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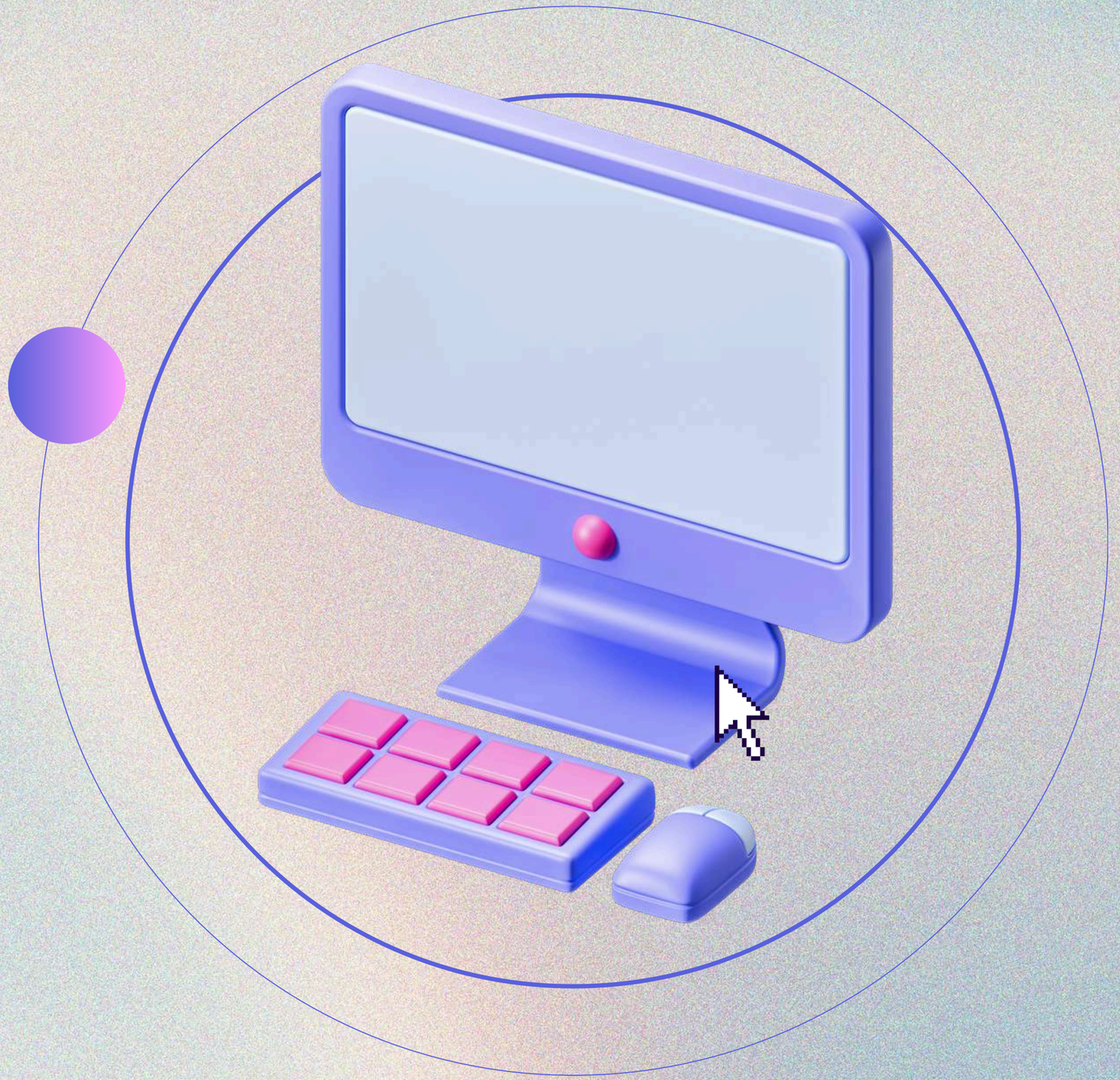
# LINUX COMMANDS

## FOR PROCESS VIEWING & USER CREDENTIAL MANAGEMENT



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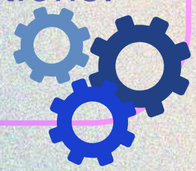
# WHY PROCESS & USER MANAGEMENT MATTER?

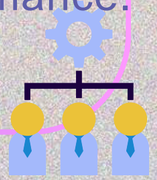
## SYSTEM STABILITY

Processes represent running programs and services. Efficient management prevents system freezes, crashes, and ensures continuous operation of critical applications.



## RESOURCE OPTIMIZATION

Monitoring processes allows administrators to identify resource-intensive applications, prevent bottlenecks, and allocate system resources effectively for optimal performance.



## SECURITY & ACCESS CONTROL

User credentials are the cornerstone of security in multi-user Linux environments, controlling who can access what resources and execute which operations. Proper management mitigates unauthorized access risks.

## TROUBLESHOOTING & AUDITING

Understanding which user owns a process and its resource usage is critical for diagnosing issues, tracking malicious activity, and maintaining a clear audit trail of system events.

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# SYSTEM PROCESS MONITORING THE PS COMMAND

```
ps aux
```

The ps (process status) command is fundamental for viewing currently running processes.

**a** → All users
**u** → User-oriented format
**x** → Include processes not attached to a terminal

Using the aux options with ps provides a detailed snapshot of all running processes across the system, including those not associated with a terminal. This output is invaluable for system administrators.

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# SYSTEM PROCESS MONITORING THE PS COMMAND

| COLUMN | DESCRIPTION |
| --- | --- |
| USER | The user ID that owns the process. |
| PID | The unique process ID. |
| %CPU | Percentage of CPU time the process is currently using. |
| %MEM | Percentage of physical memory the process is currently using. |
| COMMAND | The command that started the process, often including arguments. |

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# SYSTEM PROCESS MONITORING WITH TOP AND HTOP

```
top
```

The top command provides a dynamic, real-time view of running processes. It constantly updates the display with information about CPU usage, memory usage, and a list of processes sorted by CPU utilization by default.

```
htop
```

htop is an enhanced version of top that offers a more user-friendly interface with color-coding, vertical and horizontal scrolling, and mouse support. It's often preferred for its ease of navigation and advanced filtering options.

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# PROCESS OUTPUT FORMATTING WITH PS AND GREP

```
ps aux | grep [process_name]
```

**Filter by Process Name**

This command pipes the output of ps aux to grep, allowing you to search for processes whose command names contain a specific string (e.g., 'apache2', 'mysql').

```
ps aux --sort=-%cpu
```

**Sort Output**

You can sort the output of ps by various criteria using the --sort option. For example, -%cpu sorts by CPU usage in descending order, immediately highlighting the most CPU-intensive processes.

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# PROCESS OUTPUT FORMATTING WITH PS AND GREP CONT.

```
ps -u [username]
```

**Filter by User**

To view all processes owned by a specific user, use the -u option. This is crucial for understanding what each user is running and their potential resource impact.

```
ps -eo pid,user,%cpu,%mem,comm
```

**Custom Columns**

The -o option allows you to specify exactly which columns you want to see, providing a cleaner and more focused output, tailored to your immediate needs.

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# USER CREDENTIALS & PASSWORD MANAGEMENT

### useradd

```
sudo useradd [username]
```

Used to create new user accounts.

### usermod

```
sudo usermod -s /bin/zsh maria
```

Modifies existing user accounts. Common uses include adding a user to a group (usermod -aG sudo newuser) or changing their home directory.

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# USER CREDENTIALS & PASSWORD MANAGEMENT

### passwd

```
sudo passwd [samplepassword]
```

→ Used to create new user accounts.

### passwd -l / -u

```
sudo passwd -l maria
```

→ Lock user account

```
sudo passwd -u maria
```

→ Unlock user account

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# USER SWITCH AND SESSION RETURN

```
# Start as root
whoami
root

# Switch to maria
su - maria
Password: ****

# Now inside maria's account
whoami
maria

# Return to root
exit

# Back as root
whoami
root
```

## su

The su (substitute user) command allows you to switch to another user account.

## whoami

displays the current user

## exit

After switching users with su or performing elevated actions, the exit command allows you to return to your previous user session or close the current terminal session.


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