Tytuł szkolenia: Linux for UNIX Administrators (GL615)

Kod szkolenia: U2794S

Wprowadzenie

This is an accelerated course for experienced UNIX® administrators desiring to develop an understanding of the skills required to administer Red Hat® or SUSE Linux-based systems in their enterprise computing environments. It combines the topics in H7091S and H7092S. This course should also help prepare students for Linux certification exams such as the LPI 101/102 required for Linux Professional Institute Level One certification.

Adresaci szkolenia

Experienced UNIX system administrators new to Linux.

Prerequisites

Experience as a UNIX system administrator is required and a good understanding of network concepts, the TCP/IP protocol suite, and basic UNIX security is also assumed. The accelerated pace of this course is only possible if students are already comfortable with basic HP-UX or Sun Solaris system administration concepts and tasks.

Cel szkolenia

At the conclusion of this course, you should be able to:
- Successfully install, configure, and bring a Linux system online

Benefits to you:
- Learn the Linux approach to system administration tasks
- Gain an understanding of the Linux user interfaces, file systems and run states
- Acquire the techniques for recovering an unbootable system
- Gain knowledge of Linux disk space management options
- Effectively manage software packages
- Efficiently use networking services and security options

Czas i forma szkolenia

- 35 godzin (5 dni x 7 godzin), w tym wykłady i warsztaty praktyczne.

Plan szkolenia

Module 1: Linux orientation
- FSF and GNU
- GPL - General Public License
- Linux Kernel and versioning
- Components of a distribution
- SUSE Linux products
- Red Hat Linux products

Module 2: Linux Kernel and hardware
- Hardware Discovery tools

- Configuring New Hardware with hwinfo
- Hardware and System Clock
- Console
- Virtual terminals
- Serial ports
- SCSI devices
- USB configuration
- Defining a printer
- Tape libraries
- Managing Linux device files
- Kernel hardware info - /sys/
- /sys/ Structure
- udev
- Kernel modules
- Configuring Kernel components and modules
- Handling module dependencies
- Configuring the Kernel via/proc/
- System tools

Module 3: Boot process and systemd
- systemd system and service manager
- systemd targets
- Using systemd
- Legacy support for SysV init
- Booting Linux on PCs
- GRUB2
- GRUB2 configuration
- GRUB2 security
- Boot parameters
- Initial RAM Filesystem
- init
- System init styles overview
- Linux runlevels aliases
- systemd local-fs.target and sysinit.target
- systemd basic.target and multi-user.target
- Legacy local bootup script support
- System configuration files
- RHEL7 configuration utilities
- SLES12 configuration utilities
- Shutdown and reboot

Module 4: Software maintenance
- RPM architecture
- Working with RPMs
- Querying and verifying with RPM
- Updating the Kernel RPM
- Using the YUM command
- Using the Zypper command
- YUM package groups
- Zypper services and catalogs
- Configuring YUM
- YUM repositories
- Rebuilding source RPM packages
- Software tools comparison matrix

Module 5: Local storage administration
 • Partitioning Disks with fdisk
 • Partitioning Disks with parted
 • Filesystem creation
 • Mounting Filesystems
 • Filesystem maintenance
 • Resizing Filesystems
 • Managing an XFS Filesystem
 • Swap
 • Filesystem attributes
 • Filesystem creation and management

Module 6: LVM and RAID
 • Logical Volume Management
 • Implementing LVM
 • Creating Logical Volumes
 • Manipulating VGs and LVs
 • Advanced LVM concepts
 • gnome-disk-utility
 • SLES graphical disk tool
 • RAID concepts
 • Array creation with mdadm
 • Software RAID monitoring
 • Software RAID control and display
 • LVM and RAID: UNIX tool comparison

Module 7: Remote storage administration
 • Remote storage overview
 • Remote Filesystem Protocols
 • Remote block device protocols
 • NFS clients
 • NFS server configuration
 • Implementing NFSv4
 • AutoFS
 • AutoFS configuration
 • SAN multipathing
 • Multipath configuration
 • Multipathing best practices
 • iSCSI architecture
 • Open-iSCSI initiator implementation
 • iSCSI initiator Discovery
 • iSCSI initiator node administration
 • Mounting iSCSI targets at boot
 • iSCSI multipathing considerations

Module 8: User/group administration
 • User and group concepts
 • User administration
 • Modifying accounts
 • Group administration
 • Password aging
 • Default user files
 • Controlling login sessions
 • system-configuration-authentication

- SLES DS client configuration
- PAM overview
- PAM module types
- PAM order of processing
- PAM control statements
- pam_wheel.so
- pam_limits.so
- User/Group administration comparison matrix

Module 9: Security administration
- Security concepts
- Tightening default security
- Security advisories
- File access control lists
- Manipulating FACLs
- Viewing FACLs
- Backing up FACLs
- File creation permissions with umask
- User private group scheme
- Alternatives to UPG
- TCP Wrappers concepts
- TCP Wrappers concepts
- Xinetd
- SUSE basic firewall configuration
- Netfilter concepts
- Using the iptables command
- Common match_specs
- Connection tracking
- AppArmor
- SELinux security framework
- SELinux modes
- SELinux commands
- Choosing an SELinux policy
- SELinux booleans
- SELinux policy tools
- (X)INETD and firewalls

Module 10: Process administration
- At and Cron usage
- Anacron
- Viewing processes
- Managing processes
- Tuning process scheduling
- Process accounting
- Setting resource limits via ulimit

Module 11: Networking
- Linux network interfaces
- Ethernet hardware tools
- Network Configuration with IP command
- Configuring routing tables
- IP to MAC address mapping with ARP
- Starting and stopping interfaces
- Network manager
- DNS clients

• DHCP clients
• Network diagnostics
• Information from ss and netstat
• Managing network-wide time
• Continual time Sync with NTP
• Configuring NTP clients
• Multiple IP addresses
• IPv6
• Interface bonding
• Interface bridging
• 802.1q VLANs
• Network configuration tools

Module 12: Monitoring and troubleshooting
• System status - Memory
• System status - I/O
• System status - CPU
• Performance trending with SAR
• Troubleshooting basics: the process
• Troubleshooting basics: the tools
• System logging
• Syslog-ng
• systemd journal
• Rsyslog
• /etc/rsyslog.conf
• Log management
• Log anomaly detector
• strace and ltrace
• Troubleshooting incorrect file permissions
• Inability to boot
• Typos in configuration files
• Corrupt Filesystems
• RHEL7 rescue environment
• SUSE rescue environment
• Process tools

Module 13: BIND DNS
• The domain name space
• Delegation and zones
• Server roles
• Resolving names
• Resolving IP addresses
• Basic BIND administration
• Configuring the resolver
• Testing resolution
• rndc key configuration
• named.conf options block
• Creating a site-wide cache
• Zones in named.conf
• Zone database file syntax
• SOA - Start of authority
• A, AAAA, and PTR - Address and pointer records
• NS - Name server

- TXT, CNAME, and MX - Text, alias, and mail host
- Abbreviations and gotchas
- $GENERATE, $ORIGIN, and $INCLUDE

Module 14: SQL fundamentals and MariaDB

- Popular SQL databases
- SELECT statements
- INSERT statements
- UPDATE statements
- DELETE statements
- JOIN clauses
- MariaDB
- MariaDB installation and security
- MariaDB user account management
- MariaDB replication

Module 15: OpenLDAP

- OpenLDAP: server architecture
- OpenLDAP: backends
- OpenLDAP: replication
- OpenLDAP: configuration options
- OpenLDAP: server tools
- OpenLDAP: client tools
- LDIF: LDAP Data Interchange Format
- Enabling LDAP-based login
- System Security Services Daemon (SSSD)

Module 16: vsFTPd and Apache

- vsFTPd
- Anonymous FTP with vsFTPd
- Configuring vsFTPd
- HTTP operation
- Apache architecture
- Apache configuration files
- httpd.conf - Server settings
- httpd.conf - Main configuration
- httpd.conf - VirtualHost configuration
- Virtual hosting DNS implications
- Adding modules to Apache
- Apache logging
- Delegating administration
- Directory protection
- Directory protection with AllowOverride
- Common uses for .htaccess
- TLS using mod_ssl.so

Module 17: SQUID proxy server

- Squid overview
- Squid file layout
- Squid Access Control Lists
- Applying Squid ACLs
- Tuning Squid and configuring cache hierarchies
- Bandwidth metering
- Monitoring Squid
- Proxy client configuration

Module 18: Samba

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- Samba daemons
- Accessing Windows®/Samba shares from Linux
- Samba utilities
- Samba configuration files
- The smb.conf file
- Mapping permissions and ACLs
- Mapping Linux concepts
- Sharing home directories
- Sharing printers
- Share authentication
- User-level access
- Mapping users
- Samba account database
- User share restrictions

Module 19: Postfix
- Postfix features
- Postfix components
- Postfix configuration
- master.cf
- main.cf
- Postfix map types
- Postfix pattern matching
- Virtual domains
- Postfix mail filtering
- Configuration commands
- Management commands
- SMTP AUTH server and relay control
- SMTP AUTH clients
- TLS server configuration
- Postfix client configuration for TLS

Module 20: Email services
- Procmail
- SpamAssassin
- amavisd-new mail filtering
- Cyrus IMAP/POP3 server
- Cyrus IMAP MTA integration
- Cyrus Mailbox administration
- Dovecot POP3/IMAP server

Lab 1
- Adjusting Kernel options
- Configuring print queues
- Introduction to Troubleshooting Labs
- Troubleshooting practice: Kernel modules

Lab 2
- Boot process
- Booting directly to a Bash shell
- GRUB command Line
- Basic GRUB security
- Managing services with systemd's systemctl
- Troubleshooting practice: Boot process

Lab 3
• Managing software with RPM
• Creating a custom RPM repository
• Querying the RPM database
• Installing software via RPM and source and rebuilding SRPMs
• Using YUM
• Using Zypper

Lab 4
• Creating and managing Filesystems
• Hot Adding Swap

Lab 5
• Creating and managing LVM Volumes
• Creating and managing a RAID-5 Array

Lab 6
• Using AutoFS
• NFS server configuration
• iSCSI initiator configuration

Lab 7
• User and group administration
• Using LDAP for centralized user accounts
• Troubleshooting practice: account management
• Restricting superuser access to wheel group membership
• Setting Limits with the pam_limits modules
• Using pam_limits to restrict simultaneous logins

Lab 8
• User private groups
• Using Filesystem ACLs
• Securing xinetd services
• Enforcing security policy with xinetd
• Securing services with TCP Wrappers
• Securing services with SuSEfirewall2
• Securing services with Netfilter
• Exploring SELinux modes
• SELinux file contexts

Lab 9
• Creating and managing user Cron jobs
• Adding system Cron jobs

Lab 10
• Network discovery
• Basic client networking
• NTP client configuration
• Multiple IP addresses per network interface
• Configuring IPv6
• Troubleshooting practice: networking

Lab 11
• Using the systemd Journal
• Setting up a full debug logfile
• Remote syslog configuration
• Remote rsyslog TLS configuration
• Recovering damaged MBR

Lab 12
• Configuring a slave name server

• Use rndc to control named
• Configuring BIND zone files
Lab 13
• SQL with SQLite3
• Installing and securing MariaDB
• Creating a database in MariaDB
• Create a database backed application
Lab 14
• Building an OpenLDAP server
• Enabling TLS for an OpenLDAP server
• Enabling LDAP-based logins
Lab 15
• Configuring vsFTPd
• Apache architecture
• Apache content
• Configuring virtual hosts
• Using .htaccess files
• Using TLS certificates with Apache
Lab 16
• Installing and configuring Squid
• Squid cache manager CGI
• Proxy auto configuration
• Configure a Squid proxy cluster
Lab 17
• Samba share-level access
• Samba user-level access
• Samba group shares
• Handling symbolic links with Samba
• Samba home directory shares
Lab 18
• Configuring postfix
• Postfix network configuration
• Postfix virtual host configuration
• Postfix SMTP AUTH configuration
• Postfix STARTTLS configuration
 • SUSE postfix configuration cleanup
Lab 19
• Configuring procmail and SpamAssassin
• Configuring Cyrus IMAP
• Dovecot TLS configuration
Lab 20
• Linux installation
• Automating installation with Kickstart
Lab 21
• SUSE Linux enterprise server installation
• Automating installation with AutoYaST