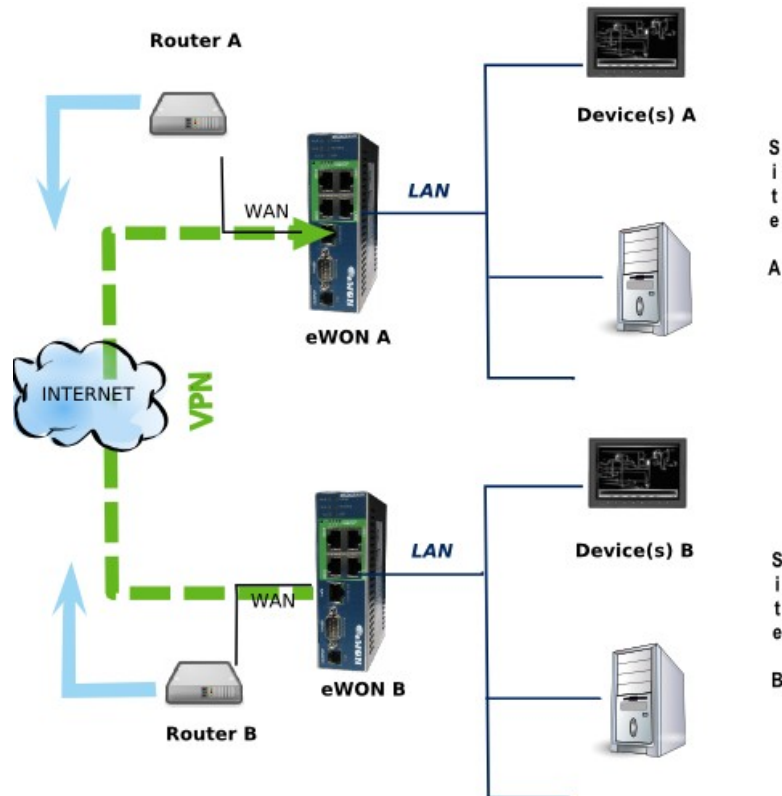




You Select, We Connect

## Linking 2 Sites Together Using VPN How To



Content

The purpose of this document is to explain you how to connect 2 remote equipments over the Internet using the second Ethernet interface of 2 eWONs (though a VPN connection).

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# Hardware and software requirements

## Hardware requirements

In order to follow this guide you will need:

- 2 eWONs with a second Ethernet interface (2005 CD or eWON 4005 CD)

## Software requirements

### eWON configuration software:

The eWON is configured through its web server. So all you need is a standard Web Browser software like Internet Explorer<sup>i</sup> or Firefox<sup>ii</sup>.

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 upgrade the firmware of your eWON (if required).

### Other programming software:

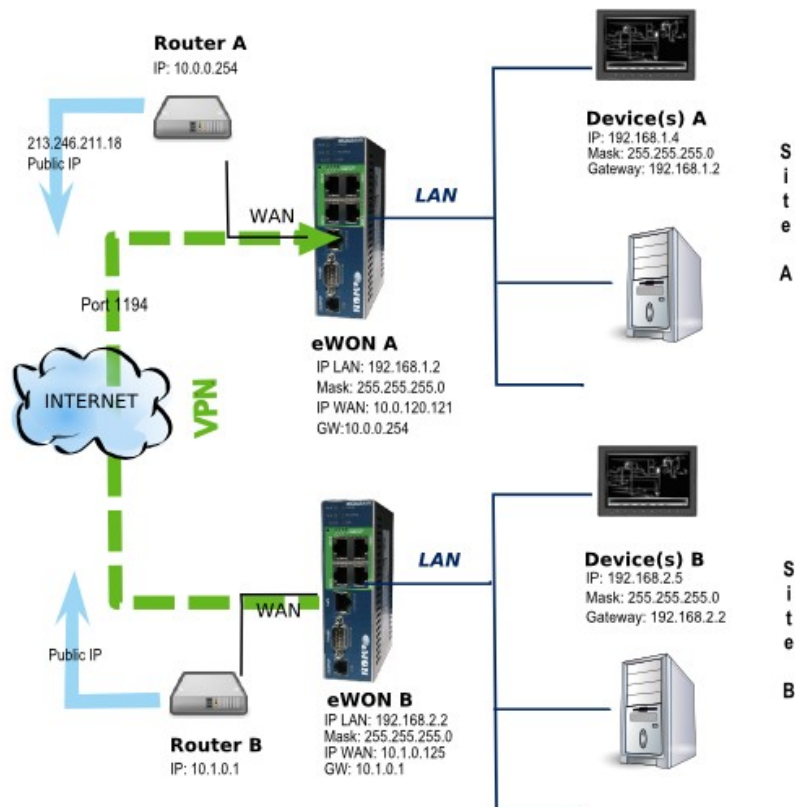
N/A

## eWON Firmware Version

To be able to follow this guide your eWON needs a firmware version 5.0 or higher. A simple way to realize the eWON firmware upgrade is to use eBuddy, the eWON software companion.

# Introduction

In this document, we will see how to link 2 remote sites together using VPN over the Internet. We will use 2 eWONs 2005CD and establish a VPN connection over the Internet using the second Ethernet interface.



**Here are the steps to make 2 networks communicate (eWON A – eWON B) through a VPN connection:**

- Configure the Internet connection on both eWONs
- Configure the eWON A for VPN incoming (as VPN Server)
- Configure the eWON B for VPN outgoing (as VPN Client Server)
- Set the eWON A LAN address as default gateway of your devices of site A
- Set the eWON B LAN address as default gateway of your devices of site B

**NOTE** Make sure that the IP addresses of site A are on a different range than the addresses of site B, otherwise, the routing will be impossible.

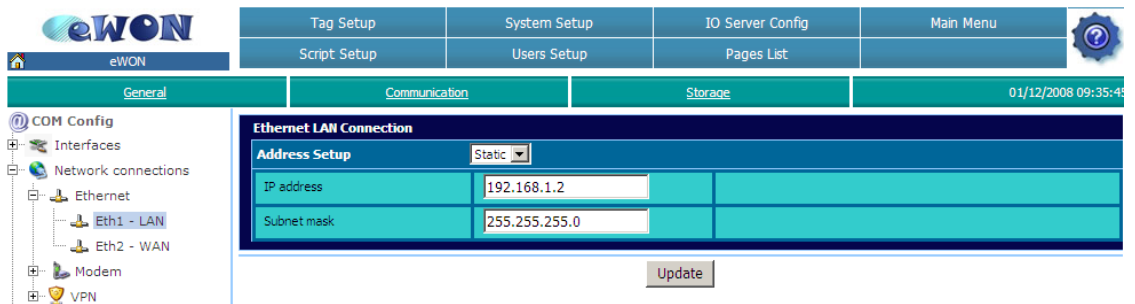


# Configure the eWON VPN Server

In our example, eWON A is the VPN Server.

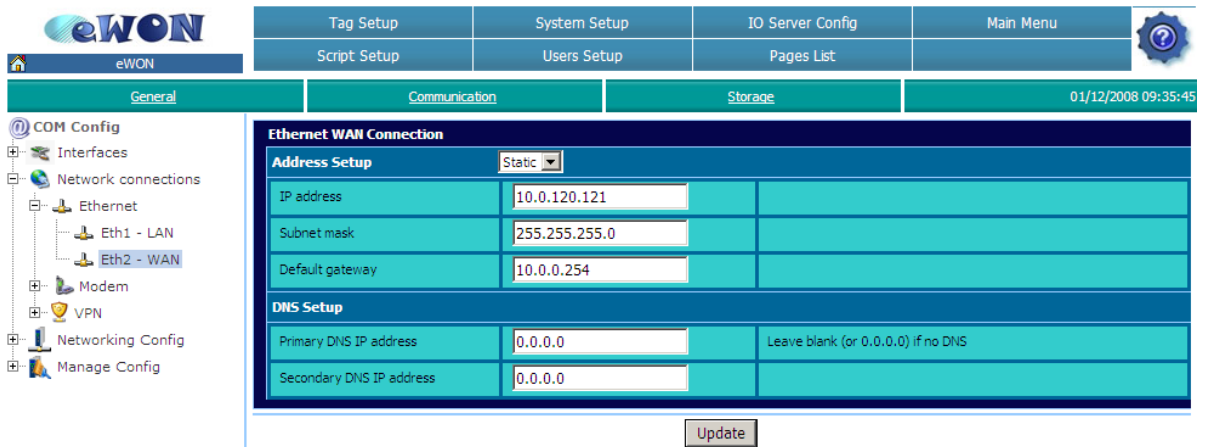
## LAN and WAN IP Interface Configuration

**Configuration → System Setup → Communication → Network Connections → Ethernet → Eth1-LAN**



Set the eWON LAN IP Address.

**Configuration → System Setup → Communication → Network Connections → Ethernet → Eth2-WAN**



Set the eWON WAN IP Address.

The default gateway should be the IP address of the ADSL router of eWON A.

## VPN Configuration

**Configuration → System Setup → Communication → Network Connections → VPN → Global**

The screenshot shows the eWON web interface. The top navigation bar includes 'Tag Setup', 'System Setup', 'IO Server Config', and 'Main Menu'. Below it are 'Script Setup', 'Users Setup', and 'Pages List'. The main content area is divided into 'General', 'Communication', and 'Storage' tabs. The left sidebar shows a tree view with 'COM Config' expanded to 'Network connections' and then 'VPN' expanded to 'Global'. The main content area displays the 'VPN Connection configuration' page. The 'Advanced options' section includes the following fields:

Diagnosis level	Low	Diagnosis goes to 'Real time log'
Port In	0	
Port Out	1194	
'keep alive' interval	120 seconds	0 = disable Keep alive.

The 'Really Advanced options' section includes the following fields:

VPN Driver Mode	TUN	Reboot required when changed.
VPN Protocol	UDP	

An 'Update' button is located at the bottom of the configuration area.

Adapt the UDP port used for the Incoming VPN connection if needed. By default *Port In* is set on 0 which means that the eWON is listening on port 1194 for the incoming VPN connection.

**Configuration → System Setup → Communication → Network Connections → VPN → Incoming**

The screenshot shows the eWON web interface. The top navigation bar includes 'Tag Setup', 'System Setup', 'IO Server Config', and 'Main Menu'. Below it are 'Script Setup', 'Users Setup', and 'Pages List'. The main content area is divided into 'General', 'Communication', and 'Storage' tabs. The left sidebar shows a tree view with 'COM Config' expanded to 'Network connections' and then 'VPN' expanded to 'Incoming'. The main content area displays the 'Accept incoming VPN connection configuration' page. The 'VPN activation rule' section includes the following fields:

Listen for incoming VPN connection	<input checked="" type="checkbox"/>	During Internet connections
------------------------------------	-------------------------------------	-----------------------------

The 'Incoming VPN connection parameters' section includes the following fields:

Passphrase	••••••••	
VPN Ip addresses config	Automatic	
Local VPN IP address	10.254.0.2	
Remote VPN IP address	10.254.0.1	

An 'Update' button is located at the bottom of the configuration area.

Check «listen for incoming VPN connection».

Enter a Passphrase (and remember the Passphrase !!)

### 3. Configure the eWON VPN Server

Assign the VPN IP address: leave it on automatic. Set it manually *only* in case of address conflict.

## Internet Connection Configuration

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

The screenshot shows the eWON web interface. The top navigation bar includes 'Tag Setup', 'System Setup', 'IO Server Config', and 'Main Menu'. Below this is a secondary bar with 'Script Setup', 'Users Setup', and 'Pages List'. The main content area is divided into 'General', 'Communication', and 'Storage' tabs. The 'Communication' tab is active, and the 'Internet Connection' sub-tab is selected. The left sidebar shows a tree view of configuration options, with 'Internet Connection' highlighted. The main panel displays the 'Internet connection setup' configuration page. The 'Internet access' section has 'Network connection' set to 'Ethernet WAN connection' and 'Maintain connection' checked. The 'Publish WAN IP address' section has 'Publish IP address' set to 'Disabled' and 'Re-publish interval' set to '0' minutes. The 'On demand Internet connection' section has 'Accept dial on demand from NO ONE EXCEPT from:' selected. Below this are four rows for 'IP Range' with 'From' and 'To' fields set to '0.0.0.0'. An 'Update' button is at the bottom.

Select «Ethernet Wan connection» for the Network connection.

Check «Maintain connection».

Disable the Publish WAN IP address.

## Routing Configuration

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

### 3. Configure the eWON VPN Server

The screenshot shows the eWON web interface. The top navigation bar includes 'Tag Setup', 'System Setup', 'IO Server Config', and 'Main Menu'. Below this, there are tabs for 'General', 'Communication', and 'Storage'. The left sidebar shows a tree view of configuration options, with 'VPN' expanded to show 'Global', 'Incoming', and 'Outgoing'. The main content area is titled 'VPN network setup' and contains 'VPN use conditions'. Under 'During Internet connection:', there are three radio button options: 'Disable VPN', 'Listen for incoming VPN from client' (which is selected), and 'Establish outgoing VPN to server'. An 'Update' button is located below these options.

Make sure that the VPN network setup is on «Listen for incoming VPN from client».

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

The screenshot shows the eWON web interface with the 'Routing setup' configuration page. The top navigation bar and tabs are the same as in the previous screenshot. The left sidebar shows 'Routing' selected. The main content area is titled 'Routing setup' and contains several sections: 'Special rules' with a checkbox for 'Route all gateway traffic through VPN' (checked) and a note 'When VPN interface is active'; 'NAT and TF (Transparent Forwarding)' with a dropdown menu set to 'NAT and TF disabled'; and a 'Static routes table' with three rows: 'Route 1', 'Route 2', and 'Route 3'. Each row has input fields for 'Destination', 'Mask', and 'Gateway', and a 'Hops' dropdown menu. Below the table, there is a note 'These changes will be effective from next WAN connection' and an 'Update' button.

Enable «Route all gateway traffic through VPN».

Select «NAT and TF disabled».



## Security Configuration

Configuration → System Setup → Communication →  
Networking Config → Security

The screenshot shows the eWON web interface. The top navigation bar includes 'Tag Setup', 'System Setup', 'IO Server Config', and 'Main Menu'. Below this is a secondary bar with 'Script Setup', 'Users Setup', and 'Pages List'. The main content area is divided into 'General', 'Communication', and 'Storage' tabs. The left sidebar contains a tree view with categories like 'COM Config', 'Interfaces', 'Network connections', 'Networking Config', 'Internet Connection', 'VPN Connection', 'Publish IP Address', 'Callback', 'Routing', 'Proxy', 'Security', 'IP Services', and 'Manage Config'. The 'Security' option is highlighted. The main panel displays the 'Networking security setup' configuration. Under 'WAN Protection', the 'WAN Protection level' is set to 'Allow all traffic on WAN connection (no protection)'. Under 'Transparent Forwarding', the 'Require authentication for Transparent Forwarding' checkbox is checked. A note at the bottom indicates 'These changes will be effective from next WAN connection' and an 'Update' button is present.

In *WAN Protection level*: select «Allow all...», and perhaps, adjust it later to «Discard all traffic excepted VPN and initiated traffic».

## Reboot your eWON

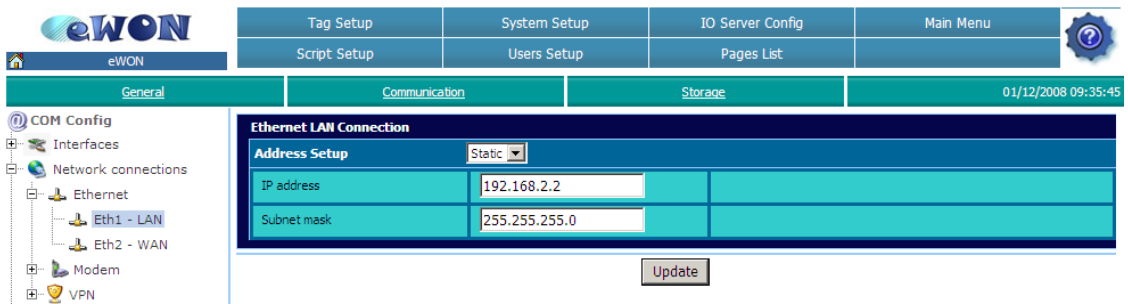
For the eWON to take the VPN connection configuration into account, you will have to reboot it. Otherwise the VPN parameters will not be applied.

# Configure the eWON VPN Client

In our example, eWON B is the VPN Client.

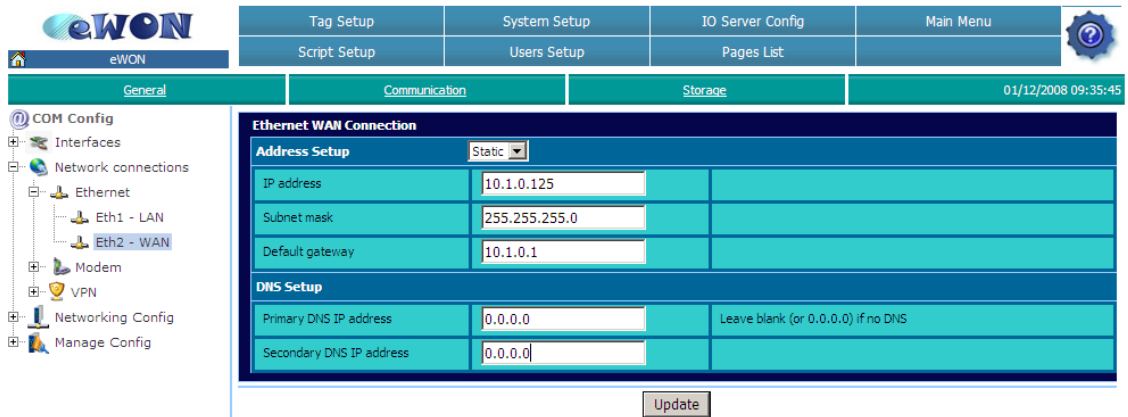
## LAN and WAN IP Interface Configuration

**Configuration → System Setup → Communication → Network Connections → Ethernet → Eth1-LAN**



Set the eWON LAN IP Address.

**Configuration → System Setup → Communication → Network Connections → Ethernet → Eht2-WAN**



Set the eWON WAN IP Address.

The default gateway should be the IP address of the ADSL router of eWON B.

#### 4. Configure the eWON VPN Client

## VPN Configuration

**Configuration → System Setup → Communication →  
 Network Connections → VPN → Global**

The screenshot shows the eWON web interface. The left sidebar has a tree view with 'VPN' expanded to 'Global'. The main content area is titled 'VPN Connection configuration' and contains the following fields:

Advanced options		
Diagnosis level	Low	Diagnosis goes to 'Real time log'
Port In	0	
Port Out	1194	
'keep alive' interval	120 seconds	0 = disable Keep alive.
Really Advanced options Please do not change, unless you know exactly what you are doing!		
VPN Driver Mode	TUN	Reboot required when changed.
VPN Protocol	UDP	

Update

Adapt the UDP port used for the outgoing VPN connection if needed. By default, 1194 is used on the other eWON for the incoming VPN connection.

**Configuration → System Setup → Communication →  
 Network Connections → VPN → Outgoing**

Configure the eWON for outgoing VPN connection to another eWON.

The screenshot shows the eWON web interface. The left sidebar has a tree view with 'VPN' expanded to 'Outgoing'. The main content area is titled 'Establish outgoing VPN connection configuration' and contains the following fields:

Establish outgoing VPN connection configuration		
VPN activation rule		
The VPN activation rule is normally defined in <a href="#">Networking Config</a> (duplicated here for simplicity)		
Establish VPN connection	<input checked="" type="checkbox"/>	During Internet connections
Remote VPN WAN address or name		
Primary server	213.246.211.18	Remote IP address or name
Secondary server		Leave empty if no secondary server
Connect to...	Other eWON	
Passphrase	••••••••	
VPN Ip addresses config	Automatic	
Local VPN IP address	10.254.0.1	
Remote VPN IP address	10.254.0.2	

Update

Enable «Establish VPN connection».

## 4. Configure the eWON VPN Client

For the «Primary server» enter the public IP address of the ADSL Router of eWON A.

Select «Other eWON» for the «Connect to...:»

Passphrase: enter the Passphrase you configured for eWON A.

Assign the VPN IP address: leave it on automatic. Set it manually only in case of address conflict.

## Internet Connection Configuration

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

The screenshot shows the eWON web interface. The top navigation bar includes 'Tag Setup', 'System Setup', 'IO Server Config', and 'Main Menu'. Below this is a secondary bar with 'Script Setup', 'Users Setup', and 'Pages List'. The main content area is divided into 'General', 'Communication', and 'Storage' tabs. The 'Communication' tab is active, and the 'Internet Connection' sub-tab is selected. The left sidebar shows a tree view of configuration options, with 'Internet Connection' highlighted. The main panel displays the 'Internet connection setup' form. The 'Internet access' section has 'Network connection' set to 'Ethernet WAN connection' and 'Maintain connection' checked. The 'Publish WAN IP address' section has 'Publish IP address' set to 'Disabled' and 'Re-publish interval' set to '0' minutes. The 'On demand' section has 'Accept dial on demand from NO ONE EXCEPT from:' selected. There are four 'IP Range' rows, each with 'From' and 'To' fields set to '0.0.0.0'. An 'Update' button is at the bottom.

Select «Ethernet Wan connection» for the Network connection.

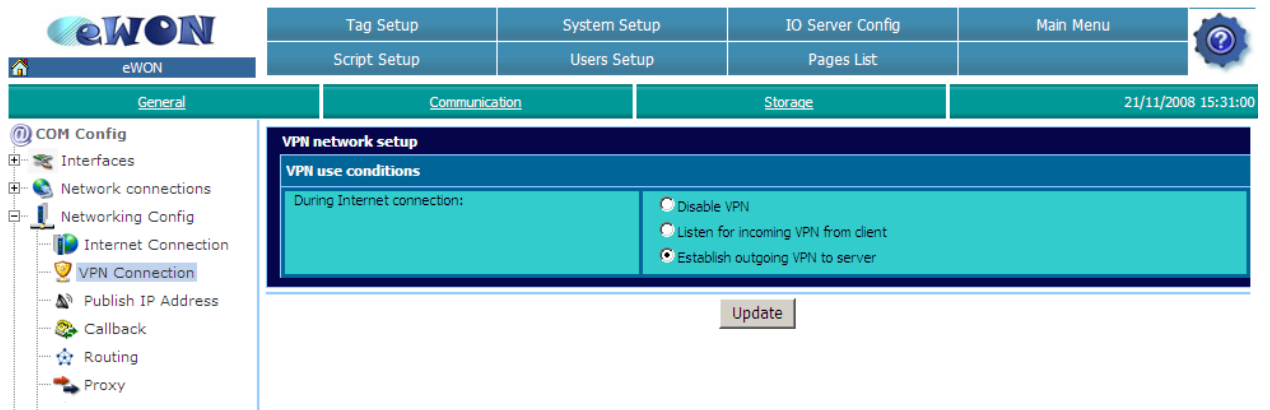
Check «Maintain connection».

Disable the Publish WAN IP address.

## Routing Configuration

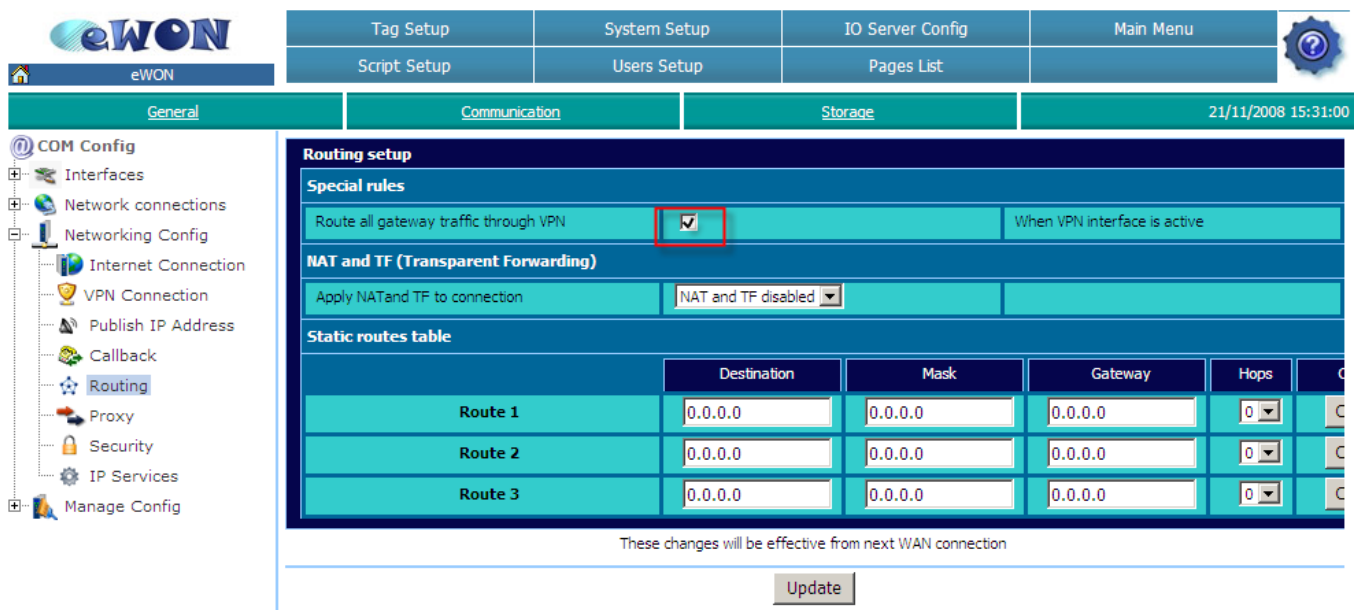
**Configuration → System Setup → Communication →  
Networking Config → VPN Connection**

## 4. Configure the eWON VPN Client



Choose : «Establish outgoing VPN to server».

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



Select «NAT and TF disabled».

Enable «Route all gateway traffic through VPN».

### **Security Configuration**

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

## 4. Configure the eWON VPN Client

The screenshot shows the eWON web interface. The top navigation bar includes 'Tag Setup', 'System Setup', 'IO Server Config', and 'Main Menu'. Below this is a secondary bar with 'Script Setup', 'Users Setup', and 'Pages List'. The main content area is divided into 'General', 'Communication', and 'Storage' tabs. The left sidebar shows a tree view with 'COM Config' expanded, including 'Interfaces', 'Network connections', 'Networking Config', 'Internet Connection', 'VPN Connection', 'Publish IP Address', 'Callback', 'Routing', 'Proxy', 'Security', 'IP Services', and 'Manage Config'. The main panel displays 'Networking security setup' with 'WAN Protection' and 'Transparent Forwarding' sections. The 'WAN Protection' section has three radio buttons, with 'Allow all traffic on WAN connection (no protection)' selected. The 'Transparent Forwarding' section has a checked checkbox for 'Require authentication for Transparent Forwarding'. A message at the bottom states 'These changes will be effective from next WAN connection' and an 'Update' button is present.

WAN Protection level: select «Allow all...», and perhaps adjust it later to «Discard all traffic excepted VPN and initiated traffic».

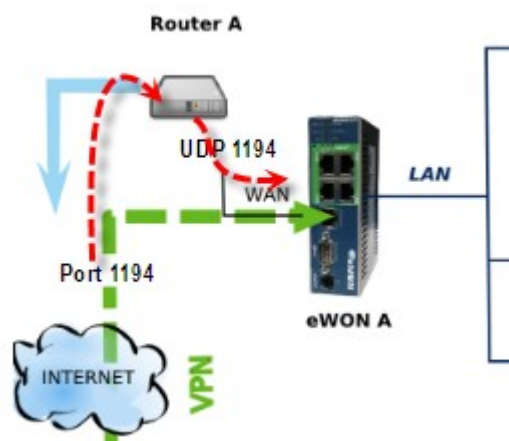
## Reboot your eWON

For the eWON to take the VPN connection configuration into account, you will have to reboot it. Otherwise the VPN parameters will not be applied.

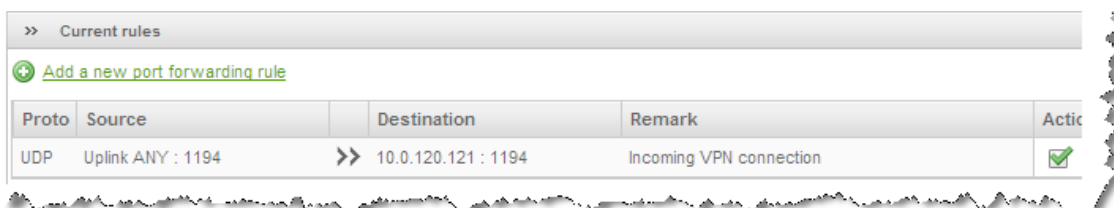
# Configuration of the ADSL Routers

## Port Forwarding

You will have to configure the ADSL router of site A to make a port forwarding (router A).



For example, if you use the eWON standard VPN configuration you will have to define that all the incoming packets on UDP port 1194 will have to be redirected to the WAN IP address of your eWON (eWON A) at UDP port 1194. (Attention: UDP port <> TCP port).



On router B we do not need to configure the port forwarding, because only outgoing connections are used on this eWON.

## Public IP address

To make the VPN connection work, you need to specify in the eWON VPN Client (eWON B) the public IP address of the router of site A. So, you need a static public IP address for the site A. If you do not have a static IP address, then you can configure your router for dynamic DNS and use the dynamic domain name in the eWON VPN Client. Instead of router A, eWON can also be configured for dynamic DNS.

The public IP address of the router of site B do not need to be static and it is not necessary to know.

## Configuration of the devices behind the eWONs

All the devices connected to the LAN of eWON A must have the LAN IP address of eWON A as Gateway.

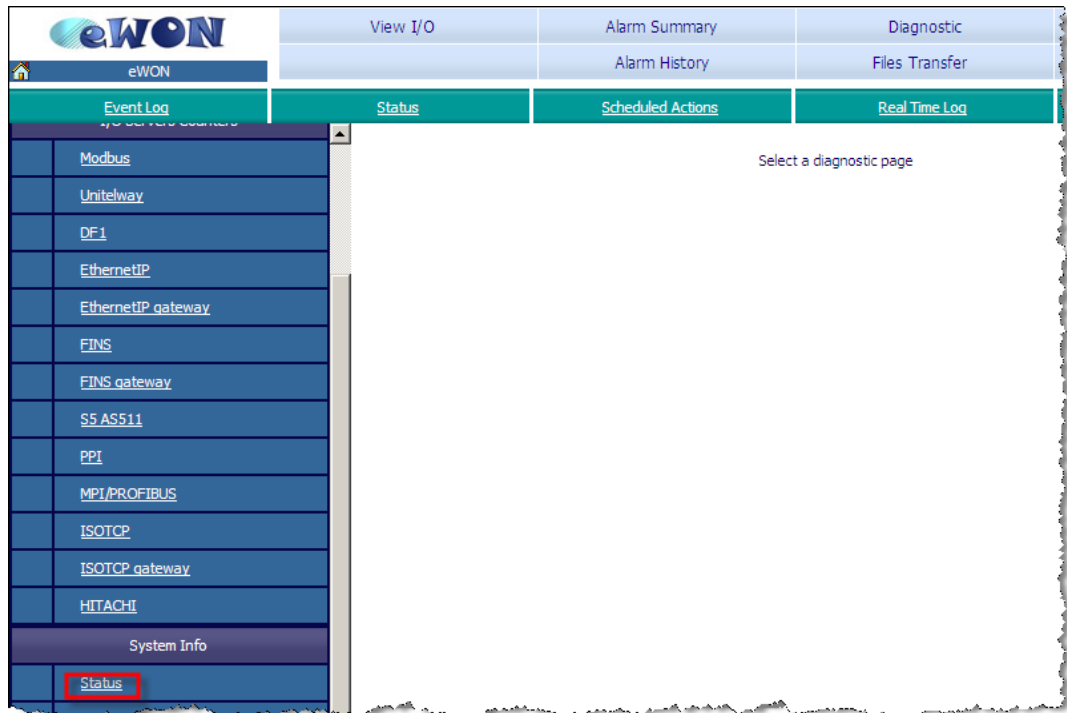
All the devices connected to the LAN of eWON B must have the LAN IP address of eWON B as Gateway, as shown in our introduction picture.



# Connection Establishment

Once the VPN connection has been configured, the connection will be automatically established when the eWON is powered on. To make sure that the VPN connection is indeed established, follow this path:

**Diagnostic → Status → Status**



Click on «Status» to make the following page open:

In our example the VPN allocated IP address is 10.254.0.2 for eWON A.

Status				
Description	Value	Unit	Stat	?
<u>PPP allocated IP address</u>	0.0.0.0			
<u>Current IP transparent forward address</u>	0.0.0.0			
<u>VPN allocated IP address</u>	10.254.0.2			
<u>PPP accumulated incoming traffic</u>	0	Bytes		
<u>PPP accumulated outgoing traffic</u>	0	Bytes		
<u>ADSL Line status</u>				
<u>ADSL WAN status</u>				
<u>ADSL Local IP</u>	0.0.0.0			
<u>ADSL Remote IP</u>	0.0.0.0			
<u>ADSL Primary DNS</u>	0.0.0.0			
<u>ADSL Secondary DNS</u>	0.0.0.0			

## 7. Connection Establishment

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The eWON B received the VPN IP address 10.254.0.1

Status				
Description	Value	Unit	Stat	?
<u>PPP allocated IP address</u>	0.0.0.0			
<u>Current IP transparent forward address</u>	0.0.0.0			
<u>VPN allocated IP address</u>	10.254.0.1			
<u>PPP accumulated incoming traffic</u>	0	Bytes		
<u>PPP accumulated outgoing traffic</u>	0	Bytes		

# Troubleshooting

***If a VPN connection has been established, but the devices behind the eWONs do not communicate:***

- Check that devices on site A are not on the same LAN IP address range as the LAN IP address range of devices on site B.
- Make sure that each eWON is the default gateway of the devices linked to it.

***If the VPN connection cannot be established:***

- Verify that the eWON Server WAN IP address range is different from the eWON Client WAN IP address range.
- Make sure that each router is the default gateway of the eWON it is linked to: *router A=default gateway of eWON A and router B=default gateway of eWON B.*

***If the VPN connection is interrupted:***

- Check if the «Maintain Connection» is indeed activated in each eWON (in the ***Internet Connection*** configuration page).

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Revisions

<b><i>Revision Level</i></b>	<b><i>Date</i></b>	<b><i>Description</i></b>
<b>1.0</b>	2008-12-20	First release.

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- ii Firefox is a trademark of the Mozilla Foundation

Document build number: 124

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