# SETTING UP SSH FOR YOUR PARALLELLA: A TUTORIAL FOR STUDENTS

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## ABOUT THIS TUTORIAL:

This tutorial teaches you to access your Parallella board from your laptop using an SSH connection. If you don't have an HDMI monitor, this is the principle way to run programs, and transfer files between the Parallella board and your computer in the Barracks. Before you get started, you will need to ensure you have a few things.

## THINGS YOU WILL NEED BEFORE-HAND:

- A Parallella board with the latest image already installed (see other tutorial if this is not the case)
- Crossover Ethernet cable
- Putty on your laptop: cadet software link: \\usmasvddeecs\EECS\Cadet\Software\Putty.

## CONFIGURING THE PARRALLELA BOARD:

In order to SSH into our Parallella board, we need to configure it with a static IP address. Boot up the Parallella board using the HDMI display and keyboard input, and pull up LXTerminal. Ensure that `/etc/network/interfaces` has the following lines:

```
auto eth0
iface eth0 inet static
     address 10.0.0.3/8
     up route add 10.0.0.2 dev eth0
```

Next, edit `/etc/hostname` and give your board a hostname. `linx47691` is an example.

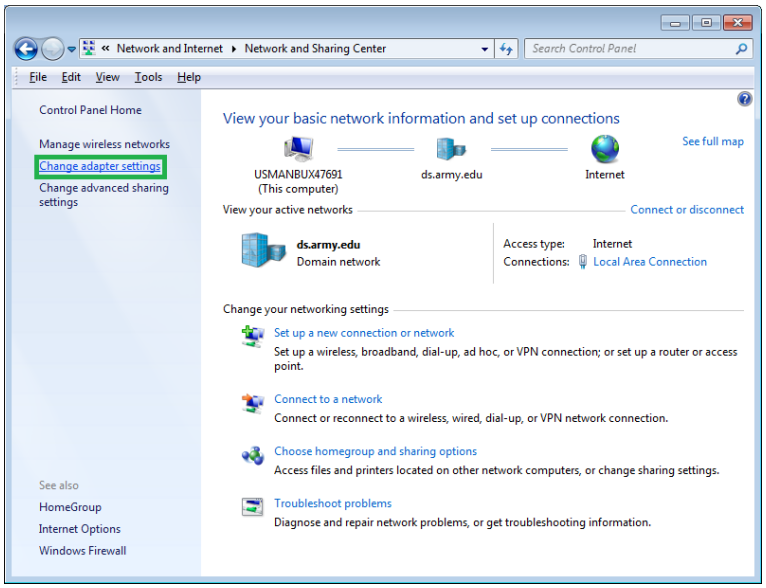
Next, edit `/etc/hosts` and add the following line (assumes the IP address and hostname

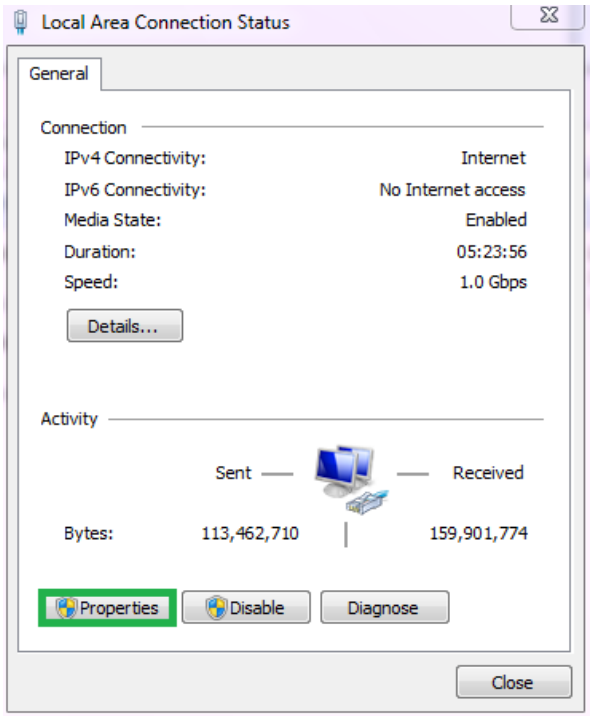
```
10.0.0.3 linx47691
```

Reboot the board using `sudo reboot` to allow the OS to process the changes you've made. At this point, your Parallella board is configured. Next, we will configure our laptop for use.

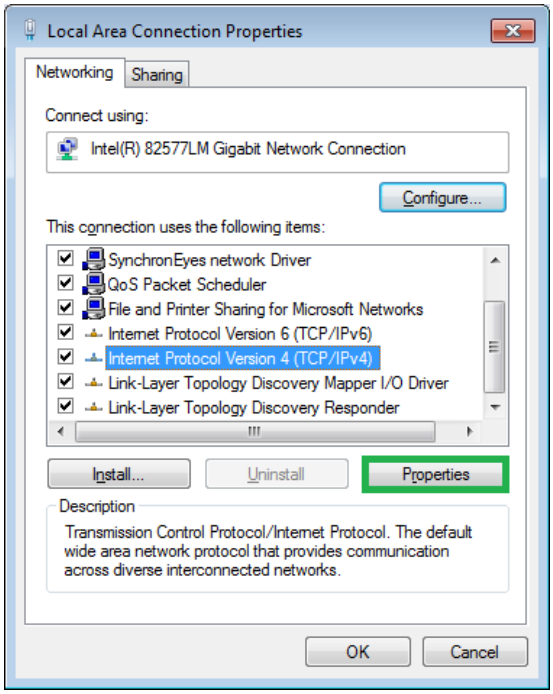
## CONFIGURING YOUR PERSONAL COMPUTER:

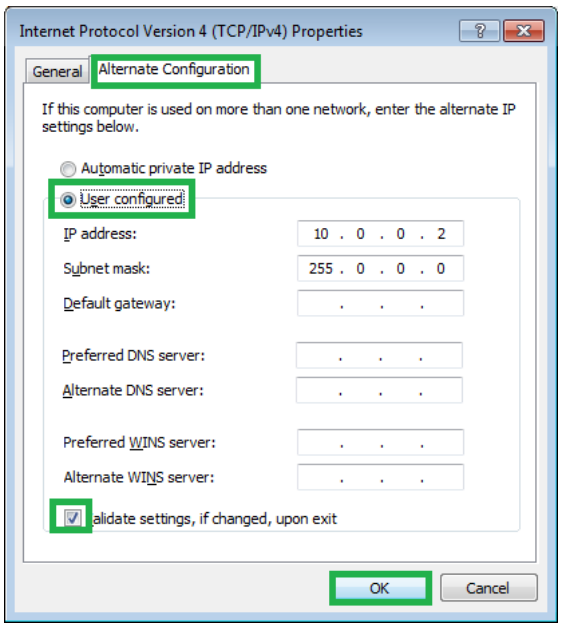
Under Control Panel select -> Network and Sharing -> “Change adapter settings” -> “Local Area Connection”-> “Properties” -> “Internet Protocol Version 4 (TCP/IPv4 -> Properties.



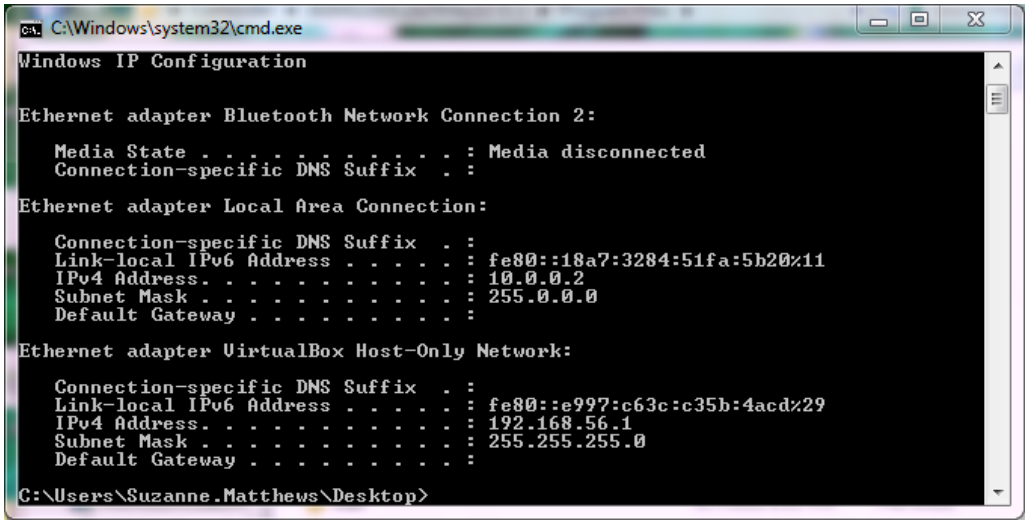




Click on “Alternative Configuration”. Indicate that the IP address should be User Configured, and enter `10.0.0.2` as your IP address.

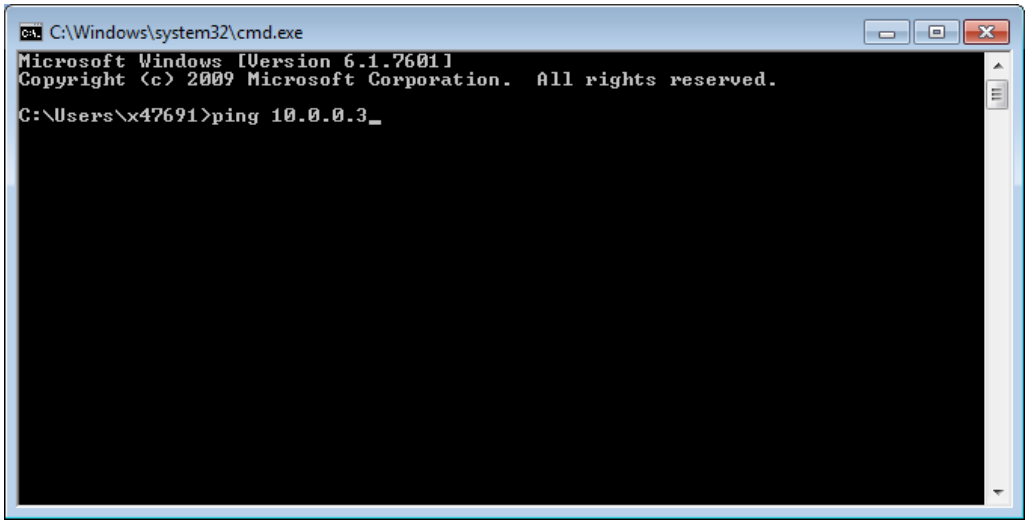


Open up a command prompt (SHIFT->Right Click->Open Command Window Here) and ensure that you have an IP address of `10.0.0.2`



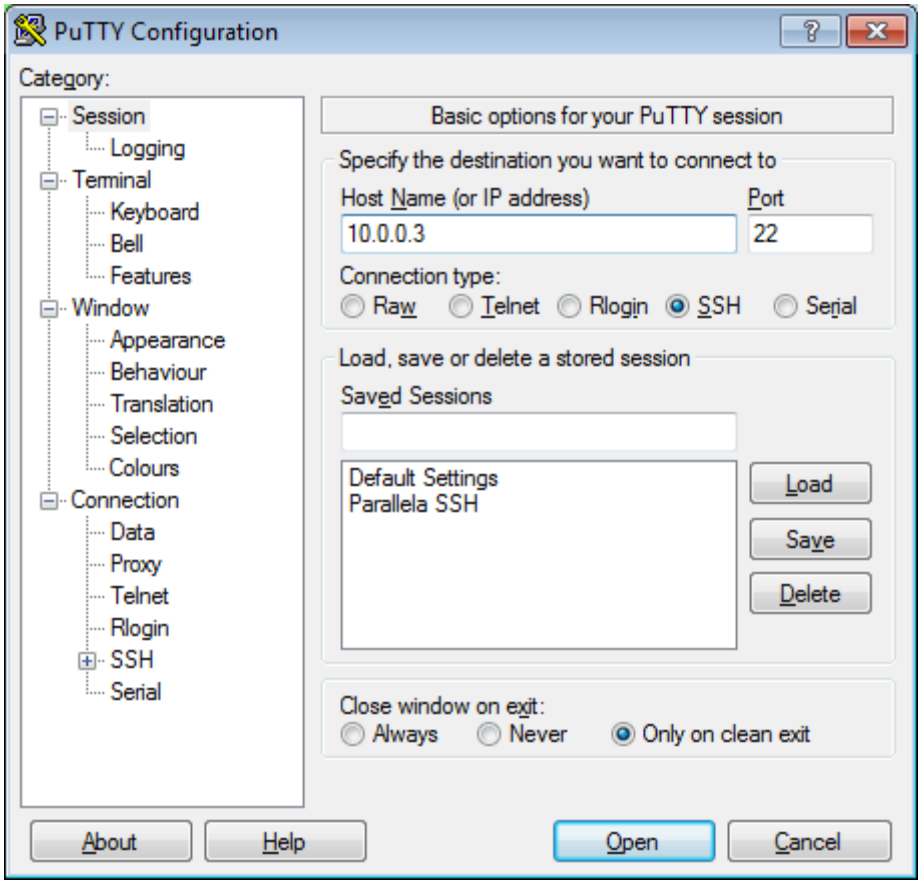

Next, ensure you have connectivity to the board by entering `ping 10.0.0.3`




## TROUBLESHOOTING:

- If Parallella IP is not `10.0.0.3`
  - Ensure all the files match what is specified above. In particular, /etc/hosts and /etc/hostname should have the same hostname! (lin<your x Number>!)
  - Run `ifconfig -a` to ensure that the address is `10.0.0.3`
  - Reboot the board to ensure all changes are propagated: type `sudo reboot`.
- If Windows IP address is not 10.0.0.2
  - Are you connected to wireless? This may be interfering with your ability to get a static IP address. Try disconnecting or turning off wireless.

Open up putty.exe in Windows and create a new profile that looks like the following:

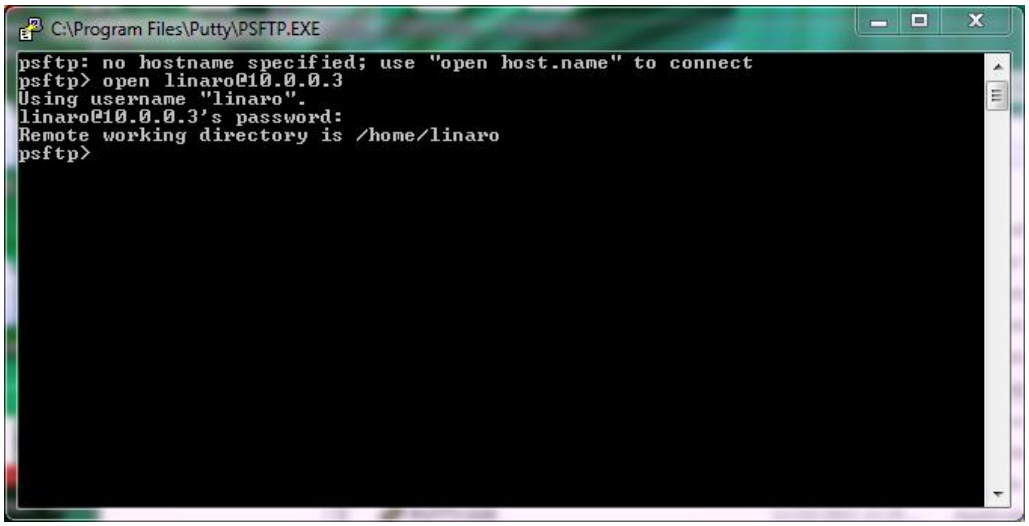



Save it as Parallella-SSH. Clicking “open” should give you a login prompt. Log in using the regular username and password. You should now be connected!

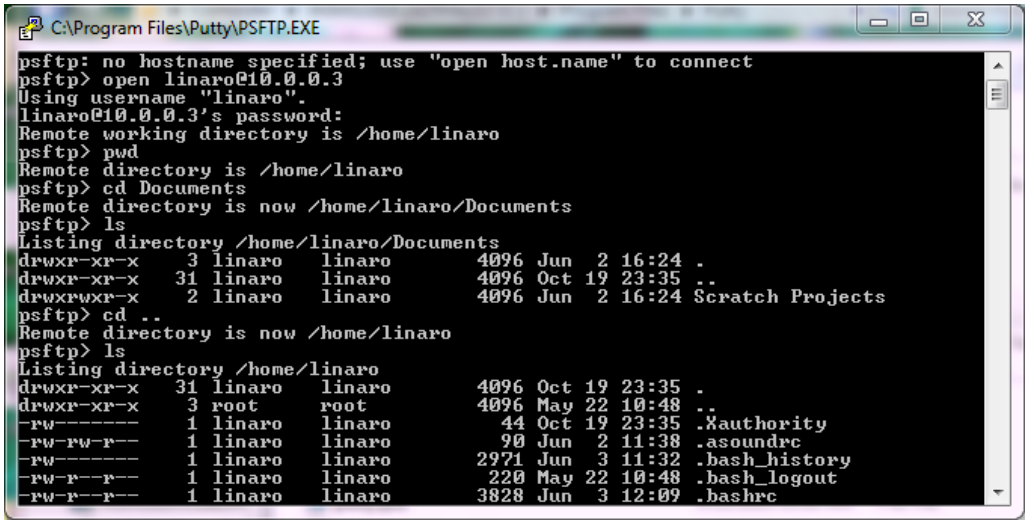
## TRANSFERRING FILES:

We will be using the PSFTP (Putty Secure FTP) client to transfer files between your laptop and the Parallella board via SSH. PSFTP will acts as an interactive FTP session that allows you to list directory contents, browse the file systems, etc. The program PSFTP.EXE is located in the same directory as the Putty.exe executable. Double click on PSFTP.EXE to open the prompt. Ensure that you can ssh into your board prior to doing this! If you cannot ssh, this certainly will not work.

First we need to logon. Type `open linaro@10.0.0.3` to establish a connection:

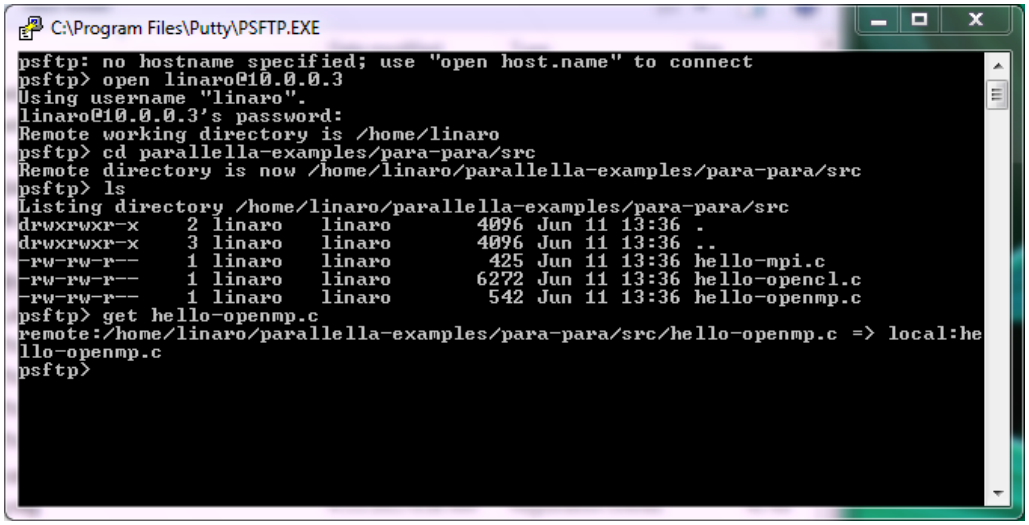



This psftp prompt acts like a linux terminal. You can ls, cd, etc. In the following set of examples, we will be transferring files from the `parallella-files/para-para/src` directory and the directory that your Putty install resides in.



## GET: TRANSFERRING FILES FROM PARALLELLA TO WINDOWS

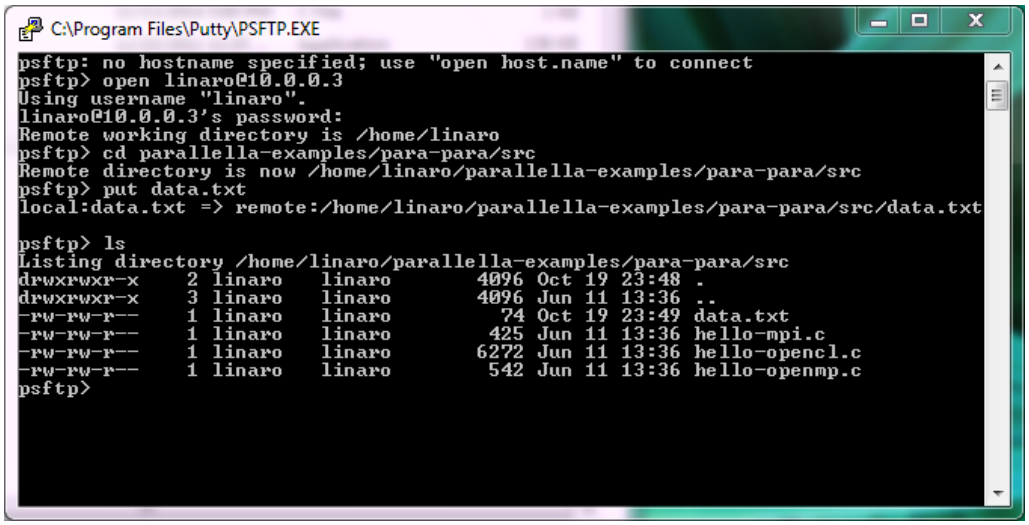
To transfer files from the Parallella board and place it in the putty directory, we can use the `get` command. In this example, we are transferring the file `hello-openmp.c`:




We should now see `hello-openmp.c` in our putty directory.

## PUT: TRANSFERRING FILES FROM WINDOWS TO PARALLELLA

To transfer files from the Putty directory and place it on the Parallella board, we can use the `put` command. In this example, we are transferring a new file called `data.txt`, which is filled with some random data:




More information can be found in the PSFTP documentation: http://tartarus.org/~simon/putty-snapshots/htmldoc/Chapter6.html