

## Configure NSLU2 for TF5800PVR access over Ethernet

Summary            A Linksys NSLU2 is a paperback size unit that has Ethernet and USB ports. Using this the Topfield TF5800 PVR can be accessed over a home network. The NSLU2 is about £55 but needs custom firmware to access the Topfield. This document describes the installation process on a Windows PC. This configuration does not use any USB drives on the NSLU2.

Make sure you read the appendix for latest info.

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# 1. Initial Test

So you've bought a NSLU2. Let's test it and make sure it's working. So connect it your home network.

Most home networks are 192.168.0.xxx (where xxx is any number between 1 and 254) with a mask of 255.255.255.0. This range is reserved for local networks and it's what Windows defaults to. You'll need to change the mask to 255.255.254.0 on your PC and on your router if you have one. This is because the default IP address of the NSLU2 is 192.168.1.77 which is not on the default local network.

After changing the mask enter 192.168.1.77 in a browser URL bar. This should bring up the Linksys web setup pages for the NSLU2. Select administration on the top menu. Default login is admin, password is admin. Change the IP address back to something in the normal range, i.e. 192.168.0.xxx. Save. Then reset the PC and router masks back to 255.255.255.0.

**LINKSYS**  
A Division of Cisco Systems, Inc. Firmware Version: V2.3R29

**LAN** Network Storage Link for USB 2.0 Disks **NSLU2**

Home **User password** Administration User Guide Linksys Web

LAN | System | Users | Status | Advanced

**IP Address:**

Obtain IP Address automatically (DHCP client)  
 Fixed IP Address (recommended)

IP Address:	192	168	0	77
Network Mask:	255	255	255	0
Gateway:	192	168	0	1

**DNS Server**

Primary: ...  
Backup 1: ... (optional)  
Backup 2: ... (optional)

**DNS is required for E-mail messages**

Save Cancel Help

CISCO SYSTEMS

## Note:

- The gateway should point to your internet gateway to enable the NSLU2 to be updated direct from the net.
- The DNS values should be filled in so that the NSLU2 can access the internet for installing packages (software).

## 2. RedBoot

Redboot is needed for a worst case recovery. Hence the wise user will test this **before** flashing new firmware (also see Appendix A ).

Redboot is only available at power up of the NSLU2, only for a few seconds and only on 192.168.0.1. This last address is the default address used for internet gateways and routers. If you can change that on your router then ok, otherwise you will need to connect the NSLU2 direct to a PC with a cross-over Ethernet cable.

Since Redboot is only available for a few seconds, during which time you have to hit Ctrl+C, then a script is the easy way to catch it. Below is a script that runs on Tera Term, a freeware terminal program. The home page for Tera Term is currently:

<http://hp.vector.co.jp/authors/VA002416/teraterm.html>

But it is a very popular program so can be found lots of places as well.

```
; Redboot Telnnet login
setecho 1
connect '192.168.0.1 9000'
:wait1
testlink
if result <> 2 goto wait1
send 3
; OK, auto redboot complete.
```

Save this script as redboot.ttl.

To access Redboot power off the NSLU2. Start Tera Term (cancel the connect window) and from the Control menu select Macro. Open redboot.ttl. Power on the NSLU2. Tera Term window should display the prompt "Redboot>". Type reset in this window to reboot the NSLU2 now you have Redboot working and quit Tera Term.

The NSLU2 Linux site, has more information on what to do if you need to resort to Redboot to recovery from a bad flash, the info is here:

<http://www.nslu2-linux.org/wiki/HowTo/RecoverFromABadFlash>

If you can't get the Tera Term method to work for you then there are alternate methods to get into Redboot here:

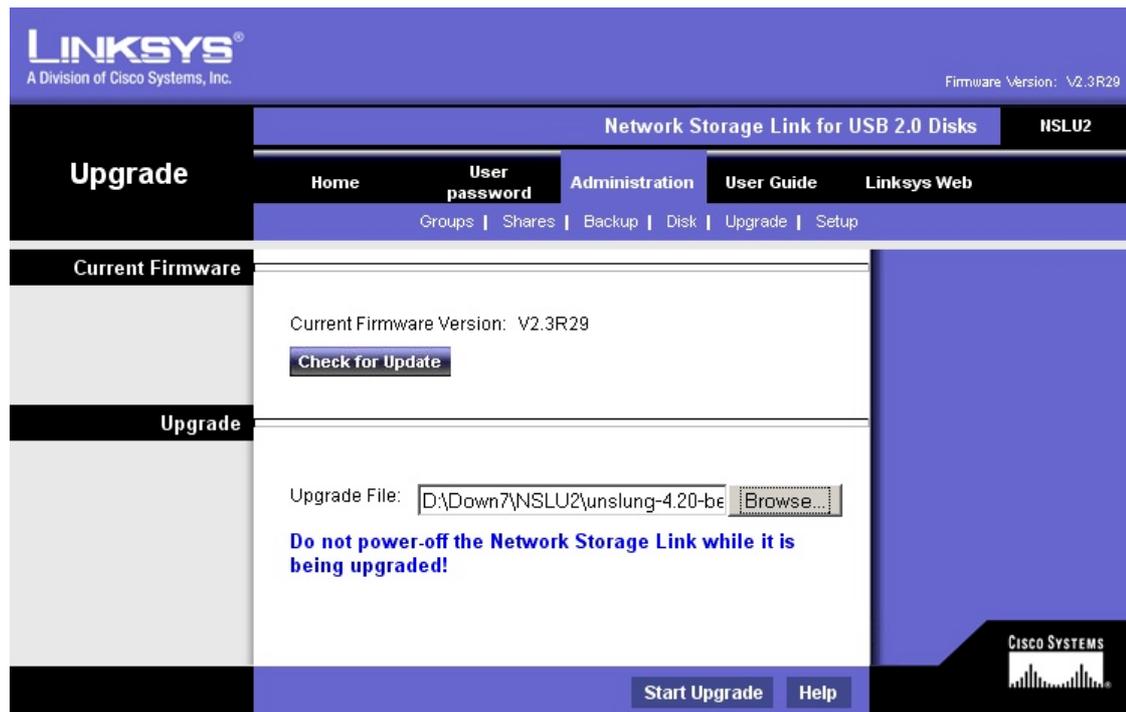
<http://www.nslu2-linux.org/wiki/HowTo/TelnetIntoRedBoot>

### 3. Install Unslung

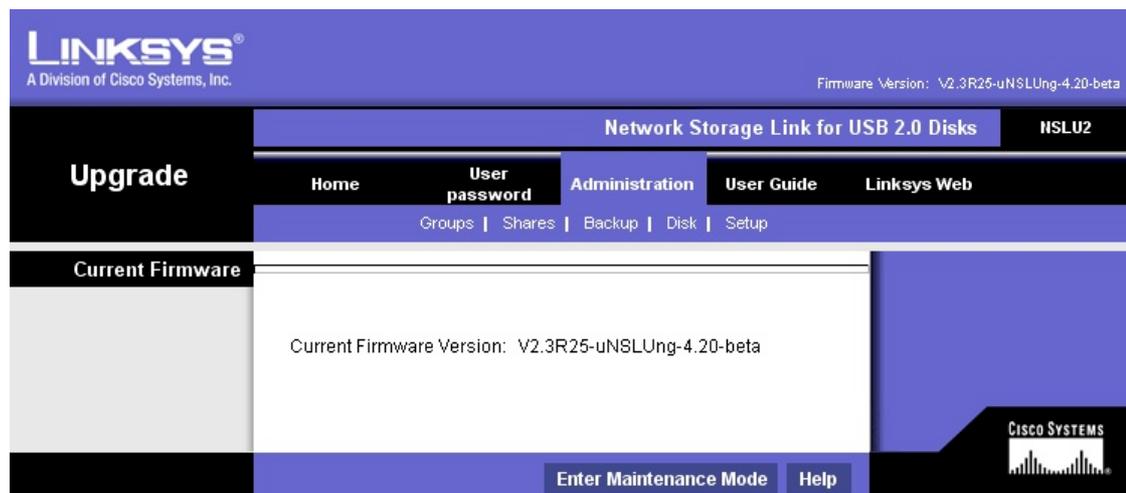
Unslung is the new firmware you need in order to be able to customise the NSLU2. This can be found here:

<http://www.nslu2-linux.org/>

The download area is where you will find the latest firmware. Download the binary zip file to your PC. Unzip to a shared directory. Enter the NSLU IP you set in section 1 in a browser. The Linksys web interface should display. Click administration and login same as in section 1 (admin, admin is the default). Click advanced, then upgrade. Current firmware version will be displayed. Click the enter maintenance mode button. When the NSLU2 reboots repeat the browser steps to get back to the same screen. Now there is an upgrade file entry. Use the browse button to point this towards the unslung firmware. Then click start upgrade.



When the upgrade process finishes use the browser to log in again and check the NSLU has the new firmware.



## 4. Install ftpd-topfield

The next suggest step is to unslung unslung to a usb disk. The reason for this is to give more space for programs (packages). However, if all you want to install is ftpd-topfield or puppy then there is no need to unslung. There is enough space in the NSLU2. Hence the unslung step will be skipped which also saves the cost of a usb disk.

**BUT**, only if you use unslung 5.5 or earlier. Later versions are too big but 5.5 works fine for me and so did 4.5 before I upgraded (also see Appendix A ).

Ftpd-topfield is less well known than the puppy application. However, although it is slightly slower than puppy it does allow a gui interface on the Windows PC by using any suitable ftp program. In comparison the puppy is only command line.

To install we need to enable telnet by clicking the button on this page:

<http://192.168.0.xxx/Management/telnet.cgi>

where xxx is the number you set the NSLU2 in section 1. Note that a reboot of the NSLU2 resets telnet access back to disabled.

Telnet into the NSLU2. This can be done with Tera Term, as used for Redboot, using the script below (change xxx to the number you set in section 1).

```
; NSLU2 Telnet login
setecho 1
connect '192.168.0.xxx'
wait 'login:'
sendln 'root'
wait 'Password'
sendln 'uNSLUng'
; OK, auto login complete.
```

When logged you should see the prompt # .

Now install the ftpd-topfield application by typing at the prompt:

```
ipkg update
ipkg install ftpd-topfield
```

First command gets the latest list of packages available and the second installs the latest version of ftpd-topfield. Note the same pair of command will also update any previous installed version too.

**Note**, in version 5.5 ipkg is now called ipkg-cl so you need to use ipkg-cl in the above commands.

type exit at the prompt to exit telnet.

### THE END

That's it. The install will configure the ftpd-topfield to automatically start when every the NSLU2 is started and with the correct options. But, read below for more useful info.

## NOTES:

1. The ftp interface allows one login only at a time. Most windows ftp programs use multiple logins so you can browse directories and move files simultaneously. The best type of ftp program to use is one that allows you to turn this off. In FileZilla this is under the Queue menu and is called use multiple connections. If you are using multiple connections then file moves will only start **after** you log off (i.e. when you free the single connection).
2. Failure of ipkg update (or ipkg-cl update if you are using version 5+) is most likely due to you forgetting to set DNS on the NSLU2. You can also use ipkg with a full filename i.e.

ipkg install [http://ipkg.nslu2-linux.org/feeds/unslung/cross/ftpd-topfield\\_0.5.2-3\\_armeb.ipk](http://ipkg.nslu2-linux.org/feeds/unslung/cross/ftpd-topfield_0.5.2-3_armeb.ipk)

Naturally you need to check <http://ipkg.nslu2-linux.org/feeds/unslung/cross/> to ensure that is the latest file.

## 5. Upgrades and Configuration

When a new version of ftpd-topfield is available you can upgrade with the ipkg command the same as for a fresh install. See previous section, 4. Install ftpd-topfield, for details. Note this will stop the current ftpd-topfield, install the new one, and restart ftpd-topfield so there is nothing else you need to do. If the install objects then you can also remove ftpd-topfield by the command (when in a telnet session of course):

```
ipkg remove ftpd-topfield
```

This will start you with a clean slate for the install (**note** ipkg is ipkg-cl in version 5.5).

The command

```
ipkg files ftpd-topfield
```

will return two pieces of information, the program location and the startup script. The results will be something like this:

```
# ipkg files ftpd-topfield
Package ftpd-topfield (1.0-5) is installed on root and has the following files:
/opt/sbin/ftpd-topfield
/opt/etc/init.d/S67ftpd-topfield
```

to find out the program options enter the command:

```
/opt/sbin/ftpd-topfield - -help
```

This will return something like this:

```
/opt/sbin/ftpd-topfield -help
Usage: /opt/sbin/ftpd-topfield [OPTION] ...
Internet File Transfer Protocol server.

-A, --anonymous-only  Server configure for anonymous service only
-b, --turbo            Default to turbo mode on for transfers
-D, --daemon          Start the ftpd standalone
-d, --debug           Debug mode
-e, --noeplf          Don't send listing in EPLF mode
-l, --logging          Increase verbosity of syslog messages
-p, --pidfile=[PIDFILE] Change default location of pidfile
-P, --port=[port]     Change the port to listen on in server mode
-q, --no-version      Do not display version in banner
-t, --timeout=[TIMEOUT] Set default idle timeout
-T, --max-timeout     Reset maximum value of timeout allowed
-u, --umask           Set default umask(base 8)
    --help           Print this message
-V, --version         Print version
-a, --auth=[AUTH]    Use AUTH for authentication, it can be:
                    default  passwd authentication.
```

To change the behaviour of ftpd-topfield you need to edit the startup script for which you need to use vi, not the most friendly of editors. A guide to vi can be found here:

<http://www.nslu2-linux.org/wiki/Puppy/ViCrashCourse>

The basic steps are as follows. Start vi with the startup script you found from using the command `ipkg files ftpd-topfield`, the second line. So with the details as above (note yours might be different) the command would be:

```
vi /opt/etc/init.d/S67ftpd-topfield
```

Once in vi you press `i` for insert mode, then use the arrow keys to move around and type the new text as usual. The `esc` key switches you back to command mode when `:wq` will write the file and quit (note the colon at the start). To abandon edits use `:q!` and to delete characters you use the `x` key in command mode.

To restart `ftpd-topfield` with your new options just run the start up script, which with the details as above, would be the command:

```
/opt/etc/init.d/S67ftpd-topfield
```

As before you type `exit` to finish.

Another useful short cut is that Tera Term has in its buffer whatever was last selected with the mouse and will enter that with right mouse click. This saves a lot of typing, if you are using Tera Term of course.

## 5.1 Turbo Mode

The USB link to the topfield can be operated in turbo mode. This gives the fastest file transfer however playback is interrupt and the remote control does not function. The default turbo state is controlled by the startup script and the `-b` option. If this is included on the command in the start up script then turbo is on by default, otherwise it is off. The default start up script setting is turbo off.

If your ftp client allows raw ftp commands like filezilla then you can change the turbo setting on the fly. The ftp command is one of:

```
site turbo  
site turbo 1  
site turbo 0
```

The first toggles the turbo state so if it was off it becomes on and vice versa. The second turns turbo on in all cases and the last turbo off in all cases. For all 3 the ftp response window reports the new state of turbo.

Note that when you connect to the NSLU2 a new version of `ftpd-topfield` is started so each time the starting state of turbo is as set in the start up script, not how you last left it when you logged off the ftp session.

## Appendix A - Rafe's Comments

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*(with some minor edits by me)*

Spent a few hours this afternoon getting my Topy onto my network using a NSLU2.

I basically followed Malc's guide which is an excellent starting point. There are a couple of places where the info is a little out of date and there are easier (in my view) ways of doing some things. But I hope that by combining the below with Malc's guide you'll have it all sorted.

So here's what I've learnt (some bits learnt the hard way) in case its of use to others:

If, like me, FTP access to your Topy is all you need then you can get away with just an NSLU2 (i.e no USB flash/HDD drive or "unslinging" required) if:

- You use V5.5 of the Unslung firmware (the later versions will fill up your NSLU2 such that when you try do the next stage you will screw it up in a way that only a reflash will fix, ask me how I know.....)
- You don't issue a ipkg-cl update command. This just wastes space on the NSLU2 (a.k.a. Slug) and there's no real need to do it.

Flashing the firmware can be done as per before or if you are running Windows its even easier if you use the SerComm Upgrade Utility as described here

<http://www.nslu2-linux.org/wiki/HowTo/RecoverFromABadFlash>

in the "Easiest Method?" section. Note that you can use the SerComm utility to reflash if things go horribly wrong, without the need for RedBoot, TeraTerm, ultrafast reflexes and a couple of extra hands.

Skipping the ipkg-cl update command is pretty straightforward, it just means that you need to install the package using its URL rather than its package name.

Just go to here: <http://ipkg.nslu2-linux.org/feeds/unslung/cross/>

Locate the ftpd-topfield package in the list and make a note of the URL. Then instead of using the package name to install i.e.:

```
ipkg install ftpd-topfield
```

simply use the URL to the package i.e.:

```
ipkg install http://ipkg.nslu2-linux.org/feeds/unslung/cross/ftpd-topfield_0.6.6-1_armeb.ipk
```

If it doesn't work then try pinging ipkg.nslu2-linux.org from both your PC and the Slug. If you get a reply from the PC but not the Slug then you just need to sort out the DNS/gateway settings on the Slug.

Finally, not documented anywhere I found is the default username and password for the ftp access: username = anonymous, blank password. I know many (proper) FTP packages offer this as the default, but the Microsoft FTP command line one doesn't. And before anyone asks why I was using that its because a) my home PC is brand new and there's not a lot installed on it and b) I rather like command line FTP (because I was once a \*nix user and "because I've always done it like that" is okay sometimes).