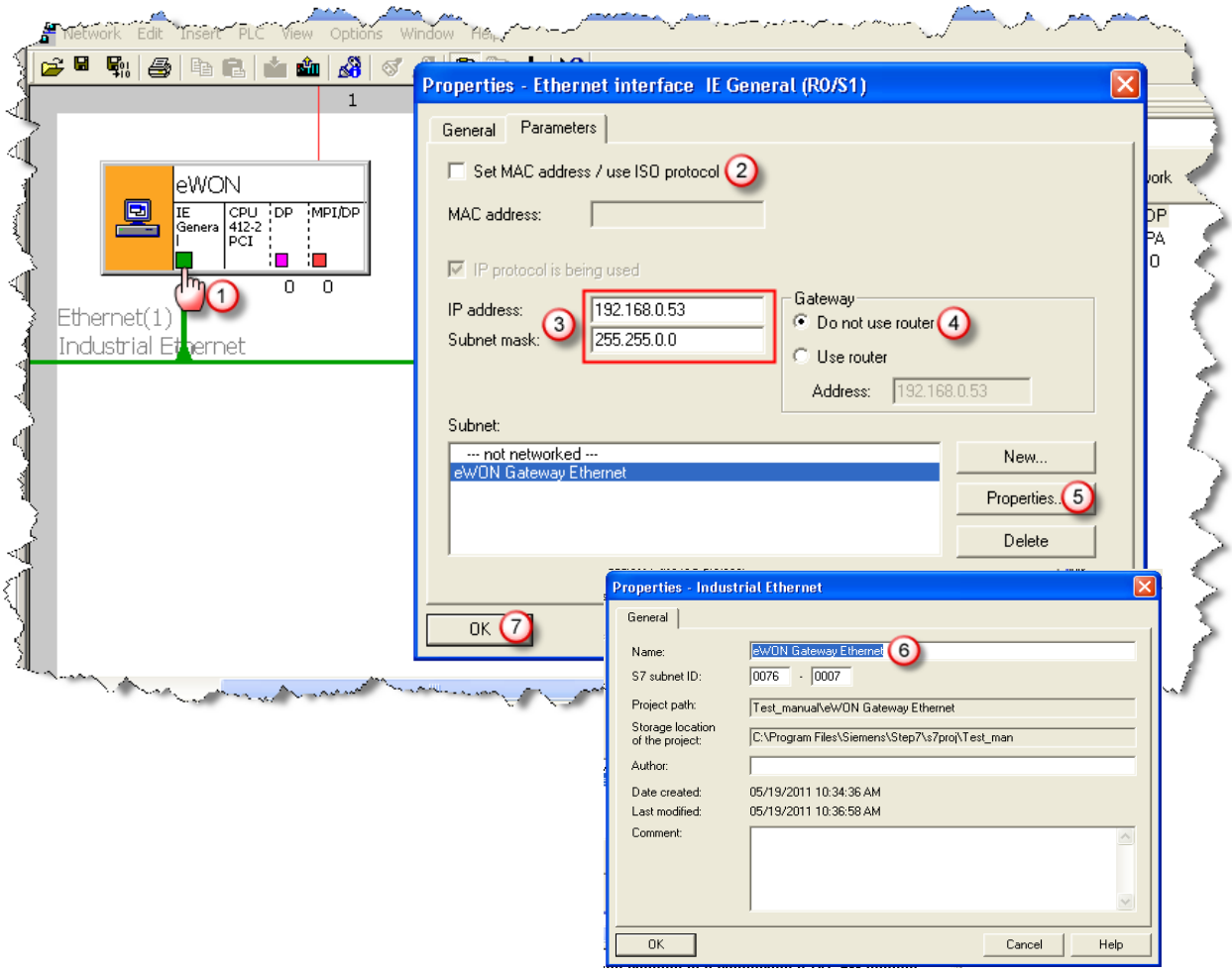
11. Click on the red square of the eWON and drag it to the MPI network of your S7 PLC to link the MPI interface of the eWON to the MPI network.



12. Open the MPI interface of the eWON by a double-click on the red square and check if the MPI address, the transmission rate and the Subnet-ID are correctly set. (Use the ***Properties***... button for more details). Click ***OK*** twice to close the two ***Properties*** windows



13. Double-click on the green square of the eWON to configure the Ethernet Interface of the Gateway.



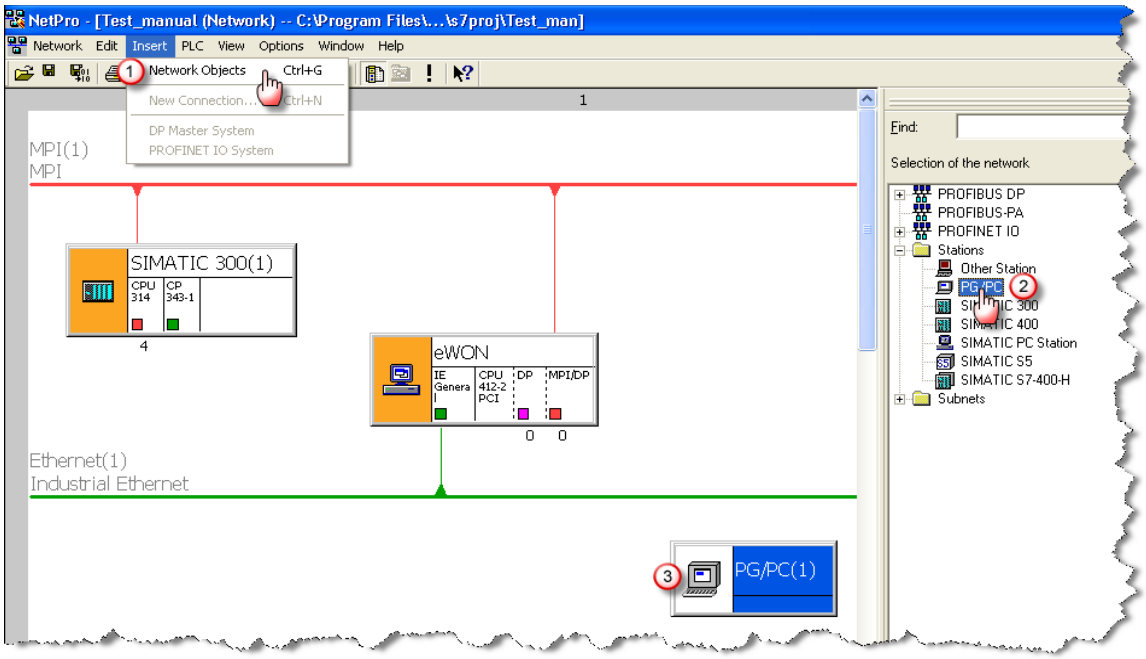
As shown in the snapshot, do not check ***Set MAC address / use ISO protocol***.

In the **IP address** field, enter the IP address of the eWON which will be used for the remote connection (in our example 192.168.0.53). For the **Subnet mask** enter the mask corresponding to the IP address you specified for the eWON (in our example 255.255.0.0).

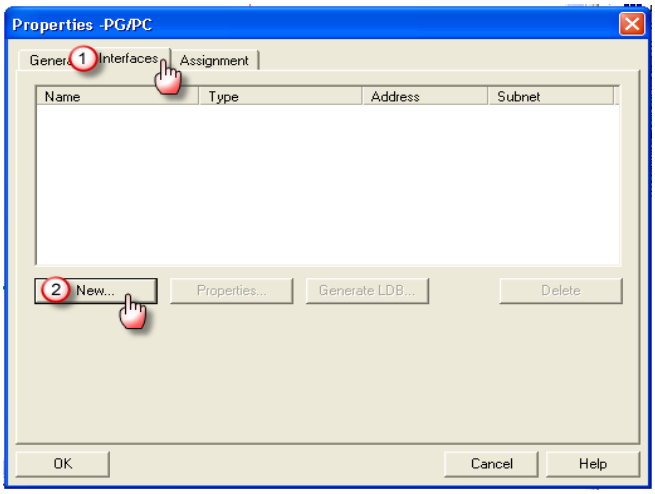
Note: In some cases Step7 rejects Subnet masks he finds inconsistent and forces you to accept for example 255.255.255.0: you can accept while it will not harm the connection capability.

If you want, you can edit the name of the Ethernet by clicking ***Properties.***
Click ***OK*** twice to close the two Properties windows.

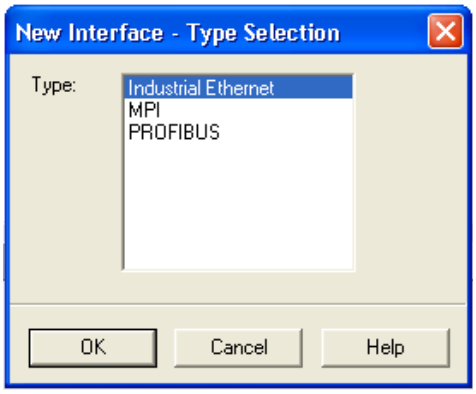
14. You will now add a PG/PC Station to the network layout using the path ***Insert*** → ***Network Objects*** of NetPro. Double-click on the PG/PC Station. An unconnected PG/PC station is now added in the network pane:



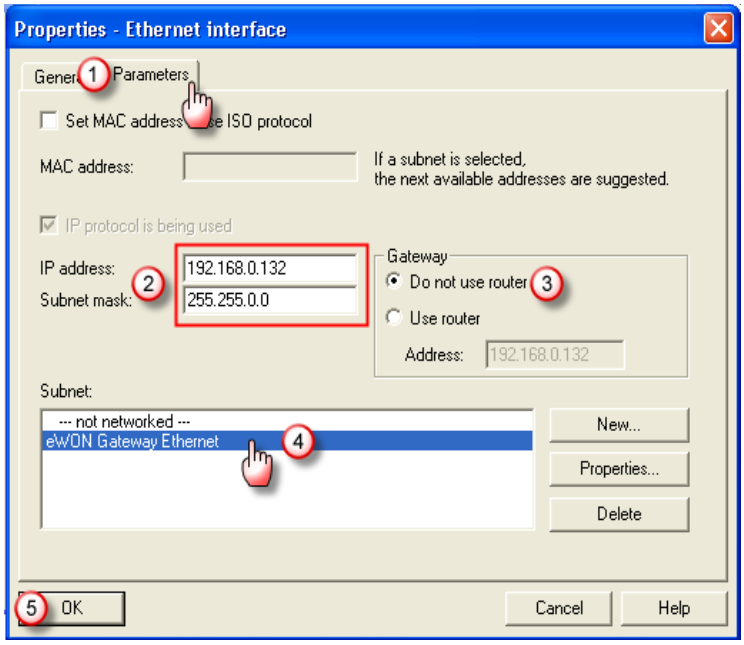
15. Right click the PG/PC and click on ***Object Properties...*** and select the Interfaces tab and click ***New***.



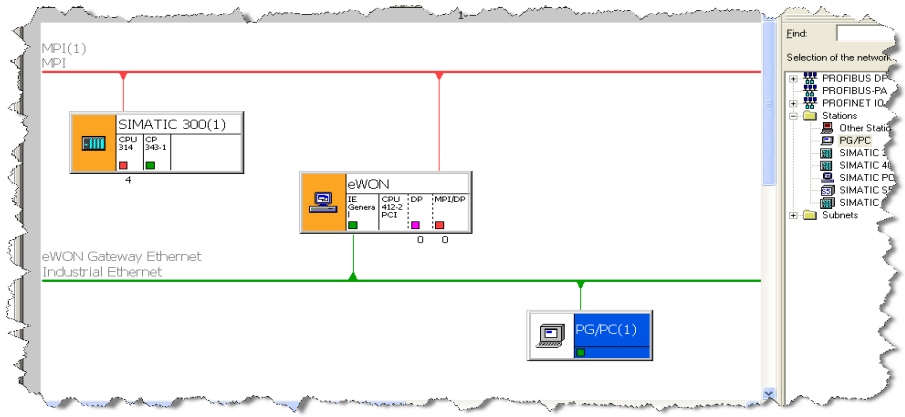
16. Select ***Industrial Ethernet***, and click ***OK***.



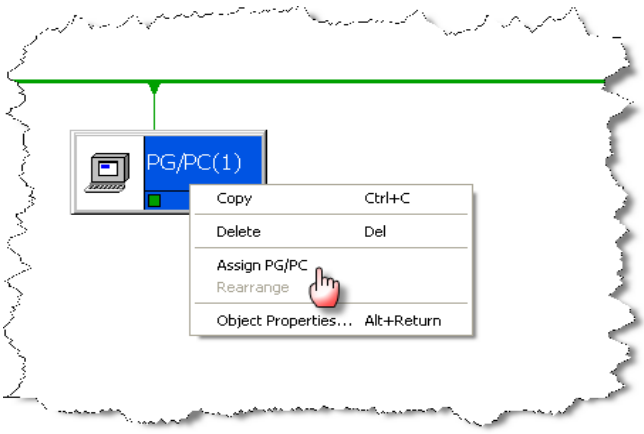
17. In the parameter tab, make sure the ***Set MAC address / use ISO protocol*** is NOT selected. - Set the ***IP address*** and the ***subnet mask*** of <u>your PC</u>. Check the ***Do not use router*** box. In the Subnet window on the bottom of the page select the network on which the eWON is connected to: in our example we named it ***eWON Gateway Ethernet.*** Click ***OK*** twice to close the two Properties windows.



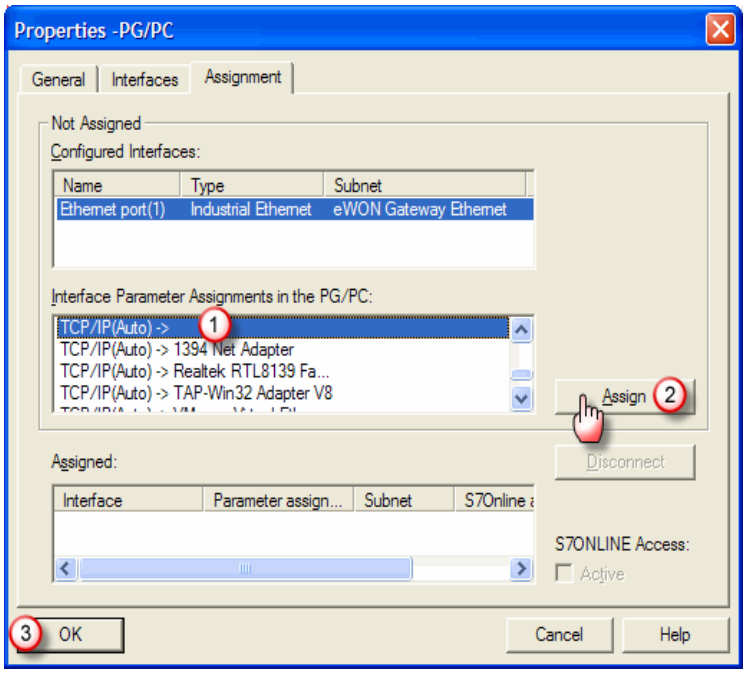
18. Your network layout should now look like this:



19. You will now have to assign the PG/PC interface. To do this, right click the PG/PC picture and click on ***Assign PG/PC.***



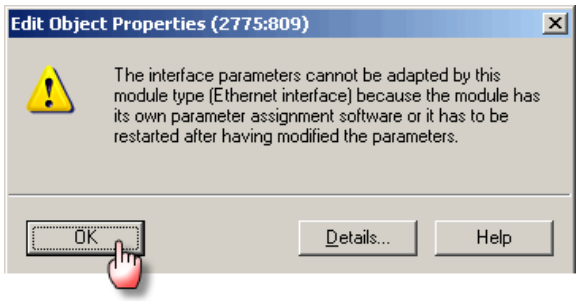
20. The ***Assignment*** tab of the ***Properties -PG/PC*** wizard appears:



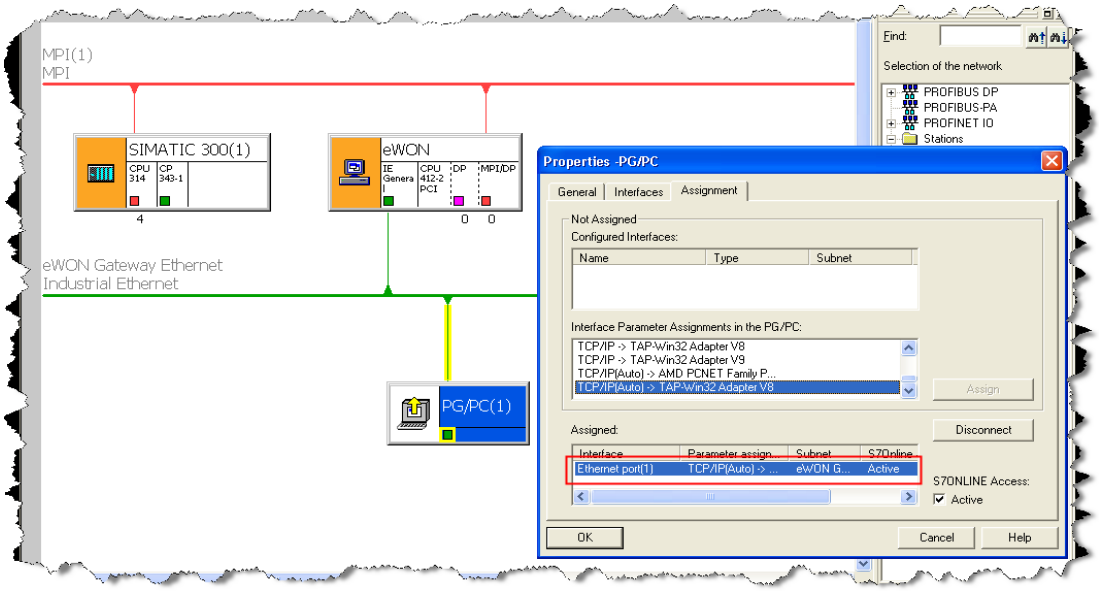
In the ***Interface Parameter Assignments in the PG/PC*** select the TCP/IP interface you are using to connect to the Ethernet. In our example it is **TCP/IP(Auto),** needs to be consistent with point 3 above. Click the **Assign** button.

Note: *in some cases, the message shown on the right may be displayed:*

You can Ignore this message and click ***OK.***

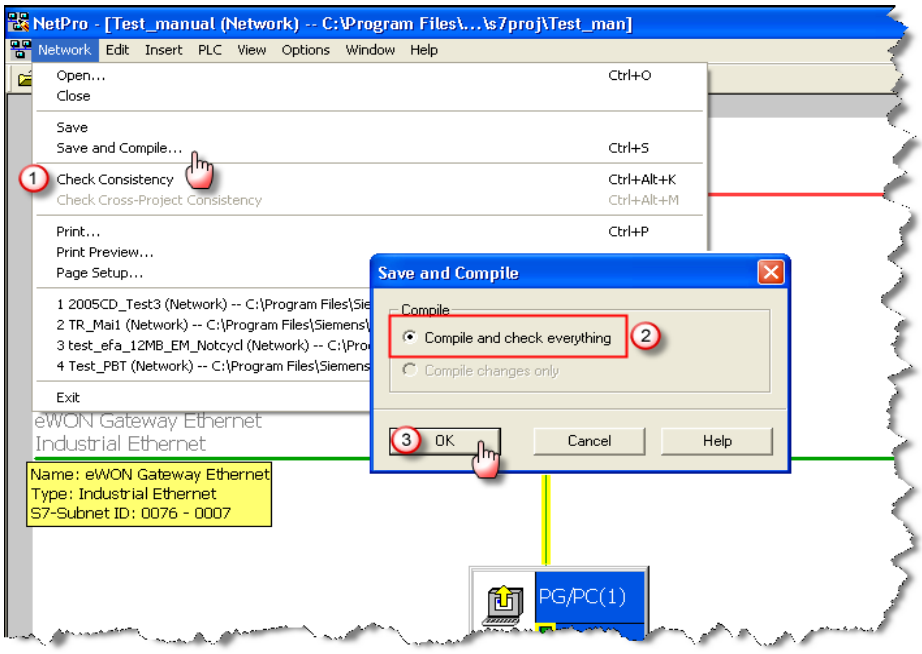


21. Verify that the **Assigned** Interface is the Ethernet card and click **OK**. Your network layout is now looking like this:



Note: *The yellow link on top of the PG/PC shows that this object will be used to go out on the network. The orange background behind the other objects are meant to warn the user that his last changes have not been saved and compiled yet.*

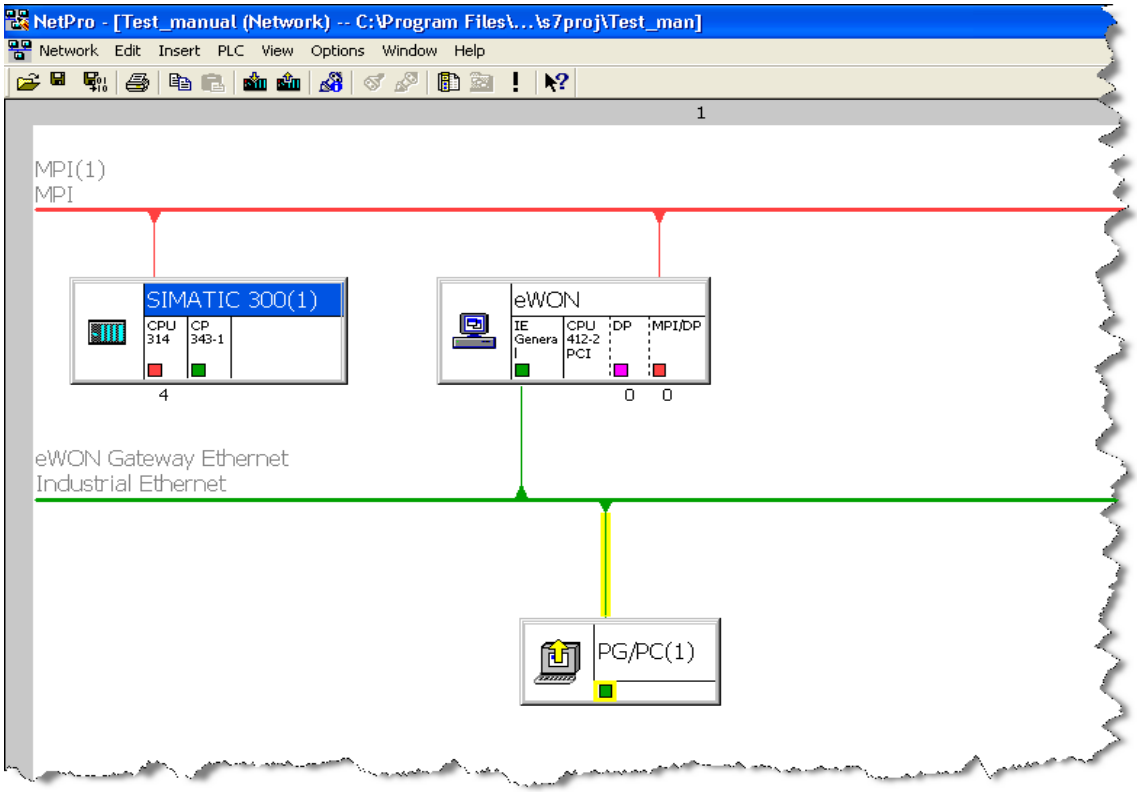
22. You will now have to compile and save the network layout of your project. This is achieved by following the ***Network*** → ***Save and Compile...*** path in NetPro.



23. Select ***Compile and check everything*** if you want to have NetPro reporting errors (recommended if this is your first experience). You can select ***Compile changes only*** if you feel confident that everything is alright. Click ***OK***.

24. After compilation a popup will be displayed to inform you if the compilation was done with success or not. ***Warning*** messages are informative only and may usually be discarded. Only ***error*** messages reflect real network configuration problems.

25. The network layout of your project should now looks like this:

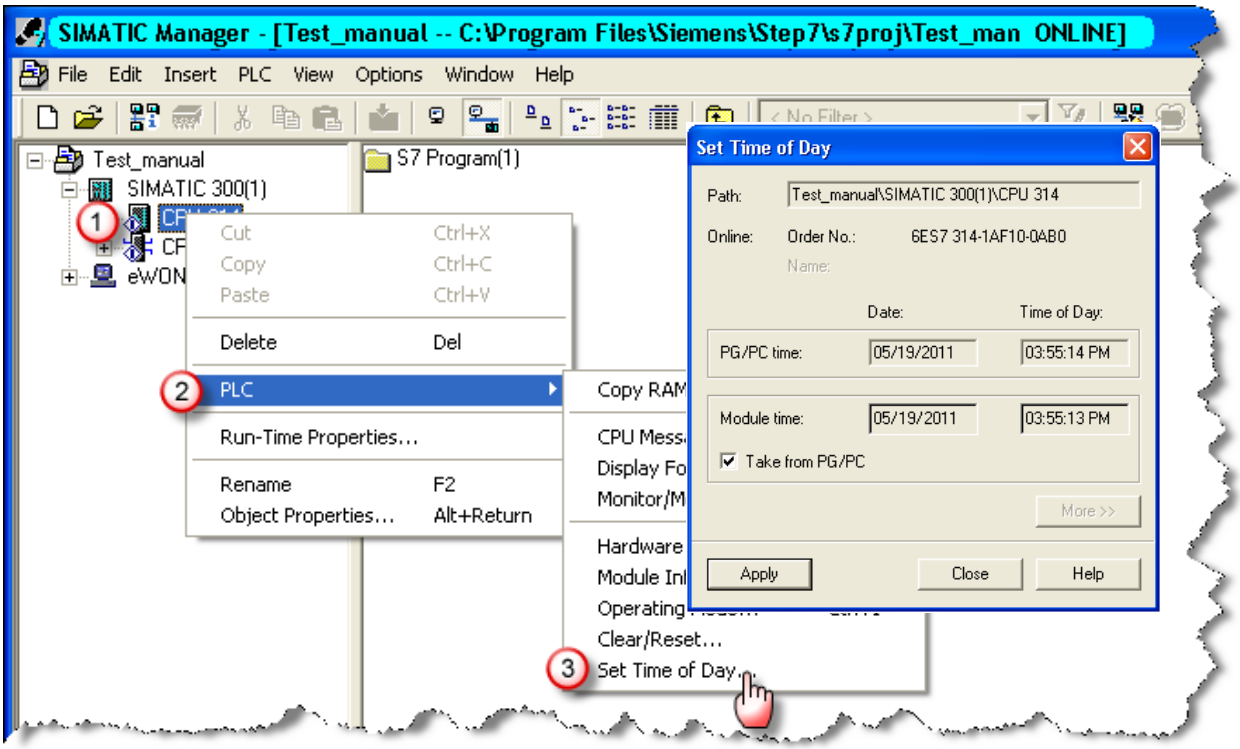


26. You can close the NetPro window

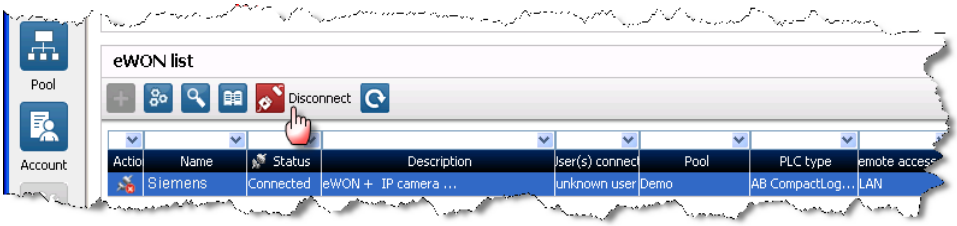
27. End of PLC software mapping configuration

6. Accessing your PLC through SIMATIC STEP7®

1. Establish the Talk2M VPN tunnel towards the eWON using eCatcher
2. Start SIMATIC STEP7®
3. Open your project and make sure you can connect with the PLC by running one of the tasks requiring communication like for example, right click on the CPU in the object tree, select ***PLC*** > ***Set Time of Day.***



4. Now you can check that the actual date/time returned by the PLC internal clock. (under ***Module time***). If the connection is OK, this date/time should be incrementing.
5. Your setup is now connected and ready to work in remote programming mode.
6. Once you finished your work with SIMATIC STEP7®:
   - terminate the SIMATIC Step7® connection through ***View*** > ***Offline*** and close the application.
   - Close the Talk2M connection (VPN tunnel) by clicking ***Disconnect*** in eCatcher.



Note: If the eWON is connected to the Internet using a GPRS/Edge modem, you may want to disconnect it to save connection costs. To close the line, you have to use the ***Go offline*** button which is displayed on the context menu when you right-click the eWON in the eWON list.

7. End of Accessing your PLC through SIMATIC STEP7®

Revision history

Revision Level	Date	Description
1.0	08/09/11	First issue
1.1	15/12/16	Added “PLC Discovery” to Chapter 5

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Document build number: *10*