

Linux Guide for SCC users

Directory Commands

| <i>command</i> | <i>description</i> |
|--------------------------------------|--|
| pwd | print full path of the current directory |
| tree | list contents of a directory in a tree-like format |
| | |
| cd /project/myproject/mydir | change directory specifying full path name |
| cd mydir | change directory to sub-directory <i>mydir</i> |
| cd .. | go to the parent directory |
| cd | go to home directory |
| | |
| mkdir dirname | create a new directory <i>dirname</i> |
| mkdir -p /path/to/dirname | create new directory, make parent directories as needed |
| cp -r dir1 /path/to/dir2 | copy directory <i>dir1</i> to <i>dir2</i> , creating <i>dir2</i> if needed |
| cp -r /path/to/mydir . | copy directory <i>mydir</i> to my current directory |
| mv dir1 dir2 | rename (move) directory <i>dir1</i> to <i>dir2</i> |
| mv mydir /path/to/another/dir | move directory <i>mydir</i> to another location |
| rmdir dirname | delete empty directory <i>dirname</i> |
| rm -rf dirname | delete <i>dirname</i> with all sub-directories and files |

File Commands

| <i>command</i> | <i>description</i> |
|-----------------------------------|---|
| ls | list all files and sub-directories |
| ls -l | display all information about files and sub-directories |
| ls -la | directory listing including dotfiles |
| ls -lh | print file size in human readable format |
| ls -lS | sort files by their size |
| ls -lrt | sort files by modification time in reverse order |
| | |
| rm filename | delete file |
| cp file1 file2 | copy file <i>file1</i> to file <i>file2</i> |
| cp myfile mydir | copy file <i>myfile</i> to sub-directory <i>mydir</i> |
| cp myfile /path/to/mydir | copy file <i>myfile</i> to a directory |
| cp /path/to/myfile . | copy file <i>myfile</i> from other directory to my current directory |
| mv file1 file2 | rename (move) file <i>file1</i> to file <i>file2</i> |
| mv myfile /path/to/mydir | move file <i>myfile</i> to another location |
| | |
| head myfile | display first 10 lines of <i>myfile</i> |
| head -n 20 myfile | display first 20 lines of <i>myfile</i> |
| tail myfile | display last 10 lines of <i>myfile</i> |
| cat myfile | display content of <i>myfile</i> |
| more myfile | output content of <i>myfile</i> page by page |
| less myfile | output content of <i>myfile</i> page by page (press <i>q</i> to exit) |
| | |
| wc myfile | output the number of lines, words and bytes in <i>myfile</i> |
| wc -l myfile | number of lines in <i>myfile</i> |
| wc -w myfile | number of words in <i>myfile</i> |
| wc -c myfile | number of characters in <i>myfile</i> |
| | |
| cat file1 file2 | concatenate 2 (or more) files |
| cat file*.txt > all.txt | concatenate files and save result in file <i>all.txt</i> |

Searching Files and Directories

| <i>command</i> | <i>description</i> |
|-----------------------------------|--|
| grep options pattern files | search for pattern in files |
| grep -i "matrix" *.csv | search for word <i>matrix</i> in all <i>csv</i> files ignoring word case |
| -i | ignore case |
| -l | display file names |
| -n | display line numbers and matching lines |
| -I | exclude binary files |
| -v | files not containing matching word |
| grep -rnl "matrix" . | search recursively all files and folders, exclude binary files |
| grep -i "matrix vector" * | search all files for words <i>matrix</i> and <i>vector</i> |
| zgrep "matrix" myfile.gz | search gzip file |
| | |
| find path expression | search for files |
| find . -name *.txt | search current dir. and all sub-directories for *.txt files |
| find . -iname *.txt | case insensitive search |
| find . -iname foo -type d | case insensitive search, only directory names |
| find . -iname foo -type f | case insensitive search, only file names |
| find . -mtime 7 | find files modified in the last 7 days |
| find . -size +100M | find files larger than 100MB |

File Transfer and Download

| <i>command</i> | <i>description</i> |
|---|--|
| scp myfile.csv user@scc2.bu.edu:. | copy file from local computer to SCC home dir. |
| scp user@scc2.bu.edu:/path/to/file . | copy file from SCC to local computer |
| rsync -a mydir user@scc2.bu.edu:~ | copy directory from local computer to SCC |
| wget http://bu.edu/document.txt | download file from the Web |

Shortcuts

| <i>command</i> | <i>description</i> |
|----------------------------|---|
| ctrl+c | halt the current command |
| ctrl+z | pause the current command, resume - fg or bg (background) |
| ctrl+d | logout of the current session, similar to exit |
| ctrl+l | clear the screen |
| ctrl+a | go to the start of the command line |
| ctrl+e | go to the end of the line |
| ctrl+u | delete from cursor to the start of the line |
| ctrl+k | delete from cursor to the end of the line |
| ctrl+w | delete from cursor to the start of the word (backwards) |
| alt+b | move backwards one word |
| alt+f | move forward one word |
| alt+d | delete to end of the word starting from cursor |
| | |
| history | print recent commands |
| ctrl+r | type to bring up a recent command |
| ctrl+g | escape from history searching mode |
| up- and down-arrows | browse through recent commands |
| !! | repeat the last command |
| !!foo | repeat the most recent command that starts with word foo |

File Permissions

| <i>command</i> | <i>description</i> |
|-----------------------------------|--|
| <code>chmod octal filename</code> | Change file mode |
| <code>0</code> | no permission to read, write or execute |
| <code>1</code> | permission to execute only |
| <code>2</code> | permission to write only |
| <code>3</code> | permission to write and execute |
| <code>4</code> | permission to read only |
| <code>5</code> | permission to read and execute |
| <code>6</code> | permission to read and write |
| <code>7</code> | permission to read, write and execute |
| <code>chmod 700 filename</code> | all permissions for user, none- for everyone else |
| <code>chmod 660 filename</code> | read and write permissions for user and group only |
| | |
| <code>chmod +x myscript</code> | make file <i>myscript</i> executable |
| <code>chmod u+x myscript</code> | make file <i>myscript</i> executable by owner |
| <code>chmod +r myfile</code> | make file readable by everyone |
| <code>chmod g+w myfile</code> | give write permissions to everyone in my group |
| <code>chmod o-rwx myfile</code> | remove all permissions from users not in the group |

Compression/Archives

| <i>command</i> | <i>description</i> |
|--|--|
| <code>tar xvf myArchive.tar</code> | extract files from *.tar archive |
| <code>tar xzvf myArchive.tar.gz</code> | extract files from *.tar.gz or *.tgz archive |
| <code>tar tzvf myArchive.tar.gz</code> | list files in *.tar.gz or *.tgz archive |
| <code>tar czvf archive.tar.gz file1 file2</code> | compress 2 files into archive |
| <code>tar czvf myDir.tgz myDir</code> | archive and compress directory <i>myDir</i> |
| <code>tar czvf myDir.tgz .</code> | archive and compress current directory |
| <code>tar xjvf myArchive.tar.gz</code> | extract files from *.tar.bz2archive |
| | |
| <code>gzip myfile</code> | compress <i>myfile</i> ; result - myfile.gz |
| <code>gunzip myfile.gz</code> | decompress <i>myfile.gz</i> file; |
| | |
| <code>bzip2 myfile</code> | compress <i>myfile</i> ; result - myfile.bz2 |
| <code>bunzip2 myfile.bz2</code> | decompress <i>myfile.bz2</i> file; |
| | |
| <code>unzip -l archive.zip</code> | list all files in the archive |
| <code>unzip archive.zip</code> | decompress archive |
| <code>zip archive.zip file1 file2</code> | add 2 files into archive |

Disk/Quota Utilities

| <i>command</i> | <i>description</i> |
|----------------------------------|--|
| <code>quota -s</code> | display disk usage and limits in the home directory |
| <code>pquota</code> | display disk usage and limits for all my projects |
| <code>pquota myproject</code> | display disk usage and limits for project <i>myproject</i> |
| <code>pquota -u myproject</code> | display disk usage by every user in the project |
| <code>du -hs</code> | display disk usage by all regular files and folders in the current dir |
| <code>du -hs .[.]* *</code> | display disk usage by all files and dirs including dotfiles |

System

| <i>command</i> | <i>description</i> |
|------------------------------------|--|
| <code>/usr/local/etc/distro</code> | check version of operating system |
| <code>cat /proc/cpuinfo</code> | display information about CPU model of the node |
| <code>free -m</code> | display information about free and used memory on the node |
| <code>df -h</code> | report file system disk space usage |
| <code>hostname</code> | show hostname of the node |
| <code>printenv</code> | list all currently defined environment variables |
| <code>date</code> | show the current date and time |
| <code>top -u username</code> | display all processes started by the user <i>username</i> |
| <code>ps -f</code> | display info about all running processes started by user |
| <code>ps -aux</code> | display info about all processes started by all users |

Pipes and Other useful utilities and commands

| <i>command</i> | <i>description</i> |
|--|---|
| <code>qstat -u username wc -l</code> | calculate the number of lines in <i>qstat</i> output |
| <code>qstat awk '{print \$3;}'</code> | print 3rd column of the <i>qstat</i> output |
| <code>command sort</code> | sort output of the prev. command |
| <code>command unique</code> | eliminate duplicates |
| <code>command > output.txt</code> | redirect output of <i>command</i> to a file <i>output.txt</i> |
| <code>command >> output.txt</code> | append output of <i>command</i> to a file <i>output.txt</i> |