# How To Set Up a VPN Server Using a Mac



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# How to Set Up a VPN Server Using a Mac



#### Introduction

These instructions may seem arcane and complex but they're really easy if you just follow along step by step. Donald Burr of Otaku No Podcast (<u>otakunopodcast.com</u>) created all of these instructions in text form, Allison just created the ScreenSteps tutorial!

I'll be focusing on using a Mac on your home network using an Airport Extreme Router (of course any router will work but the screenshots will be for the Airport). If you have a router capable of installing the Tomato Router Firmware, you should look at Donald's full instructions because you may not need to use a Mac at all for this, your router can do it all. See Donald's notes for other options.

Read Donald's instructions ===> here.

#### **Steps to Success**

We're going to go through nine steps, some more complicated than others.

In order to connect into your home Mac to use it as a VPN server, we need to give the Mac an internal network static IP and we need to be able to get to your network from the outside, even though you probably don't have a static IP, and that's where No-IP.com comes into play. We need to install Xcode to get the command line tools in order to run MacPorts which lets us use some Linux commands and install what are called Tuntap drivers. Next we'll run some nifty scripts (of doom) from Donald Burr to help us create certificates for each of our devices that need to connect to our VPN. We need to open up one teeny port on our router, and then finally we get to install software on our devices to be able to connect to the VPN server.

- 1. Setting Up a Static IP for the Server on the LAN Side
- 2. Creating Account at No-IP.com
- 3. Installing Xcode and Running Command Line Tools
- 4. Installing MacPorts
- 5. Installing Tuntap Drivers
- 6. Donald's Nifty Scripts of Doom
- 7. Opening up UDP Port 1194
- 8. Install VPN Software on iOS
- 9. Install VPN Software on OSX



## SECTION 1 - Setting Up a Static IP for the Server on the LAN Side

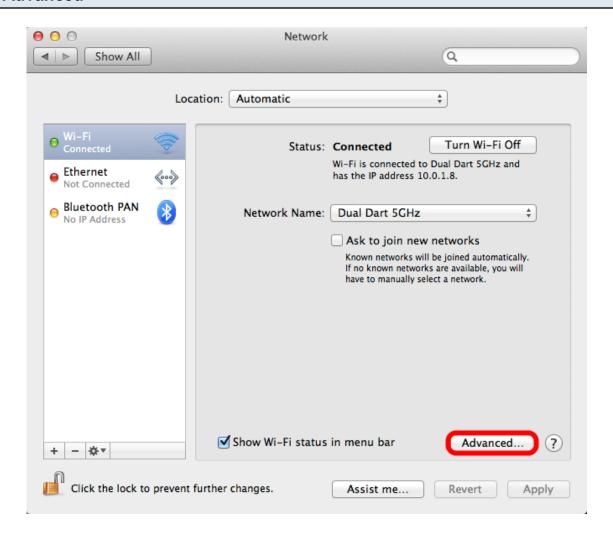
These instructions should be completed on the machine that will become the VPN server.

## **Open Network Preferences**



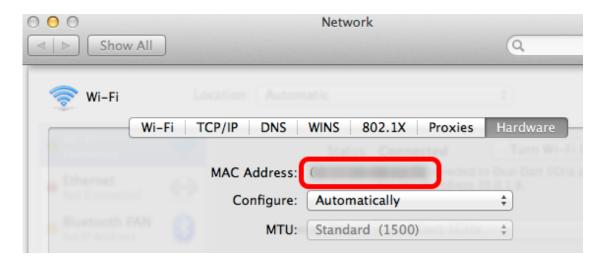


## **Select Advanced**





# **Copy the Mac Address**





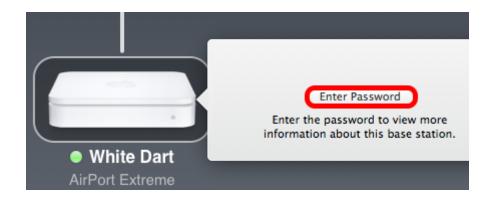
# **Open AirPort Utility**



Click on your router, in my case it's called White Dart.



## **Select Enter Router Password**



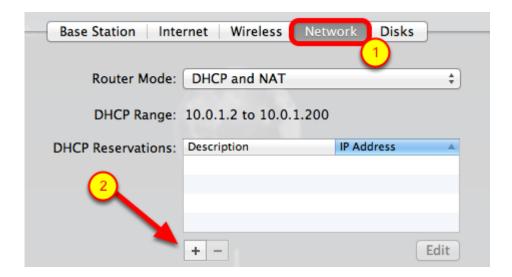
Enter your password when prompted and click OK.

## **Select Edit**

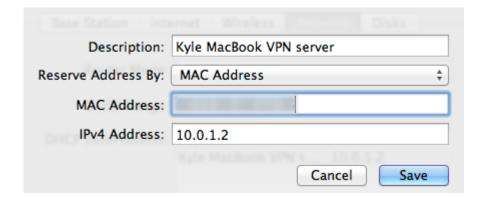




## Select the Network Tab and Click the + Button

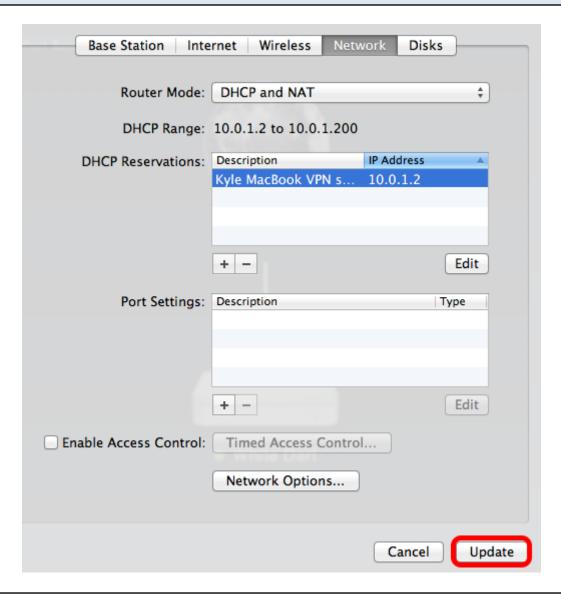


# Paste in the Mac Address You Copied Earlier





## **Select Update**



#### **Select Continue**

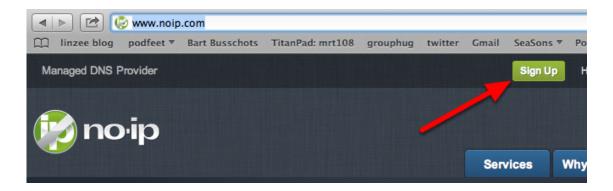


Quit Airport Utility when this operation completes.



# **SECTION 2 - Creating Account at No-IP.com**

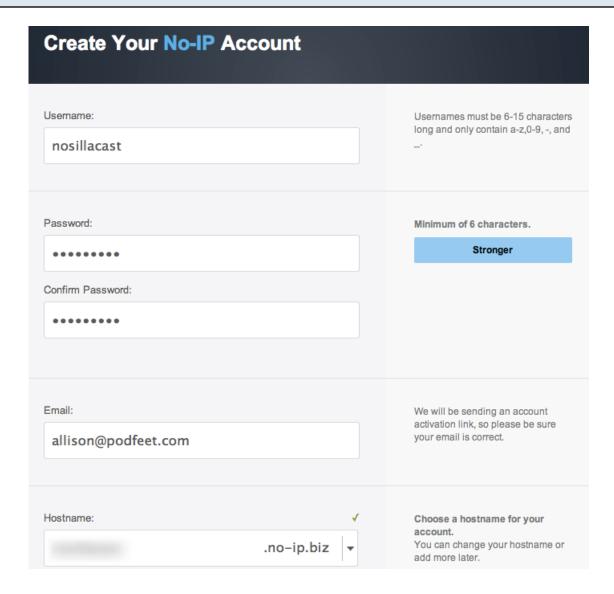
## Sign Up for an Account at No-IP.com



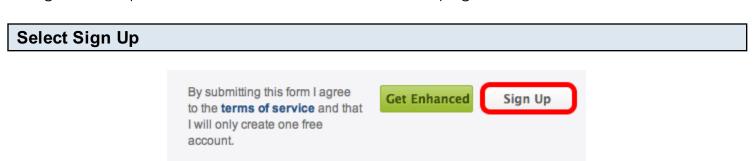
Navigate to <a href="http://www.noip.com">http://www.noip.com</a> and select Sign Up.



#### Create a Username and Password

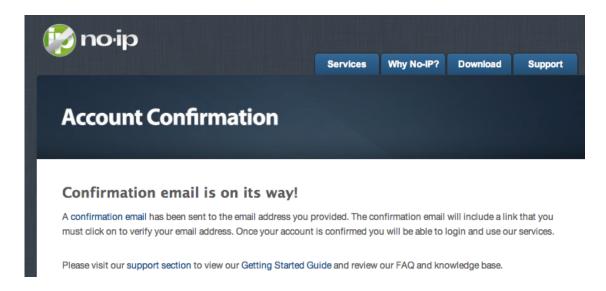


Enter your Email address. Note the host name shown which is free, but if you want to pay you can get more options. Scroll down to the bottom of the page.

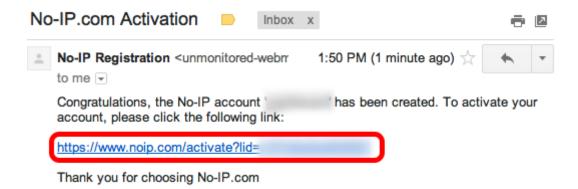




#### **Email Confirmation Will be Sent**



#### Click the Link in the Email





## **Download the Update Client**



#### Your Account Is Now Activated!

You're almost finished, please complete the steps below:

- 1. Create an Account
- 4. Download Update Client
- 2. Activate Account
- 5. Verify Hostname Settings
- 6. Forward Your Ports

Knowledge Base Articles that you may find helpful:

Getting Started Guide

Getting Started Video Tutorial

What is Dynamic DNS

What is a Hostname

Port Forwarding Guide

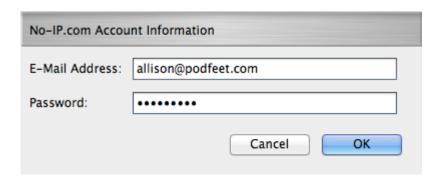
This client will run in the background and check to see if your IP address has changed, and if it has, will send it to no-ip.com



#### Download and Install the Client



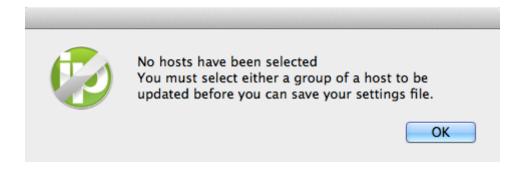
## Enter Your No-iP.com Account Info You Just Created



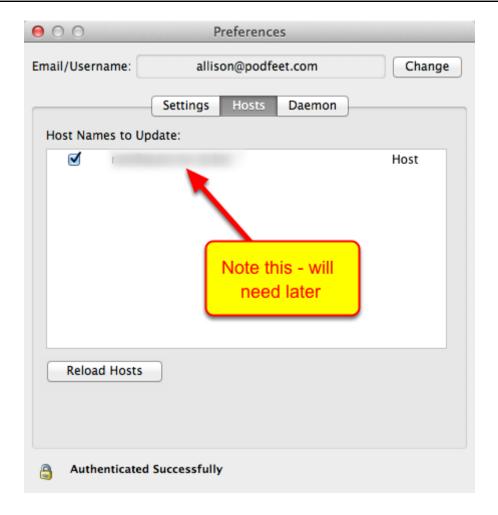
This menu should pop up automatically.



#### Click OK



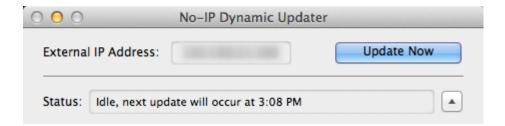
#### Click on Hosts and Check the Box Next to the Host Name You Chose



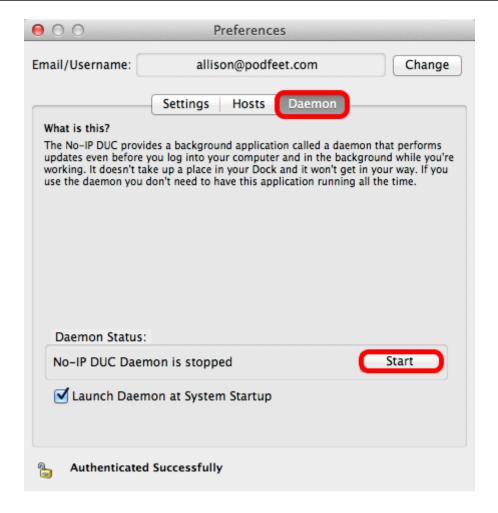
It may take a few moments for the host name you selected at no-ip.com to show up. Make sure you note this name, you'll need it later.



## **Select Update Now**



#### Turn on the Daemon



I chose this rather than running the application in the background all the time.



## **SECTION 3 - Installing Xcode and Running Command Line Tools**

#### **Download Xcode**



Find Xcode in the Mac App Store at https://itunes.apple.com/us/app/xcode/id497799835?mt=12 and install.

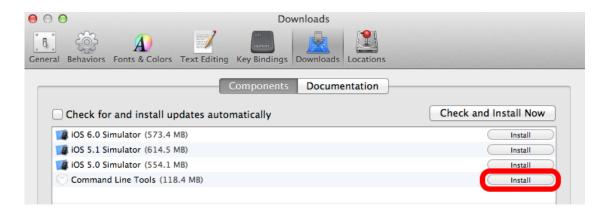
#### **Install Java**



Xcode only installs the standalone Java, and it does NOT include the Java Web plugin that has been the subject of so many security vulnerabilities lately.



#### **Select Install Next to Command Line Tools**



Wait till the installation finishes and quit X-Code

## Type xcodebuild -license to Open the License Agreement

```
\Theta \Theta \Theta
                            A allison — bash — 80×24
kyle-sheridans-macbook:~ allison$
kyle-sheridans-macbook:~ allison$ xcodebuild -license
```



#### Start Hitting the Space Bar to Scroll Through the EULA - A LOT of Times



IMPORTANT: BY USING THIS SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE FOLLOWING APPLE TERMS:

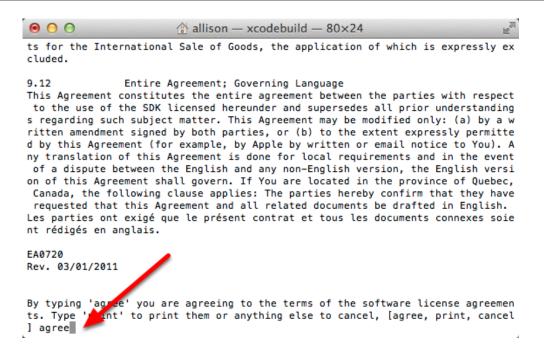
- A. SOFTWARE LICENSE AGREEMENT FOR XCODE
- B. iOS SDK AGREEMENT

APPLE INC. SOFTWARE LICENSE AGREEMENT FOR XCODE

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## Type Agree



Type agree



#### Joy of Agreement



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EA0720 Rev. 03/01/2011

By typing 'agree' you are agreeing to the terms of the software license agreemen ts. Type 'print' to print them or anything else to cancel, [agree, print, cancel] agree

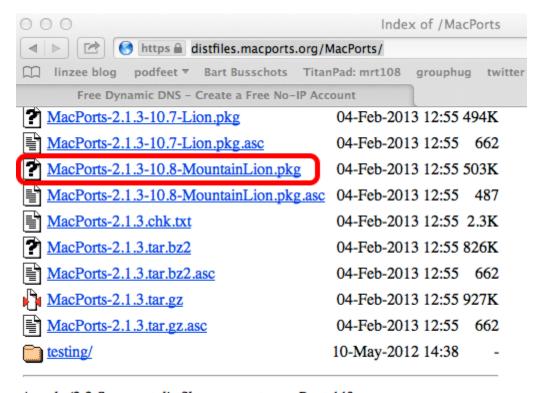
You can view the license agreements in Xcode's About Box, or at /Applications/Xc ode.app/Contents/Resources/English.lproj/License.rtf

kyle-sheridans-macbook:~ allison\$ ■



## **SECTION 4 - Installing MacPorts**

#### **Download MacPorts**

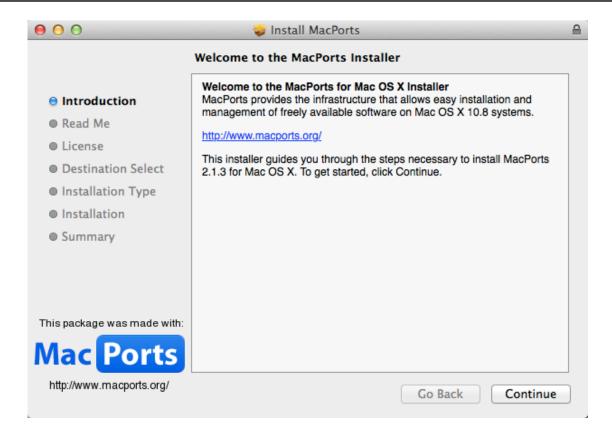


Apache/2.2 Server at distfiles.macports.org Port 443

Navigate to <a href="https://distfiles.macports.org/MacPorts/">https://distfiles.macports.org/MacPorts/</a> and scroll to the bottom to download the installer file for your OS.



#### **Install MacPorts**



#### **Enter These Commands in the Terminal**

kyle-sheridans-macbook:~ allisons source ~/.profile kyle-sheridans-macbook:~ allisons sudo port -v selfupdate

WARNING: Improper use of the sudo command could lead to data loss or the deletion of important system files. Please double-check your typing when using sudo. Type "man sudo" for more information.

To proceed, enter your password, or type Ctrl-C to abort.

Password:

To run the self update to Macports enter:

source ~/.profile
then

sudo port -v selfupdate

and enter your administrator password



#### **Success**

```
♠ allison — bash — 80×24

\Theta \Theta \Theta
ports.tar
receiving file list ... done
sent 36 bytes received 70 bytes 212.00 bytes/sec
total size is 53350400 speedup is 503305.66
receiving file list ... done
sent 36 bytes received 77 bytes 226.00 bytes/sec
total size is 512 speedup is 4.53
Creating port index in /opt/local/var/macports/sources/rsync.macports.org/releas
e/tarballs/ports
Adding port lang/rust
Adding port math/atlas
Total number of ports parsed:
Ports successfully parsed:
                                2
Ports failed:
Up-to-date ports skipped:
---> MacPorts base is already the latest version
The ports tree has been updated. To upgrade your installed ports, you should run
 port upgrade outdated
kyle-sheridans-macbook:~ allison$ ■
```

## **Open the VPN Software**

```
kyle-sheridans-macbook:~ allison$
kyle-sheridans-macbook:~ allison$
kyle-sheridans-macbook:~ allison$ sudo port -v install openvpn2
---> Computing dependencies for openvpn2....
---> Dependencies to be installed: lzo2 openssl zlib
---> Fetching archive for lzo2
---> lzo2-2.06_0.darwin_12.x86_64.tbz2 doesn't seem to exist in /opt/local/var/macports/incoming/verified
---> Attempting to fetch lzo2-2.06_0.darwin_12.x86_64.tbz2 from http://packages.macports.org/lzo2
```

#### Enter

sudo port -v install openvpn2

and watch a lot of glop go by...



## **SECTION 5 - Installing Tuntap Drivers**

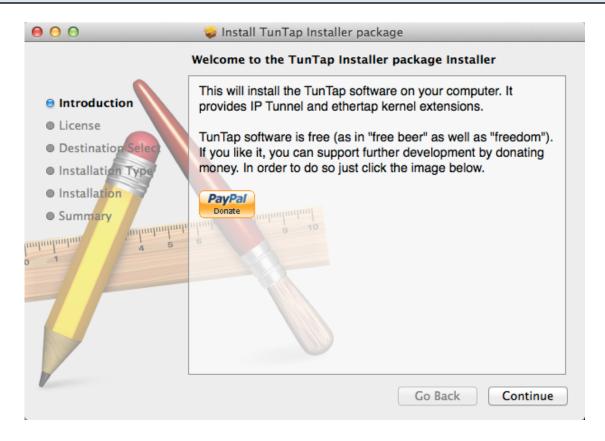
## **Download the Tuntap Drivers**



Download tuntap drivers from <a href="http://tuntaposx.sourceforge.net/download.xhtml">http://tuntaposx.sourceforge.net/download.xhtml</a>



## Open the Package File (in the folder after tuntap expands)



Gatekeeper won't let you just double click on the installer package (it will complain that it is from an unknown source), you have to right click on the installer package and choose "open".



## SECTION 6 - Donald's Nifty Scripts of Doom

#### **Download Donald's Scripts**

Download Donald's scripts from: https://dl.dropbox.com/u/169813/openvpn-mac.tar.bz2

#### Type These Commands to Unarchive the Scripts

```
---> Updating database of binaries: 100.0%
---> Scanning binaries for linking errors: 100.0%
---> No broken files found.
kyle-sheridans-macbook:~ allison$
kyle-sheridans-macbook:~ allison$
kyle-sheridans-macbook:~ allison$
kyle-sheridans-macbook:~ allison$
cd ~/Downloads
kyle-sheridans-macbook:Downloads allison$ tar xvjf openvpn-mac.tar.bz2
x openvpn-mac/
x openvpn-mac/files/
```

cd ~/Downloads
tar xvjf openvpn-mac.tar.bz2

## **Setting Up OpenVPN Server**

```
kyle-sheridans-macbook:Downloads allison$ <u>cd openvpn-mac && sudo bash setup-openvpn-serv</u>er
Password:
Installing openvpn configuration...
Installing easy-rsa..
Installing client setup script...
Installing helper scripts..
Installing startup scripts...
...net.openvpn.openvpn
...net.openvpn.enable-forwarding
setting up IP forwarding...
It is now time to set up initial configuration and to create your first
connection. Enter a name to save this configuration as (example: `bobs-mac') Please only contain letters, numbers and underscores.
*** Performing Initial Setup ***
Please answer the following questions. The only one that needs to be answered completely truthfully is the Hostname/IP. For all other values
you can enter fake information if you wish.
If you have a dynamic IP address (most likely if you have a typical home
Internet connection) you will want to set up an account with a Dynamic DNS service such as No-IP (http://noip.com/). Or, if you have a static IP address,
you can enter it here.
Enter your dynamic DNS host name or static IP address:
```

We're now going to run Donald's scripts. Enter this command:

cd openvpn-mac && sudo bash setup-openvpn-server



Name your Server (I've entered kyles-mac-vpn)
Enter the dynamic dns host name you noted back on no-ip.com (you DID note it, right?)

#### **Keep Answering Questions**

```
For a list of ISO Country Codes, see:
http://userpage.chemie.fu-berlin.de/diverse/doc/ISO_3166.html

2-letter ISO country code of your country: US
Your city of residence: Los Angeles
Your state (or province) of residence: CA

Organization name (can be your business name or something like `The Smith Household', etc.): NosillaCast Mac Podcast
Email address: allison@podfeet.com
```

The first time through you need to answer these. These steps will be duplicated MANY times, but after this the answers will be there and you can simply hit Enter for each questions.

#### Hit Enter for All These Questions for an RSA Key

```
Generating a 1024 bit RSA private key
................
.......+++++
writing new private key to 'ca.key'
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
Country Name (2 letter code) [US]:US
State or Province Name (full name) [CA]:
Locality Name (eg, city) [Los Angeles]:
Organization Name (eg, company) [NosillaCast Mac Podcast]:
Organizational Unit Name (eg, section) [openvpn]:
Common Name (eg, your name or your server's hostname) [
Name [OpenVPN Server]:
Email Address [allison@podfeet.com]:
```



#### And Again for Some Reason

```
Generating a 1024 bit RSA private key
...+++++
.........++++++
writing new private key to 'server.key'
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
Country Name (2 letter code) [US]:
State or Province Name (full name) [CA]:
Locality Name (eg, city) [Los Angeles]:
Organization Name (eg, company) [NosillaCast Mac Podcast]:
Organizational Unit Name (eg, section) [openvpn]:
Common Name (eg, your name or your server's hostname) [server]:
Name [OpenVPN Server]:
Email Address [allison@podfeet.com]:
```

#### Keep Answering...

```
Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:
An optional company name []:
Using configuration from /opt/local/etc/openvpn/easy-rsa/openssl-1.0.0.cnf
Check that the request matches the signature
Signature ok
The Subject's Distinguished Name is as follows
                     :PRINTABLE:'US'
countryName
stateOrProvinceName :PRINTABLE:'CA'
                     :PRINTABLE: Los Angeles'
localityName
                     :PRINTABLE: 'NosillaCast Mac Podcast'
organizationName
organizationalUnitName:PRINTABLE:'openvpn'
                     :PRINTABLE: 'server'
commonName
                      :PRINTABLE: 'OpenVPN Server'
name
                     :IA5STRING: 'allison@podfeet.com'
emailAddress
Certificate is to be certified until Apr 4 23:22:29 2023 GMT (3650 days)
Sign the certificate? [y/n]:y
```



#### **And Again**

```
Generating a 1024 bit RSA private key
...+++++
writing new private key to 'kyles-mac-vnn.kev'
Enter PEM pass phrase:
                                        Create Passphrase
Verifying - Enter PEM pass phrase:
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
Country Name (2 letter code) [US]:
State or Province Name (full name) [CA]:
Locality Name (eg, city) [Los Angeles]:
Organization Name (eg, company) [NosillaCast Mac Podcast]:
Organizational Unit Name (eg, section) [openvpn]:
Common Name (eg, your name or your server's hostname) [kyles-mac-vpn]:
Name [OpenVPN Server]:
Email Address [allison@podfeet.com]:
```

#### And Again...

```
Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:
An optional company name []:
Using configuration from /opt/local/etc/openvpn/easy-rsa/openssl-1.0.0.cnf
Check that the request matches the signature
Signature ok
The Subject's Distinguished Name is as follows
                     :PRINTABLE:'US'
countryName
stateOrProvinceName :PRINTABLE:'CA'
localityName
                     :PRINTABLE: 'Los Angeles'
                     :PRINTABLE: 'NosillaCast Mac Podcast'
organizationName
organizationalUnitName:PRINTABLE:'openvpn'
commonName
                     :PRINTABLE: 'kyles-mac-vpn'
                     :PRINTABLE: 'OpenVPN Server'
emailAddress
                     :IA5STRING: 'allison@podfeet.com'
Certificate is to be certified until Apr 4 23:27:45 2023 GMT (3650 days)
Sign the certificate? [y/n]:y
```



#### Whew!

```
*** IMPORTANT NOTE ***

Need to convert Key-file to new format. Please enter the password you supplied at each of the following prompts.

Enter pass phrase for /opt/local/etc/openvpn/easy-rsa/keys/kyles-mac-vpn.key.orig: writing RSA key
Enter PEM pass phrase:
Verifying - Enter PEM pass phrase:
Done, config file has been saved to `/opt/local/etc/openvpn/config-files/kyles-mac-vpn.ovpn'
.

(I will also open a Finder window with this file highlighted)
document file kyles-mac-vpn.ovpn of folder config-files of folder openvpn of folder etc of folder local of folder opt of startup disk
OK, configuration is done. Now starting the OpenVPN server.
Note: it is also configured to start up whenever you start your computer

Remember to set up port forwarding for UDP/1194 on your router.
kyle-sheridans-macbook:openvpn-mac allison$
```

Enter passphrase and password as many times as they ask for it!

#### Finder Window Opens Showing config-files



Copy this file to Dropbox. It will be the first connection file you test. It would be good to name it something associated with the device on which you'll use it (you'll be creating one of these for each of your devices).

#### Create a New VPN Connection Document for Each Device You Have

In Terminal, enter:

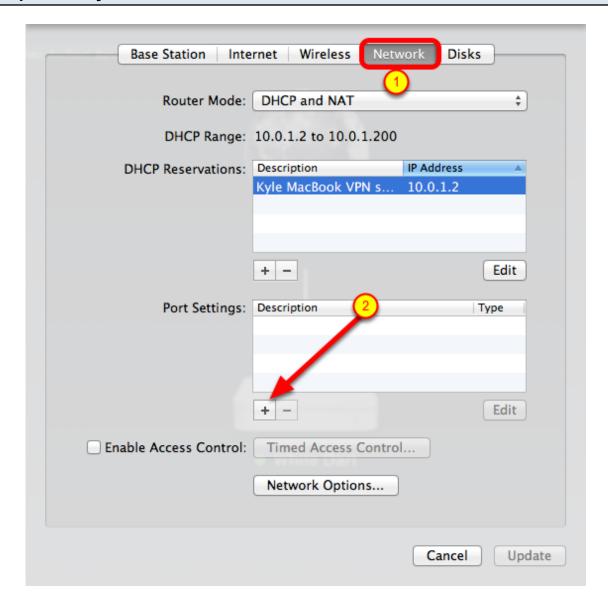
sudo setup-openvpn-client connection-name

where connection-name means something to you for each different device you'll want to connect to the VPN server. Move each of these files to Dropbox to be picked up on your devices.



# **SECTION 7 - Opening up UDP Port 1194**

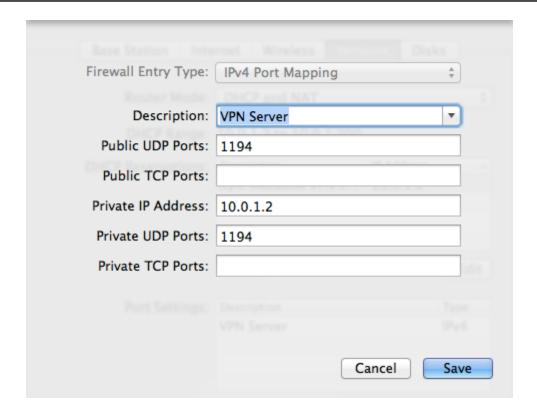
## **Open Airport Utility**



Open Airport Utility again, select your Airport again, Select Edit again. Select the Network tab, and select the + under Port Settings

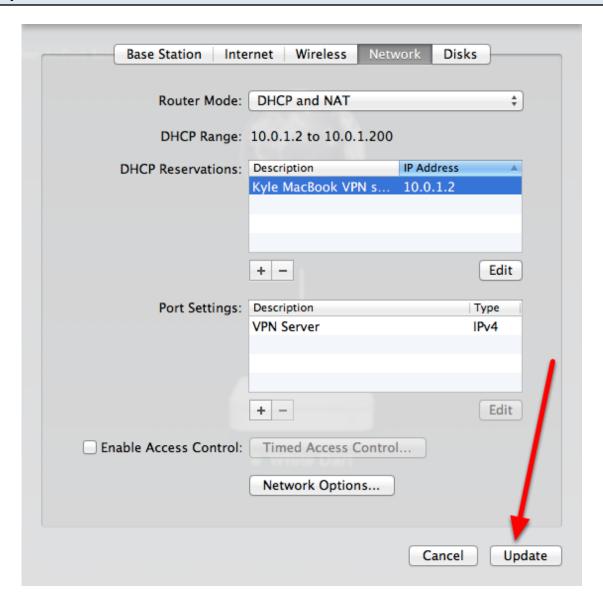


## **Enter Information As Shown**





## **Select Update**



Wait until your Airport updates.



## **SECTION 8 - Install VPN Software on iOS**

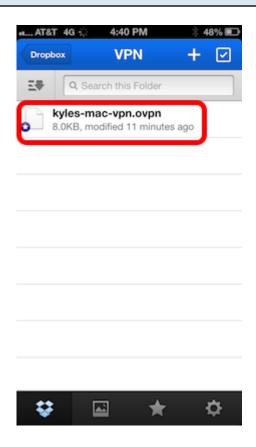
## **Download OpenVPN**



Download OpenVPN Connect from the iTunes App Store.



# **Open Dropbox**



Find the file you created and moved into Dropbox and tap on it.



# Select the Open In Button in the Bottom Right





# Select Open in OpenVPN





## Click the Green Plus Button to Import the File





## **Enter the Password**



Enter the Password you created in the creation of the file, and tap the Save switch to turn it on. Finally tap the Off Switch to Connect to the VPN.



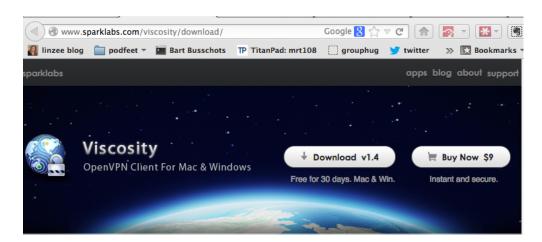
## Connected!





#### SECTION 9 - Install VPN Software on OSX

#### **VPN Software Options on OSX**

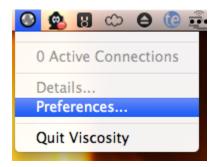


Two options for a VPN application on the Mac. Donald recommended Viscosity from <a href="http://www.sparklabs.com/viscosity/download/">http://www.sparklabs.com/viscosity/download/</a> which is \$9 per Mac.

After the show Dr. Matt suggested the free TunnelBlick from <a href="http://code.google.com/p/tunnelblick">http://code.google.com/p/tunnelblick</a>. I installed both and they both work well. This tutorial will be for Viscosity, but if you try Tunnelblick you have to do one thing to make it work. In the Settings, Configuration tab, select Advanced and then uncheck the box to use TunnelBlick's tun/tap drivers. Some people do have trouble with this software so if it doesn't work for you then jump over to Viscosity.

Let's keep going with Viscosity as our example.

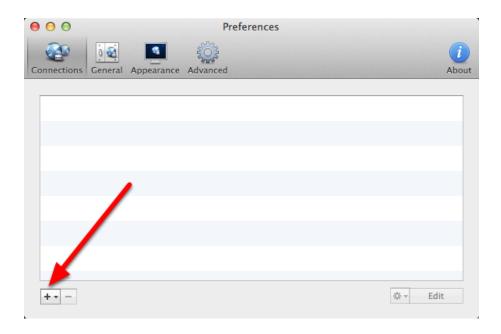
#### **Install Viscosity**



Click on the icon for Viscosity in the menubar and choose Preferences.



## In the Connection Tab Click on the Plus Button at the Bottom

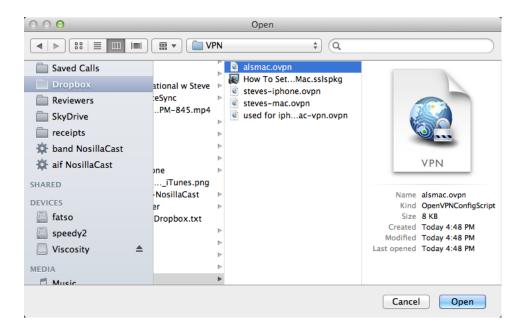


## **Select Import Connection From File...**





## Navigate to the File You Created for This Device



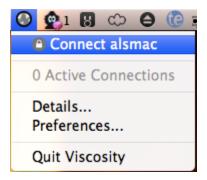
In my case I called it alsmac so I could tell which one to open

## **Connection Imported**





## **Connect Using Menu Bar App**

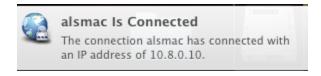


## **Enter the Password You Created**



No clue which one of the 1981 entered, luckily I typed the same one over and over again.

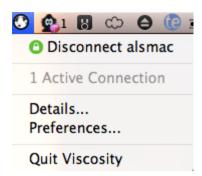
## **Fleeting Notification of Connection**



To test mine at home I used a Mifi so I was on a different network.



## Use the Menubar Icon to Disconnect When You're Through



If you want to prove to yourself that you're on VPN - go to <a href="http://ipchicken.com">http://ipchicken.com</a> before and after you VPN and you'll find that your IP changes to your home IP. Congratulations!