

Gentoo Linux Administrator

Duration: 7 Days (8Hours per day)

1. Introduction to Gentoo:
 - Overview of Gentoo and its history.
 - The philosophy behind Gentoo: flexibility, optimization, and customization.
2. Installation:
 - Preparing the environment for a Gentoo installation.
 - Disk partitioning and file system selection.
 - Installing the base system, setting up the kernel, and boot configuration.
3. Portage Package Manager:
 - Introduction to Portage, the heart of Gentoo.
 - Understanding USE flags and their significance.
 - Searching, installing, and updating packages.
 - Working with overlays.
4. Kernel Configuration:
 - Customizing the Linux kernel for your hardware and requirements.
 - Manual kernel compilation and the benefits of doing so.
 - Kernel modules and drivers.
5. System Initialization and Services:
 - Understanding Gentoo's init systems.
 - Managing and customizing system services.
6. System Configuration:
 - Configuring the system for networking, locale, time zones, etc.
 - User management and permissions.
7. Optimization:
 - CPU-specific optimizations and the benefits they offer.
 - Fine-tuning system performance through various settings and configurations.
8. Gentoo Maintenance:
 - Keeping the system up-to-date.
 - Handling system upgrades and potential issues.
 - Troubleshooting common problems.
9. Advanced Portage Features:
 - Working with slots, profiles, and eselect.
 - Masking and unmasking packages.
10. Security:
 - Setting up a secure Gentoo system.
 - Hardening and best practices.

- Introduction to SELinux or other mandatory access controls on Gentoo.

11. Desktop and Software Installation:

- Installing and customizing desktop environments.
- Introduction to popular software and their Gentoo-specific configurations.

12. Utilities and Tools:

- Using tools like ``emerge``, ``revdep-rebuild``, and ``dispatch-conf``.
- System logging and monitoring.

13. Hands-on Projects:

- Practical exercises that challenge you to apply what you've learned.
- Setting up specific server roles, desktop configurations, or embedded systems.

1. Apache:

- Installing Apache through Portage.
- Basic configuration of an Apache web server: virtual hosts, ``.htaccess``, `mod_rewrite`, etc.
- Setting up SSL for secure connections.
- Optimization and performance tuning specific to Gentoo.

2. NFS (Network File System):

- Installation and configuration of the NFS server and client packages.
- Exporting and mounting filesystems.
- Security and permissions.
- Best practices in Gentoo specific scenarios.

3. DNS (Domain Name System):

- Setting up BIND or other DNS servers.
- Configuring zones, forwarding, and caching.
- Securing your DNS server.
- DNS troubleshooting and tools.

4. ZFS:

- Introduction to the ZFS filesystem.
- Installing the ZFS kernel modules and userland utilities on Gentoo.
- Creating and managing ZFS pools and datasets.
- Snapshots, replication, and other advanced features.

5. Postgres:

- Installing PostgreSQL from Portage.
- Initializing a PostgreSQL database cluster.
- Basic database operations: creating databases, tables, and managing users.
- Performance tuning and maintenance tasks.
- Backup and restore procedures.

6. MySQL:

- Installing MySQL (or MariaDB) on Gentoo.
- MySQL server configuration.
- User management, database creation, and basic operations.
- Performance tuning, backups, and restoration.

7. GNOME and/or KDE Desktop:

- Installing GNOME or KDE from Portage.
- Configuring display managers like GDM or SDDM.
- Customizing your desktop environment.
- Introduction to key applications and utilities in GNOME/KDE.
- Performance optimization and theme customization.

8. Integration and Advanced Scenarios:

- Integrating Apache with Postgres or MySQL for web applications.
- Setting up ZFS for optimized database storage.
- Centralized authentication for services.
- Troubleshooting and recovery scenarios.