

Advanced Linux - 4 days

1. Intro to Shell Scripting

- Shell Scripting
- Positional Parameters
- Input & Output
- Doing Math
- Comparisons with test
- Conditional Statements
- The for Loop
- The while Loop

2. Process Management & Job Control

- What is a Process?
- Process Creation
- Process States
- Viewing Processes
- Signals
- Tools to Send Signals
- Job Control Basics
- Jobs
- screen
- Using screen
- Advanced Screen

3. Boot process, GRUB, NetBoot, and sysV init

- Booting Linux on Pcs
- GRUB Configuration
- Kernel Boot Parameters
- /sbin/init
- System Init Styles
- Linux Runlevels
- /etc/inittab
- /etc/init.d and rc#.d
- rc
- Typical SysV Init Script
- Managing Daemons
- Controlling Service Startup
- Shutdown and Reboot
- Network Booting

4. Mounting Filesystem and Managing Removable Media

- Filesystem Concept review
- Mounting Filesystems
- NFS
- SMB

- Automating Mounts
- Filesystem Table
- Removable Media
- The mtools Package
- mtools Commands

5. User/Group administration

- User/Group Concepts
- User Private Group Schema
- User Administration
- Modifying Accounts
- Group Administration
- Password Aging
- Default User Files
- PAM
- PAM Services
- PAM Control Statements
- su and Wheel
- sudo
- Manual Directory Services Client Configuration
- RHEL graphical DS Client Configuration

6. Filesystem administration

- Partition Table
- File System Creation
- Mounting File Systems
- Filesystem Maintenance
- Persistent Block Devices
- udev
- Resizing Filesystems
- File Deletion and Undeletion
- Swap
- Disk Usage
- Configuring Disk Quotas
- Setting Quotas
- Filesystem Attributes
- FACL
- Manipulating FAcls
- Viewing FAcls
- Backing Up FAcls
- Backup Hardware
- Tape Libraries
- Backup Software
- Backup Examples

7. Task automation

- at/batch
- at Access Control

- cron
- The crontab Command
- /etc/cron.* / Directories
- anacron
- Viewing Processes
- Managing Processes
- Tuning Process Scheduling
- System Logging
- /etc/syslog.conf
- Log Management
- Log Anomaly Detector
- Setting Resource Limits via ulimit
- Resource Limits with pam_limits.so Module
- System Status – Memory
- System Status – I/O
- System Status – CPU
- sar

8. Client networking

- Ipv4 Fundamentals
- TCP/IP Fundamentals
- Linux Network Interfaces
- Ethernet Hardware Tools
- Runtime Configuration change
- Configuring Routing Tables
- ARP
- Advanced Configuration
- Starting and Stopping Interfaces
- Virtual Interfaces
- Enabling Ipv6
- Interface Bounding
- 802.1q VLANS
- Network Profiles nad ifup
- IP Stack Configuration
- DNS Client
- Network Services via HDCP
- DHCP Client
- Configuring a DHCP Client
- Configuration Tools
- Network Diagnostics

9. Security concepts

- Tightening Default Security
- Staying Current
- Security Advisories
- SELinux Security Framework
- Choosing an SELinux Policy

- SELinux Commands
- SELinux Booleans
- Graphical SELinux Policy Tools
- xinetd
- Xinetd Features
- TCP Wrappers
- The /etc/hosts.allow & /etc/hosts.deny Files
- Advanced TCP Wrappers
- Basic Firewall Activation
- Netfilter: Stateful Packet filter Firewall
- Netfilter Concepts
- Using the iptables Command
- Netfilter Rule Syntax
- Targets
- Common match_space
- Stateless Firewall Example
- Connection Tracking
- Statefull Firewall Example

10. Linux kernel compilation

- Why Compile?
- Getting Kernel Source
- Preparing to Compile
- Kernel Compile Options
- Kernel Documentation
- Distribute Specific Kernel Extensions
- Compiling the Kernel
- Compile and Install Modules
- Installing the Kernel
- Tips and Tricks

11. Troubleshooting

- Basic Troubleshooting
- Gathering Information
- Information from:
 - df
 - mount
 - Log Files
 - ps
 - chkconfig
 - w
 - netstat

- Useful Debugging Aids
- Common Problem
- Incorrect File Permissions
- Inability to Boot
- Corrupt Filesystem
- Disk Full?
- Runaway Processes
- Shared Libraries
- Resuce Environment

12.XEN Virtualization

- What is Virtualisation?
- Virtualization Technologies
- What is Xen?
- Xen Architecture
- Xen Deployment Options and Considerations
- Workstation/Server Xen Deployment
- Xen ServerFarms
- Storage Options for Xen Servers
- Xen Networking
- Live Migration of Xen Virtual Servers
- xendConfiguration
- Guest Config Files
- Red Hat Xen Tools