# CompTIA Linux+ XK0-005

# Quick Exam Refresher

*This is your **condensed, high-impact review guide** for the Linux+ XK0-005 exam. It's designed for **last-mile recall** and **confidence-building** right before the exam — not deep instruction.*

## Linux+ XK0-005 Domains

Each domain has a different weight. Focus extra time on **System Management** and **Troubleshooting**, which carry the most weight.

- Domain 1: System Management (32%)
- Domain 2: Security (21%)
- Domain 3: Scripting, Containers, and Automation (19%)
- Domain 4: Troubleshooting (28%)

## Quick Reminder: How the Exam Works

- Number of Questions: Up to 90
- Format: Multiple Choice + Performance-Based Questions (PBQs)
- Time Limit: 90 minutes
- Passing Score: 720 / 900
- Provider: Pearson VUE (online or onsite)

## Remember - You Don't Need to Be Perfect to Pass!

The passing score is about **80%**, meaning you can **miss up to 18 questions** and still pass. Focus on **understanding and practice**, not memorizing every flag.

## Domain 1: System Management (32%)

**Focus:** Filesystems, storage, services, users, packages, and automation basics.

**Key Topics:**

- Linux directory structure (/etc, /var, /home, etc.)
- File operations: ls, cp, mv, rm, find, chmod, chown
- File compression: tar, gzip, zip
- Filesystems: ext4, xfs, btrfs
- Mounting: mount, umount, /etc/fstab, blkid, lsblk
- LVM: pvcreate, vgcreate, lvcreate, lvextend, resize2fs
- RAID: mdadm, /proc/mdstat
- Systemd: systemctl start/stop/status/enable, journalctl
- Job scheduling: cron, at, systemctl timer
- Package management:
  - Debian: apt, dpkg
  - RedHat: dnf, yum, rpm
- Snap, Flatpak basics

## Domain 2: Security (21%)

**Focus:** Permissions, access controls, firewalls, authentication, hardening.

**Key Topics:**

- File permissions: chmod, chown, umask
- Special bits: SUID, SGID, Sticky Bit
- ACLs: getfacl, setfacl
- User management: useradd, passwd, chage, usermod, groups
- Password aging and account lockout: faillock, /etc/shadow, /etc/passwd
- SSH security: sshd_config, key-based auth, ssh, scp
- Firewalls:
  - ufw (Ubuntu), firewalld (RHEL), iptables, nft
- SELinux: getenforce, setenforce, restorecon, semanage, audit2allow
- AppArmor: aa-status, profile enforcement
- Hardening: Secure boot, disable services, enforce password policy, remove unnecessary packages

## Domain 3: Scripting, Containers, and Automation (19%)

**Focus:** Bash scripting, text processing, Git, containers, automation tools.

**Key Topics:**

- Bash basics: variables, loops, if, case, functions
- Operators: -eq, -lt, -f, -d, -z
- I/O: >, >>, |, 2>&1, tee, xargs
- Text tools: grep, sed, awk, cut, sort, uniq, tr, wc, head, tail, find
- Git: clone, add, commit, push, pull, .gitignore, branch, merge
- Docker/Podman: run, ps, logs, exec, pull, build, volume, port
- YAML vs JSON syntax
- Config management: Ansible, Puppet, Chef, SaltStack (conceptual)
- IaC: Terraform basics
- CI/CD and GitOps: pipelines, builds, deploys
- Kubernetes: Pods, services, sidecars, overlay networking
- Cloud-init: Bootstrapping cloud servers

## Domain 4: Troubleshooting (28%)

**Focus:** Storage, networking, boot, services, access, and resource issues.

**Key Topics:**

- Disk usage: df, du, lsblk, mount, fsck, find
- RAID/LVM: mdadm, lvs, vgs, lvextend
- Network issues:
  - Tools: ping, ip addr, ip route, ss, ethtool, dig, traceroute
  - Check DNS, routing, cable/NIC errors
- CPU/memory:
  - top, htop, free, vmstat, nice, renice, kill, dmesg
- Login/auth failures:
  - Check /etc/passwd, /etc/shadow, PAM logs, chage, faillock
- Systemd service issues:
  - systemctl, journalctl, config syntax (nginx -t, sshd -t)
- Boot problems:
  - GRUB, /etc/fstab, dracut, rescue mode, grub2-mkconfig, lsinitrd

# Full Linux+ XK0-005 Commands List

## 1. Filesystem and File Management

| Command | Description | Common Options | Example |
|---|---|---|---|
| **ls** | List directory contents | -l (long), -a (all), -h (human-readable) | ls -lah |
| **cd** | Change directory | .. (up one level) | cd /etc |
| **pwd** | Show current directory | — | pwd |
| **mkdir** | Create a new directory | -p (make parent dirs) | mkdir -p /data/logs |
| **rmdir** | Remove an empty directory | — | rmdir emptydir |
| **rm** | Delete files/directories | -r (recursive), -f (force) | rm -rf /tmp/files |
| **cp** | Copy files/directories | -r, -p (preserve), -u (update) | cp -ruv src/ dest/ |
| **mv** | Move or rename files | — | mv oldname.txt newname.txt |
| **touch** | Create empty files | — | touch file.txt |
| **find** | Search for files/directories | -name, -type, -size, -mtime, -exec | find /var -name "*.log" |
| **file** | Show file type | — | file script.sh |
| **stat** | Show detailed file info | — | stat /etc/passwd |
| **du** | Disk usage per file/dir | -sh, -a, --max-depth=1 | du -sh * |
| **df** | Show disk space | -h (human), -i (inodes) | df -hi |

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|---|---|---|---|
| **mount** | Mount a filesystem | -t (type), -o (options) | mount -t ext4 /dev/sdb1 /mnt |
| **umount** | Unmount filesystem | — | umount /mnt |
| **lsblk** | Show block devices | -f, -o NAME,SIZE,MOUNTPOINT | lsblk -f |
| **blkid** | Show device UUIDs | — | blkid /dev/sda1 |
| **mkfs** | Format a partition | -t ext4/xfs | mkfs -t ext4 /dev/sdb1 |
| **fsck** | Check filesystem | -y (auto fix) | fsck -y /dev/sdb1 |

## 2. User and Group Management

| Command | Description | Common Options | Example |
|---|---|---|---|
| **useradd** | Add user | -m (home), -s (shell), -G (groups) | useradd -m -s /bin/bash -G wheel alice |
| **passwd** | Set/modify password | -l (lock), -u (unlock), -e (expire) | passwd alice |
| **userdel** | Delete user | -r (remove home) | userdel -r alice |
| **usermod** | Modify user | -aG (append to group), -s (shell) | usermod -aG dev alice |
| **groupadd** | Add group | — | groupadd devs |
| **groupdel** | Delete group | — | groupdel devs |
| **groups** | Show user's groups | — | groups alice |
| **id** | Show UID, GID | — | id alice |
| **chage** | Set password aging | -l, -M, -E | chage -M 90 -E 2025-12-31 bob |

## 3. Permissions and Ownership

| Command | Description | Common Options | Example |
|---|---|---|---|
| **chmod** | Change permissions | +x, 755, u+rwx | chmod 755 script.sh |
| **chown** | Change ownership | user:group | chown bob:devs file.txt |
| **chgrp** | Change group | — | chgrp devs file.txt |
| **umask** | Set default permissions | — | umask 022 |
| **getfacl** | View ACL | — | getfacl file.txt |
| **setfacl** | Set ACL | -m, -x, -b | setfacl -m u:bob:rw file.txt |
| **lsattr** | List file attributes | — | lsattr file.txt |
| **chattr** | Change file attributes | +i, -i (immutable) | chattr +i config.cfg |

## 4. Process and System Management

| Command | Description | Common Options | Example |
|---|---|---|---|
| **ps** | List processes | aux, -ef | `ps aux |
| **top** | Real-time process monitor | -u (user) | top -u bob |
| **htop** | Interactive top | (Install separately) | htop |
| **kill** | Send signal to PID | -9 (SIGKILL) | kill -9 1234 |

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|---|---|---|---|
| **killall** | Kill by name | — | killall firefox |
| **renice** | Change priority | -n, -p | renice -n 10 -p 2345 |
| **nice** | Start process with priority | -n | nice -n 19 backup.sh |
| **uptime** | Show load average | — | uptime |
| **free** | Show RAM/swap usage | -h | free -h |
| **vmstat** | Show memory, CPU stats | — | vmstat 2 5 |
| **dmesg** | Show kernel logs | ` | tail` |

## 5. Scheduling Jobs

| Command | Description | Common Options | Example |
|---|---|---|---|
| **crontab** | Manage user cron jobs | -e, -l, -r | crontab -e |
| **at** | One-time job scheduling | — | `echo "reboot" |
| **systemctl** | Manage system services | start, stop, enable, status | systemctl restart sshd |
| **journalctl** | View logs | -u, -b, -xe | journalctl -u nginx |

# 6. Package Management

**Debian-based:**

| Command | Description | Common Options | Example |
|---|---|---|---|
| **apt update** | Update repo index | — | apt update |
| **apt upgrade** | Upgrade packages | — | apt upgrade |
| **apt install** | Install package | — | apt install nginx |
| **dpkg** | Install/remove DEB files | -i, -r, -l | dpkg -i package.deb |

**RHEL-based:**

| Command | Description | Common Options | Example |
|---|---|---|---|
| **dnf / yum** | Package manager | install, remove, update | dnf install httpd |
| **rpm** | Manage RPMs directly | -qa, -ivh, -e | ` rpm -qa |

# 7. Network Troubleshooting

| Command | Description | Common Options | Example |
|---|---|---|---|
| **ip addr** | Show IPs/interfaces | — | ip addr show eth0 |
| **ip link** | Show NICs | — | ip link show |
| **ip route** | Show routing table | — | ip route |
| **ping** | Test host reachability | -c (count) | ping -c 4 google.com |
| **traceroute** | Show route path | — | traceroute google.com |
| **ss** | Show sockets | -tuln | ss -tulnp |
| **netstat** | Legacy socket tool | -an, -tulpn | netstat -tulnp |

| | | | |
|---|---|---|---|
| **ethtool** | NIC diagnostics | — | ethtool eth0 |
| **dig** | DNS query | +short | dig +short google.com |
| **host** | DNS resolution | — | host linux.org |
| **nmcli** | NetworkManager CLI | con, device | nmcli device show |

## 8. Firewall Management

| Tool | Command | Description |
|---|---|---|
| **ufw** | enable, allow, status | ufw allow 22/tcp |
| **firewall-cmd** | --list-all, --add-service | firewall-cmd --add-service=ssh --permanent |
| **iptables** | -L, -A, -P, -D | iptables -A INPUT -p tcp --dport 22 -j ACCEPT |
| **nft** | list ruleset | nft list ruleset |

## 9. SELinux and AppArmor

| Command | Description | Example |
|---|---|---|
| **getenforce** | Show SELinux mode | getenforce |
| **setenforce** | Set mode (0=permissive, 1=enforcing) | setenforce 1 |
| **sestatus** | View SELinux status | sestatus |
| **ls -Z** | Show SELinux contexts | ls -Z /var/www/html |
| **chcon** | Change context | chcon -t httpd_sys_content_t index.html |

| | | |
|---|---|---|
| **restorecon** | Reset context | restorecon -Rv /var/www |
| **setsebool** | Set boolean | setsebool -P httpd_can_network_connect on |
| **aa-status** | AppArmor status | aa-status |
| **aa-enforce** | Enforce AppArmor profile | aa-enforce /etc/apparmor.d/usr.sbin.nginx |

## 10. Containers and Automation

| Command | Description | Example |
|---|---|---|
| **docker run** | Run container | docker run -it ubuntu bash |
| **docker ps** | List containers | docker ps -a |
| **docker logs** | View logs | docker logs webapp |
| **docker exec** | Run cmd inside container | docker exec -it nginx bash |
| **docker pull** | Download image | docker pull alpine |
| **docker build** | Build image | docker build -t myapp . |
| **docker rm** | Remove container | docker rm web1 |
| **docker rmi** | Remove image | docker rmi alpine |
| **git** | Version control | git add ., git commit -m "msg", git push |
| **terraform** | IaC provisioning | terraform plan, terraform apply |
| **ansible** | Configuration mgmt | ansible-playbook site.yml |
| **cloud-init** | Cloud VM setup | in user-data config |