Cheatography

Linux / Bash / System Administration Cheat Sheet

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SSH

ssh user@host

ssh user@host (port)

Help

man (command) = Shows the manpages for the current command

(Command) --help = Less detailed version of manpages

whatis <command> -Gets short one line manual page to describe

Searching

grep "TODO" files = Searches for TODO in files

grep -r "TODO" dir = Searches recursively for TODO in the directory

locate (file) = Finds all instances of file

find (file) = Find all instances of file

Networking

netstat -rn -displays destination network and hosts of routing table

ifconfig lo 127.0.0.1 . -assigns loopback to 127.0.0.1

ifconfig eth0 127.17.75.20 . -assigns ethernet device to IP

route add default gw 128.17.75.98 . -adds route to routing table

Executing Scripts

Make script executable: chmod +x <scriptname>

./<scriptname> - Execute script

Check if is a File, Directory, or Symbolic Link

if [-d "$1"] (Directory)

elif [-h "$1"] (Symbolic Link)

elif [-f "$1"] (File)

Check history of commands

history | less

DHCP Setup

sudo \cp /usr/share/doc/dhcp-server/dhcpd.conf.example /etc/dhcp/dhcpd.conf (Setup New Empty Config)

Setup Static IP: ip addr add 192.168.114.1 dev br0;

Setting up bridging: sudo dnf install bridge-utils

sudo brctl addbr br0; sudo brctl addif enp1s0; sudo brctl addif eno1; sudo ifconfig br0 up

User Additions

sudo useradd <username>

sudo smbpasswd -a <username>

Touch

Create single file: touch example

Create multiple files: touch example1 example2

Set current time and date of file: touch -a example

Touch (cont)

Create file with specified time: touch -t YYMMDDHHMM.SS example

IO Redirection

command < file (Read input of command from file)

command > file (Write output of command to file)

command > /dev/null (Discard output of command)

command >> file (Append output of file)

command1 | command2 (Pipe output of command1 to command2)

Clear

clear (clears command line)

Create/Add/Remove Directories

mkdir (dir) [Creating Directory]

pwd [Show current directory]

cp file1 file2 [Copies file1 to file 2]

cp -r dir1 dir2 [Copies dir1 to dir2]

rm file/ rm -r dir [Remove file or remove directory]

Permissions

chmod ugo=rwx file = Changes permissions of file to Read, write, and execute for the User,Group, and all Others. This command can have many iterations.

chmod 777 = First digit is read(4++2+1), second is write(4+2+1), and the third is (4+2+1). Many combinations of numbers can be used.

Network Diagnostics

dig oreilly.com -returns information help by domain

Systemd

sudo systemctl start/stop/restart 'nginx.service' . -start, stop, and restart service with systemctl

sudo systemctl enable/disable 'nginx.service' -disables or enables service

systemctl list-units --all . -lists all units systemd has loaded into the system

journalctl . -view all log entries

sudo systemctl edit 'nginx.service' . -modify service directly

Exit command in Script

Exit 0 (Standard exit)

Exit (1,2,3,etc.) - If you want to customize for your script

Directories to Know

/ - Root

/bin – Essential User Binaries

/boot – Static Boot Files

/dev – Device Files

/etc – Configuration Files

/home – Home Folders

/lib – Essential Shared Libraries

DHCP Config File

option domain-name “sap.cslab.moravian.edu”;

option domain-name-servers sap.cslab.moravian.edu;

authoritative;

log-facility local7;

Arrays

Creating an array: array=("This" "is" "an" "array")

Print element in array: echo ${array[0]}, echo ${array[1]}

Expand all elements of array: printf ${array[@]}

Delete array value: unset ARRAY[1]

Show users currently logged in to host

users

Display absolute path of files or links

which <filename>

Performance Monitoring

Display and manage top processes: top

Display processor related statistics: mpstat 1

Display virtual memory statistics: vmstat 1

Display the last 100 syslog messages: tail 100 /var/log/messages

Monitor all traffic on port 80: tcpdump -i eth0 'port 80'

List files opened by user: lsof -u user

Display free and used memory (-h for human readable, -m is MB, -g is GB): free -hmg

Navigating Files/Directories

ls [list files in a directory]

ls -al [Formats files in a list and shows hidden files

cd (dir) [Change directory]

pwd [Show current directory]

more (file) [Outputs contents of a file]

Firewalld

firewall-cmd --add-service='-service name' -Adds system service to firewall protection

DNF

sudo dnf install <package> - useful for installing new packages from the command line

sudo dnf upgrade <package> - upgrades or updates given package

sudo dnf remove <package> - removes the selected package

If-then-exit

if []; then echo "" exit 1 . -if-then-exit commands for scripts

Tar

tar -x (Exract files) -v (verbose) z (zipped file) -f (use tar archive for operation)

Setting Up JupyterHub

jupyterhub --generate-config (Generates jupyterhub_config.py)

jupyterhub -f /etc/jupyterhub/jupyterhub_config.py (Start jupyterhub using config)

c.JupyterHub.ip = '192.168.1.2' c.JupyterHub.port = 443 (Change IP and Port in config FIle)

Reboot System Properly

reboot

Kerberos Install

sudo dnf install ntp -y

sudo dnf install krb5-libs krb5-server krb5-workstation

Edit /var/kerberos/krb5kdc/kadm5.acl Change */admin@EXAMPLE* to */admin*

sudo /usr/sbin/kdb5_util create -s

Test

Example to test if directory was created: test -d /tmp/temp_dir

How long system has been running

uptime

Download files from the web

wget -c [URL]

Reading from Standard Input with xargs

find . -mtime -1 -type f -print | xargs tar --create --gzip --file=$DESTDIR$FIL> : Reads items from the standard input

Crontab

cron -e (Find timed services)

crontab -l 2>/dev/null | grep -q "0 0 * crontab <command> (Ensure crontab is not outputting any else but the job to run)

Dick Usage

df -h (Shows used disk space of certain file or directory)

Shortcuts

Ctrl+C = Ends current process

Ctrl+Z = Stops current process, but can be resumed

Ctrl+D = Log out of current session

exit = Log Out of current session

Up/Down Arrows = Navigate through previous commands

IpConfig

ipconfig -a -displays all networks and interfaces

ping host -send a ping signal to the host

ifconfig eth0 -displays eth0 address and details

Shebang

#!/bin/bash -normal shebang of commented file

echo "Hello World!" -display line of text

#comment -# is the standard way to command in text editor

variable_name="Sebastiaan" -standard way to establish variables

Find

find -mtime (Files access within certain time) -type (Look for specific file type)

Universal Home Directory to use in Scripts etc.

$HOME

Check if argument is a command

if command -v "$1" >/dev/null; then

Check if argument is a variable

if [-v "$1"]; then

Adding Google Authenticator to JupyterHub

Add this command to JupyterHub config: from oauthenticator.google import GoogleOAuthenticator c.JupyterHub.authenticator_class = GoogleOAuthenticator

Customize domain name: c.GoogleOAuthenticator.hosted_domain = ['jupyterhub.com']

Installing oauth: dnf install oauthenticator

Alias

Create an alias example: alias 11='ls --color=auto'

Chec k whether command is an alias: type -a 11

Functions

Create function in command line example: bash$ home() { printf '%s\n' "$HOME" ; }

-- in a function: The option terminator string

"$@" expands to all of the arguments given to the function: printf '%s\n' "$@"

Save defined fucntion in bash: declare -f home

When writing functions in scripts, it is best to instantiate them at the top of the script so no errors are produced.

File Transfers

Secure copy example.txt to the /tmp folder on server: scp example.txt server:/tmp

Copy *.zip files from server to the local /tmp folder: scp server:/var/www/*.zip /tmp

Copy all files and directories recursively from server: scp -r server:/var/www /tmp

Synchronize /home to /home/.backups: rsync -a /home /backups/