



Mach4 Software Setup Guide

Version 2019Q3.3

This guide provides step-by-step instructions for installing the Mach4 CNC Control Software and configuring your PC for use with an Avid CNC machine or electronics system.

1. Download and Install Mach4

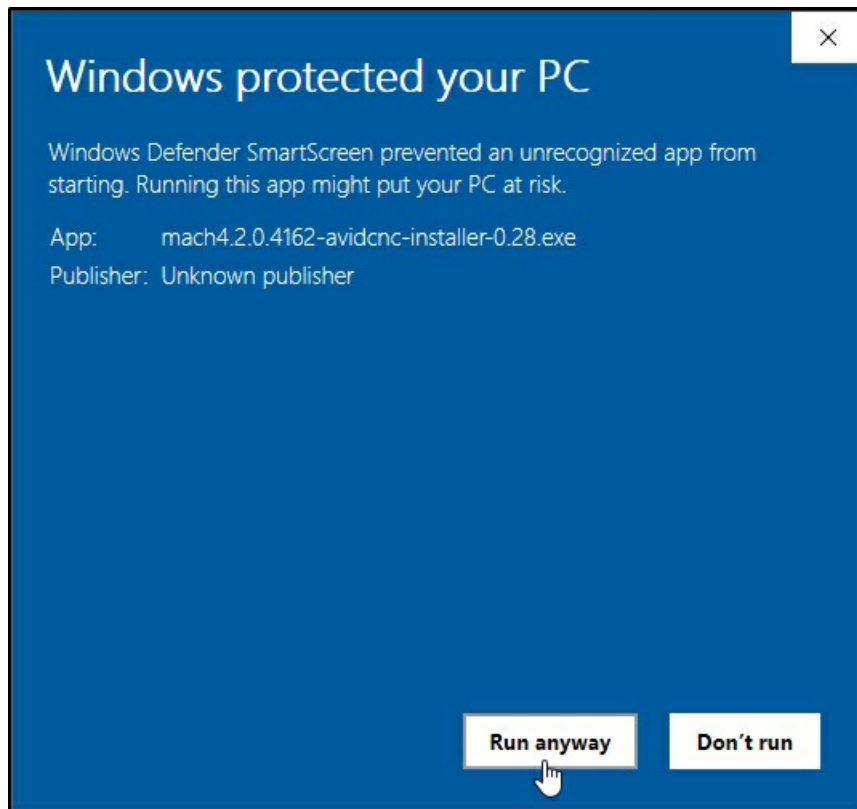
- Download and install the **Avid CNC Mach4 installer**. (www.avidcnc.com/support/software/downloads/mach4)

i Installation Note

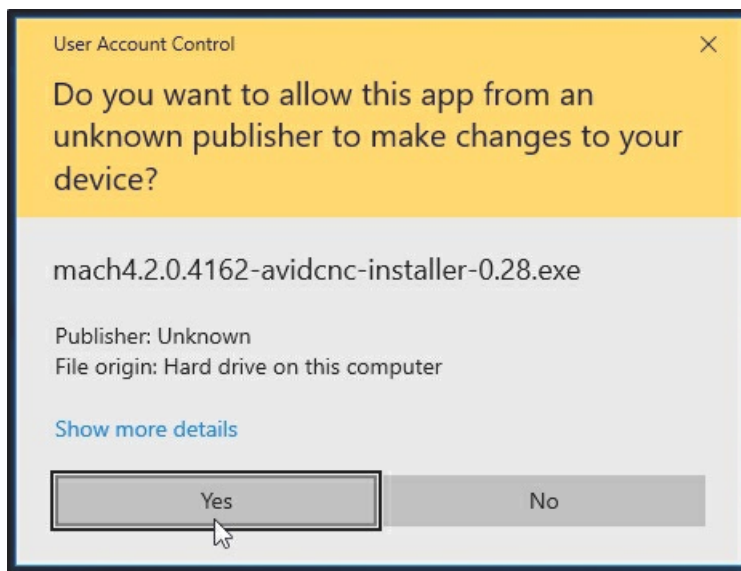
Our installer provides the correct version of Mach4, customized for use with any of our CNC machines or electronics systems.



- When installing Mach4, if the warning message pictured above appears, click "**More info**".



- Verify you are installing the Avid CNC Mach4 installer and click "**Run anyway**".



- Windows will ask if you want to make changes to your computer. Click "**Yes**" to run the installer.
- Complete the install by following the prompts on the screen.

2. Plug in Ethernet Cable

- Plug in your Ethernet cable directly from your PC to the ethernet connection on your Plug and Play Electronics control box.
- Power on your Plug and Play Electronics control box.

3. Configure PC Settings

The Ethernet SmoothStepper SCU (System Configuration Utility) is the quickest and easiest method to perform the basic configuration step to connect your computer with the SmoothStepper and CNC electronics. Follow the instructions below to run the SCU application.

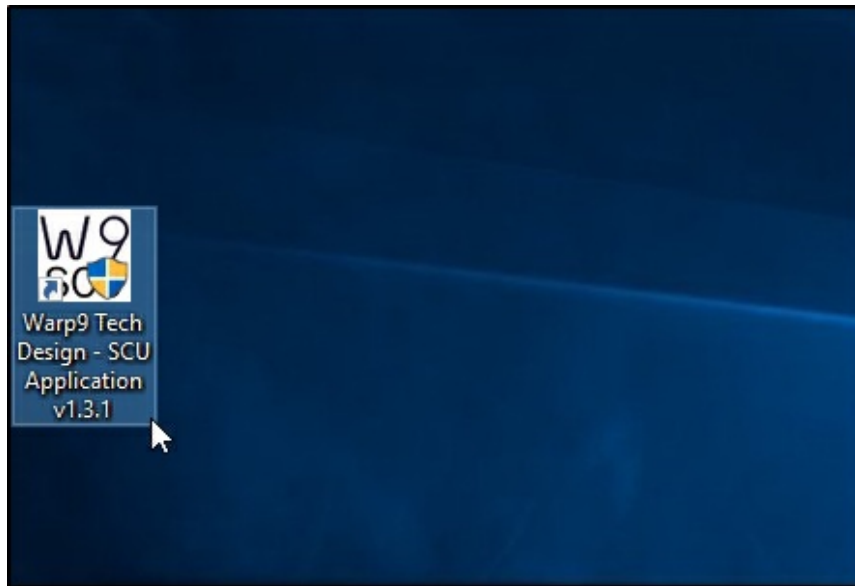
i PC Configuration Note

It is recommended for the only network connection to be the Ethernet cable from your Plug and Play Electronics connected to your PC. This will make it easier to identify the network this Ethernet cable is connected to. If using a laptop, it is ok to use a wireless connection for internet access during this process.

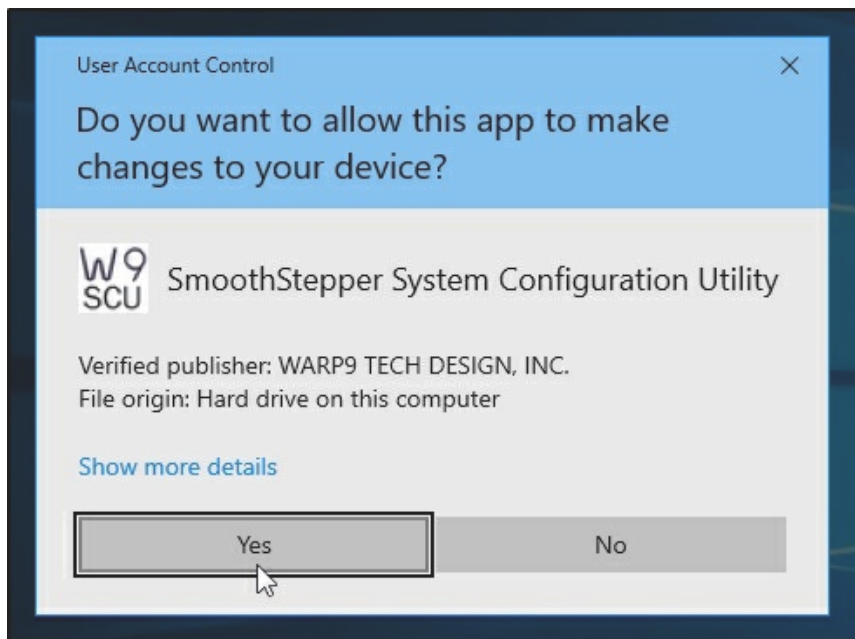
i PC Configuration Note

If you are upgrading from Mach3 and have previously ran the SCU application, it is not necessary to repeat this step.

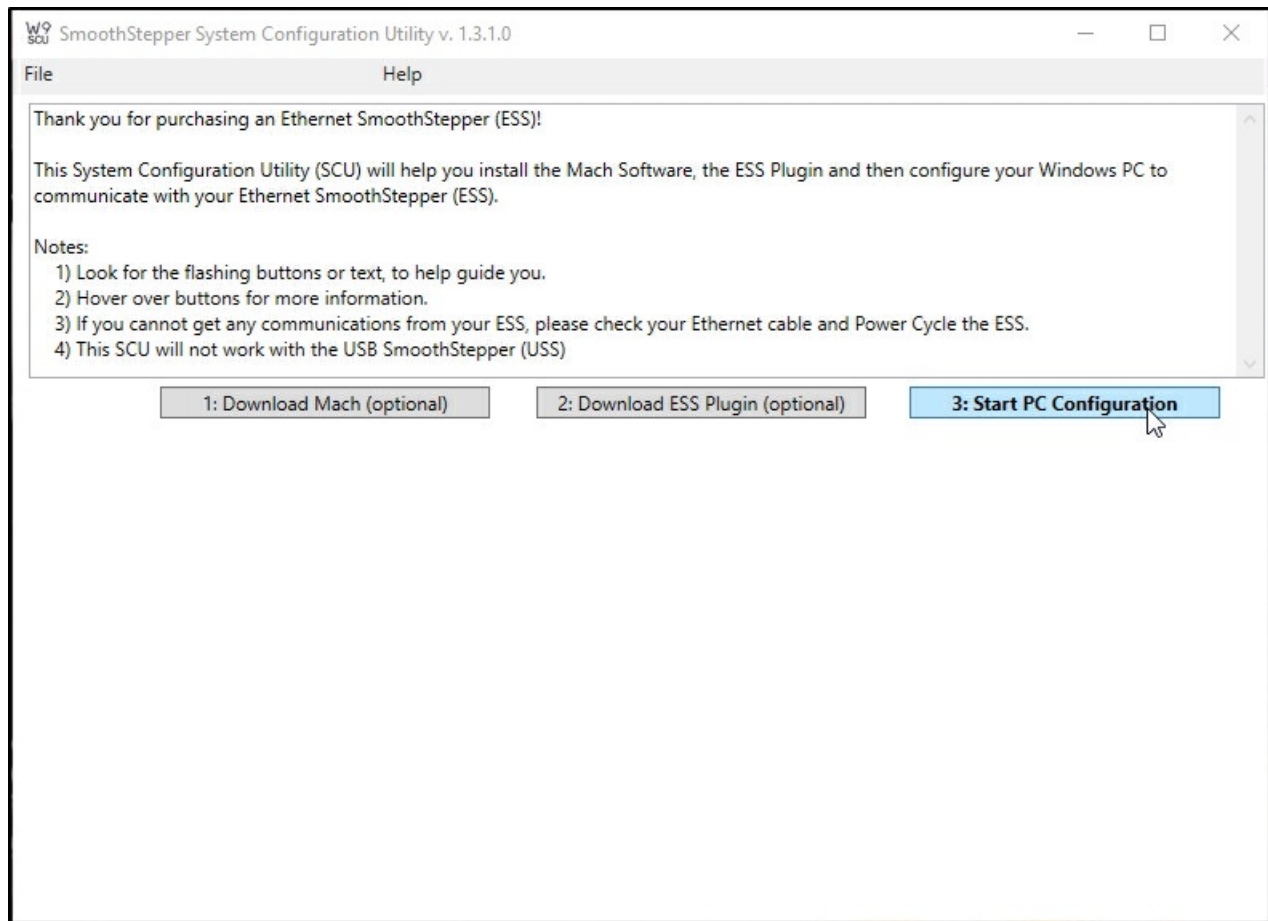




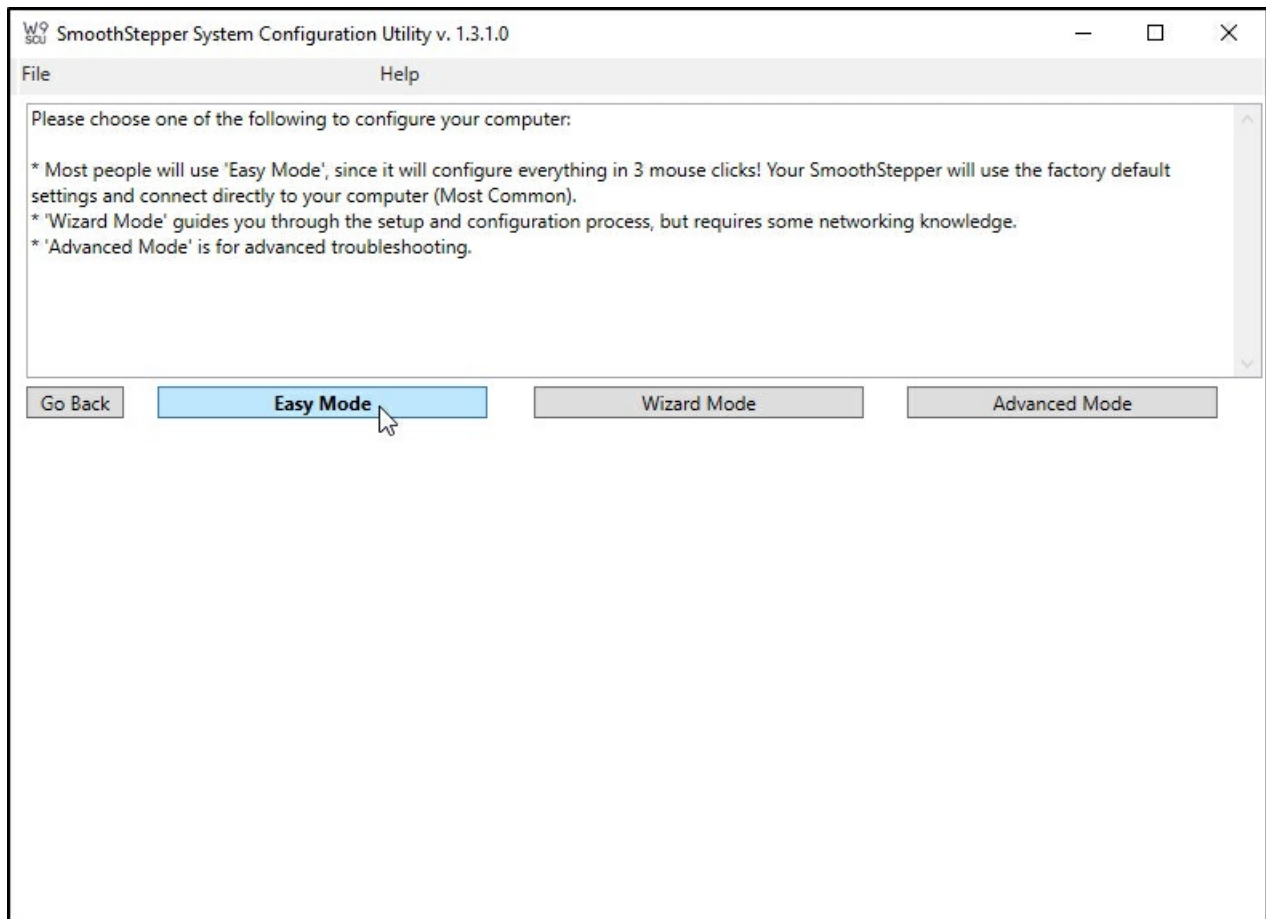
- Double click the "Warp9 Tech Design - SCU Application" icon on your desktop to start the SCU application. (This is installed when you run the Avid CNC Mach4 Installer)



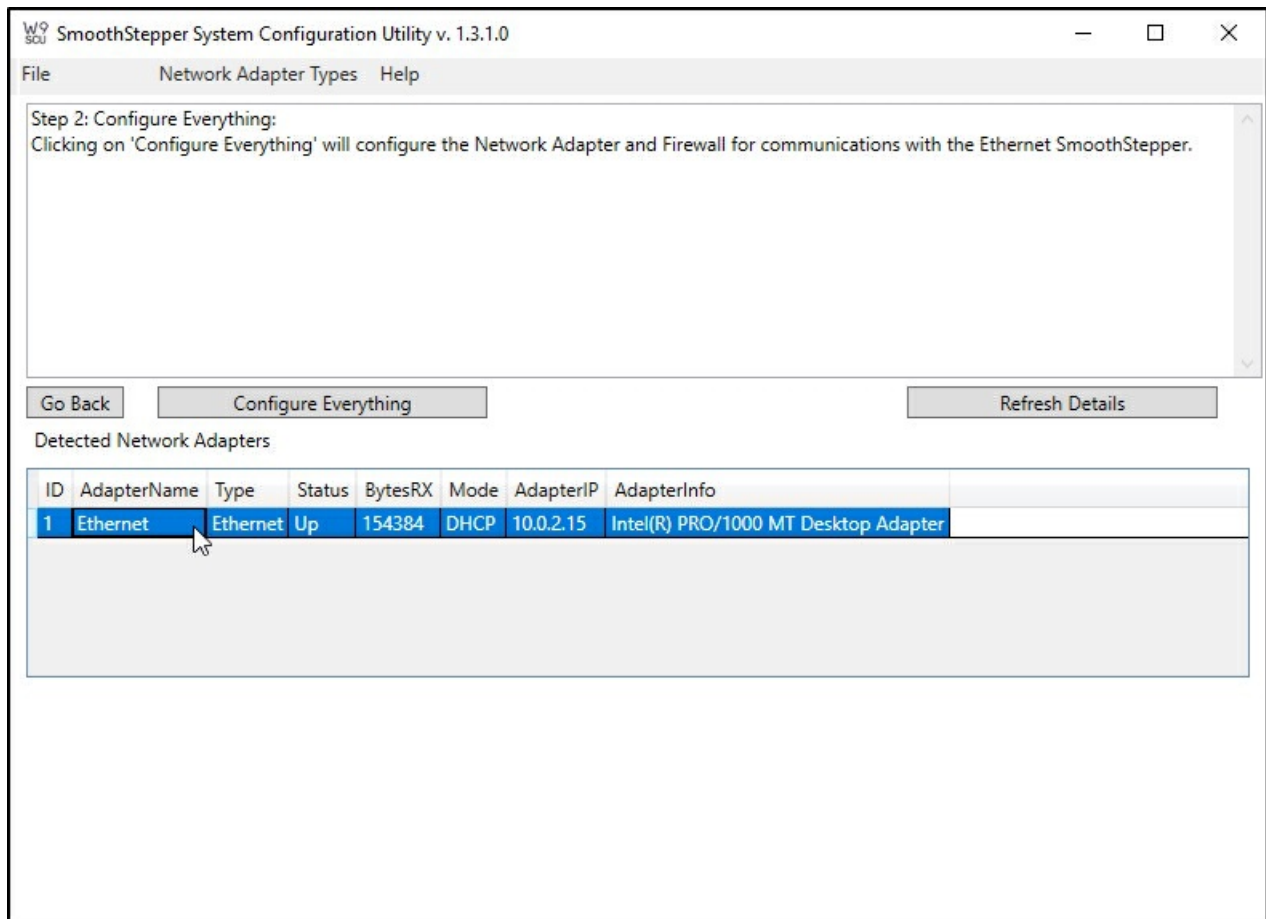
- Click "**Yes**" to allow the SCU to make changes to your computer. The application will modify your Firewall settings to allow Mach4 through, along with changing network adapter settings so it can talk to the Ethernet SmoothStepper (ESS).



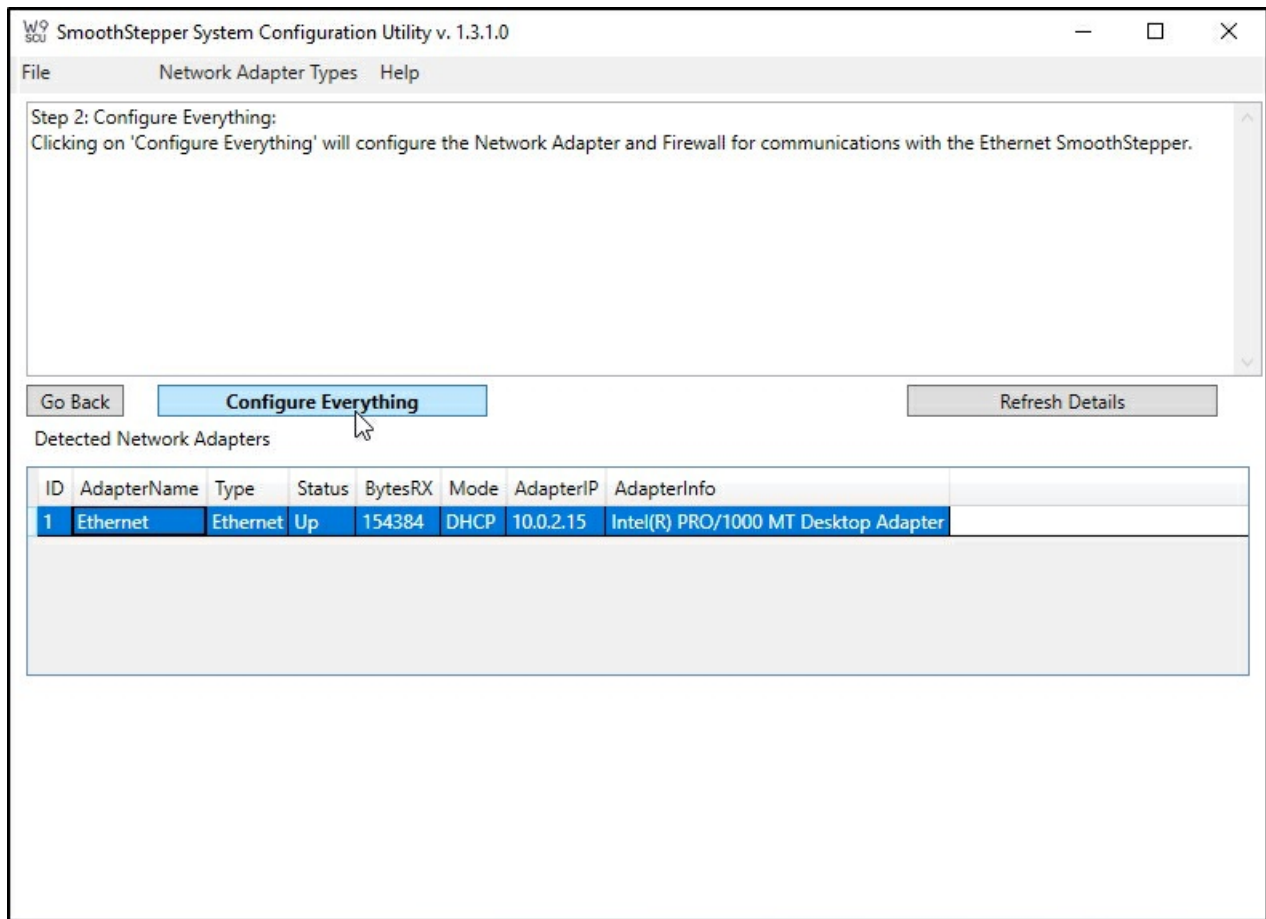
- On the Start Screen, click the "**3: Start PC Configuration**" button. This will let you start configuring your PC.



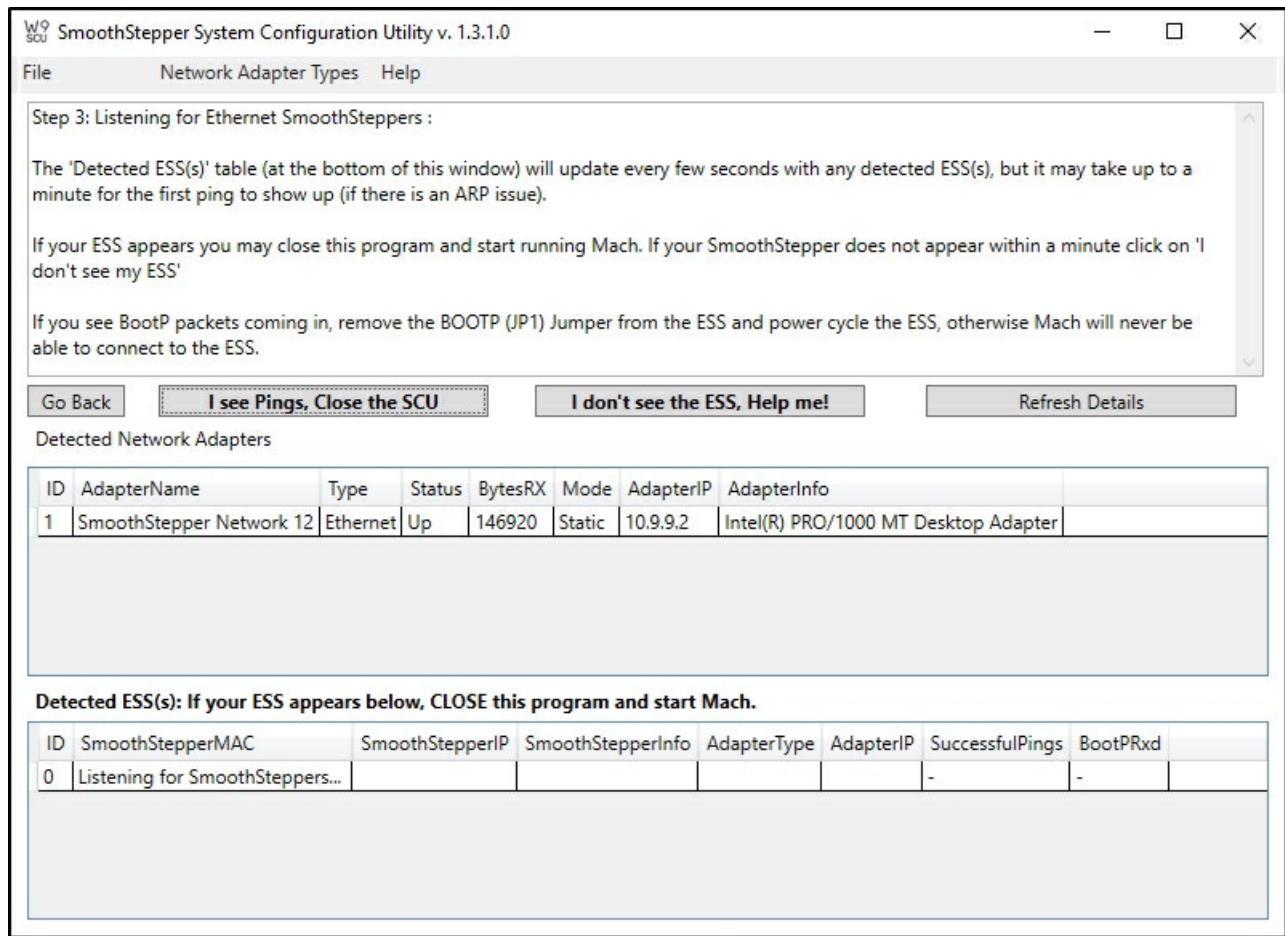
- On the next screen, click the "**Easy Mode**" button and it will guide you through the configuration process.



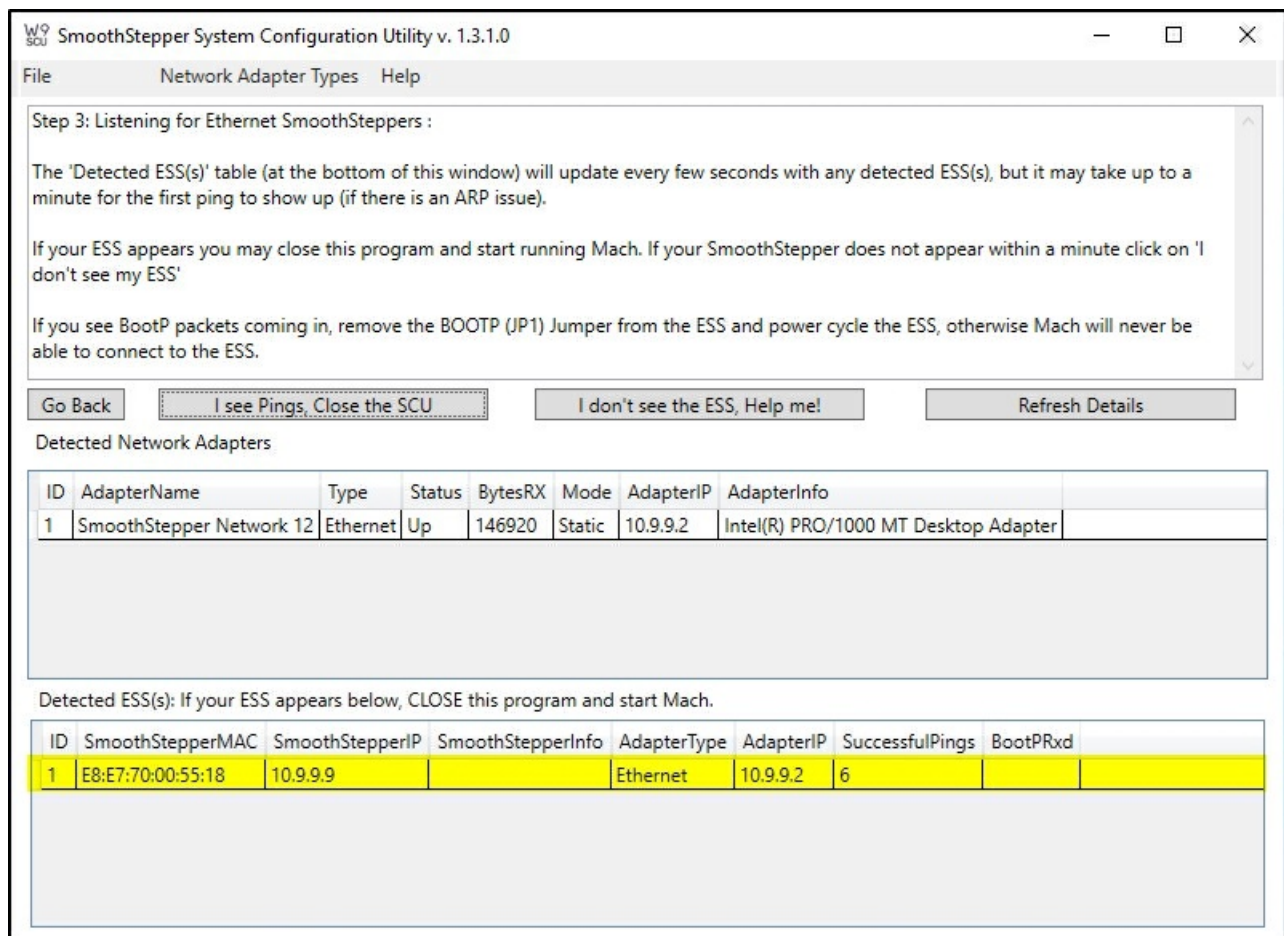
- On the next screen you will see a list of network adapters. Click on the Ethernet network adapter that your ESS is connected to.



- Click the "**Configure Everything**" button. This will configure Window's Firewall rules to let Mach4 through and modify that network adapter to communicate with the ESS in your Plug and Play Electronics control box.



- On the next screen you will see "**Detected ESSs: If your ESS appears below, CLOSE this program and start Mach.**" blinking. In the table below, if you see "Listening for SmoothSteppers", we have not found the ESS yet. Make sure your Plug and Play Electronics control box is powered on and connected with the Ethernet cable to your PC.



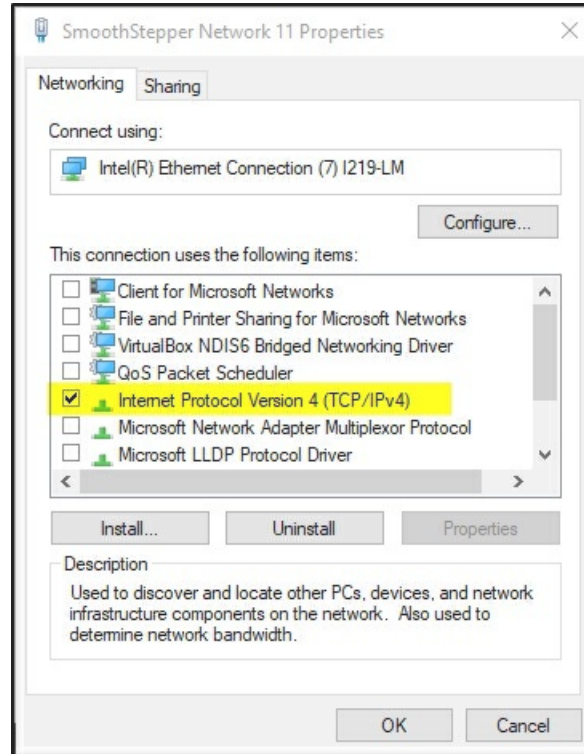
- If on the screen where you see "**Detected ESSs: If your ESS appears below, CLOSE this program and start Mach.**" blinking, a SmoothStepper has "Successful Pings" incrementing, that means the ESS in your control box has been found. You can now close this program.

If the SCU does not see any "Successful Pings" from the SmoothStepper and have verified your control box is powered on with the Ethernet cable connected to your PC, you can find additional trouble shooting tips on [Warp9td's](http://www.warp9td.com/index.php/documentation/doc-scu#TroubleShooting) website. (www.warp9td.com/index.php/documentation/doc-scu#TroubleShooting)

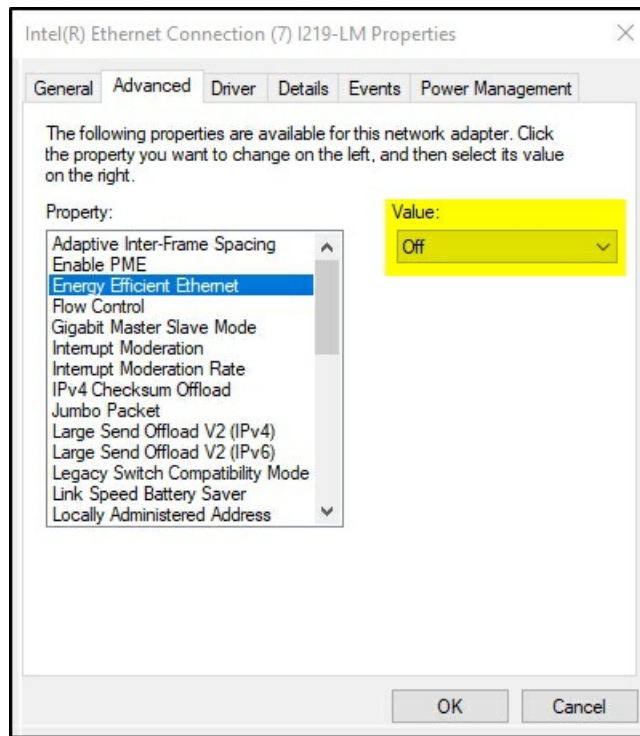
4. Additional PC Configuration

The Ethernet SmoothStepper solves, or greatly reduces, most potential Windows-related communication issues by providing a dedicated real-time DSP (digital signal processor) to handle the precise timing of step and direction signals to your CNC electronics.

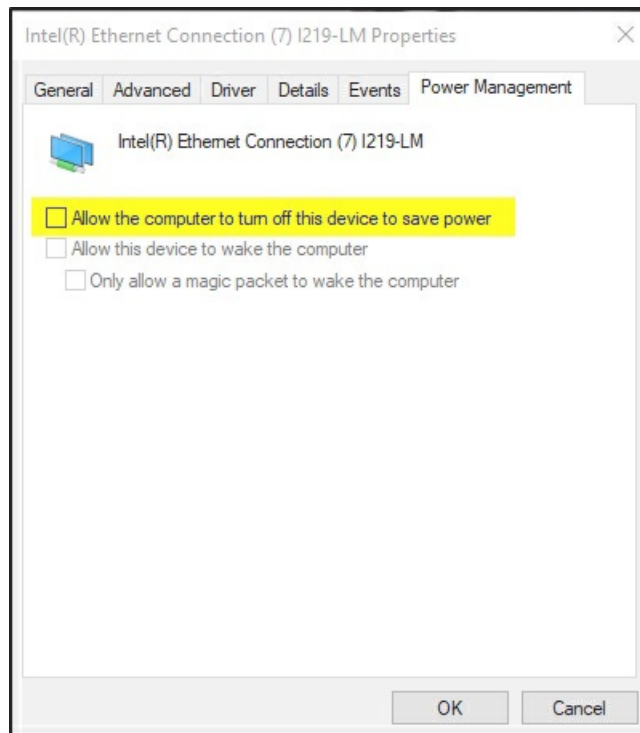
Following these additional Windows configuration steps will help to create the most stable environment for Mach4 and further reduce the opportunity for other processes to create delays or otherwise interfere with smooth and uninterrupted communication from Mach4 to the SmoothStepper:



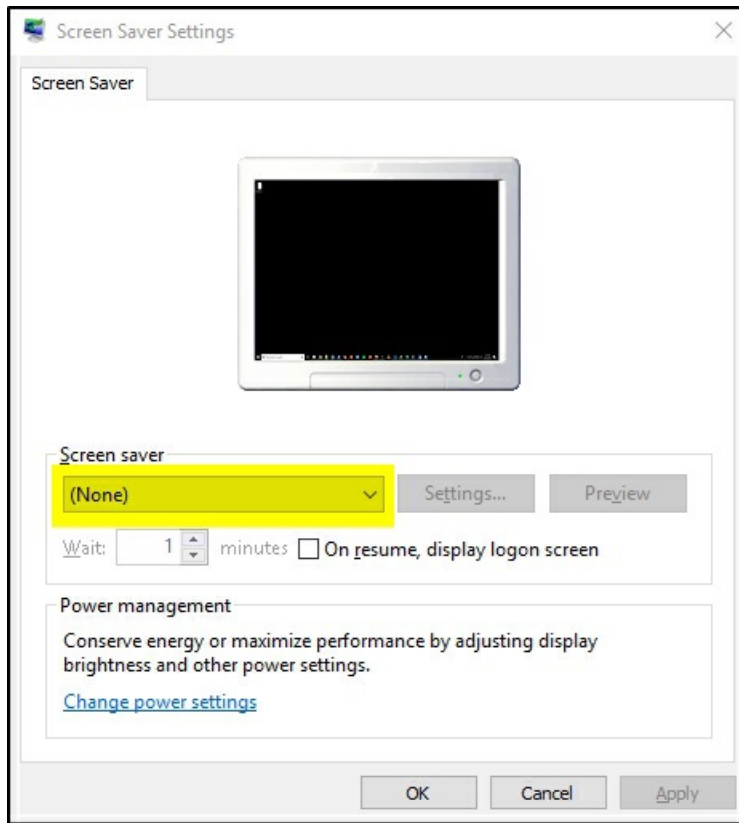
- On the ethernet adapter interface (now named "SmoothStepper Network XX"), disable all protocols **except** Internet Protocol Version 4 (TCP/IPv4)



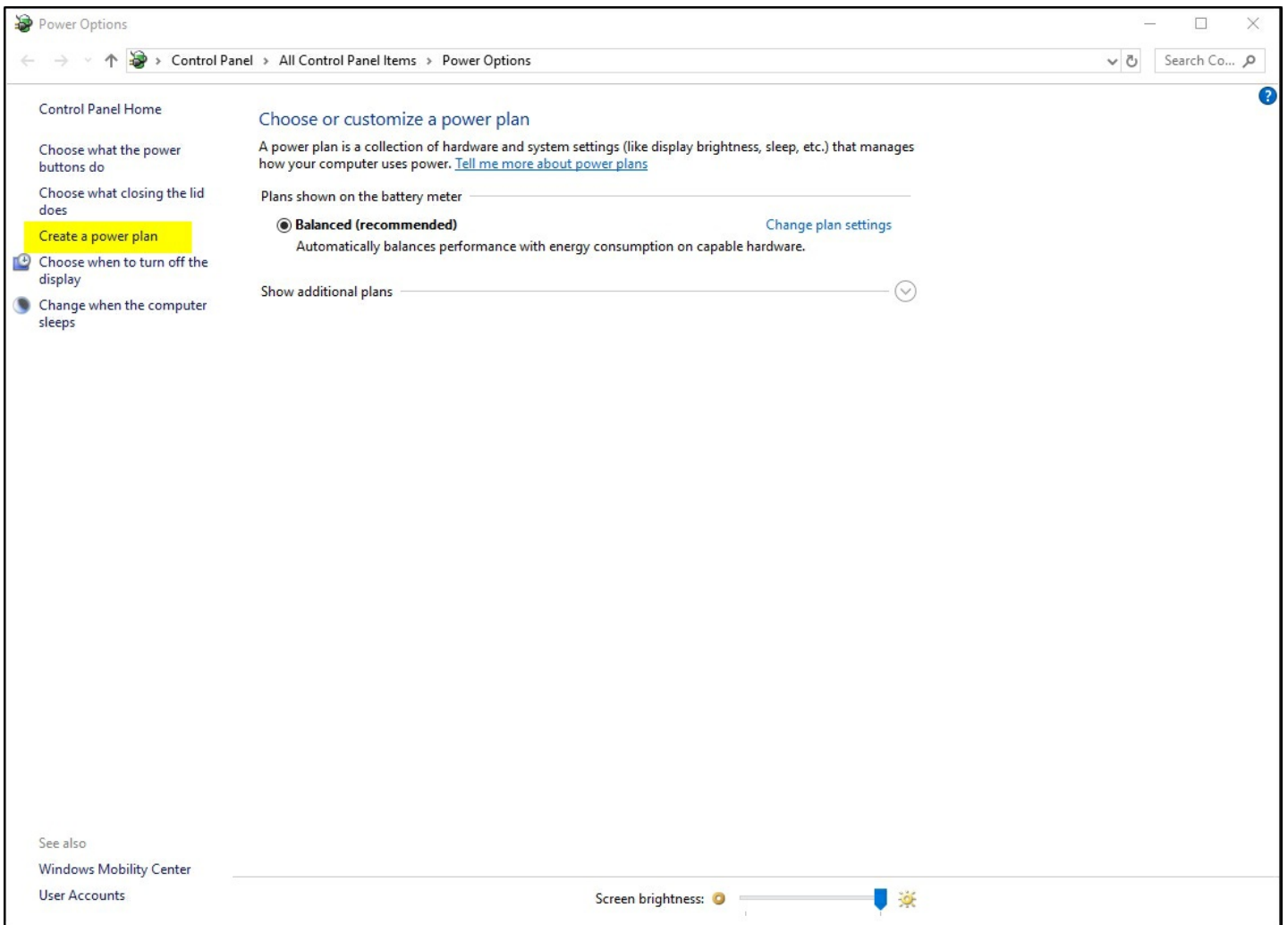
- In the ethernet adapter properties, under the “Advanced” tab, disable the “Energy Efficient Ethernet” and “Green Ethernet” properties (Note: either or both of these properties may not exist).



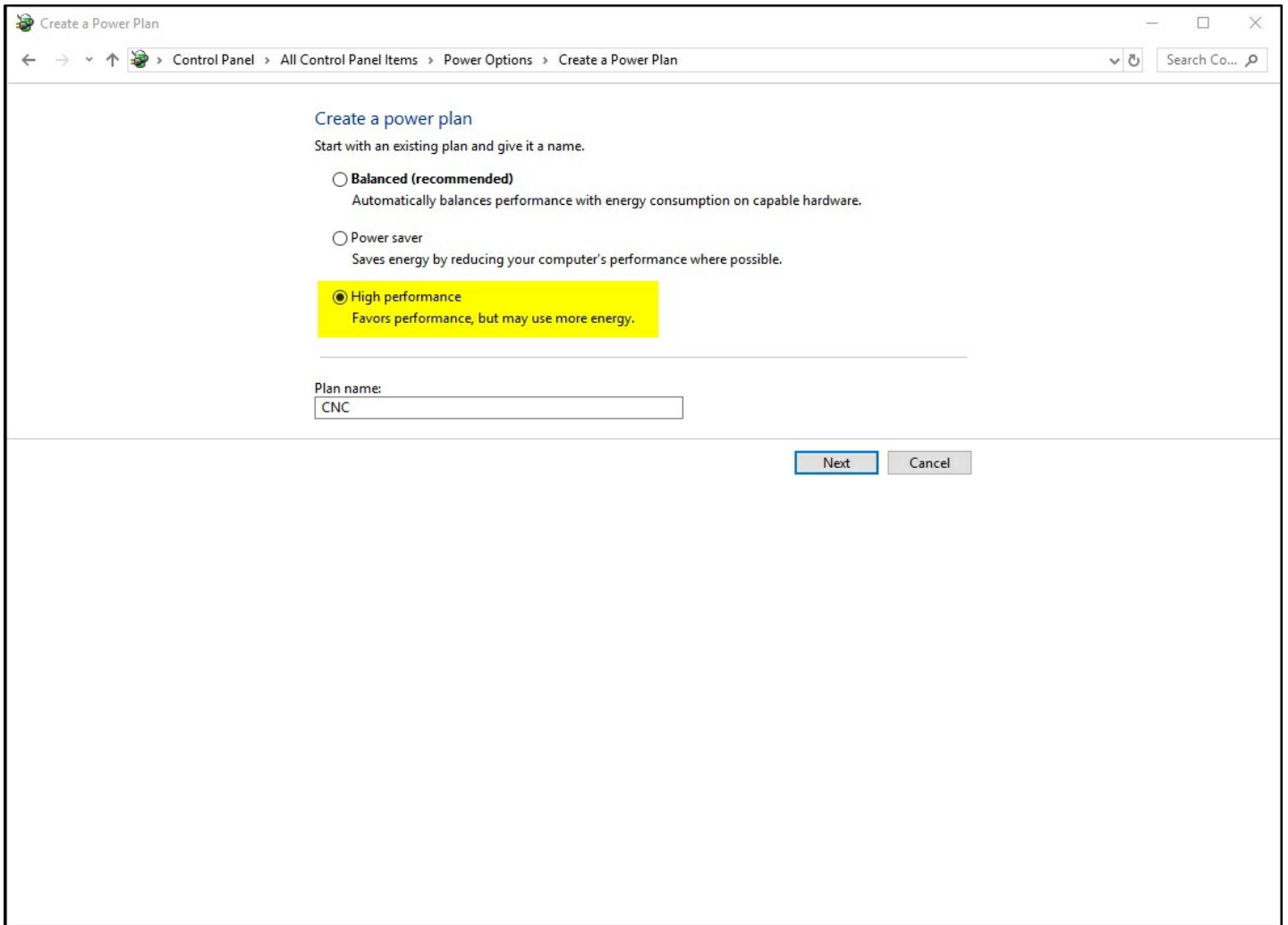
- In the ethernet adapter properties, under the “Power Management” tab, uncheck “Allow the computer to turn off this device to save power” option (Note: the Power Management tab may not exist, in which case skip this step).



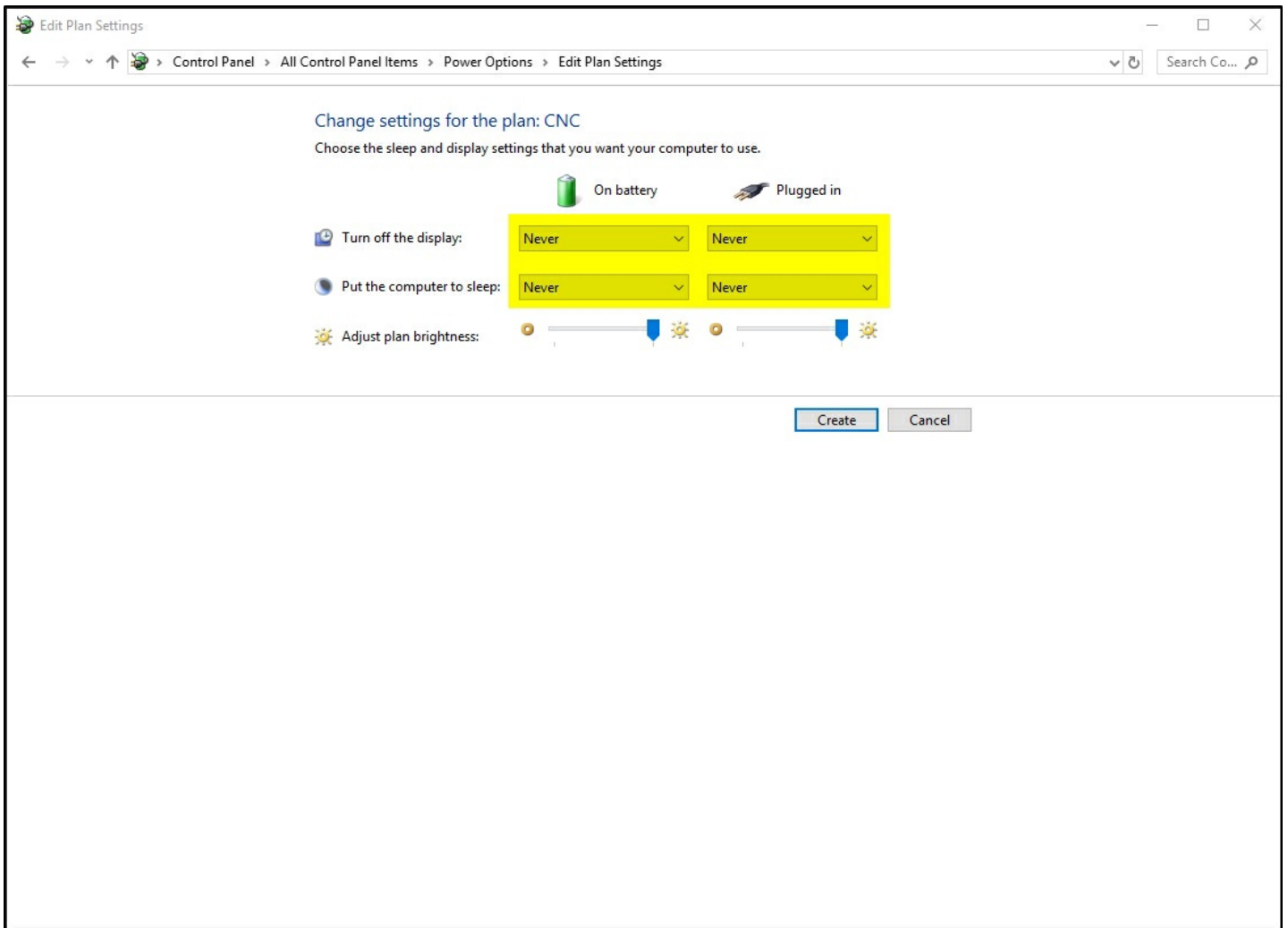
- Turn off / disable the Windows screensaver.



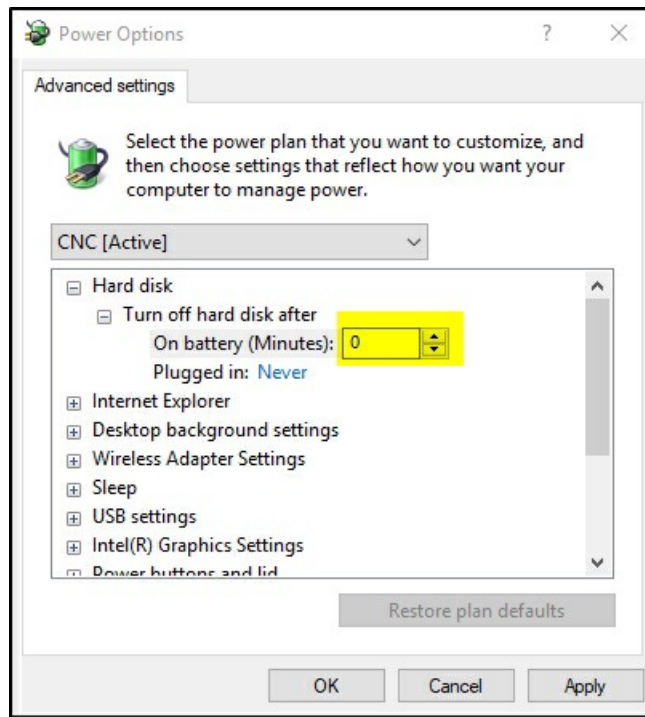
- From the Control Panel, navigate to "Power Options" and click on the link to create a new power plan.



- Create a new plan called "CNC", starting with "High Performance" as the template.



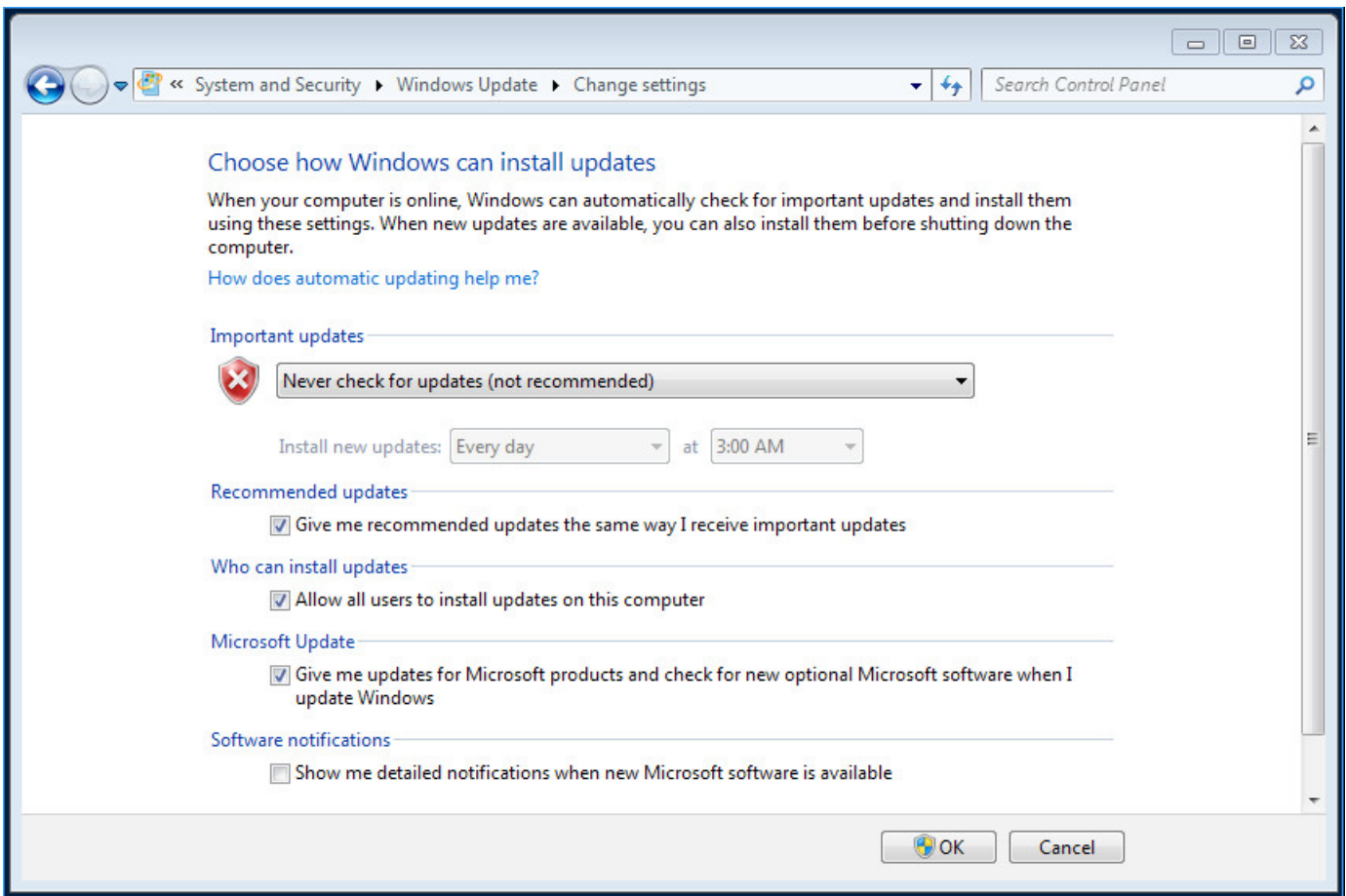
- On the next screen, set both options to "Never" for both "On battery" and "Plugged in".



- Navigate to the advanced settings for this power plan.
- Change "Turn off hard disk after" to 0 minutes for both "On battery" and "Plugged in" to set these options to "Never".

i PC Configuration Note

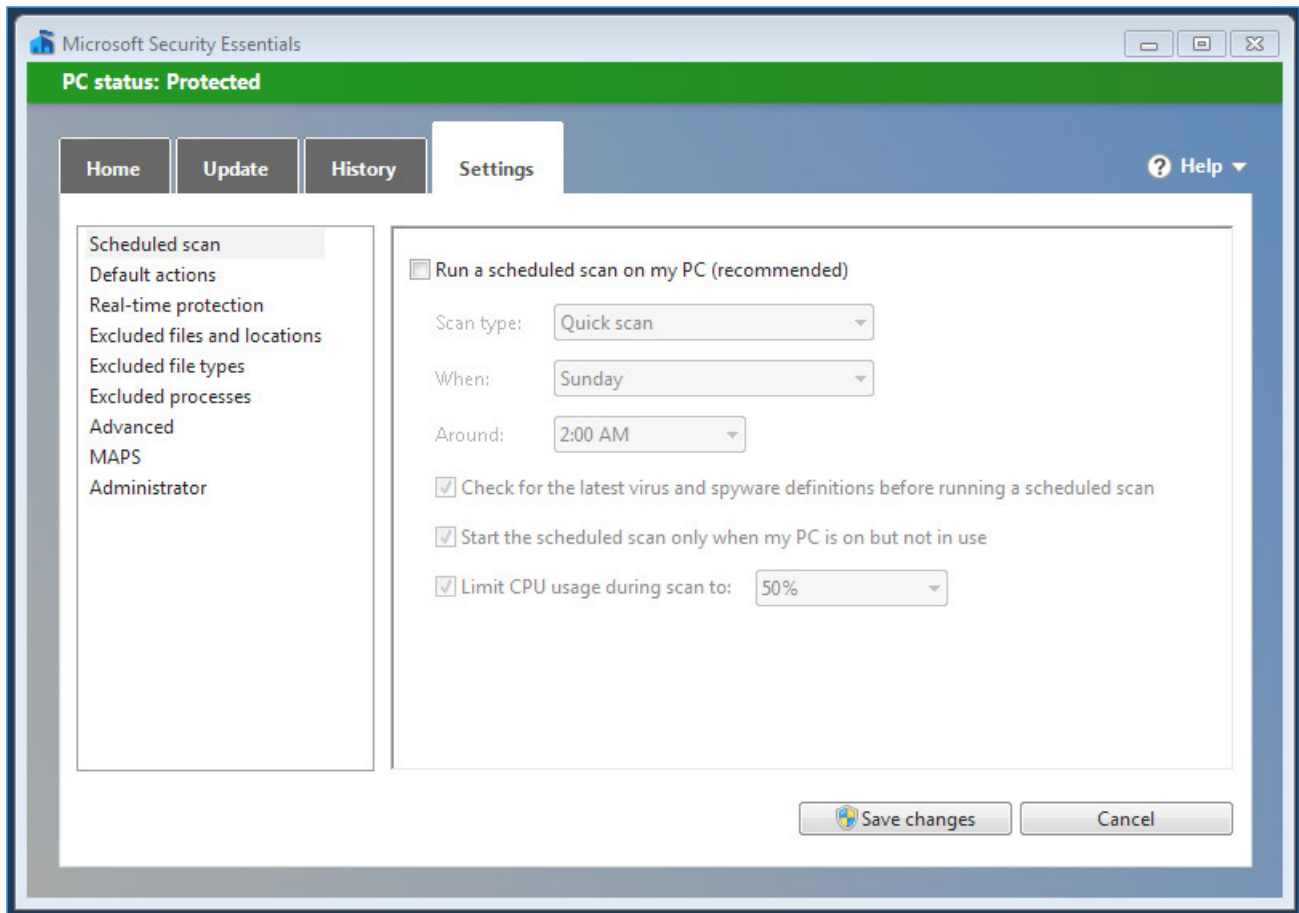
It is recommended to disable (preferably uninstall) any third-party virus scanning/protection software.



- Configure Automatic Updates:
 - If you are running Windows 10:
 - Under Advanced Options, set the "Choose how updates are installed" setting to "Notify to schedule restart"
 - Check the "Defer Updated" checkbox (if present)
 - If you are running Windows XP, Vista, 7, or 8, disable automatic updates altogether.

5. Additional PC Configuration for Windows 7 & 8

If you are running Windows 7 or 8, follow the additional steps below.



- Configure Windows Defender (Windows 8) / Windows Security Essentials (Windows 7) to never run a scheduled scan.

6. Best Practices for CNC Operation

- Always turn off or disable all other network connections (i.e. Wifi) when running a CNC program in Mach4.

