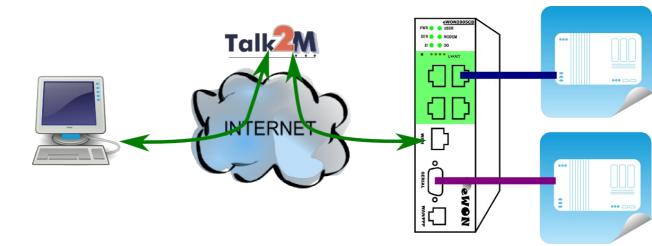


Remote Access for Siemens® S7-300 & 400 PLCs, and their VIPA equivalents S300 -SPEED7.



This guide explains in a few steps how to configure your eWON, your Talk2M account and your PLC software to access your Siemens S7-300, S7-400 PLCs and their VIPA equivalents S300 - SPEED7 for remote diagnosis and programming.

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1. Hard- and software requirements

1.1 Hardware requirements

In order to follow this guide you'll need:

- 1 eWON with VPN capabilities (for example eWON 2101CD with integrated modem or a 2005CD with second Ethernet interface)
- 1 Siemens PLC S7-300 or S7-400 Series or, 1 VIPA PLC S300-SPEED7 Series or equivalent both featuring MPI/Profibus and/or Ethernet ISOTCP interface
- PC suitable to configure the eWON and the PLC

1.2 Software requirements

1.2.1 eWON related software

- Web browser Internet Explorerⁱ or Firefoxⁱⁱ to configure the embedded eWON parameters.
- eBuddy eWON detection and firmware maintenance utility <u>http://support.ewon.biz/softwares.htm</u>
- eCatcher VPN tunneling utility <u>http://support.ewon.biz/softwares.htm</u>
 Note: this utility will be used to create the Talk2M account and to connect to your eWON remotely.

1.2.2 Siemens or VIPA related software

 SIMATIC Step7[®]iii 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 most probably feasible but not documented by eWON.

1.3 eWON Firmware Version

Successfully following these guidelines requires an eWON firmware version 6.1s2 or higher. The eBuddy application will allow you to upgrade your eWON firmware if required.

2. Objective

The objective of this document is to guide you through the steps required to enable remote access of your Siemens or VIPA PLCs.

The remote access setup is composed of 4 different parts:

- Communicating with your eWON through the Internet
- Connecting your eWON with your Siemens or VIPA PLC
- Configuring your Siemens software to correctly communicate through the eWON.
- Accessing your PLC through the Internet

To configure the eWON, all you need is a Web Browser and to open the internal Web page of the eWON. (http://10.0.053 is the default IP factory setting)

If you are connecting to an eWON for the first time, you should read the "Quick Start Guide for eWON" shipped with your eWON. This document explains step by step how to change the IP address of the eWON LAN port in order to be able to connect to it.

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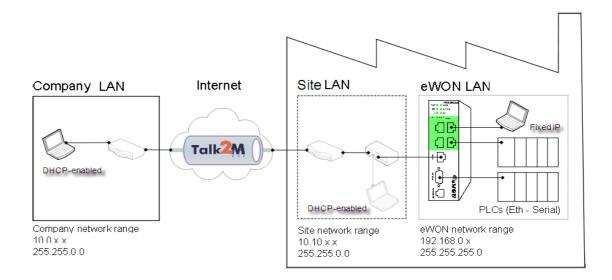
3. Typical configuration setup

Configuring remote access is simple. However, you will need to pay attention to the different IP ranges involved. The diagram below summarizes the different network ranges in use (IP numbers are examples).

When it is hooked on the Company LAN (or to the Site LAN) the configuration PC needs to be configured in DHCP-enabled mode for you to be able to go through the steps involving the general Ethernet/Internet infrastructure.

When it is hooked to the LAN-port of the eWON and the configuration PC needs to be configured with a fixed IP address - in the eWON LAN range - for you to be able to go through the steps involving the eWON (and the Ethernet ISOTCP connected PLCs).

Note 1: Because iterations between IP ranges are necessary during the configuration process, you could consider using 2 different configuration PCs. It is no problem if you use only one single PC, the present guide mentions each change in IP configuration that will be required.



Note 2: As the picture above shows, under normal circumstances the PC you will use to remotely access your eWON and PLCs will be on a different network than the site network. However, during configuration and testing, connecting PC to the site LAN is fine. As long as the site LAN address range is different than the eWON LAN address range you will not have routing issues.

4. Prerequisite: Determining suitable IP addresses

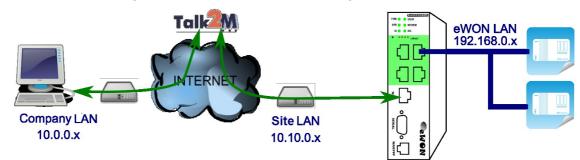
To avoid routing problems later, it is better to start to configure the eWON and the PLC with LAN IP addresses that will be suitable.

The type of physical carrier (GPRS or WAN/LAN) your eWON will use to connect to the Internet will have an impact on your IP address selection.

Before starting the actual configuration, please read the general principles below.

4.1 Internet connection using the WAN Interface

If you plan to connect to the Internet using the WAN interface, the eWON will require a LAN IP address at the PLC side and a WAN IP address at the network side.



Example of IP ranges involved in a WAN/LAN configuration:

Important Note: The company network address ranges (Company LAN and Site LAN in the example above) are specified and managed by the respective network administrators. These ranges simply cannot be changed. So before configuring your eWON LAN IP address and your PLC IP addresses, please ask for:

1. The specified company LAN network range to be used by the PC that will initiate the remote connection (Company LAN).

In our example this range is 10.0.0.#

2. The specified company LAN network (Site LAN) range (and gateway) which the eWON WAN port will use to get Internet connection.

In our example this range is 10.10.0.#

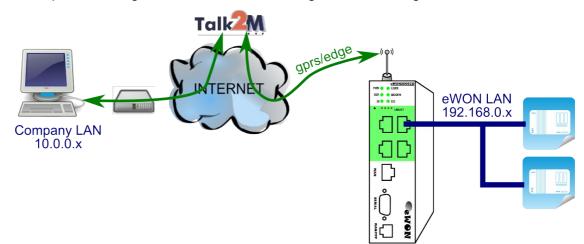
Knowing the ranges in use at the Company and Site side, you will be able to select a range **outside** these networks for the eWON LAN-port and the PLC.

In the above example, we could select addresses in the 192.168.0.# IP range for the eWON LAN and PLC since it does not overlap neither with the Company LAN range nor with the Site LAN range.

4.2 Internet connection by modem (GSM, PSTN, ADSL)

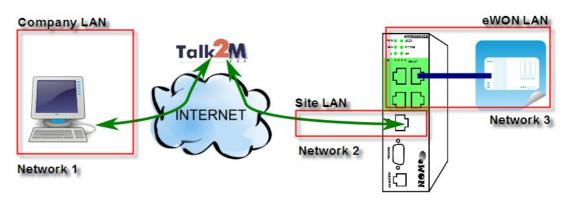
If you plan to connect to the Internet through a modem, you only need to select an IP address for the eWON LAN side. The IP address of the eWON LAN interface must be compatible with the IP address of the PLC, but be outside the network address space to which your PC is connected (Company LAN). If there is as an overlap between the IP range of your PC and the IP-range of the eWON and the PLC LAN, the setup will not route correctly.

Example of IP ranges involved in a GPRS/Edge modem configuration:



4.3 For proper routing, remember...

- 1. The eWON LAN IP address must be part of the same IP range as the PLC LAN.
- 2. The eWON WAN and LAN IP addresses must be in <u>different IP ranges</u>. The WAN port of the eWON is generally DHCP-enabled, which is a good way to make sure that it will be compatible with the company network.
- 3. The remote PLC network (eWON LAN) must be in a <u>different IP range</u> than the company network on which your PC is connected (Company LAN).



Network 3 = eWON LAN = PLC LAN (all in same range). Network 3 ≠ Network 2 Network 3 ≠ Network 1

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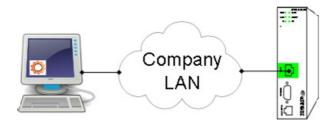
5. Reaching your eWON through the Internet

5.1 Step 1: Setting IP address of eWON LAN

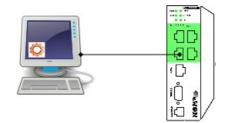
Once you have selected your IP addresses, you can start configuring your eWON. In our example, we will change the default factory address 10.0.0.53 to 192.168.0.53.

To configure your eWON LAN IP:

 This connection will usually be made through the Company network. It can also be made with a point-to-point link. At this stage there is no constraint on the IP range of your PC. For this step, eBuddy can access the eWON even if your PC and the eWON have different network address ranges. eBuddy – eWON detection and firmware maintenance utility http://support.ewon.biz/softwares.htm



Connection through company LAN



Point-to-point connection (if eWON model has only 1 LAN port use *crossed* cable).

2. Start the eBuddy utility on your PC

3. In the home page, select Set IP Address



4. You don't need to fill out the Serial Number, just click on Browse

SeBuddy - eWON Mai File View Tools Help	intenance Utility	-
eBuddy .	The eWON companion	
Set IP Address		
Click this link to set o	IP Address Wizard 🔀	
Update Firmware	Welcome to the IP Address Wizard Which eWON would you like to configure?	R
Click this link to upda (Make sure eBuddy w		K
Backup/Restore Applic	Serial Number: Browse.	3
Click this link to back	User Login	
<u>Update eBuddy</u>	Username: adm Password: •••	K
Download the latest e operations.	Passworu:	55
Switch to List Mode (A		
Click this link to displa	<back next=""> Cancel</back>	

eBuddy finds your eWON. Select it by double-clicking on it and the IP Address window opens.

5. Enter new LAN IP address and Subnet Mask. Click Next

eBuddy - eWON Maintenar File View Tools Help	nce Utility	
Refresh 🛛 🚻 Wizard Mode	IP Address Wizard	×
Serial Num Device Type 0830-0012-59 eWON 2005CD	IP Address Here you can specify the new IP settings	N
	Serial Number: 0830-0012-59 IP Address: 192 . 168 . 0 . 53 Subnet Mask: 255 . 255 . 255 . 0	
	<back next=""> Cd</back>	ancel

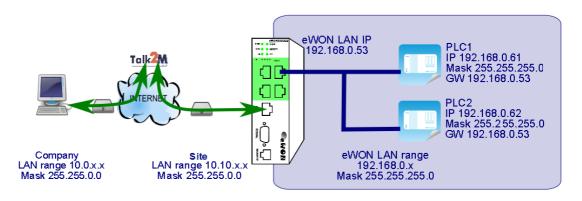
- Pile View Tools Help

 Prefeest
 Warand Mode

 Serial Num...
 Device Type

 Update of remote device
 Image: Comparison of the series of the s
- 6. Wait until address update and device reboot are completed. Click *Finish*.

In our example the eWON was set to LAN IP address 192.168.0.53. As shown below, this address fits into the PLC-range and does not interfere with the Company LAN.



7. End of step 1

5.2 Step 2: Configure eWON for Internet connection

To configure your eWON's Internet connection :

- Configure the network parameters of your configuration PC to encompass the IP range of the eWON LAN. To do this, go to START, Settings, Network Connections. Open the currently used connection, select the TCP/IP parameter row and select a fixed IP address within the range of the eWON LAN. Click OK to close the wizard.
- 2. Connect the PC to one of the LAN ports of the eWON.
- 3. Open your Internet browser and access the eWON internal Web page by typing the LAN address you just configured (in our example http://192.168.0.53)
- 4. To open the eWON wizard page, click on *Configuration* in the toolbar and then on the wizard icon. The following page will be displayed:

ewon Script Setup Users Setup Pages List ewon eWON configuration wizard What do you want to configure? Configure INTERNET Connection Use this wizard to configure how the eV/ON will connect to the Internet. Test INTERNET Connection Use this wizard to configure this eV/ON to connect to taik2M.com Configure Taik2M connectivity Use this option to configure this eV/ON to connect to taik2M.com The eV/ON want for the option to connect to taik2M.com Official Use this option to configure this eV/ON to connect to voir EndiandeV/ON	vlenu
What do you want to configure? Image: State of the state	Wiz
What do you want to configure? Image: State of the second sta	
Configure INTERNET Connection Use this wizard to configure how the eWON will connect to the Internet. Test INTERNET Connection Use this wizard to test the eWON internet connection. Configure Tail&2M connectivity Use this option to configure this eWON to connect to tail/2M.com The eWON must first be defined in Tail/2M. Configure Teil&2M connectivity	
Configure INTERNET Connection Use this wizzer to configure how the eWON will connect to the Internet. Test INTERNET Connection Use this wizzer to test the eWON internet connection. Configure Tail&2M connectivity Use this option to configure this eWON to connect to talk2M. Configure Tested Connectivity Use this option to configure this eWON connectivity Use this option to configure Taile2M connectivity	
Use this wizard to configure how the eVVON will connect to the Internet. Test INTERNET Connection Use this wizard to test the eVVON internet connection. Configure Taik2M connectivity Use this option to configure this eVVON to connect to taik2M.com The eVVON must first be defined in Tai2AM. Configure "Endian For eVVON" connectivity	
Test INTERNET Connection Use this wizard to test the eWON internet connection. Configure Talk2M Use this option to configure this eWON to connect to talk2M.com The eWON must first be defined in Talk2M. Configure "Endian For eWON" connectivity	
Use this wizard to test the eWON internet connection. Configure Talk2M connectivity Use this option to configure this eWON to connect to talk2M.com The eWON must first be defined in Talk2M. Configure "Endian For eWON" connectivity	
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Tak2M Use this option to configure thise 4WON to connect to talk2M.com The eWON must first be defined in Talk2M. Configure "Endian For eWON" connectivity	
The eWON must first be defined in Telk2M. Configure "Endian For eWON" connectivity	
Use this option to configure this eWON to connect to your Endian4eWON VPN server	
The eWON must first be defined in your VPN server.	
Configure index connectivity	
Use this option to configure this eWON to connect to mdex.	

5. Click on the icon next to **Configure INTERNET Connection** to launch the wizard. Following window will be displayed (options in drop down are depending on hardware configuration) :

net WAN connection 💙	1		
m Connection	vill use for Internet access	L.	
net WAN connection	(recommanded)		
	meters configured that you	want to keep. This	is
vancea option.			
	check only if you have para advanced option.		check only if you have parameters configured that you want to keep. This advanced option.

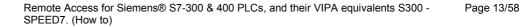
- 6. According to your eWON type (with a modem or a second Ethernet interface), you will have the possibility to choose between different connections:
 - Modem Connection
 - Ethernet WAN* connection
 - ADSL

*WAN refers to **wide area network**, which is network that covers a broad external area using the Internet infrastructure, as opposed to LAN referring to **local area network** that is restricted to internal networks.

From the next step onwards, we will address the most current access which is *Ethernet WAN connection* (for modem connection refer to Appendix 1 – Specifics for Modem connections).

- 7. Make sure the WAN port of the eWON is physically connected with the company network. Traffic LED do not lit yet as the connection is not yet defined.
- Select *Ethernet WAN connection*. The usual configuration for Ethernet is DHCP enabled (device obtains IP address and Internet access automatically from host). Use a fixed IP address, Gateway and DNS only if this is clearly required by the network admin.

Ethernet WAN	connection	
Address Setu	DHCP 💌	
IP Address:	10.0.5.170	
Subnet Mask:	255.255.0.0	
Default Gateway:	10.0.0.254	Not for reference
DNS 🔽 Via D	HCP	allocated
Primary DNS:	10.0.0.13	automatically
Secondary DNS:	0.0.0.0	
HTTP Proxy		
Connect to	Talk2M through Proxy	
	ct to Talk2M through an	HTTP Proxy?



- 9. Click *Next* and go to step 10 *Internet Connection Test*.
- 10. The last step of the Internet configuration consist in a communication test. This test should end up successfully as shown in the snapshot below:

Current operation		
Finished		8
Results		
 Internet connection 		
💙 Online IP Check		
Diagnosis		
SUCCESS: Interne	et connection tested	
1		

The Internet Connection means that the eWON is correctly configured for an Internet connection. If this test is not successful, then go back to the previous configuration steps and recheck all settings for <u>compatibility and accuracy</u>.

The **Online IP Check** means that the eWON was actually able to reach an IP address on Internet. **It might not be so critical if this particular test fails**. Go ahead with the procedure without being too much concerned.

You normally do not need to read this manual to complete the present procedure, but we mention for reference the detailed document describing the use of the wizard: AUG-019-0-EN-(eWON Configuration for Internet Access Using the Wizard). <u>http://support.ewon.biz/docs/Talk2M_Free.htm</u>

11. End of step 2.

5.3 Step 3: Creating the eWON in your Talk2M account

To connect to your eWON remotely, we will use eCatcher and Talk2M.

- You can skip the present point if you already created a Talk2M account. If you haven't created your Talk2M account yet, install eCatcher and create your Talk2M account as per § 3 of the guide "Talk2M – Getting started on Service Free+" available at <u>http://support.ewon.biz/docs/Talk2M_Free.htm.</u> You can download eCatcher from this link as well.
- 2. Connect your configuration PC to the company LAN and configure its network parameters to DHCP enabled (acquiring an IP address automatically).
- 3. On the menu on the left side of the eCatcher interface click on the "+" (New eWON) icon in the eWON list section. The following window appears:

🕵 New eWON				●Ē×
			Now mad	hines can talk
~	eWON Name :	eWON for Siemens		
	eWON Description :	Device for technical writing		
	eWON Serial Number :		You may leave this field empty The eWON will send its S/N to Talk2M later.	
	Connection Type :	LAN/ADSL	T	
			Can	cel Next

- 4. Enter the **eWON name** you want to use on the Talk2M server to identify the remote connection to your eWON.
- 5. The **eWON Serial Number** can be left empty. It will be encoded automatically during the Talk2M connection configuration of the eWON.
- 6. Select the *Connection Type* to specify how your eWON will be connected to the Talk2M server using:
 - a LAN/ADSL connection
 - a **GPRS/EDGE** connection or
 - an Internet connection over a **PSTN** connection (analog modem).

If you specify a GPRS/Edge connection, then you will be asked to specify the phone number. This will allow Talk2M to **wake up your eWON remotely** using a Wake-Up SMS as described in Appendix 1 – Specifics for Modem connections.

Click on Next.

In older versions, you were asked to specify the *Remote Network* to reach behind the eWON like shown below. Since firmware version 6.2s0, when launching the eWON Talk2M wizard to enter the Talk2M-key, the wizard transfers the eWON LAN IP address to Talk2M automatically. In this case, this step is skipped.

			●■×
Note: this step is skip	oped in newer Talk2M ve	ersions	Now machines can talk
Remote Network	Remote subnet accessi	ble on the eWON LAN side	(if any).
eWON LAN IP :	192.168.0.53	e.g.; 10.0.0.53 Leave blank if you access the eWON	
Network Mask :	255.255.0.0	e.g.: 255.255.255	.0
in this case, the Re	emote Network configura	tion is acquired autom	atically.
			Previous Next
	Remote Network eWON LAN IP : Network Mask :	Remote Network Remote subnet accessive eWON LAN IP : 192.168.0.53 Network Mask : 255.255.0.0	e.g.: 10.0.0.53 eWON LAN IP : 192.168.0.53 Leave blank if you access the eWON!

7. Click on Next.

🛤 New eWON	
Mew eWON	New machines can talk
Custom Field 1	Belgium
Custom Field 2	Nivelles
Custom Field 3	eWON Support
	Previous Finish

Here you can enter additional information concerning your remote connection. The *Custom Fields* can be used to classify or filter your different remote connections. This will allow you to find easily the eWON you need to connect to.

8. Click on *Finish* to add the eWON to the eWON list of your Talk2M account.

The new eWON account will now be displayed in the eWON List section on the lower part of the window.

🕵 eCato	her (3.0.0 build 7195)				
e	Active Connection				
Devices	\$ ⁵				
*	Name	IP Δ	Description		User(s) connected
Users					
垦	eWON list				
Account	🛨 🔯 🔍 🛤 🔊 No a	action 💽			
×	Action A Name	🔽 🔊 🔊 🖉 Status	Din User(s) connecte Custom F		Custom Field 3
Settings	eWON for Siemens	·**		Nivelles	eWON Support
			R		
i			7		
Help					
Ċ	Talk2M	• •	r Talk2M account a		
Exit		MyTalk2N	(visit https://my.talk2m	.com)	-
	my.talk2m.com	Credit : 9,3€	Idle		[pierre] 🜒 Talk2M

9. End of step 3.

5.4 Step 4: Getting the Talk2M activation key for the eWON

Up to now we only added the eWON on our Talk2M account, but we did not yet configure the eWON to connect to the Talk2M server.

To enable the eWON connecting to the Talk2M server, an activation key is needed. This key will allow the eWON to get back the VPN keys and certificates needed for the VPN connection. This step still uses the DHCP-enabled configuration of the previous step.

To get the activation key, proceed as follows:

1. Select the eWON in the eWON list and click on the *Detail* button.

🙎 eCato	her (3.0.0 build 7195)	
e	Active Connection	
Devices	<u>\$</u>	
*	Name IP Δ	Description User(s) connected
Users		
垦	eWON list	
Account	🛨 📴 🔍 🖩 📓 💽	>
\mathbf{x}		
Settings	Action A Name Status Description My Ewon Offline This is a descr	User(s) connecte Custom Field 1 Custom Field 2 Custom Field 3 Group of locat Location Unit

The eWON Detail window opens.

2. Click on the eWON Setup button.

🚅 eCato	her (3.0.0 build 7195)		<u>• i</u>
e	eWON Detail		
Devices		∑ /₩ -	
*	eWON Name :	eWON for Siemens	
Users	eWON Description	Device for technical writing	
	eWON Serial Number :		
恳	Connection Type :	LAN/ADSL	
Account			<
	Custom Field 1	Belgium	S
×	Custom Field 2	Nivelles	
Settings	Custom Field 3	eWON Support	
	Remote Connection		
	eWON's LAN IP:	192.168.120.137	<
	Network Mask:	255.255.0.0	

🧖 eCato	her (3.0.0 build 7195)	;
9	eWON Setup	
Devices		
*	Select your preferred method to configure your eWON:	
Users	Configure via SMS Send an SMS to the eWON with its activation key. It will trigger the remote auto-configuration.	
Account	ACOLE	
Settings	Configure via Activation Key Every device receives an Activation Key during its creation in Talk2M. This key cannot be changed	
	Activation Key: 240366f2b046ab212a6d7b6dbd82b66d]
	Configure via eWON Name	
i	eWON Name : My Ewon	
Help Exit	Taik2M Manage your Talk2M account and datas on MyTalk2M (visit https://my.talk2m.com)	
	[] <u>my.talk2m.com</u> Credit : 15€ Idle [pierre]	Talk 2

The following window opens:

 Under the Configure via Activation Key section you will find the Activation Key needed for the eWON configuration. Click on the Copy icon to copy the activation key into the clipboard of your PC. Keep this information on your clipboard to complete Step 5: Configuring your eWON to connect to Talk2M (go to this step).

\times	Configure via Activation Key	Every device receives an Activation Key during its creation in Talk2M.		
ettings	configure the Activation Key	This key cannot be changed		
	ARSKOLE	Activation Key: 240366f2b046ab212a6d7b6dbd82b66d		

Note: Using the Activation Key is the standard procedure. Next to this method, there are 2 alternative methods:

- Configure via eWON Name: During the eWON Talk2M wizard, instead of using the Activation Key you can alternatively specify the eWON Name and use the user name and password of your Free+ account.
- Configure via SMS: If your eWON has a GSM modem and if the eWON is already configured for Internet connection, then you can also send an SMS to the eWON containing the activation key. When eWON receives the SMS, it will then trigger automatically the Talk2M connection wizard and will configure itself to connect to the Talk2M server.
- 4. End of step 4.

5.5 Step 5: Configuring your eWON to connect to Talk2M

- 1. Configure the network parameters of your configuration PC to encompass the IP range you used to allocate the LAN IP address to the eWON.
- 2. Connect the PC to one of the LAN ports of the eWON.
- 3. Open your Internet browser and access it's internal Web page by typing the LAN address you just configured (in our example http://192.168.0.53)
- 4. To open the eWON wizard page, click on *Configuration* in the toolbar and then on the *Wizard* icon.



The wizard window will open:

What do you war	nt to configure?
	Configure INTERNET Connection
	Use this wizard to configure how the eWON will connect to the Internet.
10	Test INTERNET Connection
	Use this wizard to test the eWON internet connection.
-	Configure Talk2M connectivity
Talk2M	Use this option to configure this eWON to connect to talk2M.com
3 Im	The eWON must first be defined in Talk2M.
	Configure "Endian For eWON" connectivity
Allqiqii	Use this option to configure this eWON to connect to your Endian4eWON VPN server
	The eWON must first be defined in your VPN server.
	Configure mdex connectivity
mdex	Use this option to configure this eWON to connect to mdex.

5. Click on the Talk2M wizard.

The following window will be displayed:



- 6. Click on *Next* to register the eWON on the Talk2M server.
- Click on *Register with ACTIVATION KEY*, as in the previous step, we copied the Activation Key to the clipboard of your PC. Paste the Activation Key (Ctrl+V).



8. Click Next

Note: If you choose the **Registration with eWON NAME** method, then you will be asked to enter the Name you specified for the remote connection in your Talk2M account. You will also need to specify your Talk2M account name and enter the user name and the password which you use to connect to your Talk2M account.

The next window of the wizard will ask you if you need to connect through a Proxy server.

evvo	DN configuration wizard / Talk2M / Proxy config
	Connect via HTTP proxy Finable this option only if you are connected to Internet via proxy (ask your network administrator if not sure)
	<< Previous Next >>

9. Check this option only if you need to specify a Proxy server for the Internet connection. Otherwise leave this option unchecked and click *Next*.

10. The Talk2M registration will now start and the result will be displayed on the wizard page:

Testing Direct HTTP	connectivity	3
Results		
WAN connection UDP connection HTTP direct connection HTTP Proxy connection Read Talk2M config Test VPN connection	Wait until test process is completed	
Diagnosis		

The eWON will first test the different connections needed to connect to the Talk2M server (UDP and HTTP or HTTP using a Proxy). Then the eWON will connect to the Talk2M server and retrieve the VPN keys. At the end, the eWON will establish the VPN connection to the Talk2M server.

Once the registration and configuration of the eWON are completed, the result will be displayed on the Wizard page as shown in the following picture:

Finished	37
Thisned	57
Results	
VWAN connection	
✓ UDP connection	
✓ HTTP direct connection	
A HTTP Proxy connection Operation s	skipped
✓ Read Talk2M config	
✓ Test VPN connection	
Diagnosis	
VPN connection will use UDP mode SUCCESS: VPN connection configured and to	ested
1	

- 11. Click on the **Done** button to close the wizard. Your eWON is now configured to connect to the Talk2M server.
- 12. End of step 5.

5.6 Step 6: Connecting the eWON remotely

Now that the eWON is configured to connect to Talk2M, we can establish the remote connection to the eWON.

- 1. Connect your configuration PC to the company LAN and configure its network parameters to DHCP enabled (acquiring an IP address automatically).
- 2. Launch eCatcher and open your Talk2M account.
- 3. In the eWON list section select the eWON you want to use for the remote connection.

🙎 eCato	cher (3.0.0 build 7195)
O Devices	Active Connection
Users	Name IP A Description User
R	eWON list
Account	
Settings	Action △ Name 🚿 Status Description User(s) connecte Custom Field 1 Custom Field 2 メ eWON for Siemens Online Device for tec Belgium Nivelles eW
and the	a provide the second and the second

The eWON which you just configured should now be displayed as on line (green tick in the action column). This means that the eWON has established its VPN connection to the Talk2M server.

- 4. Double-click the **online icon** or click on the **Connect** button displayed in the eWON list menu to establish the remote connection to this eWON. eCatcher will now establish the VPN connection to the Talk2M server.
- 5. Once the VPN connection to the eWON is established, the eWON will be displayed in the *Active connection* section on the top of the window.

🙎 eCato	tcher (3.0.0 build 7195)	
e	Active Connection	>
Devices		5
*	Name IP Descri	
Users	eWON for Siemens 10.8.131.196:81 Device for technical wri	ting pierre
恳	ewon list	
Account	+ 🚱 🔍 🛤 🔊 Disconnect 💽	
×	Action △ Name 💉 Status scription User(s) connected of	Custom Field 1 Custom Field 2
Settings	🦂 eWON for Siemens Connected 🖉 evice for tec pierre Be	elgium Nivelles eWON
	Land and the second sec	and the second s

- 6. The PC is now connected to the eWON using the VPN tunnel and you can start to use the remote connection.
- 7. If you want/need to connect to the eWON itself, you can click on the IP address link in the *Active Connection* section, as displayed in the following picture. Once the home page of the eWON web interface is displayed, you know for sure that your connection is effective.

🚅 eCatc	her (3.0.0 b	uild 7195)						ſ
e	Active Conn	ection						
Devices	<u>s</u>							5
*	Nar eWON for Sieme	me 10.8	IP Δ	Dev	Des vice for technical (cription	pierre	User
Users		10.0 <u>10.0</u>	5		nce for cechnicary	wheng	pierre	->
	eWON list							7
Account	+ & •	🕄 🔳 <u>ठ</u> Die	connect 💽					\supset
*		×				×		od.
	Action Δ	Name	💉 Status		User(s) connecte		Custom Fiel	12 📂
Settings	- Main e	eWON for Siemens		Device for tec	pierre	Belgium	Nivelles	ev
المشيب ک	And Marken	A. marine A.	- All and a start		and the second s	and		

Note: For specifics related to modem connection (including GPRS/Edge) please go to 10 Appendix 1 – Specifics for Modem connections at the end of this guide.

8. End of step 6.

5.7 Step 7: Terminating the remote connection

1. Click on the disconnect button in the Active connection section. This will close the VPN connection with the eWON.

Disconnect Name		IP	D	escription	Us	er(s) connected
WON Company XY	10.8.129.39		eWON at Company	/ XY	admin	
E 💩 🔍 🖩 <u>></u>	<u> </u>	∀	▼	×	~	⊻
	me 🕺 🕺 Stati	is De	scription	User(s) connected	Country	PLC type usta
Action 🔻 Na		DLC shelsehu				
Action 🔻 Na	Offline	PLC at plant x				

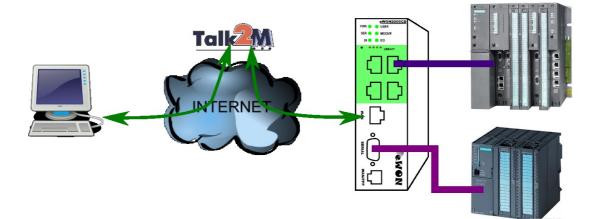
- Note: For specifics related to modem connection (including GPRS/Edge) please go to § 10 Appendix 1 – Specifics for Modem connections at the end of this guide.
- 3. End of step 7.

6. Linking eWON and PLC

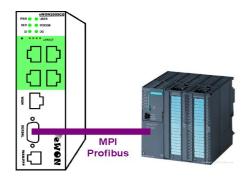
6.1 Local link capabilities

Depending on whether the PLC will be connected to the eWON with a **MPI/Profibus** or **Ethernet ISOTCP** link, the eWON configuration and the connection to the PLC will be different. Both types of connections will be explained.

Keep in mind that you can combine both connection types without any problem. For example, you can connect at the same time to one or more S7-300&400 using the MPI/Profibus port of the eWON and connect to one or more S7-300&400 PLC(s) using the Ethernet ISOTCP connection between the eWON and the PLC.



6.2 MPI/Profibus link configuration



1. Go to the eWON Web page either using the just configured VPN tunnel or a point-topoint connection to the eWON LAN port.

File Edit View Favorites Tools	Help			A
🌀 Back 👻 🐑 👻 🛃 🦿	of Search 👷 Favorite	s 🥝 🎯 · 🍓 🖼 🦓		
ddress 🗃 http://10.8.131.44:81/Ast/M	1ainAst.shtm			🔽 🛃 Go 🛛 Links
REWON	View I/O	Alarm Summary	Diagnostic	Configuration
eWON		Alarm History	Files Transfer	Log off 🗿 🛄

- 2. Open the eWON IO Server configuration and go to the IOServer page
- 3. In the drop down field select the "S73&400" IO Server

ewon	Tag Setup	System Setup	IO Server Config	onfig Main Menu		
eWON	Script Setup	Users Setup	Pages List	(
IO Server: MODBUS 💌 Edit	<u>Clear</u>	Global Config		02/06/2006 11:0		
MEM EWON MODBUS NETMPI DF1 FINS ABLOCIX 5738400 572860 QWAVE		Select an IO Server		•		

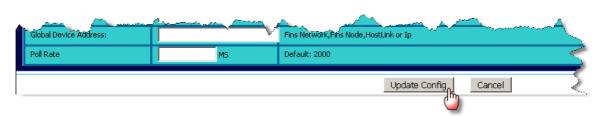
4. Set the *Protocol Type*, *Baud Rate*, *Reply Timeout*, and *MPI/Profibus Highest Station Address* corresponding to those actually configured in the PLC you want to communicate with (shown values are eWONs default values):

ewon	Tag Setu	р	System Setup		O Server Config	,	Main Menu	
eWON 201	Script Setu	Script Setup		Users Setup		Pages List		W
IO Server: <mark>573&400 😪 Edit</mark> <u>Clear</u>	Init		<u>Global Confiq</u>				01/0)1/2001 0
573 & 400 IO Server & Gateway	settings							
Gateway Configuration								
Destination MPI/PROFIBUS Node:	destination Node					0126,def	ault: 2	
MPI/PROFIBUS Setup								
Protocol Type:	MPI	*	Default MPI, PPI Mu	ltimaster ma	ay only be used w	ith the S720	0 Io server	
Baud Rate:	187500 💌		erault 187500					4
Reply Timeout:	3000 MS		5050000, default:	3000 🔪	roperties - MP1			
MPI/PROFIBUS Address:	0		Device address of e	WON on lir	General Network Se	etin <mark>MPI prop</mark>	erties of PLC CPU i	in Step7
MPI/PROFIBUS Highest Station Address:	31 💌		Default: 31		Highest MPI address:	100	y Change	
Topic A :			Transmission rate:	18	2 Kbps 7.5 Kbps 5 Mbps	-		
Topic Name:	A					31	Mbps Mbps Mbps	~
Global Device Address:	Anna and	-	MPI/PROFIBUS, des	tination Nr			and a second	

Note: The *MPI/Profibus Address* is the MPI address of the eWON <u>not the one of</u> <u>the PLC!</u> The address configured here has to be an MPI Address that is not yet used on the MPI network. In most cases the default value 0 will work fine.

5. Save your settings by clicking on *Update Config* and leave the Web configuration interface open.

6. Linking eWON and PLC



- 6. Interconnect the MPI port of the eWON with your PLC
- Go back to IOServer settings page (*Edit* menu) and click on the *Destination MPI Node link* to check if the eWON MPI interface is correctly configured and connected to your MPI network.

ewon	Tag Setup	System Setup	IO Server Config	Main Menu
eWON	Script Setup	Users Setup	Pages List	
IO Server: 573&400 💽 Edit	<u>Clear</u>	<u>Global Config</u>		09/11/2006 04::
573 & 400 IO Server & Gateway se	ettings			
Gateway Configuration				
Destination MPI Node:	destination MPI Node		0126,default: 2	
MPI Setup				
hand and have a second	Land and the second	Enter 10 500 man marked to the second	the second and the se	- and and - former for

8. The MPI Status Info popup opens:

1 s	itatı	ıs In	fo - l	Micro	osofi	i Inte	erne	t Exp	olore	۲.							
						_											
				Sta	tus o	f nei	ghbo	ur M	PI/P	ROFI	BUS	stati	ons				
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	
	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	
	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	
	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	
	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	
	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	
								Clo									
									se								

This window will show you the different MPI devices detected by the MPI chip of the eWON. The ID numbers of the detected MPI/Profibus master devices are highlighted.

If the status table <u>does not display any MPI address</u>, then the MPI IOServer setup parameters for your eWON are not correct (or have not been saved using the **Update Config** button). Please check the baud rate settings, verify that the eWON is not using an already used MPI address and make sure you end-up with **Update Config**.

If the status table <u>displays only one MPI address</u> (actually the one of your eWON), it is likely that the Baud Rate settings are not correct or that the eWON is not properly connected to the MPI network (or that the cable used is not OK).

9. End of serial link configuration.

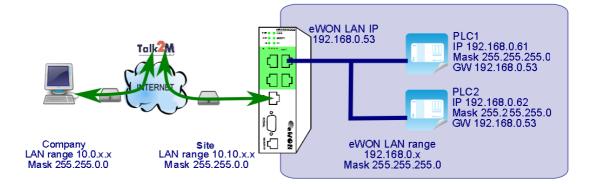
6.3 Ethernet ISOTCP link configuration

- Tips -

As of firmware v12, there is a PLC Discovery feature inside the eWON. This allows the automatic discovery of PLC (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.

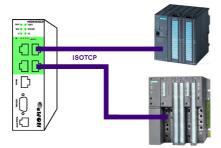


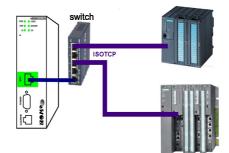
1. If your eWON runs a firmware 6.2s1 or greater (see note) AND your application is straight forward, there is nothing to do but making sure that the PLC IP address is in the same range than the LAN IP of the eWON.

Note 1: From eWON firmware version 6.2s1 onwards, the **Plug'nRoute** function automatically configures the Ethernet routing. With this configuration, it is - *in most cases* - no longer necessary to set the eWON address as Gateway into the PLC.

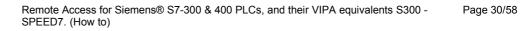
If, for any reason, you are using an earlier firmware version (not recommended) OR would the Plugn'Route function not work in your specific application, then you should refer to Appendix 2 - eWON as Gateway in PLC.

Note 2: The eWON types with 4 LAN ports (2005CD or 4005CD) can be connected to the Ethernet port of the PLC directly. Whereas the eWON types with a single LAN port (2101CD or 4101CD) need to be connected with a **crossed cable** (single PLC) or an **external switch** (multiple PLC).





2. End of Ethernet link configuration.



7. PLC software mapping configuration

7.1 Common steps for MPI and Ethernet ISOTCP link

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

🌄 SIMATIC Manager - [Test_P	BT C:⊉rogram Files\Sieme	ens\Step7\s7proj\Test_PBT]
🎒 File Edit Insert PLC View	Option: 2 indow Help	
□ ☞ 器 ☞ % ା	Customize Access Protection Change Log	Ctrl+Alt+E Filter >
	Text Libraries Language for Display Devices Manage Multilingual Texts	•
	Rewire Run-Time Properties	
	Compare Blocks Reference Data Define Global Data Configure Network	, ,
	Simulate Modules Configure Process Diagnostics	
	CAx Data Set PG/PC Interface 3	•
		a some hard

 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).

Set PG/PC Interface	Set PG/PC Interface
Access Path	Access Path
Access Point of the Application: S7ONLINE (STEP 7) -> TCP/IP(Auto) -> (Standard for STEP 7) Interface Parameter Assignment Used: TCP/IP(Auto) -> Properties Diagnostics Diagnostics Diagnostics Diagnostics Dejete	Access Point of the Application: S7ONLINE (STEP 7) -> TCP/IP(Auto) > AMD PONET Far (Standard for STEP 7) Interface Parameter Assignment Used: TCP/IP(Auto) >> AMD PONET Family PCI TCP/IP(Auto) >> AMD PONET Family PCI TCP/IP >> TAP-Win32 Adapter V8 TCP/IP(Auto) >> AMD PONET Family TCP/IP(Auto) >> AMD PONET Family Copy Delete
(Assigning Parameters for the IE-PG access to your NDIS CPs with TCP/IP Protocol (RFC-1006))	(Assigning Parameters for the IE-PG access to your NDIS CPs with TCP/IP Protocol (RFC-1006))
Add/Remove: Select	Add/Remove: Select
Cancel Help	OK Cancel Help

- 3. 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*.
- 4. Click *OK* to close the properties page. Back on the *Set PG/PC Interface* window, click *OK* to set the PC/PG interface.

Properties - TCP/IP(Auto) ->
TCP/IP network IE-PG Access
The IP addresses listed here are needed by STEP7 if the node is in a different subnet than the local IP address for the PG. STEP 7 creates additional temporary IP addresses on the local PG/PC for this purpose.
Do not assign IP addresses automatically Assign IP addresses unique to the project
IP address Subnet mask Network address first IP address last I
2 OK Cancel Help

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



7.2 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.

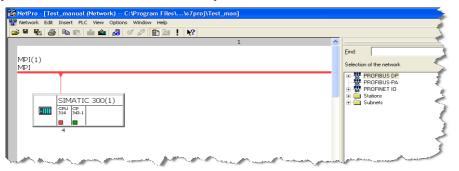
If you connect to the PLC using the MPI or Profibus link, then follow the steps explained hereunder:

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

 Open the Network Configuration *NetPro* utility of your Step7[®] project. You can access NetPro either by clicking the icon....

🗿 File Edit Insert PLC View	Options Window	Help			
🗅 🛩 🎛 🛲 🐰 🖻 🖻	📩 🤉 🗣	<u>□</u> <u>□</u> <u>□</u> <u>□</u> <u>□</u> <u>□</u>	Konter >	<u> </u>	8 🗐 🖷 🖡
→ Test_manual → mill SIMATIC 30011 → mill SIMATIC 30011 → mill CPU 314 → mill CPU 412-2 PCI	Du Hardware	CPU 314	:∭ :CP 343-1	Access to Netpro	
			uter and	ر هر العمور ا	m

... or by selecting the menu options $Options \rightarrow Configure Network$... you obtain the NetPro network layout window shown below:

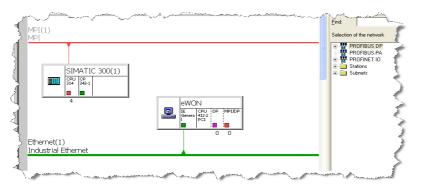


Import the eWON gateway station file you downloaded just before. Access path is *Edit* and *Import*. Browse to select either the eWON.cfg file (without WinCC) or eWON_WinCC.cfg (with WinCC) and click *OK*.

insert PLC View		'indow Help
y .		
ort	Ctrl+C Ctrl+V	
ete e ct Io Selection	Del	Import X
Го Го Connection Partn	Ctrl+E er	
ect Properties nection Partner nection Table ter System PFINET IO	Alt+Retu Alt+R	Import File C:\TempIO\eWON.cfg
en Object ge Connections ge / Unmerge Subne	Ctrl+Alt-	Cancel Help
	ort te ct o Selection o o Connection Partn oct Properties nection Partner nection Partner FINET IO n Object ge Connections	rt b te Del ct Del ct C o Selection co Ctrl+E o Connection Partner ct Properties Alt+Retu nection Partner Alt+R nection Table ter System FINET IO n Object Ctrl+Alt-

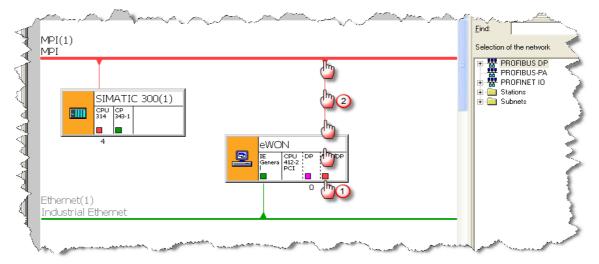
Note: the *Export file to a station* needs to be selected, though the notion of export is confusing while you will actually be importing a device configuration.

9. 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 <u>Technote 29</u> explaining how to create the **eWON gateway station file for Step7**® with NetPro from scratch.

10. 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.



11. 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

Properties - MPI interface MPI/DP (R0/52.2)		
General Parameters		
Address:	Properties - MPI	
Highest address: 31 Transmission rate: 187.5 Kbps Highest address: 31 MPI address: as defined in the IOServer config of the eWON	General Network Settings	
Subnet:	S7 subnet ID: 0020 - 0001 Project path: Test_manual\MPI(1)	
MPI(2) 187.5 Kbps 2 Properties	Storage location	
	Date created: 05/19/2011 10:26:10 AM Last modified: 05/13/2011 10:26:46 AM	
	Comment:	
DK Cancel Hel		
	OK	Help

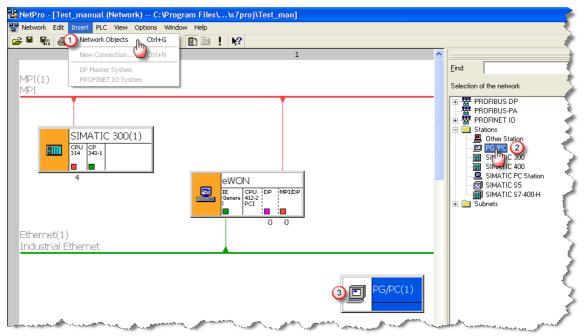
- 2 🖫 🔿 1 B R 📩 💼 6 Properties - Ethernet interface IE General (RO/S1) General Parameters Set MAC address / use ISO protocol 2 eWON CPU DP MPUDE MAC address: 412-PCI . -IP protocol is being used Π. 0 Gateway 192.168.0.53 IP address: Ethernet(1 3 Do not use router 4 255 255 0.0 Subnet mask: Industrial E ernei Use router Address: 192.168.0.53 Subnet: --- not networked New VON Gab Properties. 5 Delete roperties - Industrial Ethernet General OK (7 eWON Gateway Ethernet 6 Nar 0076 - 0007 S7 subnet ID Project path Test_manual\eWON Gateway Ethernel Storage locat of the project C:\Program Files\Siemens\Step7\s7proj\Test_man Author: Date created 05/19/2011 10:34:36 AM 05/19/2011 10:36:58 AM Last modified Comment Help ΟK Cancel
- 12. 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.

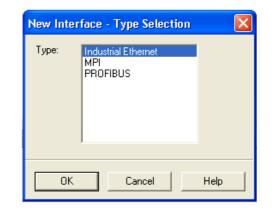
If you want, you can edit the name of the Ethernet by clicking *Properties.* Click *OK* twice to close the two Properties windows. 13. You will now add a PG/PC Station to the network layout using the path *Insert* → *Network Objects* of NetPro. Double-click on the PG/PC Station. An unconnected PG/PC station is now added in the network pane:



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

Properties -PG/PC				×
Gener Interfaces	Assignment			
Name	Туре	Address	Subnet	
2 New	Properties	Generate LDB	Delete]
ОК			Cancel Help	

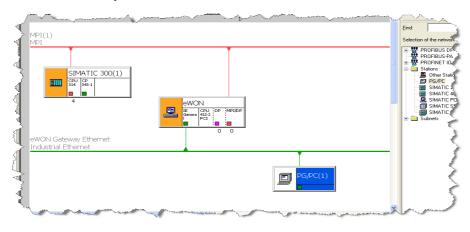
15. Select Industrial Ethernet, and click OK.



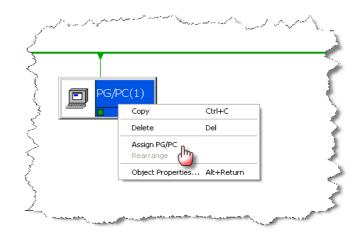
16. In the parameter tab, make sure the Set MAC address / use ISO protocol is NOT selected. - Set the IP address and the subnet *mask* of <u>your PC</u>. Check the Do not use router box. In the Subnet window on the bottom of the page select the network on which the eWON is connected to: in our example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

Properties - Ethernet interface		×
Gener①Parameters		
C Set MAC address		
MAC address: If a subnet is selected, the next available address	ses are suggested.	
IP protocol is being used		
IP address: 2 192.168.0.132 Gateway © Do not use router 3		
Subnet mask: 255.255.0.0 C Use router	2	
Address: 192.168.	0.132	
Subnet:		
eWON Gateway Ethernet 0 (4)	New	
<u> </u>	Properties	
_	Delete	
<u>б</u> ок <u>с</u> .	ancel Help	

17. Your network layout should now look like this:



18. 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*.



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

Properties -PG/PC					
General Interfaces	Assignment				
Configured Interfaces	3:				
	Type Industrial Ethernet	Subnet eWON Gateway	Ethernet		
Interface Parameter / TCP/IP(Auto) ->	0	PG/PC:	<u>~</u>		
TCP/IP(Auto) -> 13 TCP/IP(Auto) -> Re TCP/IP(Auto) -> TA	altek RTL8139 Fa. P-Win32 Adapter V		-	<u>A</u> ssi	ign 2
A <u>s</u> signed:				Disco	nnect
Interface	Parameter assig	n Subnet	S7Online a		
				S7ONLINE	Access:
<			>	🗌 Ac <u>t</u> ive	
3 ок			0	Cancel	Help

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:*

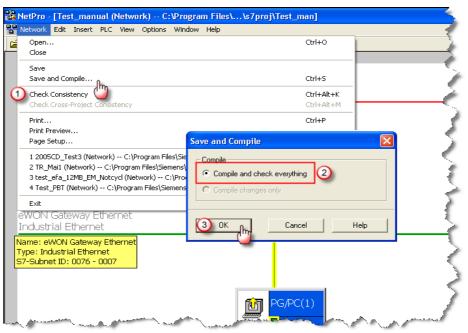
You can Ignore this message and click **OK**.

Edit Object Prop	rties (2775:809)	×
its ow	terface parameters cannot be adapted by this a type (Ethernet interface) because the module ha n parameter assignment software or it has to be ed after having modified the parameters.	s
ССК	Details Help	

- Find: mt mi 🕻 (PI(1) PROFIBUS DP Sel Stati SIMATIC 300(1) NON roperties -PG/PC CPU CP 314 343-1 Ð MPUD 8 General Interfaces Assignment Not Assigned Configured Interfaces Name Type Subnet WON Gateway Ethernet Industrial Ethernel Interface Parameter Assignments in the PG/PC: TCP/IP > TAP-Win32 Adapter V8 TCP/IP > TAP-Win32 Adapter V9 TCP/IP(Auto) > AMD PCNET Family P... TCP/IP(Auto) > AMD PCNET Family P... PG/PC(1) Û Assigned Disconnect S70NLINE Access > Active OK Cancel Help
- 20. 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.

21. 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.



- 22. 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*.
- 23. 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.
- 24. The network layout of your project should now looks like this:

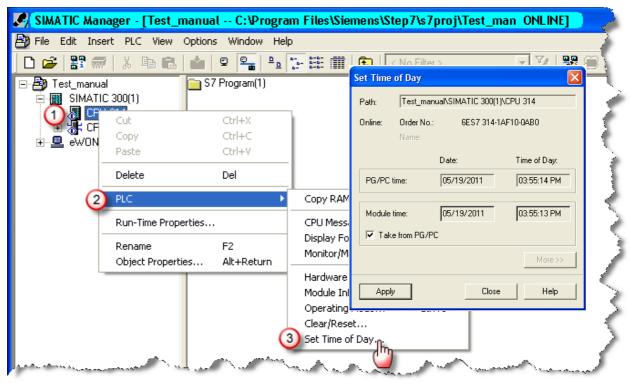
	vetPro - [Test_manual (Network) C:\Program Files\\s7proj\Test_man]	
	Network Edit Insert PLC View Options Window Help	Ŋ
2		\geq
	1	\geq
	4	5
	MPI(1) MPI	ł
		5
	SIMATIC 300(1) eWON SIMATIC 301 IE SIMATIC 300(1) IE General 412-2 IE	2
		2
	4 0 0	\$
	eWON Gateway Ethernet Industrial Ethernet	\geq
		5
		}
	 PG/PC(1)	ξ
		S
	and the second	>

- 25. You can close the NetPro window
- 26. End of PLC software mapping configuration

8. Establishing remote connection

It is supposed you have been going through the previous steps. Hence, your PLC and the eWON are physically connected either by MPI or by Ethernet ISOTCP connection. The steps below are the same for both connection type.

- 1. First establish the remote connection to the eWON as explained in <u>Step 6</u> of the eWON configuration part.
- 2. Once the Talk2M VPN tunnel towards the eWON is established by eCatcher, start SIMATIC STEP7®
- 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. Once you finished your work with SIMATIC STEP7®...
 - ...terminate the SIMATIC Step7®connection through View > Offline and close the application.
 - ...terminate the Talk2M connection of the eWON explained in Step 7: Terminating the remote connection of the eWON configuration part.
- 6. End of PLC remote access.

9. Troubleshooting

9.1 Cannot reach the PLC on its MPI/Profibus port?

If you cannot reach the serial PLC connected to the eWON then verify the following:

- Check <u>IOServer configuration</u> in eWON page (S73&400 and protocol settings)
- Open the eWON Event Log [Main Menu, Diagnostic, Event Log] to check for error messages.
- In SIMATIC Step7[®] check in the Netpro network layout if the correct IP address has been configured: You must use either the eWON LAN IP address or the eWON VPN IP address.

9.2 Cannot reach PLC by Ethernet ISOTCP ?

To be able to reach the PLC by Ethernet ISOTCP, the following conditions must be fulfilled:

- Reboot the PLC after IP address and/or gateway change.
- Check that the network LEDs are lighting at both ends. If they aren't, it means there is an issue with the Ethernet cable(s). If you use an eWON having a single Ethernet LAN port (no integrated switch), then you have to use either a *crossed* Ethernet cable (point-to-point with single PLC) or an intermediate switch (multiple PLCs).
- You might have a mismatch between the actual IP configuration of the eWON and the eWON LAN IP address configured as Remote Network in your Talk2M account. You can check, and if necessary, modify these settings, in eCatcher. Under the eWON list select the Name of the remote connection and click on the *Detail* button.

🛃 eCat	atcher (3.0.0 build 7195)	
9	Active Connection	
Devices		1
*	Name IP A Description User(s) connected	i,
Users		1
R.	eWON list	-
Account		~
×		
Sektings	Action A Name X Status Description User(s) connecte Custom Field 1 Custom Field 2 Custom Field 3 My Ewon Offline This is a descr Group of JocatLocation Unit	
	the second	and l

The eWON Detail window will open:

Here you will find the different information you entered earlier. The Remote Network is specified under the Remote connection section.

eWON Detail	4	Ì
←☑∕∕⋛``@′	M-	5
eWON Name:	eWON Company XY	5
eWON Description	eWON at Company XY	5
eWON Serial Number :	0830-0003-56	2
Connection Type :	LAN/ADSL	
Country	Belgium	2
PLC type	Siemens PLC	
Custom Field 3	4	<
Remote Connection		7
eWON's LAN IP:	192.168.0.53	1
Network Mask:	255.255.255.0	ļ
and the second	and plant reason have present.	

To change the Remote Connection settings, click on the Edit button on the top of the page.

Once the modification is finished, click on the Save button which is displayed on the top of the window when in edit mode. After the change you would then have to save and **Disconnect** and **Connect** the VPN bridge to the eWON for Talk2M to take the modification into account.

- The remote PLC network must be in a different range than the company network on which your PC is connected (see Step 1: Setting IP address of eWON LAN).

10. Appendix 1 – Specifics for Modem connections

10.1 General

The basic configuration principles remain the same except for typical modem settings. Allow enough time for tasks to be executed when you use a modem link.

In the following explanations, we took the most current example of GPRS/Edge modem. Extrapolating to other modem technologies is rather straight forward.

Only those steps that are different from the LAN/WAN connection are addressed.

10.2 Configuring the eWON for Internet connection (Step 2)

 In the Internet configuration wizard of the eWON, select *Modem Connection* option and, depending on the modem installed in the eWON, the interface asks the user to fill out the different parameters of the relevant modem. Fill out the different fields (PIN code, APN and user name/password) according those you received from your Service Provider. For most Service Providers, User Name and Password can be left empty. Click *Next.*

SIM PIN:	connection (GPRS/EDGE/3G)	
Unit III.	Enter the SIM PIN code (4 digits). Leave empty does not require a PIN code.	if the SIM card
APN:	internet.proximus.be	
	The Access Point Name is specified by the GS	Not for reference take your own PIN
User Name:		code, APN and
	User name as defined by the GSM operator (s do not require a username, check with your o	login data.
Password:	•••••	
	Password as defined by the operator.	

2. Configure how the eWON should go online, and click Next.

Configure "Go Online" trigger
Triggered by outgoing actions
eWON will establish the connection each time an internal action needs to connect to the Internet (eMail, FTP, NTP, etc.)
O Maintain connection
eWON will establish the Internet connection each time it is broken down.
O Triggered by phone call or outgoing actions.
eWON will establish the connection when receiving an external call or during outgoing actions (see above).

In most cases, it will be *Triggered by outgoing actions*. This option is needed to be able to use the Wake-Up function. Only check *Maintain connection* if you want to use a permanent connection to your eWON device (which can be very expensive using a GPRS/Edge line).

3. Configure your online time parameters, and click Next

Trigger: Connec	ct for outgoing actions
offord fill ootor	olish the connection each time an internal action needs to nternet. (eMail, FTP, NTP, etc.)
ldle time before hanging up:	120 Seconds. If there is no traffic for this amount of time, eWON will hang up
Max outgoing call duration:	60 Minutes. Maximum duration of any outgoing call.
Enable call b	udget management.
When the call bu connection.	udget is exceeded then eWON will close the Internet

In most cases, you can leave the default parameters.

The *Max outgoing call duration* is set by default to 60 minutes. The eWON will drop the Talk2M connection after 1 hour. If you need longer connection times, enter a higher value or set it to <u>0 for no limit.</u>

By default, the *Idle time before hanging up* is set to 120 seconds. You can leave this value as is. In fact, it is not a useful parameter for a Talk2M connection because a VPN life bit is periodically exchanged preventing connection interruptions due to idle times.

4. End of Step 2 in Appendix 1.

10.3 Creating the eWON in your Talk2M account (Step 3)

- 1. In the creation process of the eWON in your Talk2M account, the sole additional steps are:
 - specifying the connection type (in our example GPRS/Edge)
 - entering the phone number

🔹 eCatcher	(3.0.0 build 7195)		
e	eWON Detail		
Devices	← ☑ ≁ ₴ ````@ イヤ		
*	eWON Name :	L'iwonne au Rippe	^
Users	eWON Description		
垦	eWON Serial Number : Connection Type :	1036-0021-56 GPRS/EDGE	
Account	Phone number	0032473541035	
*	Custom Field 1	Belgique	
Settings	Custom Field 2	Nivelle-Baulers	_
Securigs	Custom Field 3	Team Support	
	Remote Connection		
	eWON's LAN IP:	192.168.120.235	
	Network Mask:	255.255.0.0	
i			~
Help			1000
\bigcirc	Talk2M	Manage your Talk2M account and datas on MyTalk2M (visit https://my.talk2m.com)	J.
Exit			-
	my.talk2m.com Ch	edit : 10,2€ [pierre]	Talk2M

2. End of Step 3 in Appendix 1.

10.4 Connecting the eWON remotely (Step 6)

1. If you use an eWON GPRS, then you probably configured the eWON not to stay connected all the time to the Talk2M server. Before being able to connect to the eWON over Talk2M you will first need to wake-up the modem of the eWON. To do this, click on the *Wake-up* icon in front of the eWON name as shown in the following picture:

- %	🔨 🖽 🛐 Wake u	Ф 💽 Ф		
~		~	Notification;	×
Action 💌	Name	s ⁵⁶		ser(s) connected
0	Plant X	Offline	Wakeup SMS sent	
վիդ	eWON Company XY	Offline	·	
			ОК	
				,

2. Talk2M sends an SMS (text message) to the eWON to ask the eWON to start its Internet connection and to connect to the Talk2M server. This can take up to several minutes; do not interfere until this process is completed.

Note: You do not necessarily need Talk2M to send the wake-up SMS to the eWON. You can do this using your own GSM (cellular phone). All you need is to have the dial number of the eWON by the hand and to send the following SMS (text-message) to it: [Talk2MConnect] (without brackets).

- 3. Once the modem is online, the green *Connect* icon is shown to allow to bridge the VPN tunnel.
- 4. You can now click on the *Connect* button as explained in the LAN/WAN procedure to establish the remote connection.
- 5. Once the VPN tunnel is bridged the red *Disconnect* icon is shown to allow you to cut the bridge of the VPN connection.

Disconnect	Name 🔻		IP		Description		Jser(s) connected	
VON Compan		10.8.129.39		eWON at Compa		admin		
WON list								
F 🇞 🛛	🔪 🧰 🔊 Disconne	ect 💽						
	×	v	~	×	×	~		*
	Name	💉 Status	Descrip	otion	User(s) connected	Country	PLC type	ustor
Action 💌		- 665	PLC at plant x					
Action 💌	Plant X	Offline	PLC at plant x					

6. End of Step 6 in Appendix 1.

10.5 Terminating the remote connection (Step 7)

If the eWON to which you were connected uses a Modem connection for the Internet access, then you probably want to close the Internet connection of the eWON (to save GPRS communication costs). This is done with eCatcher.

Note that there are 2 distinct notions to be considered: *Connect / Disconnect* that applies to bridging the VPN tunnel and *Go Offline* that closes the VPN link and hence the modem connection (on hook)

- 1. Click on *Disconnect* to cut the VPN bridge.
- 2. Right-click on the Online icon in front of the eWON. In the context menu click on the **Go offline** button to send the disconnect request to the eWON. The eWON will then close its Internet connection and after a while the eWON will be displayed as offline in your Talk2M account.



3. End of Step 7 in Appendix 1.

11. Appendix 2 – eWON as Gateway in PLC

If, for any reason, the Plug'nRoute function is not working in your configuration, then you will need to disable the Plug'nRoute feature in the eWON and configure manually the eWON LAN IP address as default Gateway in the configuration of the PLC.

 To disable the Plug'nRoute function, connect to the eWON web site and click on *Configuration*, *System Setup* from the *Main Menu*. Navigate further to *Communication, Networking Config, Routing* and the screen below should be displayed:

ewon	Tag Setup			System Setup 1 IO Server C				Main Menu 🖌
eWON51	Script S	etup	Users	Setup	Pages List			w
General		<u>C</u>	ommunication 2		<u>Storage</u>			23/06/2011 1
M Config	Routing setup							
interfaces Network connections	Special rules							
etwork connections	Route all gateway traf	fic through VPN				Wh	ien VPN interfa	ce is active
Internet Connection	NAT and TF (Transpa	rent Forwarding)						
VPN Connection	Apply NAT and TF to connection NAT and TF disabled In the device.				des LAN device access without configuring eWON as ga			
Publish IP Address	NAT and TF disabled NAT on LAN (Plug'n Rou					1110	the device.	
Callback	Static routes table		NAT and TF on VPN NAT and TF on WAN	·	Gateway	Hops	Clear	
Proxy	R	oute 1	0.0.0.0	0.0.0	0.0.0	0.	Clear	
Security	R	oute 2	0.0.0.0	0.0.0	0.0.0	0.	Clear	
IP Services	R	oute 3	0.0.0.0	0.0.0	0.0.0			
lanage Config				These shapped will be	effective from next WAN o			
-				These changes will be	-	onnection		
					Update 6			

Select **NAT and TF disabled** form the drop-down menu in the **Apply NAT and TF** to connection click **Update** AND reboot the eWON.

There are *two phases* to configure the IP addresses in a Siemens or VIPA PLCs:

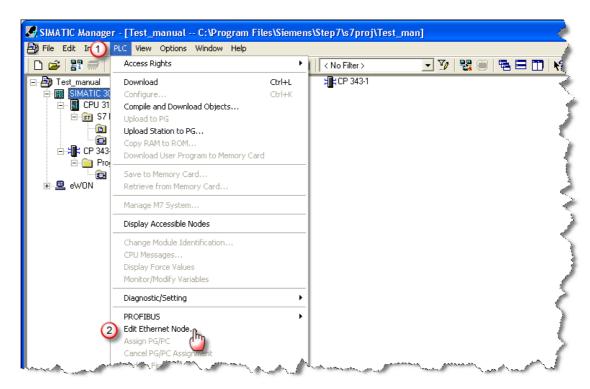
Phase 1 consists in allocating the new IP addresses to the hardware to enable communication with the PLC. This configuration is volatile and would be lost in case of PLC reboot or power down. Phase 1 is done by connecting the Ethernet card to your company network and having SIMATIC Step7® on your PG/PC detecting the IP-address of the card to be able to edit its configuration.

Phase 2 consists in configuring the new IP address in the project on the PG/PC side and downloading the project (featuring the new IP address) to the PLC.

Note: Alternatively, you can download the Ethernet card configuration parameters using a point-to-point MPI link between your PG/PC and your PLC.

11.1.1 Phase 1 – Communicating online with the PLC

- 1. Connect the Ethernet card of the PLC with the company network to which the configuration PG/PC is also connected.
- Start SIMATIC Step7[®], open your project and *PLC > Edit Ethernet Node...* from the main menu.



 In the *Edit Ethernet Node* wizard, click on the *Browse* button to have SIMATIC Step7® searching for the connected Ethernet PLC-nodes on the network. Select the node you want to configure from the proposed list:

Edit Ethernet Node						
Ethernet node	Nodes accessible online					
MAC address:	Browse	Browse Network -	3 Nodes			X
		Start	I IP address	MAC address 08-00-06-91-C5-1E	Device type	Device name
Set IP configuration	-	Stop	10.0.120.220 10.0.10.77 192.168.120	00-0E-8C-85-C2-62 00-1C-06-00-8E-57	S7-300 CP S7-300 S7-1200	SIMATIC 300 pn-io00-0e-8
Use IP parameters						
	Gateway					
IP address:	Do not use router					
Subnet mask:	C Use router					
	Address:	Flash	<			>
C Obtain IP address from a DHCP server		MAC address:	08-00-06-91-C5-1E			
r Ide Tred In-	and a second a second second	Ок			Cancel	Help

 Enter the *IP address* and *Subnet Mask* of the PLC (has to be in same range than the eWON LAN), tick the *Use Router* button and enter the eWON LAN address as Gateway. <u>Do not</u> forget to click on *Assign IP Configuration* to send the change to the PLC. Wait for the success message and click on *Close* when you have finished.

Ethernet node		
		Nodes accessible online
MAC address:	08-00-06-91-C5-1E	Browse
Set IP configuration		
Use IP parameter	rrs	
IP address: Subnet mask:	192.168.0.61 255.255.255.0	Gateway C Do not use router O Use router
		Address: 192.168.0.53
Obtain IP addres	s from a DHCP server	
Identified by		
Client ID	C MAC address	C Device name
Client ID:		
3 Assign IP Config	uration	
Assign device name		
Device name:		Assign Name
Reset to factory setti	ngs	
		Reset

5. To test the Ethernet communication, you need to put your PG/PC in the same IP range than the PLC, otherwise you will not be able to connect. Right-click on the CPU node, select *PLC* > *Set Time of Day*. If the *Set Time of Day* panel appears and timers are incrementing, the communication is working alright. If not, check PG/PC IP range and whether the new IP config in the PLC was retained. Do not power off or reset the PLC until the new configuration will embedded in the PLC program (phase 2).

11.1.2 Phase 2 – Embedding the IP config in the PLC program

Note: It might seem strange but, you have to redo in another environment part of the job you did in Phase 1. This time it is to embed the new IP configuration into the PLC program and to make it persistent (no longer temporary and sensitive to power off or reset).

1. On your project, select your PLC-station object in the tree, right-click and select the **Open Object** menu option like shown below:



2. This opens the hardware configuration window shown below. Open the Ethernet card properties by double-clicking it in the slot table. In the wizard click on *Properties*.

3. Enter the *IP address* and *Subnet Mask* of the PLC (has to be in same range than the eWON LAN), select the *Use Router* option and enter the eWON LAN address as Gateway. You can leave the Subnet as *--- not networked ---.* Click *OK*.

Properties - Ethernet interface CP 343-1 (R0/S4)	×
General Parameters General Parameters Set MAC address / use ISO protocol MAC address:	
IP protocol is being used IP address: Subnet mask: 192:168.0.61 255:255.0 Image: Construction of the second	
not networked 3 eWDN Gateway Ethernet New Properties Delete	
Cancel Help	

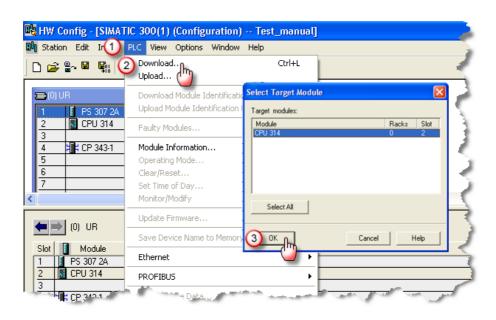
4. You can click *OK* on the error message stating the module is not assigned to a network.

Object Properties (4502:510)					
⚠	The module is not yet assigned to a network				
ОК	_fm	Help			

 Save your changes by clicking *Station* > *Save and Compile*. Wait until the operation is completed. Once OK the new IP config is included into the project program on the PG/PC-station, <u>but has not yet been sent to the PLC !</u>

HW Config - [SIMATIC 300(1		t_manual] ·
Station Edit Insert PLC View	Options Window Help	
- New	Ctrl+N	₩ ?
Open	Ctrl+O	
Open ONLINE		
Close		
Save		- <u>-</u> .
2) Save and Compile	Ctrl+S	-
	Curro	=
Properties		
Import		
· ·		
Export		× .
Consistency Check	Ctrl+Alt+K	
Check CiR Compatibility	Ctrl+Alt+F	
	And the Astronomy	

6. Download the program integrating the new IP config to the PLC module by clicking on the *PLC* > *Download* menu items. Check the CPU module and click *OK*.



7. The interface opens a node selection pane, select the node of the Ethernet card meant to interface with the eWON and click *OK*.

Select Node Add	lress				×
Over which station	address is the programming	device connec	cted to the modu	ile CPU 314?	
Rack:					
Slot:	2				
Target Station:	C Local				
	C Can be reached by r	neans of gatew	ay		
Enter connection	to target station:				
IP address	MAC address	Module type	Station name	Module name	Р
192.168.0.61	()	CP 343-1)	>
Accessible Nodes					_
<					>
		/iew			
2 ок 🧄			Cancel	Help	

8. A warning states that the CPU will be stopped during the download: <u>make sure this is</u> <u>not likely to bring any process or person in danger</u> and click **OK**. When the download is completed, another warning asks whether the CPU should be restarted, click **Yes**.

- If you want to make sure your parameters are well stored, power the PLC off and on again and check that its new IP config is well maintained (SIMATIC Step7® main menu *PLC* > *Edit Ethernet Node* > *Browse*).
- 10. You can now make the physical link between the PLC to the Ethernet LAN port of the eWON.
- 11. End of Ethernet ISOTCP link configuration.

What if you cannot set Gateway on PLC?

Setting the eWON as Gateway in the PLC is not always possible. In such case, you should first make sure the *Plug'nRoute* feature does not work in your specific case. Disable *Plug'nRoute* like explained in point 1 above and *reboot* your eWON.

You can now use the **eWON Proxy** feature to allow remote connection to the PLC without mapping the eWON IP address as gateway.

Detailed information on how to do this can be found on the eWON Web site: "How to proxy a PLC protocol" <u>http://support.ewon.biz/docs/Proxy_PLC.htm</u>

When using a Proxy, in combination with a Talk2M Connection, then you need to map the <u>VPN IP address of the eWON</u> in SIMATIC Step7 to allow the remote connection.

This is impacting:

§ 5.6 Step 6: Connecting the eWON remotely - point 5 – you need to fetch the VPN IP address allocated by Talk2M. Keep only the core IP, not the port part, this would be 10.8.129.82 in the example below.

	ner (3.0	.0 build 7	189)						Ŀ
Name IP Description User(s) conne eWON Company XY 10.8.129.82 81 eWON at Company XY jcn eWON list Image: Status Imag	Act	ve Conne	ection						
Name IP Description User(s) conne eWON Company XY 10.8.129.82 81 eWON at Company XY jcn eWON list Image: Status Imag									
eWON Company XY 10.8.129.82 81 eWON at Company XY jcn eWON list + So Q II Obsconnect C Action Name Status Description User(s) connected Custom Field 1 Custom Field 2 Cu									
eWON list + So a B Disconnect Action Name Name Status Description User(s) connected Custom Eleft 1 Custom Eleft 2 Cus					IP			User(s) c	onnected
+ 80 C E Disconnect C	eWON	I Company X	Y	<u>10.8.129.8281</u>		eWON at Company	XY	jcn	
Image: Status Description Liser(s) connect Image: Status									
+ 80 C E Disconnect C									
Action V Name Status Description User(s) connected Custom Field 1 Custom Field 2 Cu	eW	ON list							
Action V Name Status Description User(s) connected Custom Field 1 Custom Field 2 Cu									
Action 🔻 Name 🚿 Status Description Liser(s) connecter Custom Field 1 - Custom Field 2 - Cu	+	80 0	💷 🔊 Discor	nnect 💽					
Action 🔻 Name 🚿 Status Description Liser(s) connecter Custom Field 1 - Custom Field 2 - Cu									
Action * Name M* Status Description User(s) connected Custom Heid 1 Custom Heid 2 Cu									Custon
🕺 🖌 eWON Compan Connected eWON at Comp jcn 🛛 🛛 🛛 🖉 Belgium 🖉 Siemens PLC				🔊 Status	Description			Siemens PLC	Custon

§ 6 Linking eWON and PLC – you need to configure the proxy feature of the eWON. See detailed description in document referenced above.

§ 7 PLC software mapping configuration – you need to map the VPN IP address instead of the eWON LAN IP address.

§ 8 Establishing remote connection – point 4 – The PLC appears in the list with <u>IP</u> address of the VPN (not its own IP address).

12. Appendix 3 – Security aspects

12.1 Login security

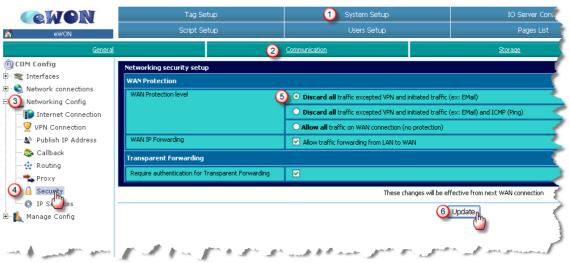
A good security practice consists in modifying the login and password of the default super user adm/adm (this default super user cannot be deleted). Modifying the default super user is done by clicking on *Configuration, Users Setup* button on the main menu of the eWON web page.

12.2 Traffic security

Since the eWON firmware version 6.2s1 (see note), when the Talk2M wizard is executed, the WAN Security setting is set automatically to *Discard all traffic excepted VPN and initiated traffic.* This is preventing third party traffic to interact with your private traffic.

If, for any reason, your eWON runs an earlier firmware version (not recommended) OR that you want to check the WAN protection status, you can do it using the following path: *Configuration, System Setup, Communication, Networking Config, Security.*

Check that the *Discard all traffic excepted VPN and initiated traffic* check-box is ticked.



If the eWON is configured to use a modem to go out on the Internet, then the WAN connection is the GPRS/EDGE connection. <u>This type of access definitely requires</u> <u>protection</u>. If the eWON is configured to use its second Ethernet Interface to go out on the Internet, then the WAN connection is the Ethernet WAN port that uses the company infrastructure and benefits from the IT protections in place. Hence, this type of access is less exposed to security issues.

Note: The changes applied on this page will only be effective from the next WAN connection. So from the next GPRS connection, or after an eWON reboot if you use the 2nd Ethernet port of the eWON for the Internet connection.

13. Appendix 4 – MPI/Profibus cable

The MPI/Profibus cable you can use the standard Siemens Profibus cables and connectors.

Siemens is offering a range of different MPI cable references we cannot list here.

One of the basic genuine Siemens references is 6ES7901-0BF00-0AA0.

There are compatible cables available on the market. Not having the same quality or featuring the same functions (i.e. switchable termination resistors).

eWON is proposing a compatible unshielded cable:

P/N EW40912 - SUBD9/SUBD9 cable for Siemens S7, Length: 2 meter

Max baudrate is 1.5 MBit/s.

For higher baudrates use the Siemens genuine Profibus cables with resistor terminations.

Revision history		
Revision Level	Date	Description
1.0	12/05/11	First issue
2.0	30/05/11	Security aspects (Appendix 2) added.
2.1	01/06/11	Automated IP config recognition
2.2	23/06/11	Plug'nRoute impact - changed 6.3 partly moved to Appendix 2, 9.3 moved to Appendix 2
2.3	15/12/16	Added "PLC Discovery" to Chapter 6.3

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