

## Linux Scenario-Based Practice

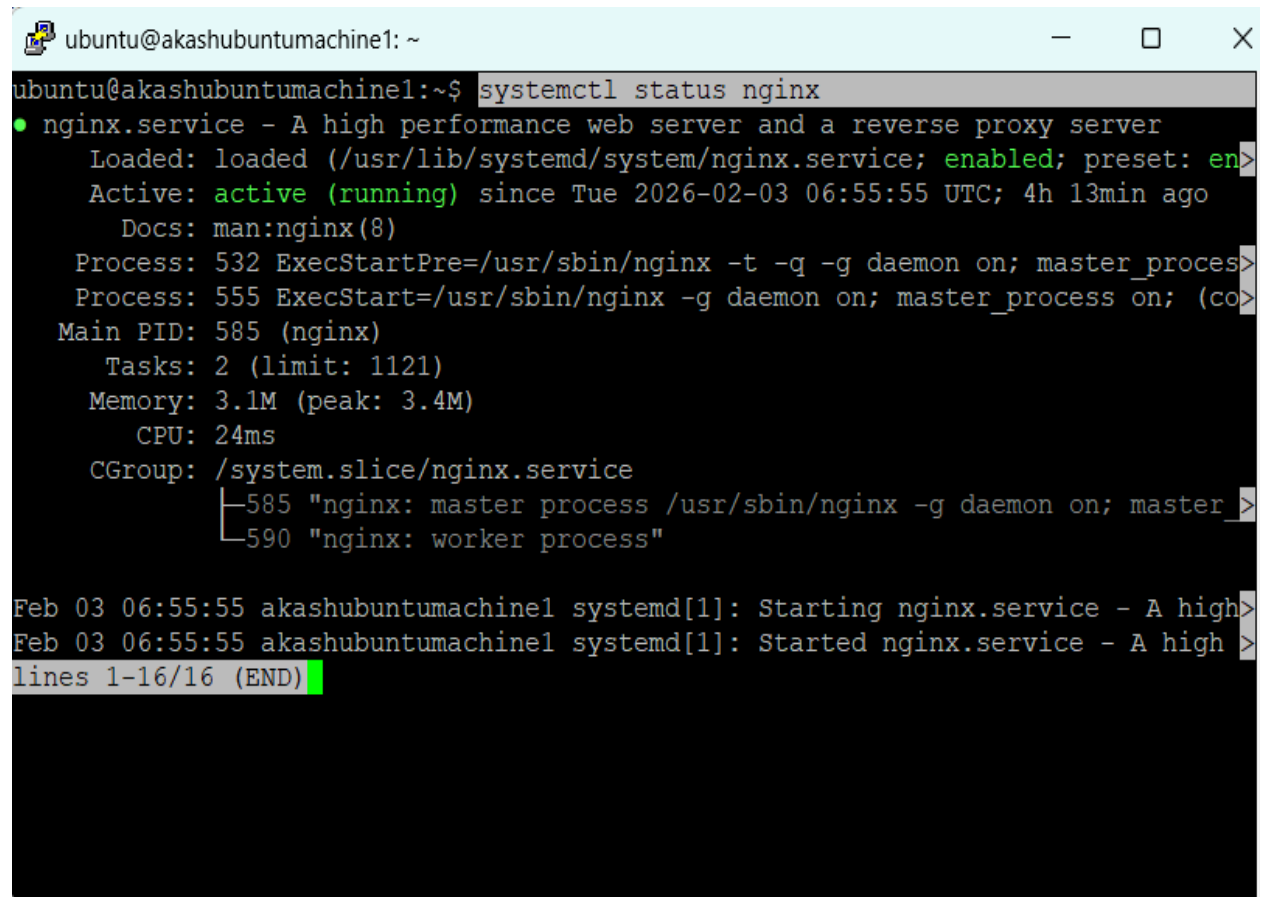
### SOLVED EXAMPLE: Understanding How to Approach Scenarios

#### Example Scenario: Check if a service is running

1-Question: How do you check if the 'nginx' service is running?

#### Step 1: Check service status

#systemctl status nginx



```
ubuntu@akashubuntumachine1: ~  
ubuntu@akashubuntumachine1:~$ systemctl status nginx  
● nginx.service - A high performance web server and a reverse proxy server  
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: en>  
   Active: active (running) since Tue 2026-02-03 06:55:55 UTC; 4h 13min ago  
     Docs: man:nginx(8)  
  Process: 532 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_proces>  
  Process: 555 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (co>  
 Main PID: 585 (nginx)  
    Tasks: 2 (limit: 1121)  
  Memory: 3.1M (peak: 3.4M)  
     CPU: 24ms  
   CGroup: /system.slice/nginx.service  
           └─585 "nginx: master process /usr/sbin/nginx -g daemon on; master_>  
             └─590 "nginx: worker process"  
  
Feb 03 06:55:55 akashubuntumachine1 systemd[1]: Starting nginx.service - A high>  
Feb 03 06:55:55 akashubuntumachine1 systemd[1]: Started nginx.service - A high>  
lines 1-16/16 (END)
```

**Step 2:** If service is not found, list all services

**# systemctl list-units --type=service**

```
ubuntu@akashubuntumachine1: ~  
ubuntu@akashubuntumachine1:~$ systemctl list-units --type=service
```

UNIT	LOAD	ACTIVE	SUB	DESCRIPT
acpid.service	loaded	active	running	ACPI eve>
apparmor.service	loaded	active	exited	Load App>
apport.service	loaded	active	exited	automati>
blk-availability.service	loaded	active	exited	Availabi>
chrony.service	loaded	active	running	chrony, >
cloud-config.service	loaded	active	exited	Cloud-in>
cloud-final.service	loaded	active	exited	Cloud-in>
cloud-init-local.service	loaded	active	exited	Cloud-in>
cloud-init.service	loaded	active	exited	Cloud-in>
console-setup.service	loaded	active	exited	Set cons>
containerd.service	loaded	active	running	containe>
cron.service	loaded	active	running	Regular >
dbus.service	loaded	active	running	D-Bus Sy>
docker.service	loaded	active	running	Docker A>
finalrd.service	loaded	active	exited	Create f>
getty@tty1.service	loaded	active	running	Getty on>
keyboard-setup.service	loaded	active	exited	Set the >
kmod-static-nodes.service	loaded	active	exited	Create L>
lvm2-monitor.service	loaded	active	exited	Monitori>
ModemManager.service	loaded	active	running	Modem Ma>
multipathd.service	loaded	active	running	Device-M>
networkd-dispatcher.service	loaded	active	running	Dispatch>

**Step 3:** Check if service is enabled on boot

```
ubuntu@akashubuntumachine1: ~  
ubuntu@akashubuntumachine1:~$ systemctl is-enabled nginx  
enabled  
ubuntu@akashubuntumachine1:~$
```

## Scenario 1: Service Not Starting

A web application service called '**myapp**' failed to start after a server reboot. What commands would you run to diagnose the issue?

### Step 1:

```
#systemctl status myapp
```

**Why:** Check whether the service is running, failed, or inactive after reboot.

---

### Step 2:

```
#journalctl -u myapp -n 50
```

**Why:** View the last 50 log entries for *myapp* to find the exact error message.

---

### Step 3:

```
#systemctl is-enabled myapp
```

**Why:** Verify if the service is enabled to start automatically at boot.

---

### Step 4:

```
#systemctl restart myapp
```

**Why:** Try restarting the service after checking logs to see if the issue persists.

---

### (Optional but professional bonus step):

```
#ps -ef | grep myapp
```

**Why:** Confirm whether the myapp process is actually running at the OS level.

## Scenario 2: High CPU Usage

Your manager reports that the application server is slow. You SSH into the server. What commands would you run to identify.

which process is using high CPU?

### Step 1:

`top`

**Why:** Display live CPU usage and quickly identify which process is consuming the most CPU.

---

### Step 2:

`ps aux --sort=-%cpu | head -10`

**Why:** List the top 10 processes sorted by highest CPU usage for clear identification.

---

### Step 3:

`htop`

**Why:** Provide an interactive and more readable view of CPU usage and running processes (if installed).

---

### Step 4:

`ps -p <PID> -o pid,ppid,cmd,%cpu,%mem`

**Why:** Inspect the specific high-CPU process in detail using its Process ID (PID).

## Scenario 3: Finding Service Logs

A developer asks: "Where are the logs for the 'docker' service?" The service is managed by systemd.

What commands would you use?

### Step 1:

```
#systemctl status docker
```

**Why:** Shows the current status of Docker and the most recent log messages.

---

### Step 2:

```
#journalctl -u docker
```

**Why:** Display all logs for the docker service from the systemd journal.

---

### Step 3:

```
#journalctl -u docker -n 50
```

**Why:** Show only the last 50 log entries for quick troubleshooting.

---

### Step 4 (live logs):

```
#journalctl -u docker -f
```

**Why:** Follow Docker logs in real time (like tail -f).

## Scenario : 4File Permissions Issue

A script at /home/user/backup.sh is not executing. When you run it: ./backup.sh

You get: "Permission denied"

What commands would you use to fix this?

### Step 1:

```
# ls -l /home/user/backup.sh
```

**Why:** Check the current file permissions to confirm the script is not executable.

---

### Step 2:

```
# chmod +x /home/user/backup.sh
```

**Why:** Add execute permission so the script can be run.

---

### Step 3:

```
# ls -l /home/user/backup.sh
```

**Why:** Verify that execute (x) permission is now set.

---

### Step 4:

```
# cd /home/user/backup.sh
```

**Why:** Run the script again to confirm the issue is resolved.

# Why This Matters for DevOps

## Understanding the file system is critical for:

- Knowing where to find logs, configs, and binaries
- Troubleshooting deployment issues
- Writing automation scripts that work across systems

## Scenario-based practice prepares you for:

- Real production incidents
- DevOps interviews
- On-call troubleshooting under pressure

These are questions you **will** face in interviews and during real incidents.