

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
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
cp -r /path/to/mydir .	copy directory <i>mydir</i> 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>