

ROYAL INSTITUTE OF INFORMATION & MANAGEMENT

LINUX ADMIN - LINUX SYSTEM ADMIN

Course Contents :

Overview:

- UNIX History & Principles
- Local Logins & Virtual Consoles
- The Xorg GUI Framework

Running Commands and Getting Help:

- Running Simple Commands
- Getting Help
- The what is, help & man command

Browsing the Filesystem:

- Linux File Hierarchy Concepts
- Absolute and Relative Pathnames
- Copying Files and Directories
- Creating Moving and Renaming Files and Directories

The bash Shell:

- Bash Introduction
- Bash Heritage and Features
- Command Line Shortcuts
- Command Line Expansion
- gnome-terminal

Standard I/O and Pipes:

- Standard Input and Output
- Overwriting vs Appending
- Redirecting Both Standard Output and Error
- Using Pipes To Connect Processes

Users, Groups, and Permissions:

- Users, Groups & The root user
- Examining Permissions
- Linux Process Security

vi and vim Editor Basics:

- Overview of vi and vim
- Three Modes of vi and vim
- Cursor Movement

The Linux File system In-Depth:

- Partitions and File systems
- Inodes and Directories
- Symbolic (or Soft) Links
- Hard Links
- The Seven Fundamental File types

Configuring the Bash Shell & Configuring the Bash Shell Variables:

- Common Local Variables
- Startup Scripts: Order of Execution

Advanced Topics in Users, Groups and Permissions:

- /etc/passwd, /etc/shadow, and /etc/group files
- System Users and Groups
- Default & Special Permissions

Advanced vi/vim and Printing:

- File Repositioning, Filtering
- Advanced Reading and Saving
- Using multiple "windows"

String Processing:

- Head, tail, wc (word count), sort, uniq etc.
- Other String Processing Tools
- Pattern Matching with Regular Expressions
- Wildcard Characters

Finding and Processing Files:

- Slocate, find
- Executing Commands with find

Investigating and Managing Processes:

- How Processes Are Created
- Viewing & Sending Signals to Processes
- Interactive Process Management Tools
- Scheduling a Process To Execute Later

Bash Shell Scripting:

- Scripting Basics
- Creating Shell Scripts
- Conditional Execution
- For loops & while loops

Network Clients:

- Web Clients
- Firefox & Other GUI Web Browsers
- Email and Messaging
- Ssh, scp, telnet and the "r" services
- Rsync, lftp, gFTP & smbclient

Mounting Floppy, CDs and USB Media Installation:

- Hardware Overview
- CPU and Memory
- Preparing to Install
- Multiboot systems
- The RHEL Installer
- Installer Features
- RHEL Installation Overview
- Partitioning Hard Drives
- Sample Partition Structure
- Configuring File Systems
- Software RAID
- LVM: Logical Volume Manager
- Network Configuration
- Firewall Setup
- Security Enhanced Linux
- SELinux Installation Options and Control
- Package Selection
- Validating the Installation
- Noprobe Mode and Driver Disks
- Post-Install Configuration
- Hands-on Lab: Installation

System Initialization and Services:

- Boot Sequence Overview
- BIOS Initialization

- Boot Loader Components
- GRUB and grub.conf
- Kernel Initialization
- init Initialization
- Run levels

Kernel Services and Configuration:

- Kernel Module Configuration
- The /proc filesystem
- /proc/sys configuration with sysctl
- Hotswappable Bus Support
- System Monitoring and Process Control

Filesystem Management:

- Disk Partitioning & Managing Partitions
- Managing Data: Filesystem Creation
- Mount Options and Configuration

Network Configuration:

- Network Interfaces
- mii-tool, ifconfig, ifup/ifdown
- Interface Configuration Files
- DHCP/BOOTP
- Default Route, Static Routes
- Name Resolution, DNS Configuration

RPM and Kickstart:

- RPM Package Manager
- Installing and Removing Software
- Updating a Kernel RPM
- Using Kickstart to Automate Installation

User Administration:

- User Policy Considerations
- The User Account Database - /etc/passwd
- Group Administration
- Login Shell Scripts
- Authentication Configuration
- NIS & LDAP Client Configuration
- The Setgid Access Mode

- Access Control Lists (ACLs)

Printing and Administration Tools:

- CUPS: Common Unix Printing System
- Controlling Access to cron
- System crontab Files
- syslog Configuration
- Using cpio
- Remote Backups

The X Window System:

- XOrg Server Configuration
- Server and Client Relationship
- Configuration Utilities
- Remote X Sessions

Advanced Filesystem Management:

- Software RAID Configuration & Recovery
- Converting LVM1 to LVM2
- The Linux Quota System

Troubleshooting:

- Troubleshooting Networking
 - Order of the Boot Process
- Filesystem Corruption & Recovery

LINUX ADMIN - LINUX NETWORK ADMIN

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Introduction to Network Services:

- Red Hat Linux Network Components
- Connecting Networks
- Service Management
- Chkconfig, xinetd Daemon

Organizing Networked Systems:

- DNS Basics
- Name Server Hierarchy
- Client & Server-side DNS
- Configuring BIND
- BIND Utilities
- Configuring the DHCP server

Network File Sharing Services:

- Configuring NFS, FTP & Samba Services
- Configuring File and Directory Sharing
- Printing to the Samba Server
- Authentication Methods

Electronic Mail Services:

- sendmail Features
- Security and "Anti-Spam" Features
- sendmail Configuration
- Postfix

The HTTP Service:

- Apache Features and Configuration
- Apache Namespace Configuration
- Apache Encrypted Web Server
- Squid Web Proxy Cache

Security Concerns and Policy:

- Basic Network Security

- Which Services Are Running?
- Remote Service Detection and Security Policy

Authentication Services:

- Authentication Basics
- Service Profile: PAM
- Password Security
- User Access Control
- Single User Mode
- Authentication Troubleshooting
- Configuring an NIS Server

System Monitoring:

- Introduction to System Monitoring
- File System Analysis
- Set User and Group ID Permissions
- EXT2 Filesystem Attributes
- Monitoring Data Integrity with tripwire
- System Log Files
- Advanced syslogd configuration
- Monitoring and Limiting Processes
- System Activity Reporting

Securing Networks:

- Packet Filtering Capabilities
- Netfilter Architecture
- Network Address Translation(NAT)
- Connection Tracking
- Rule persistence
- The "Bastion Host"

Securing Services:

- SystemV Startup Control
- Securing the Service
- tcp_wrappers Configuration
- Daemon Specification
- xinetd-based security

Securing Data:

- The Need For Encryption

- Cryptographic Building Blocks
- One-Way Hashes
- Symmetric & Asymmetric Encryption
- Public Key Infrastructures
- Digital Certificates
- OpenSSH Authentication