**Due to power fluctuation, your system starts up from a powered off state. You receive a warning error stating that the machine was not shut down properly, and fsck will be run. What is the cause of this message?**

If your hard drive file systems are not unmounted properly, the fsck utility will automatically run the next time the system is started to fix any inconsistencies before they are mounted again. If they are not fixed, the file system can quickly become corrupt.

**A junior system administrator is trying to read through a large log file using the cat command. Because it is so large, the cat command scrolls the file right to the end without allowing the start of the file to be read. What command can he be used to more easily read the file?**

He can use less command instead of using cat command, which allows him to scroll through the file.

**When you try to boot a Linux system, you receive a message stating that it canot mount the /home partition because of errors. While debugging , you found that it occur due to data error. What can you do to fix the problem?**

You can use fsck utility that enable you to recover from the errors.

**During the bootup of a Linux system, there is no output on the monitor, the machine beeps, and then halts the boot-up process. What is the most likely cause of the problem?**

If the system would not even get to the POST stage, the problem is most likely with the motherboard itself. You should count and compare the number of beeps to the BIOS manual in order to determine which specific component failed.

**Which utility could you use to repair the corrupted file system?**

You can use fsck to repair the corrupted file system.

**What must you do before performing fsck on a file system?**

The fsck utility can only run on a file system that is unmounted. If it were active, fsck would not be able to properly repair the drive, and may cause further corruption.

**A Linux administrator wants to review the messages that scrolled up the screen during a system boot. How can this be accomplished?**

The boot kernel messages are saved to the log file /var/log/dmesg. He can check this file.

**A user complains you that his system was running fine, before he rebooted. When it starts up, no display appears on the screen and the system is beeping. What may this indicate?**

Because the system was running fine before reboot and during the it got problem even before the operating system is loaded, the problem is hardware-based, and is most likely caused by a problem with the system board.

**A user has sent an e-mail, but within minutes the e-mail is returned stating that the address could not be found. What is the most likely cause of the error?**

If the e-mail was returned, all mail services are working properly, but the destination e-mail address was wrong.

**Your system crashed and being restarted, but a message appears, indicating that the operating system cannot be found. What is the most likely cause of the problem ?**

This kind of problem most likely to be associated with hard disk. There might be some issue with either MBR or hard disk.

**A user can not access a remote server. Which command he can use to verify that remote server is up?**

He can use ping command to check whatever remote server is up or not.

**A newbie administrator is having tough time to locate the httpd.conf file. What command line tool he can use to find file?**

He should first try with locate command. find command would be his next tool.

**A user has decided to come into work overnight to get some work done. Unfortunately, he is not able to login, even though he is using his proper name and password. What is the most likely cause of the problem?**

In high security environments some organizations choose to implement time restrictions on accounts, so user would not be able to login after office time.

**A Linux administrator is noticing odd system behavior. Which log file should he check to find general system log messages?**

The general log stored in /var/log/messages file.

**Instead of properly shutting down a Linux system, an user mistakenly just turned the machine off with the on/off switch. What will happen when the system restarts?**

When the system shuts down abnormally and the file systems are not properly mounted, the fsck utility will automatically check the disks for errors and inconsistencies in order to repair them.

A newbie system admin is having trouble with the options for a particular command. What is the best resource to use for information on the command?

He can use man command to get detail of the options. A quick way to get help about options is to use --help option. Most Linux command support this option and return with brief information on how to use that command.

**You are tasked to examine a log file in order to find out why a particular application keep crashing. Log file is very lengthy, which command can you use to simplify the log search using a search string ?**

You can use grep command to output the log file. You can specify the keyword of desired application to look for, grep command than displays all instances of that word in log file.

**A user is trying to check his mail by using the pop3 protocol and port 143. But mail program could not connect to the mail server to retrieve mail. What is the most likely cause of the problem?**

User is using wrong port number. Port number 143 is used for imap, he should use port 110 instead of 143.

**A developer is constantly making changes in his applications source file, then running application to see if is throwing any error. Which command can he use to see the log file in real time, instead of reopening the log file each time?**

He can use tail command with -f options to see a file being updated in real time. He do not need to reopen the file to see any changes.

**An administrator has made changes to a daemon's configuration file. When he checks the process, it is still running with old behavior. What is the reason behind it?**

He need to restart the service to process can read and implement the new configuration.

**An application process has just failed on a Linux system. What should you examine first to find out the root of the problem?**

When an application fails, the first thing that you should do to help troubleshoot the problem is to examine the application logs for the particular error that caused the application to fail.

**During a software package installation, an error occurs warning that a certain library is missing, and the installation aborts. What is the most likely cause of the problem?**

Many software packages are dependent on other programs to function properly. If these dependencies do not exist, you must install them before installing your software package.

**What command should be used to show the first 100 lines of a file?**

The command to show the first 100 lines of a file is head -100 filename.

**What command can an administrator use to see the status of a print queue?**

The lpq command can be used to see the status of a print queue.

**Which version of RHEL officially supports LUKS encryption?**

From version 6 or higher LUKS encryption is officially supported by RHEL.

**What is the default virtualization technology for RHEL6 ?**

Default virtualization technology is KVM.

**Can you configure KVM Virtual machine on 32 bit system ?**

No, KVM virtualization requires at least 64 bit system.

**What is default mode of SELinux during the installation of RHEL ?**

* In RHEL5 you have to choose the mode which you want.
* From RHEL6 default mode is Enforcing during the installation.

However you can change the mode of SELinux after installation, only difference between RHEL5 and RHEL6 is that in RHEL5 asks you to choose the mode while RHEL6 does not let you to choose the mode during the installation.

### Which remote management service is allowed through the default firewall and by default installed in RHEL?

By default SSH is always installed in RHEL. SSH uses port 22 which is allowed through the default firewall rules.

### Which standard directory is used by vsFTP server for file sharing ?

Default Standard directory for ftp is /var/ftp/pub.

### Which standard directory is used by Apache web server for HTML files ?

standard directory for HTML files is /var/www/html

### What is the default partition layout during the installation ?

Default partition Layout is the LVM.

**Which necessary partition cannot be a part of logical volume group ?**

boot partition cannot be a part of logical volume group. You must have create it as a regular partition.

**Which partitions are recommended for custom layout of partition ?**

* /
* /boot
* /home
* swap

**What step during the installation could you take to prevent a program from creating temporary files that fill up the entire space ?**

You can create a separate /tmp partition prevents a program from creating temporary files that fill up the entire filesystem.

**What is the kickstart ?**

kickstart is a installation method used in RHEL. A kickstart installation is started from a kickstart file, which contains the answers to all the questions in the installation program.

**Name any of two third party distribution based on RHEL6 source code.**

CentOS and Scientific Linux

**Which Log file contains all installation message?**

install.log.syslog file contains all messages that were generated during the installation.

### What is the Minix?

Minix is the UNIX clone written by Andrew Tanenbaum at VU University, in Amsterdam when universities were no longer allowed access to the UNIX source code. MINIX also inspired the creation of the Linux kernel.

### What does POSIX stand for?

POSIX stands for Portable Operating System Interface for Computer Environments. It is the standard for ensuring compatibility between UNIX versions.

**Who posted the source code of Linux kernel on the Internet and invited other programmers to modify and enhance it.?**

In 1991 Linus Torvalds, a 21-year-old student at the University of Helsinki Finland posted the source code of Linux kernel on the Internet and invited other programmers to modify and enhance it.

### Are Linux and UNIX are same ?

Linux kernel was built to work like UNIX but doesn’t use any of the UNIX code—this is why Linux is not UNIX. A kernel is the core of any operating system.

### Who initiated the GNU Project?

GNU project was initiated by Richard Stallman on 27 September 1983 at MIT. Main motive of this project was to give freedom and control in use of software's. GNU software guarantees these freedom-rights legally via its license. Users are free to run the software, share it, copy it, distribute it, study it and modify it.

### Under which licenses Linux kernel released?

The Linux kernel is released under the GNU General Public License version 2 (GPLv2), and is developed by contributors worldwide.

### What does GPL mean?

GPL stands for General Public License and it was created to protect the intent of the GNU project.

### Linux was originally created to run on what platform?

Linux was originally created to run on the Intel x86 platform.

**Name the Linux services which provides network printing.**

CUPS provide network printing between Linux systems. It can be used with Samba service to extend network printing to windows systems.

**Which Linux service is used to provide network file storage ?**

NFS service is used to provide file sharing.

**Which Linux service is used as a database server ?**

MySQL and PostgreSQL are Linux database server.

**Which Linux service is used to turn a Linux system in proxy server ?**

Squid service can be used to turn any Linux system into an in proxy server.

**Which components of Linux provides pre-written code that a developer can use ?**

Linux libraries contain pre-written code that a developer can reuse in their applications.

Your company purchased 5 new laptops. Laptop have Intel core i3 processor and Window 8 installed. Your network admin wants to install RHEL on them, but is concerned that it cannot be done because they already have Window 8 installed. Can this be done ?

Yes you can install any operating system as long as the hardware is compatible. Hardware and operating systems are modular. Computer hardware is not tied in any way to a particular OS. Every OS have some minimum hardware requirements, if your hardware meets with that requirements, you can install that OS.

You are a network administrator, your company wants you to download the source code of latest Linux kernel for the developer team. Can you do this?

Source code of Linux kernel is available under the GPL license. Under the GPL, you are free to download the Linux source code and modify it.

Your company have less funds but need a reliable file server set up? Which OS and file server service can you use ?

Use Linux operating with NFS file service.

You have purchased new laptop and want to resell old one, but you don't want to violate any licensing for OS. What can you do to avoid violating a software license?

You can install Linux OS. All major software's for Linux are available under the GPL, those you can use without violating any software license.

**Why should you periodically update the kernel and package versions?**

To enhance the security of system you should ensure that you are using the latest versions kernel and software packages that contain the most recent security updates.

**During a recent strikes at office, several archive tapes of the system were damaged and ruined. What can you do to prevent the physical damage in future?**

You should store them at offsite.

**Why should you avoid the Telnet to administer a Linux system remotely?**

Telnet use most insecure method for communication. It send data across the network in plain text format. Someone easily find out the password using the network tool.

**A file is unable to be restored from tape due to several device and media errors. What is most likely the cause?**

Media errors usually indicate that the tape media is damaged, or that the tape drive heads need cleaning.

**Your FTP Server recently hacked. Due to the amount of damage, the entire server needs to be restored. How should you restore the original kernel system files?**

You cannot restore the entire operating system from tap back up device. So you should reinstall the core operating system, and then restore system configuration files and user data from tape backup device.

**Your company hire a contract employee for two months. What should the Linux administrator do to enhance security on the employee's account?**

While creating new user account for this user, administrator should set the expiration date for his account, so that if the employee leaves or does not have their contract renewed, the account will be automatically disabled.

**Which backup strategy only backs up files that have changed since the last full backup?**

Differential backup will backup files that have changed since the last full backup.

**Name a service which should you disable on a Linux Server which is acting as both a Web and FTP Server.**

The finger service should be disabled because a remote user can get important information about the system by using that command.

**Why it is recommended to store backup tapes to an offsite storage facility?**

Because this will prevent the backup taps from being destroyed during a natural disaster at the server site. It also prevents the tapes from being stolen.

**A newbie enabled the root session for FTP server. is it ok?**

No, he has put the security of entire server on risk. You should disable to root session as soon as possible.

**A user complains you that he is unable to set '123' as his password. Why would not the system allow this password?**

There would be a minimum length rule for password, which is blocking user to use this password. Default minimum length rule for password is six characters. It means a user cannot have password less than six characters.

**Your company is running Web Server. One dedicate account holder customer complains that his visitors are able to scan the directory tree. Which directive would you configure to stop web server from listing the directory?**

You should remove / comment the "Options Indexes" directive from the main configuration file ' httpd.conf' of the web server. This is a security measure so that remote users can’t scan the directory tree of the server looking for security holes. Server won’t show directory listings if requested by a user.

**What type of backup strategy can you use to fully back up a system every night?**

You can use full backup strategy that will always perform a full backup of all files. This takes much more time and space than other methods, but is it the most complete method and allows for easy file restoration.

**How can you enhance the security of password file?**

Linux keep user account information in a text file called /etc/passwd. This file also store one way encrypted password. This file is accessed by several tools to get user information, so file need to world readable. This is a security risk. To minimize the security risk you can use shadow password format. This method save account information in regular file /etc/passwd. However, the password is stored as a single "x" character (not actually stored in this file). A second file, called "/etc/shadow", contains encrypted password as well as other information such as account or password expiration values, etc. The /etc/shadow file is readable only by the root account and is therefore less of a security risk

**What command should be used to make a tar archive to a disk file system located in /mnt/backup?**

The correct command is tar -cvf /mnt/backup. The /mnt/backup directory should be on another machine to be fully effective as a backup strategy.

**You have just finished the installation of sever. This server is going to be use as file server. Default installation have send mail service running, while this server will never send any e-mails. How should you deal with send mail service?**

You should disable the send mail service if server is not being used for mail purpose. Leaving them running can increase the chance of a security vulnerability being exploited, and unauthorized use of sendmail relay.

**What command can you use to back up an entire file system most efficiently?**

The easiest command to use to back up an entire file system is the dump command. Files can be restored from a dump operation by using the restore command.

**Which necessary steps should you take to enhance the security of server just after the initial installation?**

* Kernel and packages should be upgraded to the latest versions.
* Unnecessary services and daemons should be disable.
* Enable and configure firewall
* Set a complex password policy.

**While auditing user accounts, an administrator notices that one of the users has a blank password. What should he do to the account?**

To prevent further use of the account, which is an immediate security risk, disable it and set a temporary password for the user for the next time they login.

**Which backup strategy backs up all files that have changed since the last backup?**

An incremental backup will only back up files that have changed since the last backup.

**Your company has terminated a server administrator. What is first thing as an administrator should you do to enhance the security?**

Because the server administrator knows the root password for the server, it should be changed immediately to prevent them from tampering with the system.

**You are setting up an FTP server. Only company employees are allowed to use the FTP services. What should you configure on the FTP server to enhance security?**

You should disable the anonymous FTP account, so that only users with a username and password can access the system.

**What is the location of system configuration files that should be backed up on a regular basis?**

The /etc directory contains most of the Linux system configuration files.

**Which permission allows a user to run an executable with the permissions of the owner of that file?**

The Set-User-ID is a special permission that allows a user to run an executable with the permissions of the owner of that file.

**What command can you use to make a tape archive file of a /home directory, and send it to the /dev/tape device?**

The correct command is tar -cvf /dev/tape /home.

The -xvf option is used to extract files from an archive.

**Employees at your company are lazy in changing the password. As a system administrator what can you do to minimize the security risk?**

You can setup a password policy which enforce user to change his password after a specific time periods.

**Which program should you use to connect a system remotely?**

You should always use SSH to connect a system remotely. SSH is a secure method that encrypts the entire session.

**To save disk space, an administrator wants to backup files, and then remove them from the server permanently. What kind of backup operation is this?**

An archive operation will take the files, back them up to a device, and then remove the files from the original server.

**What does firewall do?**

Firewall is a device or service which can be used to protect the network or system from other outside networks.