

Advanced Linux System Administration Knowledge GNU/LINUX Requirements

Duration: 112Hours / 28 Classes (4hrs each class Including Theory & Lab Session) (2 Classes/ Week)

Class	Topic	Duration
Class 1	History of Linux (GNU/LINUX)	10min
	GNU General Public License	5min
	H/D Geometry	30min
	Basic Requirement for Linux Installation	15min
	Installation – Minimal and Custom	1hrs 30min
	Assessment – 3	1hrs 30min
Class 2	Linux Commands – Part I Pwd/cd/ls/alias/unalias/who/whoami/who am i/users/finger/w/basename/which/file/cp/mv/rm/mkdir/touch/hostname/cat/cal/eject/file/mount/umount/login/logout/wall/echo/wget	2hrs
	VI Editor	30min
	Assessment – 1	1hrs 30min
Class 3	Linux Commands – Part II Halt/shutdown/poweroff/reboot/ll/dd/joe/emacs/ln/fdisk/mke2fs/mtools/pico/sed/wc/whereis/convert/ifconfig/ncftp/scp/mplayer/mpg123/hdparm/dmesg/bc/sh/at/atq/trm/date/uptime/su /switchdesk/uname	3hrs
	Assessment – 2	1hrs
Class 4	Binary/Process/Daemon	20min
	File System Hierarchy Standard	40min
	Details FSTAB	1hrs
	Archiving/Encoding/Compressing/Encrypting File Compress/Uncompress/tar/bzip2/bunzip2/gzip/gunzip/zip	30min
	Process and Job Control Ps/nice/renice/top/nohup/kill/killall/bg/fg/jobs	30min
	Assessment – 4	1hrs
Class 5	Symbolic Link / Hard Link	30min
	Comparison between Both Links	10min
	Advance Linux Commands useradd/userdel/usermod/groupadd/groupmod/groupdel/passwd/id/uname/chown/chgrp/chmod/chroot	1hrs 20min
	File manipulation commands Head/tail/less/more/grep/find/awk/comm./diff/join	1hrs
	Assessment – 5	1hrs
Class 6	Shell Scripting	1hrs 30min
	Boot Process Part 1	1hrs 30min
	Assessment – 6	1hrs
Class 7	Boot Process Part 2	2hrs 30min
	Assessment – 7	1hrs 30min
Class 8	User and Group Administration – Useradd Details	1hrs
	File & Directory Permission & Security	1hrs
	Chmod/chgrp/SetUid/SetGid/StickyBit/umask	30min
	SUDO	30min

Semaphore Technologies Pvt. Ltd. – (technologies.semaphore@gmail.com)

	Assessment – 8	1hrs
Class 9	Software Installation With RPM / With Source Code (Tar Ball)	2hrs 30min
	X-Windows	1hrs
	Assessment – 9	30min
Class 10	User and Group Quota Management	1hrs
	Cron and Anacron	1hrs
	Autofs/Syslog Administration	1hrs
	Assessment – 10	1hrs
Class 11	Linux Kernel	1hrs
	Building Custom Kernel using CUI and GUI/Kernel Patching	1hrs 30min
	Assessment – 11	1hrs 30min
Class 12	Some Advanced Commands Df/Du/Fdformat/Elabel/Dumpe2fs/Tune2fs/Chroot/Sync/ Mkswap/Swapon/E2fsck/iftisk	1hrs
	LVM (Logical Volume Manager) / LVM with RAID	2hrs
	Assessment – 12	1hrs
Class 13	IP Addressing – Basic	30min
	IP Address Configuration for Linux Boxes	15min
	Sub netting, bonding, Configure NIC with Multiple IP	30min
	Using Different Utility - ping/tcpdump/netstat/nmap	15min
	DHCP Server Configuration	1hrs
	SAMBA	1hrs
	Assessment – 13	30min
Class 14	VSFTPD	1hrs
	XINETD – TCPWRAPPER	30min
	OpenSSH	1hrs 30min
	Assessment – 14	1hrs
Class 15	Apache Basic Configuration/ Virtual Hosting/ Authentication Content Description and Modification Indexing /Redirection/ Logging/ Proxying Security – Using OpenSSL. Integration and Testing of PHP Module Integration and Testing of Perl Module Modular and Static Installation of Apache from Source Code. Integration of Tomcat with Apache Apache Failover/ HA with Hearbeat Software	3hrs
	Assessment – 15	1hrs
Class 16	NFS Why NFS? Server Side NFS Configuration Client Side NFS Configuration Automation of NFS Server and Client. Logging/Security/Failover High Availability of NFS Servers.	1hrs 30min
	NIS Why NIS? NIS Server Configuration NIS Client Configuration Testing from the Clients Host.conf and nsswitch.conf Advantage of NIS/Automation/Security.	1hrs 30min

	Assessment – 16	1hrs
Class 17	<p>IPTables Build internet firewall based on stateless and stateful firewall All Kind of Network address and port translation NAT to implement transparent Proxy Iptables integration with Linux router, implementing Default, Static and Dynamic Routers and VPN Support</p>	1hrs 30min
	<p>Endian Firewall Endian Firewall offers network security, stability and scalability by protecting your network from multiple threats, providing network assurance through ease of use, extensive support and manageability with Endian Network.</p>	1hrs 30min
	Assessment – 17	1hrs
Class 18	<p>Squid Introduction to SQUID/ CLI Options Network Parameters/ Admin Parameters Caching/ Access Control List Authentication/ Logging Transparent Proxy Reverse Proxy DNS Mapping</p>	2hrs 30min
	<p>Squid Guard SquidGuard is a URL redirector used to use blacklists with the proxy software Squid. There are two big advantages to squidguard: it is fast and it is free. SquidGuard is published under GNU Public License.</p>	30min
	Assessment – 18	1hrs
Class 19	DNS/DNS Restriction and ACL implementation/Dynamic DNS	1hrs 30min
	Mail – Sendmail	2hrs
	Assessment – 19	30min
Class 20	Postfix	1hrs 30min
	Qmail	1hrs
	<p>SquirrelMail SquirrelMail is a standards-based webmail package written in PHP. It includes built-in pure PHP support for the IMAP and SMTP protocols, and all pages render in pure HTML 4.0 (with no JavaScript required) for maximum compatibility across browsers. It has very few requirements and is very easy to configure and install. SquirrelMail has all the functionality you would want from an email client, including strong MIME support, address books, and folder manipulation.</p>	15min
	Assessment 20	1hrs 15min
Class 21	<p>MySQL Introduction to RDBMS Installation of MySQL MySQL Architecture Creation of Database Simple SQL Statements Backup and Restore</p>	3hrs
	Assessment -21	1hrs
Class 22	Linux High-Availability with Heartbeat	1hrs
	Clustering with OpenMosix	2hrs

	Assessment – 22	1hrs
	Additional (Class 23/24/25/26)	
	System Backup & Restoration with Mondo Rescue Mondo is reliable. It backs up your GNU/Linux server or workstation to tape, CD-R, CD-RW, DVD-R[W], DVD+R[W], NFS or hard disk partition. In the event of catastrophic data loss, you will be able to restore all of your data [or as much as you want], from bare metal if necessary. Mondo is in use by Lockheed-Martin, Nortel Networks, Siemens, HP, IBM, NASA's JPL, the US Dept of Agriculture, dozens of smaller companies, and tens of thousands of users.	1hrs
	Backup Using Rsync Rsync is a program for synchronizing 2 directory trees across different file systems even if they are on different computers. It can run its host <> host communications over Ssh to keep things secure and to provide key based authentication. Rsync can also do a block level comparison of 2 files and transfer only the parts that have changed which are a huge benefit if you are transferring large files over a slow link.	1hrs
	OpenLDAP A directory is a specialized database optimized for reading, browsing and searching. Directories tend to contain descriptive, attribute-based information and support sophisticated filtering capabilities. LDAP stands for Lightweight Directory Access Protocol. As the name suggests, it is a lightweight protocol for accessing directory services, specifically X.500-based directory services. LDAP runs over TCP/IP or other connection oriented transfer services. The OpenLDAP Project is a collaborative effort to develop a robust, commercial-Grade, fully featured and open source LDAP suite of applications and development tools.	2hrs
	Webmin Webmin is a web-based interface for system administration for UNIX. Using any modern web browser, you can setup user accounts, Apache, DNS, file sharing and much more. Webmin removes the need to manually edit Unix configuration files like /etc/passwd, and lets you manage a system from the console or remotely.	30min
	Nagios Nagios is a host and service monitor designed to inform you of network problems before your clients, end-users or managers do. It has been designed to run under the Linux operating system, but works fine under most *NIX variants as well. The monitoring daemon runs intermittent checks on hosts and services you specify using external "plugins" which return status information to Nagios. When problems are encountered, the daemon can send notifications out to administrative contacts in a variety of different ways (email,	1hrs 30min

	instant message, SMS, etc.). Current status information, historical logs, and reports can all be accessed via a web browser.	
	<p>Nessus</p> <p>Nessus is the world's most popular vulnerability scanner used in over 75,000 organizations world-wide. Many of the world's largest organizations are realizing significant cost savings by using Nessus to audit business-critical enterprise devices and applications. The Nessus program is a Client/Server application offering a framework for lots of security related scanners, so-called plugins.</p>	1hrs 30min
	<p>Ntop</p> <p>Ntop shows the current network usage. It displays a list of hosts that are currently using the network and reports information concerning the IP (Internet Protocol) and Fiber Channel (FC) traffic generated by each host. The traffic is sorted according to host and protocol.</p>	1hrs
	<p>MRTG – Multi Router Traffic Grapher</p> <p>The Multi Router Traffic Grapher is a tool primarily used to monitor the traffic load on network links (typically by using SNMP). MRTG generates HTML pages containing PNG images which provide a LIVE visual representation of this traffic.</p>	1hrs 30min
	<p>ClamAV</p> <p>Clam Antivirus is an open source (GPL) anti-virus toolkit for UNIX, designed especially for e-mail scanning on mail gateways. It provides a number of utilities including a flexible and scalable multi-threaded daemon, a command line scanner and advanced tool for automatic database updates.</p>	1hrs
	<p>Configure Radius Server – Free RADIUS</p> <p>Remote Authentication Dial-In User Service (RADIUS) is a client/server protocol and software that enables remote access servers to communicate with a central server to authenticate dial-in users and authorize their access to the requested system or service. RADIUS allows a company to maintain user profiles in a central database that all remote servers can share.</p> <p>Free RADIUS is a modular, high performance and feature-rich RADIUS suite including server, clients, development libraries and numerous additional RADIUS related utilities.</p>	2hrs
	<p>Ethereal</p> <p>Ethereal® is used by network professionals around the world for troubleshooting, analysis, software and protocol development, and education. It has all of the standard features you would expect in a protocol analyzer, and several features not seen in any other product. Its open source license allows talented experts in the networking community to add enhancements. It runs on all popular computing platforms, including UNIX, Linux, and Windows.</p>	1hrs
	<p>Additional LAB Sessions</p> <p>Installation of Linux over Network</p>	2hrs

Class 27	Final Assessment – Part I	4hrs
Class 28	Final Assessment – Part II	4hrs

Semaphore Technologies Pvt. Ltd. (technologies.semaphore@gmail.com)