How to connect to WirelessLeiden with a WET11?

Guide for Dummies

Philip van der Zande

March 2004

*** D R A F T ***

Table of contents

1. Installing your WET11

Connect your WET11 to the network card of your PC/laptop through the provided cable. Put the provided CD-ROM in your CD/DVD drive to start the configuration process. The first screen will look like this:

Click "setup" on this screen and click "next" on the following screen.
The setup software will start searching for the WET11:

Once found, a screen similar to the following one will be displayed:

Click on "yes". On the next screen, enter "admin" as your password. Until now, we were following the steps according to the official WET11 manual, we will now continue making the specific settings required to connect to the Wireless Leiden network.

The following screen will now be displayed:
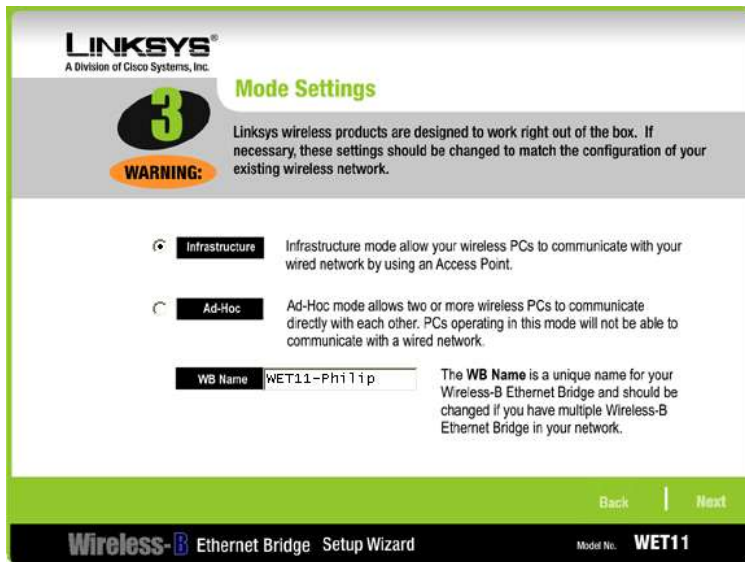
Select "infrastructure" as the mode you would like to use for your WET11. In addition, type a name you would like to use for identification on the network for your WET11. Any name will do, as long as it is unique on the network. I use "WET11-Philip" as identification.

Click "next".
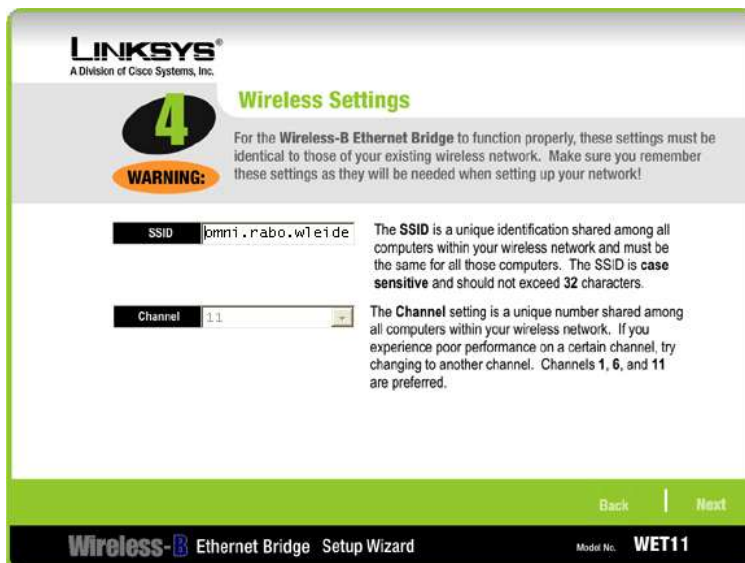
This screen is important, here you decide to which node you want to connect. If you already know the name of the node (the SSID), enter it here. If you are not sure which nodes you can connect to, refer to chapter XXX to find out which node you can connect to at your location. You cannot change the channel when you are in infrastructure, nor should you have a reason to. If you still feel you need to change the channel (11 is typically used), you can go back one screen, change to ad hoc mode, change the channel to 11, and change to infrastructure mode again.

When you have made your settings, click "next".
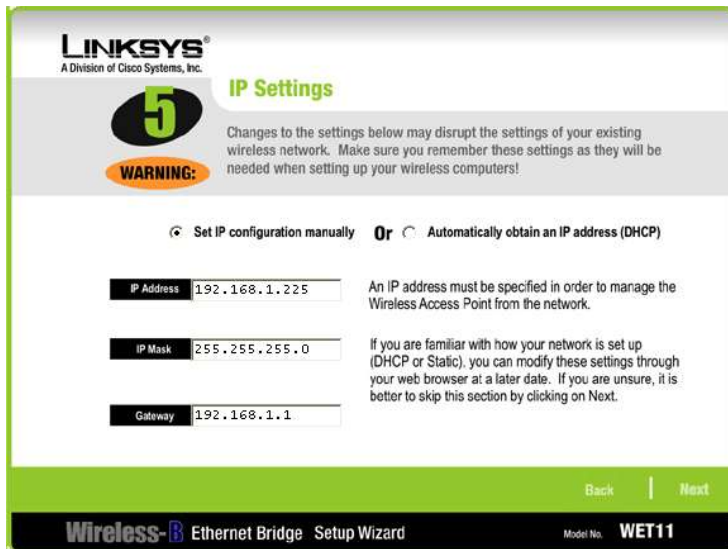
On this screen, make the entries as displayed in the picture. The WET11 device needs to have a fixed ip address. (Later on, we will be choosing an automatic ip address under the TCP/IP settings, but the WET11 – being a bridge – needs a static ip).

Click "next" on the following two screens and click "yes" and "exit" on the last screens.

Your WET11 has now been configured properly. To check your settings, start the setup process again and walk through the screens without changing anything.

2.   Finding WL through your WET11

A. Setting up the WET11 web tool

The WET11 has a built in web browser that you can use to access advanced functions of the WET11. To use the WET11 web browser, you will have to make the following configuration settings:

1. Set a static ip address on your TCP/IP connection

Go to the windows control panel and open "network connections". Your screen should look similar to this:
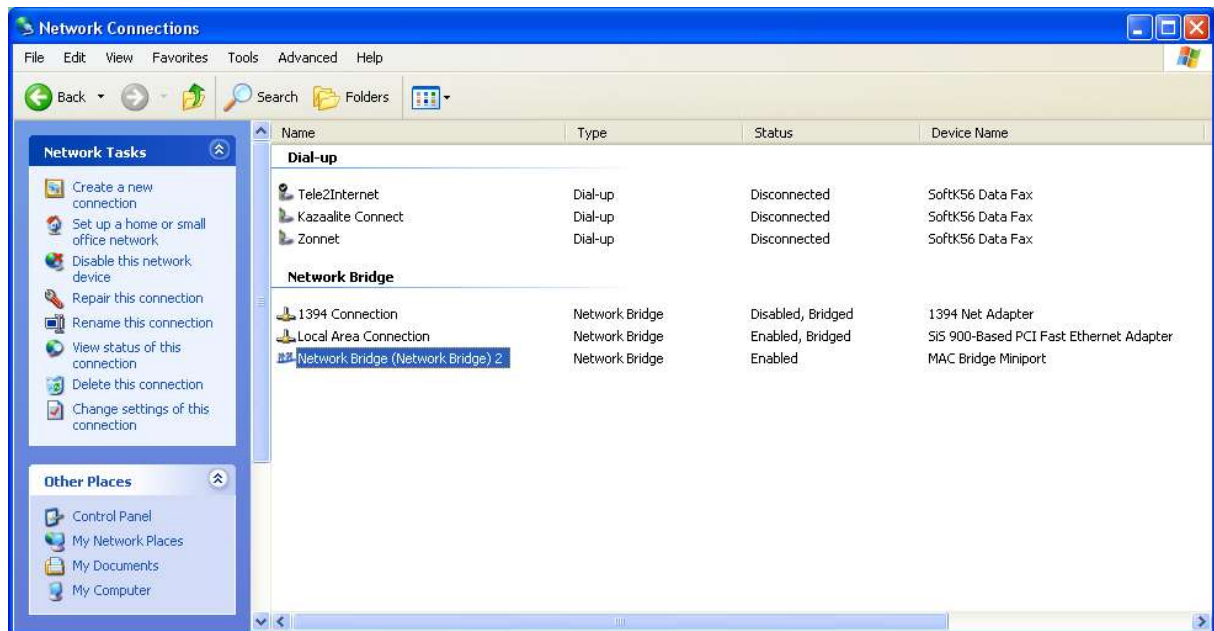
Select the Network Bridge (which is representing the connection to your WET11 now), and click on "change settings of this connection" on the left pane of the screen. You can also right-click on the connection and choose "properties".
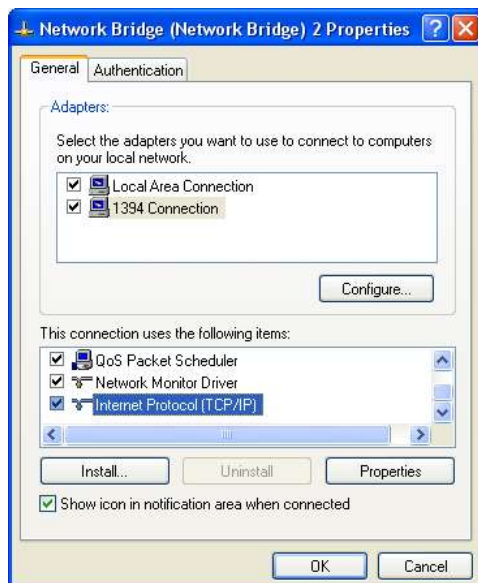

On the next screen, select the connection "Internet Protocol (TCP/IP)" and click on the properties button. On the following screen, under the "general" tab, select "use the following IP address" and enter the following information:

IP address:	192.168.1.159 (the 159 can be replaced by anything, except
225 (used by WET11) and 1)	
Subnet mask:	255.255.255.0
Default gateway:	192.168.1.1. (same as your WET11)

Your screen should now look like this:
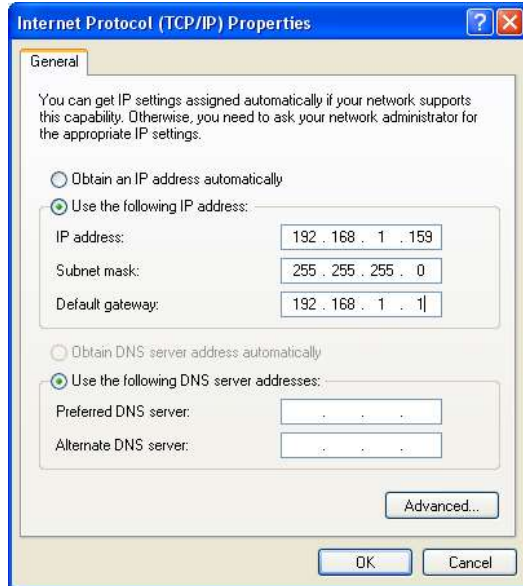
Click "ok" and on the following screen click "close". It may take a few seconds before your PC has activated the new settings.

2. Configure your web browser

First of all, if you normally use a dial-up connection to surf on the Internet, you will have to switch off the automatic dial-up. In Internet Explorer, you can do this by going to the "tools" menu, and then choose "Internet options". On the screen that pops up, select the "connections" tab:

Select "never dial a connection" to deactivate the automatic dial-up. Next step is to ensure your web browser is not trying to connect to a proxy server. Click on the "LAN settings" button. On the following screen, make sure ALL checkboxes are **not** flagged:
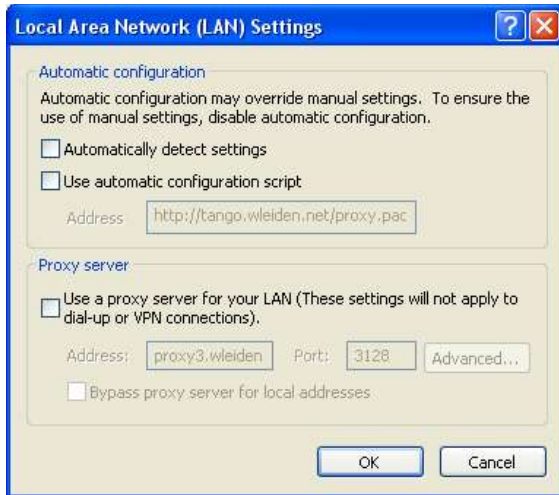
Click "ok" twice to get back to your browser. You are ready to connect to the WET11 through the web browser now!

3. Connecting to the WET11 through a web browser

Straight from the factory, the WET11 will be configured with a static ip address 192.168.1.225 (refer to chapter 1, "Installing your WET11"). You can now use your web browser to connect directly to the IP address.
Open your web browser and type enter the following into the address line: http://192.168.1.225/

Hit enter, and a logon screen will pop up. Enter "admin" as a password, no user name is required. Click "ok".

If all went well, you should now see the first screen of the WET11 web tool:
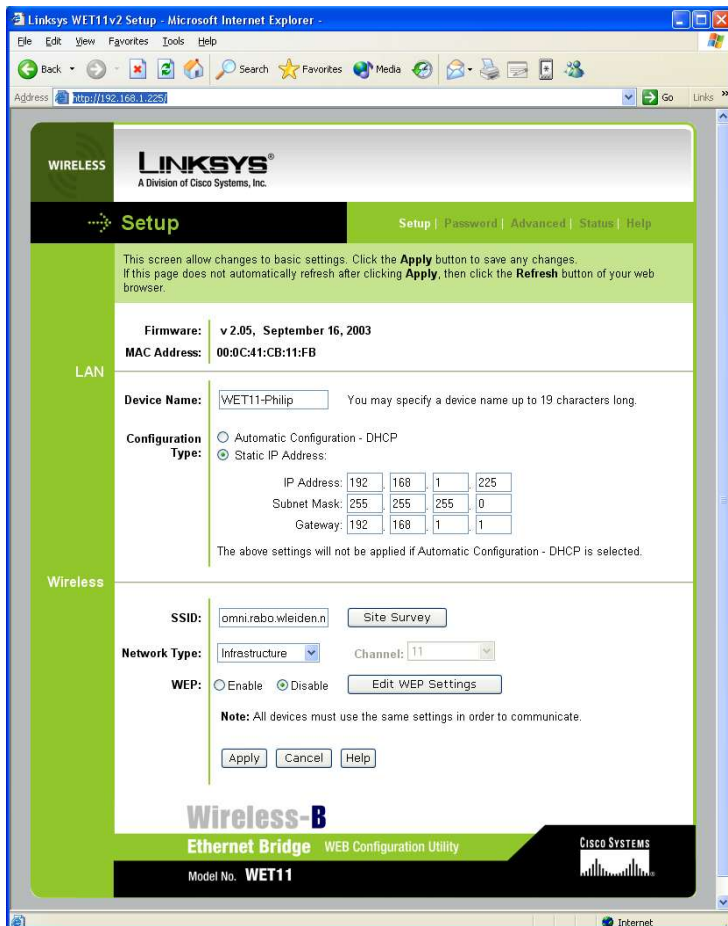
In the next chapters you will learn which functions you can use in this web tool.

B. Verifying signal quality with the web tool

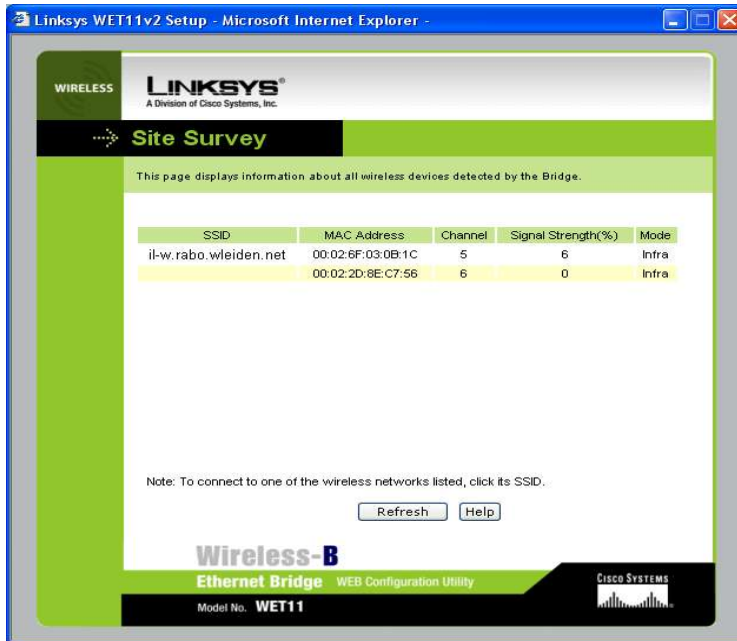On the first screen of the web tool, click the button "Site survey". The WET11 will now scan the environment for wireless devices. A list will be displayed with all devices found:


As you can see, the signal strength is listed for each device as well. You can click on the refresh button each time you want to try a new position of the antenna connected to your WET11. Be aware that if you are using the standard WET11 antenna, it should be in a vertical position if you want to pick up Wireless Leiden signal. Typically your WET11 needs to have a direct view of the WL node that you are trying to connect to. If a building is blocking the view, it is unlikely that you will have a good signal. Sometimes you can have a good signal in your house when you can view a WL node from behind a window, but in other cases, you may need to place the antenna on the roof of your house.

Be aware that there is another page in the WET11 web tool where you can also view the signal quality. Go to the "status" screen of the web tool and you will find more detail about your connection. For a reason unknown to me, the signal quality on the status web page is different than on the Site Survey page (… ?):
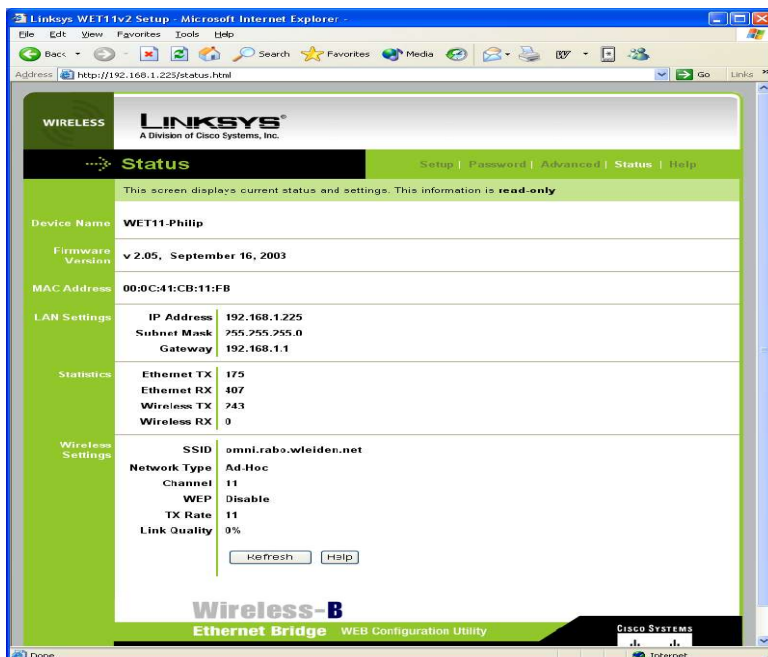
Play with the position of your antenna and with the Site Survey function of your WET11 to get the best signal to the node you want to connect to. Please be aware that you can only connect to WL nodes that start with "omni" or "ap" (e.g., "omni.rabo.wleiden.net"). The node mentioned above, il-w.rabo.wleiden.net, will not allow you to setup a connection. Once you have identified a node that you would like to connect to, go back to the first screen of the WET11 web tool to instruct your WET11 to always connect to that node. In my case, I am using "omni.rabo.wleiden.net" (in SSID field):
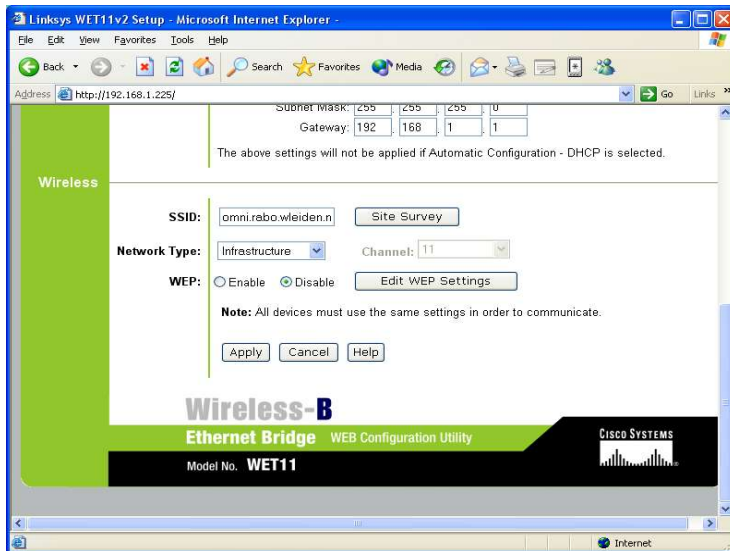
You can also change the SSID through the standard setup software that came with the WET11 (the installation CD-ROM). Refer to chapter 1.
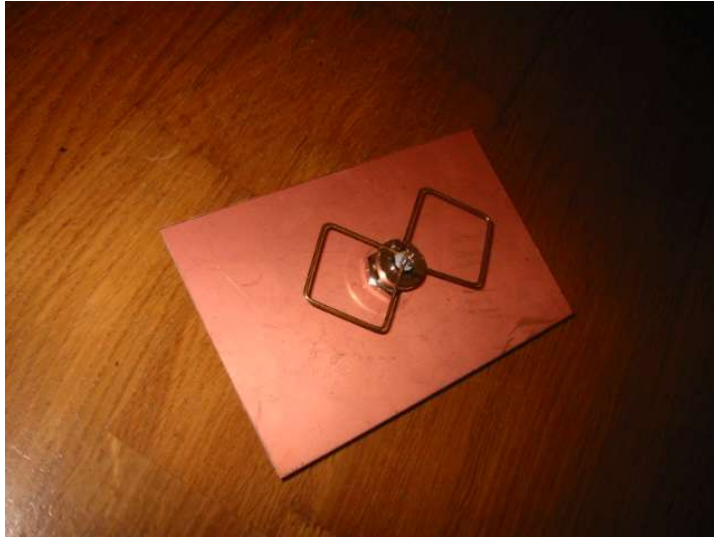
C. Improving quality of the signal

As mentioned earlier, your WET11 has an antenna that may not be strong enough to setup a connection with a WL node. From my own experience I found out that a signal of 15% or higher will be adequate for a wireless broadband connection. A signal of less than 15% will result in data loss during transmission which will obviously deteriorate your connection. There are some creative ways to improve the quality of the signal.

1. Use a bi-quad antenna

A bi-quad antenna is cheap and can be built by yourself if you know how to solder. See the following wiki site with a manual on building your own bi-quad antenna: http://www.xs4all.nl/~tom1572/
A bi-quad will improve your signal with 8-10db and will cost Apr. EUR 15,-

Here's a picture of a self-made bi-quad:

2. Use a parabola

An even cheaper and easier way of improving signal quality of your WET11, is by creating a parabola screen around your WET11 antenna. This has a double advantage: it will improve the signal dramatically, while at the same time lowering the noise from unwanted sources.

You can make a parable from plain cardboard, or chicken wire. The following web site describes how to build your own parable and has a specific template for use with a WET11:
http://www.nodomainname.co.uk/parabolic/parabolic.htm

Depending on your situation, you may need to install the WET11 outside (e.g. on the roof of your house). The Wireless Leiden technicians have been very creative in creating a cheap waterproof housing for your WET11 and antenna. See following web site to create your own: http://wiki.wirelessleiden.nl/wcl/cgi-bin/moin.cgi/RegenpijpClient

D. *Connecting to Wireless Leiden, activating your internet connection*

Once you have properly installed your WET11 (see chapter 1) and once you have ensured that you have good signal from a WL node, you are ready for the last step: connecting to the WL network.

1. Configuring TCP/IP

To use the WET11 web tool, you have configured a static ip address under TCP/IP (chapter 2.A.1). To connect to the Wireless Leiden network, you have to change this to "automatic IP".
Go to the control panel and open your network connections. Click on the network bridge and click "change settings" on the left pane of your screen, or right-click on the network bridge and choose "properties". You see the following screen again:
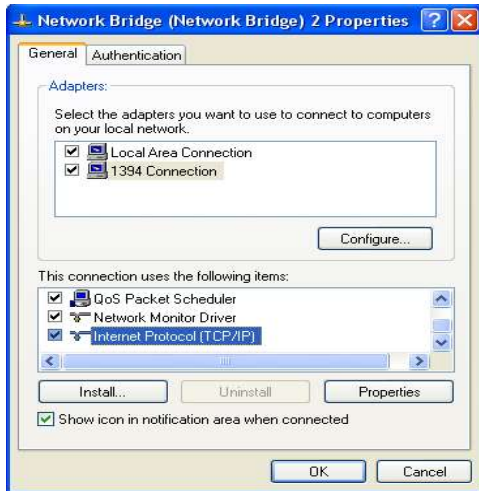
Select the "Internet Protocol (TCP/IP)" and click "properties". On the following screen select "Obtain an IP address automatically":
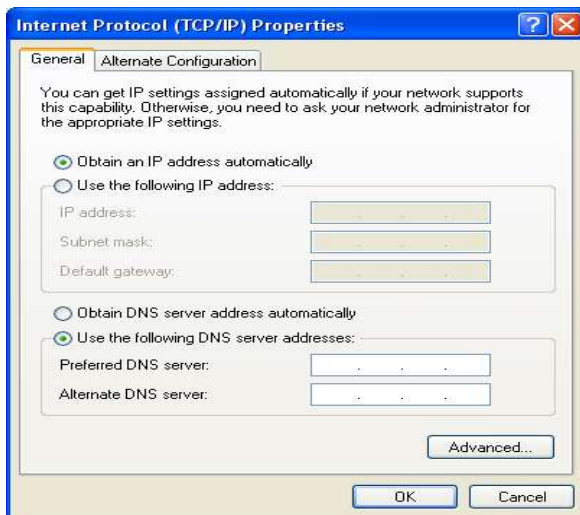
Click "ok" on this screen and "close" on the following screen.

2. Configuring your web browser

To connect to the WET11 web tool, we have deactivated all proxy settings in your browser (chapter 2.A.2). However, to connect to the Internet through Wireless Leiden, you will have to activate the proxy setting.

Open Internet Explorer, click on "tools" in the menu and then choose "Internet options". A screen will pop up. Choose the "connections" tab:

Choose "LAN settings".
On the following screen, flag the "proxy server" checkbox and enter the following server: proxy3.wleiden.net.
Enter 3128 as the port:

Click "ok" on this screen and on the next screen.

YOUR CONFIGURATION IS NOW COMPLETE!

3. Trouble shooting

With the above-mentioned steps, you should now be able to browse on the Internet through your Wireless Leiden connection. If this is not working properly, follow these steps to investigate what the problem is:

1 - Check the Connection Debugging page on the WIKI web site:

 http://wiki.wirelessleiden.nl/wcl/cgi-bin/moin.cgi/DeBuggenConnectie?action=highlight&value=debuggen

- When the debugging page refers to Netstumbler, you can replace the comments as if they were referring to the WET11 web tool (Netstumbler software does not work for a WET11).

- When the page refers to "opening a command prompt (dosshell)", go to the "start" menu in windows and choose "run…" In the following screen, enter "command.com" and hit enter:


A DOS screen will open in which you can type the commands explained on the debugging web page:

2 – Check if you have configured your WET11, your web browser and your TCP/IP settings properly by checking each setting as described in the previous chapters.

- Do you have a radio signal of at least 15%?
- Have you instructed your WET11 to look at the right node?
- Did you activate "automatic IP address assignment" on TCP/IP?
- Is your web browser configured to look at the correct proxy server?
    - As far as I know, the proxy should be proxy3.wleiden.net (works for me!), but on the WL site there are also references to proxy.wleiden.net. Something may have changed in the past and it may be worthwhile checking on the *user list* (see below) with the WL experts what the correct proxy server is.
    - Anyway, you may want to try the other proxy server to see if it works for you. If not, you can also try to use the automatic proxy script http://tango.wleiden.net/proxy.pac. Go to your web browser and change the proxy settings for this (see picture):
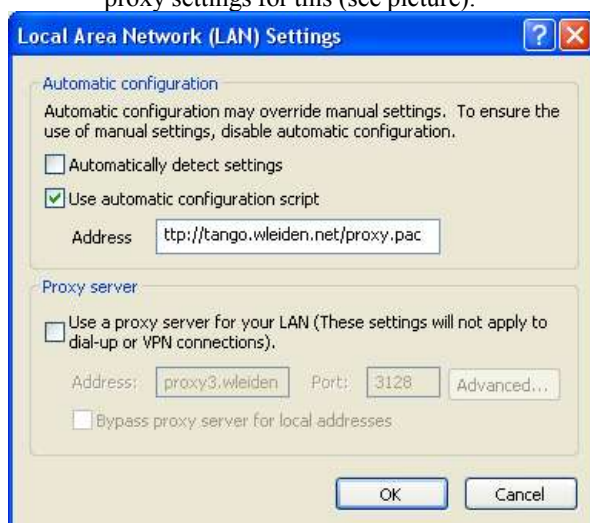
3 – Check if your WL node is active

- Due to maintenance or other reasons, a node can be down for some time. On the WL web site you can check if the WL node, to which you are trying to connect, is active or not: http://wiki.wirelessleiden.nl/wcl/cgi-bin/moin.cgi/NodeMap

4 – Check if other people have had similar problems

The *User list* (gebruikerslijst) is a distribution list where everyone can raise any questions or topics related to their experiences on the WL network. It is likely that other people before you have had similar problems and they may have raised those problems to the *user list*. The following web site contains the archives of the *user list*, check these archives to see if an answer to your problem is available: http://wiki.wirelessleiden.nl/lists/gebruikers/

5 – Raise your problem to the *user list*

If you have tried all the above to no avail, send an email to the *user list*. Describe your problem, and – when possible – include some details on your configuration. A copy of your ipconfig (see under "Debugging connection" above) would be very useful.

Before you can send an email to the *user list*, you will have to sign up for it. Go to the following web page to learn how to do this:

http://wiki.wirelessleiden.nl/wcl/cgi-bin/moin.cgi/MailingList?action=highlight&value=gebruikerslijst

6 – Raise your problem to Linksys

I was quite surprised when I found on the support pages of the Linksys web site (www.linksys.com) that you can chat online with a support person. Even though it is a little bit cumbersome to describe your problem in a chat session and sometimes there was also some delay in the line; it did help me in solving a problem in the past. If you know that a problem you are experiencing is directly related to the operations of your WET11, try to raise your problem on the Linksys support web site and maybe you will get a useful answer instantly!

3. Additional documentation

A. WET11 Manual

To get the latest manual on your Linksys WET11 in PDF format, surf to ftp.linksys.com/pdf/
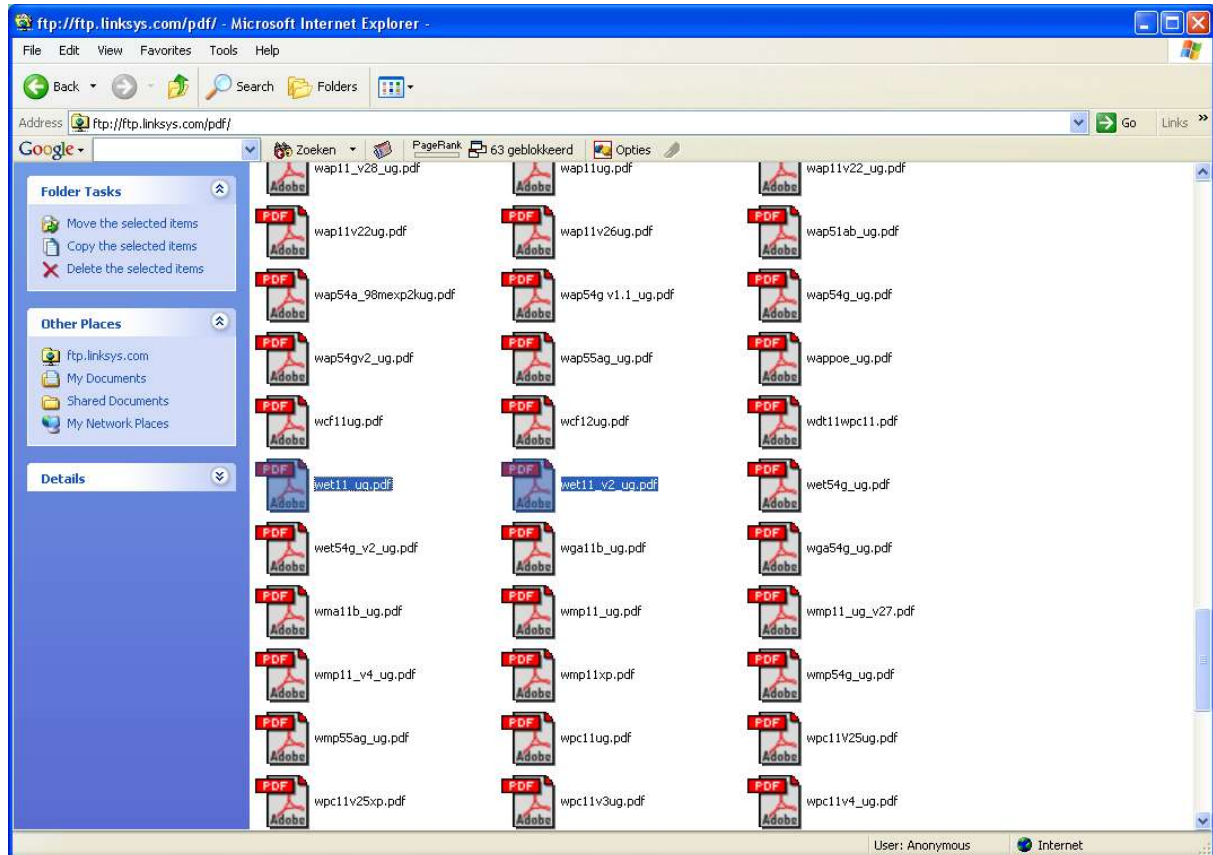
B. Firmware versions

On the Linksys web site www.linksys.com, you can also download software related to the WET11, like new firmware versions.
There is a whole discussion on which firmware version is better than others (see *user list* archives mentioned above), but in the end; you will have to decide for yourself if you need to upgrade your WET11.

C. Security

On the WL web site, you will find some more information on how to make your connection secure with 64 or 128 bit encryption. Have a look at the WL web site, plus check the WET11 manual for more details on how to activate this. Please be aware that the WET11 web tool (described in chapter 2.A.3) allows you to configure your WET11 security settings.