

Contents

- 1 Description 2**
- 2 Initial setup..... 3**
 - 2.1 Setup of remote PLC3
 - 2.2 Setup of remote PC4
 - 2.3 Setup of PG6
- 3 Connecting and use with STEP7..... 7**
 - 3.1 Connecting Teamviewer VPN.7
 - 3.2 Connecting STEP79

1 Description

Teamviewer is a software solution for remotely observing or controlling PCs. It is typically used for remote support from a suppliers home office to a customers remote location.

By using the additional VPN functionality with Teamviewer, it is possible to reach out to further connected devices at the customers location. For example PLCs and operator panels.

This guide describes how to program a Siemens S7 CPU remotely via Teamviewer VPN.

Below is a general description of the setup:

Programming PC (hereafter known as the “PG”) at the location of the person that must access the PLC site remotely.

The PG is connected to the internet, typically via the company office-LAN.

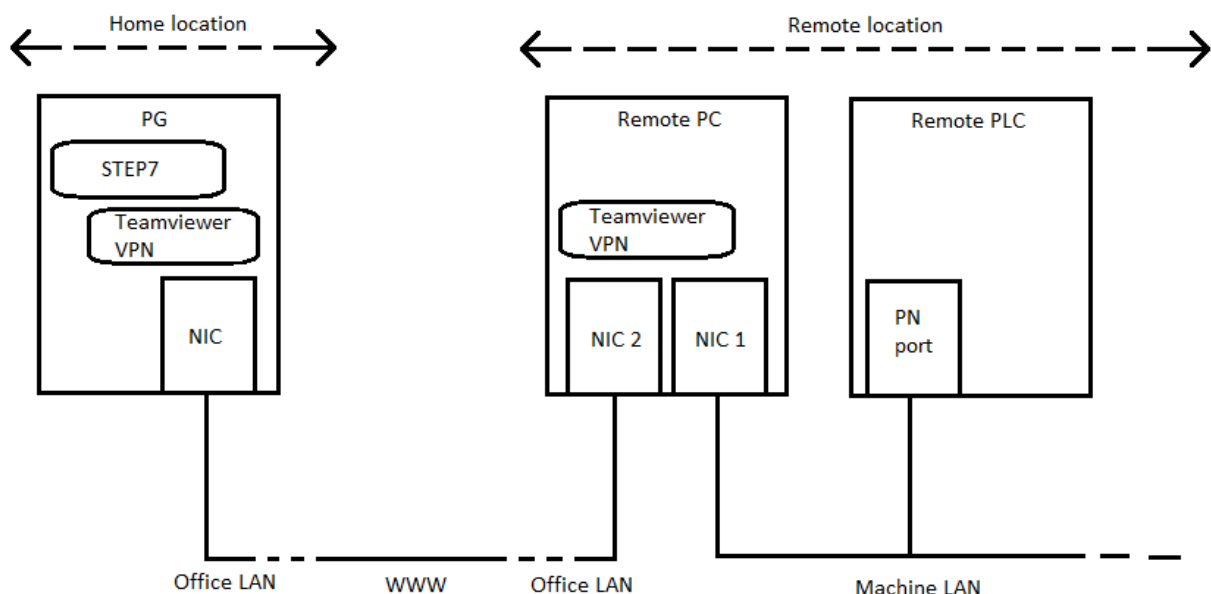
PC on the remote site (hereafter know as the “remote PC”). The PC may be used for purposes related to the machine or process in connection with the PLC. For example the PC can be used for HMI software, or for database connection to the PLC. The HMI and/or database connection can continue to operate even during the remote access to the PLC via VPN.

There will be two Ethernet network cards in the remote PC.

The remote PC is connected to the machine or process LAN, via the first Ethernet card, with a fixed IP address.

The remote PC is connected to the internet, via the second network card, typically connected to the company office-LAN

The PLC on the remote site (hereafter known as the “remote PLC”) is connected to the machine or process LAN.



Notice that this document does not describe the general installation or use of Teamviewer for remote monitoring or control of the remote PC.

Notice that some of the screenshots in the document shows programs with a red title bar. This does not indicate an error, but is setup this way by the IT department of the company.

2 Initial setup.

2.1 Setup of remote PLC

The remote PLC must be assigned addresses for IP, Subnet and Gateway that matches the strategy for IP addresses on all devices connected to the machine/process LAN.

For example:

Remote PLC IP: 192.168.1.131

Remote PLC Subnet: 255.255.255.0

Remote PLC Gateway (aka "Router" in STEP7): 192.168.1.132

2.2 Setup of remote PC

On the remote PC, the Ethernet adapter on the machine/process LAN must be assigned matching addresses for IP and Subnet:

For example:

Remote PC 1st adapter IP: 192.168.1.132

Remote PC 1st adapter Subnet: 255.255.255.0

Remote PC 1st adapter Gateway (aka "Router" in STEP7): (none, not required for this purpose).

On the remote PC, the second Ethernet adapter must have internet access. Typically it is connected to the customers LAN.

For example:

Remote PC 2nd adapter IP: Specified via DHCP

Remote PC 2nd adapter Subnet: Specified via DHCP

Remote PC 2nd adapter Gateway: Specified via DHCP

On the remote PC, Teamviewer must be installed, and the Teamviewer VPN driver must be installed.

To install the Teamviewer VPN driver, start Teamviewer and go to the menu items

Extras ... Options ... Advanced.

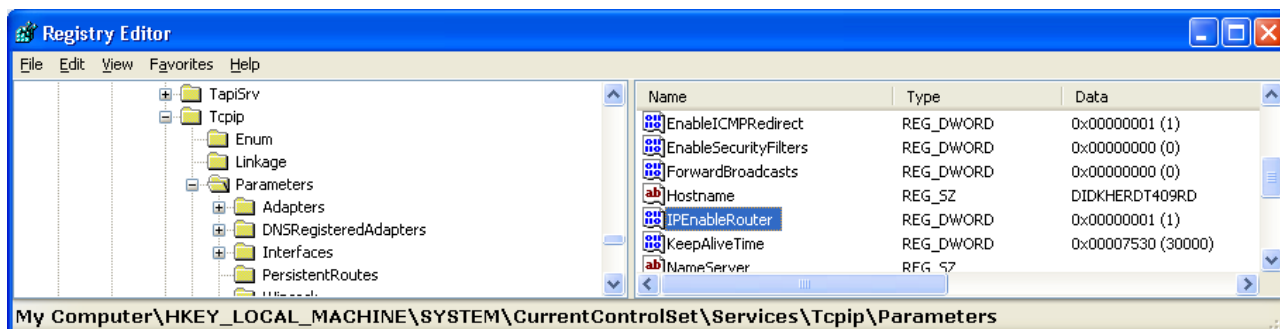
Use the button **Show advanced options**, and go to **Advanced network options ... Install VPN driver.**

On the remote PC, the registry has to be modified.

Start the registry editor for example by Regedt32, and browse to

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters

Set the parameter **IPEnableRouter** to "1".



When done reboot the PC.

Open a command prompt, and type *ipconfig /all*

```
C:\WINDOWS\system32\cmd.exe
C:\>ipconfig /all

Windows IP Configuration

    Host Name . . . . . : 
    Primary Dns Suffix . . . . . : 
    Node Type . . . . . : Hybrid
    IP Routing Enabled. . . . . : Yes
    WINS Proxy Enabled. . . . . : No
    DNS Suffix Search List. . . . . : 
                                        eu.itg.com
                                        na.itg.com
                                        itg.com

Ethernet adapter Local Area Connection 2:

    Connection-specific DNS Suffix  . : 
    Description . . . . . : D-Link DFE-530TX PCI Fast Ethernet A
    adapter (rev.C)
    Physical Address. . . . . : 00-1B-11-16-32-E7
    Dhcp Enabled. . . . . : No
    IP Address. . . . . : 192.168.1.133
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 
    Description . . . . . : Broadcom NetXtreme Gigabit Ethernet
    Physical Address. . . . . : 00-1E-0B-A9-06-00
    Dhcp Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes
    IP Address. . . . . : 10.1.1.2
    Subnet Mask . . . . . : 255.255.0.0
    Default Gateway . . . . . : 10.1.3.249
    DHCP Server . . . . . : 10.1.0.130
    DNS Servers . . . . . : 10.1.0.130
                                10.16.1.95
    Primary WINS Server . . . . . : 10.1.0.130
    Secondary WINS Server . . . . . : 10.16.1.94
    Lease Obtained. . . . . : 5. december 2012 11:25:54
    Lease Expires . . . . . : 12. december 2012 11:25:54

Ethernet adapter TeamViewer UPN:

    Connection-specific DNS Suffix  . : 
    Description . . . . . : TeamViewer UPN Adapter
    Physical Address. . . . . : 00-FF-7B-F2-14-8F
    Dhcp Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes
    IP Address. . . . . : 7.207.172.240
    Subnet Mask . . . . . : 255.0.0.0
    Default Gateway . . . . . : 
    DHCP Server . . . . . : 7.0.0.1
    Lease Obtained. . . . . : 5. december 2012 11:26:44
    Lease Expires . . . . . : 5. december 2013 11:26:44

C:\>
```

Check that IP routing is enabled.

Check that the Teamviewer VPN driver is running, and an IP address is assigned.

2.3 Setup of PG

The PG must have internet access. Typically it is connected to the company LAN.

On the PG, Teamviewer must be installed, and the Teamviewer VPN driver must be installed.

To install the Teamviewer VPN driver, start Teamviewer and go to the menu items

Extras ... Options ... Advanced.

Use the button **Show advanced options**, and go to **Advanced network options ... Install VPN driver.**

3 Connecting and use with STEP7.

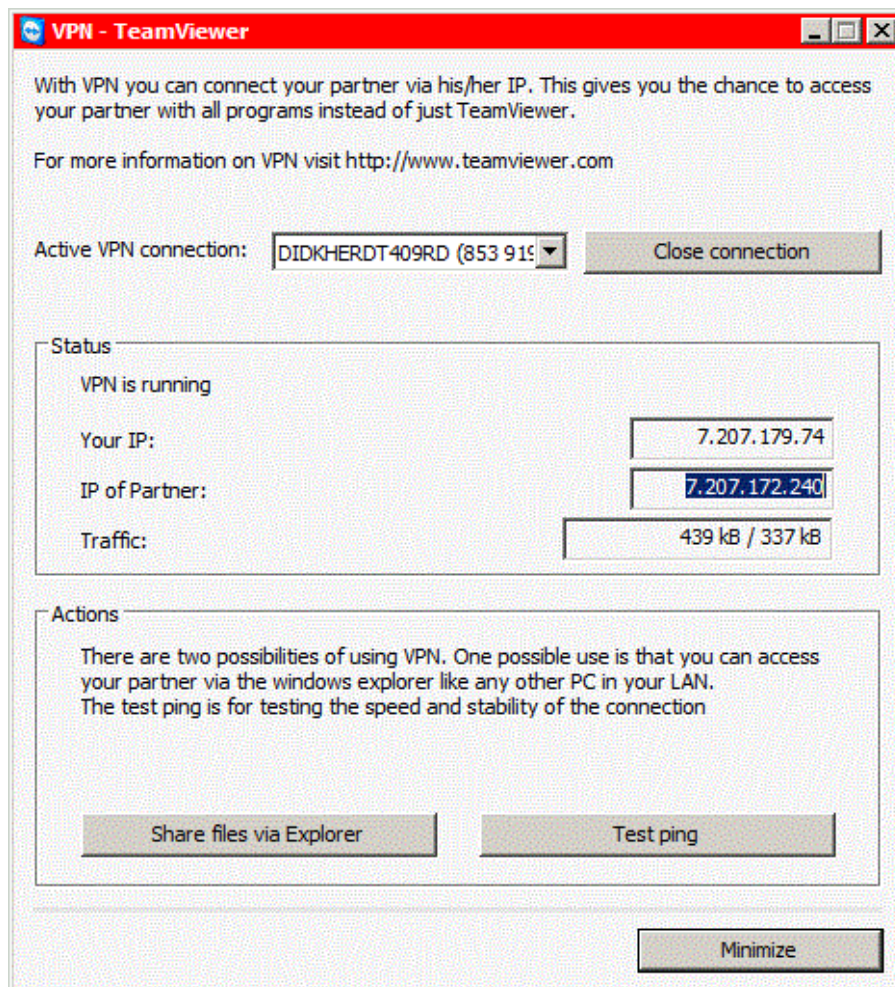
3.1 Connecting Teamviewer VPN.

Start Teamviewer on the remote PC.

Start Teamviewer on the PG.

On the PG, in the Teamviewer start window, select the connection type **VPN**, and specify the **Partner ID** (typically informed by phone by a person on the remote site), then use the button **Connect to partner**.

A password prompt will appear. Specify the password from the Teamviewer start window on the remote PC, (typically informed by phone by a person on the remote site).



The VPN connection will now be established. A window appears on the PG with information about the connection.

Make a note of the **IP of Partner**.

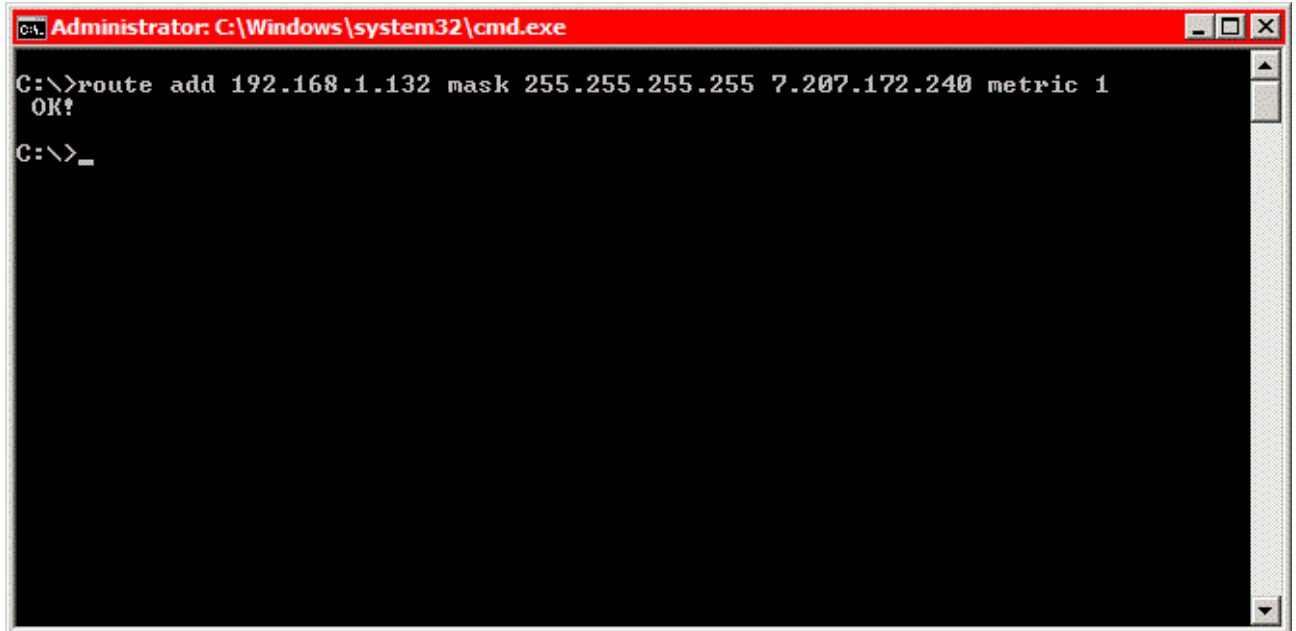
General instruction.

Add a route to the PLC on the PG:

Open a command prompt on the PG, and type

route add <IP of remote PLC> mask 255.255.255.255 <IP of Teamviewer VPN on remote PC> metric 1

for example:

route add 192.168.1.132 mask 255.255.255.255 7.207.172.240 metric 1 <ENTER>A screenshot of a Windows command prompt window titled "Administrator: C:\Windows\system32\cmd.exe". The window has a black background with white text. The command prompt shows the following sequence of text: "C:\>route add 192.168.1.132 mask 255.255.255.255 7.207.172.240 metric 1", followed by "OK!" on the next line, and then "C:\>_" on the third line, indicating the command was executed successfully and the prompt is ready for the next command.

Notice: The above route gives access to only the PLC by its specific IP address.

To give access to several devices that have the same subnet, add the route like this:

route add <base IP of remote devices> mask 255.255.255.0 <IP of Teamviewer VPN on remote PC> metric 1

for example:

route add 192.168.1.0 mask 255.255.255.0 7.207.172.240 metric 1 <ENTER>

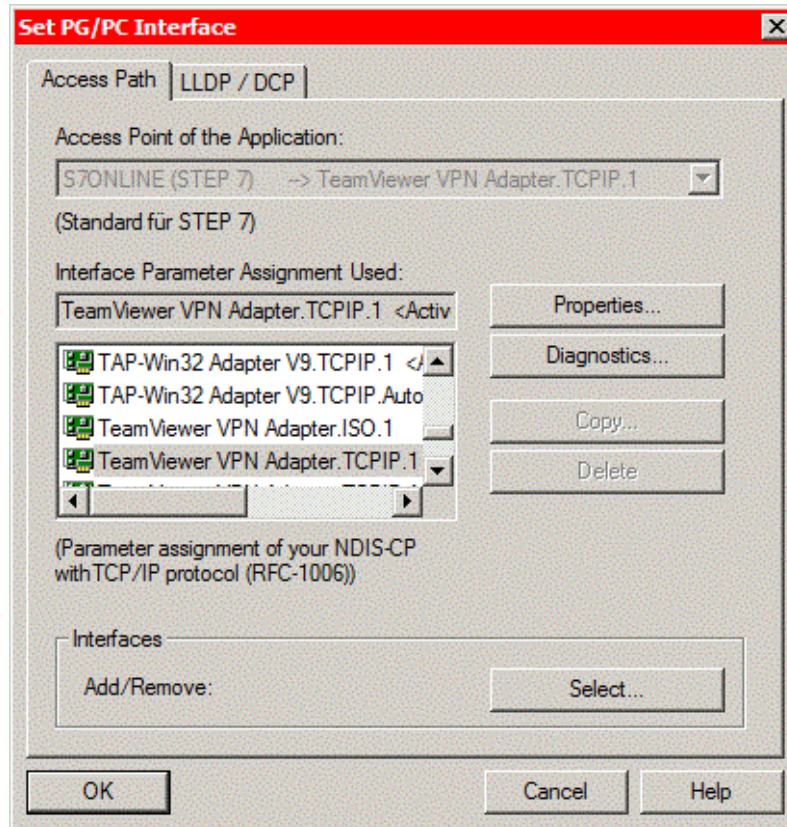
This gives access to all the devices 192.168.1.1 ... 192.168.1.255 on the remote network.

3.2 Connecting STEP7

On the PG, start STEP7.

Go to the menu items **Options ... Set PG/PC Interface.**

Set the access point **S7ONLINE** to **Teamviewer VPN Adapter TCPIP.**



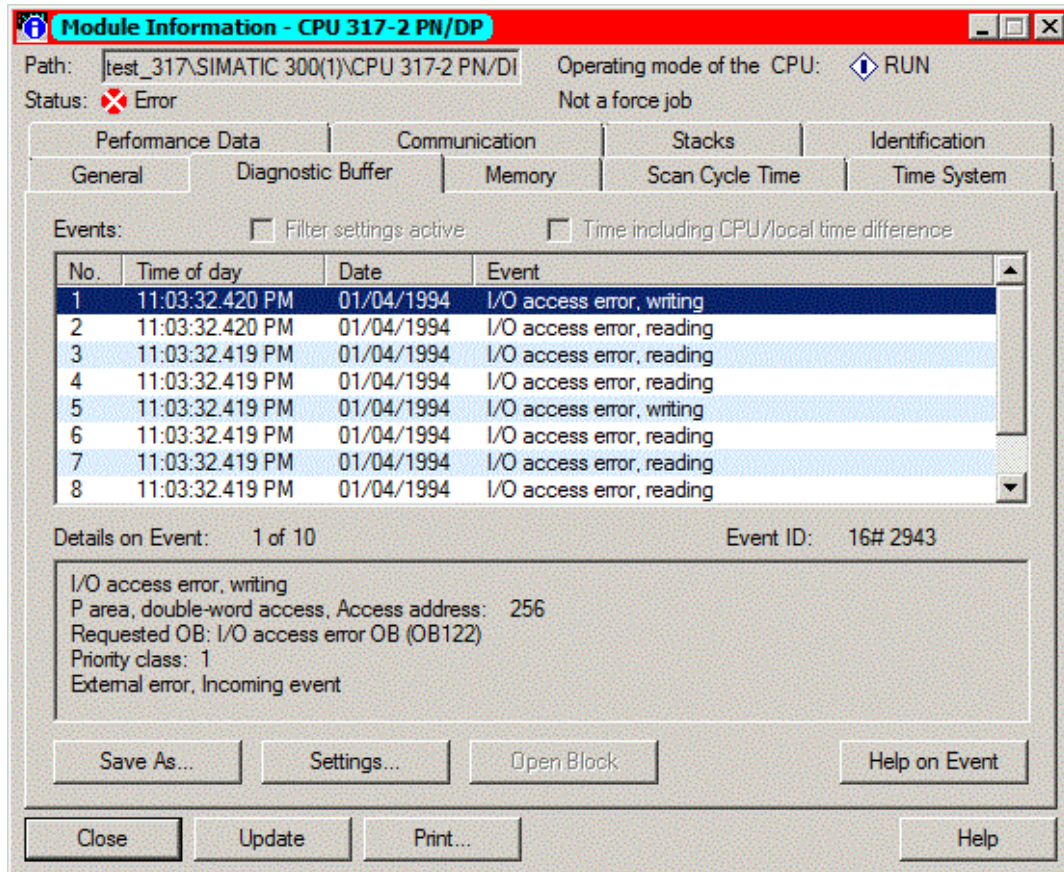
General instruction.

Load the STEP7 project with the PLC that has to be reached.

Test that there is a connection to the remote PLC.

In Simatic Manager, select the CPU, and type **CTRL-D**.

If OK, the online CPU properties will appear. It will be possible to access for example the diagnostics buffer of the CPU on the remote site.



It is now possible to monitor and program the remote PLC.

(end of document).