

ZUMspot USB Quick Start Guide

The ZUMspot USB has all of the capabilities of the regular ZUMspot all packaged up in a nice clear USB dongle case. Because of the USB interface it takes up less space. It is made to work with a PC but it can also interface with a Raspberry Pi through a USB port.

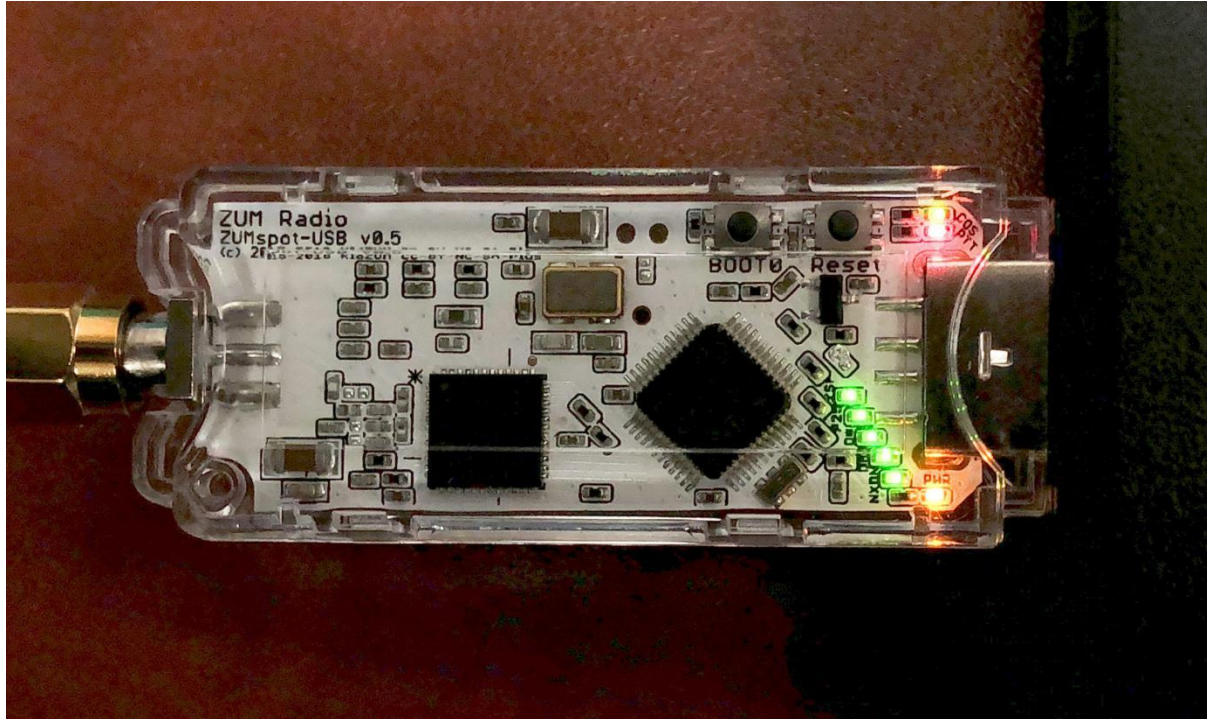


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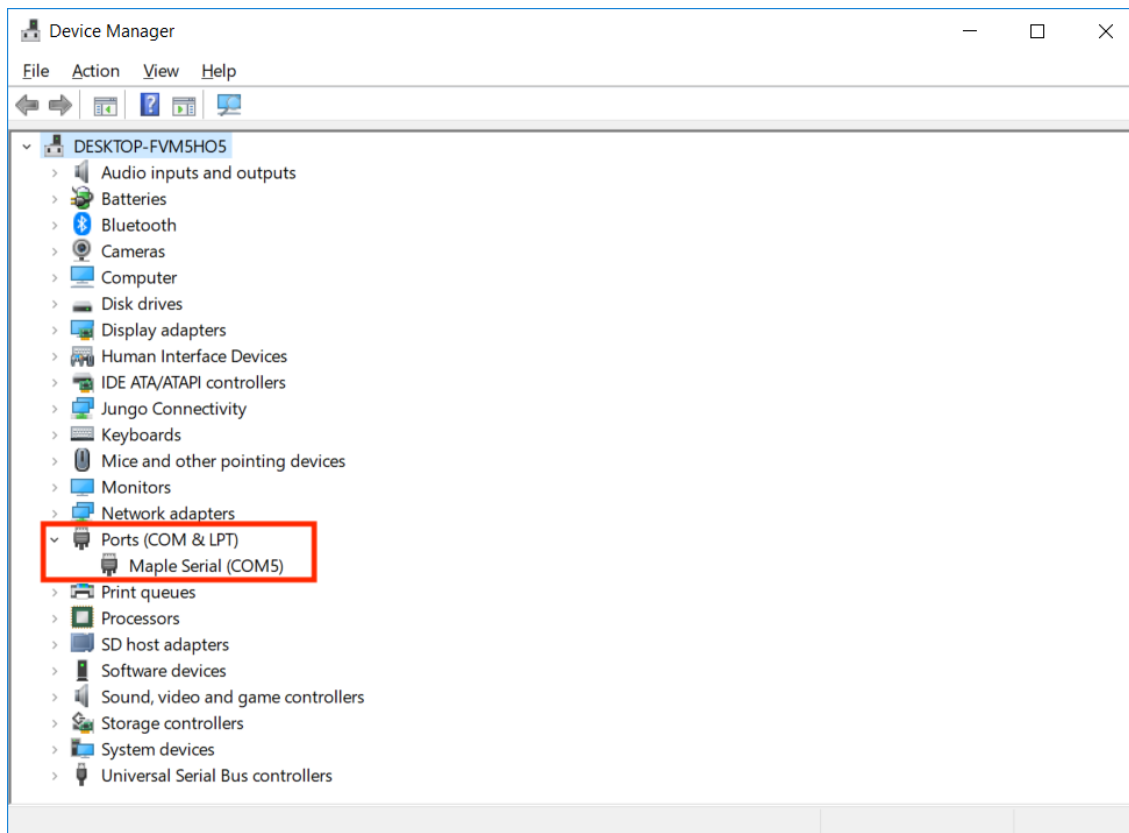
Windows Setup:

Power Up:

- Install the antenna into the RF connector.
- Insert the ZUMspot USB into any of the USB ports on your Windows machine. All of the LEDs will flash when first powered on and the PWR LED will remain on. Also, if you have the sound enabled on your computer, you should hear the USB device enumerate twice.

Device drivers:

Once the device drivers for the board have loaded, there should be a new COM port displayed. Make a note of that port number.



You may have to manually load the drivers on machines running **Windows 7** and earlier, or if there is a yellow exclamation point. Follow the **Installing device drivers** section [later in this document](#).

Windows Software

For more information about BlueDV, visit the website of David PA7LIM.

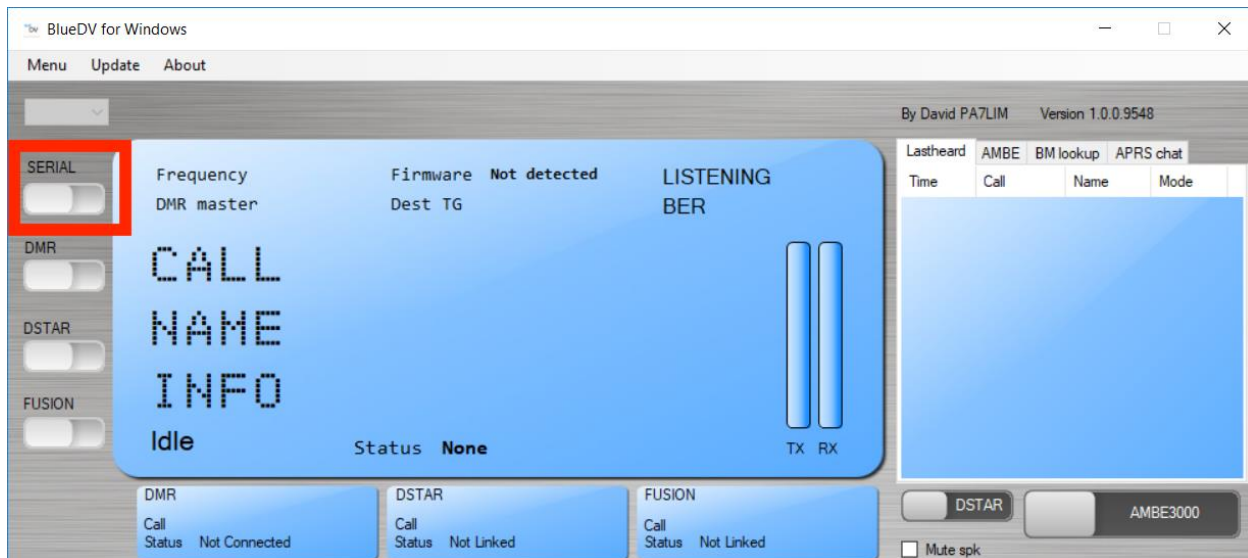
<https://www.pa7lim.nl/bluedv-windows/>

Download and install BlueDV for Windows. Be sure to download the zip file with the most recent date.

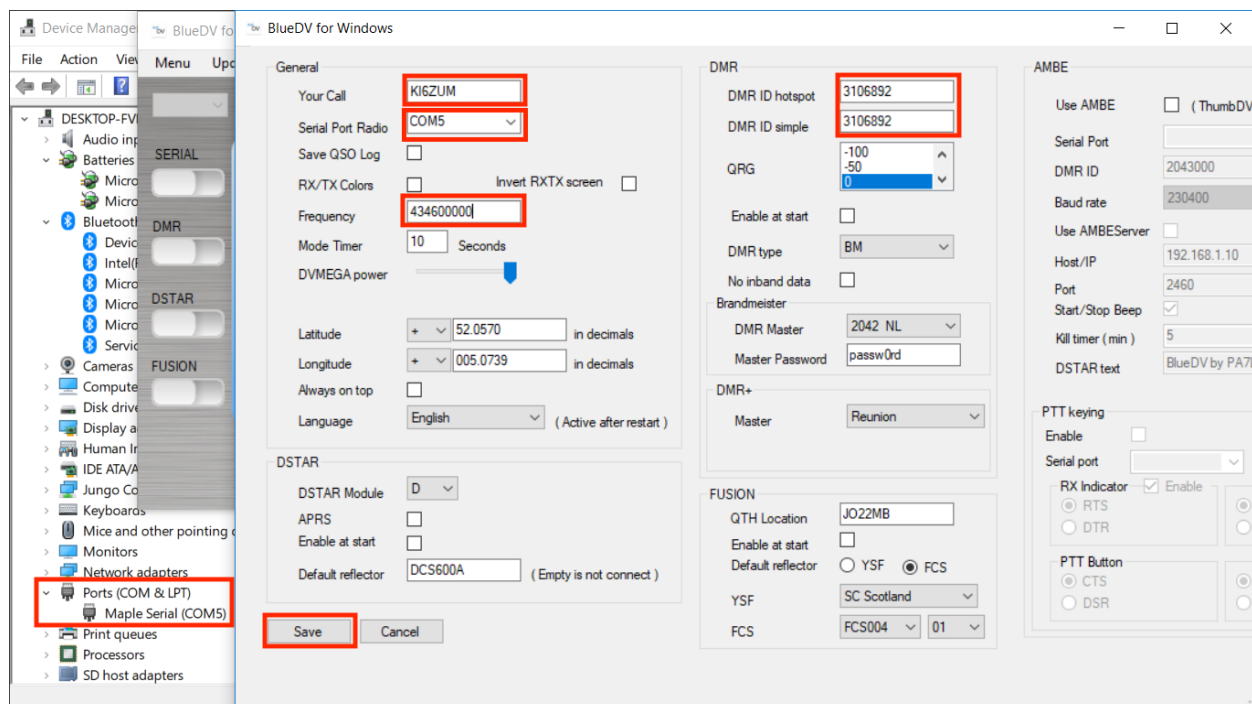
<http://software.pa7lim.nl/BlueDV/BETA/Windows/>

Configuring BlueDV

1. Launch the software and turn off “SERIAL” if it is already enabled.

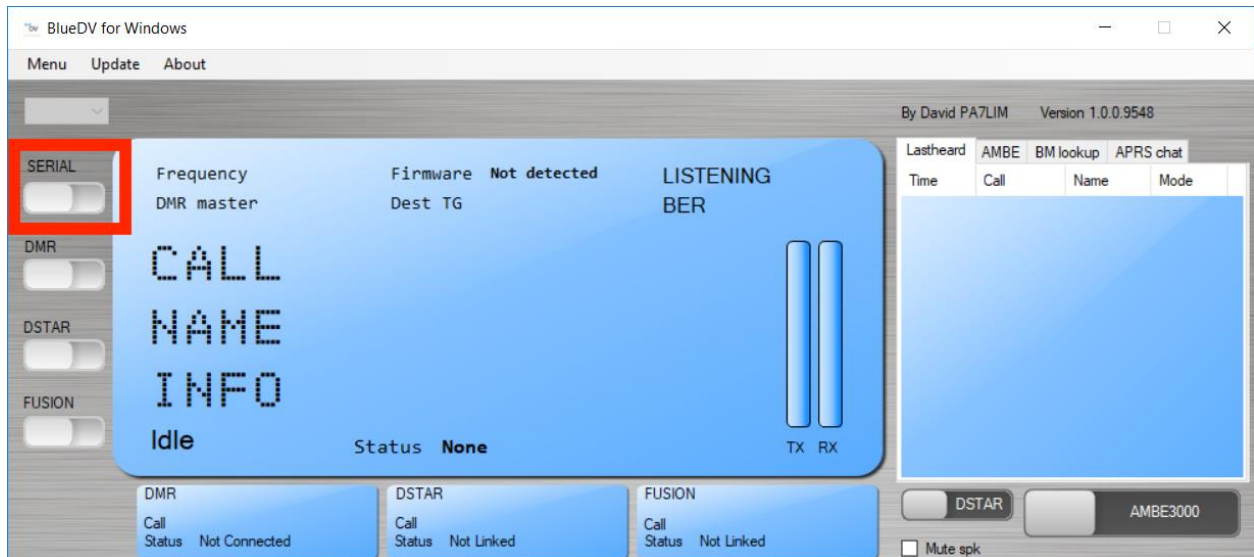


2. Next select “Menu” -> “Setup”. As a minimum, set “Your Call”, the “Serial Port Radio”, “DMR ID” and “Frequency”. Next select “Save”

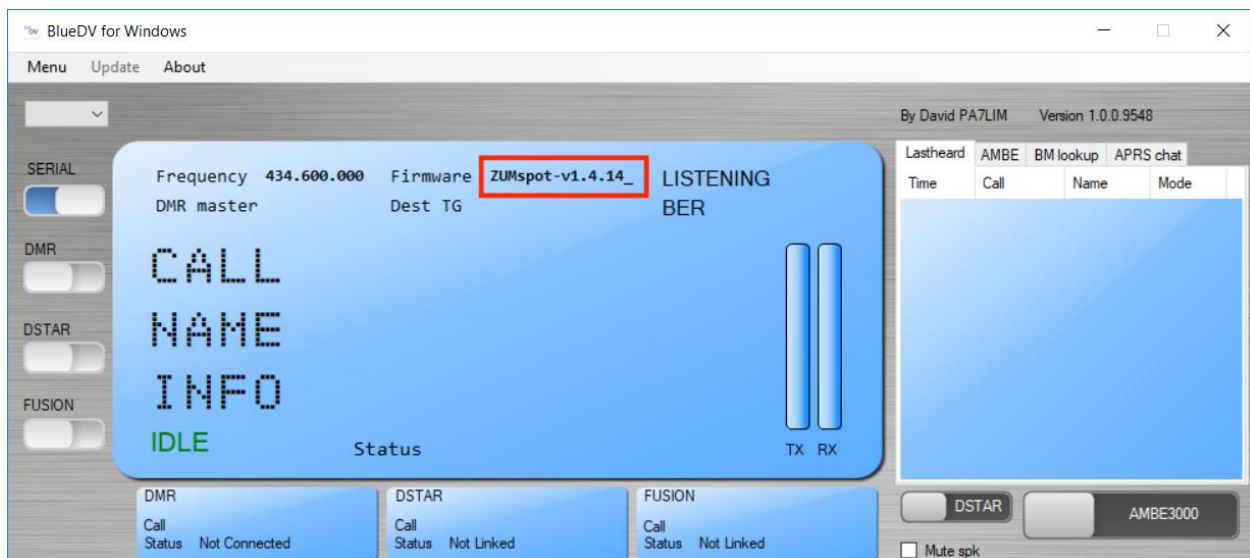


3. **NOTE:** If you reconnect the ZUMspot to another USB port, it may enumerate under a different COM port. So whenever you reconnect, double check your “Setup” with the COM port under Windows Device Manager.

- Next turn “SERIAL” back on.



- If the USB connection to the ZUMspot USB is functional, the software should display the “Firmware” version of the ZUMspot.

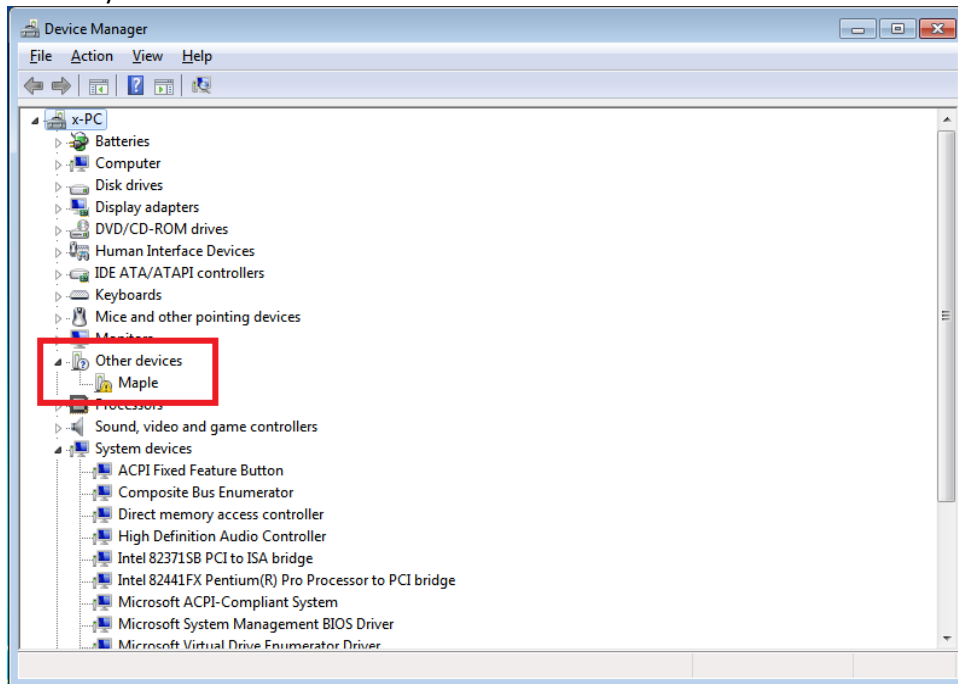


-
- BlueDV for Windows
- Menu Update About
- DSTAR ▾ REF030 ▾ C ▾ Link Unlink ☒ REF ☐ DCS ☐ XRF ☐ XLX
- By David PA7LIM Version 1.0.0.9548
- SERIAL ☒ DMR ☐ DSTAR ☒ FUSION ☐
- Frequency 434.600.000 Firmware ZUMspot-v1.4.14_ LISTENING BER
DMR master Dest TG
- CALL
NAME
INFO
DSTAR Status
- TX RX
- | Lastheard | AMBE | BM lookup | APRS chat |
|-----------|------|-----------|-----------|
| Time | Call | Name | Mode |
| | | | |
- DMR Call Status Not Connected DSTAR Call Status Not Linked FUSION Call Status Not Linked
- ☐ Mute spk

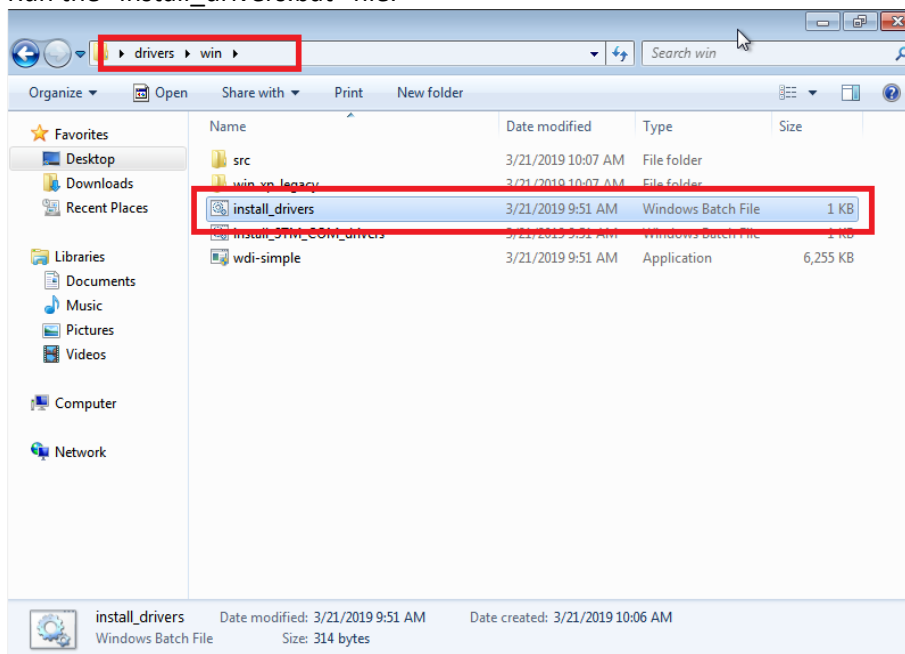
-
- BlueDV for Windows
- Menu Update About
- DSTAR ▾ REF001 ▾ C ▾ Link Unlink ☒ REF ☐ DCS ☐ XRF ☐ XLX
- By David PA7LIM Version 1.0.0.9548
- SERIAL ☒ DMR ☐ DSTAR ☒ FUSION ☐
- Frequency 434.600.000 Firmware ZUMspot-v1.4.16_ TX BER
DMR master Dest TG
- CALL VE3SIZ
NAME STEVE
INFO 3023527
DSTAR Status
- TX RX
- | Lastheard | AMBE | BM lookup | APRS chat |
|-----------|--------|-----------|-----------|
| Time | Call | Name | Mode |
| 04:25 PM | VE3SIZ | Steve | DSTAR |
- DMR
Call Status Not Connected
- DSTAR
Call Status Linked to REF001 C
- FUSION
Call Status Not Linked
- ☐ Mute spk
-

Installing device drivers

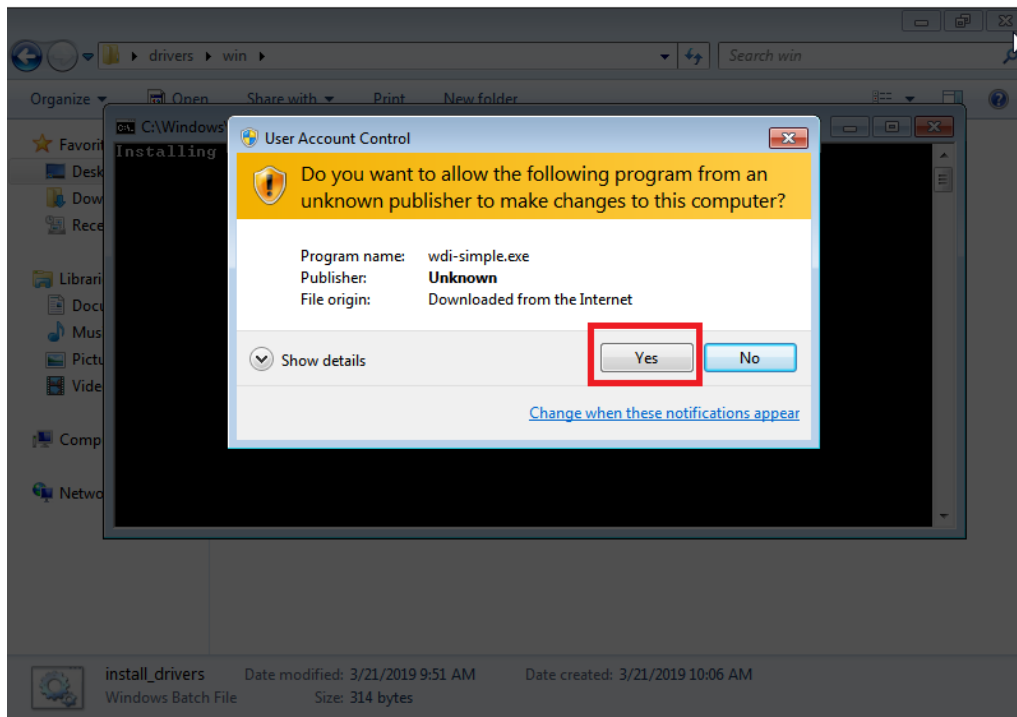
1. If there is a yellow exclamation point next to the “Maple” device, the device drivers need to be manually installed.



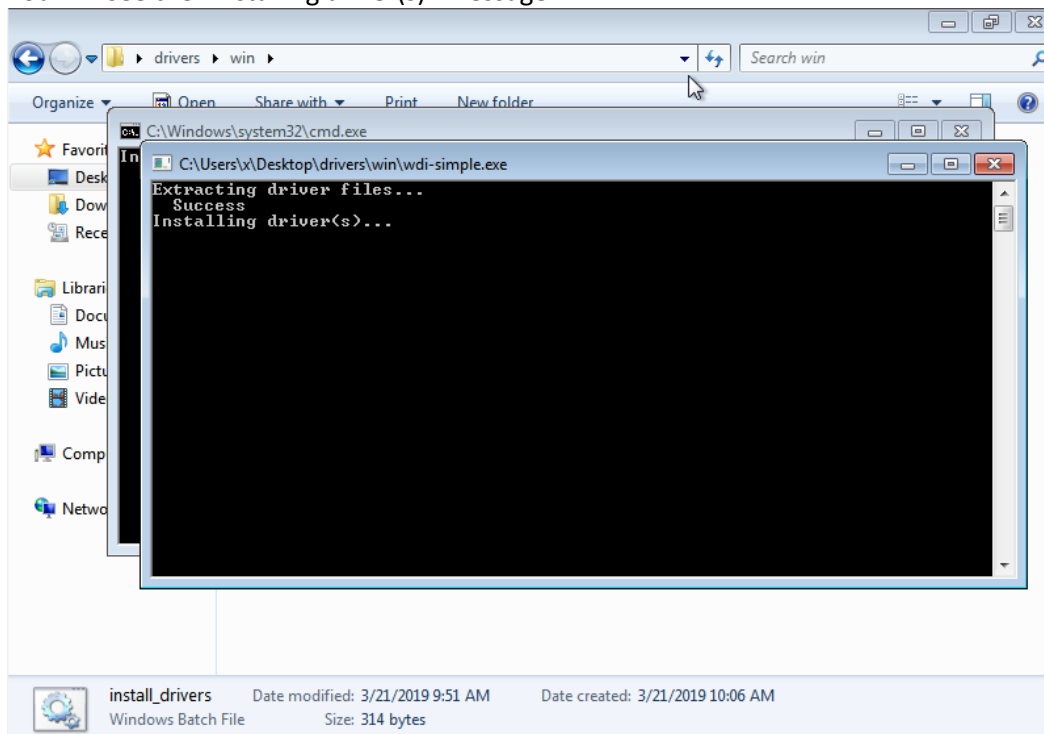
2. Download the drivers from GitHub:
3. https://github.com/rogerclarkmelbourne/Arduino_STM32/archive/master.zip
4. Extract the files from the zip file and go to the “drivers\win” folder.
5. Run the “install_drivers.bat” file.



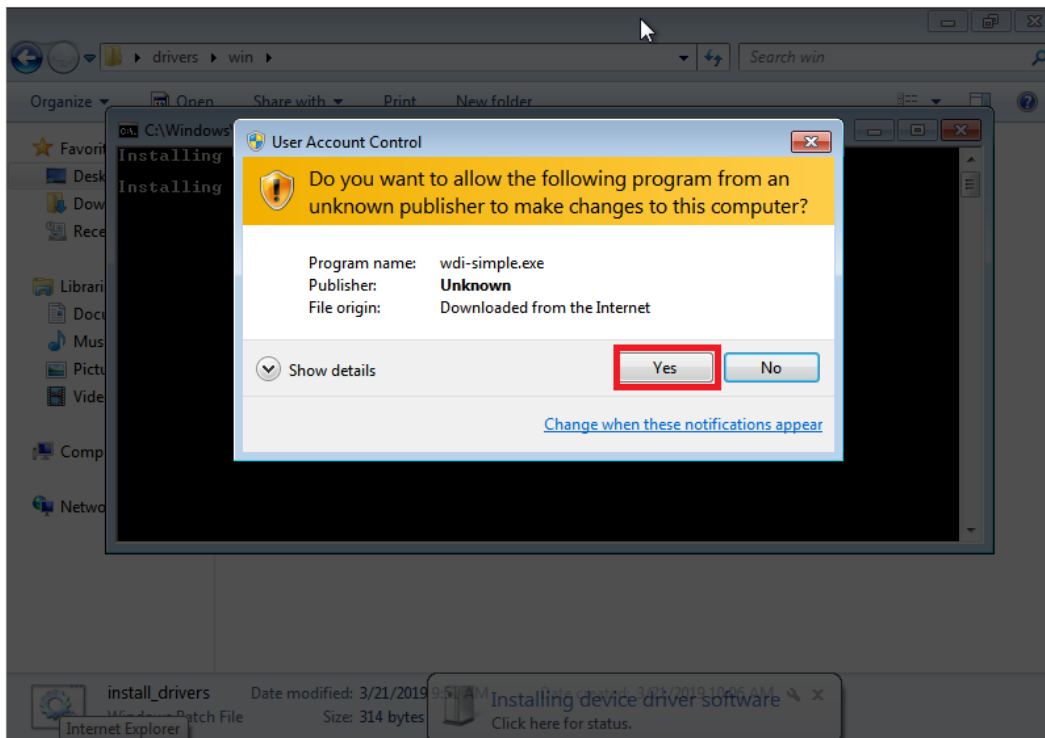
6. Click “Yes” to allow the driver installer to run.



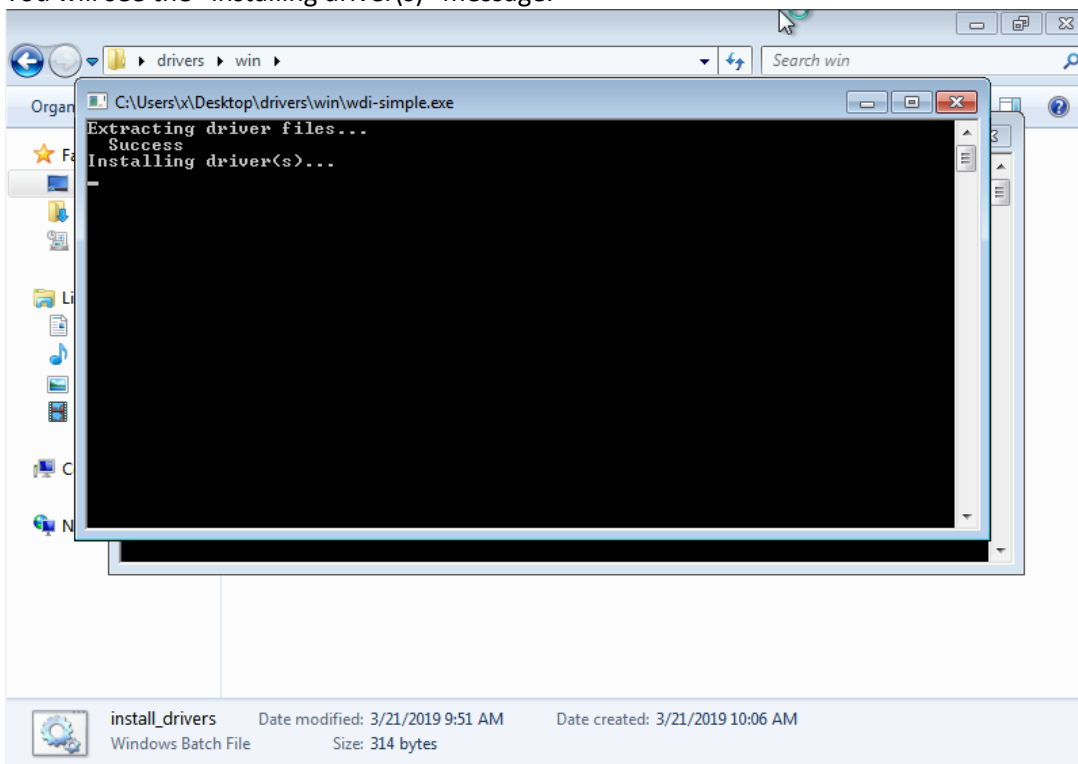
7. You will see the “installing driver(s)” message.



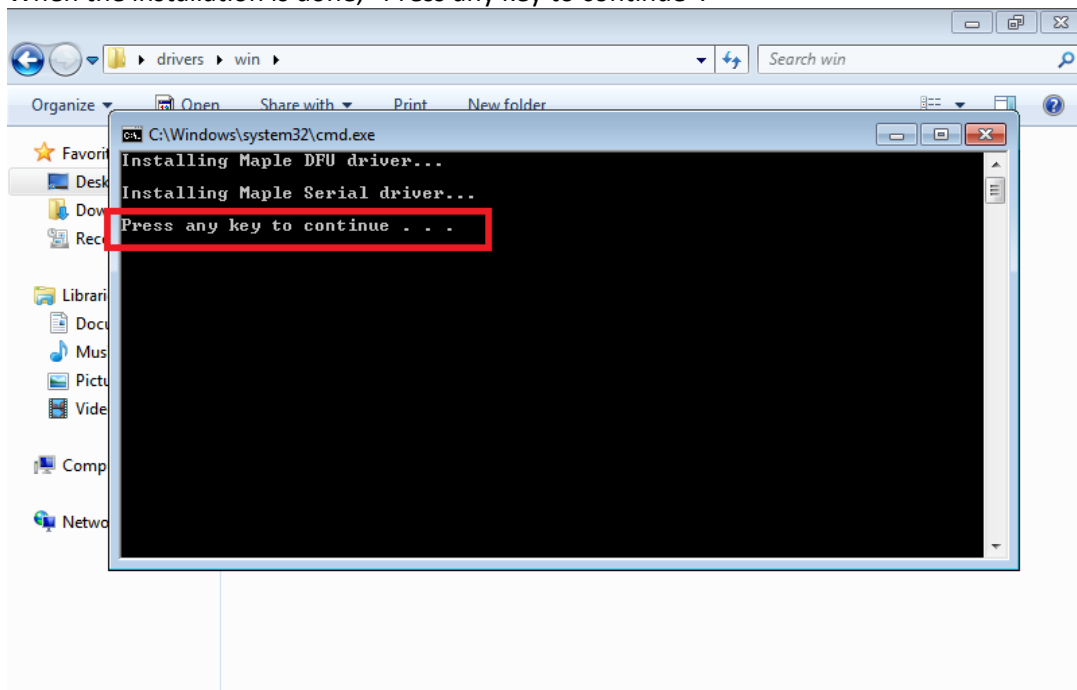
8. Click “Yes” to allow the second driver installer to run.



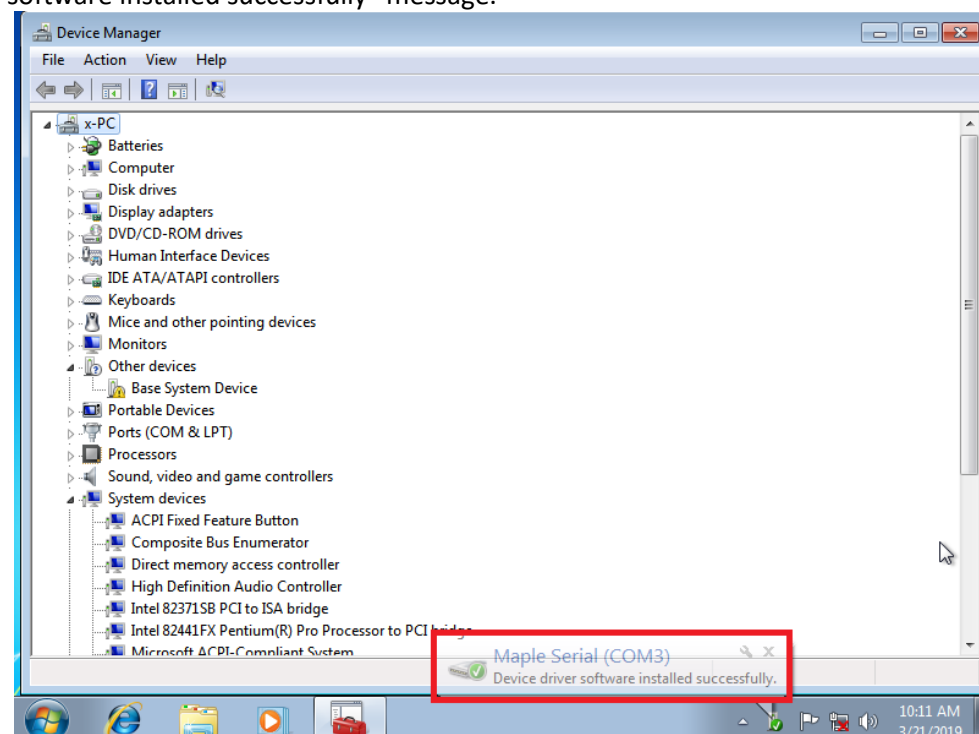
9. You will see the “installing driver(s)” message.



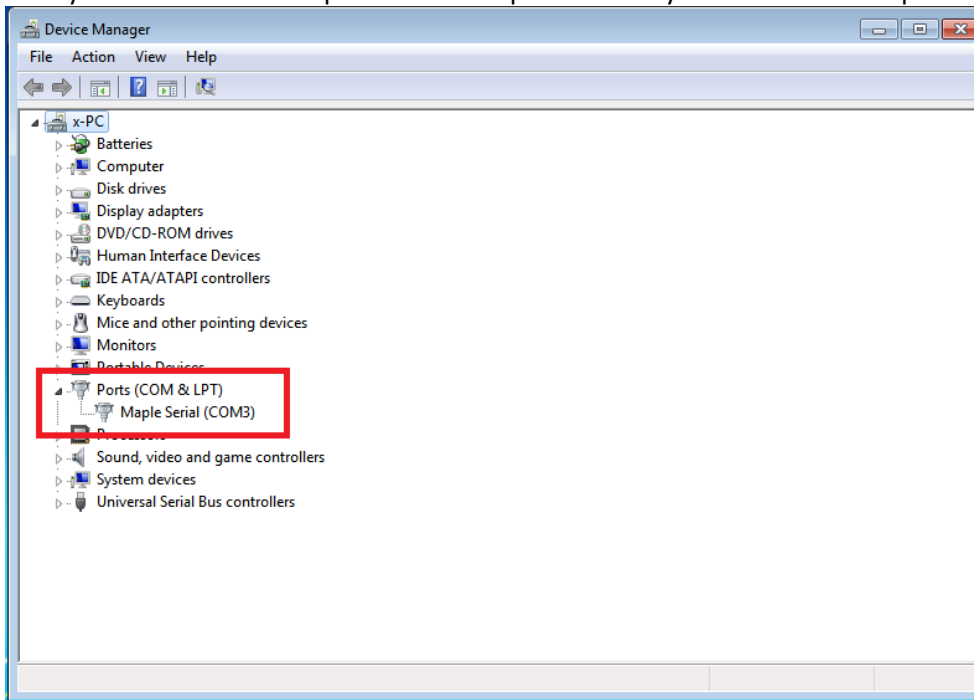
10. When the installation is done, “Press any key to continue”.



11. The drivers will now load for the ZUMspot USB. When done, you should see the “Device driver software installed successfully” message.



12. Now you should see a “Maple Serial” com port with no yellow exclamation point.



Linux Bash Shell under Windows 10 - mmdvmhost command line

Installing tools:

Here are example instructions for installing bash shell:

<https://itsfoss.com/install-bash-on-windows/>

Open a bash window.

```
apt-get update
```

Build MMDVMHost:

```
cd ~  
git clone https://github.com/g4klx/MMDVMHost/  
cd MMDVMHost/  
make
```

Edit MMDVM.ini according your preferences. See info on the mmdvm.ini file format:

<https://on7lds.net/42/node/44>

```
nano MMDVM.ini  
(eg use Port=/dev/ttyS1 in [Modem])
```

Windows UART device names are mapped like:

```
COM1 >> /dev/ttyS1  
COM2 >> /dev/ttyS2  
...  
COM192 >> /dev/ttyS192
```

Make sure these settings are present in the MMDVM.ini file:

[Log]

```
DisplayLevel=1  
FileLevel=1  
FilePath=.  
FileRoot=MMDVM
```

[General]

```
Daemon=0
```

Execute MMDVMHost:

```
sudo ./MMDVMHost MMDVM.ini
```

macOS - mmdvmhost command line

Build MMDVMHost using a terminal window:

```
cd ~  
git clone https://github.com/g4klx/MMDVMHost/  
cd MMDVMHost/  
make
```

Edit MMDVM.ini according your preferences. See info on the mmdvm.ini file format:

<https://on7lds.net/42/node/44>

```
vi MMDVM.ini  
(eg use Port=/dev/ttyUSB0 in [Modem])
```

OSX UART device names are mapped like: /dev/tty.usb*

Make sure these settings are present in the MMDVM.ini file:

[Log]

```
DisplayLevel=1  
FileLevel=1  
FilePath=.  
FileRoot=MMDVM
```

[General]

```
Daemon=0
```

Execute MMDVMHost:

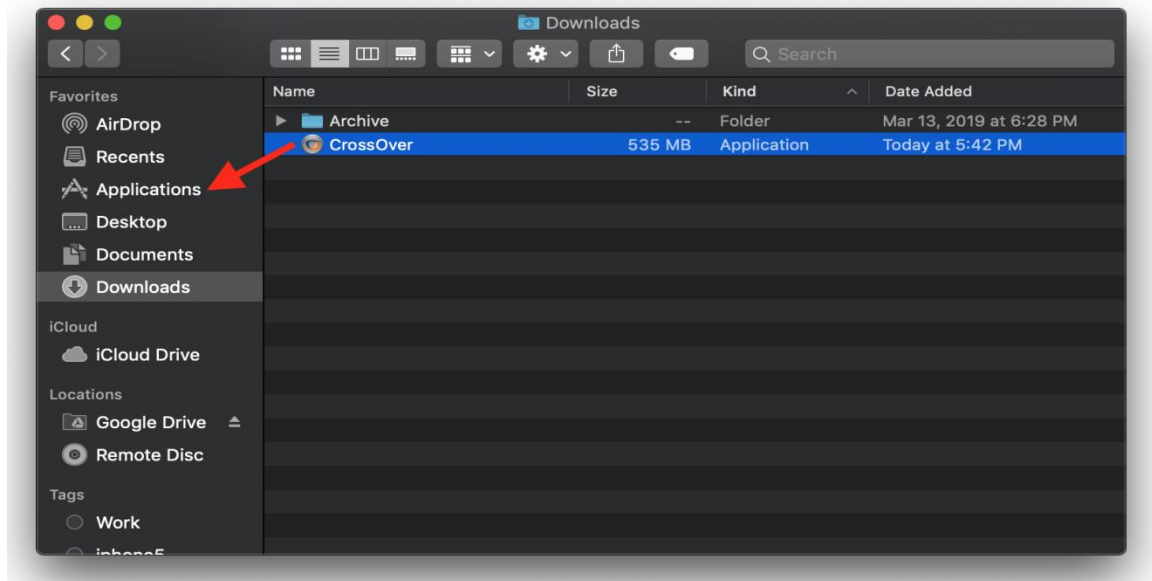
```
sudo ./MMDVMHost MMDVM.ini
```

macOS BlueDV Setup:

Installing Crossover

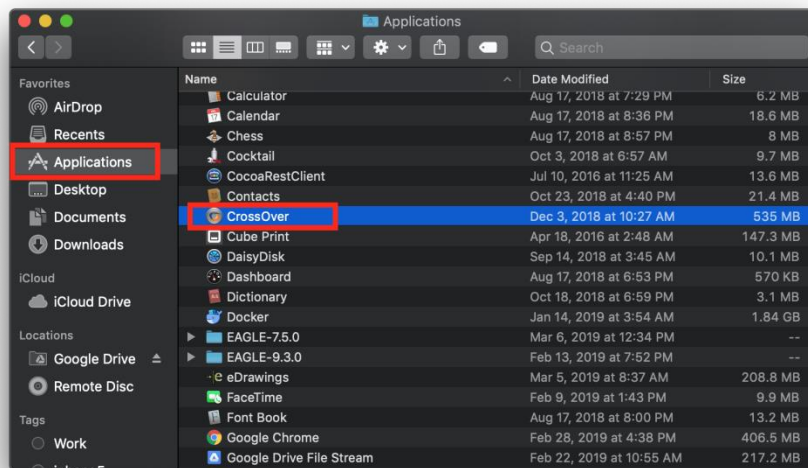
To get BlueDV running on macOS, a Windows emulator is needed first.

1. Download Crossover from here: <https://www.codeweavers.com/products/crossover-mac/>
2. Use free trial or enter purchase info
3. Open folder where Crossover was downloaded into (Usually it's the Downloads folder)
4. Unzip Crossover.zip (Double click on Crossover.zip so that Archive Utility can unzip it) if you haven't already.
5. Drag the file Crossover.app and drop it over Applications. This installs Crossover on your Mac.

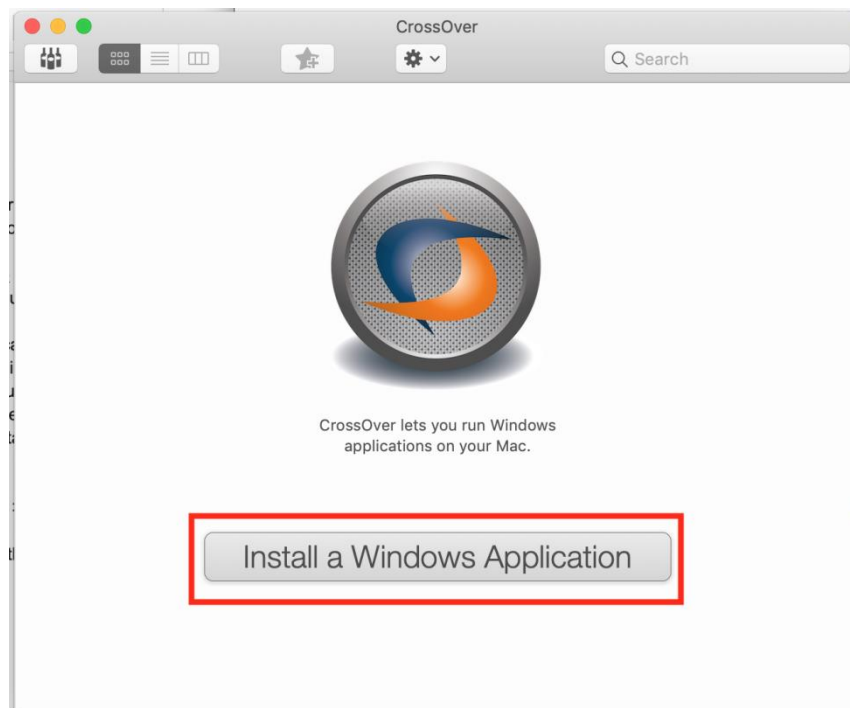


Installing BlueDV Prerequisites

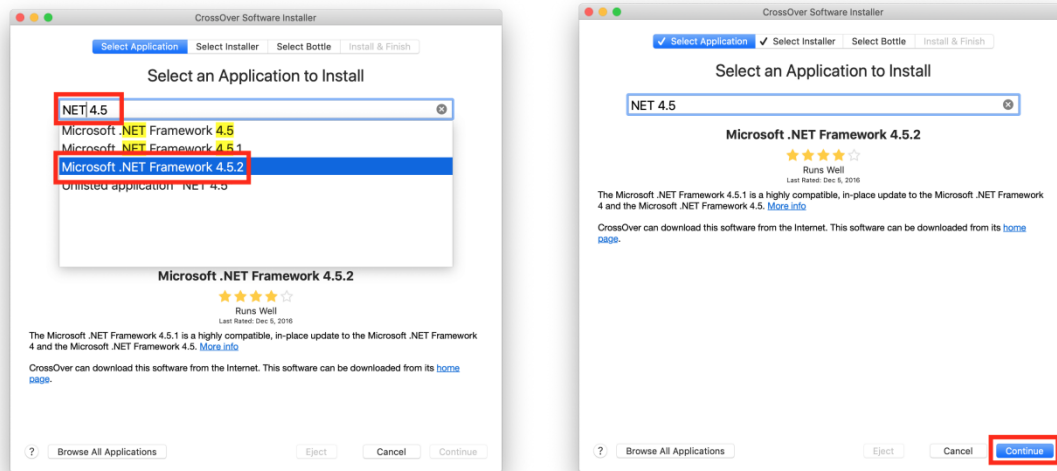
1. Open Crossover
 - a. Click on “Finder”
 - b. Go to the “Applications” folder
 - c. Double click on the Crossover app



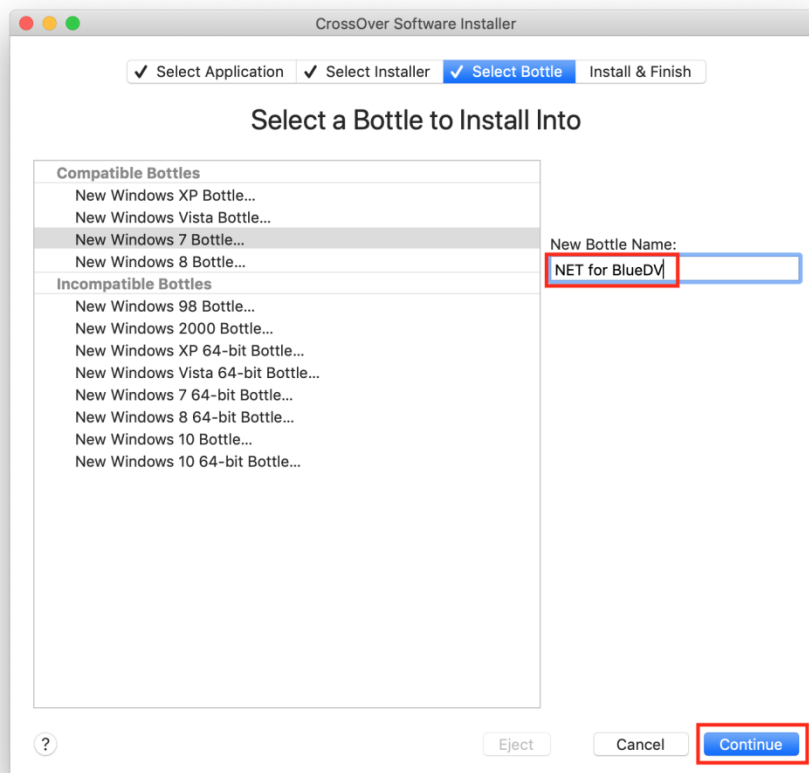
2. Click on “Install a Windows Application”



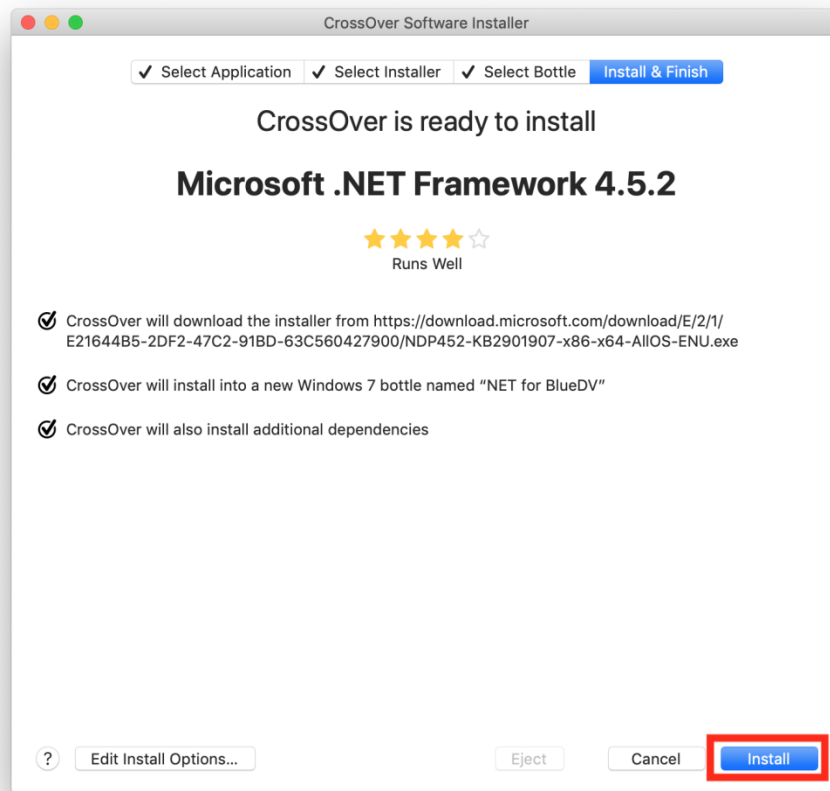
- Under the “Select Application” tab, type in “NET 4.5” and select “Microsoft .NET Framework 4.5.2”. Then press “Continue”



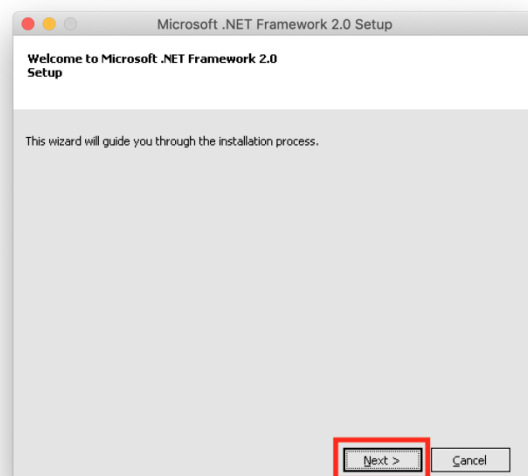
- Select “New Windows 7 64-bit Bottle...”. Then change bottle name to something like “NET for BlueDV” or whatever you would like to call it. Then press “Continue”



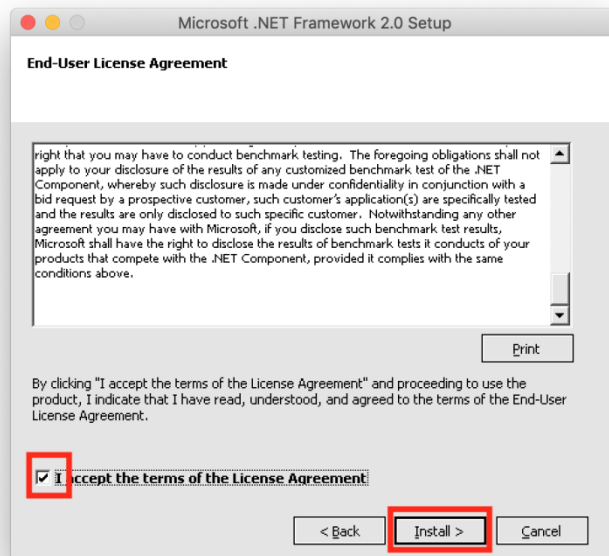
5. Press “Install”



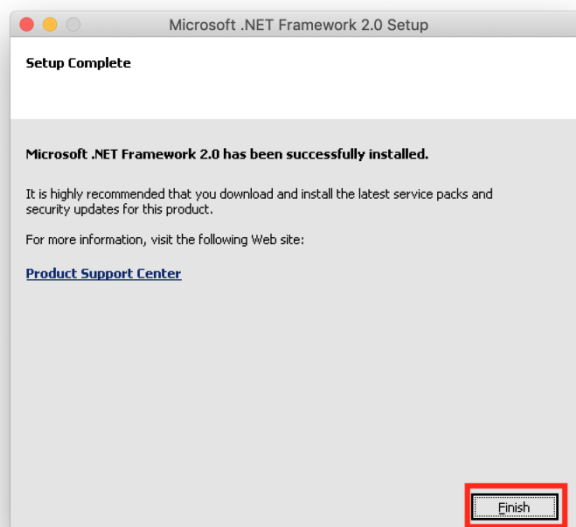
6. Click “Next”



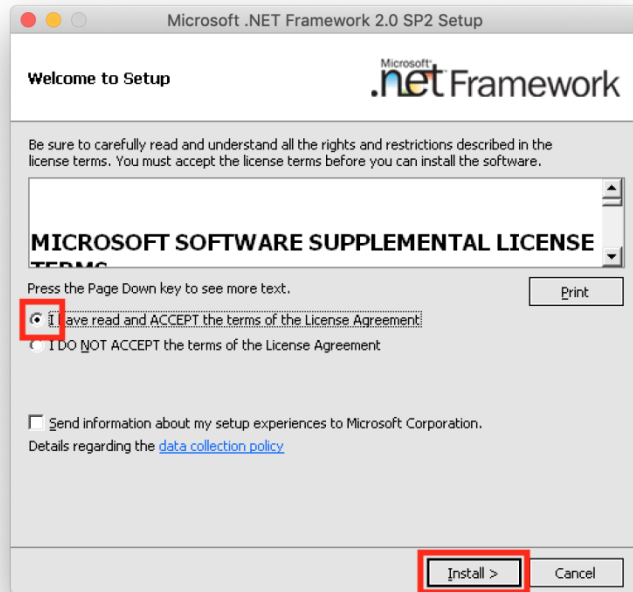
- Click check box to accept license agreement, and then click “Install”



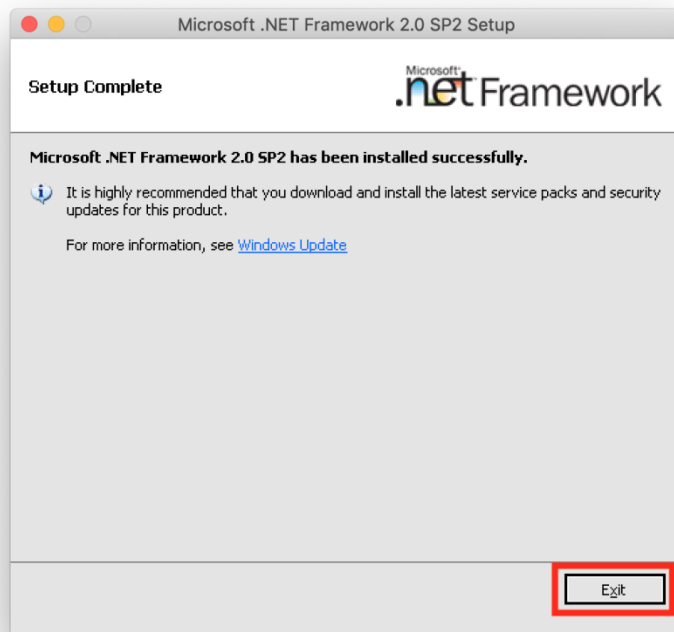
- Click “Finish”



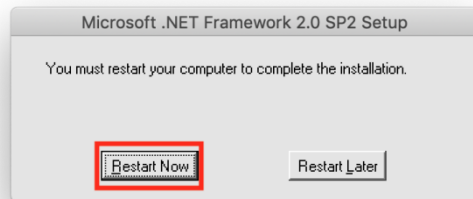
9. Click check box to accept license agreement, and then click “Install”



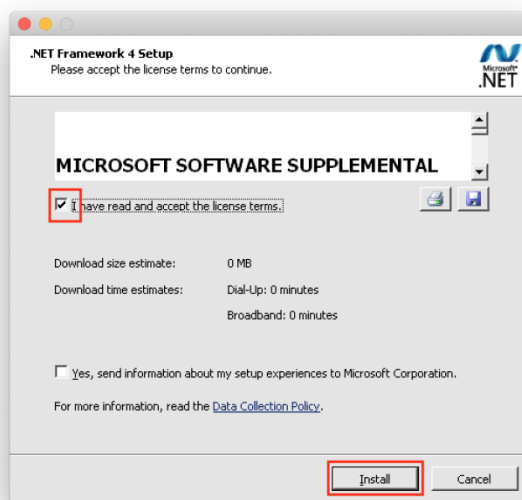
10. Press “Exit”



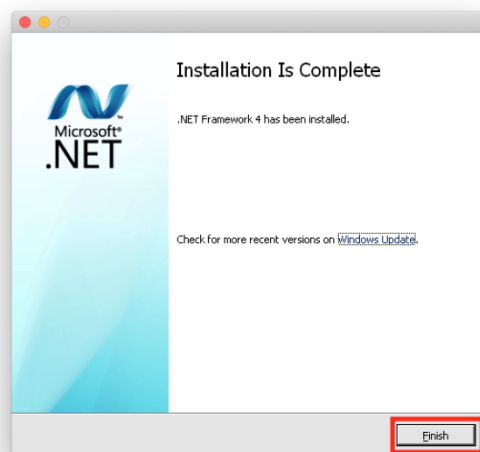
11. Click “Restart Now”



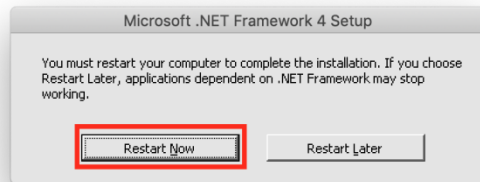
12. Click check box to accept license agreement, and then click “Install”



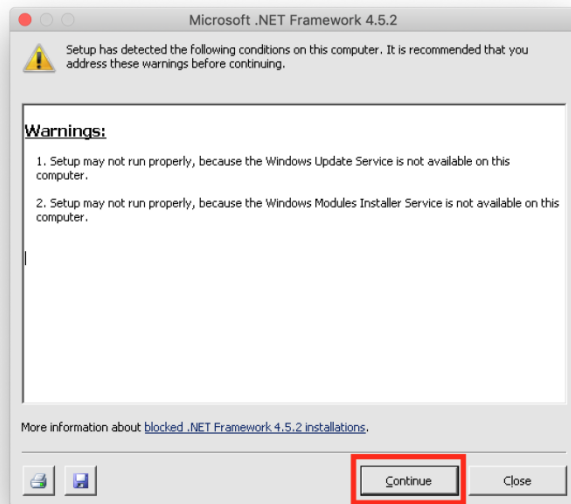
13. Click “Finish”



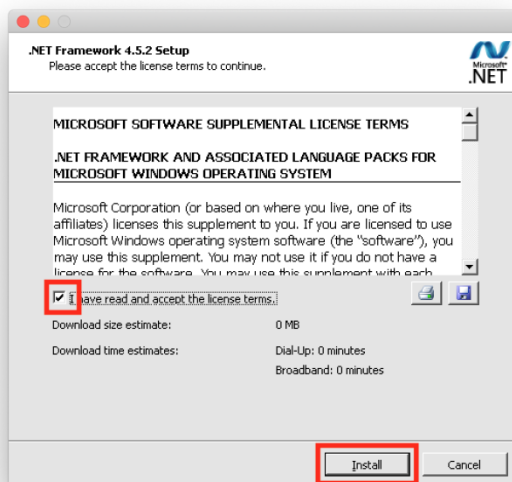
14. Click “Restart Now”



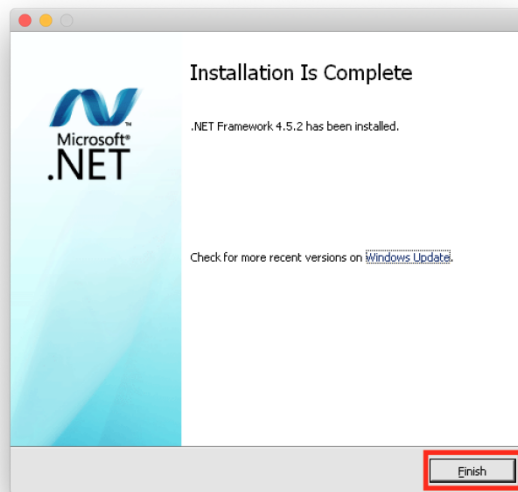
15. Click “Continue”



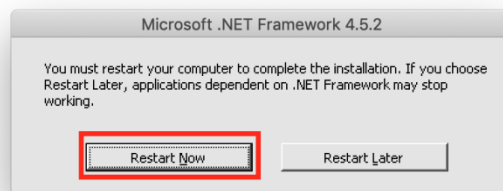
16. Click check box to accept license agreement, and then click “Install”



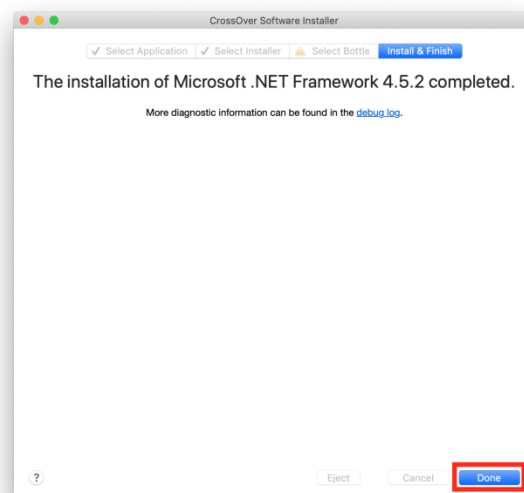
17. Click “Finish”



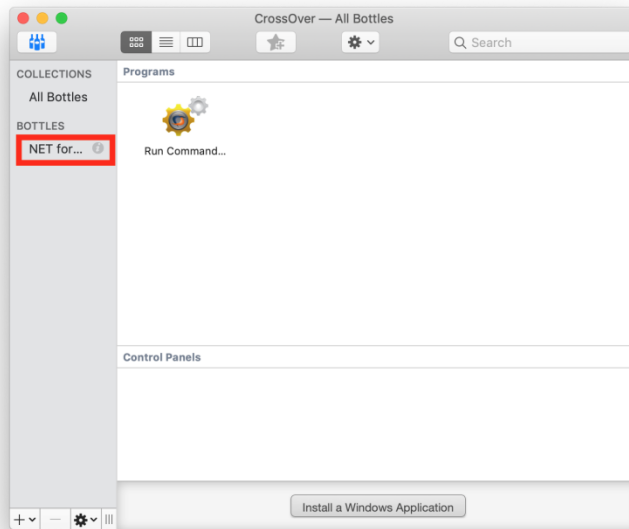
18. Click “Restart Now”



19. Click “Done” to conclude the installation

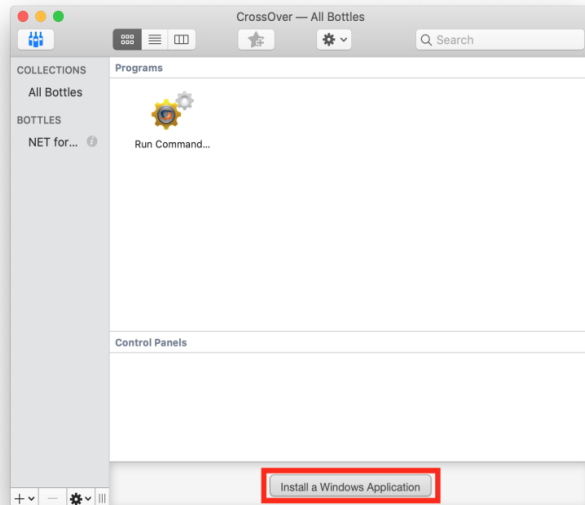


20. You should see something like this. If so, then you have successfully installed .NET 4.5

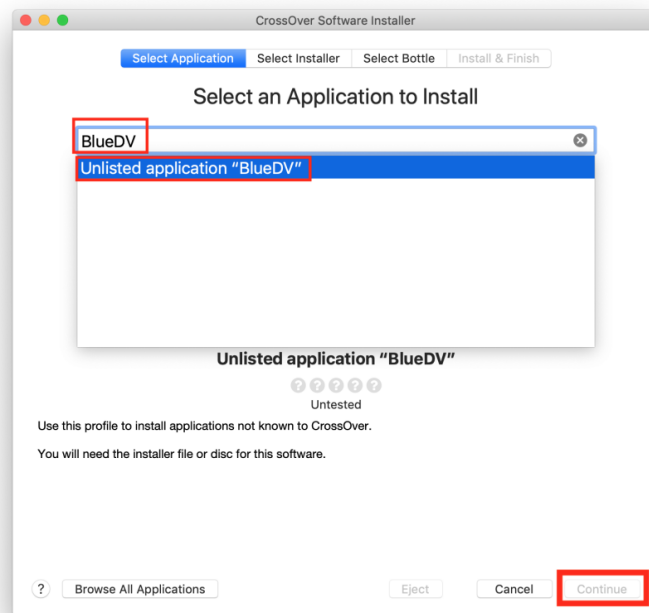


Installing BlueDV

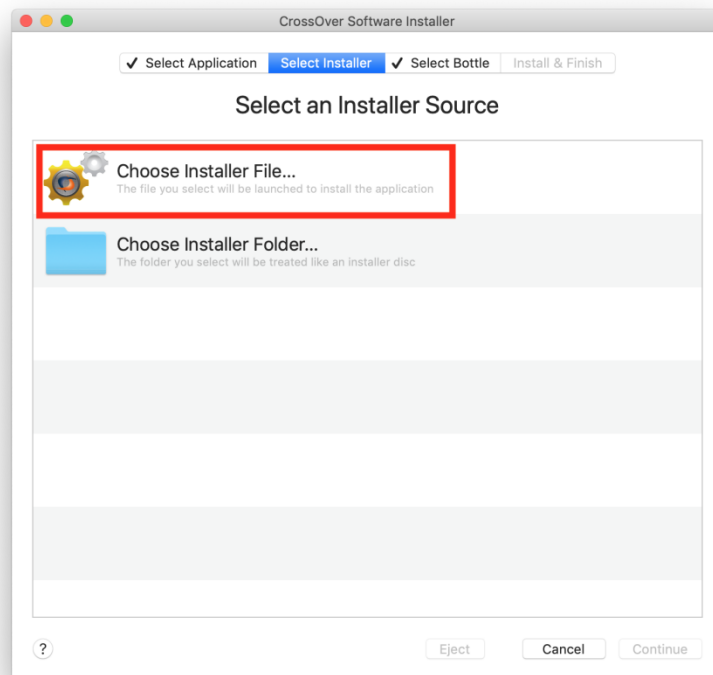
1. Download the latest version of BlueDV for Windows from this page:
<http://software.pa7lim.nl/BlueDV/BETA/Windows>
2. Extract the .MSI from the .zip file (Double click on BlueDV-09548-preBETA.zip so that Archive Utility can unzip it)
3. Click on “Install a Windows Application”



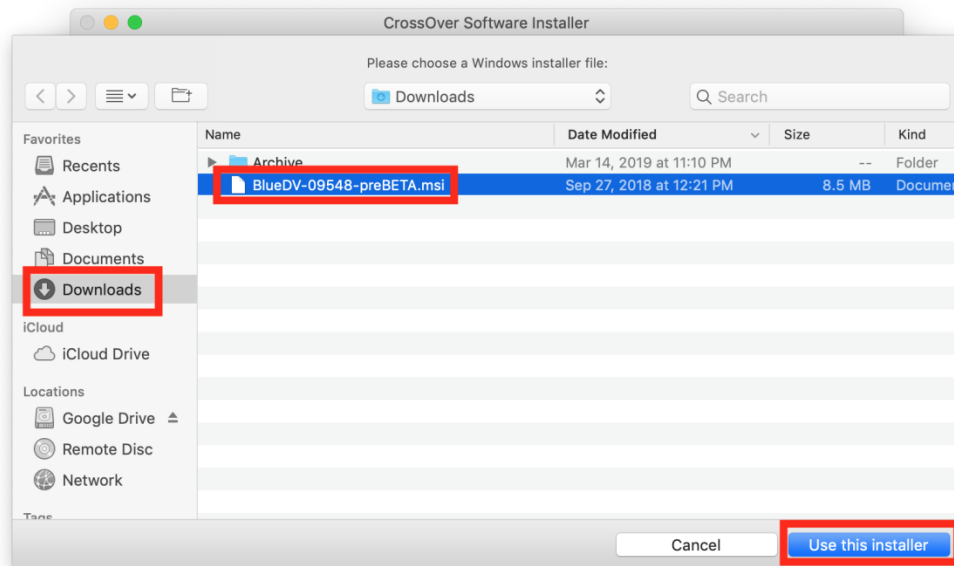
4. Under the “Select Application” tab, type in “BlueDV” and select “Unlisted application BlueDV”. Then press “Continue”



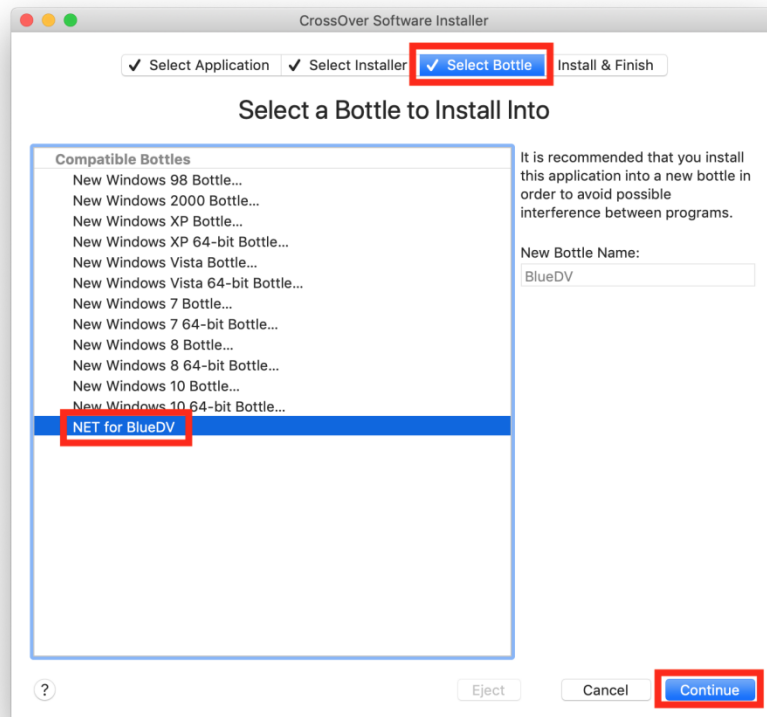
- Click on “Choose Installer File...”



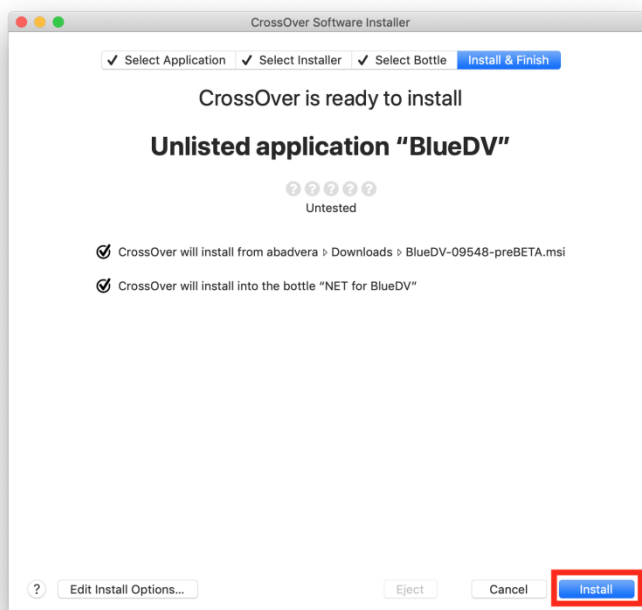
- Navigate to where you downloaded BlueDV. Select the BlueDV MSI file and press “Use this Installer”. Then press “Continue”.



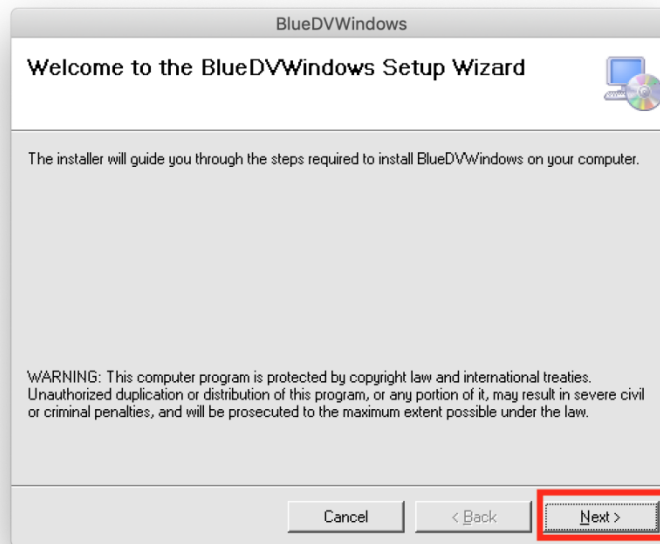
- Go to the “Select Bottle” tab. Select the “NET for BlueDV” bottle from previous steps. Then press “Continue”



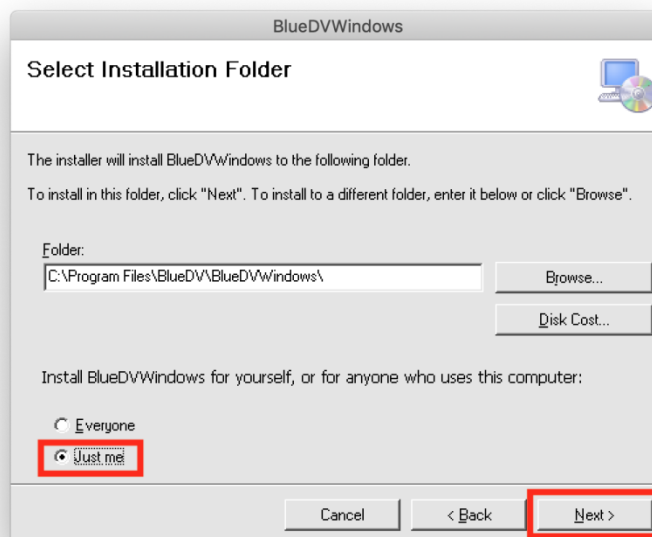
- Press “Install”



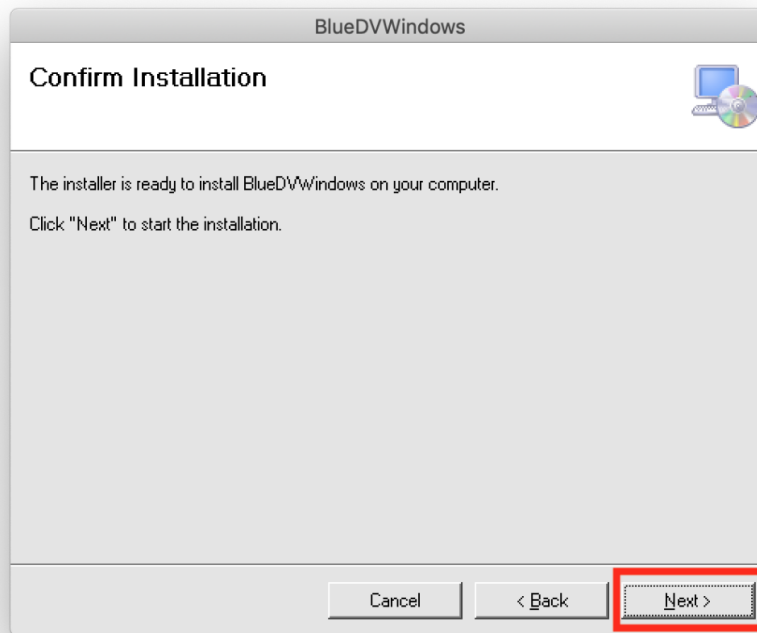
9. Click on “Next”



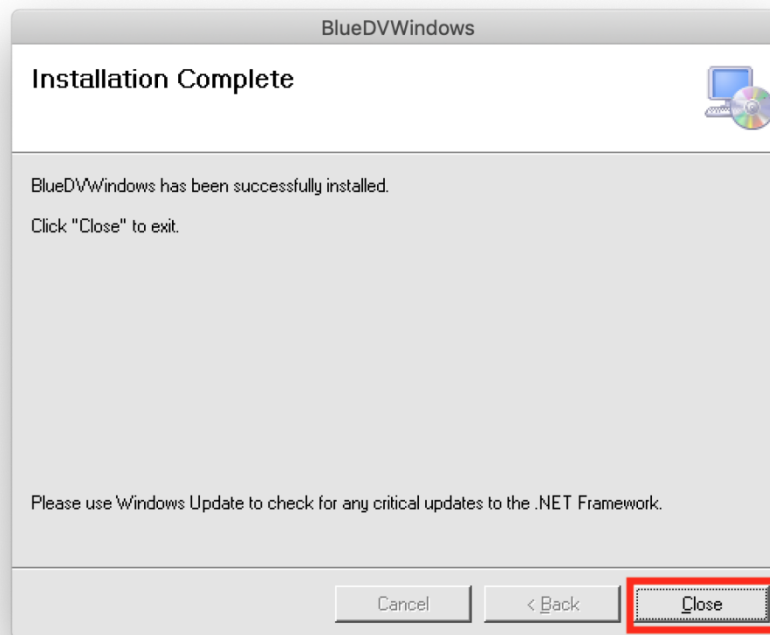
10. Select “Just me” and then press “Continue”



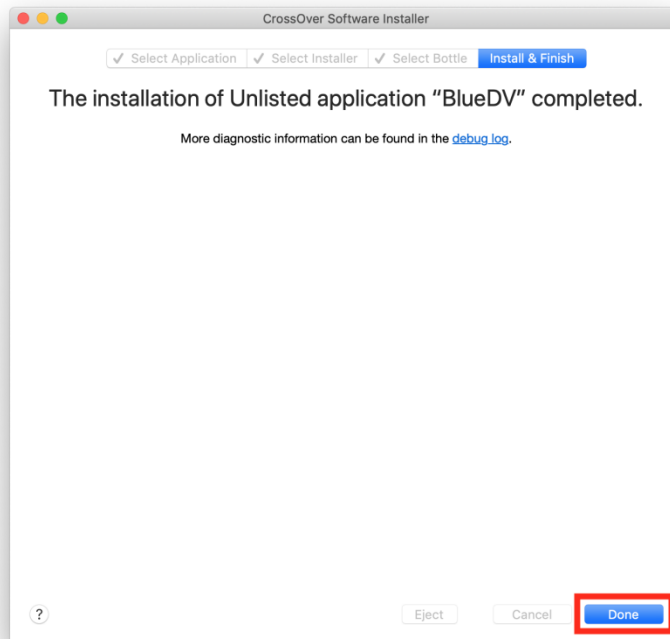
11. Click on “Next”



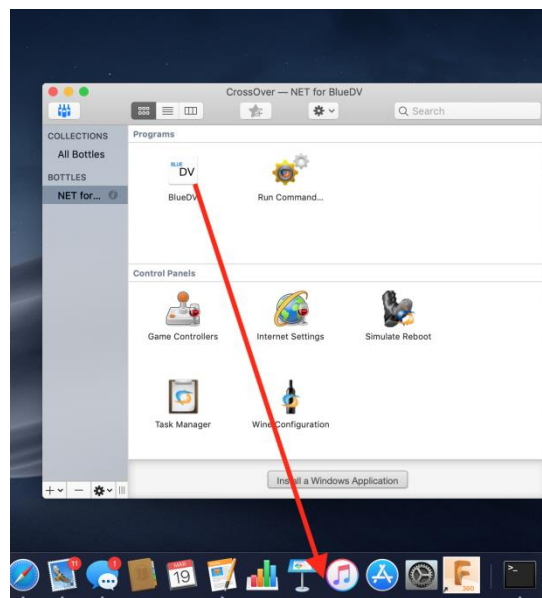
12. Press “Close” on the last pop up window



13. Once installation is finished press “Done”



14. You can add the BlueDV icon to the taskbar by dragging and dropping it there.

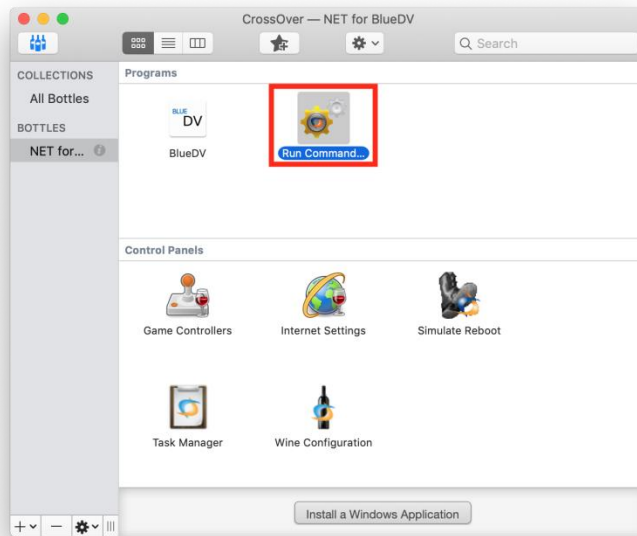


15. To run BlueDV just click on the icon in the taskbar or double-click from within Crossover

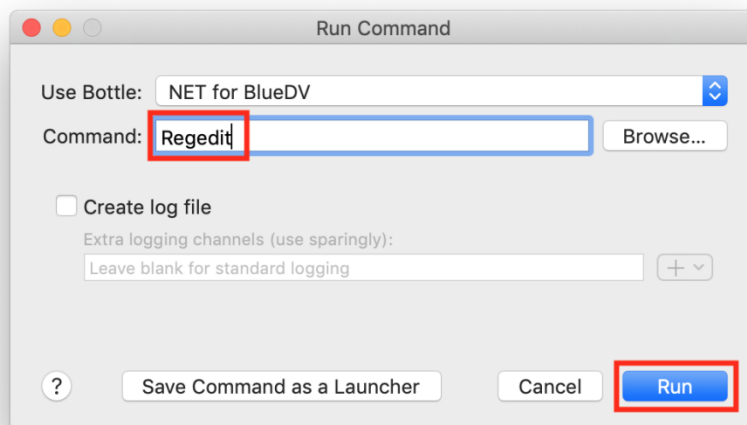
Modifying COM Port

1. Open Crossover
2. Select the bottle where you installed the .NET 4.5 and BlueDV.

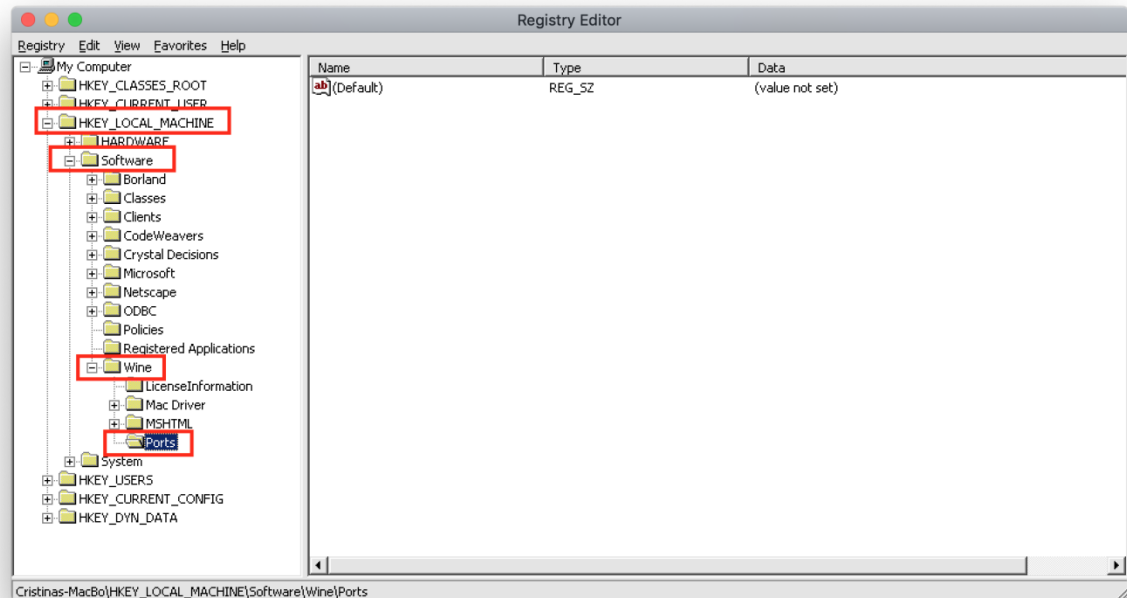
3. Double-click on “Run Command”



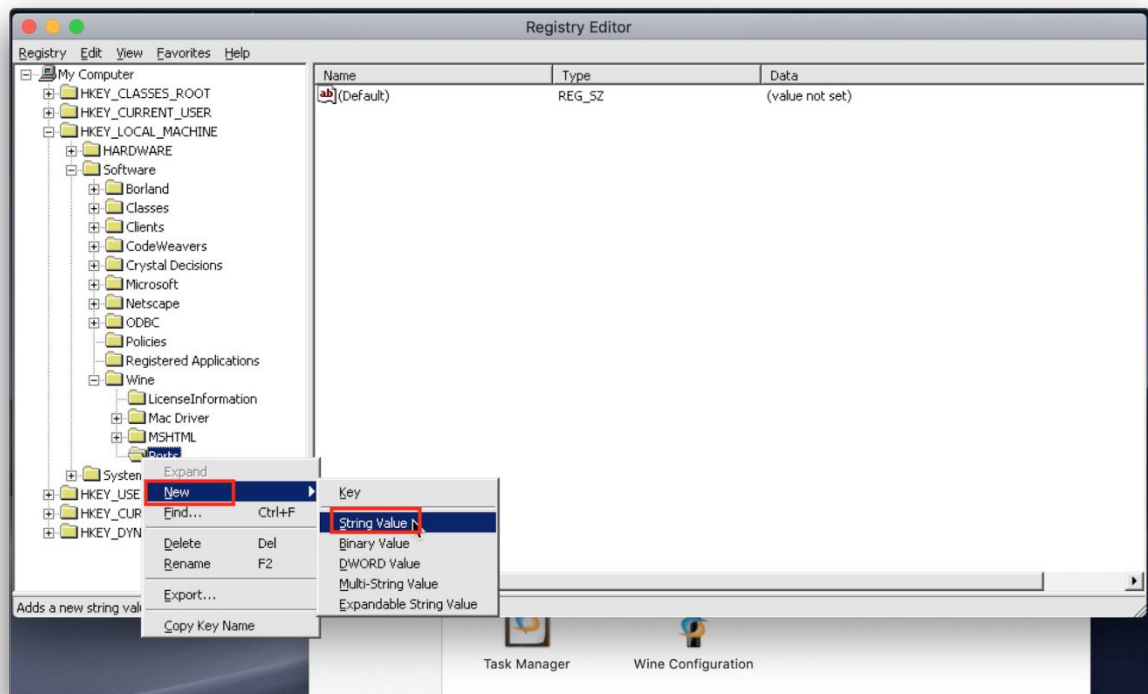
4. Type in “Regedit” into the Command section. Then click on “Run”



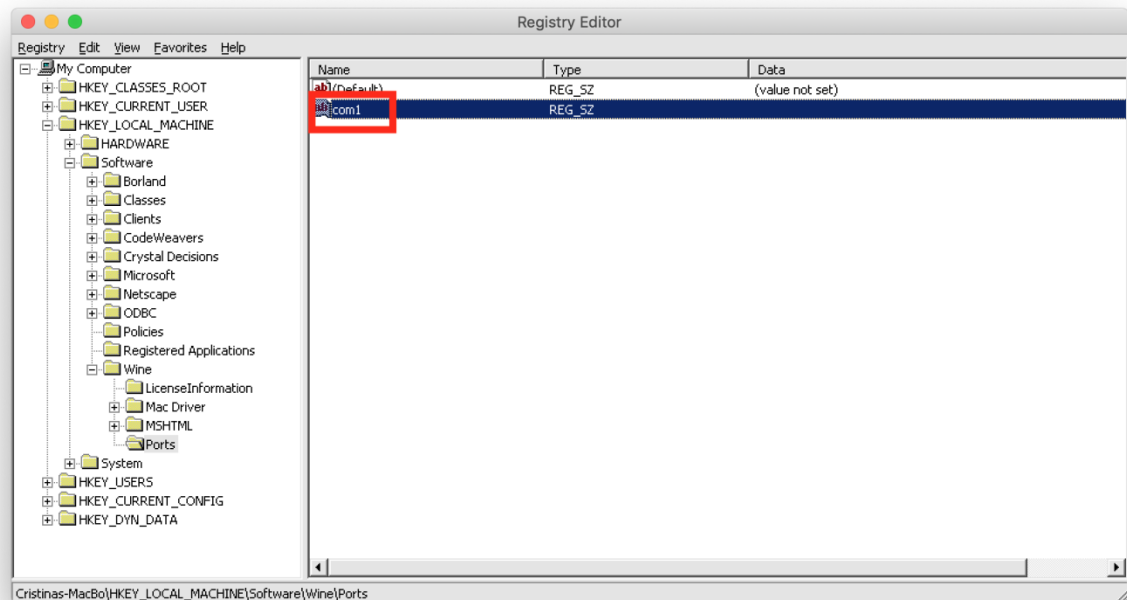
5. Within Regedit, navigate to: *HKEY_LOCAL_MACHINE -> Software -> Wine -> Ports*



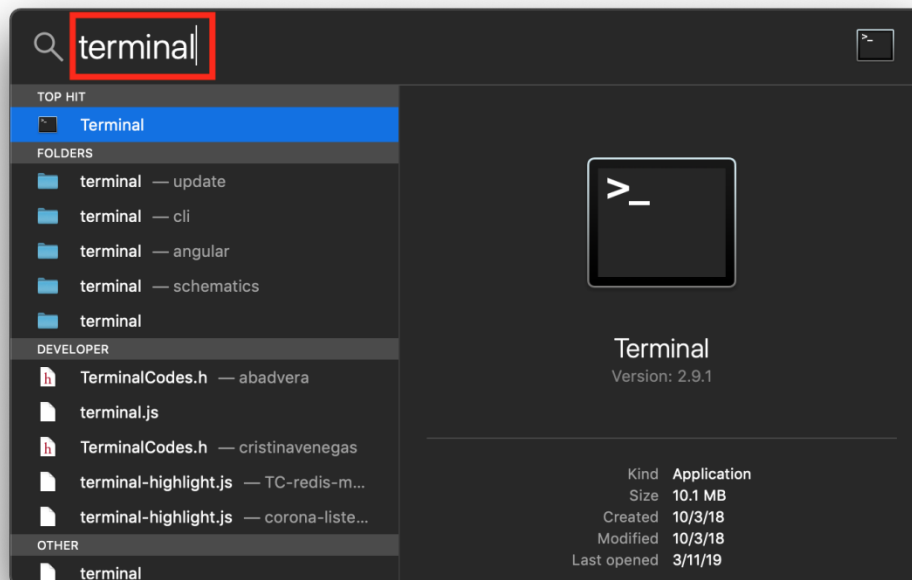
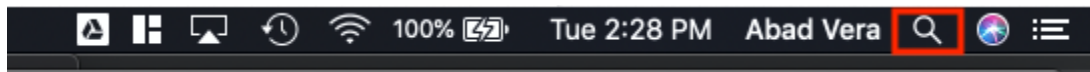
6. Right-click (For trackpad users press down with two fingers) on “Ports”. Then go to *New -> String Value*



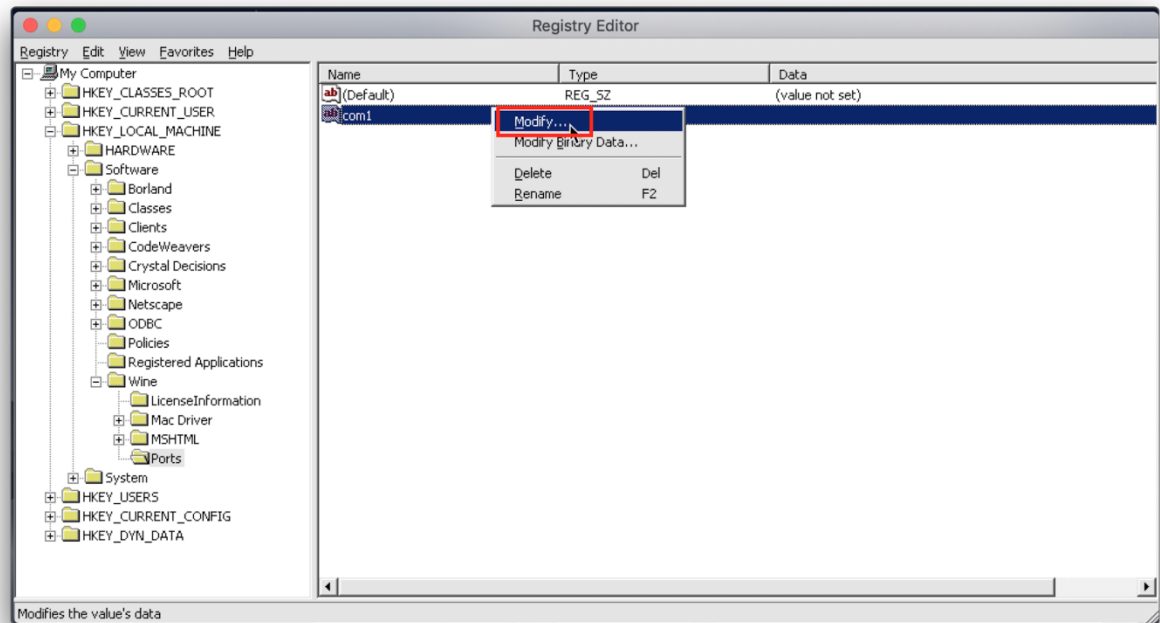
7. Type in “com1” into the string value



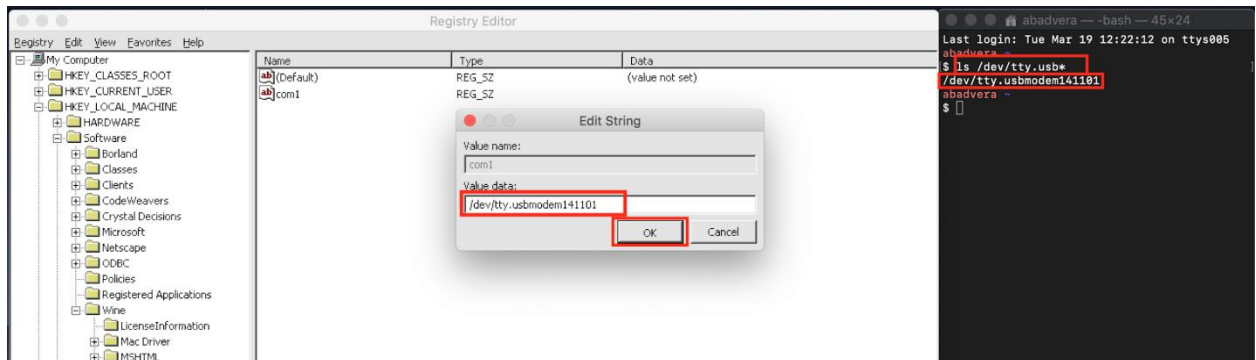
8. Open the Terminal app. Easiest way to do it is by clicking on the Spotlight icon on the top right corner of your screen. Then type “Terminal” and then press Enter



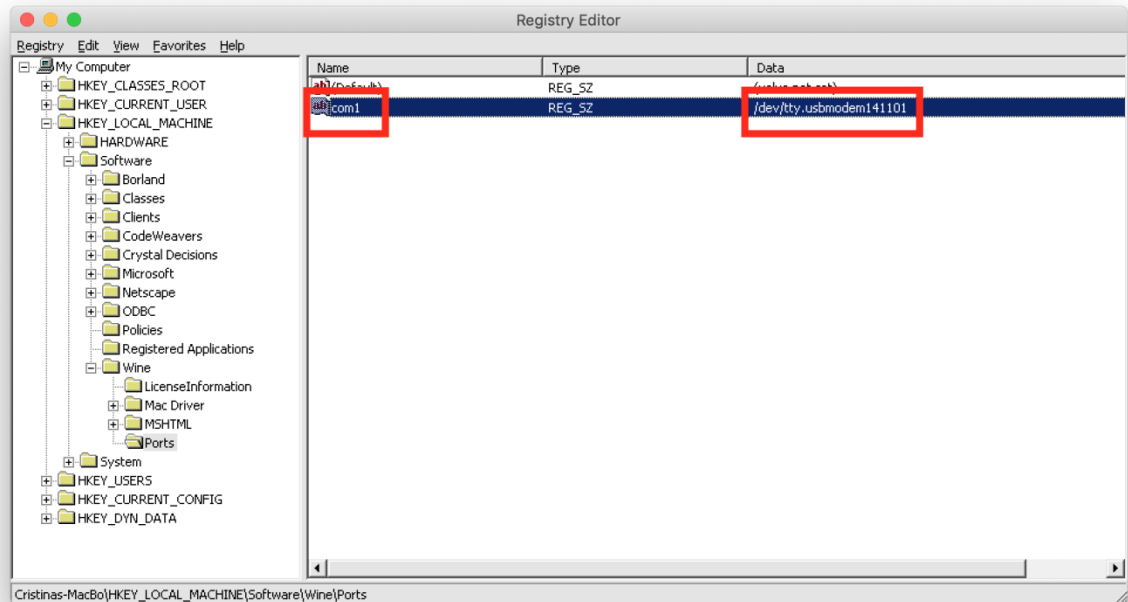
9. Go back to Regedit and right-click on “com1” and select “Modify...”



10. Plug in the ZUMspot USB into one of the USB ports on your Mac.
11. Go back to Terminal and type in `ls /dev/tty.usb*` and press Enter. The following line will show you the full name macOS gives to your ZUMspot. Copy that line and paste it into the “Value data:” field. Then click “OK”



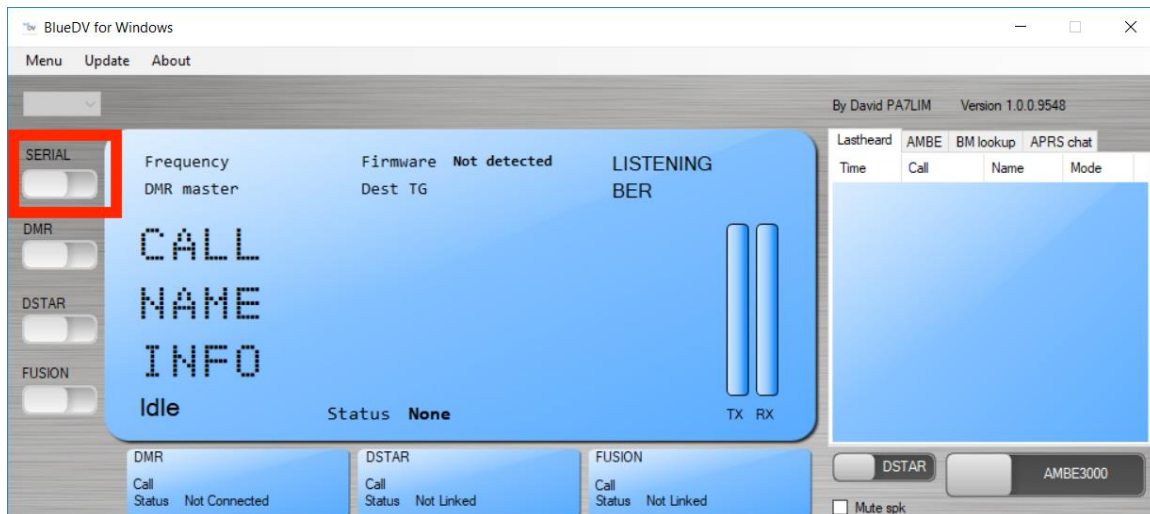
12. Now you should see something like this:



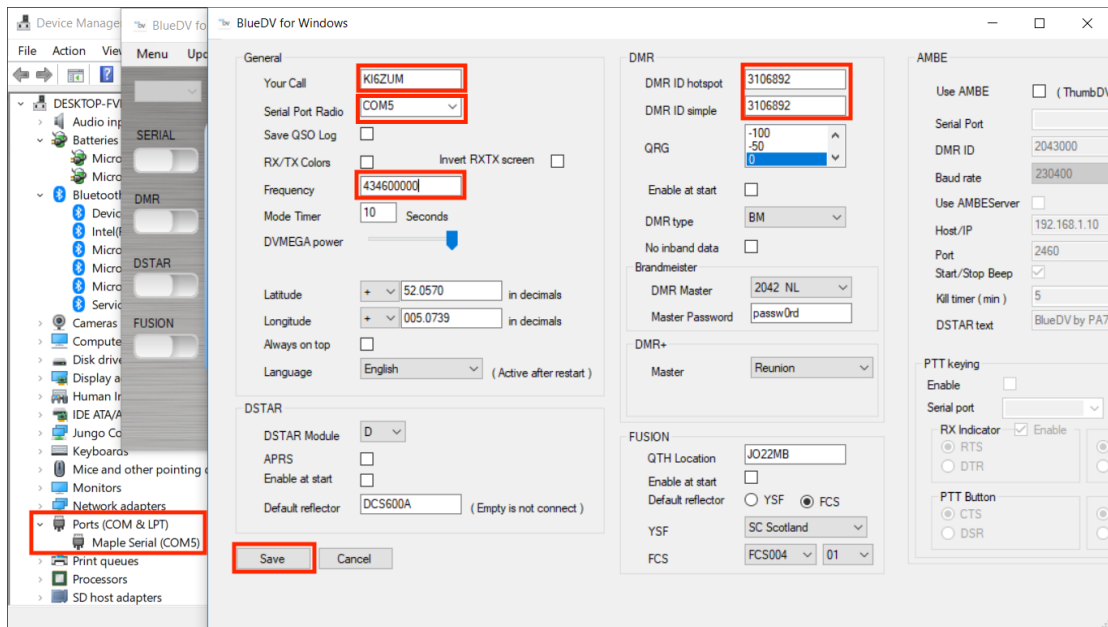
- a. **NOTE!!** - If you remove the ZUMspot and insert it into a different USB port on the same computer, it will enumerate under a different name. So always insert it into the same USB port or you will have to go through the previous steps all over again to set it up with a different name.

Finishing the setup of BlueDV

1. Open BlueDV by clicking on the icon in the taskbar or double-click from within Crossover
2. Launch the software and turn off "SERIAL" if it is already enabled.

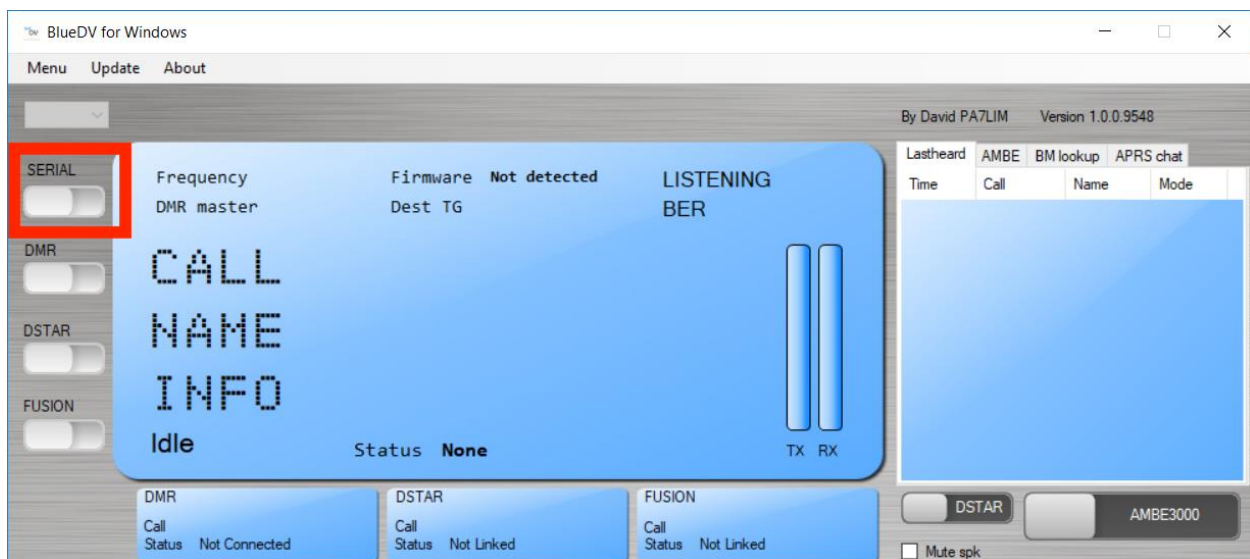


- Next select “Menu” -> “Setup”. As a minimum, set “Your Call”, the “Serial Port Radio”, “DMR ID” and “Frequency”. Next select “Save”



NOTE: If you reconnect the ZUMspot to another USB port, it may enumerate under a different COM port. If so you will need to update the settings.

- Next turn “SERIAL” back on.



BlueDV for Windows

Menu Update About

By David PA7LIM Version 1.0.0.9548

SERIAL ☒ Frequency 434.600.000 Firmware **ZUMspot-v1.4.14_** LISTENING BER

DMR master Dest TG

CALL

NAME

INFO

IDLE Status

TX RX

Lastheard	AMBE	BM lookup	APRS chat
Time	Call	Name	Mode

DMR Call Status Not Connected

DSTAR Call Status Not Linked

FUSION Call Status Not Linked

☐ Mute spk

The screenshot shows the BlueDV for Windows application interface. The 'DSTAR' dropdown menu is highlighted with a red box, showing 'REF030' selected. The 'Link' button is also highlighted with a red box. The main display area shows 'LISTENING BER' and 'CALL NAME INFO' in large characters. The 'DSTAR' status is shown as 'DSTAR' in red text. The bottom status bar shows 'DSTAR' and 'FUSION' sections, both indicating 'Not Connected' or 'Not Linked'.

BlueDV for Windows

Menu Update About

DSTAR REF001 C Link Unlink REF DCS XRF XLX

By David PA7LIM Version 1.0.0.9548

SERIAL Frequency 434.600.000 Firmware ZUMspot-v1.4.16_ TX
DMR master Dest TG BER

CALL VE3SIZ
NAME STEVE
INFO 3023527
DSTAR Status

TX RX

DMR
Status Not Connected

DSTAR
Call Status VE3SIZ
Linked to REF001 C

FUSION
Call Status Not Linked

Lastheard AMBE BM lookup APRS chat
Time Call Name Mode
04:25 PM VE3SIZ Steve DSTAR

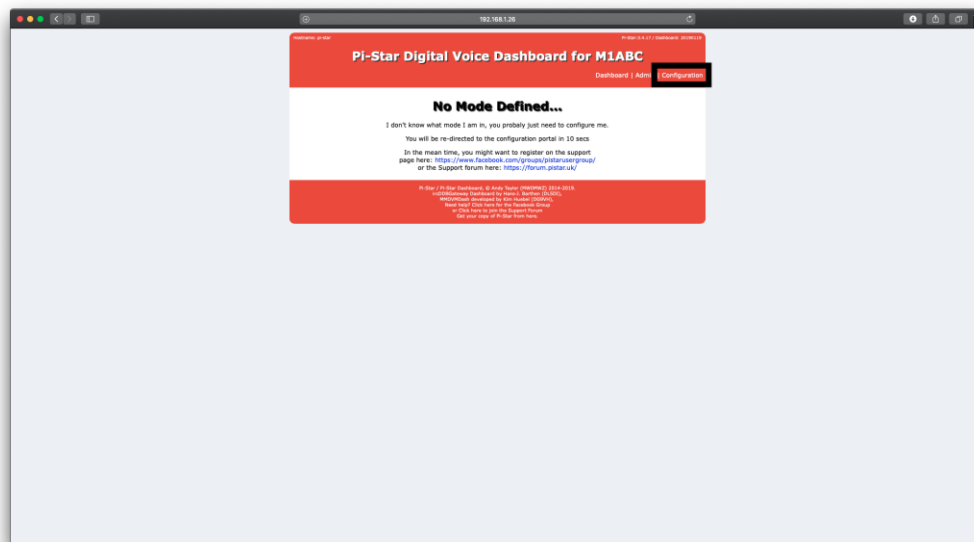
DSTAR AMBE3000

Mute spk

Setup Pi-Star:

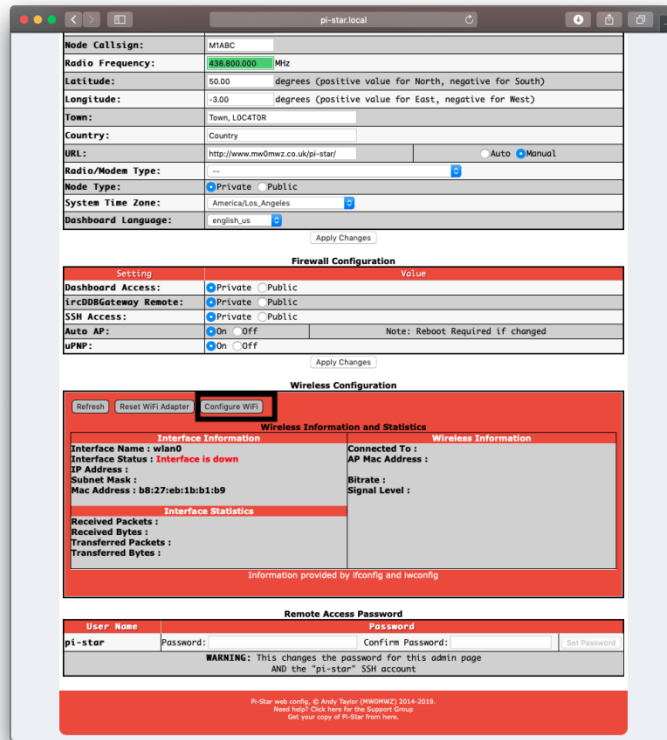
WiFi:

- Plug in the ZUMspot USB, to one of the USB ports on the Raspberry Pi.
- Power up the Raspberry Pi
- After 3 minutes, scan for WiFi access points from your phone or laptop. One should appear with the name “Pi-Star-Setup”
- Connect to it. When asked for the Wi-Fi password type in: raspberry
- After 3 minutes, go to your web browser (Chrome, Firefox, etc.) and connect to the website:
<http://pi-star> (for Windows, Linux and Android devices)
<http://pi-star.local> (for OS X and iOS devices)
- You should see this page.



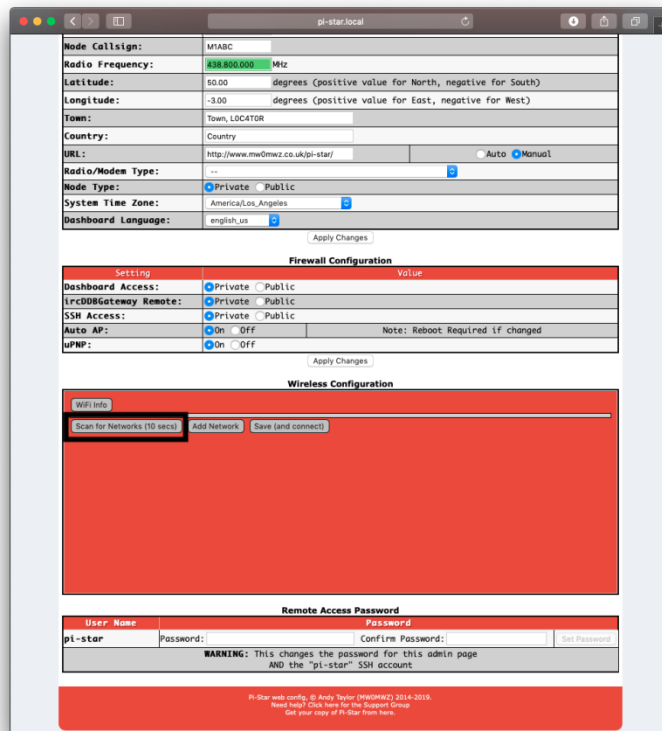
- Go to **Configuration**
 - You will be asked to put in the default username which is “pi-star” and the default password which is “raspberry”

- Select **“Configure WiFi”** and then click on **“Scan for Networks (10 secs)”**



The screenshot shows the Pi-Star web interface with the following sections:

- Node Configuration:** MIABC, Radio Frequency: 438.800.000 MHz, Latitude: 50.00, Longitude: -3.00, Town: LOCATOR, Country: Country, URL: http://www.m0mwz.co.uk/pi-star/, Radio/Modem Type: --, Mode Type: Private, System Time Zone: America/Los_Angeles, Dashboard Language: english_us.
- Firewall Configuration:**
 - Setting: Dashboard Access (Private), lrcdDBGateway Remote (Private), SSH Access (Private), Auto AP (On), uPNP (On).
 - Value: Public, Public, Public, Note: Reboot Required if changed, Off.
- Wireless Configuration:**
 - Buttons: Refresh, Reset WiFi Adapter, **Configure WiFi** (highlighted).
 - Interface Information:** Interface Name: wlan0, Interface Status: Interface is down, IP Address, Subnet Mask, Mac Address: b8:27:eb:1b:1b:09.
 - Wireless Information:** Connected To, AP Mac Address, Bitrate, Signal Level.
 - Interface Statistics:** Received Packets, Received Bytes, Transferred Packets, Transferred Bytes.
- Remote Access Password:** User Name: pi-star, Password, Confirm Password, Set Password.

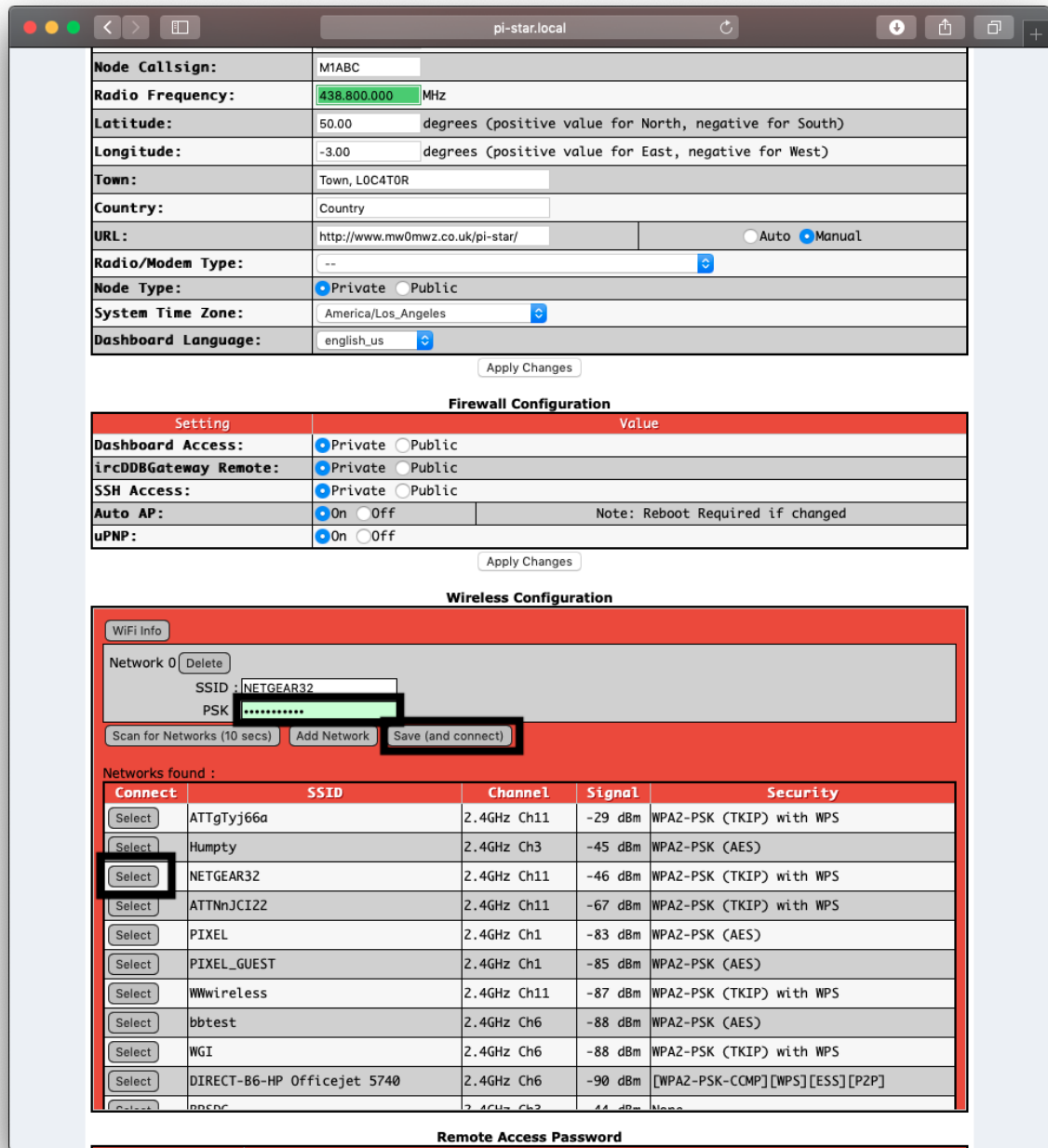


The screenshot shows the Pi-Star web interface with the following sections:

- Node Configuration:** MIABC, Radio Frequency: 438.800.000 MHz, Latitude: 50.00, Longitude: -3.00, Town: LOCATOR, Country: Country, URL: http://www.m0mwz.co.uk/pi-star/, Radio/Modem Type: --, Mode Type: Private, System Time Zone: America/Los_Angeles, Dashboard Language: english_us.
- Firewall Configuration:**
 - Setting: Dashboard Access (Private), lrcdDBGateway Remote (Private), SSH Access (Private), Auto AP (On), uPNP (On).
 - Value: Public, Public, Public, Note: Reboot Required if changed, Off.
- Wireless Configuration:**
 - Buttons: Scan for Networks (10 secs) (highlighted), Add Network, Save (and connect).
 - WiFi Info:** (Empty table)
- Remote Access Password:** User Name: pi-star, Password, Confirm Password, Set Password.

- Select your WiFi SSID and enter your password.

- Click on **“Save (and connect)”** to save the WiFi configuration



The screenshot shows the pi-star.local configuration interface. The top section contains various system settings, followed by Firewall Configuration and Wireless Configuration sections. The Wireless Configuration section is highlighted with a red background and contains a table of found networks.

Node Configuration:

- Node Callsign: M1ABC
- Radio Frequency: 438.800.000 MHz
- Latitude: 50.00 degrees (positive value for North, negative for South)
- Longitude: -3.00 degrees (positive value for East, negative for West)
- Town: Town, LOC4TOR
- Country: Country
- URL: http://www.mw0mwz.co.uk/pi-star/
- Radio/Modem Type: --
- Node Type: ☒ Private ☐ Public
- System Time Zone: America/Los_Angeles
- Dashboard Language: english_us

Firewall Configuration:

- Dashboard Access: ☒ Private ☐ Public
- ircDDBGateway Remote: ☒ Private ☐ Public
- SSH Access: ☒ Private ☐ Public
- Auto AP: ☒ On ☐ Off
- uPNP: ☒ On ☐ Off

Wireless Configuration:

WiFi Info

Network 0

SSID: NETGEAR32

PSK: *****

Networks found :

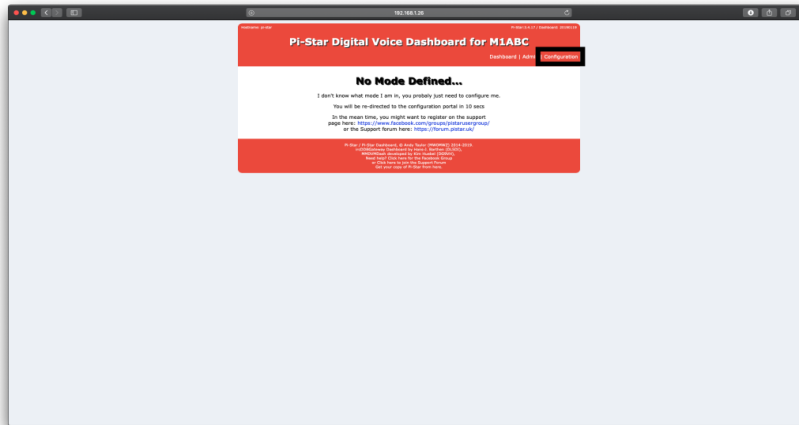
Connect	SSID	Channel	Signal	Security
Select	ATTgTyj66a	2.4GHz Ch11	-29 dBm	WPA2-PSK (TKIP) with WPS
Select	Humpty	2.4GHz Ch3	-45 dBm	WPA2-PSK (AES)
<input checked="" type="button" value="Select"/>	NETGEAR32	2.4GHz Ch11	-46 dBm	WPA2-PSK (TKIP) with WPS
Select	ATTNnJCI22	2.4GHz Ch11	-67 dBm	WPA2-PSK (TKIP) with WPS
Select	PIXEL	2.4GHz Ch1	-83 dBm	WPA2-PSK (AES)
Select	PIXEL_GUEST	2.4GHz Ch1	-85 dBm	WPA2-PSK (AES)
Select	WWireless	2.4GHz Ch11	-87 dBm	WPA2-PSK (TKIP) with WPS
Select	bbtest	2.4GHz Ch6	-88 dBm	WPA2-PSK (AES)
Select	WGI	2.4GHz Ch6	-88 dBm	WPA2-PSK (TKIP) with WPS
Select	DIRECT-B6-HP Officejet 5740	2.4GHz Ch6	-90 dBm	[WPA2-PSK-CCMP][WPS][ESS][P2P]
Select	DDFNC	2.4GHz Ch3	-44 dBm	None

Remote Access Password

- Reboot your Raspberry Pi
- Now you can continue on the **“Configuration”** section below.

Ethernet:

- Plug in the ZUMspot USB, to one of the USB ports on the Raspberry Pi.
- Connect an Ethernet cable to the Raspberry Pi and then turn on the power.
- After 3 minutes, go to your web browser (Chrome, Firefox, etc.) and connect to the website:
<http://pi-star> (for Windows, Linux and Android devices)
<http://pi-star.local> (for OS X and iOS devices)
- You should see this page.



- Go to **“Configuration”**
 - You will be asked to put in the default username which is **“pi-star”** and the default password which is **“raspberry”**

Configuration:

- Change the Node Callsign to your own, set the **“Radio/Modem Type”** to **“ZumSpot - USB Stick”**, set the **“System Time Zone”** to your timezone, and set the **“Dashboard Language”** to the language you prefer.

General Configuration		
Setting	Value	
Hostname:	pi-star Do not add suffixes such as .local	
Node Callsign:	K16ZUM	
Radio Frequency:	434.600.000 MHz	
Latitude:	50.00 degrees (positive value for North, negative for South)	
Longitude:	-3.00 degrees (positive value for East, negative for West)	
Town:	Town, LOC4TOR	
Country:	Country	
URL:	http://www.mw0mwz.co.uk/pi-star/ ☐ Auto ☒ Manual	
Radio/Modem Type:	ZumSpot - USB Stick	
Node Type:	☒ Private ☐ Public	
System Time Zone:	America/Los_Angeles	
Dashboard Language:	english_us	

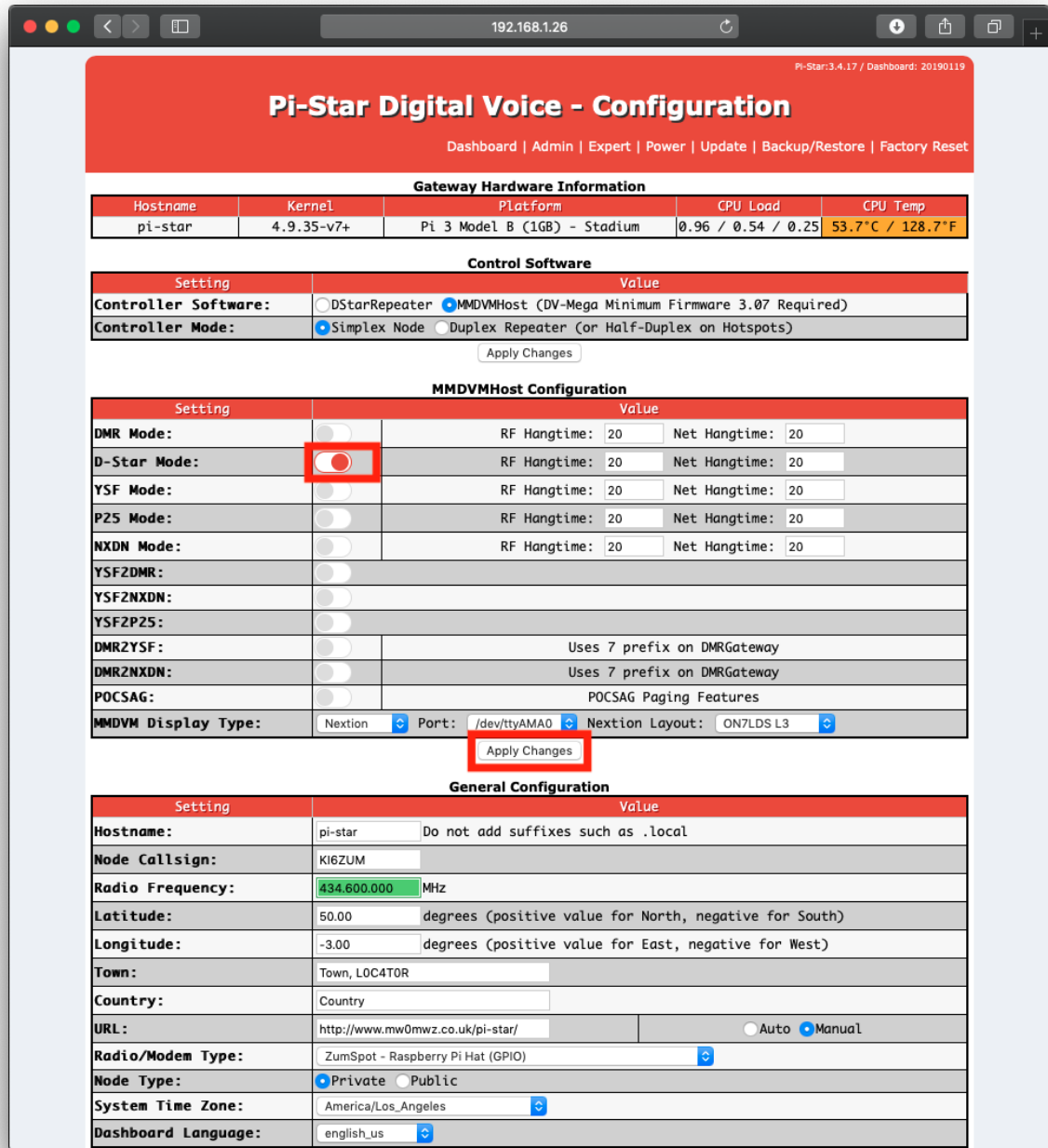
Apply Changes

- Click **“Apply Changes”** when you are done

- When everything reloads, you will need to re-set the “Radio/Modem Type” to “ZumSpot - Raspberry Pi Hat (GPIO)” and click “Apply Changes” again.

Configuration (example to enable D-Star):

- Now you can turn on D-Star by selecting the “D-Star Mode” switch and clicking “Apply Changes”



Pi-Star Digital Voice - Configuration

Dashboard | Admin | Expert | Power | Update | Backup/Restore | Factory Reset

Gateway Hardware Information

Hostname	Kernel	Platform	CPU Load	CPU Temp
pi-star	4.9.35-v7+	Pi 3 Model B (1GB) - Stadium	0.96 / 0.54 / 0.25	53.7°C / 128.7°F

Control Software

Setting	Value
Controller Software:	☐ DStarRepeater ☒ MMDVMHost (DV-Mega Minimum Firmware 3.07 Required)
Controller Mode:	☒ Simplex Node ☐ Duplex Repeater (or Half-Duplex on Hotspots)

Apply Changes

MMDVMHost Configuration

Setting	Value
DMR Mode:	☐ RF Hangtime: 20 Net Hangtime: 20
D-Star Mode:	☒ RF Hangtime: 20 Net Hangtime: 20
YSF Mode:	☐ RF Hangtime: 20 Net Hangtime: 20
P25 Mode:	☐ RF Hangtime: 20 Net Hangtime: 20
NXDN Mode:	☐ RF Hangtime: 20 Net Hangtime: 20
YSF2DMR:	☐
YSF2NXDN:	☐
YSF2P25:	☐
DMR2YSF:	☐ Uses 7 prefix on DMRGateway
DMR2NXDN:	☐ Uses 7 prefix on DMRGateway
POCSAG:	☐ POCSAG Paging Features
MMDVM Display Type:	Nextion Port: /dev/ttyAMA0 Nextion Layout: ON7LDS L3

Apply Changes

General Configuration

Setting	Value
Hostname:	pi-star Do not add suffixes such as .local
Node Callsign:	KI6ZUM
Radio Frequency:	434.600.000 MHz
Latitude:	50.00 degrees (positive value for North, negative for South)
Longitude:	-3.00 degrees (positive value for East, negative for West)
Town:	Town, LOC4TOR
Country:	Country
URL:	http://www.mw0mwz.co.uk/pi-star/ ☐ Auto ☒ Manual
Radio/Modem Type:	ZumSpot - Raspberry Pi Hat (GPIO)
Node Type:	☒ Private ☐ Public
System Time Zone:	America/Los_Angeles
Dashboard Language:	english_us

Finished:

Once you have completed any of the configuration steps above you can start using the ZUMspot USB to connect to D-Star, DMR and other networks.

There is more information on configuring and using Pi-Star in this document.

https://amateurradionotes.com/images/1-Playing_with_Pi-Star.pdf

Support:

MMDVM groups.io group:

<https://groups.io/g/OpenDV>

Pi-Star support forum:

<https://forum.pistar.uk/>

Pi-Star Facebook support group:

<https://www.facebook.com/groups/pistar/>

Pi-Star Wiki:

<http://wiki.pistar.uk>

ZUM Radio Facebook group:

<https://www.facebook.com/groups/249802742395450/>