Hodor and Bran HPC Tutorial - Basics

UND Computational Research Center

Here is some basic information on how to connect to Hodor and Bran, the UND HPC Linux clusters. For Bran instructions, simply substitute “bran” everywhere you see “hodor”.

Your Hodor Account

User Login:

The user login for your Hodor account is the same as your NDUS Active Directory (NDUSAD) account, which is the same as your UND Campus Connection (UNDCC) account. This is usually in the format of:

firstname.lastname

Though, for a user who has a very common name, or a non-traditional name, the format may very slightly.

Account Password:

The password for your Hodor account is the same password that you use for your NDUSAD/UNDCC account. Whenever you change the password for your NDUSAD/UNDCC account, your Hodor password will automatically update to the new password.

Storage Limit:

Each user account is allocated 200GB of storage space. Should you exceed this storage limit you will be asked to remove files from the system. Failure to comply with this request may cause you to be banned from using the system.

IMPORTANT:

- Changing your password while actively logged into your Hodor account is ***NOT*** allowed.
- Passwordless authentication through the use of SSH keys is ***NOT*** allowed without additional permission.
- User-generated SSH keys are ***NOT*** allowed. Installing your own SSH keys will break your account, and possibly get you banned from using the system.

Connecting to the Hodor HPC Cluster

You must use an SSH client to connect to Hodor. SSH Port-forwarding for the use of GUI applications is allowed, but not for computational work unless special arrangements are made prior to the work being run. A discussion of port-forwarding is beyond the scope of this document.

Hostname:

You may connect to the Hodor HPC cluster using the following hostname: ***hodor.und.edu***

Terminal Connection:

If using a Linux, OSX, or Cygwin terminal, you may type the following command at the shell prompt to connect to the Hodor login node (aka "headnode"):

ssh firstname.lastname@hodor.und.edu

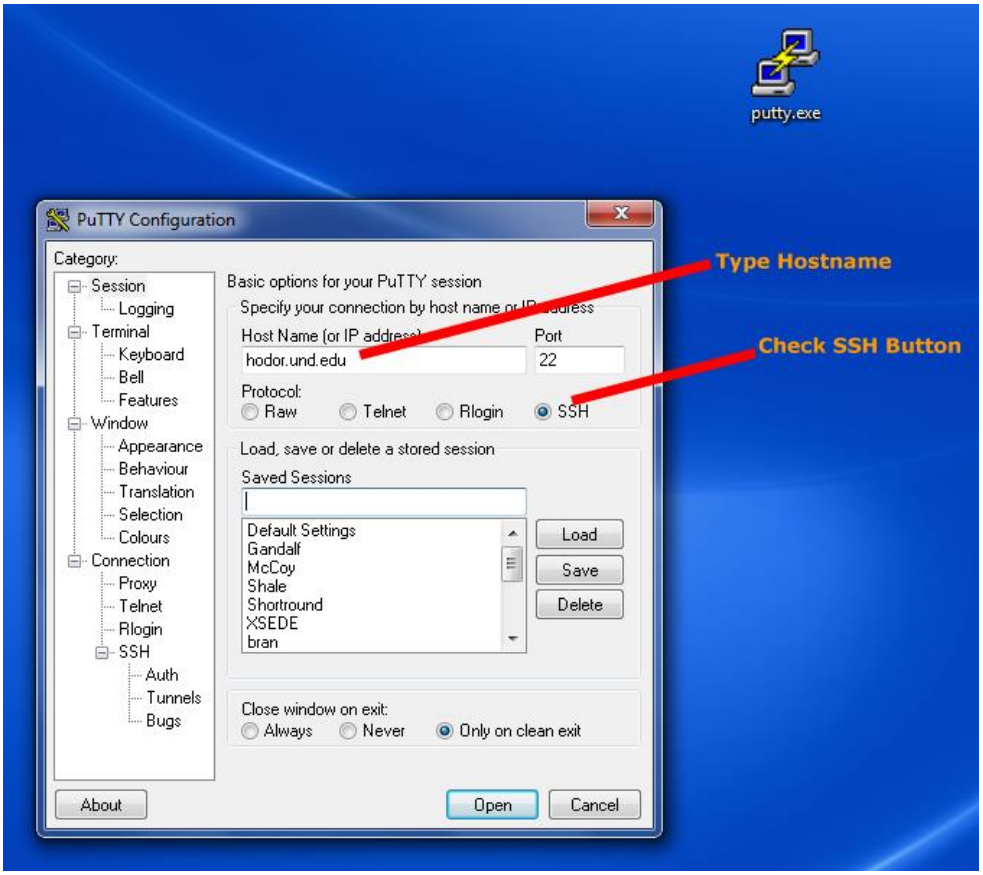
Once connected, you'll be prompted for your NDUSAD/UNDCC password.

Putty Connections:

Putty is a GUI telnet client with SSH capabilities for use on Windows operating systems. A link to the Putty download is available from the UND CRC Windows Desktop Software page: ***http://und.edu/research/computational-research-center/software.cfm***

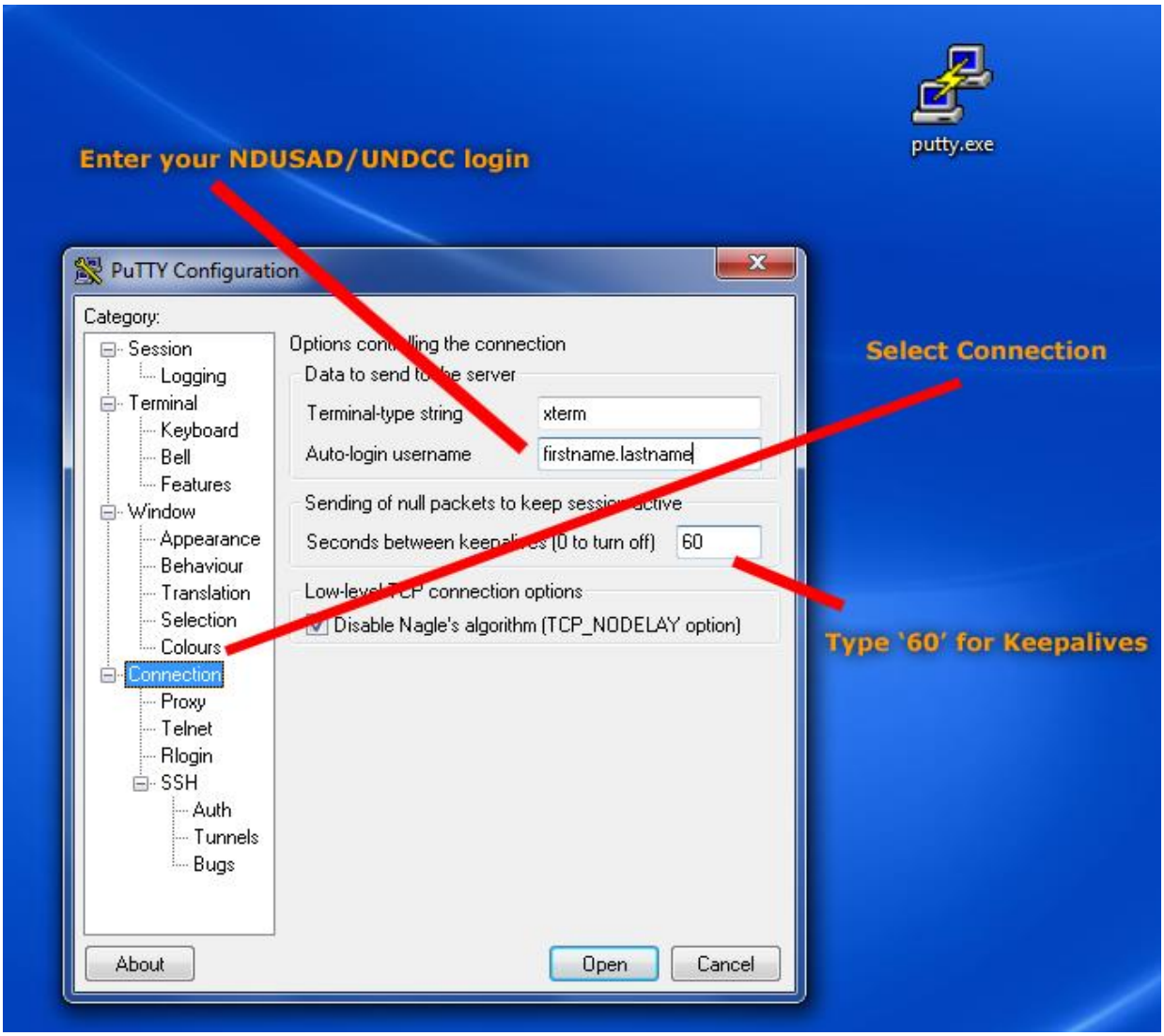
Putty does not need to be "installed". Once it is downloaded, copy the program to your desktop. It will then be ready for immediate use. Double click the putty icon to get started:

Once you've started the Putty you should see something similar to the image below. Do the following:
1) Type the hostname in the appropriate box – remember from above the hostname is: ***hodor.und.edu***
2) Check the "SSH" button.



Next, go to the “Connection” options window:

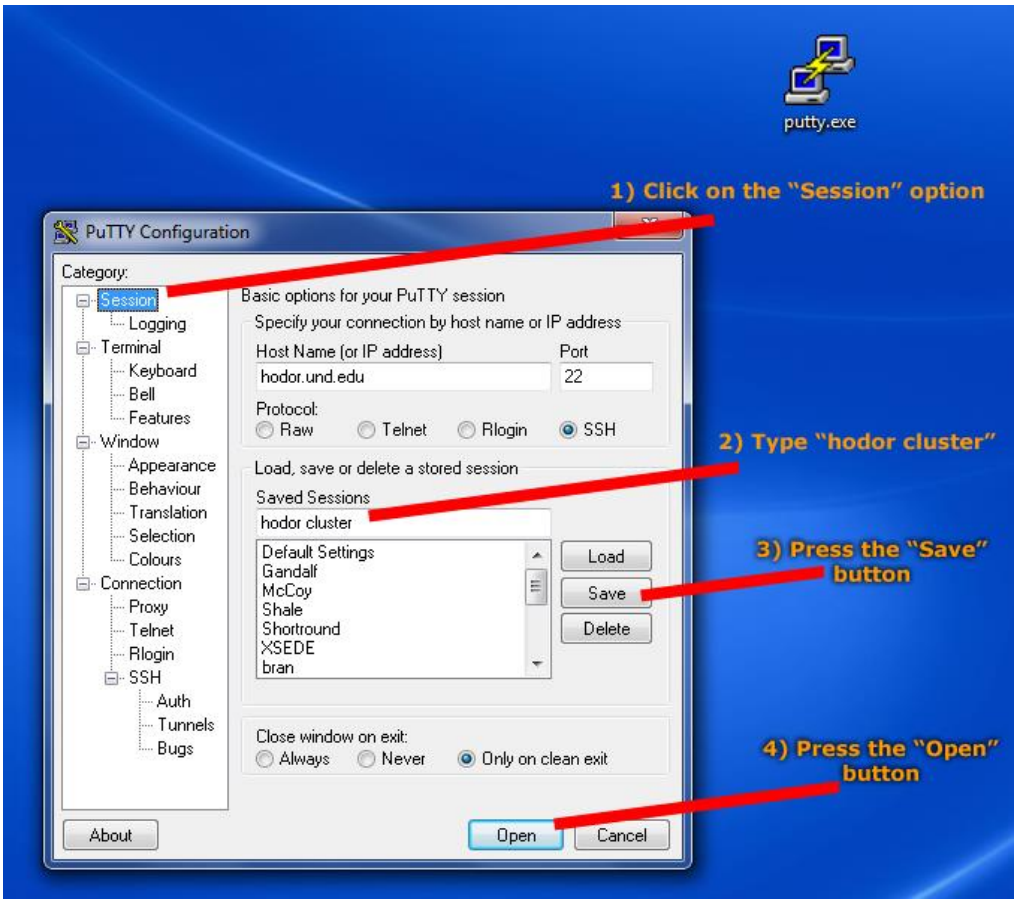
1) Select on “Connection” to display the connection options.
2) Change the “keepalive” value from ‘0’ to a value of ’60’. This will help you to keep from getting disconnected from the cluster during low activity periods (ie… when you’re reading code, but not typing).
3) Enter your NDUSAD/UNDCC login - firstname.lastname (Substitute your actual login please)



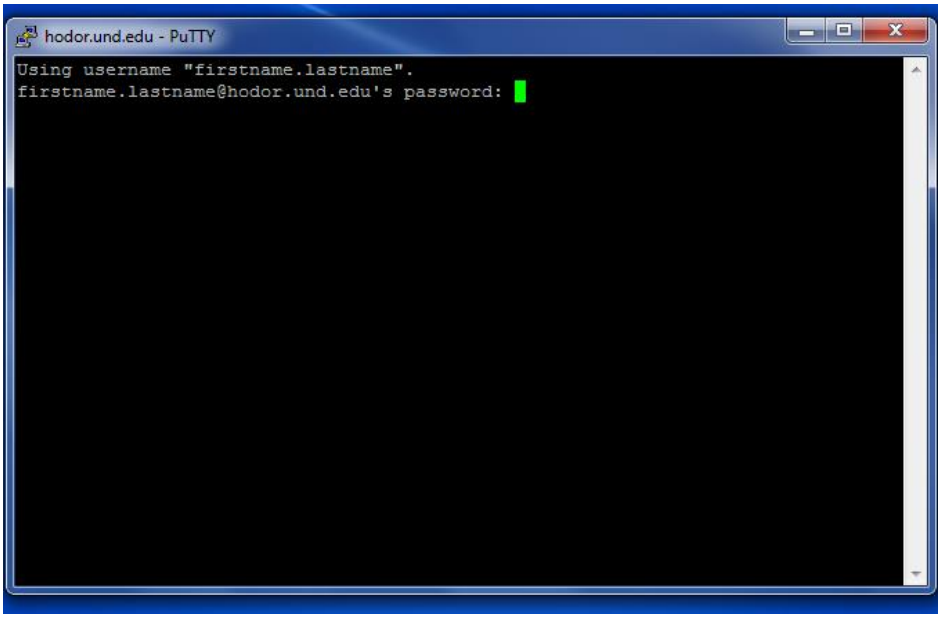
Finally return to the “Session” options page:

1) Click on the “Session” opton.
2) Type “hodor cluster” in the “Saved Sessions” box.
3) Press the “Save” button to save that session for future use.
4) Press the “Open” button to connect to the login node (aka “headnode”).

(See figure on next page)

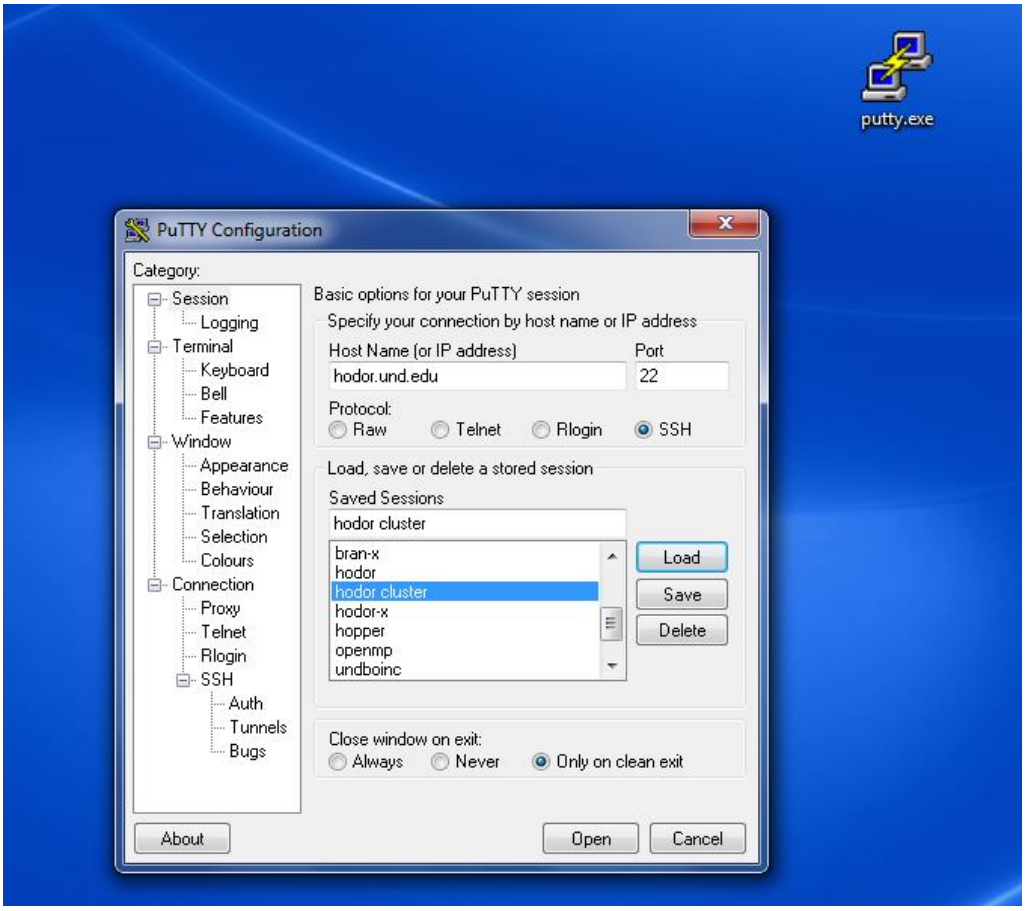


Once you have pressed the "Open" button, the Putty program will connect you to the Hodor login node (aka the "headenode"), and then you'll be prompted for your NDUSAD/UNDCC password. Once you've entered it, the cluster will be available for your use.



In future connections, you simply will need to double click the Putty icon to start the program, and then:

1) Select “hodor cluster” from your Saved Sessions list.
2) Press the “Load” button.
3) Press the “Open” button. As before, once you press the “Open” button, Putty will connect you to the Hodor login node.



Cygwin Connections:

While Windows users may also utilize ***Cygwin*** to connect to Hodor, an overview of how to download, install, and use Cygwin is outside the scope of this document.

Failed Login Attempts:

You will be allowed three attempts to login before your local computer is locked out of the system (ie… you type your password incorrectly three times). If this happens, you must contact Aaron Bergstrom, CRC HPC Specialist to get this temporary band removed. This is done to prevent automated hacking attempts.

Aaron’s Contact Info:

Campus Phone: 7-2075
Email: Aaron.Bergstrom@email.und.edu

Basic Bash Shell Commands

Once you have logged into the Hodor cluster, you'll need to navigate and execute programs through the "Bash" Shell… aka command line instructions. Here is a list of useful BASH commands for novice Linux users:

pwd	Displays your current directory
env	Displays your current environment variables
cd ..	Moves you up one level to the folder above your current directory
cd ../../	Moves you up two levels to the folder two levels above your current directory
cd ~	Moves you to your Home directory
cd -	Moves you to your previous directory
ls	Lists the contents of your current directory
ls –al	Lists the contents of your current directory with more information
qstat –a	Lists the computational jobs actively running on the Hodor cluster
qstat –n	Lists the computational jobs actively running on the Hodor cluster and the nodes upon which these jobs are currently running
qstat –f	Lists the computational jobs actively running on the Hodor cluster and all the information available about each job
qdel ####	Where #### is a job ID number for a job either in the job queue or a job that is actively running… this command deletes that job. You can only delete jobs that you've submitted.
qsub jobscript.pbs	Where 'jobscript.pbs' is the PBS script that provides the cluster job scheduling software with information about how you want your job to run… 'qsub' is the program that submits this information to the job scheduler.

See the CRC tutorial document "***Hodor PBS Scripts***" for further information on how to write PBS job scripts and submit them using 'qsub' and 'msub'.

For further information on how to use the Bash shell see the following website: http://tldp.org/HOWTO/Bash-Prog-Intro-HOWTO.html

Experienced Linux users may prefer to use CSH or some other command shell. Contact Aaron Bergstrom for more information about other command shells available for use on Hodor.