

Establishing a Stable WiFi Connection on the BeagleBone via Network Bridging

Preface

Connecting to the WiFi network on an SFU campus can prove to be a difficult task. Before writing this guide, we (the authors) managed to establish a connection between a WiFi dongle and SFU-SECURE, but the connection wasn't stable. Disconnects and high latency issues were found. Setting up a connection through a router proved to be much more stable. This guide will show you how to setup an access point (via a router) using a laptop connected to SFU's WiFi connection. This process is known as Network Bridging.

Requirements

Hardware

- WiFi Dongle - Used the [Edimax EW-7811Un Wifi Dongle](#) in this guide.
- Router - Used the [TP Link Archer C7](#) in this guide
- BeagleBone
- Laptop with an ethernet port that is connected to SFU WiFi - Used [Lenovo Y50](#)
- Ethernet Cable (Category 5)

Software

- Network manager on the BeagleBone: `sudo apt-get install network-manager`

Steps

Hardware Setup

1. Connect the laptop to the Internet port of your router with the ethernet cable.

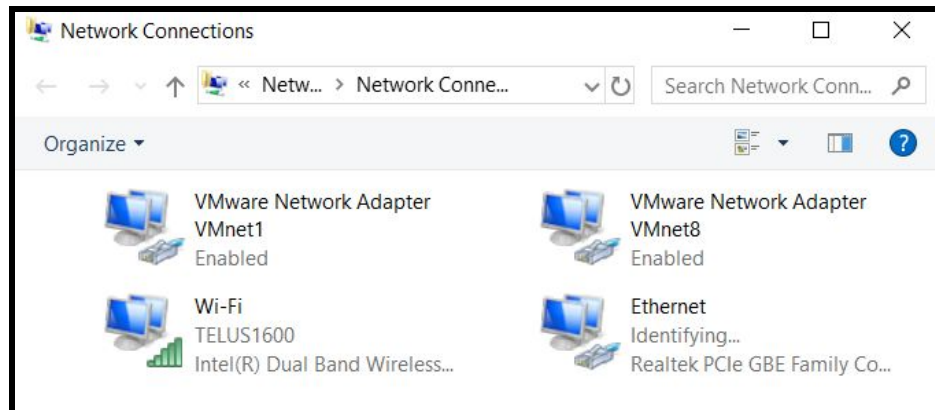


- a.
2. Plug in the WiFi dongle to the BeagleBone

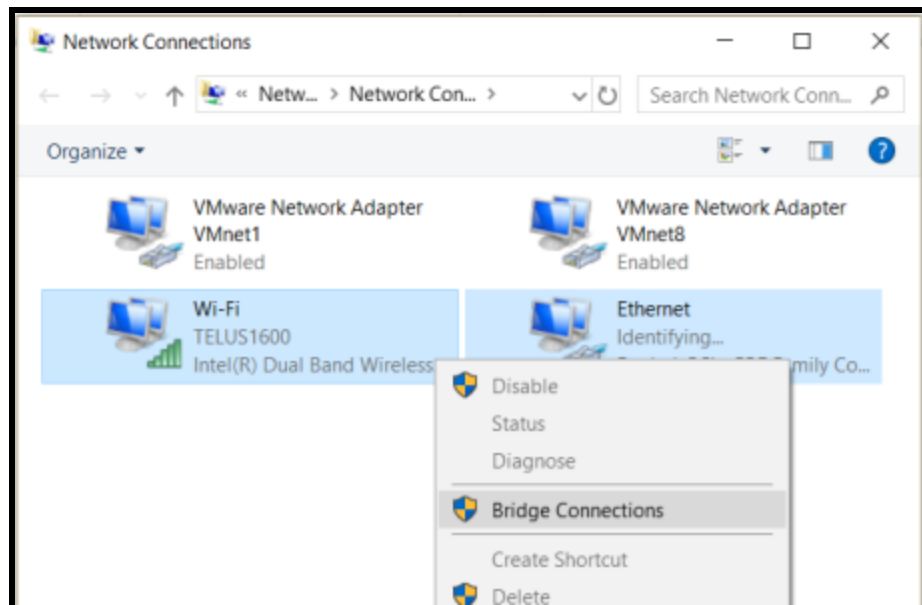
Software Setup

Laptop

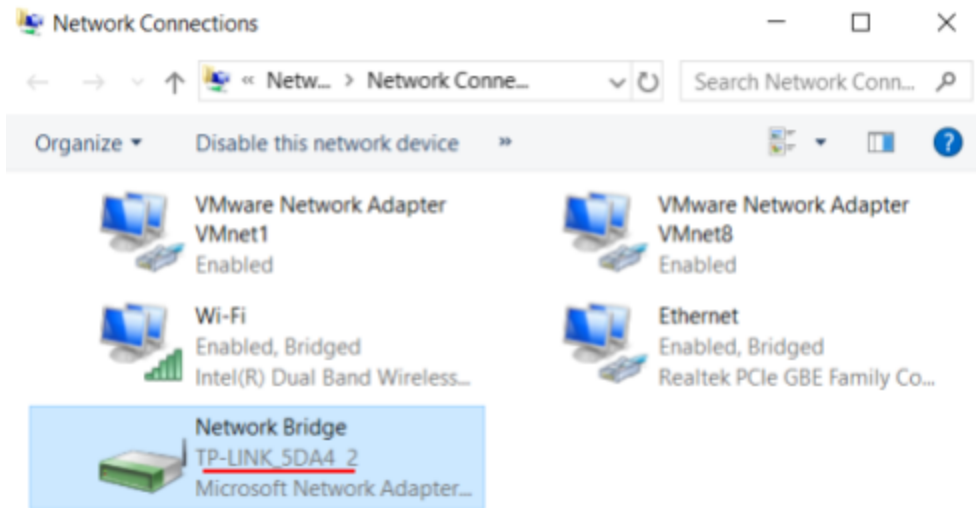
1. Go to the adapter settings page on Windows



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2. Highlight the Wi-Fi and Ethernet adapters, right click and click "Bridge Connections"



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3. Connect to the Access Point identified by the bridged connection



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BeagleBone

1. Make sure WiFi dongle is detected by the BeagleBone. Use `ifconfig` to check. `ifconfig` revealed the dongle as `wlan0`
 - Optional: `ifconfig wlan0 up` to activate the connection
2. Install `nmcli`, view Requirements section above.
3. Check that network manager installed by using the command `nmcli` in a terminal
4. Scan networks with: `nmcli dev wifi`
5. Connect to a network using
 - `nmcli dev wifi con "SSID" password "password"`
 - If a connection previous connection was already set up you use `nmcli con up "mySSID"` to switch to a different connection.
6. Connection should persist through reboots

Troubleshooting

- When bridging two adapters, the Network Bridge may be stuck on "Identifying...". If this is the case, try rebooting the router and deleting the Network Bridge. Then, re-do the bridging process.