

# **LINUX NETWORKING & ADMINISTRATION**

## **Training program**



**A TRAINING PROGRAM IS DESIGNED AND DEVELOPED BY CERTIFIED AND EXPERIENCED LINUX TRAINERS**

**This highly specialized and concentrated programme is ideally suited to following individuals who are:**

- **Fresh University Graduates and like to pursue a career in Computer's Networking.**
- **Already working and interested to switch over to field in Networking.**
- **Already working in a Networking position and like to excel in terms of better position and compensation.**
- **Already working in a Network Position in Companies and want to get the certification in International market.**

**Program is offered by: 3D Educators – Trainers & Consultants**

# Table of Contents

**Detail**

**Inauguration**

**Structure**

**Topics & Time Allocation**

**Other Learning Activities**

**About the Program Designer & Instructor**

**Syllabus**

**3D EDUCATORS**

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**TRAINERS & CONSULTANTS**

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# Program Details

## Inauguration

The Training Program will be inaugurated by a senior member of 3DEducators

## Program Structure

Number of classes in a week	Two Class Per Week
Duration of each class	2 - Hour
Total Duration	32 Hours

## Other Learning Activities:

Classroom Assignments	2
Presentations by Trainees	2

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## **About the Program Designer & Instructor**

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The Profile of Program Designers & Instructors is given below:

The “**LINUX NETWORKING AND ADMINISTRATION**” Program has been designed and will be conducted the Senior Network Administrator who has ten years experience in Computer Networking and Administration.

The Person is qualified, certified in Networking and MCS and MBA.

At present, faculty is working with FMCG based organization in a senior position, also involved in training and development for last ten years.

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### **COURSE CONTENTS (RH302, RH300, RH301 4D)**

#### **INSTALLING THE REDHAT LINUX**

- **Introducing RedHat Linux**
  - New Feature
  - Basic Components
- **A Short History of Unix & Linux**
  - Unix & The Coming Internet
  - Unix Alternative
  - The Free Software Foundation
  - Linux Develops a Kernel
- **Exploring The Kernel**
  - Concepts behind the Kernel
  - The / Proc File System
  - Modular or Monolithic
- **Why Choose Linux**
  - Cost
  - Reliability
  - Flexibility
  - Support
- **The Roll of Linux Computer**
  - Linux as a Computer
  - Linux on the Desktop
  - RedHat Linux for Small Business
  - RedHat Linux for The Enterprise
- **Preparing Your Hardware**
  - Creating Hard Disk Partition
    - Partition Name
    - Partition Type With Supported Partition
- **Configuring Microsoft & Linux on the same Computer**
  - The Easy way : A New Hard Drive
  - The Cheaper Way: An Existing Hard Drive
  - Step by Step Procedure
- **Why Worry about Hardware**
  - Hardware Problems can be Expensive
  - Not all Hardware is Built for Linux
- **Installing Linux Locally (The Exercise consist upon LAB Session)**
  - Starting With a Boot Disk
    - Creating a Boot or Driver Disk
    - Analyzing the RedHat Boot Floppy
  - Checking the Installation CDs
    - Inspecting CDs with Media Check
    - Checking CDs Media Check
- **Installing RedHat Linux, Step by Step**
  - Selecting Installation Prompt Option
  - Configuring Basic Parameters
  - Selecting an Installation Type

- Setting up Hard Drive
- Setting up Partitions with Disk Druid
- Configuring Installation Detail
- Selecting Package Group
- Selecting Individual Package
- Ready to Install
- Anaconda, install RedHat Linux
- Managing Post - Installation Step
- **Running The RedHat Setup Agent**
  - Creating a Regular User
  - Specifying a Date & Time
  - Additional Installation
- **Upgrading RedHat Linux**
  - Allowable Upgrades

## LINUX FUNDAMENTALS

- **Staring at the Command Line**
  - Exploring Navigation Command
    - pwd
    - cd
    - ls
    - Path Management
  - Setting up Files & Directories
    - touch
    - cp
    - mv
    - rm
    - ln
    - mkdir & rmdir
  - Managing Files
    - file
    - cat
    - head & tail
    - more & less
    - Permission
    - umask
  - Manipulating Files
    - wc
    - find
    - locate & slocate
    - grep
    - command & combination
  - Using the vi Editor
    - Command mode
    - Insert Mode
    - Execute Mode
  - Understanding Other Text Editors
    - pico
    - joe
- **A File System Printer**
  - Understanding The File System Hierarchy Standard
    - The Basic Linux Directory Structure

- Partition Schemes
- Managing Partitions
  - Adding Partition with fdisk
  - Revising Partition Labels
- Using Format & Journals
  - Basic Linux Formulas
  - Formatting a Partition
  - Tuning & Disk Management
  - Extended Partition Data
  - Mounting Directories with Partition
  - Troubleshooting
- Mastering / etc / fstab
- Exploring Logical Volume Management
  - Fundamental
  - Creating a Physical & Logical Volume
  - Creating a Volume Group
- **Making the Shell Work for You**
  - Managing the Shell
    - Interactivity
    - Command Completion
  - Configuring the Shell
    - Shell Variable
    - Environment Variables
  - The sector of The shell
    - Data streams
    - Running in the Background
    - Special Shell Characters
    - Tildes & Home Directories
    - Wildcards
    - Slashes in the Shell
- **A TCP / IP Primer**


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  - Exploring Network Fundamentals
    - Hostname & Hardware Address
  - Understanding Protocol Stacks
    - OSI Level
    - NetBEUI
  - Learning the Basic of TCP/IP
    - The TCP / IP Model
    - Major Protocol
  - Using IP Addressing
    - IP Version 4 subnet Mask & Default Gateway
    - Address Classes

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- **Managing Linux on Your LAN**
  - Understanding Network Hardware
    - Transmission Media
    - Overview of Hubs, Switches, Routers & Gateways
  - Configuring Your Computer on a LAN
    - Configuring with ifConfig, arp
    - The Hostname Commands
    - Network Configuration Files
  - Configuring Private & Public Networks

- Private IP Address
- Overview of Classless Inter-Domain Routing (CIDR)
- Creating Internet Connections
  - The Internet Configuration Wizard
  - Using Modem Detection Tool
- Troubleshooting Your Network
  - Checking Network Status
  - Checking Connection with Ping & traceroute
- **Securing Linux Network**
  - Understanding Best Practices
    - Physical Setup
    - Encryption
    - Password Security
    - Firewall & DMZs
  - Using Pluggable Authentication Modules
    - Basic Configuration
    - Module Type
    - Control Flags
    - A PAM Example
  - Creating Firewalls
    - Data Direction & iptables
    - Firewalls as Chains
    - Format & Iptables
    - Option for iptables
    - Iptables as a Statefull firewall
    - Network Address Translation via IPTables
    - Iptables and TCP Flags
    - Postrouting via Iptables
    - Prerouting via Iptables
  - Detecting Break-ins
    - Concept of Sniffing with Ethereal
    - Practically Hacking the Username Password of Other users
    - Using tools to protect the Authentication data (username & Password)
    - Using Tool to Protect the Confidential data of any Type.
    - Checking Logins
    - Concept of Tripwire & Suspicious Activity

## BASIC LINUX ADMINISTRATOR

- **Administering Users & Group Securely**
  - Basic User & Group Management
    - /etc / password
    - /etc/shadow
    - /etc/group
    - /etc / gshadow
    - /etc / skel
    - /etc / login.defs
  - Administering User Accounts
    - Adding user with new user
    - Deleting User
    - Managing User Access with chang

- User Private Group
- Quotas
  - Configuration
  - Quota Monitoring
  - User & Group Quotas
- **Managing Packages with RPM**
  - Installing & Upgrading, Simplified
    - Queries
    - The Basic Installation
    - Upgrade, Dependencies & Deletions
    - A Database of RPM
  - Making Source RPMs Work
    - Directories
    - The Space File
    - Building Binaries from a Tarball
    - Building a Binary RPM
    - Verifying a Packages
    - Updating RPMS
- **Configuration & Troubleshooting the Boot Process**
  - Exploring the Basic Boot Process
    - Initializing Hardware
    - Boot Loaders
    - Run levels
- **Understanding the Default Configuration Files**
  - Hardware Detection
  - The Bootloader
  - /etc / inittab
  - Starting a Runlevels
- **The Administrative Nitty-Gritty**
  - Using the Cron Daemon
    - The Syntax of Cron
    - Standard Cron Jobs
    - User Cron Job
  - Using the at Daemon
    - Setting up an at Job
    - Job Queue, Batch Jobs & Security
    - Service Management
    - /etc/rc.d/init.script
    - Activation at Different Run Levels
  - Troubleshooting With Logs
    - Log File Categories
    - System Logs
    - Other Logs
  - Process Management
    - Process with ps, top
    - Login & who
    - Process Kill
    - Nice & Renice
    - Leaving a Nohup
- **Backing Up Your System**

- What you need to Know about Backing Up
  - Data Disaster Scenarios
  - Level of Backup, Type & Frequency
- Selecting Your Media
  - Tape Drives, Partition
  - CD Backups
- Using Backup & Restore Commands
  - Generic Backup Commands
  - Tape dump & restore
- Understanding RAID
  - RAID Options
  - RAID 0, RAID 1 & RAID 5
  - Software & Hardware RAID
  - RAID Partitions
  - Configuration of RAID File & Mounting RAID
- **Managing X Server & X Clients**
  - Using the Basic Configuration Tool
    - Xf86config
    - Redhat-config 86
    - Auto X Configure & Switchdesk
    - Changing the Display Manager
- **RedHat Graphical Fonts Ends**
  - Configuring with Basic Configuration Utilities
    - Setting a Date & Time
    - Configuring a Mouse
  - Connecting with Network Configuration Utilities
    - Basic Network Configuration
    - Text Mode Network Configuration
    - Domain Name Server (DNS) from GUI (An Overview)
    - Network File System (NFS) from GUI (An Overview)
    - Samba from GUI (An Overview)
  - Using System Administration Utilities
    - Package Group Management
    - Root Password
    - Configuration User
    - GUI Configuration
    - Authentication
  - Working with Service Configuration Utilities
    - Setting Service Levels
    - Configuration Printers
    - Switching Mail Agents
    - Switching Desktop

## BASIC LINUX NETWORKING

- **A TCP / IP Primer**
  - Exploring Network Fundamentals
    - Hostname & Hardware Address
  - Understanding Protocol Stacks
    - OSI Level
    - NetBEUI

- Learning the Basic of TCP/IP
  - The TCP / IP Model
  - Major Protocol
- Using IP Addressing
  - IP Version 4 subnet Mask & Default Gateway
  - Address Classes
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    - The Internet Configuration Wizard
    - Using Modem Detection Tool
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    - Basic Configuration
    - Module Type
    - Control Flags
    - A PAM Example
  - Creating Firewalls
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    - Postrouting via Iptables
    - Prerouting via Iptables
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    - Concept of Sniffing with Ethereal
    - Practically Hacking the Username Password of Other users
    - Using tools to protect the Authentication data (username & Password)
    - Using Tool to Protect the Confidential data of any Type.
    - Checking Logins
    - Concept of Tripwire & Suspicious Activity

# LINUX NETWORK SERVICES

- **Remote Access & Xinetd Service**
  - Using Typical Extended Services
    - The xinetd Configuration File
    - Activating xinetd Services
    - Telnet & FTP Servers
  - Understanding the Secure Shell (SSH)
    - SSH Installation & Configuration
    - Sample Session
- **DNS & DHCP**
  - Configuring DNS Server
    - Packages
    - DNS Concept
    - Initial DNS Configuration
    - A DNS Slave Server
    - DNS Configuration File
    - Starting DNS
  - Using a DNS Client
  - Setting Up a DHCP Server
    - Packages
    - Basic Configuration
      - The Configuration File `:/etc/dhcpd.conf`
      - Setting the DHCP server
    - A Lease Database
- **Printing with CUPS & LPD**
  - Using the Internet Protocol
  - Configuration the common Unix Print System
    - Graphical Configuration
    - The `lpadmin` & `lpstat` Command
    - Configuration File
    - `/etc/cups/cupsd.conf`
    - Printer Management
  - Using the Line Print Daemon
    - The LPD Configuration Files
    - Printer Management
  - RedHat's Printer Tool
- **Mail Services**
  - Examining General Mail services
    - Key Protocol
    - Alternate Mail Servers
  - Configuring Sendmail
    - Package & Basic Configuration Files
    - Understanding `Sendmail.mc`
    - Revising `Sendmail.mc`
    - Processing & reactivating `sendmail`
    - Setting up aliases
    - Setting - up Virtual Domains
  - Configuration Postfix
    - Package & Basic Configuration File
    - Understanding and configuring `main.cf`

- Understanding and Configuring alias
- Understanding and Configuration Virtual Domains
- Using Incoming E-Mail Servers
  - The POP3 E-Mail Server
  - The IMAP4 E-Mail Server
- Configuring Mail Clients
  - Text-Based Clients
  - Graphical Clients

## LINUX FILE-SHARING SERVICES

- **FTP Clint & Servers**
  - Using FTP & Clint
    - Basic Command & Configuration File
    - Connecting to ftp.redhat.com
    - The GUI FTP Clint
  - The Secure vsFTPd Server
    - Basic Security Features
    - Configuration File
    - Creating an anonymous FTP Server
    - Anonymous Directories
    - Commands & Anonymous Uploads
- **Linux Sharing Services : NFS & NIS**
  - Configuration Network File System Servers
    - NFS Packages
    - Basic Daemons
    - Setting up Expert
    - Securing NFS
  - Configuring with redhat - config-nfs
  - Working with NFS Clint
    - Listing shared Directories
    - Mounting a Shared NFS Directory
  - Setting Up Network Information service Server
    - NIS Packages
    - Defining the NIS Domain
    - Defining Shared File
    - Creating and updating the Database Map
    - NIS Slave Server
  - Using NIS Clients
    - NIS Clint Configuration in yp.conf
    - NIS Clint Commands
    - Configuring / etc /nsswitch.conf
- **Making Samba Work for You**
  - Bridging the Gap Between Linux & Windows
    - Functioning on a Microsoft Network
    - Licensing Definition & Packages
  - Configuring Samba as a & Client
    - Shared Samba Directory
    - Samba Terminal Mode
  - The Samba Configuration File
    - Samba Daemons
    - Other Samba Configuration Files

- The Main Samba File : smb.conf with Security
- A Samba Troubleshooting Checking
- The Samba Administration Tool (SWAT)
  - The Home Menu
  - Samba Configuration Wizard
  - The Globals & Shares Menu
  - The Printers & View Menu
  - The Password & Server Status Menu
- The RedHat-Config Samba Alternative
  - Server Setting
  - User Management
  - Creating a new Share
- **Web Services**
  - Exploring Web Server Option
  - Learning Apache Basics
    - Apache 2.0 & Package
  - Configuring Apache
    - Starting Apache
    - Website Publishing with Apache
    - Troubleshooting Apache
  - Virtual Hosting with Apache
    - Name Base Virtual Hosting
    - IP-Based Virtual Hosting
  - Configuring with the RedHat GUI Apache Utility
    - Setting Main Apache Parameters
    - Configuring Virtual Hosts
    - Configuring the Server
- **Proxy Server**
  - Exploring the Squid Proxy Server
  - Configuring the Squid Proxy Server
  - Initializing the cache
  - Starting Squid with various methods and options
  - Running Squid Acceleration Mode
  - Enabling Username Password Authentication
  - Transparent Proxy
  - Introduction to OSI Layers Protocols
    - TCP / IP
    - UDP
  - Methods of Data Transmission
    - Signaling
    - Switching
    - Media Access Control (MAC)

## X WINDOW MANAGEMENT

- **Managing X Server & X Clients**
  - Using the Basic Configuration Tool
    - Xf86config
    - Redhat-config 86
    - Auto X Configure & Switchdesk
    - Changing the Display Manager

- **RedHat Graphical Fonts Ends**
  - Configuring with Basic Configuration Utilities
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