

Instructions for Project

Github: <https://github.com/NathanBlais/CSE-120-Cisco3>

System Installation

Hardware Needed

- Raspberry pi with either an ethernet port or usb to ethernet adapter.
- Power USB power brick with USB cable that plugs into your pi's usb power port.
 - This will be either a USB-C or Micro USB depending on which pi.
 - <https://www.raspberrypi.org/documentation/hardware/raspberrypi/power/README.md>
- Ethernet cord
- Micro SD card

Flash DietPi to the SD card

1. Download and unpack the 32bit version of the DietPi Operating System for Raspberry Pi
 - https://dietpi.com/downloads/images/DietPi_RPi-ARMv6-Buster.7z
2. Download and install the Raspberry Pi Imager for your desktop operating system
 - <https://www.raspberrypi.org/software/>
3. Insert the Micro SD card into your desktop's card drive
 - If you don't have one you will need to purchase a usb SD card reader to plug into your desktop.
4. Reformat the SD card to Fat32:
 - Open the Raspberry Pi Imager
 - Click the "Chose OS" box
 - Click on the "Format card as Fat32" option
 - Choose the SD card from the "Choose SD Card" box
 - Click "Write"
- 4.5* If that does not work you can reformat using your operating systems preferred method:
 - Windows10:<https://recoverit.wondershare.com/memorycard-recovery/format-sd-card-fat32.html>
 - Archive:
<https://web.archive.org/web/20201218201958/https://recoverit.wondershare.com/memorycard-recovery/format-sd-card-fat32.html>
 - MacOS:<https://havecamerawilltravel.com/photographer/how-to-format-sd-card-on-mac>
 - Archive:
<https://web.archive.org/web/20201218202133/https://www.hellotech.com/guide/for/how-to-format-a-hard-drive-for-mac>

- Linux/BSD: <https://ragnyll.gitlab.io/2018/05/22/format-a-sd-card-to-fat-32linux.html>
 - Archive: <https://web.archive.org/web/20201218203116/https://ragnyll.gitlab.io/2018/05/22/format-a-sd-card-to-fat-32linux.html>
5. Install the operating system:
 - In the Raspberry Pi Imager click the “Chose OS” box
 - Click on the “Use Custom” option
 - Choose the DietPi_RPi-ARMv6-Buster.img file you unpacked from the .7z file you downloaded
 - Choose the SD card from the “Choose SD Card” box
 - Click “Write”
 6. Once it has finished installing eject and remove the SD card from the card reader.
 7. Put the micro SD card into the Raspberry pi’s micro SD card slot.
 8. Plug an ethernet cord into your router and connect it to your Raspberry Pi.
 9. Plug your power brick into a socket and connect it to your Pi via your USB cable.

Install the Operating System

Connect to the Pi

Here are a few examples of ways of doing this depending on your setup.

1. Connect a monitor and keyboard to your Pi (Most Reliable and Easy way)
 - Some Pi’s can’t use this method Without a USB hub.
 - i. They are Models: Zero, Zero W, & Zero WH
2. Connect your Pi to your desktop via an ethernet cable (Best Alternative way)
 - Windows: <https://medium.com/@jrcharney/connect-your-raspberry-pi-to-your-computer-via-ethernet-4564e1e68922>
 - MacOS: <https://medium.com/@tzhenghao/how-to-ssh-into-your-raspberry-pi-with-a-mac-and-ethernet-cable-636a197d055>
3. Find your DietPi’s IP address and ssh into it over your network
 1. If you know what you're doing, log in to your router's admin page and check the DHCP client/reservation list for "DietPi"
 2. If you don't know how to do the above, download Angry IP scanner and run it: <https://img.gg/8KVmS>
 3. Look for the hostname "DietPi", on that line the IP and MAC address of our Raspberry Pi will also be listed
 4. Open a Terminal emulator application on your Desktop. Either the Terminal app for Mac & Linux or Putty for Windows
 - i. Putty: https://dietpi.com/docs/user-guide_installation/#4-first-logon-on-dietpi
 5. You will need to run the command `ssh root@<Your Pi’s IP address>
 6. Then input the password **dietpi**
4. Other ways you can google to find help

- Connect your Pi to your desktop via a USB cable

Install the OS

When you are connected and logged into DietPi your screen should look like this

```
RPi 4 Model B (armv7l) | IP: 192.168.1.106 | File viewer
-----
DietPi - GPLv2 License:
-----
- Use arrow keys to scroll
- Press 'TAB' then 'ENTER' to continue

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under the terms of the GNU General Public License as published by the Free
Software Foundation, either version 2 of the License, or any later version.

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this program. If not, please see http://www.gnu.org/licenses/

<Ok>
```

- To accept the DietPi GPL license. Hit the Enter key on your keyboard.

DietPi will then immediately begin to search for and install updated software packages, which will take some time to complete.

Once the packages have been updated, DietPi will ask you to confirm whether you would like to enable user analytics.

- Choose no by pressing the down arrow to highlight the 0 row and press the Enter

```
RPi 4 Model B (armv7l) | IP: 192.168.1.106 | DietPi-Survey
-----
DietPi-Survey would like to collect anonymous usage statistics.
This allows us to focus development based on popularity.
- NO private data will be collected and NO ONE can identify you based on
it.
- The data is sent via secured SFTP connection, stored unreadable to the
public upload user.
- If you agree, your uploaded data will be updated after each DietPi-Update
and DietPi-Software install.
- Current survey statistics can be reviewed at: https://dietpi.com/survey/

Show : Show me the upload file content
1 : Opt IN and upload data
0 : Opt OUT and purge uploaded data

<Ok> <Cancel>
```

You will eventually reach this screen

```
DietPi-Software

Help!           : Links to online guides, docs and information
DietPi-Config   : Feature-rich configuration tool for your device
  ● Select Software
Search          : Find a software title for installation
Software Optimised : Select DietPi optimised software for installation
Software Additional : Select additional Linux software for installation
SSH Server      : [Dropbear]
File Server     : [None]
Log System      : [DietPi-RAMlog #1]
Webserver Preference : [Lighttpd]
User Data Location : [SD/eMMC | /mnt/dietpi_userdata]
  ● Install or Remove Software
Uninstall       : Select installed software for removal
Install         : Go >> Start installation for selected software

                <Ok>                      <Exit>
```

- Press the Tab key twice to highlight the Exit.
 - Press Enter
- Confirm by pressing Tab to highlight Ok
 - Press Enter

There may be more instructions, but keep them default and accept them with Enter.
It should finish installing and look like this

DietPi v6.33.3 : 23:05 - Fri 12/18/20

- **Device model** : RPi 4 Model B (armv7l)
- **CPU temp** : 42'C : 107'F (Optimal temperature)
- **LAN IP** : 192.168.1.20 (eth0)
- **MOTD** : Please help testing the upcoming DietPi v6.34:
 <https://github.com/MichaIng/DietPi/issues/3963>

DietPi Team : MichaIng (lead), Daniel Knight (founder), Joulinar (support)
Image : DietPi Core Team (pre-image: Raspbian Lite)
Web : <https://dietpi.com> | https://twitter.com/DietPi_
Patreon Legends : Bryce
Donate : <https://dietpi.com/#donate>
DietPi Hosting : Powered by <https://myvirtualserver.com>

dietpi-launcher : All the DietPi programs in one place.
dietpi-config : Feature rich configuration tool for your device.
dietpi-software : Select optimized software for installation.
htop : Resource monitor.
cpu : Shows CPU information and stats.

root@DietPi:~# █

Configure the Operating System

Set a Static IP

1. Type the command “dietpi-config” and Enter

You should see this

```
DietPi-Config
Hardware : RPi 4 Model B (armv7l)

1 : Display Options
2 : Audio Options
3 : Performance Options
4 : Advanced Options
5 : Language/Regional Options
6 : Security Options
7 : Network Options: Adapters
8 : Network Options: Misc
9 : AutoStart Options
10 : Tools

<Ok>                                <Exit>
```

2. Scroll down to “7 : Network Options: Adapters” and Enter

```
DietPi-Config
Please select an option to change:

●-- Adapter Options -----●
Ethernet : Available | [On] | Connected
WiFi     : Not Found | [Off] | Disconnected
Onboard WiFi : [Off]

●-- Additional Options -----●
IPv6      : [On]
Prefer IPv4 : [On]
Proxy     : [Off]
Test      : Run internet connection test

<Ok>                                <Back>
```

3. Next choose and Enter “Ethernet”

```
DietPi-Config
Ethernet Details:
Usage   : Sent = 0 MiB | Recieved = 0 MiB
Address : IP = 192.168.1.20 | Mask = 255.255.255.0 | Gateway = 192.168.1.1 | DNS = 192.168.1.14

●-- DHCP/STATIC IP -----●
Change Mode : [STATIC]
Copy        : Copy current address to "Static"
Static IP   : [192.168.1.20]
Static Mask : [255.255.255.0]
Static Gateway : [192.168.1.1]
Static DNS  : [192.168.1.14]

●-- Additional Options -----●
Link Speed  : [auto (default)]
Disable     : Disable Ethernet adapter
Apply       : Save all changes and restart networking

<Ok>                                <Back>
```

4. Here you can set your static IP. Here is what mine looks like.
5. All you will need to do is Apply your changes and exit the program by using Enter on the Back's and Exit
 - If you have SSH'd into the Pi. You may need to disconnect and reconnect using the new IP address if you assigned one.

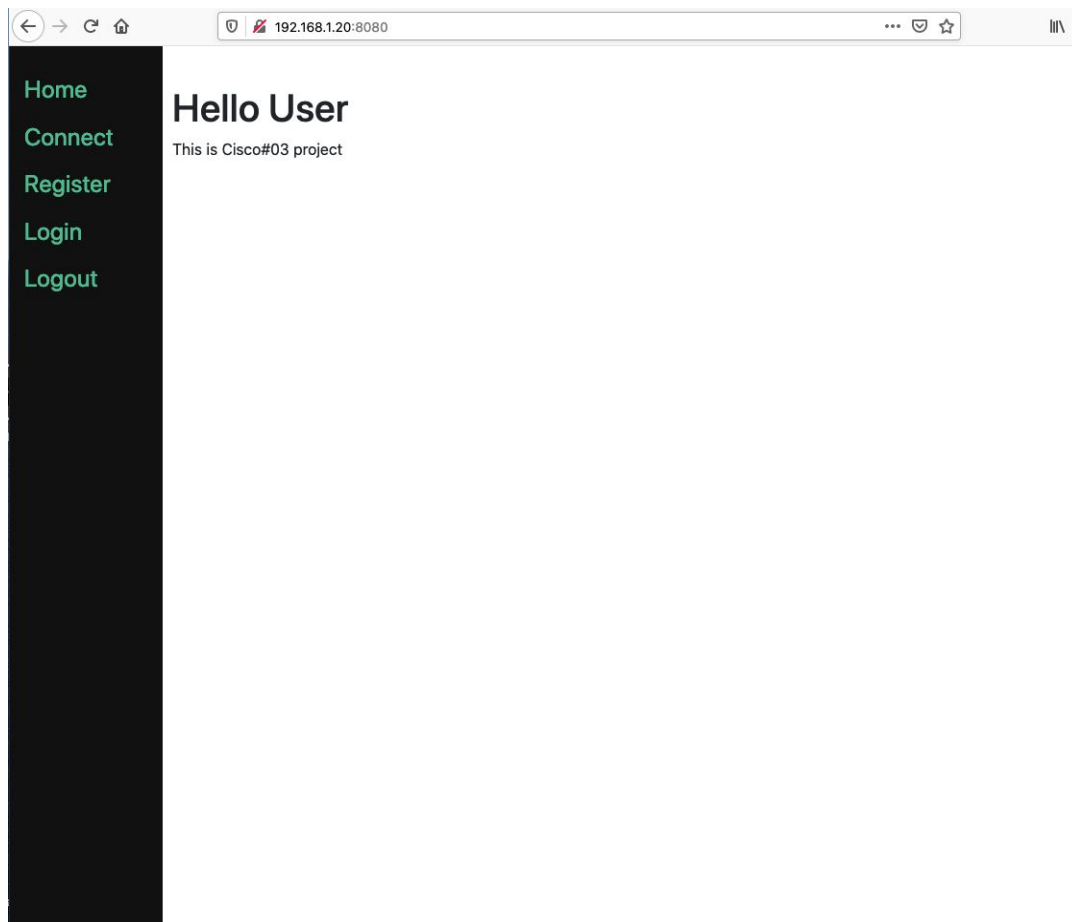
Application Installation

Server:

1. Run the command `wget https://github.com/NathanBlais/CSE-120-Cisco3/archive/main.zip`
2. Run the command `unzip main`
3. Run the command `chmod -R 755 CSE-120-Cisco3-main/`
4. Run the command `cd CSE-120-Cisco3-main`
5. Run the command `python3 manage.py runserver 0.0.0.0:8080`

The website should be working now

- To access it you need to put the <Your Pi's IP Address>:8080 into your Desktops internet browser
 - You should see the website look like this



Client

- There are different WireGuard clients available for different operating systems and platforms
- You will need to download the one you need from here:
<https://www.wireguard.com/install/>

Notes on Running the Application

- Here is the admin account used to initially sign in
 - username: cisco3
 - password: ciscoproject
- The code to transfer the clients config file was not fully implemented. So if you have issues you can manually retrieve the config in the `/etc/wireguard/client-conf/` directory.
- If you want to generate a QR code of the config file you run this command in the terminal
 - ``rencode -t ansiutf8 < /etc/wireguard/<client config you want>.conf``