Linux Server - Server Security And Automation

1. What is the minimum number of partitions you need to install Linux?
At minimum, Linux requires one partition — the root partition (/) — where the entire operating system and user data can be stored. However, for better management and security, most installations use at least two partitions: one for the root (/) directory and one for swap space. The swap partition acts as virtual memory when physical RAM is full, improving system stability.

2. Explain About Chmod Command
The chmod command in Linux is used to change file or directory permissions. Each file has read (r), write (w), and execute (x) permissions for the owner, group, and others. Using chmod, users can modify these permissions either symbolically (e.g., chmod u+x file) or numerically (e.g., chmod 755 file). This command helps control who can access or modify files.

3. How to check Linux memory utilization
You can check memory usage in Linux using commands like free -h, vmstat, or top. The free -h command shows total, used, and available memory in a human-readable format. The top command displays real-time system statistics, including memory and CPU usage for each running process.

4. Use grep to search for specific patterns in files
The grep command searches for specific text patterns in files. For example, grep "error" /var/log/syslog searches for the word “error” in the system log file. It supports regular expressions and options like -i for case-insensitive search and -r for recursive search through directories.

5. Get connecting on a Linux server by SSH
To connect to a remote Linux server using SSH (Secure Shell), use the command ssh username@hostname. For example, ssh root@192.168.1.10. SSH provides a secure, encrypted connection for managing and transferring files between systems remotely.

6. Create 5 files in the /tmp directory, and then use tar and gzip to bundle and compress the files.
First, create files using:
touch /tmp/file1 /tmp/file2 /tmp/file3 /tmp/file4 /tmp/file5
Then, bundle them into one archive:
tar -cvf /tmp/files.tar /tmp/file1 /tmp/file2 /tmp/file3 /tmp/file4 /tmp/file5
Finally, compress the archive using gzip:
gzip /tmp/files.tar
This creates a compressed file named /tmp/files.tar.gz.

7. Describe the root account
The root account is the superuser or administrator account in Linux with full system access. It can modify system files, install or remove software, change permissions, and manage all users. Because it has unlimited privileges, it must be used carefully to avoid accidental system damage.

8. What is shell?
A shell is a command-line interface that allows users to interact with the Linux operating system. It interprets commands entered by the user and executes them. Examples include Bash, Zsh, and Ksh. It serves as a bridge between the user and the system kernel.

9. What is Linux?
Linux is an open-source operating system based on the UNIX architecture. It manages hardware resources, runs applications, and provides essential services for software. It is widely used in servers, embedded systems, and mobile devices due to its stability, security, and flexibility.

10. What is Bash?

Bash (Bourne Again SHell) is the default command-line shell for most Linux distributions. It executes commands, runs scripts, supports loops, and variables, and helps automate tasks. Bash is an improvement over the original Bourne shell (sh), adding more features and usability.

11. You have a new empty hard drive that you will use for Linux. What is the first step you use.
The first step is to partition the hard drive using tools like fdisk or parted. Partitioning divides the disk into sections where Linux can store its system files and data. After partitioning, you can format the partitions using a filesystem like ext4 and proceed with installation.

12. Write the Linux command to show the current working directory.
pwd
This command displays the full path of the directory you are currently in.

13. Write the Linux command to get help with various options.
man command_name
For example, man ls displays the manual page for the ls command. You can also use --help with most commands, such as ls --help.

14. Write the Linux command to display what all users are currently doing.
w
The w command shows a list of logged-in users, their login time, and the processes they are running.

15. Write the Linux command to get information about the operating system.
uname -a
This command displays system information, including kernel name, version, and architecture. You can also use lsb_release -a for detailed Linux distribution information.

16. Write the Linux command to create a hard link of a file.
ln source_file link_name
Example: ln file1.txt file1_hardlink.txt
A hard link creates another reference to the same physical data on disk.

17. Write the Linux command to create a soft link of a file as well as Directory.
ln -s source_file link_name for files, and ln -s /path/to/directory link_name for directories.
A soft link (symbolic link) points to the original file or folder, similar to a shortcut in Windows.

18. Write the Linux command to search for specific pattern in a file.
grep "pattern" filename
Example: grep "user" /etc/passwd searches for the word “user” in the passwd file.

19. Write the Linux command to show the use of basic regular expressions using grep command.
grep -E "^[a-z]+" filename
This example searches for lines that start with lowercase letters. The -E option enables extended regular expressions, allowing patterns like ^, $, and +.