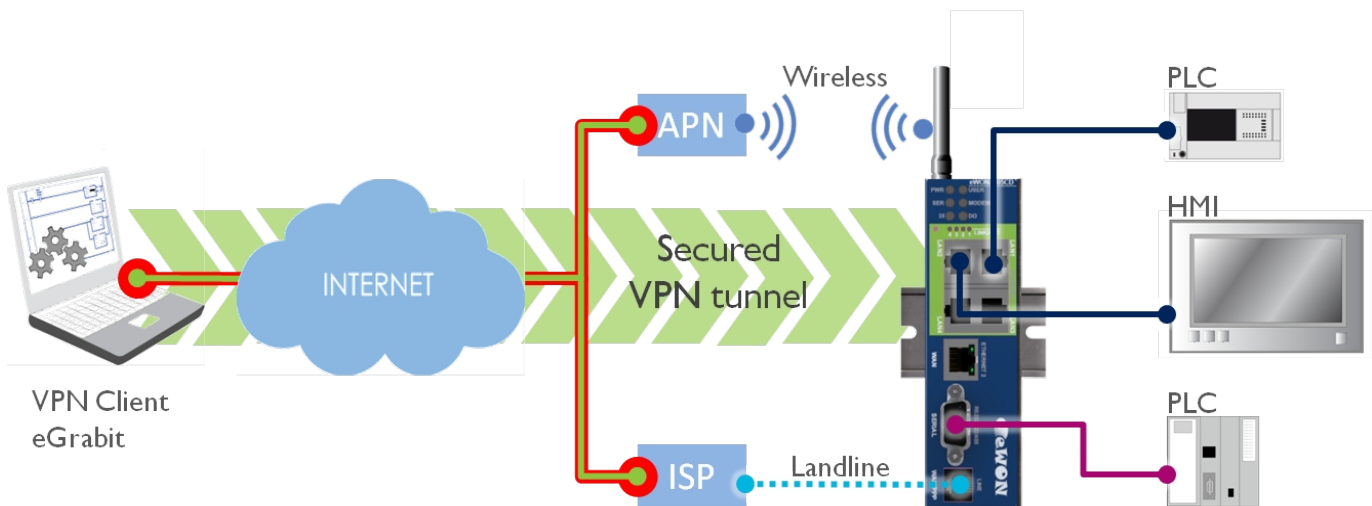


Direct VPN Connection Using a Modem



Content

This guide explains how to configure your eWON in order to establish a direct VPN connection between your PC and your eWON using a landline or wireless modem.

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Hardware and software requirements

Hardware requirements

In order to follow this guide you will need:

- 1 eWON with VPN capabilities (for example : eWON 2005CD)

Software requirements

eWON configuration software:

The eWON is configured through its embedded web server. So all you need is a standard Web Browser software like Internet Explorerⁱ or Firefoxⁱⁱ.

Additionally we suggest you to download the eBuddy utility on our website :

<http://support.ewon.biz>.

This utility allows to list all the eWONs on your network and to change the default IP address of an eWON to match your LAN IP address range. With eBuddy you can also easily backup/restore your configuration or upgrade the firmware of your eWON (if required).

eGorbit:

To establish the VPN connection you need to install eGorbit on your PC. This software will act as VPN Client for the VPN connection to the VPN server (eWON).

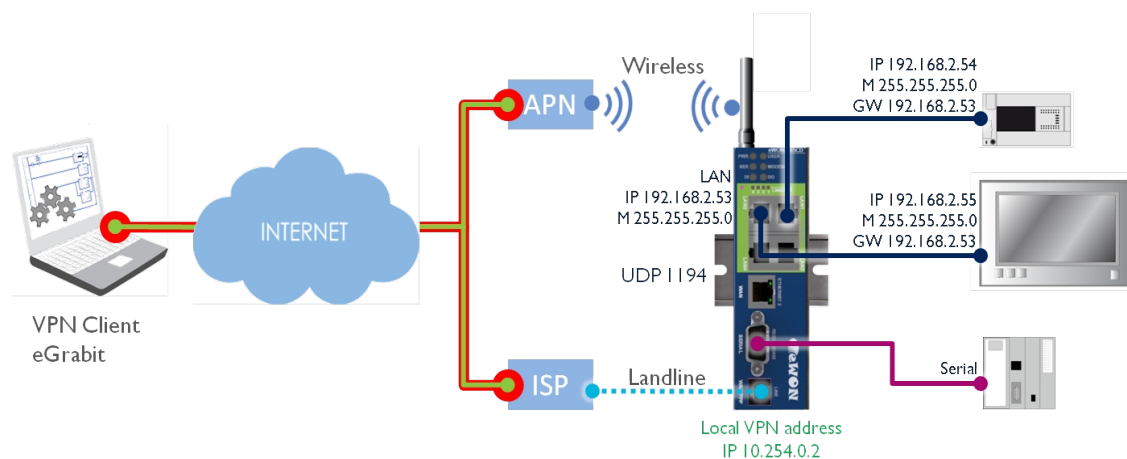
eGorbit can be downloaded for free from our website: <http://support.ewon.biz>.

eWON Firmware Version

To be able to follow this guide your eWON needs a firmware version 5.4s0 or higher. A simple way to realize the eWON firmware upgrade is to use eBuddy, the eWON software companion.

Introduction

With its embedded PSTN, ISDN or GSM/GPRS modem, the eWON is your access point to field applications and your service gateway to perform remote maintenance on distant equipments.



In this document, we will see how to reach your eWON and PLC(s) from your PC through a VPN connection.


Here are the steps to reach your eWON through a VPN connection:

- Configure your eWON for **Internet** connection
- Configure your eWON to act as VPN server
- Install and configure the **eGabit** software on your PC to act as VPN client

If you want to reach devices connected to your eWON:

- Set your eWON LAN IP address as default gateway on the devices behind the eWON

eWON configuration for Internet connection

To establish an Internet connection using the eWON modem, you can configure it manually or using the eWON Wizard which is efficient and easier. To open the eWON Wizard, click on **Configuration** in the toolbar and then on the  icon. If you choose the Wizard option, please go directly to Chapter 4. Should you have any problem in configuring your eWON for the Internet connection using Wizard, refer to our document AUG-019-0-EN (<http://support.ewon.biz>)

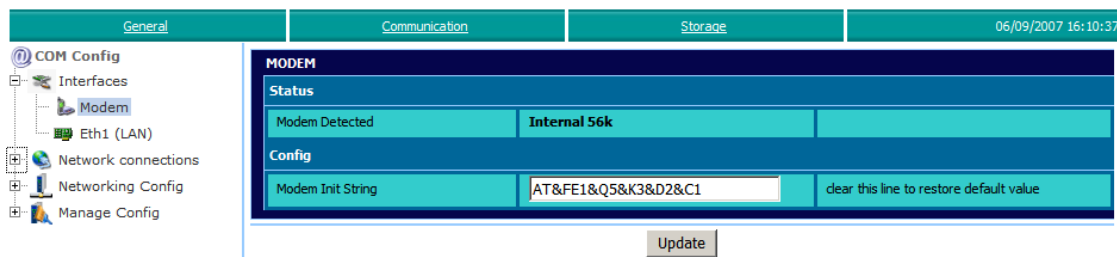
In this guide, we will focus on the manual configuration only.

Modem Configuration

To configure the modem of your eWON, follow this path:

Configuration → System Setup → Communication → Interfaces → Modem

PSTN Modem



Let the **Modem Init String** unchanged.

You can adapt the string if the modem needs special settings to comply with your local telephone system.

ISDN Modem

Here, you can insert your MSN which identifies your equipment on your ISDN network.

3. eWON configuration for Internet connection

The screenshot shows the eWON web interface with the 'Communication' tab selected. The left sidebar shows a tree view with 'COM Config' expanded to 'Modem'. The main content area displays the 'MODEM' configuration page. The 'Status' section includes 'Modem Detected' (Internal ISDN) and 'Signal Level' (29). The 'Config' section includes 'Modem Init String' (AT&FE0&D&C1&K3B3) and 'MSN' (empty). An 'Update' button is located at the bottom right of the configuration area.

GSM/GPRS Edge Modem


The screenshot shows the eWON web interface with the 'Communication' tab selected. The left sidebar shows a tree view with 'COM Config' expanded to 'Modem'. The main content area displays the 'MODEM' configuration page. The 'Status' section includes 'Modem Detected' (Internal MULTIBAND GSM), 'Signal Level' (29), 'Network' (Home network), and 'Operator' (BEL PROXIMUS). The 'Config' section includes 'Modem Init String' (AT&FE0&D2&C1+IFC=2,2;+CSNS=4) and 'GSM PIN Code' (1234). The 'GPRS Configuration' section includes 'PDP context definition' (Enabled), 'Access Point Name' (internet.proximus.be), and 'Quality of Service Profile (Requested)' and 'Quality of Service Profile (Minimum Acceptable)' (both Enabled). An 'Update' button is located at the bottom right of the configuration area.


Let the **Modem Init String** unchanged.

Enter the PIN code of your SIM card.

If you want to use GPRS, enable the **PDP context definition** and enter the **Access Point Name** (APN) for your GPRS connection.

The APN specifies to which network your mobile will be connected. So the information of which APN to use should be provided by the Service Provider of your SIM card.

NOTE  If your SIM card has an empty PIN code, then enter 0000 in the «GSM PIN Code» field or leave it empty.
Only for firmware versions older than 5.4s0 you must specify 0000 otherwise the GSM connection will not work.

IMPORTANT  The PIN code is only checked when the eWON starts up. So if you change the PIN code, you will have to reboot the eWON to take the changes into account.

The other fields (upper part) cannot be modified, they only give you status information:

- The **Modem Detected** field displays the textual description of the eWON internal modem detected.
- The **Signal Level** field shows the current signal level for your GSM/GPRS communication. The signal level must be between 20 and 31 (signal levels lower than 18 could work, but the communication could be slower or even interrupted). If you get 0 or 99, check your local environment and your antenna isolation/power.
- The **Network** field indicates if you are able to connect to the GSM/GPRS network. You should read «**Home network**» (when you are in your country) and «**Roaming**» (when you are abroad) to communicate safely.
- The **Operator** field displays the current GSM provider that you are using.

Setup outgoing connection to the ISP provider

Configuration → System Setup → Communication → Network connections → Modem → Outgoing → Global

Section	Parameter	Value	Unit	Notes
Global outgoing connections parameters	Dial and connection timeout	180	seconds	
	Enable protocol compression	<input checked="" type="checkbox"/>		
	Delay between dialout retries	60	seconds	
Maximum connection time	Idle time before hanging up	600	seconds	Minimum 60 seconds
	Max outgoing call duration	60	minutes	0 for no limit
	Hangup if no outgoing action after	-1	minutes	-1 to hangup after idle time
Error recovery	Select next server in case of error	Use only server 1		
	Reset modem after	4	outgoing call failures	
Calls budget management	Allocated budget	24	hours	0 for no limit
	Reset budget period	168	hours	
	Current budget period	24:00:00	hours	Leave empty for 'no change'
Volume monitoring	Volume: IN: 335956, OUT: 328160, Last reset: 01/01/1970 00:00:00			Reset volume monitoring counters

Enable the **PPP outgoing Connection**.

Change if needed the **Maximum connection Time** settings:

The **Idle time before hanging up** parameter defines the number of seconds that eWON will keep the connection established if there is no communication. If there is no traffic for this amount of time, eWON will hang up. By default this parameter is set to 120 sec. By setting the **Idle time before hanging up** to 600 seconds, eWON will drop the Internet connection after 10 minutes of inactivity.

By default the **Max outgoing call duration** is set to 60 minutes. So the eWON will drop the Internet connection after 1 hour. Even if there is still traffic on the modem connection. Increase this parameter if you want to stay connected for a longer time. Put it on 0 to define no time limit for the connection.

For the **Error recovery** choose **Use only server 1** if you do not specify a second ISP.

The **Call budget management** allows you to manage the costs of the outgoing connection. The default settings allow you to use 24 hours of outgoing connection during one week (168 hours). Set to 0 to disable the call budget management.

3. eWON configuration for Internet connection

Configuration → System Setup → Communication → Network connections → Modem → Outgoing → Server1

PSTN or ISDN Modem

General	Communication	Storage	06/09/2007 16:21:42
COM Config			
Interfaces			
Modem			
Eth1 (LAN)			
Network connections			
Ethernet			
Eth1 - LAN			
Modem			
Incoming			
Outgoing			
Global			
Server1			
Server2			
VPN			
Networking Config			
Manage Config			

PPP outgoing Connection - Server 1	
Server access setup	
Server phone number	090930199
User name	amxxxxxx
Password
Require secure authentication (CHAP)	<input type="checkbox"/> Otherwise allow PAP (password is sent in clear text)
Configuration common to all servers (summary) - editable in global outgoing configuration	
Dial and connection timeout	180
Enable protocol compression	<input checked="" type="checkbox"/>
Idle time before hanging up	120

Update

Enter here the phone number, **User name** and **Password** of your ISP (Internet Service Provider).

GSM/GPRS or Edge Modem

General	Communication	Storage	12/10/2007 15:34:47
COM Config			
Interfaces			
Network connections			
Ethernet			
Modem			
Incoming			
Outgoing			
Global			
Server1			
Server2			
VPN			
Networking Config			
Manage Config			

PPP outgoing Connection - Server 1	
Server access setup	
Connection type	GPRS
User name	
Password
Require secure authentication (CHAP)	<input type="checkbox"/> Otherwise allow PAP (password is sent in clear text)
Configuration common to all servers (summary) - editable in global outgoing configuration	
Outgoing calls are currently NOT allowed	
Dial and connection timeout	180
Enable protocol compression	<input checked="" type="checkbox"/>
Idle time before hanging up	120

Update

Select the connection type you want to use:

If you want to connect using GPRS or Edge then choose «GPRS» in the **Connection type** and leave the **User name** and **Password** fields empty.

If you want to connect to an ISP using the GSM data connection, then chose the **Remote access connection** and enter the Server phone number, user name and password of your ISP.

Configure the Internet Connection

Configuration → System Setup → Communication → Networking Config
→ Internet Connection

The screenshot shows the 'Internet connection setup' configuration page. The 'Network connection' dropdown menu is set to 'Modem Connection'. The 'Maintain connection' checkbox is checked. The 'Publish IP address' dropdown menu is set to 'Enabled'. The 'Re-publish interval' is set to 0 minutes. The 'On demand' section has 'Accept dial on demand from NO ONE EXCEPT from:' selected. There are four IP Range fields, each with 'From: 0.0.0.0' and 'To: 0.0.0.0'. An 'Update' button is at the bottom.

Set the **Network connection** to **Modem Connection**.

Check only the **Maintain connection** box if you want that your eWON stays always connected to the Internet. This is especially useful for GPRS or Edge connections.

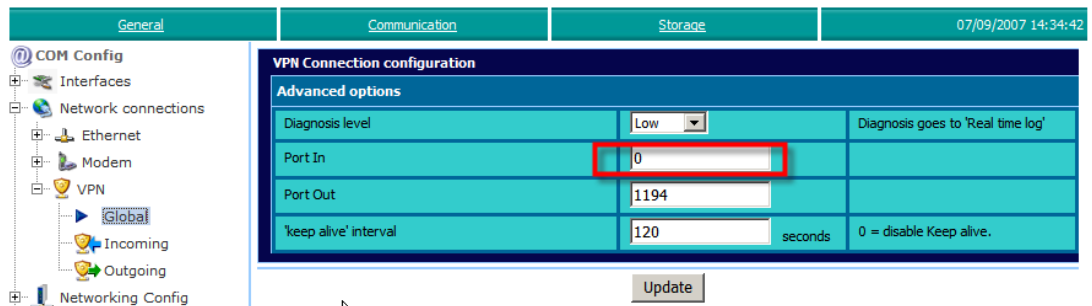
Enable the **Publish IP address** to ask eWON to publish its public Internet address for every new Internet connection. To see how to apply the Publish address option, please refer to Chapter 5.

NOTE The **Maintain connection** feature will only reactivate the Internet connection once the Internet connection is closed. The duration of the Internet connection must still be configured using the **Maximum connection Time** fields of the PPP outgoing connection (see page 8).

eWON configuration for VPN connection

Specify the VPN incoming connection

Configuration → System Setup → Communication → Network connections → VPN → Global



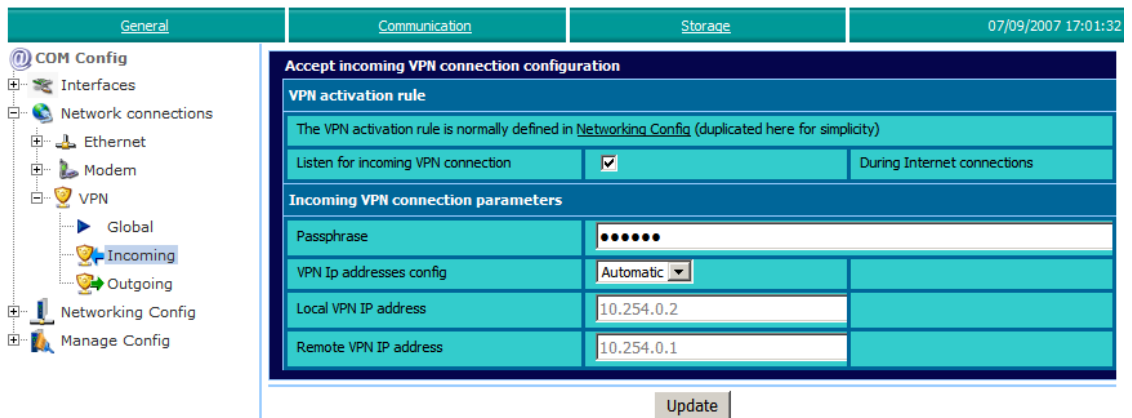
Here you can change the Port number on which eWON will «listen for» incoming VPN traffic.

NOTE Port in: 0 = default behavior



If VPN is initiated by an external source (eGabit), then eWON listens on port 1194 (hard coded).

Configuration → System Setup → Communication → Network connections → VPN → Incoming

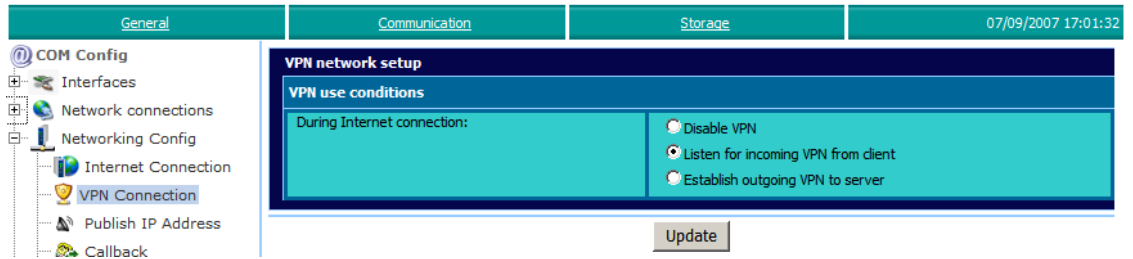


Check **Listen for incoming VPN connection**.

Enter a **Passphrase** and remember this **Passphrase** for the eGabit configuration.

Let the **VPN IP addresses config** on **Automatic**.

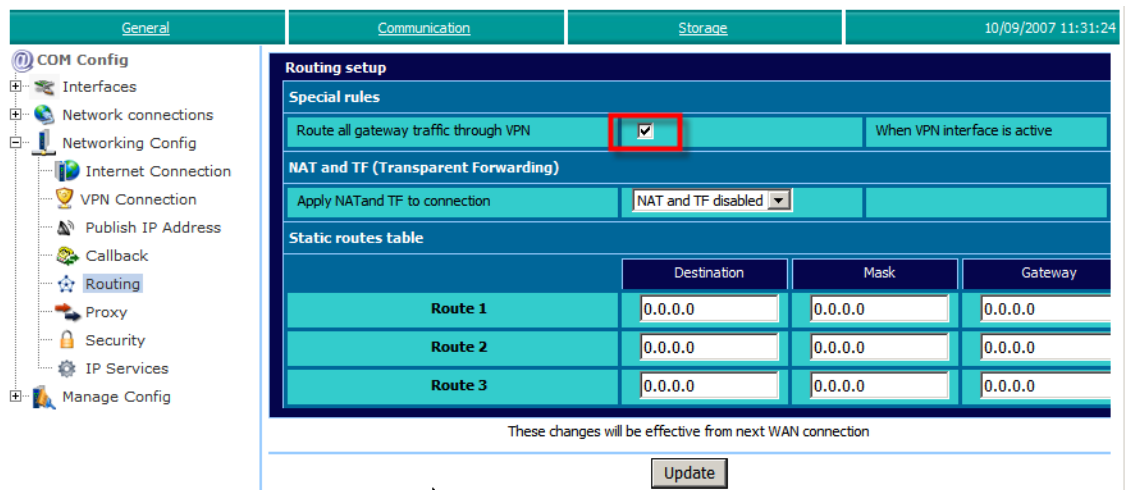
Configuration → System Setup → Communication → Networking Config → VPN Connection



Check the *Listen for incoming VPN from client*.

Specify the VPN routing

Configuration → System Setup → Communication → Networking Config → Routing

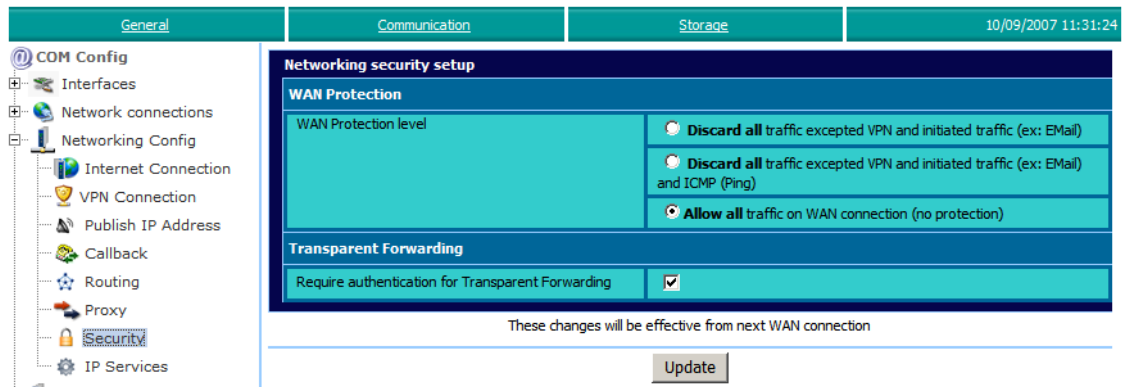


Check the *Route all Gateway Traffic through VPN* to route all the gateway traffic through the VPN tunnel.

Do not enable the NAT and TF.

NOTE The NAT and Transparent Forwarding are not needed because the packets will use the VPN tunnel. Only for special networking configurations the NAT and TF have to be activated.

Specify the security level



Choose the **WAN Protection level** you want to apply.

For testing purposes, it is better to start first with the **Allow all traffic** option.

Once your VPN connection has been tested, you can then choose the **Discard all traffic excepted VPN** to restrict the Internet access on your eWON. Your eWON will then be accessible only through VPN.

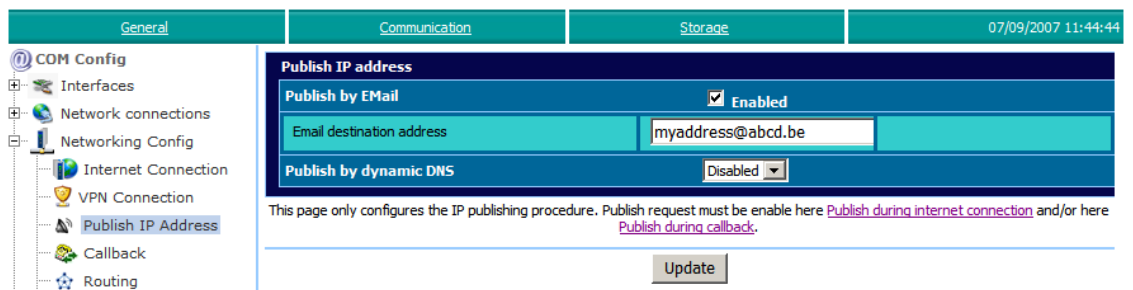
Publish the eWON IP address

When you connect to your eWON using GPRS or ISP, the online address is probably not fixed. So to be able to reach your eWON, you need to know its online IP address.

Thanks to the eWON **Publish IP address** feature, you can enable the **Publish by email** or **Publish by dynamic DNS**. Bear in mind that the IP publishing will not work if you did not enable this option in the **Networking Config** (see page 10)

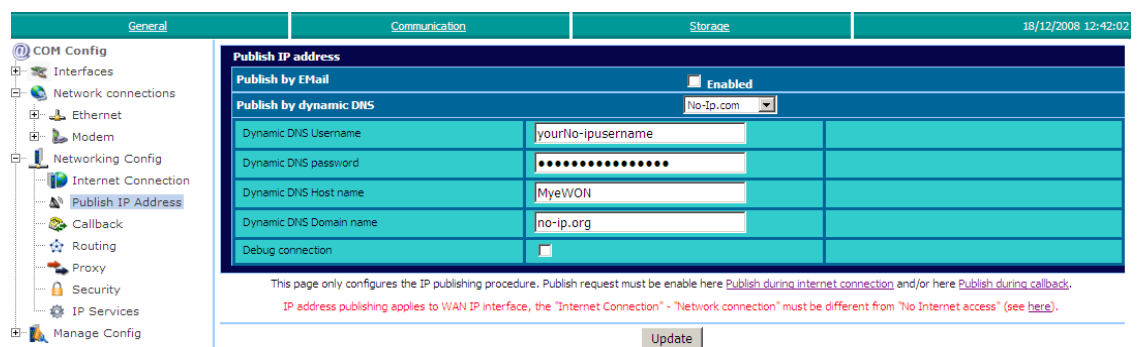
Configure the Publish IP Address

Configuration → System Setup → Communication → Networking Config → Publish IP Address



Enable the **Publish by Email** box and enter the email address where the public IP address has to be sent to.

If you want to use dynamic DNS (No-IP, DynDns, EasyDns,...), you can enable the **Publish by dynamic DNS** and specify the settings of your No-IP account in the following page:



Your eWON be thus accessible at address <http://MyeWON.no-ip.org>.

Configure the SMTP Server

If you prefer the address to be published by email, you will have to configure the **SMTP Server**.

Configuration → System Setup → General → Net services → SMTP(mails)

The screenshot shows the 'SMTP Configure Mail Transfer' configuration page. On the left is a tree view with 'Main settings' expanded to 'Net services' and 'SMTP (mails)'. The main area contains a table with the following fields:

Field	Value	Description
SMTP Server Address:	relay.proximus.be	Usually something like smtp.domain.com or mail.domain.com (can be an IP address)
SMTP Server Port:	25	The default value is 25. It must only be changed in very special cases.
E-Mail "From" User name:	eWON@abc.be	This will be used to send E-mails, it must be compatible with your account name on the SMTP server.
User name:		Fill this only if SMTP requires authentication, otherwise leave empty.
Password:		Password for SMTP authentication (only if above field used).

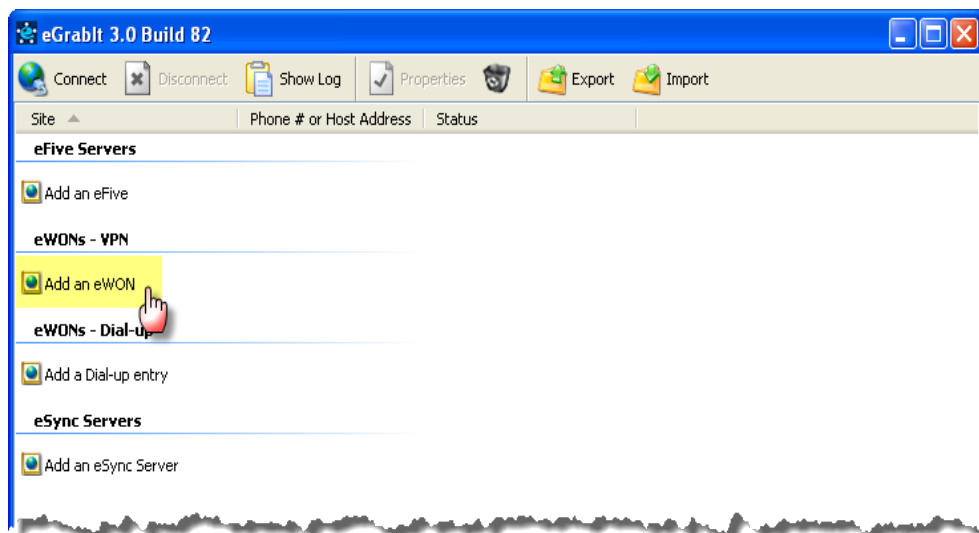
Enter the **SMTP Server Address** and **Port information**.

Specify the email address that will be used to send the email. Generally this email address must be compatible with your SMTP Server and ISP account.

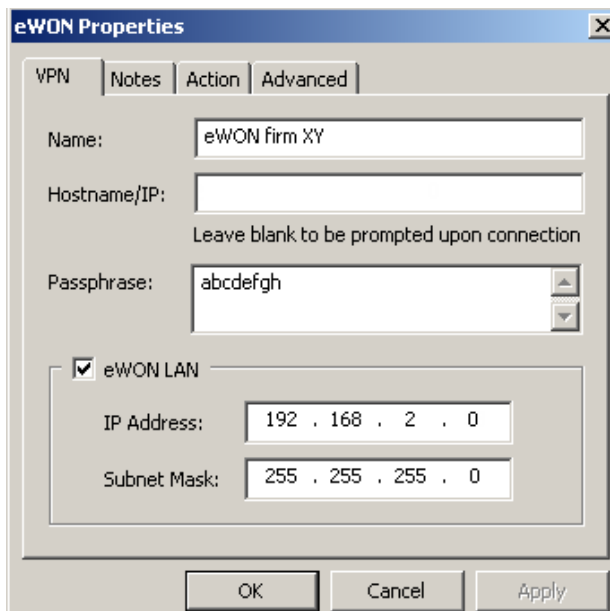
eGabit configuration

While the eWON acts as VPN Server, thanks to the eGabit software, your PC will act as VPN Client.

Launch eGabit.



Click on «Add an eWON» under the «eWONs -VPN» section.



Enter a name for your VPN connection (**ex.:** eWON firm XY)

In the «Hostname/IP» field, insert the public Internet address of your eWON. You can let this field empty to specify the address for every new connection (best option if you receive the IP-address by email through the *Publish IP address* feature of the eWON)

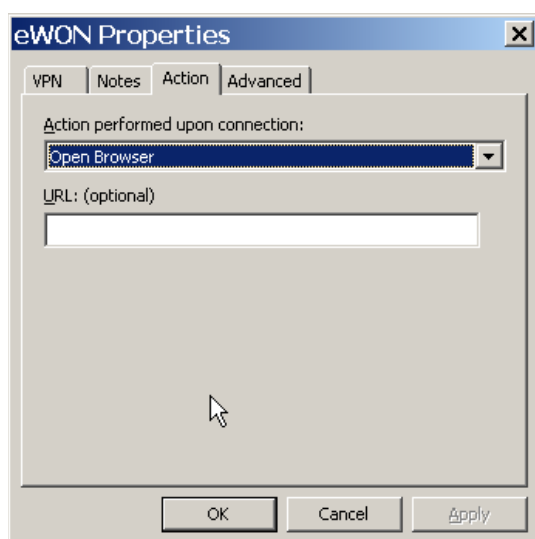
If you have configured your eWON to publish address by DNS, the «Hostname/IP» should be this Dynamic DNS name.

6. eGabit configuration

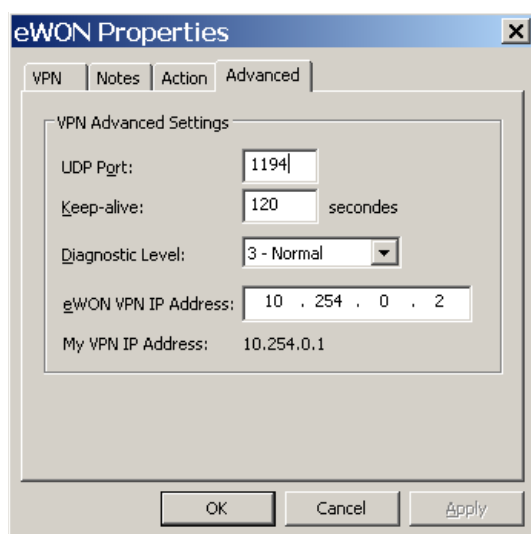
In the «Passphrase» field enter the Passphrase you have previously configured in your eWON.

In the «eWON LAN» section enter the IP address range of the devices connected to the LAN side of the eWON. This information will be used to automatically add the route on your PC to route the packets through the VPN tunnel.

NOTE Make sure you insert the IP address range and *NOT* the IP address.
So, if the eWON IP address is 192.168.2.13, mask 255.255.255.0, enter 192.168.2.0 mask 255.255.255.0.



In the «Action», tab choose the action to perform once the VPN connection is established. By default the eWON internal Web pages will be displayed.



In the «Advanced» tab, you can specify the UDP port to use for the VPN connection. By default 1194 is used because eWON uses port 1194 in default config (see page 11).

How to «Wake up» the eWON

When you use a GPRS or Edge connection, you probably do not want your eWON to remain permanently connected to the Internet (simply for cost reasons)

So, how can I «Wake up» my eWON from remote to ask it to connect to the Internet?

Callback feature

eWON has a callback feature.

You can for example call your eWON, let ring 7 times and hang up. The eWON will then trigger the outgoing connection to the Internet.

**Configuration → System Setup → Communication →
Networking Config → Callback**

General	Communication	Storage
COM Config Interfaces Network connections Networking Config Internet Connection VPN Connection Publish IP Address Callback Routing Proxy Security IP Services Manage Config		
Callback setup <input checked="" type="checkbox"/> Callback enabled		
General		
Callback delay	30	seconds
Wait for user login for	1200	seconds
Dialup account	Primary dialup server	
Publish IP address	Disabled	
Callback mode:	On RING	
Number of RINGS	5	
Plus number of RINGS then On Hook	10	
Update		

Check the **Callback enabled** check box.

You can let the other settings unchanged.

Configured like explained before, the eWON will trigger the callback if the modem rings between 5 and 15 times. After 15 rings the eWON will pick up the line to allow incoming dialup-connection (if enabled).

The Internet connection will be established using the primary dialup server (**Server 1**).

With SMS

Configuration → Script Setup → Edit Script

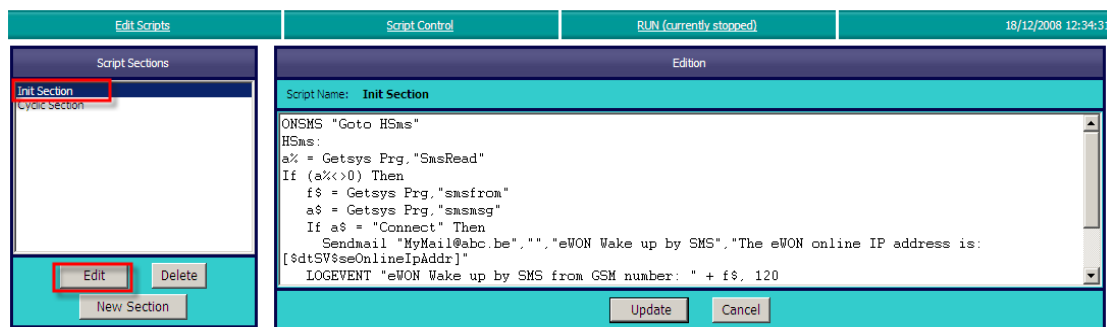
If your eWON is equipped with a GPRS or Edge modem and if your GSM SIM card subscription allows SMS receiving, then you can «Wake up» the eWON using SMS.

The script shown hereunder will send a email after the SMS reception. The scheduled email will then activate the outgoing connection to the Internet as configured in the **Outgoing Connection** settings of the eWON.

```
InitSection:
ONSMS "Goto HSms"
HSms:
a% = Getsys Prg,"SmsRead"
If (a%<>0) Then
  f$ = Getsys Prg,"smsfrom"
  a$ = Getsys Prg,"smsmsg"
  If a$ = "Connect" Then
    Sendmail "MyMail@abc.be", "", "eWON Wake up by SMS", "The eWON online IP address
is: [$dtSV$seOnlineIpAddr]"
    LOGEVENT "eWON Wake up by SMS from GSM number: " + f$, 120
  ENDIF
  Goto HSms
ENDIF
Endif
End
```

The contents of the SMS has to be «Connect» to launch the «Wake up» process.

The «LogEvent» function is used to track the action done by SMS.



To add the following code in the eWON, select **Init Section** and click on the **Edit** button, insert your script and click on the **Update** button.

7. How to «Wake up» the eWON

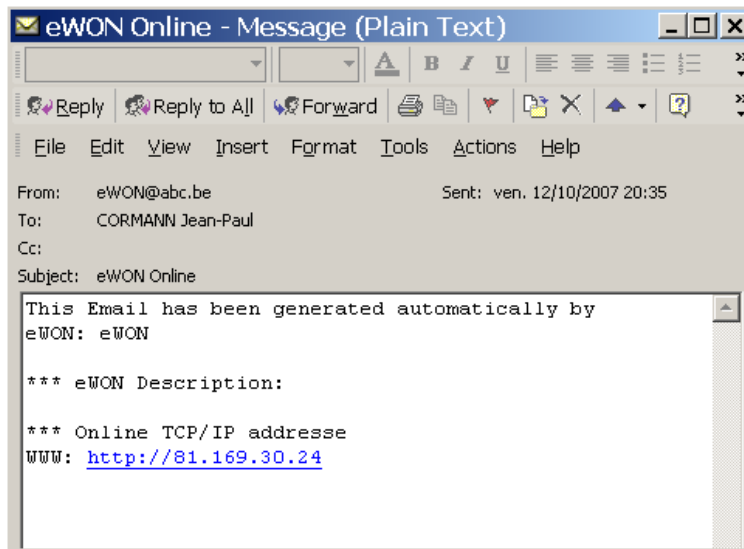
To make your script start at the eWON boot, click on **Script Control**:
Check the **Script starts at eWON Boot** box and click on **Update Autorun mode**.

Edit Scripts	Script Control	RUN (currently stopped)
Script Control		
Update Output	Script starts at eWON Boot <input checked="" type="checkbox"/>	Update Autorun mode
Execute Command		

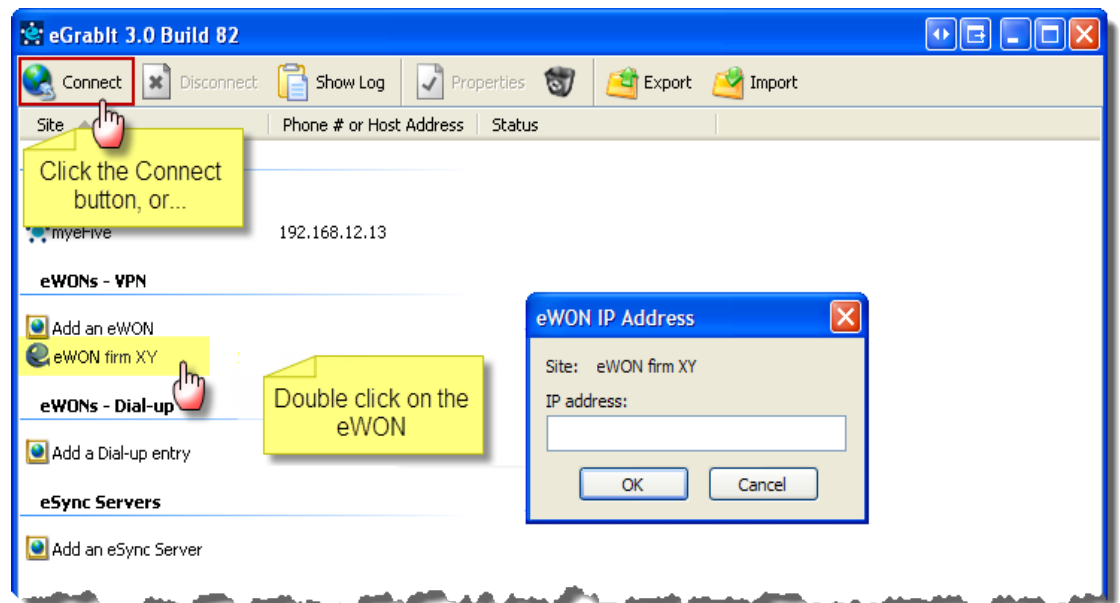
To start the Script click on the **RUN** button.

Establish the VPN connection

If you have configured your eWON to publish the IP address by email, you will receive an email specifying the Online TCP/IP address of the eWON after the «Wake up» of the eWON and once the eWON is connected to the Internet,.



Launch eGrabIt and double click on the «eWON - VPN» link you have created earlier.

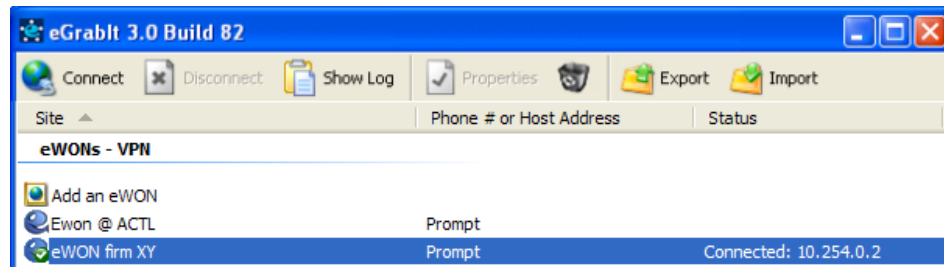


Enter the eWON public IP address and click on **OK**. If you have configured your Publish IP address by dynamic DNS, just click on the VPN link;

Now eGrabIt tries to establish the VPN connection to the eWON.

Establish the VPN connection

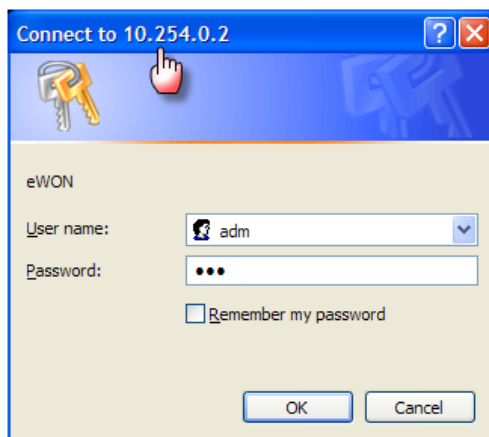
Once the connection is established, you will see the following information in the eGabit window:



As you can see, eGabit is connected to the «eWON firm XY» on IP address 10.254.0.2. This address is the default VPN address of the eWON (refer to page 11).

If you have introduced the eWON LAN IP address when configuring eGabit, you will now be able to access your eWON on its local IP address and also the devices behind the eWON using the VPN tunneling.

Configured that way, eGabit will then launch your Web browser to open the eWON Web Interface on IP address 10.254.0.2 (= eWON VPN IP address)



IMPORTANT



To be able to reach the Ethernet devices connected to the eWON using the VPN tunnel you will have to specify on every Ethernet device the **eWON as default Gateway**, (or create the adequate routing).

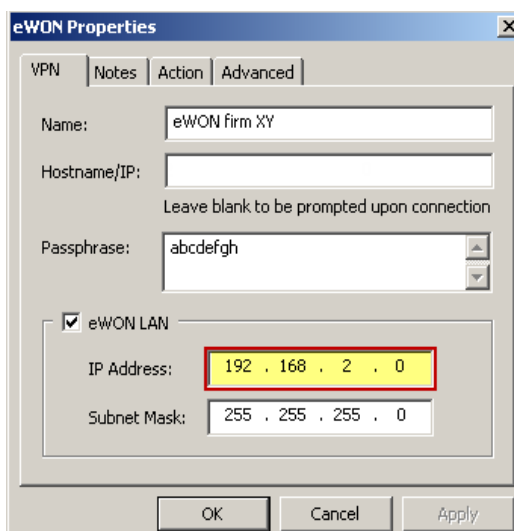
Troubleshooting

PC cannot connect to the eWON

- Check the Passphrase that you chose when configuring eGrabit.
- Make sure that the eWON Internet connection does actually allow incoming connections on port UDP 1194. Ask your Internet provider to open this port or adapt the port used for the VPN connection to another opened port.

If a VPN connection has been established, but the devices cannot be reached

- Check the eGrabit settings. Make sure that you have introduced the eWON IP address range and not the whole IP address.



- You can also have a look at the route that has been created by eGrabit on your PC. Open a DOS command window (Run: cmd) and type «route print». You will have to find a route for the eWON LAN as you specified in eGrabit. As you can see the address for the LAN 10.0.120.0 will be routed through the VPN connection (10.254.0.2 = eWON VPN address).

```
C:\>route print
-----
Interface List
0{x1} ...00 50 56 c0 00 08 ..... MS TCP Loopback interface
0{x2} ...00 50 56 c0 00 01 ..... VMware Virtual Ethernet Adapter for VMnet8
0{x3} ...00 50 56 c0 00 01 ..... VMware Virtual Ethernet Adapter for VMnet1
0{x4} ...00 08 02 f4 91 9c ..... Realtek RTL8139 Family PCI Fast Ethernet NIC
Packet Scheduler Miniport
0{x5} ...00 ff 52 0a 9b 52 ..... TAP-Win32 Adapter U8 - Packet Scheduler Miniport
0x{20007} ...00 53 45 00 00 00 ..... WAN (PPP/SLIP) Interface
-----
Active Routes:
Network Destination        Netmask          Gateway             Interface           Metric
0.0.0.0                    0.0.0.0          62.4.195.227       62.4.195.227       1
10.0.120.0                 255.255.255.0   10.254.0.2         10.254.0.1         1
10.254.0.0                 255.255.255.252 10.254.0.1         10.254.0.1         30
10.254.0.1                 255.255.255.255 127.0.0.1         127.0.0.1         30
10.255.255.255            255.255.255.255 10.254.0.1         10.254.0.1         30
62.4.195.227             255.255.255.255 127.0.0.1         127.0.0.1         50
62.255.255.255          255.255.255.255 62.4.195.227       62.4.195.227       50
127.0.0.0                 255.0.0.0       127.0.0.1         127.0.0.1         1
192.168.184.0            255.255.255.0   192.168.184.1     192.168.184.1     20
```

Publish IP address does not work

- If you did not receive an email or if the dyn DNS does not work, have a look to the **Event Log** of the eWON. If the message is «DNS-Unable to resolve host name», try to put a DNS manually in the eWON. Normally, the DNS should be allocated to the eWON by the Internet connection (ISP, APN, ...). To obtain the DNS to use, contact your Internet provider.

Time	Event	Description	Originator	Help
26/11/2008 17:19:03	31912	esync-Internet communication failed	esyncitf	
26/11/2008 17:19:03	25000	noip-Connect to No-IP server failed	esyncitf	
26/11/2008 17:19:03	24916	dns-Unable to resolve host name (dynupdate.no-ip.com)	esyncitf	

Configuration → System Setup → Communication → Network connections → Ethernet → Eth1 - LAN

COM Config | Interfaces | Network connections | Ethernet | Eth1 - LAN | Modem | VPN | Networking Config | Manage Config

Ethernet LAN Connection	
Address Setup	
IP address	10.0.0.53
Subnet mask	255.255.255.0
Default gateway	0.0.0.0
Use BOOTP	<input type="checkbox"/> Ethernet address, mask and gateway will be provided by BOOTP
DNS Setup	
Primary DNS IP address	195.238.2.21 <small>leave blank (or 0.0.0.0) if no DNS</small>
Secondary DNS IP address	0.0.0.0

Update

Here you can specify the DNS IP address if needed.

Revisions

Revision Level	Date	Description
1.0	2008-05-05	First release.
1.1	2008-12-20	Lay-out and contents update.
1.2	2009-11-26	Changes in chapter 3 section "Setup outgoing connection to the ISP provider"
1.3	2013-10-07	Change to eGigabit + diagrams

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Document build number: 141

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