Introduction to the Command Line

In this video, we'll introduce you to the basics of working with the Linux command line,as our clusters use the Linux Operating System. We'll take a look at working with files and folders. And we’ll show you some common commands you should be familiar with.

What is the Command Line?

The command line is a text-based interface where we type commands and direct text-based input and output to the screen, to files, or to other programs.

Below are some of the common commands in Linux

·         ls-lists all the files and folders in your current working directory.

          pwd - displays your current working directory

          ls -a ; Lists all the files and folders in your current working directory including the hidden files and folders.

·         cd- Changes your directory ,i.e cd Desktop changes the working directory to Desktop provided Desktop is a folder in your current Working Directory.

·         cp - Copy file from directory ,i.e' cp <file1.txt> <path to new file location>" copies the file file1.txt to the directory specified.

·         mv -Moves file into new directory e.g mv <filename> <path to new file location>

Can also be used to rename files e.g mv <file1.txt> <new filename>

·         mkdir -Creates a directory in your currrent working directory

i.e 'mkdir NewDirectory' creates a new folder named NewDirectory in my current working  directory.

·         rmdir -removes/deletes a folder.

i.e 'rmdir newDirectory' deletes the directory named newDirectory from my current working directory if it's empty.

if it's not an empty folder then 'rmdir -rf newDirectory' should delete the folder and all it's contents.

·         rm - deletes or removes a specified directory or file from current working directory.

i.e 'rm file1.txt'  deletes the file 'file1.txt' from my current directory.

·         history- displays a list of previous commands that have been executed on your commamnd line.

·         chmod-changes the access permissions to files and folders in your system.

        - +r adds a reading permission. -r removes the reading permission.

        - +x gives a permission to execute the specified file.

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·         cat -Displays the contents of a file at the command line.

                - allows us to create single or multiple files, view contents of a file at the command line, concatenate files and redirect output in terminal or files.

Common Commands in Cluster Activies()

·         ssh - allows you to log into a remote machine and execute commands on a remote machin e

·pbsnodes- Lists the count of unique nodes along with the properties of those nodes.

     pbsnodes -a | grep "state = " generates a list of all pbsnodes and then filters out the string 'state = ' from each node.  i.e 'pbsnodes -a | grep "state = free" |wc -l' counts tye number of nodes that are free. There are 3 different states; down, free and offline.

The command line has an editor called nano,which allows you to edit your files.

to open the editor,  type 'nano filename.txt' which'll open the file on the command line,and after modifying the file,you have to save it using the following keys: 1. 'Ctrl+o' and then press 'ENTER'. To exit the editor ,Use 'Ctrl +x' .

-qsub -This commands allows you to send your job to the queue for execution,and needs a pbs file as input,and it returns a job Id for the job you sent. Please note that the pbs file and your program file should be in the same directory you're sending the job from. We'll look more into this in the next few videos where we'll be discussing examples.

Now,after sending your job,you'd want to know the status of your sent job. so to view that information,the command is 'qstat -a',which displays your Job ID,Job name and the Job Status among other things.

    There are different states ; namely, Q-Queued. Job is eligible to proceed.

                                                                   R-Running

                                                                   E-Exiting after running

                                                                   C-Complete

                                                                   H- Job is being held,can be releaseed with a command.

                                                                   W-Waiting to be executed.

                                                                   T- transit,Job is changing states.

Other useful command are qdel which deletes a submitted job,qhold which prevents a job from running,qrls which releases jobs that have been held/prevented from runnung. qorder which allows you to change the order in which your jobs are processed.

Putty and winSCP are software that allow you to connect to a remote Computer,they are ssh clients for the Windows operating system,and winSCP is preferable if you'll need to transferfiles between your local computer and  the remote computer.

\*\*\* we'll do a short demo for both Putty and winSCP.