

# Red Hat Enterprise Linux (RHEL) / CentOS : Managing Network Services

## Presentation

**Objectives** : Learn Red Hat Enterprise Server Network Services Management.

**Who can benefit**: Linux technicians and administrators.

**Prerequisites**: A clear understanding of basic Linux administration.

**Learning technique** : Clear, theoretical course content divided into lessons and extensive LABS available on-line 24/24 7/7.

**Duration** : 35 hours.

**Instructor** : Certified **LPI**.

**Student Progression** : Student progression is monitored both in terms of effective course duration and in terms of student comprehension using self-assessment tests.

**Resources** : CentOS 7 Virtual Appliance.

## Programme

- **Starting and stopping network services under Systemd**
  - Systemd
  - The systemctl command
  - Configuration files
  - The systemd-analyze command
  - Managing services under Systemd
- **Managing the Network**
  - TCP/IP
    - Messages, Datagrams and Segments
    - Establishing a TCP connection
    - The TCP header

- The UDP header
- Fragmentation and Re-encapsulation
- TCPv4 Classes
- Subnet Masks
  - Variable Length Subnet Masks - VLSM
- Ports and sockets
- Configuring a Network Client under Linux
  - /etc/services
  - Ethernet address resolution with arp
- Configuring TCP/IP on RHEL 6
  - DHCP
    - /etc/sysconfig/network
    - /etc/sysconfig/network-scripts/ifcfg-ethX (où X=0,1 ...)
  - Fixed IP Address
    - /etc/sysconfig/network
    - /etc/sysconfig/network-scripts/ifcfg-ethX (où X=0,1 ...)
  - The hostname command
  - The ifconfig command
  - Manually bringing up and down a network interface
  - The /etc/networks file
  - IP address resolution
    - /etc/resolv.conf
    - /etc/nsswitch.conf
    - /etc/hosts
- Configuring TCP/IP on RHEL 7
  - The nmcli command
  - Connections and Profiles
  - Adding a second IP address to an existing profile
  - The hostname command
  - The ip command
  - Manually bringing up and down a network interface
- Network Services
  - xinetd
  - TCP Wrapper

- Network Diagnostic Commands
  - ping
  - ping6
  - netstat-i
  - traceroute
  - traceroute 6
  - tracepath6
- Static Routing Tables on RHEL 6
  - The route Command
  - The netstat Command
  - Turning routing ON/OFF
- Static Routing Tables on RHEL 7
  - The ip Command
  - Turning routing ON/OFF
- Remote Administration
  - Telnet
  - ssh
  - wget
  - ftp
  - scp
- Administering an NFS server
  - Presentation
    - NFSv3 services and processes
    - NFSv3 services and processes
    - Basic commands
  - Server installation
  - Client installation
  - The rpcinfo command
  - The nfsstat command
- Packet Sniffers
  - TCPdump
  - Wireshark
- Port Scanners
  - nmap

- netcat
- The Netfilter Firewall
  - Introduction
  - Configuration using scripts on RHEL 6
  - Configuration using firewalld on RHEL 7
- Cryptology
  - Public Key Infrastructures
    - X509 Certificates
  - SSH and SCP
  - SSH Tunneling

- **Managing the DNS, NTP, FTP and DHCP servers**

- The DNS server
  - Pre-installation configuration
  - Installation
  - Configuration files
    - named.ca
    - named.conf
    - Zones
      - Type
      - File
      - db.fenestros.loc.hosts
      - db.2.0.10.hosts
  - rndc
    - The rndc key
    - Configuration files
  - LAB #1 - Install and configure bind9
- The Time server
  - Introduction
  - Installation
  - The ntp.conf file
  - LAB #2 - Installing and configuring ntp
- The vsftpd FTP server
  - Installation

- Basic configuration
- /etc/ftpusers
- vsftpd Anonymous server
  - Configuration
- Virtual users
  - Introduction
  - Configuration
- LAB #3 - Installing and configuring vsftpd
- The DHCP server
  - Introduction
  - Installation
  - Basic configuration
    - The dhcpd.conf file

- **Managing the Samba server**

- Microsoft networking
  - Microsoft network types
  - Windows client types
- Understanding Samba,
  - Samba Daemons
  - Samba commands
- Installation
  - Basic configuration
  - Manually starting Samba,
  - Samba configuration
  - Managing accounts and groups
  - Creating the smbpasswd file
  - Understanding the smb.conf file
    - Sécurité = share
    - Sécurité = user
  - Testing Samba.

- **Managing the Postfix server.**

- Sendmail basic configuration
- Installation & Configuration

- Installation
- Basic Configuration
- Dovecot
- Advanced configurations
  - Défining Aliases
  - SMTP AUTH
  - SSL

- **Managing the Apache server**

- Presentation and Configuration
  - Testing Apache
    - with telnet
    - with a browser
  - Configuring the global environment and the main server
    - /etc/httpd/conf/httpd.conf
    - /etc/httpd/conf.d/autoindex.conf
    - /etc/httpd/conf.d/userdir.conf
    - /etc/httpd/conf.d/welcome.conf
    - /etc/httpd/conf.modules.d/00-\*.conf
    - /etc/httpd/conf.d/local.conf
  - Virtual servers
    - Named virtual hosts
    - IP based virtual hosts
- Additional modules
  - mod\_userdir
  - mod\_php
  - mod\_auth\_basic
  - mod\_auth\_mysql
  - mod\_authnz\_ldap
  - mod\_ssl
  - mod\_proxy
  - mod\_dav
  - mod-rewrite
  - mod\_header

- mod\_suexec

- **Managing OpenLDAP**

- Presentation
  - What is LDAP?
    - The X.500 protocol
    - LDAP v3
  - How does LDAP work?
    - LDAP information model
    - DN versus RDN
  - LDAP structure
    - Attributes
      - User attributes
      - Operational attributes
      - Object classes
      - OID's
      - Schemas
- Installing the LDAP server
- Configuring the LDAP server
  - The local LDAP directory
  - Referrals
  - Replication
- Configuration files
  - slapd.conf
    - include
    - allow
    - referral
    - pidfile
    - argsfile
    - modulepath
    - moduleload
    - TLSCACertificateFile, TLSCertificateFile & TLSCertificateKeyFile
    - security
    - access to

- database config
- backend
- suffix DN
- checkpoint
- rootdn <DN>
- rootpw <mot de passe>
- directory
- index
- relogfile <filename>
- replica host <hostname>[:<port>] [bindmethod={ simple | kerberos | sasl }]
- loglevel
- password-hash
- schemacheck
- idletimeout
- sizelimit
- timelimit
- readonly <on | off>
- lastmod <on | off>
- /etc/openldap/ldap.conf
- cn=config
- Securing the directory
  - Creating an administrative password
  - Implementing SSL
- Creating and maintaining the databases
  - The LDIF format
  - Creating a database online
    - The ldapadd command
    - Using the luma graphical client
    - The Directory Information Tree
    - alias
    - attributes
    - classes
    - schemas
    - referrals



- The ldapsearch command
  - The ldapmodify command
  - The ldapdelete command
- Creating a database offline
  - The slapadd command
- Maintaining an LDAP database
  - The slapcat command
  - The slapindex command
  - The slapdn command
  - The slaptest command
  - The slapauth command
- LAB #1 - Replication
  - Preparation
  - Replication
    - Configuring the supply server
    - Configuring the consumer server
    - Tests