

# Ethernet Smoothstepper Setup Guide

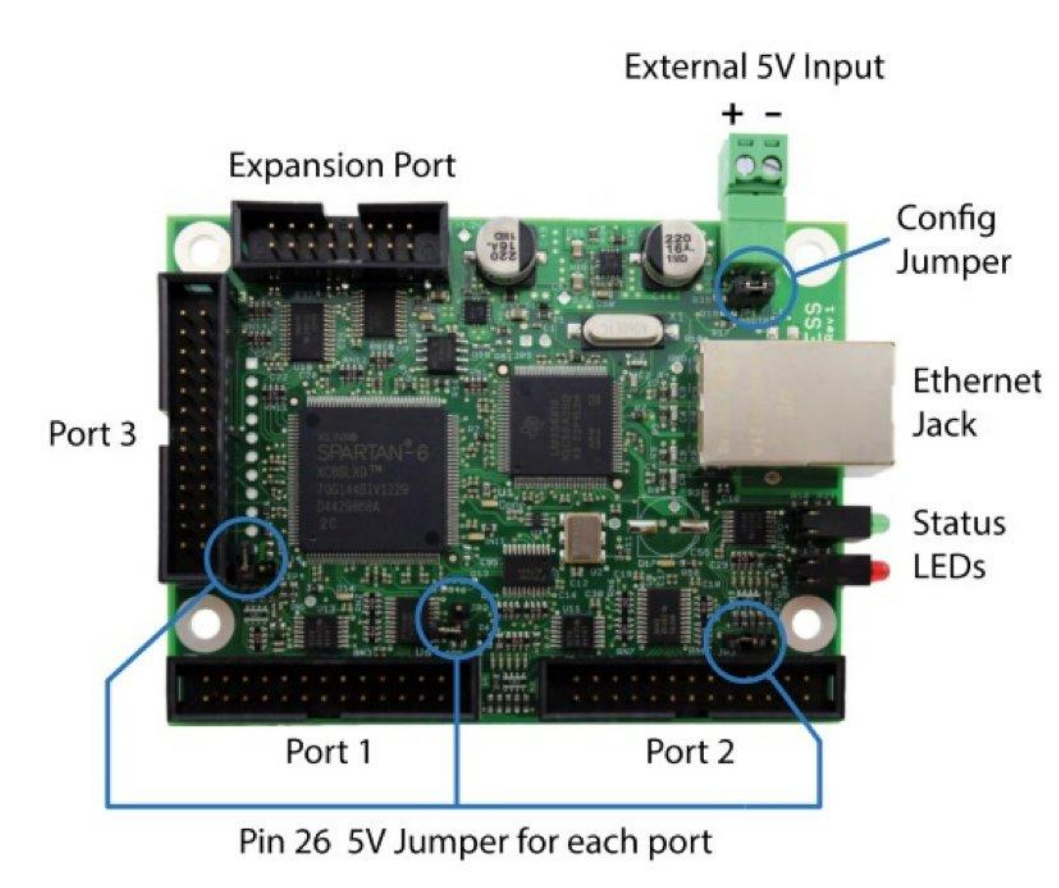
This guide provides step by step setup instructions for the Ethernet Smoothstepper (or ESS). Additional documentation can be found on the [Warp9 website](#) (the manufacturer of Smoothstepper), where their manual can be downloaded.

## 1. Installing Mach 3 and Pre-Configured XML File

Please install Mach 3 first before attempting the instructions in this guide.

## 2. Supplying power to the Smoothstepper and setting jumpers

The ESS requires 5V power to operate, and can receive it by one of two different methods (but not both!)



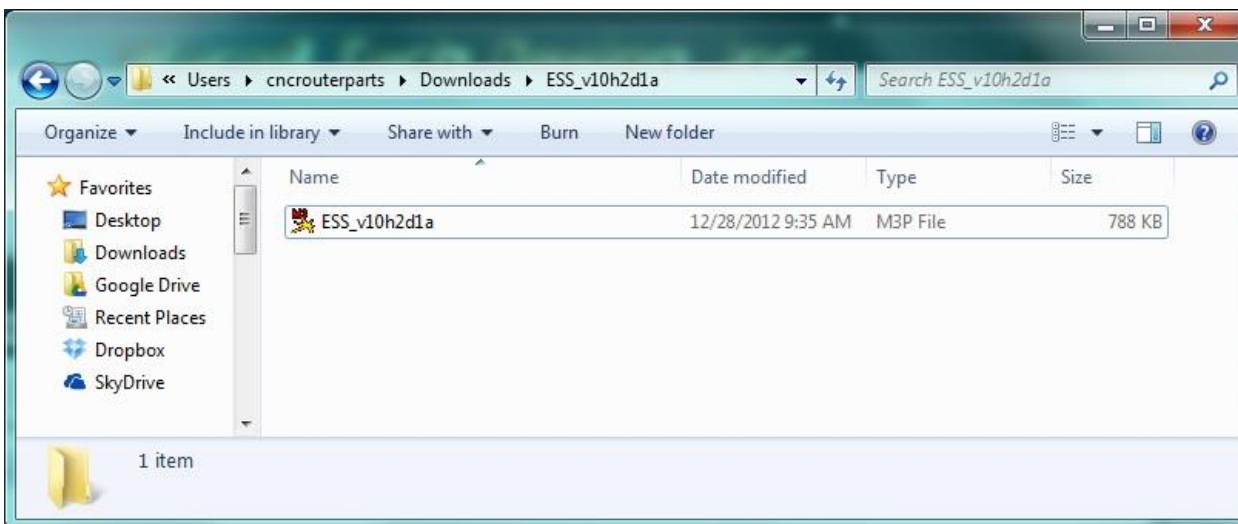
An external 5V power source needs to be connected to the green power terminals on the ESS. For G540 or other breakout board configurations, the Pin 26 5V Jumpers should be OFF for Ports 1, 2, and 3, and 5V should be supplied to the External 5V Input.

There are multiple ways you can power the 5V on the board -- a 5V wall supply, a small regulated power supply, or DIN Rail power supply.

**For all configurations, the Config Jumper should be OFF.** This jumper is only used for troubleshooting, and sets the board to BOOTP communication mode for communication with a utility program called the configurator when ON. In this mode, Mach3 is not able to communicate with the ESS. For all normal operations, this jumper should be OFF.

### 3. Install Ethernet Smoothstepper Plugin

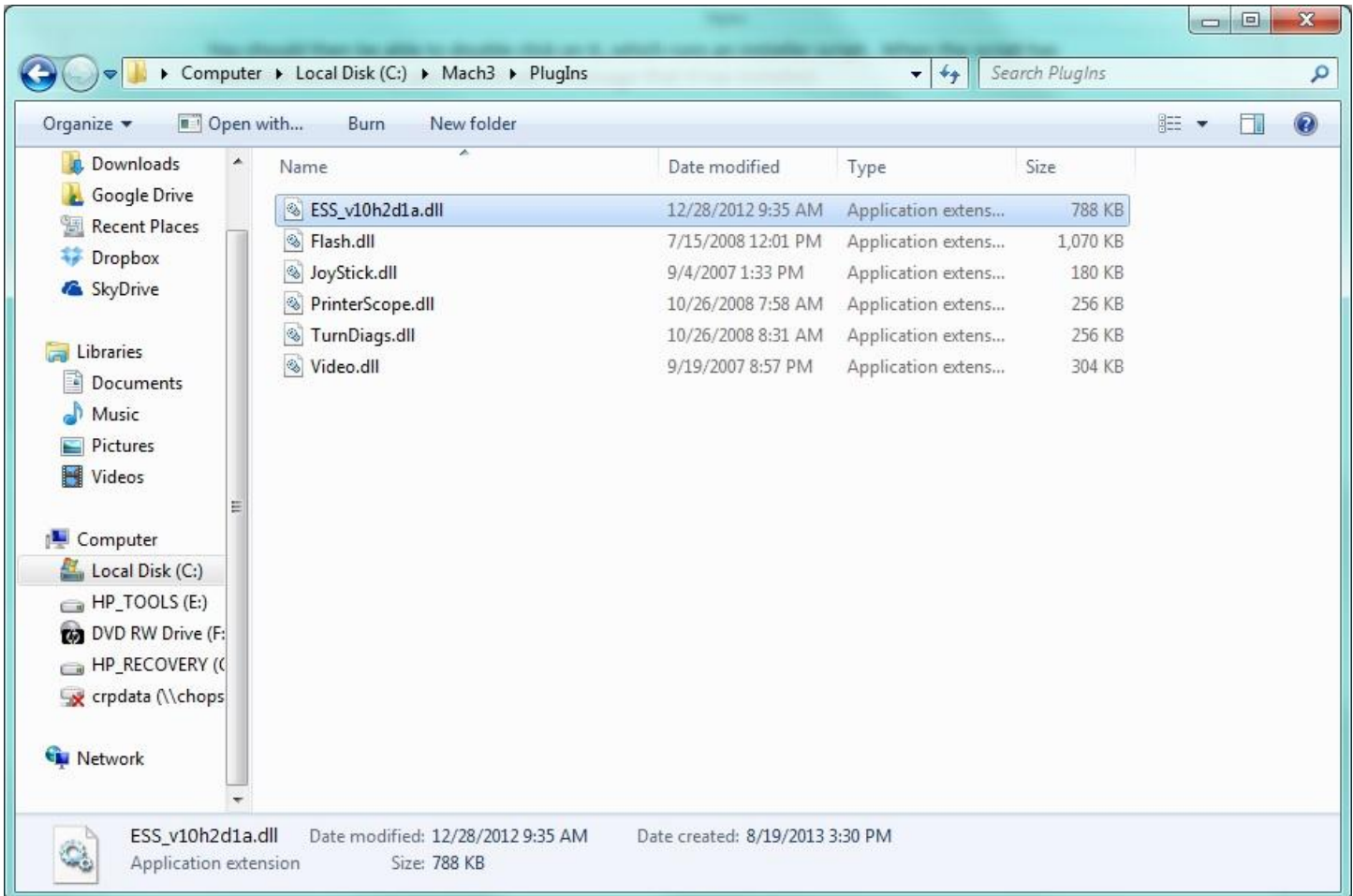
This plugin can be downloaded from [Warp9's website](#). You will need to unzip the file. Note, the instructions below show version v10h2d1a of the plugin, but we recommend installing the latest stable version of the plugin available from Warp9.



You should then be able to double click on it, which runs the installer. When the installer has executed successfully, you should see a message that it has installed:



This simply renames the file extension from “.m3p” to “.dll” and copies it to your C:\Mach3\Plugins folder. To verify success, you can check to see if the file is present in this folder:



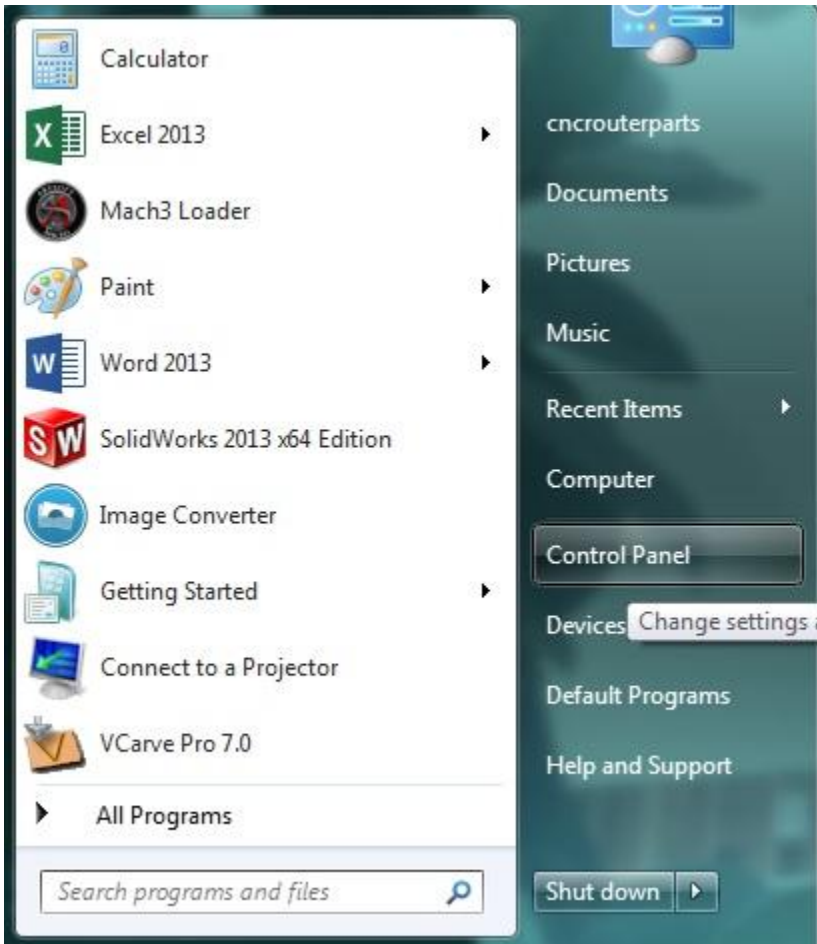
#### 4. Plug in Ethernet Cable

Your Ethernet cable should now be plugged in to both your PC and the Ethernet Smoothstepper.

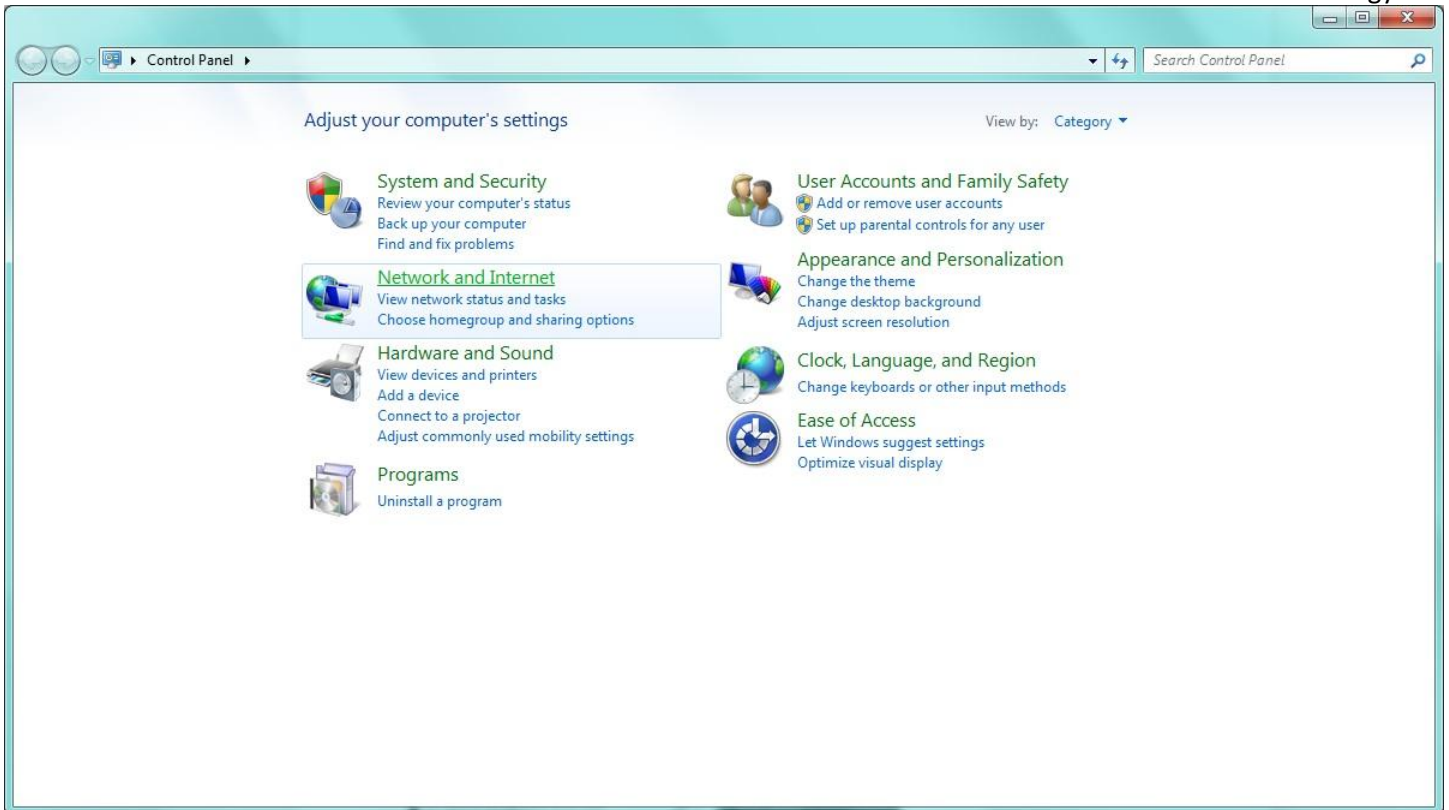
#### 5. Configuring your PC Ethernet Settings

The ESS communicates with your PC over the Ethernet port, so your PC needs to be set up to talk with it. Please note that the ESS should be connected directly to the PC port (not through a router or switch). This will disable wired LAN/internet connectivity on this port, so if you also require this connectivity, you will need a wireless adapter or another wired Ethernet card.

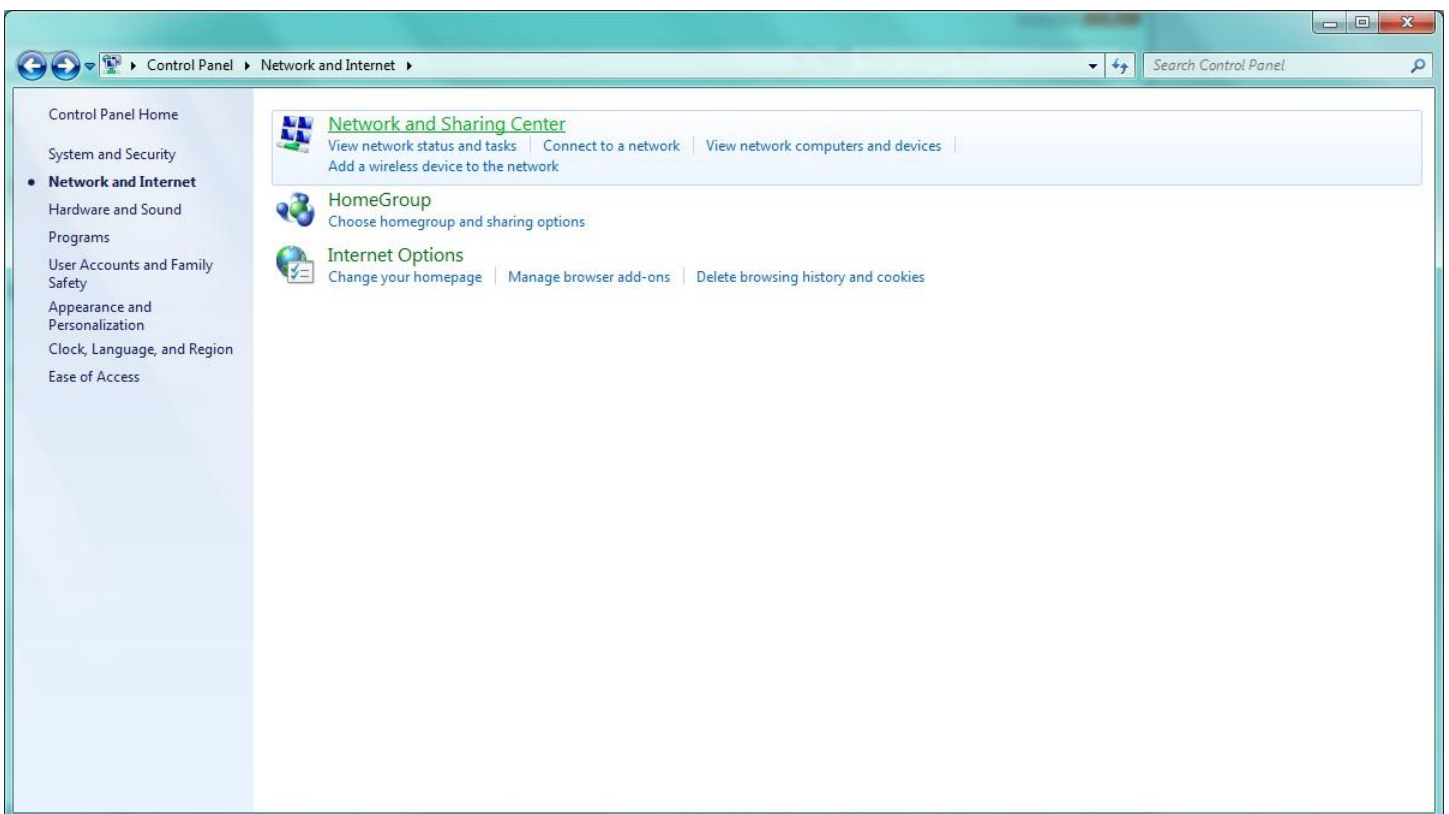
First, go to Control Panels from the Start or Windows menu:



Select "Network and Internet":

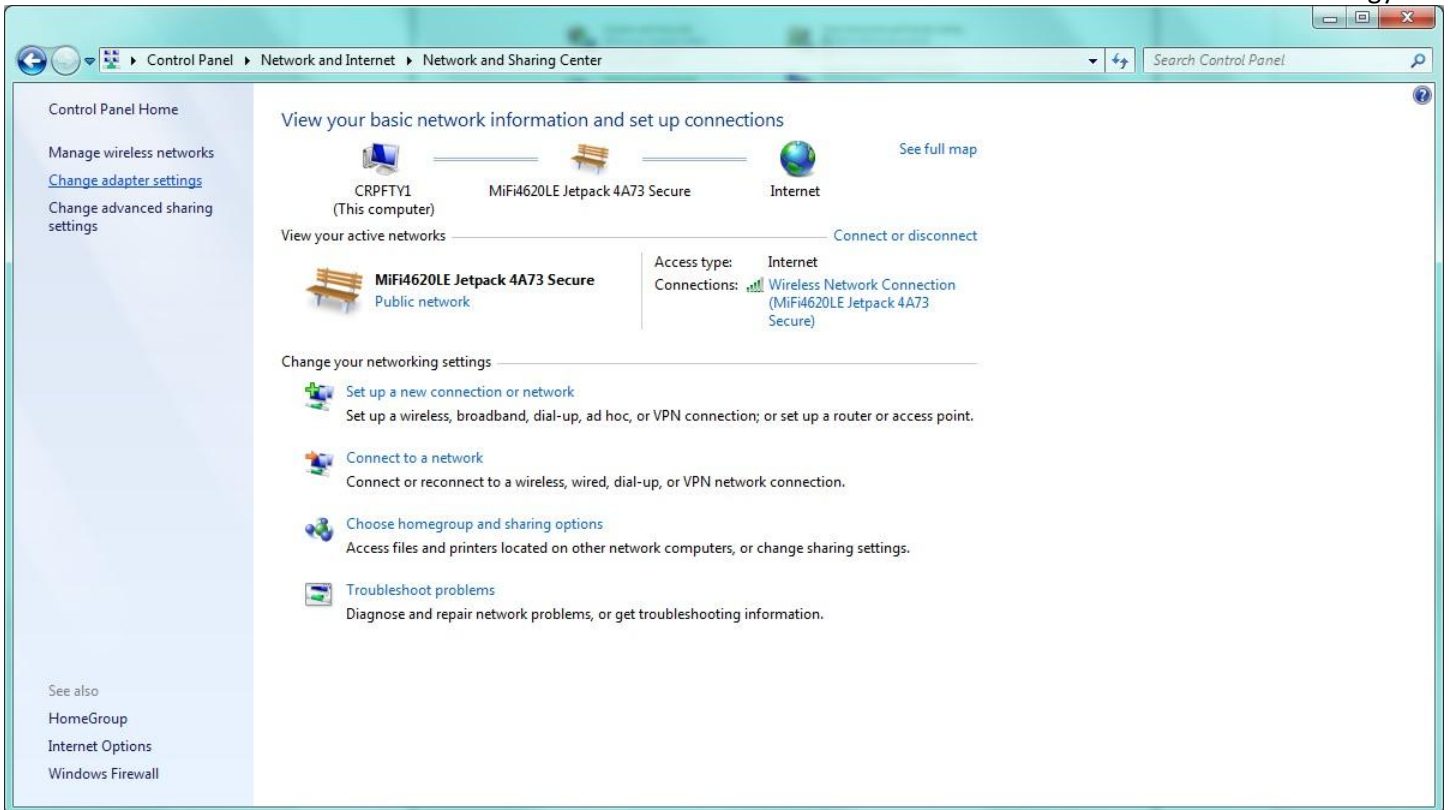


Select "Network and Sharing Center":

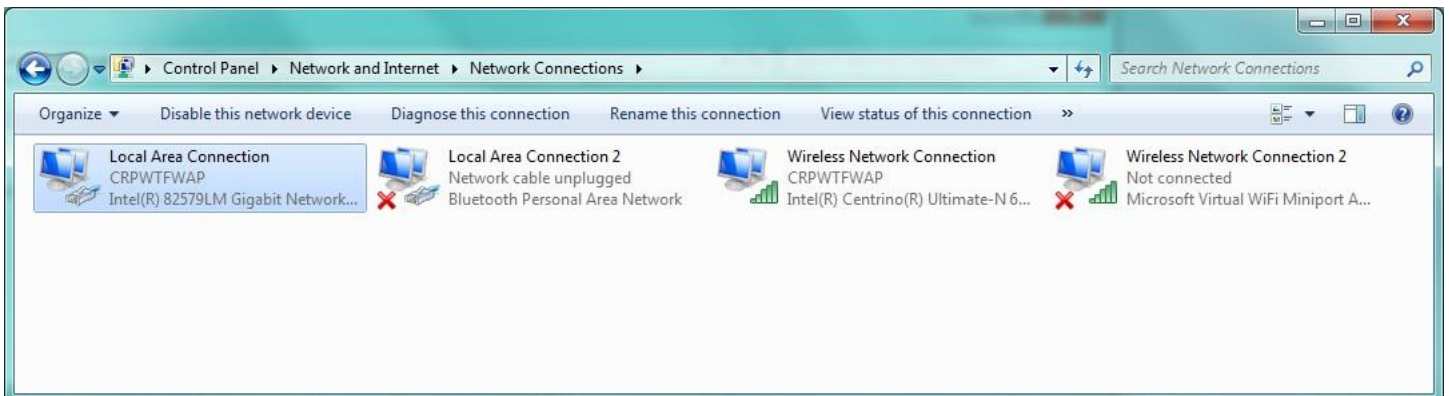


From the pane on the left side of the page, select "Change adapter settings":

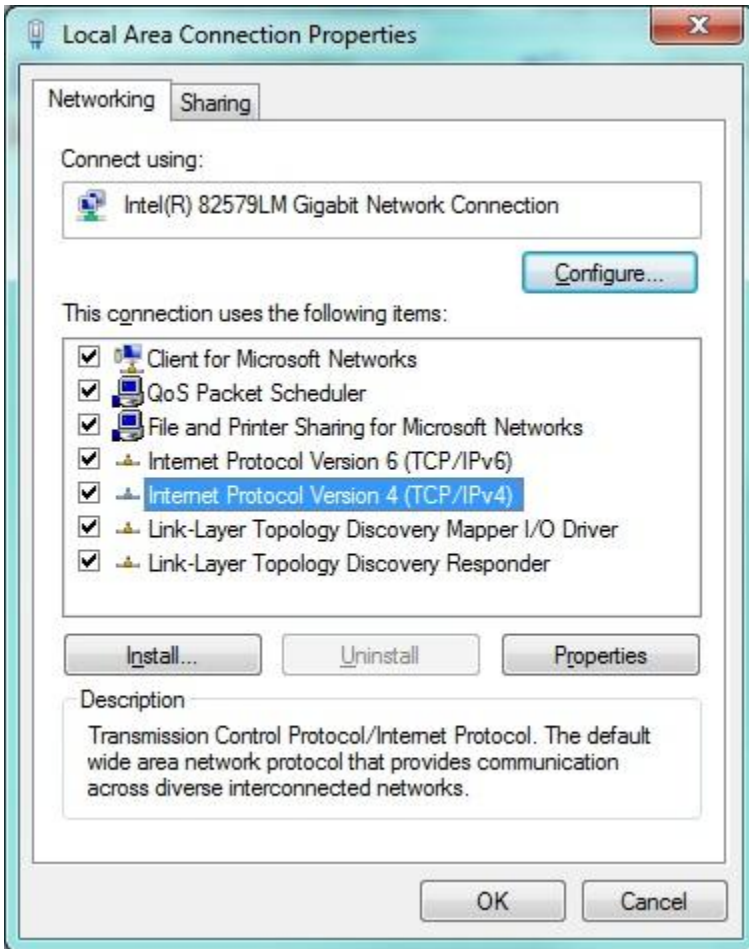




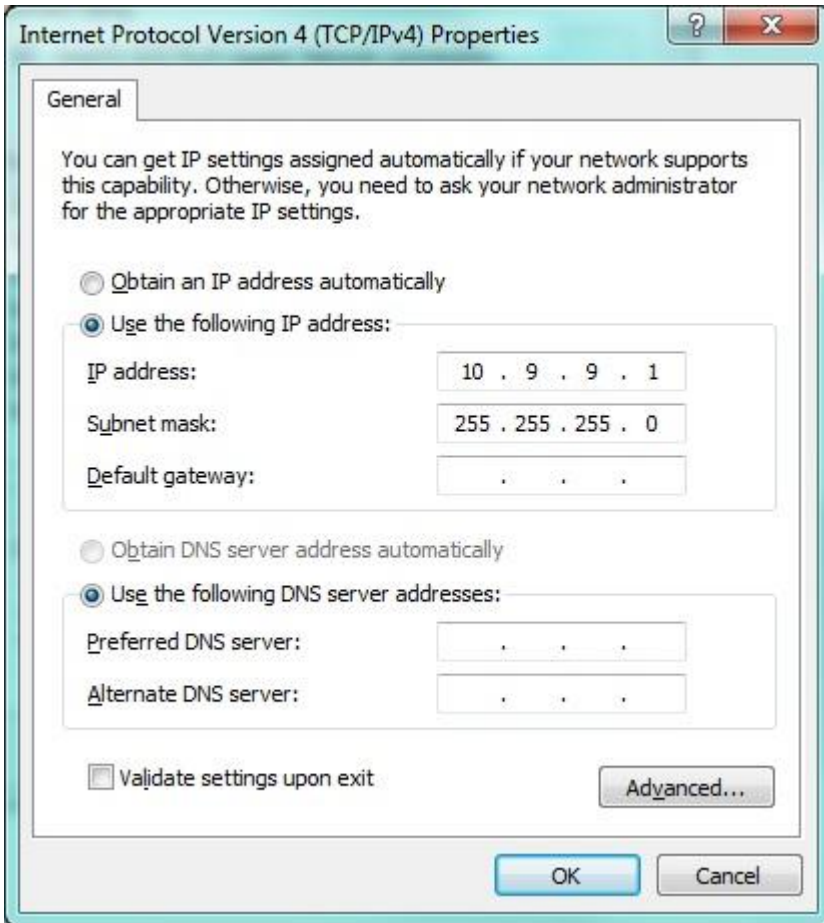
At this point, you may find you have multiple network adapters. Make sure to select the one that you have plugged into the ESS, and make sure that the adapter is enabled (does not have a red X next to it). Right click the icon and select "Properties".



You will then select "Internet Protocol Version 4 (TCP/IPv4)" from the list of options, and click the "Properties" button.



Select the “Use the following IP address” button, and then configure the settings as shown below. IP Address should be 10.9.9.1, subnet mask should be 255.255.255.0:

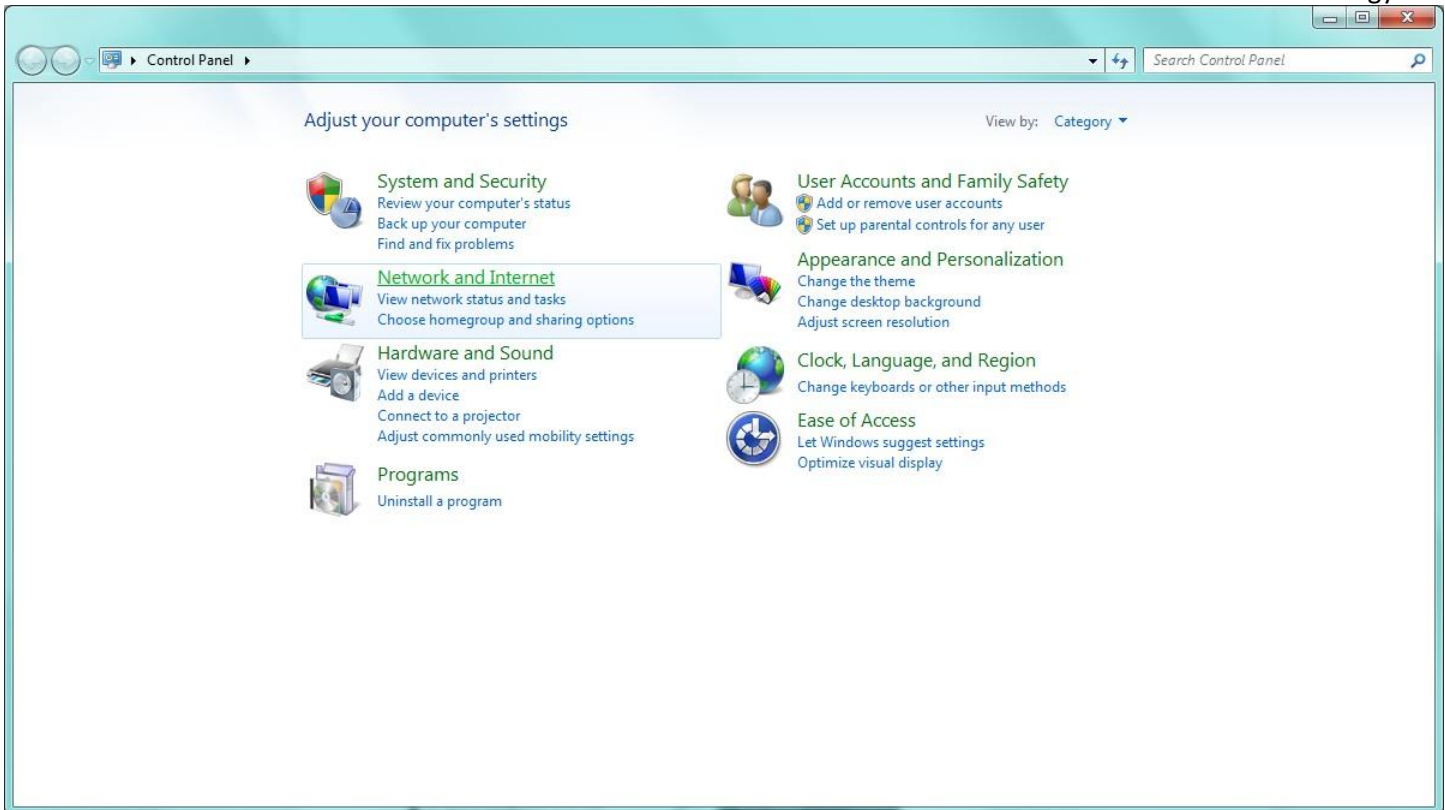


Exit back to the Control Panel main screen.

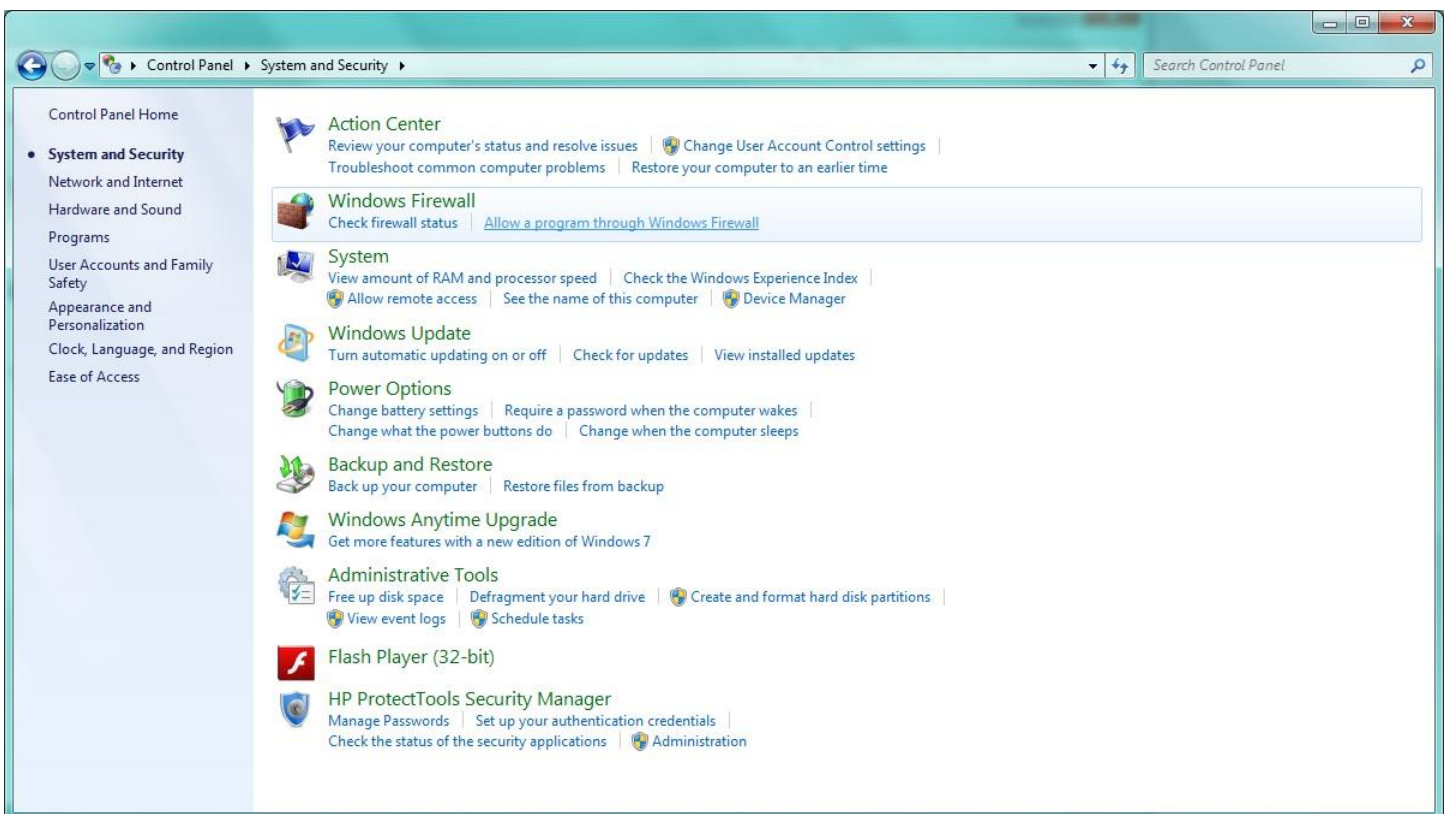
## 6. Allowing Firewall Access for Mach / ESS

Once back to the Control Panel main screen, click on "System and Security"

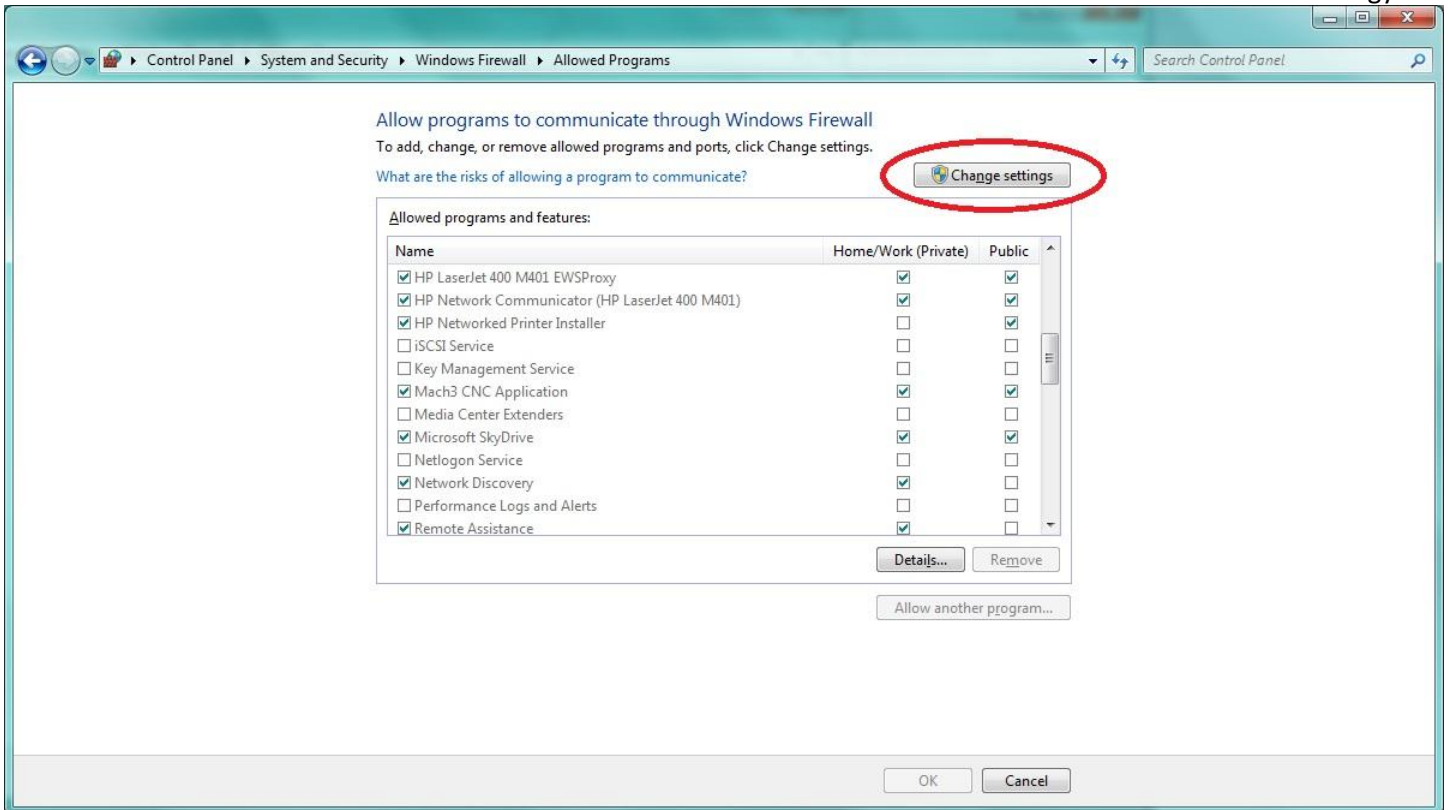




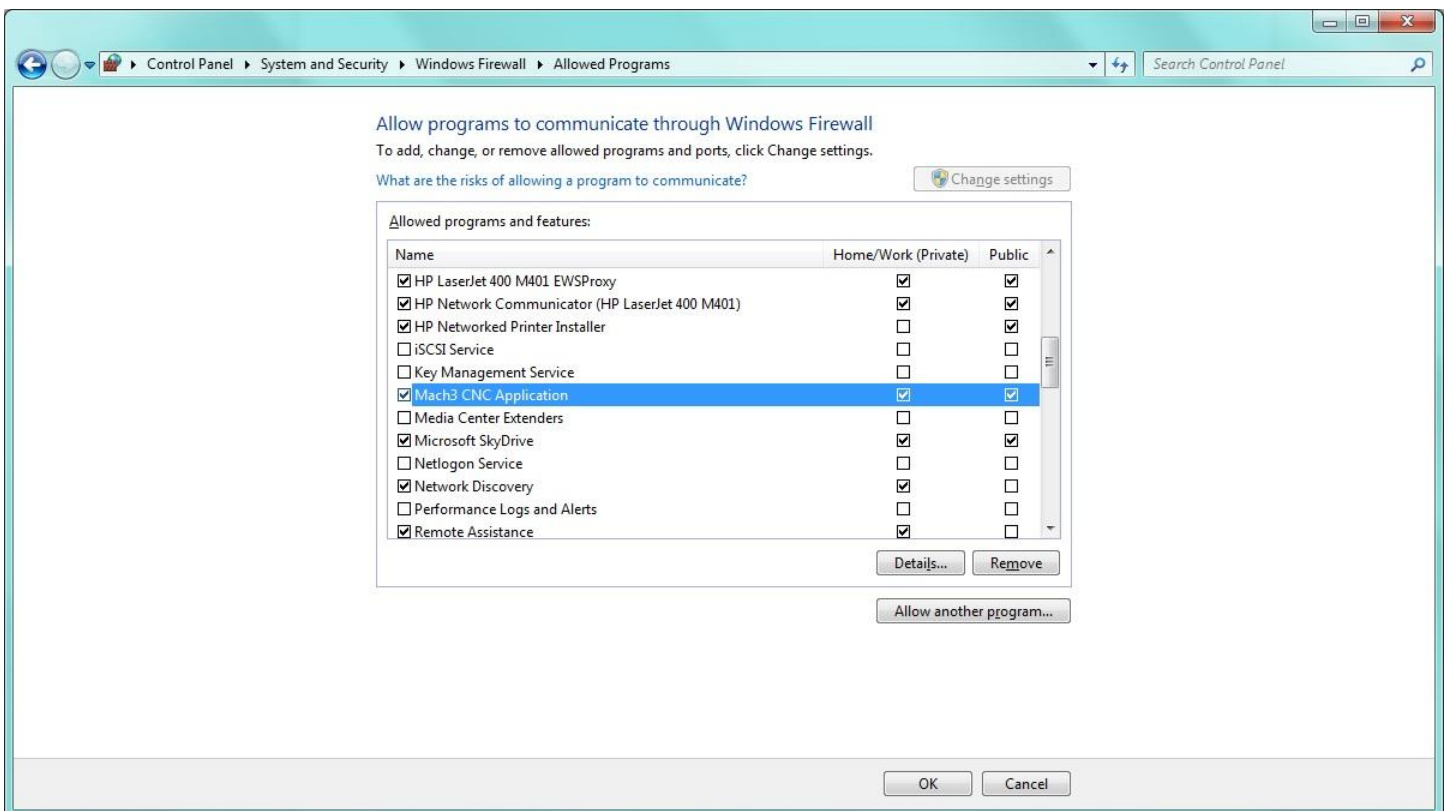
At the next page, under "Windows Firewall", click on the "Allow a program through Windows Firewall":



You will then need to click on the "Change Settings" button in order to allow programs through the firewall:



After you select this, scroll down in the list until you find either “Mach3 CNC Application” or “Mach3 Loader” (depends on version of Mach and plugin). For either of these, check the box to the left of the program, then make sure there is a check in the boxes for both Home/Work (Private) and Public. The ESS sometimes makes use of either type of network, so needs to be allowed through on both:



## 7. Launch Mach 3 from the Loader

Launch Mach 3 by double clicking the Mach 3 Loader icon on your desktop.

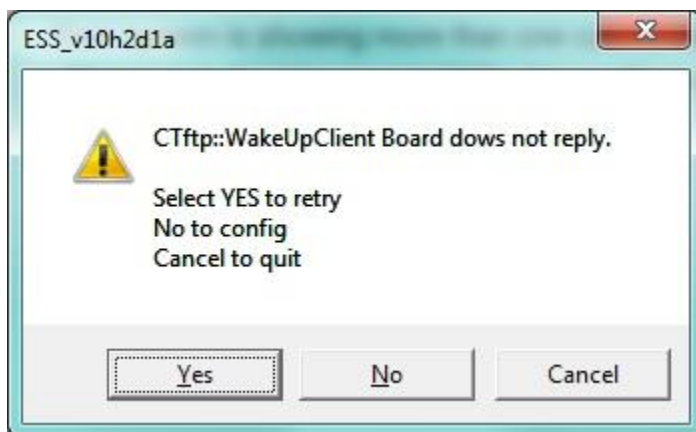
Select the profile you have setup for your machine.

#### 8. Configure IP Address for Smoothstepper to 10.9.9.9

Once Mach opens, you will be given the chance to select what interface to use. Select the ESS interface. We recommend leaving the “Don’t ask me this again” checkbox unchecked until you have everything confirmed and working.



You will then likely be greeted with the following error message:



Click “No” to config, which will bring up the following screen with 0.0.0.0 set for the SmoothStepper Board IP Address. Change this IP Address to 10.9.9.9 (the default IP address of the ESS):

Dialog

SmoothStepper Board IP Address:

Board Nickname:

MAC Address of PC Ethernet Adapter Currently In Use:


MAC Address of SmoothStepper Board:

OK

Cancel

If everything is configured correctly, you should see the following page:

ESS\_v10h2d1a

 One or more initialization values were either not found or were invalid in the XML File.

This is normal if this is the first time you have run the Ethernet SmoothStepper, or you are using a new plugin that has added features that require changes to the XML. Another possible reason is that Mach3 Software did not exit properly the last time, and the values that were set were not saved.

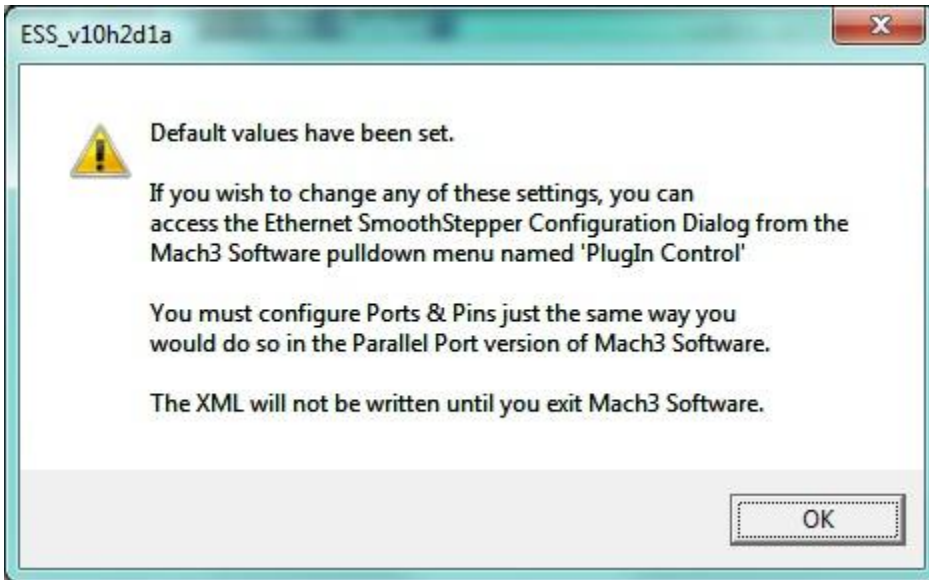
The software reports the following tags were not defined:

- Controller Frequency Undefined.
- Max Step Frequency not defined for X, Y, Z, A, B, C, S axes.
- Port 2 Direction not defined.
- Port 3 Direction not defined.
- Output Mode (Step & Direction / Quadrature) for axis X not defined.
- Output Mode (Step & Direction / Quadrature) for axis Y not defined.
- Output Mode (Step & Direction / Quadrature) for axis Z not defined.
- Output Mode (Step & Direction / Quadrature) for axis A not defined.
- Output Mode (Step & Direction / Quadrature) for axis B not defined.
- Output Mode (Step & Direction / Quadrature) for axis C not defined.
- Spindle Mode not defined.

Do you want to use default values for these undefined parameters?  
(if you don't, please run the Ethernet SmoothStepper Config right away)

Yes No

Select "Yes" – some of these values can be edited later if necessary, but in general the default values work quite well. You should then see the following menu:



Hit OK to dismiss this message.

### 9. Save settings and shut down Mach

To save settings, simply select "Save Settings" from the "Config" menu. You can then exit Mach by selecting "Exit" from the "File" menu. This will complete your installation. The ESS settings are now saved in your XML profile, so the next time you launch Mach through the loader, it should connect automatically.