Application Note
Siemens PLC and SIMATIC S7

This document guides you through the setup of proprietary vendor specific software installed on you PC. Your supervisor may provide you with additional or alternative instructions.

The document consists of standard instructions that may not fit your particular solution. Please visit our support website for latest revisions of documentation and firmware:

http://www.secomea.com

Version: 2.1, May 2010

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1. Prerequisite for this guide

The following guide will assist you to setup a remote and online connection to the Siemens PLC equipment placed on the customer site using your Siemens SIMATIC S7 PLC programming software installed on you PC.

Prerequisites for this guide are:

- You have an operational LinkManager installed on your PC with a Gatemanager certificate that allows you to connect to the SiteManager agents.
- You have the Siemens software installed.
- You have the Siemens device agent installed and configured on the SiteManager at the remote site, and there is access between the SiteManager and the Siemens PLC. (A Serial attached PLC must be configured with agent device type **Siemens/Serial** on the SiteManager. A network attached PLC must be configured with agent device type **Siemens/Ethernet** on the SiteManager).

If this is not the case, we kindly ask you to contact the person / department responsible within your own company or at the company responsible hereof.

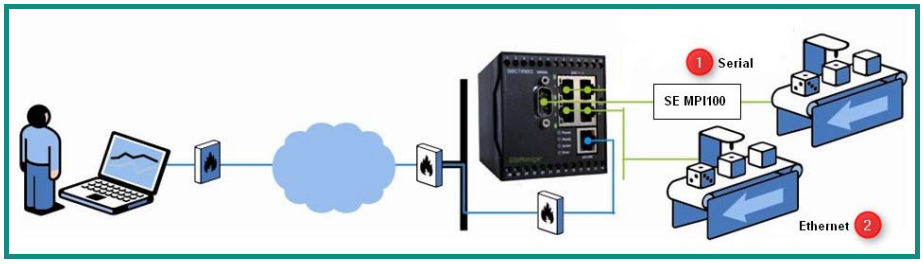
System overview

The communication path is as follows:

Siemens PLC software → LinkManager → GateManager → SiteManager → Siemens PLC.

This guide will elaborate on the components marked with **bold.**

The following system overview depicts a SiteManager 3034/3134 at the customer location:



This guide will discuss the following specific setups:

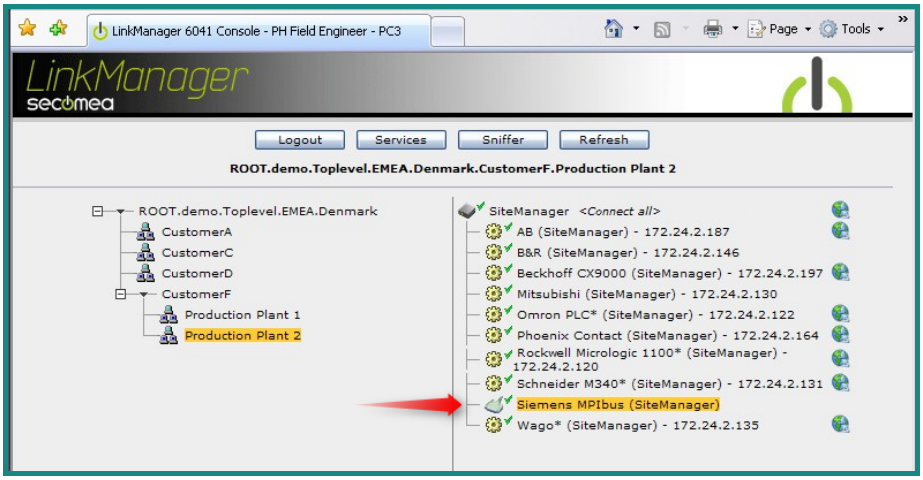
1. Serial connected PLC accessed by Siemens SIMATIC installed on standard WindowsXP
2. Network connected PLC accessed by Siemens SIMATIC installed on standard WindowsXP
3. Serial connected PLC accessed by Siemens SIMATIC installed on WindowsXP **running in a VMWare virtual engine**.
4. Network connected PLC accessed by Siemens SIMATIC installed on WindowsXP **running in a VMWare virtual engine.**

2. Serial connection via standard Windows XP

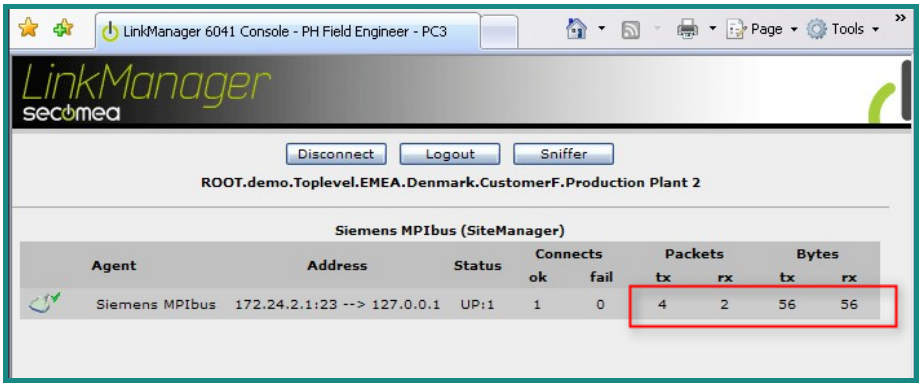
The following describes how to connect to the SIMATIC program, to a Siemens PLC that is attached to a SiteManager via a SE MPI100 Serial adapter (Secomea part number 26864).

The following illustrates VMWare Player, which can be downloaded from http://www.vmware.com/support/product-support/player/

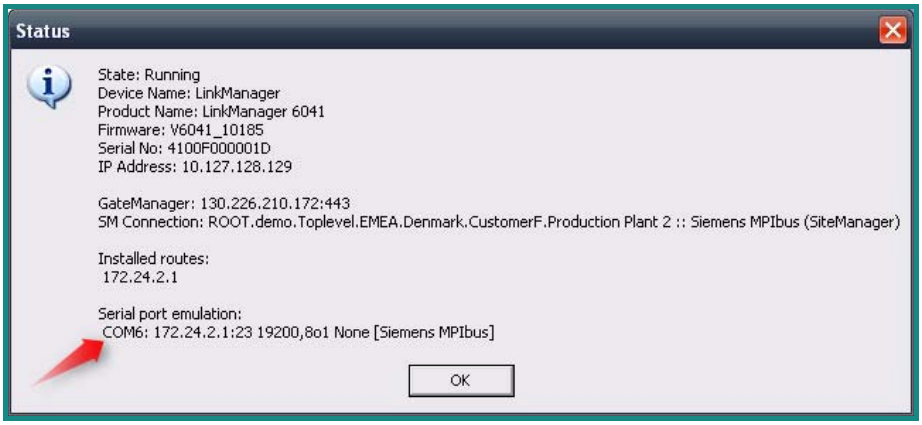
1. Locate the agent that represents you Serial Siemens PLC.



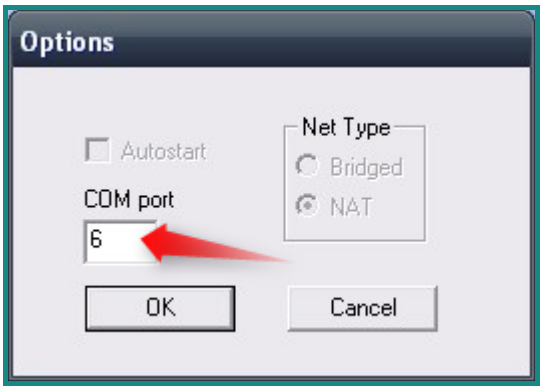
2. When connecting the agent, you should see some activity in the tray icon area, which is the auto configuring of a virtual serial port. If your SiteManager, MPI100 and the Siemens PLC is correctly attached, you should also see the status of the agent become OK, and a few bytes of traffic:



3. Now right click the LinkManager system tray Icon, and select **Status**. Make note of the Serial port that has been assigned (in this case COM6):

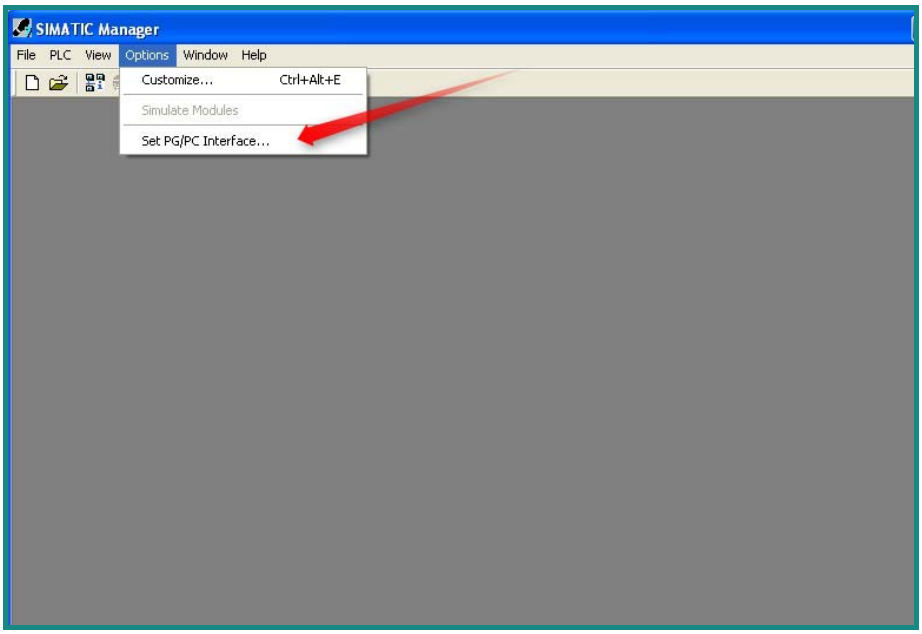


4. Right click the LinkManager system tray icon again, and select **Options**. Enter the number of the COM port you found under status. This will ensure that you will always get this port in the future (note that this feature only exist in Link-Manager version v6041_10185 and newer).

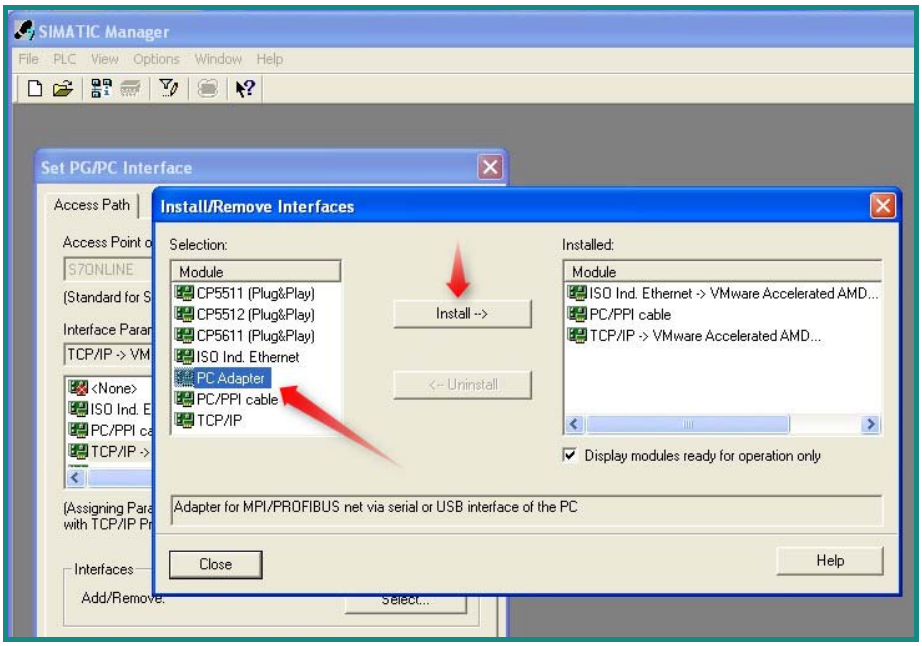


Note: You can also force another COM port (e.g. COM2). Just ensure in your Windows device manager, that the port is not conflicting with an existing COM port. See Appendix A for info on how to organize COM ports.

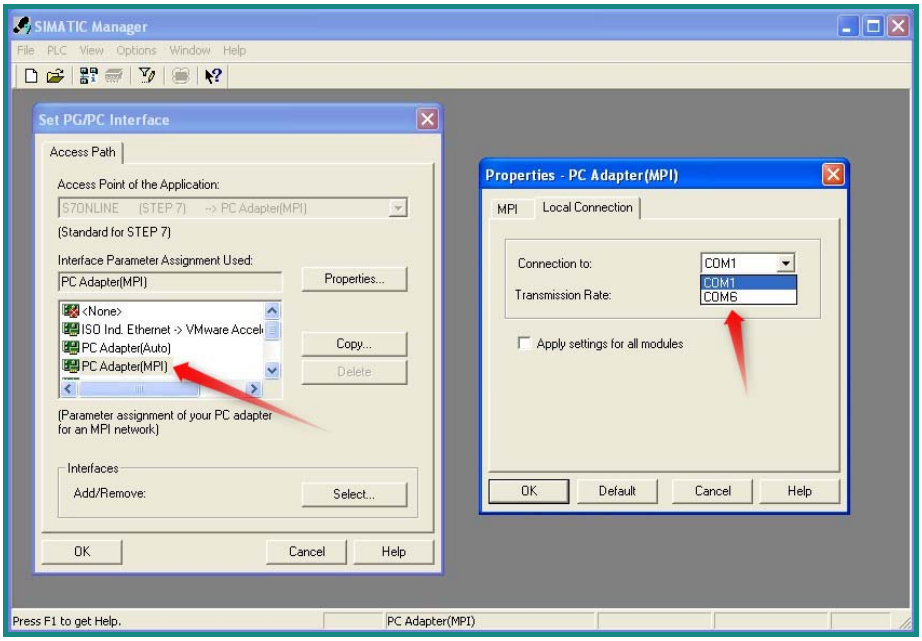
5. In the SIMATIC program, select **Options → Set PG/PC interface**:



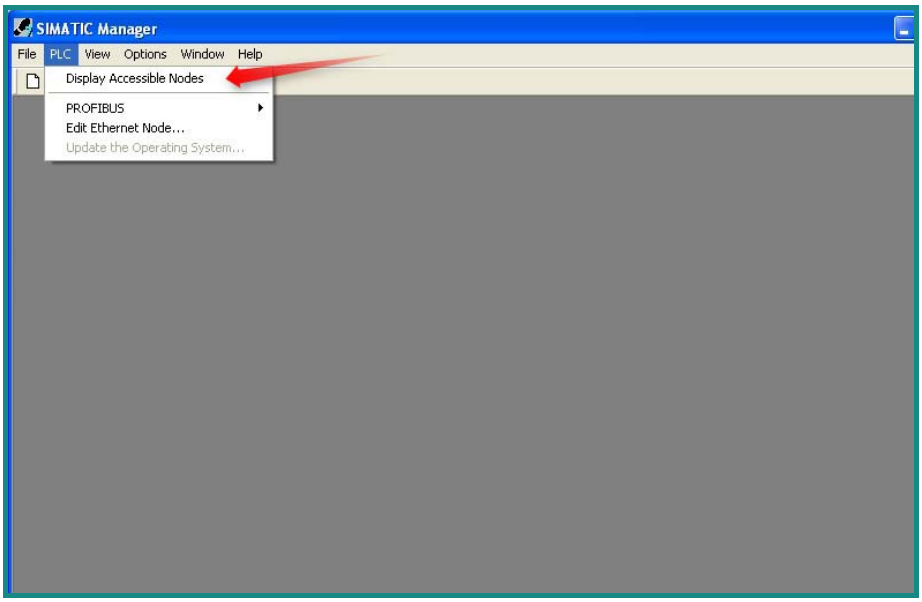
6. Select **PC Adapter(MPI)**, If you do not see this adapter in the list, click **Select** and install the PC Adapter:



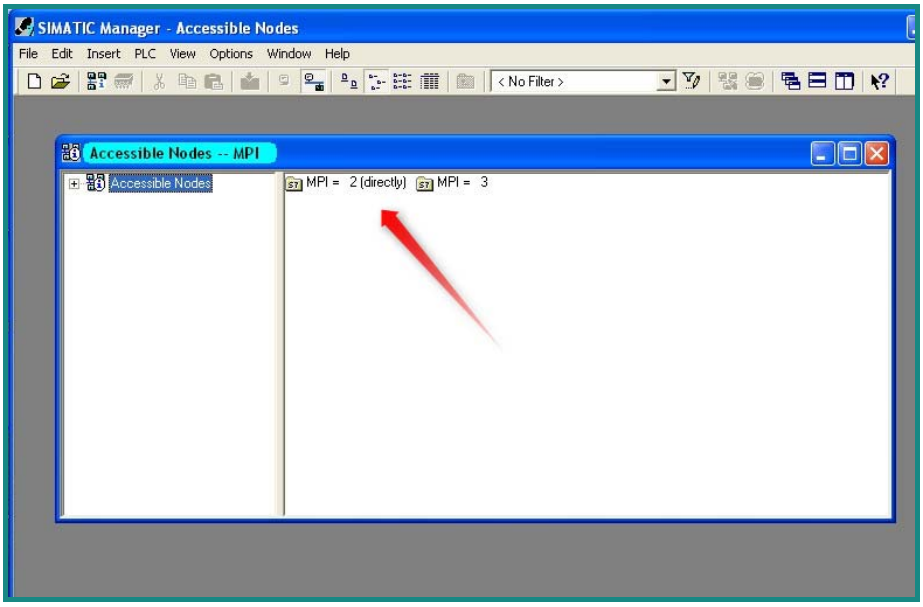
7. For the **PC Adapter(MPI)**, select properties and select the COM port you found on the LinkManager Status screen. (Make sure that “Apply settings for all modules” is NOT checked)



8. In the SIMATIC software select **PLC → Display Accessible Nodes**



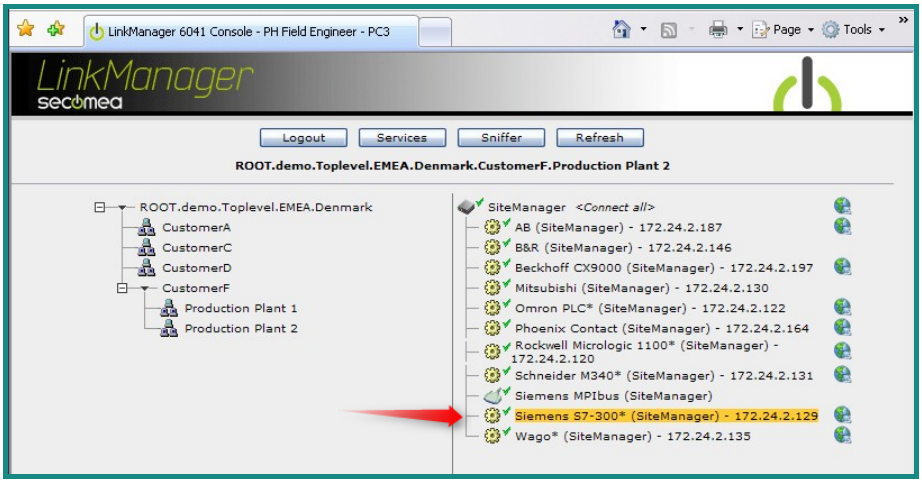
9. If the SIMATIC software displays some accessible MPI nodes, you have configured everything correctly, and you should be able to start a project and communicate with the PLC.



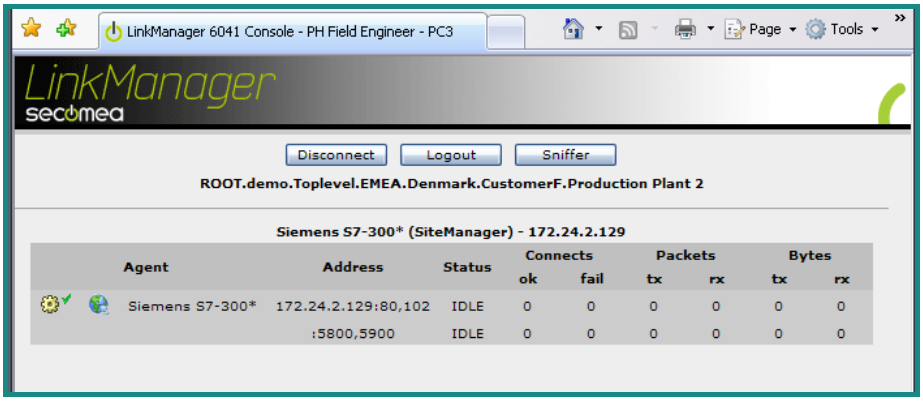
3. TCP/IP access via standard Windows XP

The following describes how to connect to the SIMATIC program to a Siemens PLC that is attached to a SiteManager via Ethernet.

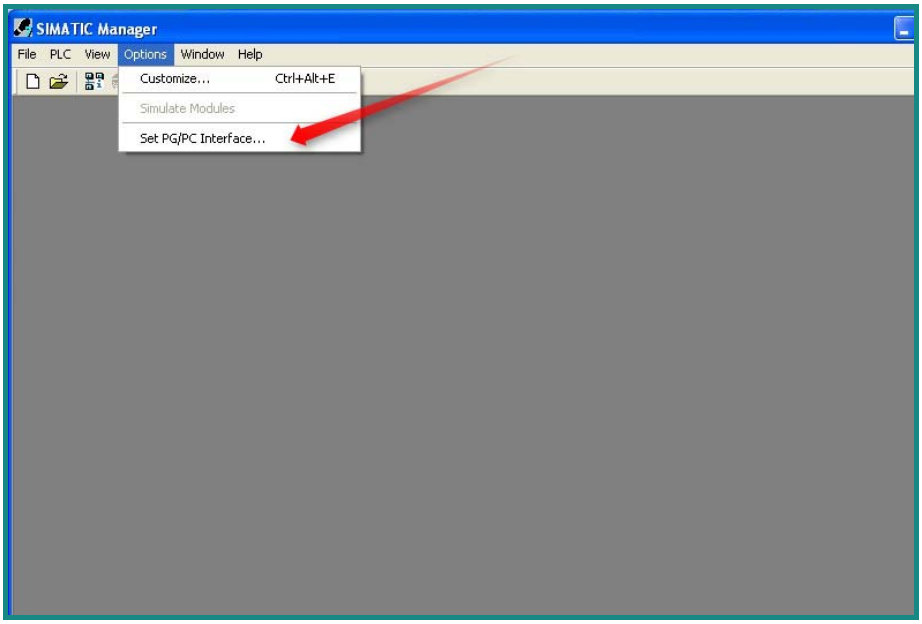
1. Locate the agent that represents you TCPI/IP attached Siemens PLC



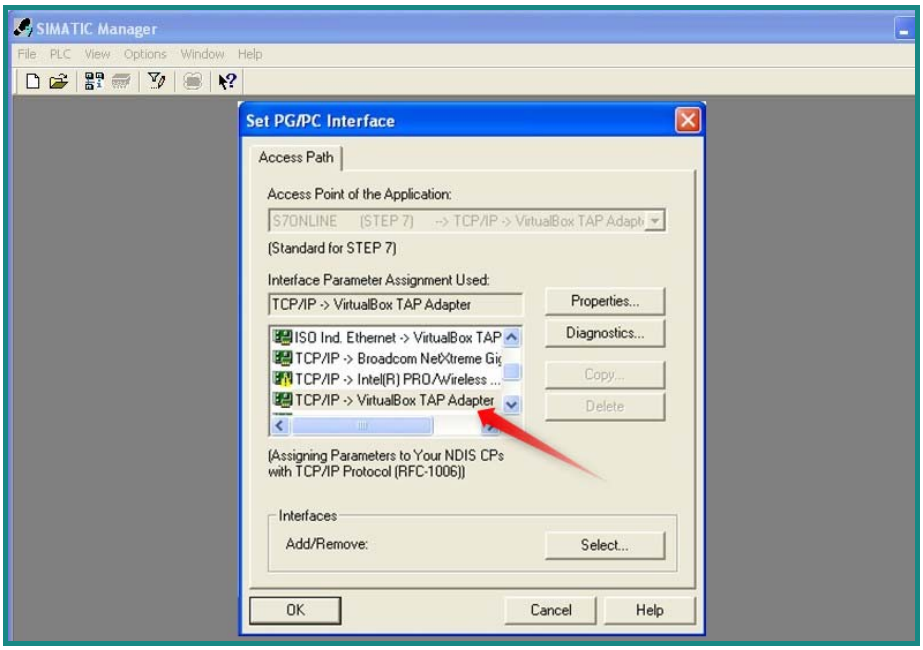
2. You will not see any activity on it yet. This only starts when you connect to the PLC via your project:



3. Start the SIMATIC software and select **Options → Set PG/PC Interface**:



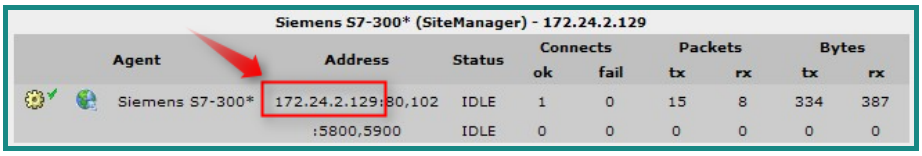
4. Select **TCP/IP -> VirtualBox TAP Adapter:**

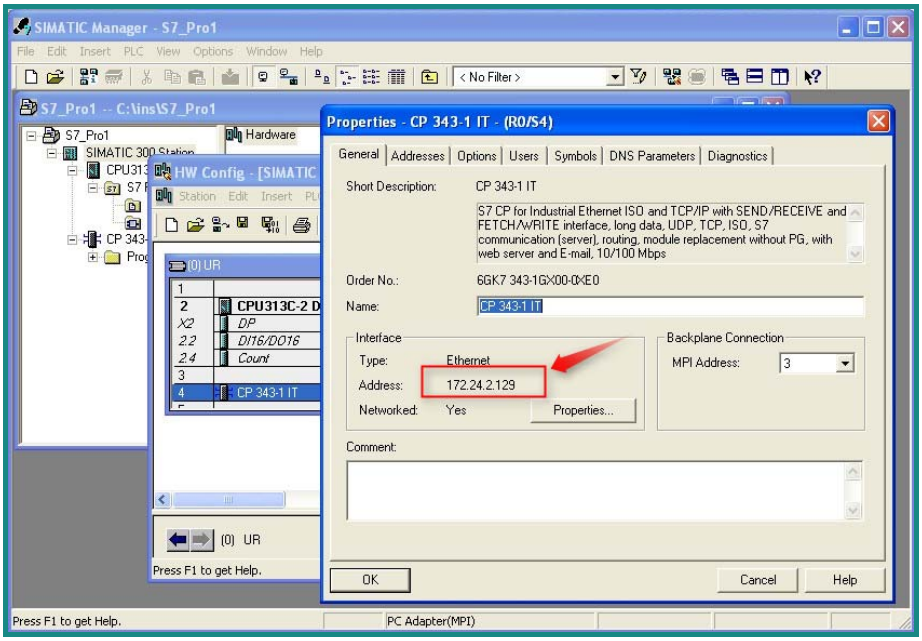


5. Press **OK** to save.

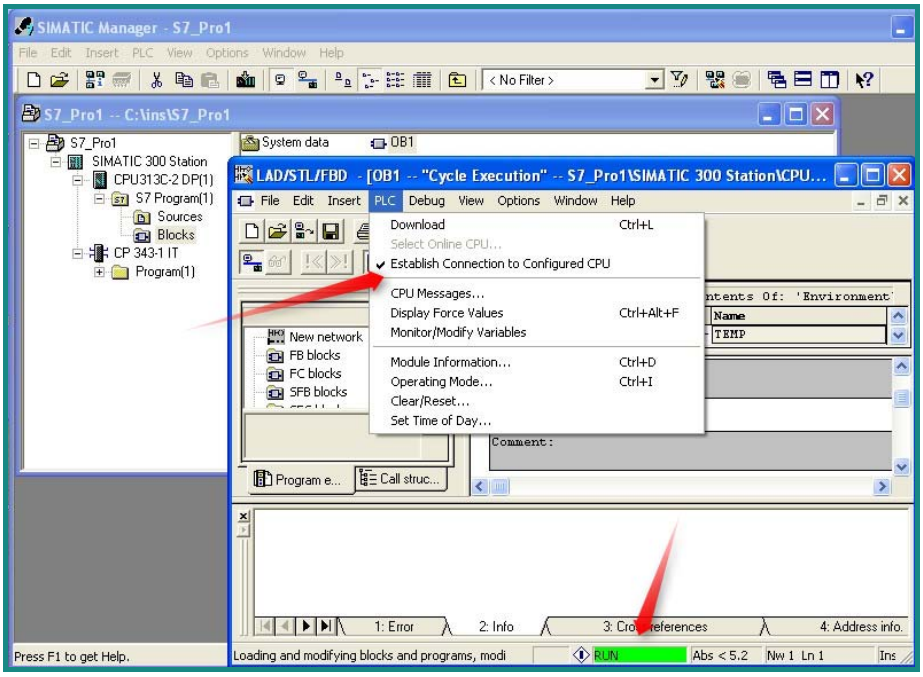
   NOTE: The LinkManager does not allow SIMATIC to scan for network attached devices. Therefore you will NOT see the PLC under the menu **PLC → Display Accessible Nodes.** Neither will you see any activity on the LinkManager before you access it with a project where the PLC's specific IP address is configured.

6. Open your project, and make sure your project have the IP address configured to match the address of the LinkManager agent.





7. In the project select **PLC → Establish Connection to Configured CPU**. You should see the green RUN indication at the bottom..



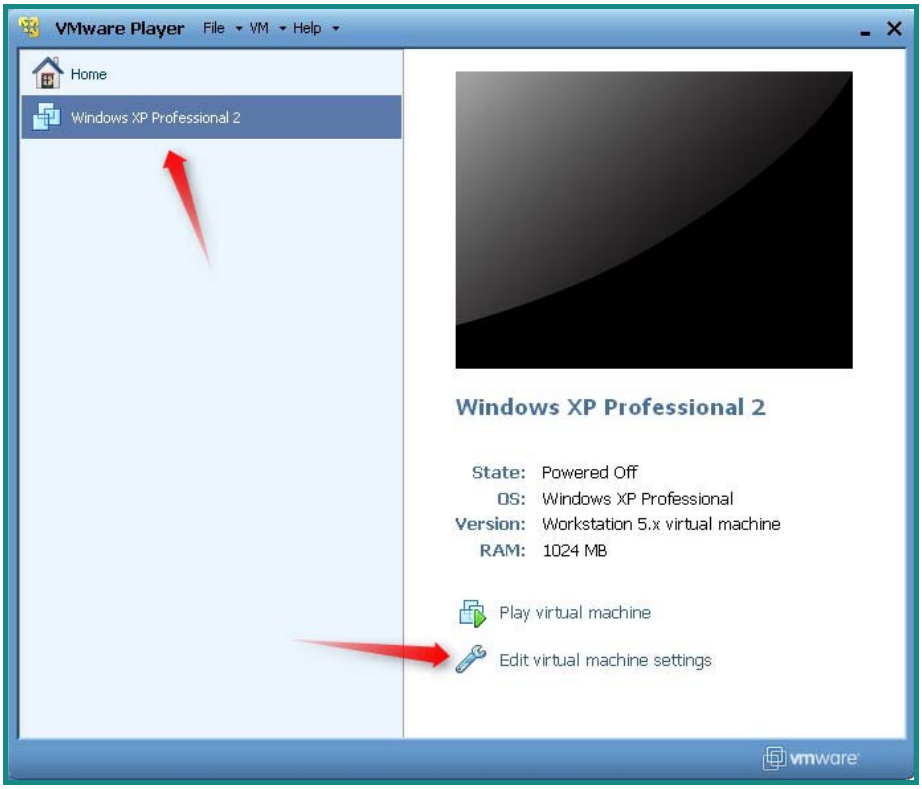
4. Serial connection via WindowsXP under VMWare

The following describes how to connect the SIMATIC program running inside a VMWare engine, to a Siemens PLC that is attached to a SiteManager via a SE MPI100 Serial adapter (Secomea part number 26864)

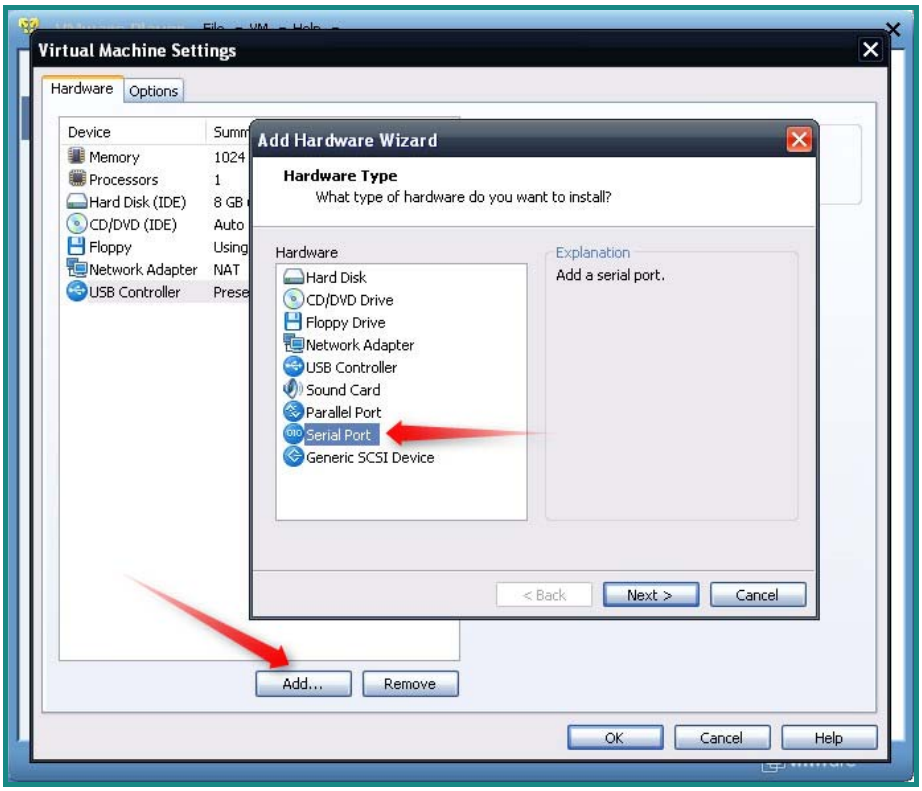
Note: LinkManager must be installed on the hosting machine - and NOT inside the VMWare Windows XP image. LinkManager can not run inside a virtual machine.

The following illustrates VMWare Player, which can be downloaded free of charge from http://www.vmware.com/support/product-support/player/

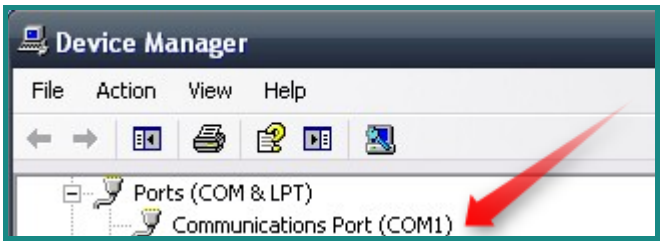
10. Locate your WindowsXP that has SIMATIC installed, and enter **Edit virtual machine settings.**



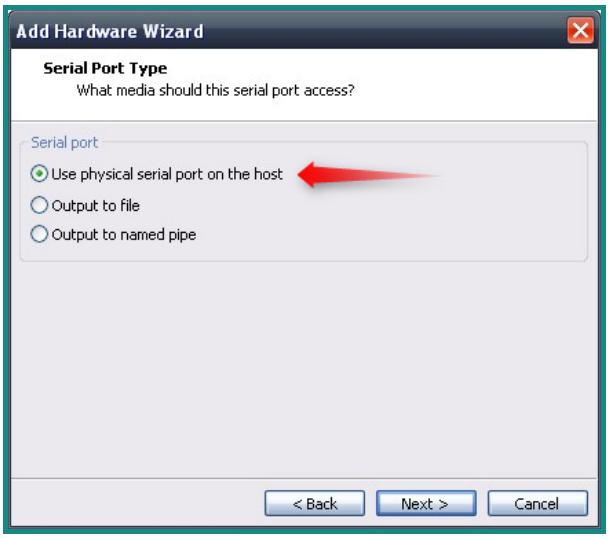
11. Make sure there is a Serial Port available in the hardware list. If not, you should add it.



Note: The PC you are installing on must have a physical COM port available for VMWare to allow adding a Serial Port. You can verify if you have a Serial port on your PC, under Windows Control Panel → System → Hardware → Device Manager → Ports (COM & LPT).
On Windows 7 it is possible to add a COM port under the device manager even though the PC does not have a physical COM port available.



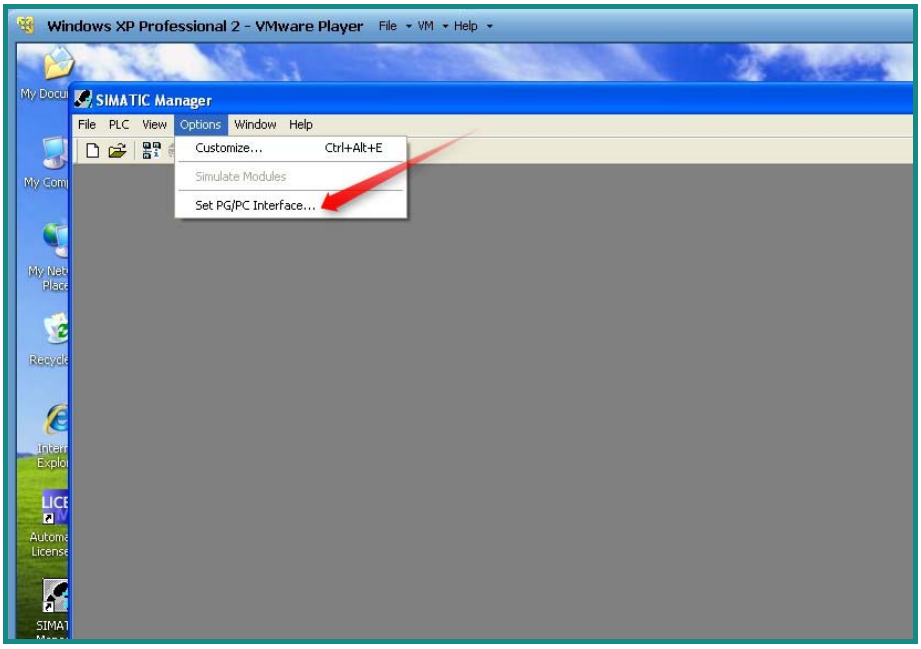
12. Check that it is set to use physical serial port on the host.



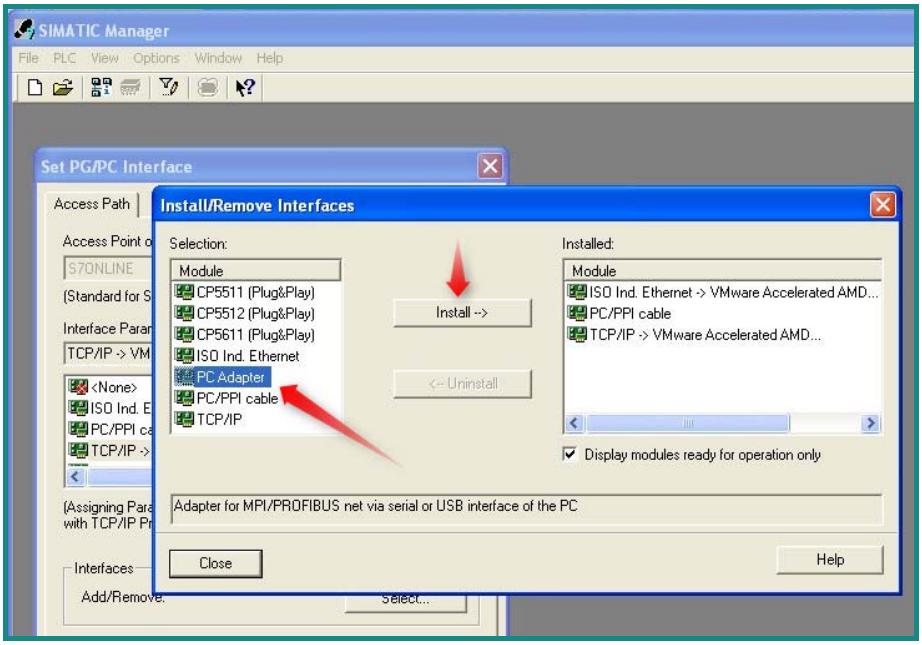
13. Click **Next**. If you have not started the LinkManager, you will probably only have COM1 and maybe COM2 available. This does not matter for now, as you can change that when the VMWare image is running.

14. Press **OK** twice, and select the Select **Finish** and **OK**, Start the VMWare WindowsXP image, and start the SIMATIC software.

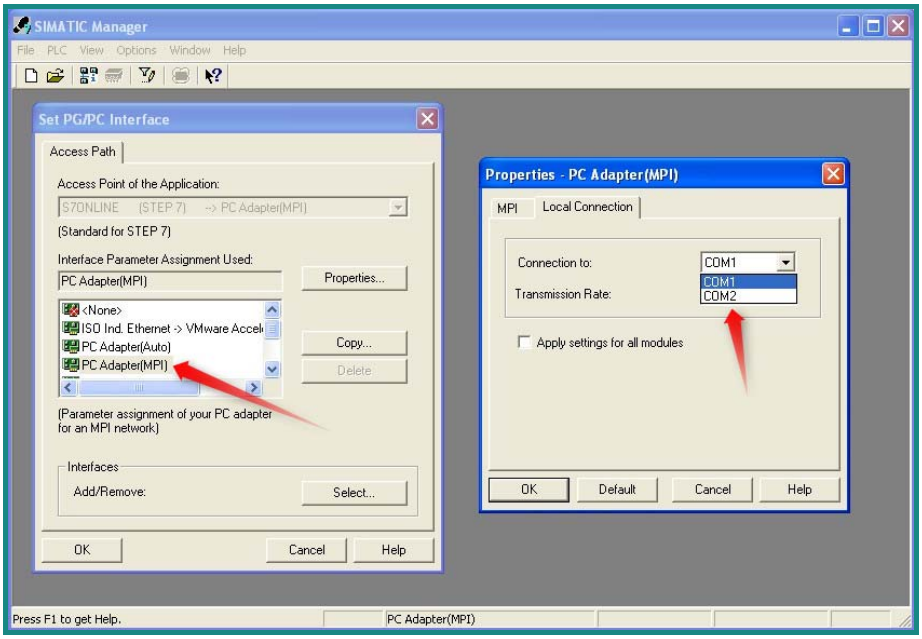
15. In the SIMATIC program, select **Options → Set PG/PC interface**:



16. Select **PC Adapter(MPI)**, If you do not see this adapter in the list, click **Select** and install the PC Adapter:



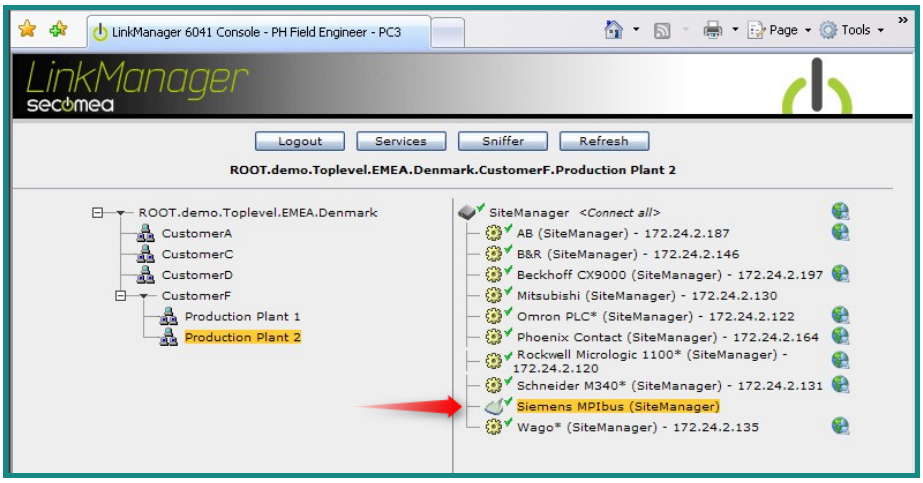
17. For the **PC Adapter(MPI)**, select properties and select **COM1** (This selection is the virtual COM port inside the VMWare engine, and not on your physical PC)



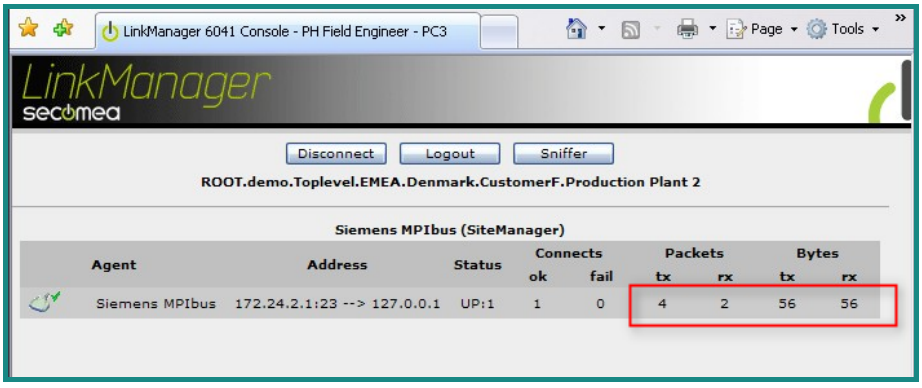
18. Although you have now set up SIMATIC to use COM1, this port is not yet associated to the LinkManager, so clicking **PLC → Display accessible nodes**, will generate an error saying that the adapter is damaged.

    So now start the LinkManager, right click the LinkManager system tray icon and select **Console**.

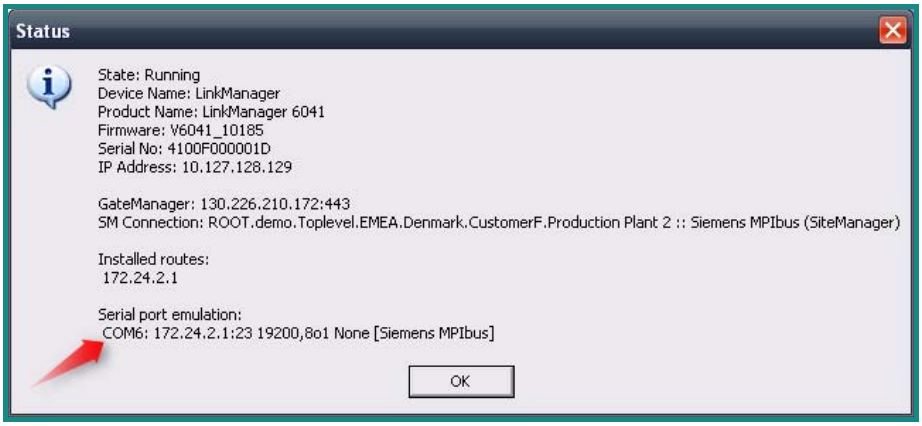
19. Locate the agent that represents you Serial Siemens PLC.



20. When connecting the agent, you should see some activity in the system tray area, which is LinkManager auto configuring a virtual serial port. If your Site-Manager, MPI100 and the Siemens PLC is correctly attached, you should also see the status of the Agent being OK, and a few bytes of traffic:



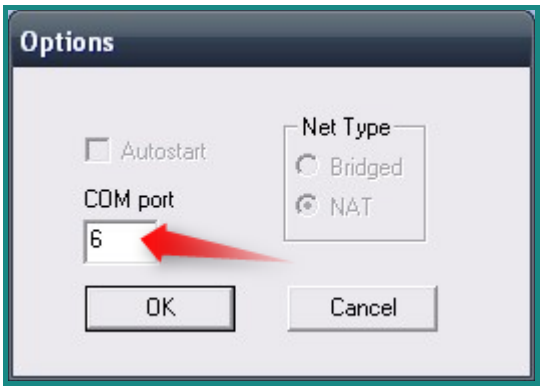
21. Now right click the LinkManager system tray icon, and select **Status**. Make note of the Serial port that has been assigned (in this case COM6):



22. Right click the LinkManager system tray icon again, and select **Options**. Enter the number of the COM port you found under status. This will ensure that you will always get this port in the future (note that this feature only exist in Link-Manager version v6041_10185 and newer)

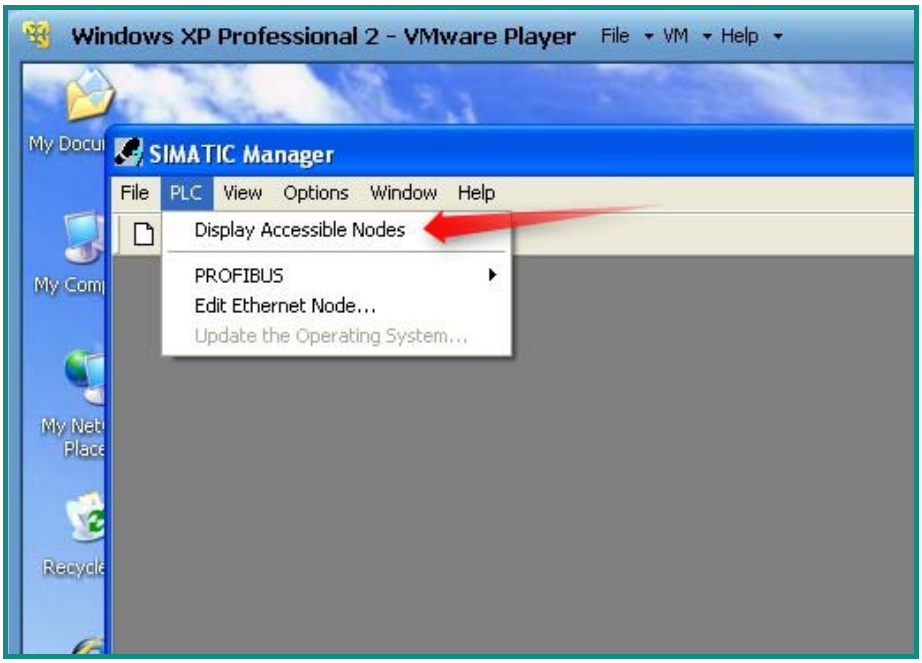
    Note: You can also force another COM port (e.g. COM2). Just ensure in your

Windows device manager, that the port is not conflicting with an existing COM port. See Appendix A for info on how to organize COM ports.

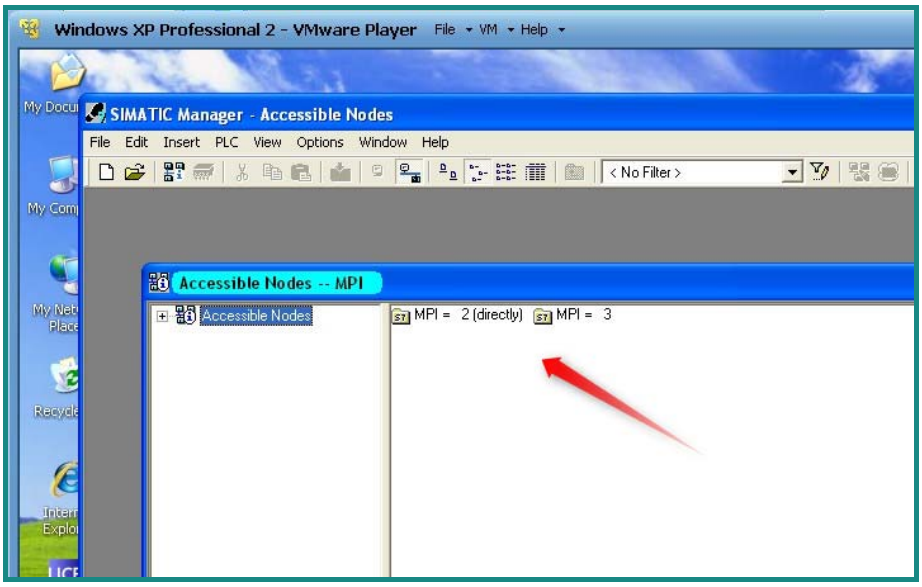


23. In the VMWare top bar of your running VMWare XP engine, select **VM → Settings**. Enter the **Serial Port** settings and set the physical serial port, to the value you just found in the LinkManager status.

24. In the SIMATIC software select **PLC → Display Accessible Nodes**



25. If the SIMATIC software displays some accessible MPI nodes, you have configured everything correctly, and you should be able to communicate with the PLC from your project.


Windows XP Professional 2 - VMware Player
File
VM
Help
SIMATIC Manager - Accessible Nodes
File
Edit
Insert
PLC
View
Options
Window
Help
< No Filter >
Accessible Nodes -- MPI
Accessible Nodes
MPI = 2 (directly)
MPI = 3

5. TCP/IP connection via WindowsXP under VMWare

The following describes how to connect the SIMATIC program running under VMWare, to a Siemens PLC that is attached to a SiteManager via Ethernet.

Note: LinkManager must be installed on the hosting machine,- and NOT inside the VMWare Windows XP image. LinkManager can not run inside a virtual machine.

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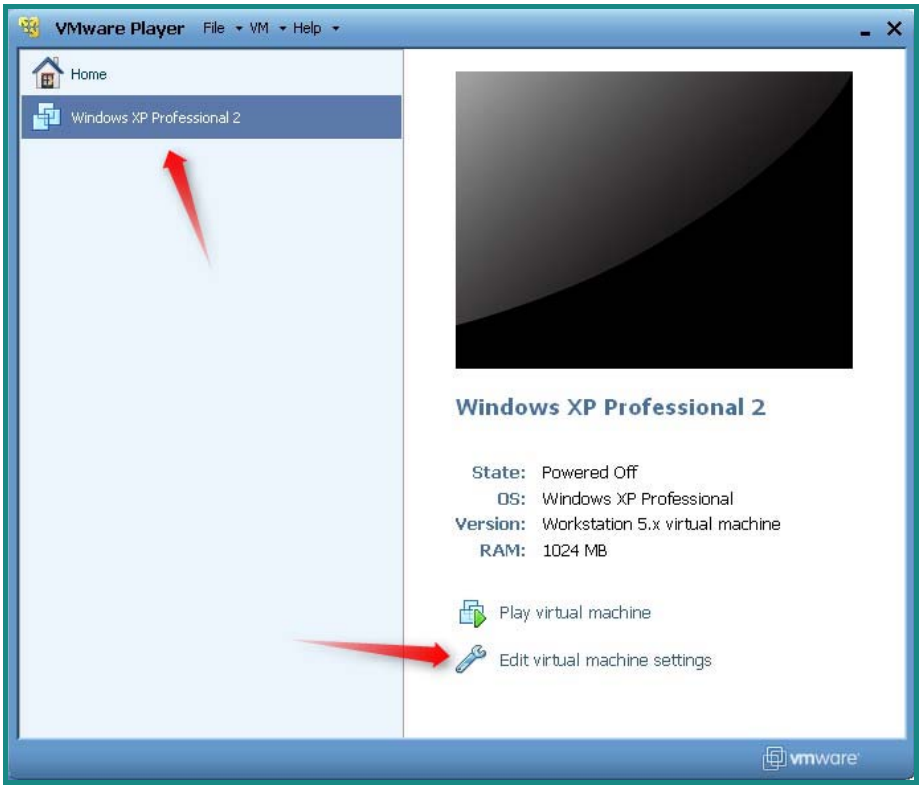
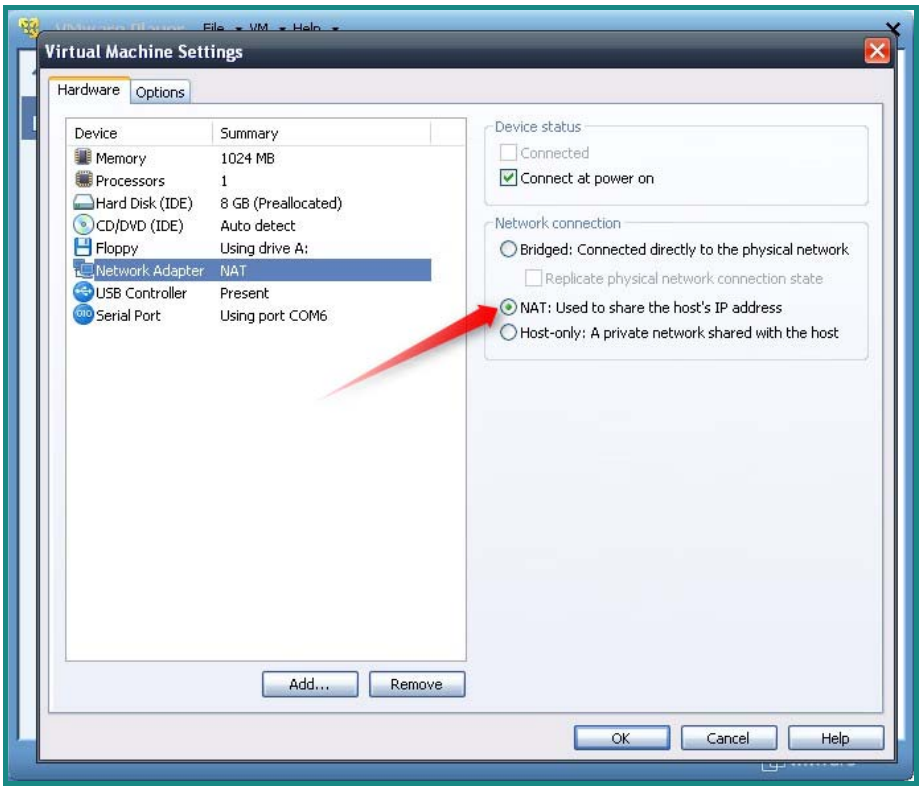
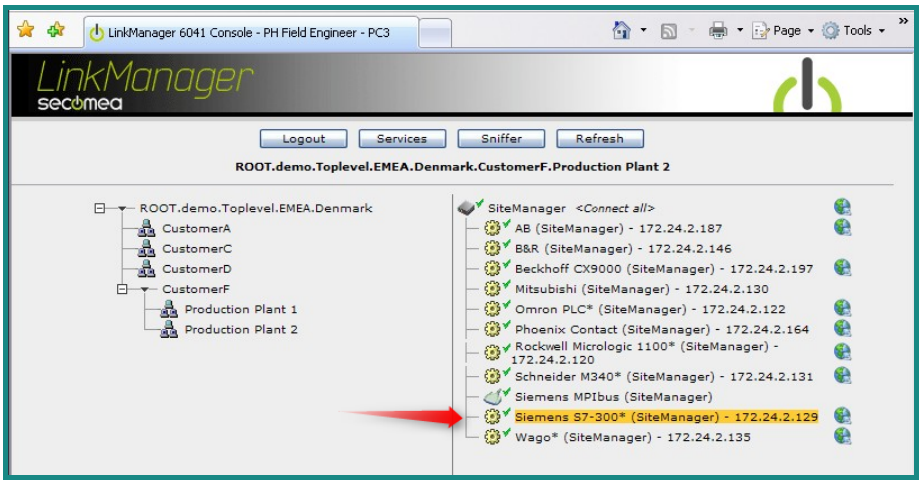
8. Locate your WindowsXP that has SIMATIC installed, and enter **Edit virtual machine settings.**



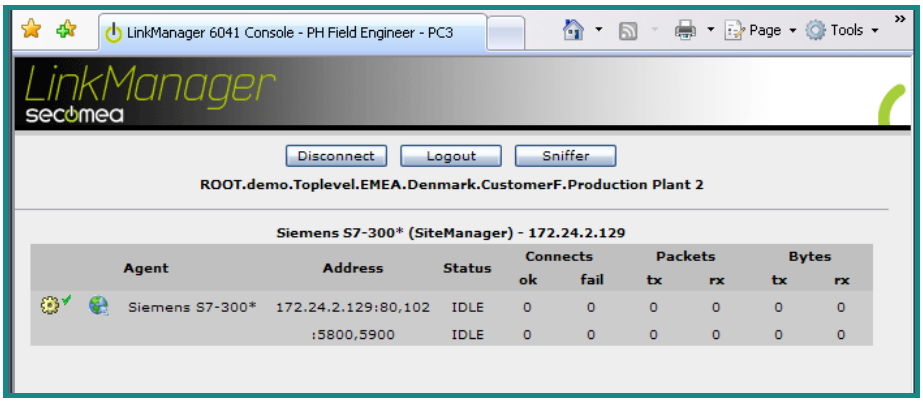
9. Make sure the Network Adapter settings is set to **NAT:**



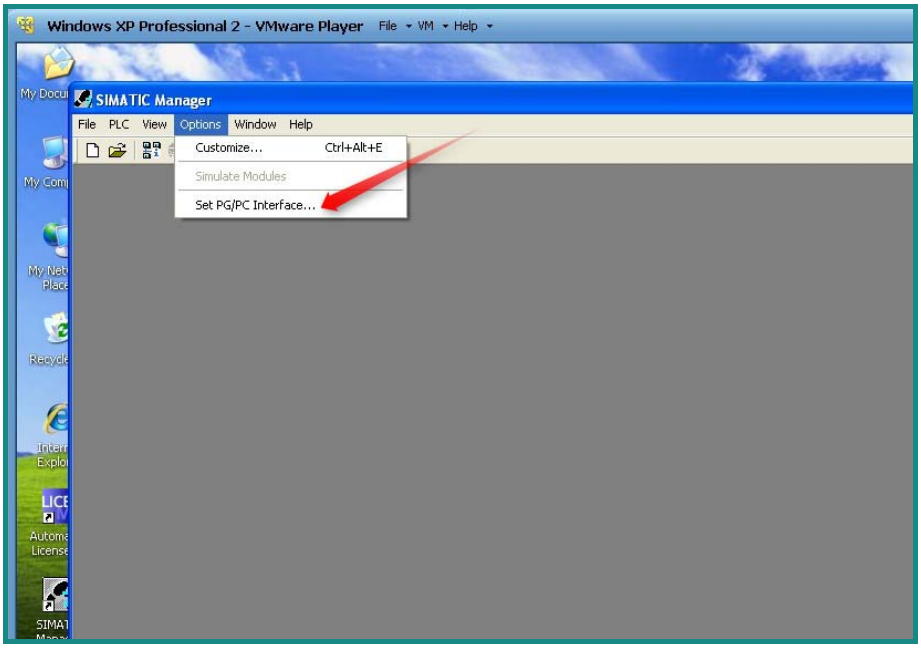
10. Locate the agent that represents you TCPI/IP attached Siemens PLC.



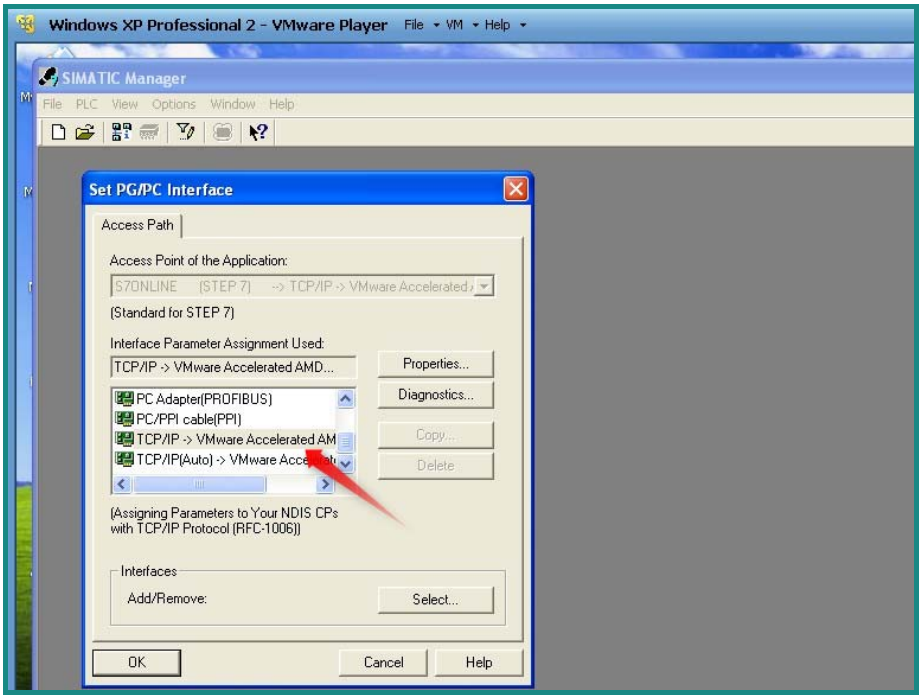
11. You will not see any activity on it yet. This will only start when you connect to the PLC from within your project.



12. Start the VMWare engine, start the SIMATIC software and select **Options → Set PG/PC Interface**:



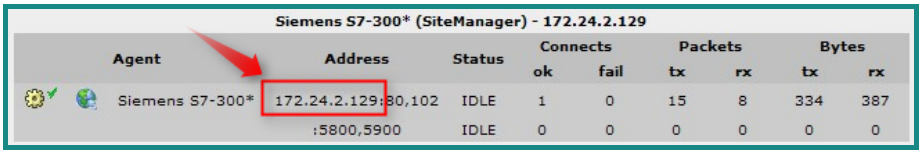
13. Select **TCP/IP -> VMWare Accelerated …** Do NOT select TCP/IP[Auto].

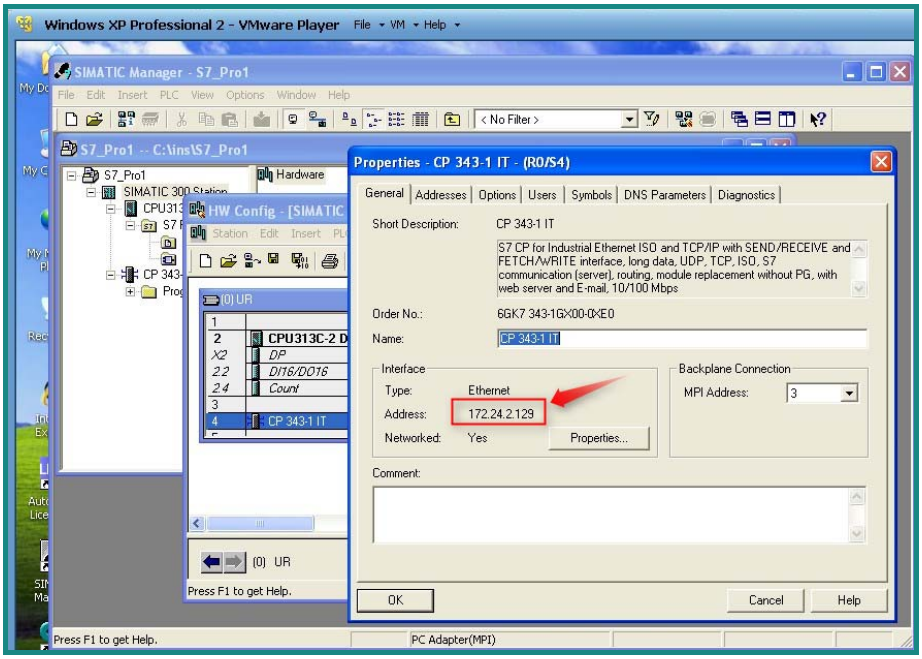


14. Press **OK** to save

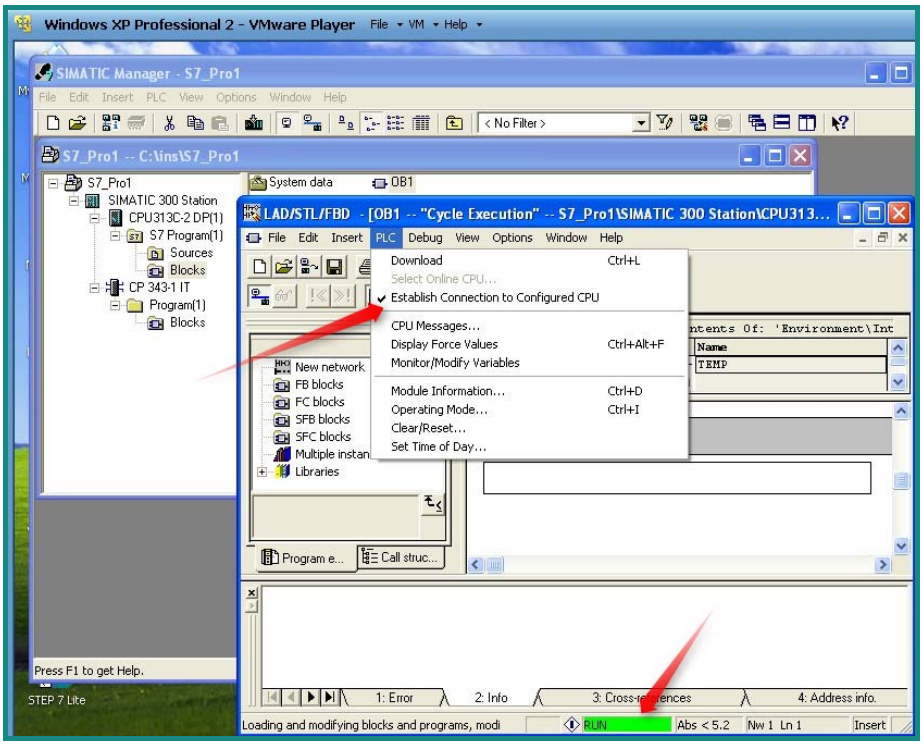
    NOTE: The LinkManager does not allow SIMATIC to scan for network attached devices. Therefore you will not see the PLC under the menu **PLC → Display Accessible Nodes**. You will not see any activity on the LinkManager before you access it with a project where the PLC's specific IP address is configured.

15. Open your project, and make sure your project have the IP address configured to match the address of the LinkManager agent.





16. In the project select **PLC → Establish Connection to Configured CPU**. You should see the green RUN indication at the bottom.



6. Appendix A, Organizing COM ports in Windows

Clean up Windows Registry for redundant COM ports:

We have experienced that some versions of the Siemens software require a COM port number less than 7. In case your PC assigns a COM port of e.g. 13, it may be due to previous installs of virtual COM ports from in relation to installation of other programs.

You can clean your PC for redundant COM ports in Windows registry:

1. Open regedit (Start → run → Regedit)
2. Navigate to:

   HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\COM Name arbiter
3. In the ComDB set all values to 00
4. Restart your PC

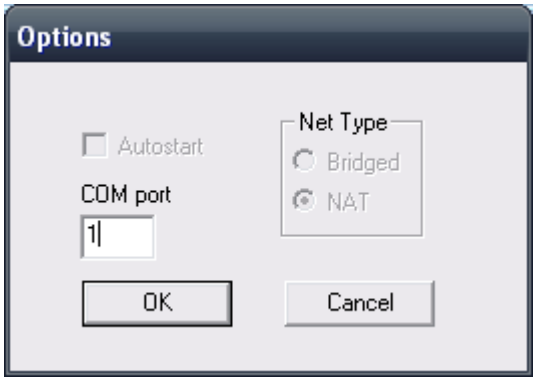
Enable LinkManager to use COM1:

Some Siemenns programs (such as the “Flexible Transfer Tool”) require the COM port to be COM1.

Even if no COM ports are installed on the PC, Windows will never assign a COM port lower than COM3 to the LinkManager. You therefore have to do the following to force LinkManager to use COM1:

1. Open Windows Control Panel → System → Hardware → Device Manager → Ports (COM & LPT).
2. If there already are physical COM ports listed, you must re-assign the port numbers to free up COM1.

   Right click a COM port and select Properties → Port Settings → advanced
3. Change the COM port number in the drop down list.
4. Restart your PC.
5. Right click the LinkManager system tray icon and select Options.
6. Enter 1 in the COM port field.



7. Stop and Start the LinkManager and start the Serial agent.

7. Notices

Publication and copyright

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