



Linux Administration

This course will cover all aspects of Linux Certification. At the end of the course delegates will have the skills required to administer a Linux System. It is designed for professionals to easily install and configure advanced Linux services like IPv6, IPsec VPN, iptables as well as configuration of SAN, MySQL, Oracle integration of Linux and Windows etc. The course will also cover Internet application server configuration on live registered domain name with valid public IP addresses. The training will be given by Senior System / Network engineers with several years of industry experience.

ZOOM
TECHNOLOGIES

Linux Administration

Course Outline

Introduction to UNIX and LINUX

- History of UNIX and LINUX
- Basic concepts of Operating System, Kernel, Shell & File System structure
- Basic concepts of Linux
- Differences between CentOS, Red Hat Enterprise Linux & Fedora

Installation of Linux

- Interactive Method
- Standalone Method

Introduction to Graphical Environment

- Use and customize the GNOME interface
- Perform command tasks using the GNOME GUI
- Launch applications from command line & GNOME interface
- Customize X Window System

Creating files and folders

- Creating files using cat, touch and vi commands
- Creating directories using mkdir command
- Copying, moving and removing objects

VI-Editor

- Modifying file content using cli editor called vi and vim
- Modifying file content using gui editor called gedit

User and Group Administration

- Creating and deleting users from the systems
- Modifying users properties
- Creating and deleting groups
- Modifying group properties
- Explanation of user password properties
- Explanation of group password properties

File Permissions

- Explanation of files attributes

- Explanation of Umask value
- Changing Umask value
- Explanation of permission methods Absolute and symbolic method
- Assigning permissions on objects using chmod, chown and chgrp commands

Advanced File Permissions

- Explanation of SUID, SGID and Sticky bit
- Configuring SUID on commands
- Configuring SGID on group users
- Configuring Sticky bit on objects

ACL (Access Control List)

- Configuring different permissions on user and group level
- Removing users and groups from ACL permissions

Links Configuration

- Explaining types of Links
- Creating soft links and hard links
- Differences between Soft and Hard links

Disk Partitioning and Mounting File System

- Using fdisk, disk druid utilities for disk partitioning
- Using mkfscommands to create file systems
- Mounting partition on folder
- Permanent mounting of partition

LVM (Logical Volume Manager)

- Explanation of lvm components
- Configuring lvm in Pre-Installation mode
- Configuring lvm in Post-Installation mode
- Resizing logical volumes and volume groups

Disk Quotas

- Enabling Quotas on partitions
- Creating Quotas limit on user level
- Creating Quotas limit on group level

RAID (Redundant Array of Independent Disks)

- Explanation of Raid levels
- Explanation of fault tolerance and parity
- Implementation of Raid level 5 using mdadm tool

Backup and Recovery

- Introduction to backup and restore concepts
- Backup and restoring data using tar and cpio commands
- Compressing data size using gunzip and bunzip commands
- Introduction to full backup, incremental backup and differential backup
- Taking data backup using dump command
- Taking Remote backup using scp command

Automation of jobs

- Introduction to cronjob and At jobs.
- Scheduling system task using crontab
- Scheduling system one time task using At command

IP Address and Hostname Configuration

- Configuring IP address using the command called nmtui
- Updating new configured IP address to kernel
- Verifying configured IP address, DNS IP and gateway.
- Configuring new hostname using hostname or hostnamectl commands

Package Management

- Introduction to RPM and YUM commands
- Installing, Querying, removing and updating packages using RPM and YUM

Dynamic Host Configuration Protocol (DHCP)

- Configuring Linux as DHCP Server
- Configuring various clients for DHCP Server (Windows & Linux)

FTP Server (vsftpd daemon)

- Basics of File Transfer Protocol
- Configuring vsftpd for anonymous ftp service
- Configuring FTP server for downloading and uploading the files
- Configuring vsftpd for anonymous ftp service
- Configuring vsftpd only for private users

Yum Server Configuration

- Introduction to YUM deployment server
- Configuring YUM deployment server

NFS

- Introduction to NFS Server
- Configuring NFS server
- Mounting NFS exports on NFS clients systems

Auto Mounting

- Introduction to Auto Mounting
- Auto Mounting to NFS shared directory

DNS Server

- Introduction to DNS server
- Installing DNS packages
- Configuring DNS forward lookup zone
- Configuring DNS reverse lookup zone
- DNS client side configuration
- Adding services into DNS database
- DNS client side configuration
- Adding services into DNS database

Mail Server (SMTP, POP3, IMAP)

- Basics of Mail Servers
- Configuring SMTP service using Postfix
- Configuring POP3 / IMAP service on Linux
- Adding mail server into DNS database using MX record
- Sending and receiving the mails between multiple users

Apache Web Server (HTTP)

- Basics of Web Service
- Introduction to Apache
- Configuring Apache to host website
- Configuring Apache to host multiple websites using virtual hosting methods

Web based Administration

- Installing Webmin on Linux
- Administrating Linux machine remotely
- Using Webmin as a tool for configuring various services on Linux

Differences between Unix and Linux Flavours

Booting Process

- Introduction to Booting Process
- Explaining types of booting process
- Kernel Initialization

- Types of Runlevels
- Changing Runlevels
- Managing services and daemons using systemctl command

Virtualization

- Managing Virtual machine with kvm andQemu
- Starting andstopping virtual machine
- Virtualization troubleshooting

Troubleshooting Linux System

- Recovering super user password
- Assigning password on GRUB
- Recovering GRUB password
- Troubleshooting Xserver problems
- Troubleshooting network related problems

NTP Server

- Configuration of NTP Server
- Starting the service
- NTP Synchronized
- Configuration of NTP and Chronyd Client

Maria DB

- Installation of MariaDB on LINUX
- Starting the service
- Creating a MariaDB root Account
- Location of MariaDB Database
- Accessing MariaDB Command Line
- Creating and Deleting MariaDB

LDAP Server

- Introduction of LDAP.
- Structure of LDAP Schema.
- Features of LDAP.
- Differences between NIS and LDAP.
- Configuring LDAP Server Creating of LDAP Domain Database.
- LDAP Users and Groups
- Adding, Modifying and Deleting Users from LDAP Database.
- Configuring LDAP SLAVE Server as a Backup Server.
- Explaining the Data Replication in Between Master and Slave.

Apache Web Server (HTTPS)

- Introduction of Apache.
- Differences between HTTP And HTTPS.
- Generating SSL keys.
- Creating CA.
- Redirecting http to https
- Configuring HTTPS Clients.

Apache Tomcat Server

- Installation of JDK
- Installation & Configuration of Tomcat
- Creating users & groups
- Assigning the Password
- Integration of Tomcat with Apache
- Access Tomcat with web Interface

Samba Server

- Introduction to samba server
- Configuring Samba server to share data with Linux and windows clients
- Configuring samba server for multiple users

SAMBA PDC (Primary Domain Controller)

- Configuring samba PDC server
- Creating samba password on root user
- Integrating windows client system into samba PDC server
- Creating users in samba PDC database
- Login Linux users into windows client systems

Samba Winbind Configuration

- Introduction to samba winbind
- Installing samba winbind
- Integrating Linux client system with Active Directory domain
- Starting winbind and oddjobd services
- Login Active Directory Users from Linux clients

Proxy Server (Squid)

- Introduction to proxy server
- Configuring proxy server and clients
- Creating squid ACL's rules to control internet access

Nagios Monitoring Tool

- Installation of Nagios and Plugins

- Configuration of Nagios
- Creating Nagios User and Group
- Starting the Service
- Monitoring network infrastructure via Nagios web interface
- Adding hosts and services into Nagios database.
- Installation of NMON tool

Remote Installation

- Introduction to PXE and Kickstart
- Kickstart configuration
- PXE configuration at server
- PXE configuration at client

Storage Technologies (iSCSI)

- Introduction to SAN, DAS and NAS.
- Explaining components of SAN
- Configuring SAN Server by using iSCSI Target.
- Making SAN Clients by using iSCSI Initiator.

IPsec VPN

- Introduction of VPN.
- Features of VPN.
- Types of VPN.
- Types of VPN Protocols.
- Creating Tunnel in Between Networks.
- Configuration of VPN in between different networks

Clustering (Web Based)

- Introduction of CLUSTER.
- Types of CLUSTER.
- Explanation of Load Balancing.
- Explanation of LVS Components.
- Configuring LVS.
- Configuring Real and Backup Servers.
- Checking Load Balancing in CLUSTER Server

IPv6 Configuration

- Check For Ipv6 Support In The Current Running Kernel
- Compile kernel with IPv6 capabilities
- IPv6 network devices
- Adding, Checking and Removing IPv6, Gateway, and DNS IP

- Bringing Interface up/down
- Configuring Servers on IPv6 address

IP-tables and SELinux firewalls

- Introduction to IP-tables chains and tables
- Configuration of IP-tables rules
- Activating the IP-tables rules
- Configuring IP-tables for servers
- Introduction to SELinux firewall
- Configuring SELinux Permanent
- Configuring SELinux to protect various servers

Securing Network with firewalld

- Introduction to firewalld
- Difference between IP-tables and firewalld firewalls
- Configuring rich rules
- Configuring port forwarding rule
- Adding firewalld rules permanent and temporary
- Updating the rules

Teaming Configuration (IP-Bonding)

- Introduction to Teaming
- Explaining types of teaming
- Round Robin Runner
- Active Backup Runner
- Load Balancer Runner
- Configuring active backup Teaming

Log Server

- Configuring Rsyslog and Saving Syslog Messages
- Sending Syslog Message over the network
- Configuring Rsyslog clients and Users log files

Kernel upgradation

- Checking existing Kernel
- Upgrading Kernel with RPM tool

Bash Scripts Writing

- Basics of shell Scripting
- Writing bash scripting
- Changing the shell environment

Openssh Configuration

- Introduction to openssh
- Accessing the remote system via command line using ssh
- Creating ssh key using ssh-keygen
- Configuration of ssh authentication
- Making client login into other system using without password

Process Management

- Introduction to Various Process
- Managing Background and Foreground Process
- killing process
- Monitoring and Managing Linux process

Kerberos

- What is Kerberos
- Kerberos server configuration
- Kerberos client configuration
- Creating certificates in Kerberos server and client systems
- Integrating Kerberos with NFS serve