



CSCI 26 - Linux 2, System Administration

Catalog Description

Transfer Status: CSU
Prerequisite: CSCI 25
Unit(s): 3.00
Lecture: 34.00 Contact hours/68.00 Out of class hours/102.00 Total hours/2.00 Unit(s)
Lab: 51.00 Contact hours/0.00 Out of class hours/51.00 Total hours/1.00 Unit(s)
Total: 85.00 Contact hours/68.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Course Description: In this course students learn how to perform basic administration of a multiuser Linux system. Topics include customizing the user environment, user administration, essential system services, networking, and security. Students will perform all essential tasks of a system administrator on a modern Linux distribution. This course prepares students for the globally recognized LPIC1-102 Certification test.

Objectives

- Upon successful completion of this course, the student should be able to:
1. Select, install, and manage software on a modern Linux distribution.
 2. Customize and configure a shell and create shell scripts to perform administration tasks.
 3. Install and configure display server software, window managers and desktop environments.
 4. Identify the major issues of computer accessibility and describe the technologies available to enhance computer accessibility for users.
 5. Create and manage user accounts and groups including setting permissions, and identify the system files associated with user and group management.
 6. Automate system administration tasks by scheduling jobs.
 7. Configure localization and internationalization settings and explain why LANG=C is useful when scripting.
 8. Manage system services including time, system logging, email and printer management.
 9. Explain TCP/IP network services fundamentals, manage the persistent network configuration of a Linux host, and troubleshoot networking issues.
 10. Manage system, account, and host security and encryption protocols.
 11. Describe the protocols used for remote desktop sessions and list examples of software that implements these protocols.

Course Content

Topic Titles / Suggested Time Topic	
	<u>Lecture</u>
<u>Topics</u>	<u>Lec Hrs</u>
Customize and use the shell environment and shell scripting	6.00
Managing essential system services	3.00
Install and configure X11 and manage graphical desktops	1.00
Accessibility	1.00
Manage user and group accounts and related system files	2.00
Automate system administration tasks by scheduling jobs	2.00
Localization and internationalization	1.00
Maintain system time	1.00
System logging	1.00
Mail Transfer Agent (MTA) basics	1.50
Manage printers and printing	1.50
Fundamentals of internet protocols	2.00
Persistent network configuration	2.00
Basic network troubleshooting	3.00
Configure client side DNS	1.00
Perform security administration tasks	2.00
Setup host security	2.00
Securing data with encryption	1.00
Total Hours: 34.00	

Lab

<u>Topics</u>	<u>Lab Hrs</u>
Customize and use the shell environment and shell scripting	11.00
Manage user and group accounts and related system files	4.00
Install and configure X11 and manage graphical desktops	3.00
Accessibility	1.50
Automate system administration tasks by scheduling jobs	4.00
Localization and internationalization	1.00
Maintain system time	2.00
Managing essential system services	5.00
System logging	2.00
Mail Transfer Agent (MTA) basics	2.00
Manage printers and printing	2.00
Fundamentals of internet protocols	2.00
Persistent network configuration	2.00
Basic network troubleshooting	2.50
Configure client side DNS	1.50
Perform security administration tasks	2.00
Setup host security	2.00
Securing data with encryption	1.50
Total Hours: 51.00	

Methods of Instruction

- A. Demonstrations
- B. Group Discussions
- C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- D. Lecture
- E. Multimedia Presentations
- F. Advanced Security Practitioner

Methods of Evaluation

- A. Quizzes
- B. Homework
- C. Lab Projects
- D. Mid-term and final examinations

Examples of Assignments

Reading Assignments

1. Read the chapter in your text about "Keeping Time." Be prepared to discuss the concept of localtime and the Network Time Protocol (NTP), and to demonstrate showing and setting system time and basic NTP configuration.
2. Read the article provided by the instructor about the most popular MTAs (Mail Transport Agents) for Linux systems. Be prepared to discuss the strengths and weaknesses of each MTA from the perspective of a system administrator.

Writing Assignments

1. Prepare a 2-3 page draft of a computer security policy for a small business of 15-20 employees with 15-20 workstations networked with a Linux server. Be sure to discuss user and group permissions, password policy, system services, and system and account security.
2. Write a 500-word essay describing computer accessibility issues for people with motor or dexterity impairments.

Out-of-Class Assignments

1. Conduct Internet research on three different desktop environments for Linux. Write a summary of your research including a brief history of the software, a listing of its software dependencies and included applications, and a description of its configuration (e.g., options and related system files). Then, install each desktop environment on a virtual machine, try it out, and add a summary of your overall impression of each to your report.
2. You have been given the task of recommending a bootable/live distribution of Linux for a company that wants to audit their network for intrusions. Using the database of distributions at www.linux.com, select a distribution and write a short paragraph to explain your choice. Be prepared to present your solution in class.

Recommended Materials of Instruction

Bresnahan, Christine; Blum, Richard. (2019). LPIC-1 Linux Professional Institute Certification Study Guide Exam 101-500 and Exam 102-500. Sybex, 5th. 9781119582120.

Suehring, Steve. (2019). LPIC-1 Linux Professional Institute Certification Practice Tests: Exam 101-500 and Exam 102-500. *Wiley, 2nd*. 978-1-119-61109-7.

Shotts Jr., William E. (2019). The Linux Command Line: A Complete Introduction.. *No Starch Press, 2nd*.

Minimum Qualifications

Computer Information Systems

Computer Science (Masters Required)

Computer Service Technology

Created/Revised by: Sathrum, Luke

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