

Linux Scenario Practice Guide for DevOps Engineers

This guide is designed for DevOps engineers to practice real-world Linux scenarios. Each scenario includes the situation, question, and answer with practical commands you'll use daily in production environments.

1. Disk Space Alert

Situation: Jenkins jobs are failing due to low disk space.

Solution:
`df -h; du -sh /* 2>/dev/null | sort -hr | head -10; find /var/log -type f -name '*.log' -mtime +7 -delete; docker system prune -a --volumes`

2. High CPU Usage

Situation: Web server is slow due to CPU hogging.

Solution:
`top; ps -eo pid,comm,%cpu,%mem --sort=-%cpu | head; kill -9`

3. SSH Access Denied

Situation: A new DevOps user cannot SSH into the server.

Solution:
`id devopsuser; ls -ld /home/devopsuser/.ssh; cat /home/devopsuser/.ssh/authorized_keys; systemctl status sshd`

4. Application Port Not Listening

Situation: Nginx running but website unreachable.

Solution:
`ss -tulnp | grep nginx; curl -I http://localhost:80; firewall-cmd --permanent --add-port=80/tcp; firewall-cmd --reload`

5. Service Fails After Reboot

Situation: Docker doesn't start automatically.

Solution:
`systemctl enable docker; systemctl start docker; systemctl status docker`

6. Log File Analysis

Situation: Application crashed last night.

Solution:
`grep -i 'error' /var/log/syslog | tail -20; journalctl -u nginx --since 'yesterday'`

7. Network Connectivity Issue

Situation: Ping to internal server fails.

Solution:
`ping ; ip a; ip route; systemctl status NetworkManager`

8. File Permission Error

Situation: Jenkins reports 'Permission denied'.

Solution:
`ls -l /var/lib/jenkins; chown -R jenkins:jenkins /var/lib/jenkins; chmod -R 755 /var/lib/jenkins`

9. Automation with Cron

Situation: Run cleanup script daily.

Solution:
`crontab -e; 0 0 * * * /usr/local/bin/cleanup.sh`

10. Package Installation

Situation: Install jq and git on RHEL.

Solution:
`yum install -y jq git`

11. Check System Uptime

Situation: Check how long system has been up.

Solution:
`uptime; who -b`

12. Find Recently Modified Files

Situation: Find modified files in last 24h.

Solution:
`find /path/to/dir -type f -mtime -1`

13. Port Conflict

Situation: Port 8080 is busy.

Solution:
`lsof -i :8080; netstat -tulnp | grep 8080`

14. Copy Files Between Servers

Situation: Copy backup file to another node.

Solution:
`scp /backup/db_backup.sql user@10.10.10.2:/data/backups/`

15. File System Read-Only Error

Situation: Can't save logs: Read-only FS.

Solution:
`mount -o remount,rw /; df -hT; dmesg | tail -20`

16. Docker Container Not Starting

Situation: Container exits immediately.

Solution:
`docker ps -a; docker logs ; docker inspect | grep Error`

17. Docker Image Consuming Space

Situation: Disk full due to Docker images.

Solution:
`docker system df; docker system prune -a --volumes; du -sh /var/lib/docker/*`

18. Docker Network Issue

Situation: Containers can't reach each other.

Solution:
`docker network ls; docker network inspect ; docker exec -it ping`

19. Ansible Permission Error

Situation: Playbook fails with permission issue.

Solution:
`ansible-playbook site.yml -vvv; ansible all -m ping; ansible all -a 'whoami'`

20. Dynamic Inventory

Situation: Auto-discover EC2 instances via Ansible.

Solution:
`ansible-inventory -i aws_ec2.yml --list`

21. Kubernetes Pod CrashLoopBackOff

Situation: Pod restarts repeatedly.

Solution:
`kubectl describe pod ; kubectl logs --previous`

22. Node NotReady

Situation: Kubernetes worker node shows NotReady.

Solution:
`kubectl describe node ; df -h; du -sh /var/lib/containerd /var/lib/kubelet`

23. Pod External Connection Issue

Situation: Pod can't connect to external API.

Solution:
`kubectl exec -it -- curl -v https://api.example.com; kubectl get networkpolicy`

24. ConfigMap Not Updated

Situation: Pods not showing latest config.

Solution:
`kubectl rollout restart deployment`

25. High System Load

Situation: Prometheus alert: high load average.

Solution:
`uptime; top; vmstat 1 5; iostat -xz 1 5`

26. Time Desync

Situation: Timestamps differ between servers.

Solution:
`timedatectl; systemctl restart chronyd`

27. SELinux Blocking App

Situation: Permission denied due to SELinux.

Solution:
`getenforce; setenforce 0`

28. Firewall Blocking App

Situation: Grafana port not accessible.

Solution:
`firewall-cmd --list-all; firewall-cmd --permanent --add-port=3000/tcp; firewall-cmd --reload`

29. Deleted Log File Still in Use

Situation: File missing but process writing.

Solution:
`lsof | grep deleted`

30. Backup Database Script

Situation: Automate PostgreSQL backups daily.

Solution:
`pg_dump -U postgres mydb > /backup/mydb_$(date +%F).sql; find /backup -type f -mtime +7 -delete`

Keep Practicing!

Use these scenarios daily to strengthen your Linux troubleshooting and automation skills. Remember — mastery comes from repetition, observation, and automation.