CompTIA®

Linux+

PRACTICE TESTS

Second Edition

EXAM XK0-004

Provides 1,000 practice questions covering all exam objectives.

Complements the *CompTIA Linux+ Study Guide Fourth Edition*, Exam XK0-004.

STEVE SUEHRING

SYBEX®
A Wiley Brand

CompTIA® Linux+

Practice Tests

Exam XK0-004

Second Edition

Steven Suehring

SYBEX®
A Wiley Brand

Senior Acquisitions Editor: Kenyon Brown
Development Editor: Tom Cirtin
Technical Editor: Kevin Ryan
Production Editor: Amy Odum
Copy Editor: Tiffany Taylor
Editorial Manager: Pete Gaughan
Production Manager: Kathleen Wisor
Executive Editor: Jim Minatel
Proofreader: Kathryn Duggan
Indexer: Ted Laux
Project Coordinator, Cover: Brent Savage
Cover Designer: Wiley
Cover Image: © Jeremy Woodhouse/Getty Images, Inc.

Published simultaneously in Canada

ISBN: 978-1-119-55596-4
ISBN: 978-1-119-55602-2 (ebk.)
ISBN: 978-1-119-55610-7 (ebk.)

Manufactured in the United States of America

Library of Congress Control Number: 2019938095

10 9 8 7 6 5 4 3 2 1

To Tim Krause

Acknowledgments

Thank you to the team that helped put this title together: Pete Gaughan, editorial manager; Kenyon Brown, the acquisitions editor; Kevin Ryan, technical editor; Tom Cirtin, the project editor; Amy Odum, production editor; copyeditor Tiffany Taylor; and the compositors at Aptara.

Thank you also to all of those individuals who support me throughout book-writing and project endeavors, including my family, Patti, Rob, and Jim at Partners, Kent and everyone at Soundworks, and my colleagues at UWSP.

About the Author

Steve Suehring is an assistant professor of computing and new media technologies at University of Wisconsin—Stevens Point. Prior to joining the faculty in 2015, Steve gained 20 years of field experience in a variety of technical engineering, system and network administration, and system architectural roles. Steve has written several books and has served as an editor for *LinuxWorld* magazine.

Contents at a Glance

Contents

Introduction

This book is a companion volume to *CompTIA Linux+ Study Guide: Exam XK0-004* (4th ed.). The book will help you prepare for the certification exams by testing your knowledge using questions derived directly from the exam objectives. There are 1,000 questions within this book, divided into chapters based on the objectives.

Each of the chapters will test your knowledge on a given exam objective along with its subobjectives. There is also a practice exam at the end covering all exam objectives. The questions are a mix of easy to difficult and will help you prepare for the types of knowledge needed to demonstrate that you can work with Linux systems.

To achieve maximum benefit, the book should be used with the corresponding certification study guide. You can also use the book to identify areas where additional study is needed.

Objective Map

The following table lists each of the five objective domains in the CompTIA Linux+ exam and the percentage of the exam of each domain. The subobjectives are also listed for each domain. Because each chapter in this book focuses on a specific domain, the mapping is easy: for Domain 1.0, refer to Chapter 1; for Domain 2.0, refer to Chapter 2, and so on.

Objective Domain	Percentage of Exam	Chapter
Domain 1.0 Hardware and System Configuration	**21%**	**1**
1.1 Explain Linux boot process concepts		
1.2 Given a scenario, install, configure, and monitor kernel modules		
1.3 Given a scenario, configure and verify network connection parameters		
1.4 Given a scenario, manage storage in a Linux environment		
1.5 Compare and contrast cloud and virtualization concepts and technologies		
1.6 Given a scenario, configure localization options		

Objective Domain	Percentage of Exam	Chapter
Domain 2.0 Systems Operation and Maintenance	**26%**	**2**
2.1 Given a scenario, conduct software installations, configurations, updates, and removals		
2.2 Given a scenario, manage users and groups		
2.3 Given a scenario, create, modify, and redirect files		
2.4 Given a scenario, manage services		
2.5 Summarize and explain server roles		
2.6 Given a scenario, automate and schedule jobs		
2.7 Explain the use and operation of Linux devices		
2.8 Compare and contrast Linux graphical user interfaces		
Domain 3.0 Security	**19%**	**3**
3.1 Given a scenario, apply or acquire the appropriate user and/or group permissions and ownership		
3.2 Given a scenario, configure and implement appropriate access and authentication methods		
3.3 Summarize security best practices in a Linux environment		
3.4 Given a scenario, implement logging services		
3.5 Given a scenario, implement and configure Linux firewalls		
3.6 Given a scenario, backup, restore, and compress files		

Objective Domain	Percentage of Exam	Chapter
Domain 4.0 Linux Troubleshooting and Diagnostics	**20%**	**4**
4.1 Given a scenario, analyze system properties and remediate accordingly		
4.2 Given a scenario, analyze system processes in order to optimize performance		
4.3 Given a scenario, analyze and troubleshoot user issues		
4.4 Given a scenario, analyze and troubleshoot application and hardware issues		
Domain 5.0 Automation and Scripting	**14%**	**5**
5.1 Given a scenario, deploy and execute basic Bash scripts		
5.2 Given a scenario, carry out version control using Git		
5.3 Summarize orchestration processes and concepts		

Chapter 1

Hardware and System Configuration

THE FOLLOWING COMPTIA LINUX+ EXAM OBJECTIVES ARE COVERED IN THIS CHAPTER:

✓ **1.1 Explain Linux boot process concepts.**

- The following is a partial list of the used files, terms, and utilities:
  - Boot loaders such as `GRUB` and `GRUB2`
  - Boot options such as UEFI/EFI, PXE, NFS, and booting from ISO and HTTP/FTP
  - `/etc/default/grub`
  - `/etc/grub2.cfg`
  - `/boot`
  - `mkinitrd`
  - `dracut`
  - `grub2-install`
  - `grub2-mkconfig`
  - `initramfs`
  - `linux.efi`
  - `vmlinuz`
  - `vmlinux`

✓ **1.2 Given a scenario, install, configure, and monitor kernel modules**

- The following is a partial list of the used files, terms, and utilities:
  - lsmod
  - insmod

- modprobe
- dmesg
- rmmod
- depmod
- /usr/lib/[kernelversion]
- /usr/lib/modules
- /etc/modprobe.conf
- /etc/modprobe.d/

✓ 1.3 Given a scenario, configure and verify network connection parameters

- The following is a partial list of the used files, terms, and utilities:
  - ping
  - netstat
  - nslookup
  - dig
  - host
  - route
  - ip
  - ethtool
  - ss
  - iwconfig
  - nmcli
  - brctl
  - nmtui
  - /etc/sysconfig/network
  - /etc/sysconfig/network-scripts/
  - /etc/hosts
  - /etc/network
  - /etc/resolv.conf
  - /etc/netplan

- /etc/sysctl.conf
- /etc/dhcpd.conf
- Bonding aggregation, active/passive, load balancing

✓ 1.4 Given a scenario, manage storage in a Linux environment

- The following is a partial list of the used files, terms, and utilities:
  - Basic partitions including raw devices, GPT, and MBR
  - File system hierarchy including real file systems, virtual filesystems, relative paths, and absolute paths
  - Device mappers including lvm, mdadm, and Multipath
  - XFS tools
  - LVM tools
  - EXT tools
  - fdisk
  - parted
  - mkfs
  - iostat
  - df
  - du
  - mount
  - umount
  - tune2fs
  - fsck
  - /etc/fstab
  - /etc/cryptab
  - /dev/
  - /dev/mapper
  - /dev/disk/by-id
  - /etc/mtab
  - /sys/block
  - Filesystem types including ext3, ext4, xfs, nfs, smb, cifs, and ntfs

✓ 1.5 Compare and contrast cloud and virtualization concepts and technologies

- The following is a partial list of the used files, terms, and utilities:
  - Templates including VM, OVA, OVF, JSON, YAML, and container images
  - Bootstrapping, including Cloud-init, Anaconda, and Kickstart
  - Storage such as thin vs. thick provisioning, persistent volumes, blob, and block
  - Network considerations including bridging, overlay networks, NAT, local, and dual-homed
  - Types of hypervisors
  - Tools such as `libvirt`, `virsh`, and `vmm`

✓ 1.6 Given a scenario, configure localization options

- The following is a partial list of the used files, terms, and utilities:
  - `/etc/timezone`
  - `/usr/share/zoneinfo`
  - `localectl`
  - `timedatectl`
  - `date`
  - `hwclock`
  - `time`
  - Environment variables such as `LC_*`, `LC_ALL`, `LANG`, and `TZ`
  - Character sets such as UTF-8, ASCII, and Unicode

1. Which command is used to load a module and its dependencies automatically?
   - **A.** `modprobe`
   - **B.** `lsmod`
   - **C.** `insmod`
   - **D.** `rmmod`

2. Which option given at boot time within the GRUB configuration will boot the system into single-user mode?
   - **A.** `single-user`
   - **B.** `su`
   - **C.** `single`
   - **D.** `root`

3. During boot of a system with GRUB2, which key can be pressed to display the GRUB menu?
   - **A.** Shift
   - **B.** E
   - **C.** V
   - **D.** H

4. Which command can be used to view the kernel ring buffer in order to troubleshoot the boot process?
   - **A.** `lsboot`
   - **B.** `boot-log`
   - **C.** `krblog`
   - **D.** `dmesg`

5. Which command can be used to obtain a list of currently loaded kernel modules?
   - **A.** `insmod`
   - **B.** `modlist`
   - **C.** `ls --modules`
   - **D.** `lsmod`

6. Within which partition will the EFI system partition typically be mounted?
   - **A.** `/etc/efi`
   - **B.** `/efi`
   - **C.** `/sys/efi`
   - **D.** `/boot/efi`

7. Assuming that a USB disk contains a single partition and is made available on `/dev/sdb`, which command mounts the disk in `/media/usb`?
   - **A.** `mount /dev/sdb1 /media/usb`
   - **B.** `usbconnect /dev/sdb0 /media/usb`
   - **C.** `mount /dev/sdb0 /media/usb`
   - **D.** `usbmount /dev/sdb1 /media/usb`

8. What is one reason a device driver does not appear in the output of `lsmod`, even though the device is loaded and working properly?
   - **A.** The use of `systemd` means drivers are not required for most devices.
   - **B.** The use of `initramfs` means support is enabled by default.
   - **C.** The system does not need a driver for the device.
   - **D.** Support for the device has been compiled directly into the kernel.

9. Which option to `rmmod` will cause the module to wait until it's no longer in use to unload the module?
   - **A.** `-test`
   - **B.** `-b`
   - **C.** `-w`
   - **D.** `-unload`

10. Which command will output a new GRUB2 configuration file and send the output to the correct location for booting?
    - **A.** `update-grub > /boot/grub/grub.cfg`
    - **B.** `update-grub boot > /boot/grub.cfg`
    - **C.** `grub-rc.d`
    - **D.** `grub-boot`

11. What is the maximum number of primary partitions available on an MBR partitioning system?
    - **A.** 2
    - **B.** 4
    - **C.** 1
    - **D.** 5

12. When working with disk partitions through a tool like `fdisk`, you see the type 0x82. Which type of partition is this?
    - **A.** Linux
    - **B.** Linux swap
    - **C.** NTFS
    - **D.** FAT

13. Which file should you edit when using GRUB2 in order to set things like the timeout?
    A. `/etc/default/grub`
    B. `/etc/grub/boot`
    C. `/etc/boot/grub.d`
    D. `/grub.d/boot`

14. Which option for the `grub2-mkconfig` command sends output to a file instead of `STDOUT`?
    A. `-stdout`
    B. `--fileout`
    C. `-o`
    D. `-f`

15. Of the following choices, which size would be most appropriate for the `/boot` partition of a Linux system?
    A. Between 100 MB and 500 MB
    B. Between 1 GB and 10 GB
    C. `/boot` should not be partitioned separately.
    D. Less than 5 MB

16. Which of the following commands initializes a physical disk partition for use with LVM?
    A. `lvmcreate`
    B. `pvcreate`
    C. `fvcreate`
    D. `lvinit`

17. Which of the following commands installs GRUB into the MBR of the second SATA disk?
    A. `grub2-install /dev/hdb2`
    B. `grub2-install /dev/sda2`
    C. `grub2-config /dev/sda`
    D. `grub2-install /dev/sdb`

18. Which command is used to create a logical volume with LVM?
    A. `pvcreate`
    B. `lvmcreate`
    C. `lvcreate`
    D. `volcreate`

19. What is the logical order for creation of an LVM logical volume?

A. Physical volume creation, volume group creation, logical volume creation

B. Physical volume creation, logical volume creation, volume group creation

C. Logical volume creation, physical volume creation, volume group creation

D. LVM creation, format, partition

20. Which command should be run after making a change to the `/etc/default/grub` file?

A. `grub`

B. `grub-mkconfig`

C. `grub-inst`

D. `reboot`

21. Which command is used to search for physical volumes for use with LVM?

A. `lvmcreate`

B. `pvcreate`

C. `lvmdiskscan`

D. `lvmscan`

22. A hard drive is reported as `hd(0,0)` by the GRUB Legacy configuration file. To which of the following disks and partitions does this correspond?

A. `/dev/hdb2`

B. `/dev/hda0`

C. `/dev/disk1`

D. `/dev/sda1`

23. Which of the following commands installs GRUB into the master boot record (MBR) of the first SATA drive?

A. `grub-install /dev/hda`

B. `grub-install /dev/sda`

C. `grub-install /dev/hd0,0`

D. `grub -i /dev/hda`

24. When running `fsck` on an `ext3` filesystem, the process is taking longer than expected and requiring input from the administrator to fix issues. What option could be added to `fsck` next time so that the command will automatically attempt to fix errors without intervention?

A. `-o`

B. `-V`

C. `-y`

D. `-f`

25. After inserting a new hard drive into the system, what is the correct order to make the drive ready for use within Linux?

A. Use `fdisk` to create partitions, and then mount the partitions.

B. Mount the partitions.

C. Use `fdisk` to create partitions and mount `-a` to mount all the newly created partitions.

D. Use `fdisk` to create partitions, then format the partitions using a command such as `mkfs`, and then mount the partitions.

26. You are using a storage area network (SAN) that keeps causing errors on your Linux system due to an improper kernel module created by the SAN vendor. When the SAN sends updates, it causes the filesystem to be mounted as read-only. Which command and option can you use to change the behavior of the filesystem to account for the SAN bug?

A. `mount --continue`

B. `tune2fs -e continue`

C. `mkfs --no-remount`

D. `mount -o remount`

27. Which of the following describes a primary difference between `ext2` and `ext3` filesystems?

A. `ext3` was primarily a bug-fix update to `ext2`.

B. `ext3` includes journaling for the filesystem.

C. `ext3` completely changed the tools needed for management of the disks.

D. `ext3` has no significant differences.

28. According to the Filesystem Hierarchy Standard (FHS), what is the correct location for site-specific data for a server?

A. `/etc`

B. `/var`

C. `/tmp`

D. `/srv`

29. Which option to the `mount` command will mount all filesystems that are currently available in `/etc/fstab`?

A. `-f`

B. `-d`

C. `-a`

D. `-m`

30. Which command and option are used to display the number of times a filesystem has been mounted?

A. `tune2fs -h`

B. `cat /etc/fstab`

C. `mount -a`

D. `less /etc/fsmnt`

31. Which option to `xfs_metadump` displays a progress indicator?

A. `-g`

B. `-p`

C. `-f`

D. `-v`

32. The system is running out of disk space within the home directory partition, and quotas have not been enabled. Which command can you use to determine the directories that might contain large files?

A. `du`

B. `df`

C. `ls`

D. `locate`

33. Which file contains information about the filesystems to mount, their partitions, and the options that should be used to mount them?

A. `/etc/filesystems`

B. `/etc/mounts`

C. `/etc/fstab`

D. `/srv/mounts`

34. According to the FHS, what is the proper mount point for removable media?

A. `/etc`

B. `/srv`

C. `/tmp`

D. `/media`

35. Which file contains information on currently mounted filesystems, including their mount options?

A. `/etc/mtab`

B. `/etc/fstab`

C. `/tmp/files`

D. `/etc/filesystems`