

LPI 117-201 Rama Update 2013-02-01

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LPI 201 EXAM

This dump is just an update of "Combo Friend rice dump" based on the comments found on his page . If you are taking the exam in Spring 2013 a Major update is on the way so this dump might not be relevant anymore
178 + 6 more filling the blanks and 19 other more questionable Questions

Exam A and B are all multiple choice questions (split from combo rice question A and a correction)

Exams A and B are (as far as I can tell) relevant to the 201 exam and correct.

Exam D are "Fill in the blank" type questions

Exam C contains some questions that are to be taken with caution. They might be wrong and/or irrelevant to the 201 exam. I have also deleted what was surely from LPIC1.

EXAM F is based on the comments found on Fried Rice 'dump' (Please improve this) and recheck the answers and improve the questions or the answers we need the help of everyone.

GIVE BACK WHAT YOU RECEIVE please.

MAY THE FORCE BE WITH YOU (not the dark one :-)



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Exam A

QUESTION 1

What is the minimum number of disks required in a RAID5 array?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

Correct Answer: C

Section: 204.1 Configuring RAID

Explanation

Explanation/Reference:

See <http://en.wikipedia.org/wiki/RAID>

RAID 5: Block-level striping with distributed parity. Minimum 3 disks.

QUESTION 2

A server has three disks of 80GB each and must manage a database with 4 million records of 30KB each. The best configuration for this server, with the criteria being performance, configurability and flexibility, is:

- A. Use just LVM
- B. Use RAID1 over LVM
- C. Use LVM over RAID5
- D. Use LVM over RAID1
- E. Use RAID5 over LVM

Correct Answer: C

Section: 204.3 Logical Volume Manager

Explanation

Explanation/Reference:

RAID1 would not be performance enhancing (Mirroring), as would the default LVM (linear). So use a RAID5 for redundancy and performance and use LVM for added configurability and flexibility

A striped LVM only would work too, I guess, if you need no redundancy at all.

QUESTION 3

The correct command sequence to create logical volumes on a Linux system is:

- A. lvcreate, pvcreate, vgcreate, mount, mke2fs
- B. pvcreate, vgcreate, lvcreate, mke2fs, mount
- C. vgcreate, lvcreate, pvcreate, mount, mke2fs
- D. mke2fs, pvcreate, vgcreate, lvcreate, mount
- E. pvcreate, lvcreate, vgcreate, mount, mke2fs

Correct Answer: B

Section: 204.3 Logical Volume Manager

Explanation

Explanation/Reference:

See <http://www.tldp.org/HOWTO/LVM-HOWTO/anatomy.html>

You need to create the Physical Volumes first, then the Volume Group (consisting of PVs), then the Logical Volumes, which you need to format and mount.

QUESTION 4

What is the usable disk space of a RAID 5 array of five 18GB drives with one drive dedicated as a spare?

- A. 18GB
- B. 36GB
- C. 54GB
- D. 72GB
- E. 90GB

Correct Answer: C

Section: 204.1 Configuring RAID

Explanation

Explanation/Reference:

See <http://en.wikipedia.org/wiki/RAID>

RAID5 capacity is available disks - 1. 5 disks - 1 - 1 spare = 3 disks. 3 x 18 = 54

QUESTION 5

You decide to use the logical volume manager (LVM) to manage four 4GB disk drives. After creating the volume group, how would you create a 10GB logical volume called big-app?

- A. `vgcreate -p 10g -n /dev/vg01/big-app`
- B. `vgcreate -l 2560 /dev/vg01/big-app`
- C. `mklvm -v 10240 -n /dev/vg01/big-app`
- D. `lvcreate -v 10240 /dev/vg01/big-app`
- E. `lvcreate -l 2560 vg01 -n big-app`

Correct Answer: E

Section: 204.3 Logical Volume Manager

Explanation

Explanation/Reference:

From the man pages:

`lvcreate` - create a logical volume in an existing volume group

`-l, --extents LogicalExtentsNumber[#{VG|PVS|FREE}]`

Gives the number of logical extents to allocate for the new logical volume. This can also be expressed as a percentage of the total space in the Volume Group with the suffix `%VG`, of the remaining free space in the Volume Group with the suffix `%FREE`, or of the remaining free space for the specified PhysicalVolume (s) with the suffix `%PVS`

`-n, --name LogicalVolumeName`

The name for the new logical volume. Without this option a default names of "lvol#" `will be generated where # is the LVM internal number of the logical volume.`

QUESTION 6

What is the purpose of `vgextend`?

- A. Extend a volume group's footprint on disk
- B. Add physical volumes to a volume group
- C. Increase the number of days between scheduled error checking

D. Create a volume group which uses all available space on disk

Correct Answer: B

Section: 204.3 Logical Volume Manager

Explanation

Explanation/Reference:

From the man pages:

vgextend - add physical volumes to a volume group

QUESTION 7

Which RAID level provides the most redundancy?

- A. RAID4
- B. RAID5
- C. RAID1
- D. RAID0

Correct Answer: C

Section: 204.1 Configuring RAID

Explanation

Explanation/Reference:

See <http://en.wikipedia.org/wiki/RAID>

a,b) only 1 disk may fail, regardless how many disks are in the RAID

d) no disk may fail

c) n - 1 disks may fail

QUESTION 8

Which pseudo-file contains information on the status of software RAID devices?

- A. /proc/raidstat
- B. /proc/mdstatus
- C. /proc/raidstatus
- D. /proc/mdstat
- E. /proc/raid/status

Correct Answer: D

Section: 204.1 Configuring RAID

Explanation

Explanation/Reference:

From the man pages:

/proc/mdstat If you're using the /proc filesystem, /proc/mdstat lists all active md devices with information about them. mdadm uses this to find arrays when --scan is given in Misc mode, and to monitor array reconstruction on Monitor mode.

QUESTION 9

What information does the file modules.dep provide?

- A. A list of all modules available to the kernel.
- B. A list of modules required by each module.
- C. A list of devices and their module name.

- D. A list of modules compiled for this kernel.
- E. A list of modules the kernel needs to run.

Correct Answer: B

Section: 201.5 Manage/Query kernel at runtime

Explanation

Explanation/Reference:

From the man pages:

The modules.dep.bin as generated by module-init-tools depmod, lists the dependencies for every module in the directories under /lib/modules/version, where modules.dep.bin (or the human readable version modules.dep) is also located. It is used by utilities such as modprobe. The binary version will be used by default, if it was generated by a compatible version of depmod, with fallback to the generic modules.dep. These files are not intended for editing or use by any additional utilities as their format is subject to change in the future. You should use the modinfo(8) command to obtain information about modules in a future proof and compatible fashion rather than touching these files.

QUESTION 10

Before compiling a new kernel, what needs to be done?

- A. Compile kernel modules
- B. Configure the kernel options
- C. Delete old kernel sources
- D. Change to runlevel 1
- E. All of the above

Correct Answer: B

Section: 201.2 Compiling a kernel

Explanation

Explanation/Reference:

see <http://www.faqs.org/docs/Linux-HOWTO/Kernel-HOWTO.html#impatient>

QUESTION 11

On a system with separate partitions for /, /usr, /var, /tmp, which filesystem[s] can safely be mounted read-only?

- A. /var, /usr
- B. /var
- C. /usr, /, /tmp
- D. /usr
- E. /tmp

Correct Answer: D

Section: 203.1 Operating the Linux filesystem

Explanation

Explanation/Reference:

/tmp and /var both need to be written to. /usr is the most static of the directories (excluding /usr/local)

QUESTION 12

Which of the following best describes the format of the /etc/fstab file?

- A. mount point; device name; filesystem type; mount options; dump filesystem; fsck order

- B. device name; mount point; filesystem type; mount options; dump filesystem; fsck order
- C. mount point; filesystem type; device name; mount options; dump filesystem; fsck order
- D. device name; mount point; mount options; filesystem type; dump filesystem; fsck order
- E. device name; filesystem type; mount point; mount options; dump filesystem; fsck order

Correct Answer: B

Section: 203.1 Operating the Linux filesystem

Explanation

Explanation/Reference:

From the man pages:

The first field, (fs_spec), describes the block special device or remote filesystem to be mounted.

The second field, (fs_file), describes the mount point for the filesystem. For swap partitions, this field should be specified as 'none'.

The third field, (fs_vfstype), describes the type of the filesystem.

The fourth field, (fs_mntops), describes the mount options associated with the filesystem.

The fifth field, (fs_freq), is used for these filesystems by the dump(8) command to determine which filesystems need to be dumped.

The sixth field, (fs_passno), is used by the fsck(8) program to determine the order in which filesystem checks are done at reboot time.

QUESTION 13

Which of the following is a valid location in the automount configuration, when a Windows share needs to be made available to the system?

- A. \\server\sharename
- B. ://server/sharename
- C. server:/sharename
- D. :server/sharename
- E. \\\server\sharename

Correct Answer: B

Section: 203.4 udev Device Management

Explanation

Explanation/Reference:

From the man pages:

EXAMPLE

```
kernel -ro,soft,intr ftp.kernel.org:/pub/linux
boot -fstype=ext2 :/dev/hda1
windoze -fstype=smbfs ://windoze/c
removable -fstype=ext2 :/dev/hdd
cd -fstype=iso9660,ro :/dev/hdc
floppy -fstype=auto :/dev/fd0
server -rw,hard,intr / -ro myserver.me.org:/ \
      /usr myserver.me.org:/usr \
      /home myserver.me.org:/home
```

In the first line we have a NFS remote mount of the kernel directory on ftp.kernel.org. This is mounted read-only. The second line mounts an ext2 volume on a local ide drive. The third makes a share exported from a Windows machine available for automounting. The rest should be fairly self-explanatory. The last entry (the last three lines) is an example of a multi-map (see below).

QUESTION 14

What script is included with the kernel source to patch a kernel?

- A. patch
- B. patch-kernel
- C. apply-patch
- D. update-kernel

Correct Answer: B

Section: 201.3 Patching a kernel

Explanation

Explanation/Reference:

see <http://book.opensourceproject.org.cn/distrib/ubuntu/unleashed/opensource/0672329093/ch35lev1sec6.html>

It is possible to patch a kernel to the newest Linux kernel version as opposed to downloading the entire source code. This choice can be beneficial for those who are not using a high-speed broadband connection. (A typical compressed kernel source file is nearly 30MB for a download time of about 10 minutes on a 512Kb DSL connection; adjust accordingly for your connection.) Whether you are patching existing sources or downloading the full source, the end results will be identical.

Patching the kernel is not a mindless task. It requires the user to retrieve all patches from her current version to the version she wants to upgrade to. For example, if you are currently running 2.6.1 (and have those sources) and want to upgrade to 2.6.8, you must retrieve the 2.6.2 and 2.6.3 patch sets, and so on. Once downloaded, these patches must be applied in succession to upgrade to 2.6.8. This is more tedious than downloading the entire source, but useful for those who keep up with kernel hacking and want to perform incremental upgrades to keep their Linux kernel as up-to-date as possible.

To patch up to several versions in a single operation, you can use the patch-kernel script located in the kernel source directory for the kernel version you currently use. This script applies all necessary version patches to bring your kernel up to the latest version.

The format for using the patch-kernel script looks like this:

```
patch-kernel source_dir patch_dir stopversion
```

QUESTION 15

Which command would you use to apply a diff file to an original?

- A. patch > diff-file
- B. patch < diff-file
- C. patch << diff-file
- D. cat diff-file >> kernel
- E. cat diff-file << kernel

Correct Answer: B

Section: 201.3 Patching a kernel

Explanation

Explanation/Reference:

from the man pages:

SYNOPSIS

```
patch [options] [originalfile [patchfile]]  
but usually just  
patch -pnum < patchfile
```

QUESTION 16

One of the IDE hard drives in a server is transferring data very slowly. What command must be run to enable DMA on it?

- A. `hdparm -d /dev/hda`
- B. `hdparm --dma /dev/hda`
- C. `hdparm --dma /dev/hda1`
- D. `hdparm -d /dev/hda1`
- E. `hdparm -d1 /dev/hda`

Correct Answer: E

Section: 204.2 Adjusting Storage Device Access

Explanation

Explanation/Reference:

`hdparm` provides a command line interface to various kernel interfaces supported by the Linux SATA/PATA/SAS "libata" subsystem and the older IDE driver subsystem. Many newer (2008 and later) USB drive enclosures now also support "SAT" (SCSI-ATA Command Translation) and therefore may also work with `hdparm`. Eg. recent WD "Passport" models and recent NexStar-3 enclosures. Some options may work correctly only with the latest kernels.

`-d` Disable/enable the "using_dma" flag for this drive. This option now works with most combinations of drives and PCI interfaces which support DMA and which are known to the kernel IDE driver. It is also a good idea to use the appropriate **-X option in combination with -d1** to ensure that the drive itself is programmed for the correct DMA mode, although most BIOSs should do this for you at boot time. Using DMA nearly always gives the best performance, with fast I/O throughput and low CPU usage.

QUESTION 17

What happens when the Linux kernel can't mount the root filesystem when booting?

- A. An error message is shown, showing which device couldn't be mounted or informing that init couldn't be found.
- B. An error message is shown and the system reboots after a keypress.
- C. An error message is shown and the system boots in maintenance mode.
- D. An error message is shown and the administrator is asked to specify a valid root filesystem to continue the boot process.
- E. An error message is shown, stating that the corresponding kernel module couldn't be loaded.

Correct Answer: A

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

QUESTION 18

You have written a little startup script (`/usr/local/bin/startup.sh`) that should automatically execute when entering runlevel 3. According to the standards, how can this best be achieved?

- A. `chmod 700 /usr/local/bin/startup.sh; cd/etc/init.d/rc3.d/; ln -s /usr/local/bin/startup.sh`
- B. `chmod 700 /usr/local/bin/startup.sh; cd/etc/init.d/rc3.d/; ln -s /usr/local/bin/startup.sh S99startup.sh`
- C. `chmod 700 /usr/local/bin/startup.sh; cd/etc/init.d/rc3.d/; ln /usr/local/bin/startup.sh`
- D. `chmod 700 /usr/local/bin/startup.sh; cd/etc/init.d/rc3.d/; ln -s /usr/local/bin/startup.sh /usr/local/bin/startup.sh`

E. `chmod 700 /usr/local/bin/startup.sh; cp /user/local/bin/startup.sh /etc/init.d/rc3.d/S99Startup.sh`

Correct Answer: B

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

see <http://www.linux-tutorial.info/modules.php?name=ManPage&sec=7&manpage=init.d>

QUESTION 19

What command is used to create an ISO9660 filesystem that can be properly accessed from a Windows 95/98 machine?

- A. `mkisofs -l -o backup.iso /home/joe`
- B. `mkisofs -J -T -r -o backup.iso /home/joe`
- C. `mkisofs -D -T -o backup.iso /home/joe`
- D. `mkisofs -j -T -o backup.iso /home/joe`
- E. `mkisofs -d -T -o backup.iso /home/joe`

Correct Answer: B

Section: 203.3 Creating and configuring filesystem options

Explanation

Explanation/Reference:

see http://linux.about.com/library/cmd/blcmdl8_mkisofs.htm

-J Generate Joliet directory records in addition to regular iso9660 file names. This is primarily useful when the discs are to be used on Windows-NT or Windows-95 machines.

-T Generate a file TRANS.TBL in each directory on the CDRROM, which can be used on non-Rock Ridge capable systems to help establish the correct file names.

-o filename is the name of the file to which the iso9660 filesystem image should be written.

actually you can leave the "-r" option, since you wouldn't need Rock Ridge on a Windows Machine.

QUESTION 20

In order to find all library dependencies of `/usr/bin/foo`, which of the following statement is true?

- A. Running `ldconfig` against `/usr/bin/foo` will show the required libraries
- B. Running `ldd` against `/usr/bin/foo` will show the required libraries
- C. It's necessary to compile the program again to check the library dependencies of `foo`.
- D. The `ls -la` command has to be run in the `/usr/bin` directory, to show all library dependencies of `foo`.
- E. Library dependencies are shown in the `/usr/lib` directory.

Correct Answer: B

Section: 206.1 Make and install programs from source

Explanation

Explanation/Reference:

From the man pages:

`ldd` prints the shared libraries required by each program or shared library specified on the command line.

QUESTION 21

The user' quotas on the server were reduced from 200MB to 100MB. Besides sending emails to all users, it was requested that a message should communicate the change every time a user access the server. Which of the following is the correct method to configure this?

- A. Put the message text in the `/etc/login-message` file
- B. Put the message text in the `/etc/motd` file
- C. Put the message text in the `/etc/default/login` file.
- D. Put the message text in the `/etc/passwd` file, after all users entries.
- E. There is no way to do this because the administrator has no permission to change the `.bash_profile` file for each user.

Correct Answer: B

Section: 205.4 Notify users on system-related issues

Explanation

Explanation/Reference:

From the man pages

The contents of `/etc/motd` are displayed by `login(1)` after a successful login but just before it executes the login shell.

This message of course is not shown on GUIs!

QUESTION 22

A GRUB boot loader installed in the MBR was accidentally overwritten. After booting with a rescue CD-ROM, how can the lost GRUB first stage loader be recovered?

- A. Use `dd` to restore a previous backup of the MBR
- B. Install LILO since there is no easy way to recover GRUB
- C. Running `mformat` will create a new MBR and fix GRUB using info from `grub.conf`
- D. Run `grub-install` after verifying that `grub.conf` is correct.
- E. Run `fdisk --mbr /dev/had` assuming that the boot harddisk is `/dev/hda`.

Correct Answer: D

Section: 202.2 System recovery

Explanation

Explanation/Reference:

From the man pages:

`grub-install` copies GRUB images into `/boot/grub` (or `/grub` on NetBSD and OpenBSD), and uses `grub-setup` to install grub into the boot sector.

QUESTION 23

Why is the root file system mounted read-only during boot and remounted with write permission later on?

- A. Because if problems with the root file system are detected during the boot, `fsck` can be run, without risk of damage.
- B. Because this way crackers cannot collect information about root with boot sniffers
- C. To avoid writing to the disk, unless the root password is known.
- D. To avoid other operating systems overwriting the Linux root partition
- E. Because the disk has its own write protection that cannot change by the operating system.

Correct Answer: A

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

QUESTION 24

Following the instructions contained in the README file of an application, the make command was executed but the following message was displayed on the screen:

```
make: *** No targets specified and no makefile found. Stop.
```

Which are the TWO possible causes for this problem?

- A. The make command is being executed in the wrong location.
- B. The user has no write permission to the Makefile, so he cannot execute the make command correctly.
- C. The make command was executed in the right place but the command to generate the Makefile was not properly executed.
- D. The make command is not installed in the system.
- E. The development libraries needed by make are not installed on the system.

Correct Answer: AC

Section: 206.1 Make and install programs from source

Explanation

Explanation/Reference:

QUESTION 25

It is possible to configure kernel parameters at runtime (e.g. the maximum size of the shared memory segment (shmmax)). In which TWO ways can this be changed to 2GB (2147483648 Bytes) on a running system?

- A. Edit /etc/shmmax and set the parameter to 2147483648.
- B. `sysctl shmmax=2147483648`.
- C. `sysctl kernel.shmmax=2147483648`
- D. `echo 2147483648 > /proc/sys/kernel/shmmax`
- E. `export kernel.shmmax=2147483648`

Correct Answer: CD

Section: 201.5 Manage/Query kernel at runtime

Explanation

Explanation/Reference:

QUESTION 26

To make a system backup, the simplest and fastest way is to use the tar command. Select the correct alternative below that shows the three tar parameters that create, list and expand a tar file respectively.

- A. `--create --list --extract`
- B. `--compose --list --expand`
- C. `-c -t -e`
- D. `-c -l -x`

Correct Answer: A

Section: 206.2 Backup operations

Explanation

Explanation/Reference:

From the man pages:

-c, --create create a new archive
-t, --list list the contents of an archive
-x, --extract, --get extract files from an archive

QUESTION 27

A Linux machine freezes during boot. To boot directly to a shell prompt so that editing of files and manual starting of services is possible which command line must be passed to the kernel for the boot process?

- A. init=/bin/bash
- B. 1
- C. runlevel=1
- D. sh
- E. /bin/sh

Correct Answer: A

Section: 202.2 System recovery

Explanation**Explanation/Reference:**

see http://en.wikipedia.org/wiki/Init#Skipping_init

In Linux systems, with most modern bootloaders (such as LILO or GRUB), users can change which process the kernel spawns at the end of its initialization from the normal default of /sbin/init. This is generally done by typing init=/foo/bar at the bootloader's prompt. Appending init=/bin/bash, for example, will bring up a single root shell, without a password.

QUESTION 28

Which ONE of the following wireless tools can be used to check the wireless network link quality?

- A. iwconfig
- B. iwlink
- C. iwscan
- D. iwifi

Correct Answer: A

Section: 205.1 Basic networking configuration

Explanation**Explanation/Reference:**

see http://en.wikipedia.org/wiki/Wireless_tools_for_Linux

QUESTION 29

A network client has an ethernet interface configured with an IP address in the subnet 192.168.0.0/24. This subnet has a router, with the IP address 192.168.0.1, that connects this subnet to the Internet. What needs to be done on the client to enable it to use the router as its default gateway?

- A. Run route add default gw 192.168.0.1 eth1.
- B. Run route add gw 192.168.0.1 eth1.
- C. Run ifconfig eth0 defaultroute 192.168.0.1.
- D. Add "defaultroute 192.168.0.1" to /etc/resolv.conf.
- E. Run route add defaultgw=192.168.0.1 if=eth0.

Correct Answer: A

Section: 205.1 Basic networking configuration

Explanation

Explanation/Reference:

From the man pages:

route add default gw mango-gw

adds a default route (which will be used if no other route matches). All packets using this route will be gatewayed through "mango-gw". The device which will actually be used for that route depends on how we can reach "mango-gw" - the static route to "mango-gw" will have to be set up before.

QUESTION 30

What is the command to add another IP address to an interface that already has (at least) one IP address?

- A. ifconfig eth0:1 192.168.1.2
- B. ifconfig eth0 192.168.1.2
- C. ipconfig eth0:1 192.168.1.2
- D. ipconfig eth0 192.168.1.2
- E. ifconfig eth0:sub1 192.168.1.2

Correct Answer: AE

Section: 205.1 Basic networking configuration

Explanation

Explanation/Reference:

From the man pages:

ifconfig - configure a network interface

The interface is usually a driver name followed by a unit number, for example eth0 for the first Ethernet interface. If your kernel supports alias interfaces, you can specify them with eth0:0 for the first alias of eth0. You can use them to assign a second address.

QUESTION 31

Which of these tools can provide the most information about DNS queries?

- A. dig
- B. nslookup
- C. host
- D. named-checkconf
- E. named-checkzone

Correct Answer: A

Section: 205.3 Troubleshooting network issues

Explanation

Explanation/Reference:

dig - DNS lookup utility

nslookup - query Internet name servers interactively

host - DNS lookup utility

named-checkconf - named configuration file syntax checking tool

named-checkzone - zone file validity checking tool

QUESTION 32

What command must be used to create an ext3 file-system?

- A. mkext3fs
- B. mkjfs
- C. mke3fs
- D. mke2fs
- E. mkext2fs

Correct Answer: D

Section: 203.1 Operating the Linux filesystem

Explanation

Explanation/Reference:

also: mkfs -t ext3 or mkfs.ext3

if you call mke2fs you actually need option -J to enable journalling otherwise ext2 will be used.

QUESTION 33

What needs to be done to enable 32 bit I/O transfer mode for (E)IDE disks, on a system running a 2.4 series Linux kernel?

- A. The Linux kernel must be recompiled.
- B. The sysctl utility must be used.
- C. The hdparm utility must be used.
- D. This feature isn't supported in 2.4 series kernels.
- E. This feature is enabled by default in 2.4 series kernels

Correct Answer: C

Section: 203.1 Operating the Linux filesystem

Explanation

Explanation/Reference:

Explanation:

hdparm provides a command line interface to various hard disk ioctls supported by the stock Linux ATA/IDE device driver subsystem. Some options may work correctly only with the latest kernels.

-c Query/enable (E)IDE 32-bit I/O support. A numeric parameter can be used to enable/disable 32-bit I/O support: Currently supported values include 0 to disable 32-bit I/O support, 1 to enable 32-bit data transfers, and 3 to enable 32-bit data transfers with a special sync sequence required by many chipsets. The value 3 works with nearly all 32-bit IDE chipsets, but incurs slightly more overhead. Note that "32-bit" refers to data transfers across a PCI or VLB bus to the interface card only; all (E)IDE drives still have only a 16-bit connection over the ribbon cable from the interface card.

QUESTION 34

DNSSEC is used for?

- A. Encrypted DNS queries between nameservers.
- B. Cryptographic authentication of DNS zones.
- C. Secondary DNS queries for local zones.
- D. Defining a secure DNS section.
- E. Querying a secure DNS section.

Correct Answer: B

Section: 207.1 Basic DNS server configuration

Explanation

Explanation/Reference:

see http://en.wikipedia.org/wiki/Domain_Name_System_Security_Extensions

DNSSEC was designed to protect Internet resolvers (clients) from forged DNS data, such as that created by DNS cache poisoning. All answers in DNSSEC are digitally signed. By checking the digital signature, a DNS resolver is able to check if the information is identical (correct and complete) to the information on the authoritative DNS server.

QUESTION 35

The following is an excerpt from the output of `tcpdump -nli eth1 'udp'`:

```
13:03:17.277327 IP 192.168.123.5.1065 > 192.168.5.112.53: 43653+ A? lpi.org. (25)
13:03:17.598624 IP 192.168.5.112.53 > 192.168.123.5.1065: 43653 1/0/0 A
24.215.7.109 (41)
```

Which network service or protocol was used?

- A. FTP
- B. HTTP
- C. SSH
- D. DNS
- E. DHCP

Correct Answer: D

Section: 205.2 Advanced Network Configuration and Troubleshooting

Explanation**Explanation/Reference:**

192.168.5.112.53 shows that we connect to Port 53 and `/etc/services` specifies port 53 as DNS.

```
# cat /etc/services
domain      53/tcp      # name-domain server
domain      53/udp
```

here is another example of `tcpdump` catching a DNS request and response:

```
11:17:44.585523 IP 10.1.112.106.48380 > 8.8.8.8.53: 7880+ A? www.google.at. (31)
11:17:44.621611 IP 8.8.8.8.53 > 10.1.112.106.48380: 7880 8/0/0 CNAME www.google.
com., CNAME www.l.google.com., A 209.85.135.103, A 209.85.135.147, A
209.85.135.105, A 209.85.135.104, A 209.85.135.99, A 209.85.135.106 (175)
```

QUESTION 36

During which stage of the boot process would this message be seen?

```
ide_setup: hdc=ide-scsi
```

- A. Daemon initialization and setup.
- B. Boot loader start and hand off to kernel.
- C. Hardware initialization and setup.
- D. Kernel loading.

Correct Answer: D

Section: 202.1 Customizing startup and boot processes

Explanation**Explanation/Reference:**

see http://www.learninglinuxkernel.com/Linux_Boot_Process.html

In the Kernel-Loading phase it re-initializes parallel ports, serial ports and all the on-board controllers like USB, IDE, SCSI, Serial, parallel, timers, RTC etc. These startup drivers are also called BSP drivers or Board Support Drivers.

QUESTION 37

After configuring a new 2.4 series kernel, all dependencies, such as included files, need to be created. How can this be achieved?

- A. make dependencies
- B. make clean
- C. make mrproper
- D. make dep
- E. make test

Correct Answer: D

Section: 201.2 Compiling a kernel

Explanation

Explanation/Reference:

`/usr/src/linux# make clean`

If you've already built the system and are making minor changes, not wanting to re-compile all the objects again, skip this step. If you want to be a purist and make sure you're starting absolutely fresh, do this step.

`/usr/src/linux# make mrproper`

This completely cleans out your binary directories. I only do this if I've really screwed something up. Note that **this deletes your .config** file, so you might want to rename it first! I hardly ever do this.

`/usr/src/linux# make dep`

This determines all the header file dependencies. Do this whenever you've made a change to the configuration.

QUESTION 38

Considering the following kernel IP routing table now, which of the following commands must be remove the route to the network 10.10.1.0/24?

Kernel IP routing table

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
200.207.199.162	0.0.0.0	255.255.255.255	UH	0	0	0	ppp0
172.16.87.0	0.0.0.0	255.255.255.0	U	0	0	0	eth0
192.168.246.0	0.0.0.0	255.255.255.0	U	0	0	0	eth1
10.10.1.0	192.168.246.11	255.255.255.0	UG	0	0	0	eth1
127.0.0.0	0.0.0.0	255.0.0.0	U	0	0	0	lo
0.0.0.0	200.207.199.162	0.0.0.0	UG	0	0	0	ppp0

- A. route del 10.10.1.0
- B. route del 10.10.1.0/24
- C. route del -net 10.10.1.0/24
- D. route del 10.10.1.0/24 gw 192.168.246.11
- E. route del -net 10.10.1.0

Correct Answer: C

Section: 205.1 Basic networking configuration

Explanation

Explanation/Reference:

Either specify net in CIDR notation or specify parameter netmask

QUESTION 39

Some users are unable to connect to specific local hosts by name, while accessing hosts in other zones works as expected. Given that the hosts are reachable by their IP addresses, which is the default log file that could provide hints about the problem?

- A. `/var/named/log`
- B. `/var/lib/named/dev/log`
- C. `/var/log/bind_errors`
- D. `/var/log/bind/errors`
- E. `/var/log/messages`

Correct Answer: E

Section: 207.1 Basic DNS server configuration

Explanation

Explanation/Reference:

BIND uses `syslogd` before a valid logging clause is available so `named.conf` parse errors and other information will appear in `/var/log/messages` (depending on `syslog.conf`) prior to, or in the absence of, a valid logging clause.

On Ubuntu Systems this is equal to `/var/log/syslog`.

QUESTION 40

If the command `arp -f` is run, which file will be read by default?

- A. `/etc/hosts`
- B. `/etc/ethers`
- C. `/etc/arp.conf`
- D. `/etc/networks`
- E. `/var/cache/arp`

Correct Answer: B

Section: 205.1 Basic networking configuration

Explanation

Explanation/Reference:

from the man pages:

`arp` - manipulate the system ARP cache

`-f filename`, `--file filename`

Similar to the `-s` option, only this time the address info is taken from file `filename`. This can be used if ARP entries for a lot of hosts have to be set up. The name of the data file is very often `/etc/ethers`, but this is not official. If no filename is specified `/etc/ethers` is used as default.

QUESTION 41

What is the difference between `zImage` and `bzImage` targets when compiling a kernel?

- A. `zImage` is compressed using `gzip`, `bzImage` is compressed using `bzip2`
- B. `zImage` is for 2.4 series kernels, `bzImage` is for 2.6 series kernels
- C. `zImage` is loaded into low memory, `bzImage` is loaded into high memory
- D. `zImage` is limited to 64k, `bzImage` is not

Correct Answer: C

Section: 201.1 Kernel Components**Explanation****Explanation/Reference:**

see http://www.ibiblio.org/oswg/oswg-nightly/oswg/en_US.ISO_8859-1/articles/alessandro-rubini/boot/boot/zimage.html

QUESTION 42

A DNS server has the IP address 192.168.0.1. Which TWO of the following need to be done on a client machine to use this DNS server?

- A. Add nameserver 192.168.0.1 to /etc/resolv.conf
- B. Run route add nameserver 192.168.0.1
- C. Run ifconfig eth0 nameserver 192.168.0.1
- D. Ensure that the dns service is listed in the hosts entry in the /etc/nsswitch.conf file
- E. Run bind add nameserver 192.168.0.1

Correct Answer: AD

Section: 205.1 Basic networking configuration**Explanation****Explanation/Reference:**

see <http://en.wikipedia.org/wiki/Resolv.conf> and http://en.wikipedia.org/wiki/Name_Service_Switch

QUESTION 43

The mailserv is currently called fred, while the primary MX record points to mailhost.example.org.

What must be done to direct example.org email towards fred?

- A. Add an A record for mailhost to fred's IP address.
- B. Add a CNAME record from mailhost to fred
- C. Add another MX record pointing to fred's IP address.
- D. Add a PTR record from mailhost to fred.

Correct Answer: A

Section: 207.1 Basic DNS server configuration**Explanation****Explanation/Reference:**

If there is already an A record for mailhost.example.org you need to change this to fred's ip address.

QUESTION 44

Which of these ways can be used to only allow access to a DNS server from specified networks/hosts?

- A. Using the limit{...};statement in the named configuration file.
- B. Using the allow-query{...};statement in the named configuration file.
- C. Using the answer only{...};statement in the named configuration file.
- D. Using the answer{...};statement in the named configuration file.
- E. Using the query access{...};statement in the named configuration file.

Correct Answer: B

Section: 207.2 Create and maintain DNS zones**Explanation**

Explanation/Reference:

to allow a specific client access to the dns server use
allow-query { 192.168.0.1; };

alternatively you can use the acl-keyword

```
acl lan { 192.168.0.1; };  
...  
allow-query { lan; };
```

QUESTION 45

Which of these commands allows you to use shared libraries that are in /usr/local/lib?

- A. export LD_PRELOAD=/usr/local/lib
- B. export LD_LIBRARY_PATH=/usr/local/lib
- C. ldconfig /usr/local/lib
- D. ldd /usr/local/lib

Correct Answer: C

Section: 206.1 Make and install programs from source

Explanation**Explanation/Reference:**

From the man pages:

ldconfig creates, updates, and removes the necessary links and cache (for use by the run-time linker, ld.so) to the most recent shared libraries found in the directories specified on the command line, in the file /etc/ld.so.conf, and in the trusted directories (/usr/lib and /lib). ldconfig checks the header and file names of the libraries it encounters when determining which versions should have their links updated. ldconfig ignores symbolic links when scanning for libraries.

ldd - print shared library dependencies

LD_PRELOAD - a whitespace-separated list of additional, user-specified, ELF shared libraries to be loaded before all others. This can be used to selectively override functions in other shared libraries. For set-user-ID/set-group-ID ELF binaries, only libraries in the standard search directories that are also set-user-ID will be loaded.

LD_LIBRARY_PATH - a colon-separated list of directories in which to search for ELF libraries at execution-time. Similar to the PATH environment variable

QUESTION 46

Which TWO archiving formats are used to create an initramfs image?

- A. gzip
- B. tar
- C. rar
- D. cpio
- E. bzip2

Correct Answer: AD

Section: 201.4 Customize, build and install a custom kernel

Explanation

Explanation/Reference:

see <http://www.kernel.org/doc/Documentation/filesystems/ramfs-rootfs-initramfs.txt>

All 2.6 Linux kernels contain a gzipped "cpio" format archive, which is extracted into rootfs when the kernel boots up.

QUESTION 47

After unpacking the source code for a Linux kernel, what is the first make command that should be run which will delete any current configuration and all generated files? This command will ensure that no inappropriate files were left in the kernel archive by the maintainer.

- A. make depend
- B. make distclean
- C. make config
- D. make clean
- E. make mrproper

Correct Answer: B

Section: 201.2 Compiling a kernel

Explanation**Explanation/Reference:**

see <http://www.gnu.org/software/automake/manual/automake.html#Clean>

QUESTION 48

Which script, in the linux/scripts directory, can be used to add up grades or updated code to the 2.6.xx kernel source code?

- A. patch
- B. patch-kernel
- C. kernel-update
- D. upgrade-kernel
- E. upgrade

Correct Answer: B

Section: 201.3 Patching a kernel

Explanation**Explanation/Reference:**

see <http://answers.oreilly.com/topic/36-how-to-patch-a-linux-kernel/>

QUESTION 49

What tool can you use to print shared library dependencies?

- A. ldconfig
- B. ldd
- C. libdep
- D. libpath
- E. ldev

Correct Answer: B

Section: 206.1 Make and install programs from source

Explanation

Explanation/Reference:

from the man pages:

ldd - print shared library dependencies

QUESTION 50

To securely use dynamic DNS updates, the use of TSIG is recommended. Which TWO statements about TSIG are true?

- A. TSIG is used for zone data encryption
- B. TSIG is a signal to start a zone update
- C. TSIG is used in zone files
- D. TSIG is used only in server configuration
- E. Servers using TSIG must be in sync (time zone!)

Correct Answer: DE

Section: 207.3 Securing a DNS server

Explanation**Explanation/Reference:**

see <http://tools.ietf.org/html/rfc2845>

To defend against attackers resending old messages the time of the message is used in the hashing of the message, which means that servers must be synced.

QUESTION 51

Which THREE statements concerning automounter are true?

- A. The autofs service does not need to be restarted after changing automounter map files
- B. Only one entry in master map can refer to each map file
- C. The automounter service does not rely on the kernel configuration
- D. For each entry in auto.master, a separate automounter daemon is started
- E. Changes to auto.master require automounter to reload its configuration

Correct Answer: ADE

Section: 203.3 Creating and configuring filesystem options

Explanation**Explanation/Reference:**

From the man pages:

autofs will consult a configuration file `/etc/auto.master` (see `auto.master(5)`) to find mount points on the system. **For each of those mount points a automount(8) process is started** with the appropriate parameters. You can check the active mount points for the automounter with the `/etc/init.d/autofs status` command. After the `auto.master` configuration file is processed the `autofs` script will check for an NIS map with the same name. If such a map exists then that map will be processed in the same way as the `auto.master` map. The NIS map will be processed last. **`/etc/init.d/autofs reload` will check the current `auto.master` map against running daemons.** It will kill those daemons whose entries have changed and then start daemons for new or changed entries. If a map is modified then the change will become effective immediately. If the `auto.master` map is modified then the `autofs` script must be rerun to activate the changes. `/etc/init.d/autofs status` will display the current configuration and a list of currently running automount daemons.

QUESTION 52

What are typical targets in a makefile?

- A. CFLAGS, CPPFLAGS, LIBS, LDFLAGS
- B. clean, install, uninstall
- C. PATHS, DESTDIR, LIBS, LDFLAGS
- D. prefix, exec_prefix, bindir, mandir

Correct Answer: B

Section: 206.1 Make and install programs from source

Explanation

Explanation/Reference:

see <http://stackoverflow.com/questions/3915067/what-are-makefiles-make-install>

QUESTION 53

Which single command will extract data from the file abc.tar.bz2

- A. bunzip2
- B. tar
- C. gzip
- D. gunzip

Correct Answer: B

Section: 206.2 Backup operations

Explanation

Explanation/Reference:

From the man pages:

tar — The GNU version of the tar archiving utility

-j, --bzip2 extract bz2 file

if you use bunzip2 you are still left with the tar-archive.

Exam B

QUESTION 1

Which of the following commands will copy one disk partition /dev/sda3 to /dev/sdb3?

- A. dd if=/dev/sdb3 of=/dev/sda3 bs=4096 conv=notrunc
- B. dd if=/dev/sda3 of=/dev/sdb3 bs=4096 conv=notrunc
- C. dd --input /dev/sda3 --output /dev/sdb3 bs=4096 conv=notrunc
- D. dd --input /dev/sdb3 --output /dev/sda3 bs=4096 conv=notrunc

Correct Answer: B

Section: 203.2 Maintaining a Linux filesystem

Explanation

Explanation/Reference:

From the man pages:

dd - convert and copy a file

SYNOPSIS

dd [OPERAND]...

dd OPTION

DESCRIPTION

Copy a file, converting and formatting according to the operands.

bs=BYTES read and write BYTES bytes at a time (also see ibs=,obs=)

if=FILE read from FILE instead of stdin

of=FILE write to FILE instead of stdout

QUESTION 2

After unpacking source code, what file is used by configure to create a final Makefile?

- A. configure.in
- B. configure.ac
- C. Makefile.in
- D. Makefile.tmpl

Correct Answer: C

Section: 206.1 Make and install programs from source

Explanation

Explanation/Reference:

see <http://www.la-samhna.de/library/compile/configure.html>

QUESTION 3

User Joseph has successfully extracted and compiled a program from source code. Installing the binaries produces errors. What is the most likely reason?

- A. The source code was compiled for a different CPU
- B. The permissions set in the /usr/bin directory are wrong
- C. The binaries require root privileges to be installed
- D. The wrong prefix was used during configuration of the source code

Correct Answer: C

Section: 206.1 Make and install programs from source

Explanation

Explanation/Reference:

/usr/local usually requires root privileges to write to

QUESTION 4

You have finished updating and resolving dependencies for some source code. What command should you run before recompiling the code into binary form?

- A. make clean
- B. make all
- C. make dep
- D. make install

Correct Answer: A

Section: 206.1 Make and install programs from source

Explanation

Explanation/Reference:

make all, make dep, make install compile the code; make clean is the only option that can be run before compiling.

QUESTION 5

How can you manually add an entry to your system's ARP cache?

- A. Directly edit /etc/arp-cache
- B. Run add-arp hostname FF:FF:FF:FF:FF:FF
- C. Run ping -a hostname
- D. Run arp -s hostname FF:FF:FF:FF:FF:FF
- E. Edit arp.conf and restart arpd

Correct Answer: D

Section: 205.1 Basic networking configuration

Explanation

Explanation/Reference:

From the man pages:

```
-s hostname hw_addr, --set hostname
```

Manually create an ARP address mapping entry for host hostname with hardware address set to hw_addr class, but for most classes one can assume that the usual presentation can be used. For the Ethernet class, this is 6 bytes in hexadecimal, separated by colons. When adding proxy arp entries (that is those with the publish flag set a netmask may be specified to proxy arp for entire subnets. This is not good practice, but is supported by older kernels because it can be useful. If the temp flag is not supplied entries will be permanent stored into the ARP cache.

QUESTION 6

You find that a host (192.168.1.4) being used on one of your client's networks has been compromised with a backdoor program listening on port 31337. Your client requests a list of originating IP addresses connecting to that port. Using a Linux workstation as traffic analyzer, which of the following commands would gather the data requested by the client?

- A. tcpdump host 192.168.1.4 and port 31337 -w out
- B. nmap host 192.168.1.4:31337
- C. arpwatrch -n 192.168.1.4/32 -p 31337 > capture

- D. `pcap -d 192.168.1.4:31337`
- E. `ipwatch --syn 192.168.1.4 -p 31337 --log=out`

Correct Answer: A

Section: 205.3 Troubleshooting network issues

Explanation

Explanation/Reference:

tcpdump - dump traffic on a network

nmap - Network exploration tool and security / port scanner

<http://en.wikipedia.org/wiki/Arpwatch>

<http://en.wikipedia.org/wiki/Pcap>

<http://www.scrounge.org/ipwatch/>

QUESTION 7

Which tool can be used to control the runtime behaviour of udev?

- A. `udev`
- B. `udevctl`
- C. `udevadm`
- D. `udevconfig`
- E. `udevclient`

Correct Answer: C

Section: 201.5 Manage/Query kernel at runtime

Explanation

Explanation/Reference:

From the man pages:

`udevadm` - udev management tool

`udevadm` expects a command and command specific options. It controls the runtime behavior of udev, requests kernel events, manages the event queue, and provides simple debugging mechanisms.

QUESTION 8

What is the purpose of `udevmonitor`?

- A. Listen to kernel events produced by a udev rule and print information to the console
- B. Monitors the `/dev` directory for new devices
- C. Monitors the udev process and prints performance statistics to the console
- D. Communicates with D-Bus to setup new devices

Correct Answer: A

Section: 201.5 Manage/Query kernel at runtime

Explanation

Explanation/Reference:

`udevmonitor` was replaced by `udevadm monitor`.

QUESTION 9

What is the term for unmounting a filesystem, which cleans up all references to the filesystem, as soon as it is not in use any longer?

- A. soft
- B. strong
- C. forced
- D. lazy
- E. delayed

Correct Answer: D

Section: 204.2 Adjusting Storage Device Access

Explanation

Explanation/Reference:

From the man pages:

umount - unmount file systems

-l Lazy unmount. Detach the filesystem from the filesystem hierarchy now, and cleanup all references to the filesystem as soon as it is not busy anymore. (Requires kernel 2.4.11 or later.)

QUESTION 10

Which system files are updated as devices are mounted and unmount to provide information on the mounted devices and the options used? (Please specify TWO answers)

- A. /proc/dtab
- B. /etc/mstab
- C. /etc/fstab
- D. /proc/mounts
- E. /proc/devices

Correct Answer: BD

Section: 203.2 Maintaining a Linux filesystem

Explanation

Explanation/Reference:

The programs mount and umount maintain a list of currently mounted file systems in the file /etc/mstab. If no arguments are given to mount, this list is printed.

see http://linux.web.cern.ch/linux/scientific5/docs/rhel/Deployment_Guide/s2-proc-mounts.html
similar to the contents of /etc/mstab, except that /proc/mount is more up-to-date.

QUESTION 11

On a Debian based system, which command can be used to stop the apache2 init script from running at boot time once the real script has been removed from /etc/init.d/?

- A. update-rc.d -d apache2
- B. update-rc.d apache2 delete
- C. update-rc.d remove apache2
- D. update-rc.d apache2 remove
- E. update-rc.d delete apache2

Correct Answer: D

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

see <http://www.debuntu.org/how-to-manage-services-with-update-rc.d>

QUESTION 12

Which command could be used to see the kernel messages created from the boot time until now?

- A. initm
- B. initmessage
- C. initmsg
- D. inittab
- E. dmesg

Correct Answer: E

Section: 201.1 Kernel Components

Explanation

Explanation/Reference:

From the man pages:

dmesg - print or control the kernel ring buffer

QUESTION 13

A zone file on the DNS server has been updated. Which of the following commands will tell named to reload its zone files? (Please select TWO correct answers)

- A. killall -HUP named
- B. killall named
- C. rndc reload
- D. rndc flush
- E. named-checkzone -r

Correct Answer: AC

Section: 207.2 Create and maintain DNS zones

Explanation

Explanation/Reference:

From the man pages:

Signals - In routine operation, signals should not be used to control the nameserver; rndc should be used instead.

SIGHUP Force a reload of the server.

for more information on rndc see http://www.centos.org/docs/5/html/Deployment_Guide-en-US/s1-bind-rndc.html

QUESTION 14

Which hdparm command-line options will set an IDE hard disk to use both DMA and 32-bit I/O support?

- A. -p 1 -A 1
- B. -f -g
- C. -L 1 -i 1
- D. -d 1 -c 1
- E. -L 1 -i 32

Correct Answer: D

Section: 203.3 Creating and configuring filesystem options

Explanation

Explanation/Reference:

From the man pages:

hdparm provides a command line interface to various hard disk ioctls supported by the stock Linux ATA/IDE device driver subsystem.

-c Query/enable (E)IDE 32-bit I/O support. A numeric parameter can be used to enable/disable 32-bit I/O support: Currently supported values include 0 to disable 32-bit I/O support, 1 to enable 32-bit data transfers, and 3 to enable 32-bit data transfers with a special sync sequence required by many chipsets.

-d Disable/enable the "using_dma" flag for this drive. This option now works with most combinations of drives and PCI interfaces which support DMA and which are known to the kernel IDE driver. It is also a good idea to use the appropriate -X option in combination with -d1 to ensure that the drive itself is programmed for the correct DMA mode, although most BIOSs should do this for you at boot time.

QUESTION 15

Which of the following applications utilize the device mapper? (Select TWO correct answers)

- A. SELinux
- B. LVM2
- C. EVMS
- D. GRUB
- E. LILO

Correct Answer: BC

Section: 203.4 udev Device Management

Explanation

Explanation/Reference:

see http://en.wikipedia.org/wiki/Device_mapper

QUESTION 16

Why has mkinitrd been deprecated in favour of mkinitramfs in 2.6 series kernels? (Select TWO correct answers)

- A. It isn't loaded until later in the boot process
- B. An easy to use GUI is available for mkinitramfs
- C. mkinitrd relies on devfs
- D. SATA hard drives are unsupported

Correct Answer: CD

Section: 201.4 Customize, build and install a custom kernel

Explanation

Explanation/Reference:

see <http://wiki.debian.org/InitrdReplacementOptions>

Initrd-tools relies on **devfs** and on removed or deprecated /proc interfaces. It has no maintainer. Its CodingStyle is weird. There is **no support for sata...**

QUESTION 17

A Linux server is running in single user mode, but the problem that existed before is now fixed. What command is most appropriate to restore the server to service?

- A. reboot
- B. telinit 2
- C. shutdown -r now
- D. telinit 3
- E. shutdown -h now

Correct Answer: D

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

see <http://en.wikipedia.org/wiki/Runlevel>

ID	Name	Description
1	Single-User Mode	Does not configure network interfaces, start daemons, or allow non-root logins.
2	Multi-User Mode	Does not configure network interfaces or start daemons.
3	Multi-User Mode with Networking	Starts the system normally.
4	Not used/User-definable	For special purposes.
5	X11	As runlevel 3 + display manager.

QUESTION 18

The swap usage on a system needs to be checked. Which TWO commands can be used to display a swap usage summary?

- A. swapconfig
- B. cat /proc/swaps
- C. swapon -s
- D. swapshow
- E. cat /etc/fstab

Correct Answer: BC

Section: 203.1 Operating the Linux filesystem

Explanation

Explanation/Reference:

From the man pages:

swapon, swapoff - enable/disable devices and files for paging and swapping

-s, --summary Display swap usage summary by device. Equivalent to "cat /proc/swaps".

/proc/swaps provides a snapshot of every swap file name, the type of swap space, the total size, and the amount of space in use (in kilobytes). The priority column is useful when multiple swap files are in use. The lower the priority, the more likely the swap file is to be used.

QUESTION 19

To remove the patch patch-2.4.28.tar.bz2 from a kernel source tree, the command that must be used is:

- A. bunzip2 ../patch-2.4.28.tar.bz2 | patch -rp1
- B. bunzip2 -c ../patch-2.4.28.tar.bz2 | patch -Rp1
- C. bunzip2 -c ../patch-2.4.28.tar.bz2 | unpatch -p1
- D. bunzip2 ../patch-2.4.28.tar.bz2 | unpatch -p1
- E. bunzip2 ../patch-2.4.28.tar.bz2 | patch -Rp1
- F. bunzip2 -c ../patch-2.4.28.tar.bz2 | patch -rp1

Correct Answer: B

Section: 201.3 Patching a kernel

Explanation

Explanation/Reference:

bunzip2: -c --stdout Compress or decompress to standard output.
patch: -R or --reverse Assume that this patch was created with the old and new files swapped. patch attempts to swap each hunk around before applying it. Rejects come out in the swapped format.

QUESTION 20

Which of the following entries are NOT valid in /etc/raidtab?

- A. superblock-persistent
- B. chunk-size
- C. nr-spare-disks
- D. nr-raid-disks

Correct Answer: A

Section: 204.1 Configuring RAID

Explanation

Explanation/Reference:

From the man pages:

These are the possible entries in /etc/raidtab:

raiddev nr-raid-disks nr-spare-disks persistent-superblock parity-algorithm chunk-size size device raid-disk
spare-disk parity-disk failed-disk

QUESTION 21

A pre-compiled module has been moved to /lib/modules/<kernel-version>, but 'modprobe -a <module-name>' fails to load it. What needs to be done to enable usage of this module?

- A. make modules_install must be run.
- B. depmod must be run.
- C. The kernel must be re-compiled.
- D. modules.conf or modprobe.conf must be edited.
- E. The system must be rebooted.

Correct Answer: B

Section: 201.4 Customize, build and install a custom kernel

Explanation

Explanation/Reference:

From the man pages:

depmod - program to generate modules.dep and map files.

depmod creates a list of module dependencies by reading each module under /lib/modules/version and determining what symbols it exports and what symbols it needs. By default, this list is written to modules.dep, and a binary hashed version named modules.dep.bin, in the same directory. If filenames are given on the command line, only those modules are examined (which is rarely useful unless all modules are listed). depmod also creates a list of symbols provided by modules in the file named modules.symbols and its binary hashed version, modules.symbols.bin.

modprobe expects an up-to-date modules.dep.bin file (or fallback human readable modules.dep file), as generated by the corresponding depmod utility shipped along with modprobe (see depmod(8)). This file

lists what other modules each module needs (if any), and modprobe uses this to add or remove these dependencies automatically.

QUESTION 22

Which of the following commands should be used in a bash script that needs a variable containing the IP address of the eth0 interface? The output for the command `ifconfig eth0` is shown below:

```
eth0 Link encap:Ethernet HWaddr 00:0C:29:CB:FA:30
inet addr:192.168.246.11 Bcast:192.168.246.255 Mask:255.255.255.0 UP BROADCAST
RUNNING MULTICAST MTU:1500 Metric:1
RX packets:4721 errors:0 dropped:0 overruns:0 frame:0 TX packets:3216 errors:0
dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000
RX bytes:445184 (434.7 Kb) TX bytes:512968 (500.9 Kb) Interrupt:185 Base
address:0x1080
```

- A. `IP=LANG= ifconfig eth0 | awk '{ print $2 }' | cut -f2`
- B. `IP=`LANG= ifconfig eth0 | grep inet | cut -d: -f2 | awk { print $1 }``
- C. `IP=`LANG= ifconfig eth0 | awk '{ print $3 }``
- D. `IP=$(LANG= ifconfig eth0 | grep inet | awk '{ print $2 }' | cut -d: -f2)`
- E. `IP=$(LANG= ifconfig eth0 | grep inet | cut -d: -f2)`

Correct Answer: D

Section: 205.2 Advanced Network Configuration and Troubleshooting

Explanation

Explanation/Reference:

QUESTION 23

You have elected to use the automounter and the autofs script. Your `/etc/auto.master` file contains the following:

```
/home /etc/auto.home
/project /etc/auto.project
/data yp:data.map
```

If you change the contents of `/etc/auto.project` to include a new source path what must be done to access the new path?

- A. Shutdown and restart the local NFS client daemons
- B. Run `fsck` on the affected mount point
- C. Issue the `/etc/init.d/autofs reload` command
- D. Add the newly mapped path to `/etc/fstab`
- E. Nothing Simply access the newly mapped resource

Correct Answer: C

Section: 203.3 Creating and configuring filesystem options

Explanation

Explanation/Reference:

From the man pages:

`/etc/init.d/autofs reload` will check the current `auto.master` map against running daemons. It will kill those daemons whose entries have changed and then start daemons for new or changed entries. If a map is modified then the change will become effective immediately.

QUESTION 24

In order to find all library dependencies of `/usr/bin/foo`, which of the following statement is true?

- A. Running `ldconfig` against `/usr/bin/foo` will show the required libraries
- B. Running `ldd` against `/usr/bin/foo` will show the required libraries
- C. It's necessary to compile the program again to check the library dependencies of `foo`.
- D. The `ls -la` command has to be run in the `/usr/bin` directory, to show all library dependencies of `foo`.
- E. Library dependencies are shown in the `/usr/lib` directory.

Correct Answer: B

Section: 206.1 Make and install programs from source

Explanation

Explanation/Reference:

QUESTION 25

How can DMA be enabled for the device `/dev/hda`?

- A. `echo "1" >/proc/ide/hda/dma`
- B. `sysctl -w dev.ide.dma=1`
- C. `dma add /dev/hda`
- D. `hdparm -d 1 /dev/hda`
- E. `insmod dma dev=/dev/hda`

Correct Answer: D

Section: 203.3 Creating and configuring filesystem options

Explanation

Explanation/Reference:

QUESTION 26

To restore the kernel source to the previous, unpatched, version, which of the following commands could be used?

- A. `patch --restore`
- B. `patch --remove`
- C. `patch -U`
- D. `patch --undo`
- E. `patch -R`

Correct Answer: E

Section: 201.3 Patching a kernel

Explanation

Explanation/Reference:

`-R` or `--reverse`

QUESTION 27

If the current directory is `/root` and the kernel source is located in `/usr/src/linux`, which of the following commands should be used to apply the patch `/tmp/foopatch`?

- A. `cat /tmp/foopatch | patch -p0`

- B. `cd/usr/src/linux; cat/tmp/foopatch | patch -p0`
- C. `cd/usr/src/linux; cat/tmp/foopatch | patch`
- D. `cd/usr/src/linux; patch -p1 </tmp/foopatch`
- E. `cd/usr/src/linux; patch -p1 >/tmp/foopatch`

Correct Answer: D

Section: 201.3 Patching a kernel

Explanation

Explanation/Reference:

From the man pages:

patch takes a patch file patchfile containing a difference listing produced by the diff program and applies those differences to one or more original files, producing patched versions. Normally the patched versions are put in place of the originals. [...] If no original file origfile is specified on the command line, patch tries to figure out from the leading garbage what the name of the file to edit is.

QUESTION 28

A 2.6.9-ac1 kernel would be

- A. an alpha kernel.
- B. someone's patch to a stable kernel.
- C. a stable kernel.
- D. an unstable kernel.
- E. someone's patch to an unstable kernel.

Correct Answer: B

Section: 201.4 Customize, build and install a custom kernel

Explanation

Explanation/Reference:

2.x is a stable kernel if x is an even number. Kernels are numbered like 2.6.37. (see www.kernel.org)

QUESTION 29

What command should be used to find out what PCI devices can be seen, without querying the kernel?

- A. `lspci -v`
- B. `lspci -s`
- C. `lspci -x`
- D. `lspci -b`
- E. `lspci -p`

Correct Answer: D

Section: 201.5 Manage/Query kernel at runtime

Explanation

Explanation/Reference:

-b Bus-centric view. Show all IRQ numbers and addresses as seen by the cards on the PCI bus instead of as seen by the kernel.

QUESTION 30

Considering that a 2.4 series Linux kernel is being used, which kernel module must be loaded to enable CD burning with an IDE CD writer?

- A. ide-cd
- B. ide-cdrw
- C. ide-cdb
- D. ide-scsi
- E. None of the above

Correct Answer: D

Section: 201.1 Kernel Components

Explanation

Explanation/Reference:

see <http://linux.ardynet.com/idescsi.php3>

QUESTION 31

What command must be used to create an ext3 filesystem?

- A. mke2fs
- B. mkext2fs
- C. mke3fs
- D. mkext3fs
- E. mkjfs

Correct Answer: A

Section: 203.1 Operating the Linux filesystem

Explanation

Explanation/Reference:

From the man pages:

mke2fs - create an ext2/ext3/ext4 filesystem

QUESTION 32

The Linux kernel is loaded successfully by the boot loader. However, straight after the kernel mounts the root filesystem, the boot process stops and an error message regarding init is shown. Which of the following actions is the best one to be used in order to identify and fix the problem?

- A. The administrator reboots the system with a recovery disk and checks the root file system for errors with fsck.
- B. The administrator reboots the system with a recovery disk and restores from a backup.
- C. The administrator reboots the system and tells the kernel, through the boot loader prompt, to use /bin/bash as the initial process.
- D. The administrator reboots the system with a recovery disk and installs a new kernel.
- E. The administrator reboots the system and tells init, through the boot loader prompt, to use a different runlevel.

Correct Answer: C

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

see http://en.wikipedia.org/wiki/Init#Skipping_init

QUESTION 33

A machine is running in single user mode and, as such, not all file-systems are accessible. What command

must be run to make all of the other file-systems listed in /etc/fstab accessible?

- A. mount --all
- B. mountfs --all
- C. mountfs -a
- D. mount -a

Correct Answer: D

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

from the man pages:

mount - mount a filesystem

-a, --all Mount all filesystems (of the given types) mentioned in fstab.

QUESTION 34

What command is used to force a file-system check, when rebooting?

- A. reboot-f
- B. shutdown -f now
- C. shutdown -c -r now
- D. fsck -r
- E. shutdown -F -r now

Correct Answer: E

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

From the man pages:

shutdown - bring the system down

-r Requests that the system be rebooted after it has been brought down.

-F Force fsck on reboot. (see <http://linux.die.net/man/8/shutdown>)

-F is not available on Debian Systems

QUESTION 35

What command can be used on an existing (formatted) partition, to configure the interval between disk checks when mounting partitions?

- A. mke2fs
- B. e2fsck
- C. e2fsckconfig
- D. config2fs
- E. tune2fs

Correct Answer: E

Section: 203.2 Maintaining a Linux filesystem

Explanation

Explanation/Reference:

From the man pages:

tune2fs - adjust tunable filesystem parameters on ext2/ext3/ext4 filesystems
-i interval-between-checks[d|m|w] Adjust the maximal time between two filesystem checks. No suffix or d will interpret the number interval-between-checks as days, m as months, and w as weeks. A value of zero will disable the time-dependent checking.

QUESTION 36

Performing a DNS lookup with dig results in this answer:

```
;; QUESTION SECTION:
;5.123.168.192.in-addr.arpa.      IN   PTR
;; ANSWER SECTION:
5.123.168.192.in-addr.arpa. 600 IN   PTR   linuserv.example.net.123.168.192.in-addr.
arpa.
;;AUTHORITY SECTION:
123.168.192.in-addr.arpa.    600 IN   NS    linuserv.example.net.
;; ADDITIONAL SECTION:
linuserv.example.net.       600 IN   A     192.168.123.5
```

What might be wrong in the zone definition?

- A. Nothing. All seems to be good.
- B. There's no "." after linuserv.example.net in the PTR record in the forward lookup zone file.
- C. There's no "." after linuserv in the PTR record in the forward lookup zone file.
- D. There's no "." after linuserv.example.net in the PTR record in the reverse lookup zone file.
- E. The "." in the NS definition in reverse lookup zone has to be removed.

Correct Answer: D

Section: 207.1 Basic DNS server configuration

Explanation

Explanation/Reference:

The output was generated by the following dig:
dig PTR 5.123.168.192.in-addr.arpa

In the answer section the PTR entry has the default domain added to the actual domain name, indicating that the PTR record in the reverse lookup zone file is specified incorrectly.

QUESTION 37

Which of the following commands will securely copy the directory ./fyf/ to /var/tmp/ on the remote host deltaur using the remote user account kevin?

- A. rsync -a -e ssh kevin@deltaur:/var/tmp/ fyf/
- B. rsync -a -u kevin -e ssh fyf/ deltaur:/var/tmp/
- C. rsync -a -u kevin -e ssh deltaur:/var/tmp/ fyf/
- D. rsync -a -e ssh fyf/ kevin@deltaur:/var/tmp/

Correct Answer: D

Section: 206.2 Backup operations

Explanation

Explanation/Reference:

From the man pages:

rsync - a fast, versatile, remote (and local) file-copying tool
-a, --archive archive mode; equals -r, -l, -p, -t, -o, -D (no -H, -A, -X)
-e, --rsh=COMMAND specify the remote shell to use

QUESTION 38

Journalling doesn't appear to be working on an ext3 file-system. When booting, the following line appears:

VFS: Mounted root (ext2 filesystem) readonly.

What could be causing the problem?

- A. An old version of e2fsprogs is installed.
- B. The kernel does not contain ext3 support.
- C. The file-system is specified as ext2 in /etc/fstab.
- D. The system was not shut down cleanly.

Correct Answer: B

Section: 201.4 Customize, build and install a custom kernel

Explanation

Explanation/Reference:

The kernel is directed by the bootloader to load the root partition readonly by default - the /etc/fstab is not evolved at this time.

QUESTION 39

Your routing configuration relies on eth0 being a 3com card that requires the 3c59x module. What line must be added to modules configuration file, to ensure that eth0 always uses this module?

- A. eth0=3c59x
- B. alias eth0=3c59x
- C. alias eth0 3c59x
- D. set eth0 3c59x
- E. set eth0=3c59x

Correct Answer: C

Section: 205.3 Troubleshooting network issues

Explanation

Explanation/Reference:

This job is now done by udev via /etc/udev/rules.d/

In older systems this is done via /etc/modprobe.d or other modprobe.conf files.

QUESTION 40

What backup arrangement should be used for an intranet web server the contents of which is updated fairly regularly by different staff?

- A. Daily incremental backups with a weekly full backup tape sent off-site
- B. Monthly full backups with the tape sent off-site
- C. Daily full backups with all tapes sent off-site
- D. Weekly full backups with all tapes sent off-site
- E. Daily full backups with one tape sent off-site per week

Correct Answer: A

Section: 206.2 Backup operations

Explanation

Explanation/Reference:

Daily full backup for only fairly regularly updated data seems a bit overkill, so just do daily incrementals and weekly full backup to be on the safe side.

QUESTION 41

During which stage of the boot process would this message be seen?

Ide0: BM-DMA at 0xff00-0xff07, BIOS settings: hda:DMA, hdb:DMA

- A. Boot loader start and hand off to kernel
- B. Kernel loading
- C. Hardware initialization and setup
- D. Daemon initialization and setup

Correct Answer: C

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

see <http://www.snow.nl/dist/xhtmlc/ch14s02.html>

QUESTION 42

Which of the following commands can be used to access the content of a ramdisk file (/boot/initrd) used by the kernel at boot time?

- A. `mount /boot/initrd /mnt/ -o loop; cat /mnt`
- B. `mkinitrd -d /boot/initrd; mount /boot/initrd /mnt/ -o loop`
- C. `cp /boot/initrd /tmp/initrd.gz; mount /tmp/initrd /mnt/ -o loop`
- D. `cp /boot/initrd /tmp/initrd.gz; gunzip initrd.gz; mount /tmp/initrd /mnt/ -o loop`
- E. `cp /boot/initrd /tmp/initrd.gz; gunzip initrd.gz; mount /tmp/initrd /mnt/`

Correct Answer: D

Section: 201.4 Customize, build and install a custom kernel

Explanation

Explanation/Reference:

This is the old initrd version. New initramfs is a zipped cpio archive which doesn't need to be mounted.

QUESTION 43

A BIND server should be upgraded to use TSIG. Which configuration parameters should be added, if the server should use the algorithm hmac-md5 and the key skrKc4DoTzi/tAkllPi7JZA== ?

- A.

```
TSIG server.example.com.  
algorithm hmac-md5;  
secret "skrKc4DoTzi/tAkllPi7JZA==";  
};
```
- B.

```
key server.example.com. {  
algorithm hmac-md5;  
secret skrKc4DoTzi/tAkllPi7JZA==;  
};
```
- C.

```
key server.example.com. {  
algorithm hmac-md5;  
secret "skrKc4DoTzi/tAkllPi7JZA==";  
};
```

- D.

```
key server.example.com. {
  algorithm=hmac-md5;
  secret="skrKc4DoTzi/tAk1lPi7JZA==";
};
```
- E.

```
key server.example.com. {
  algorithm hmac-md5
  secret "skrKc4DoTzi/tAkI1Pi7JZA=="
};
```

Correct Answer: C

Section: 207.3 Securing a DNS server

Explanation

Explanation/Reference:

Insert into `/etc/bind/named.conf.local` of master DNS and all slave DNS. In the `allow-transfer` statement add the `key` keyword instead of IPs.

QUESTION 44

Which of the following sentences is true for the shown BIND9 configuration?

```
options {
  directory "/var/named";
  allow-query { any; };
  allow-recursion {127.0.0.1; 10.0.0.0/24; };
  forwarders {192.168.0.4; };
  forward first;
};

zone "." {
  type hint;
  file "named.ca";
};
```

- A. Any host, from any network, may use this server as its main DNS server.
- B. If the server doesn't know the answer to a query, it sends a recursive query to 192.168.0.4.
- C. If the server doesn't know the answer to a query, it sends a query to a root DNS server.
- D. Hosts in the network 10.0.0.0/24 will be able to ask for zone transfers.
- E. If the server doesn't know the answer to a query, it sends a recursive query to 192.168.0.4 and, if this fails, it returns a failure.

Correct Answer: B

Section: 207.2 Create and maintain DNS zones

Explanation

Explanation/Reference:

- A) would be correct if `allow-recursion {any;};` was specified.
- C) would be correct if no `forwarders` were specified.
- D) all hosts may initiate a zone transfer. disallow with `allow-transfer {none;};`
- E) would be correct if `forward only;` was specified or no root-Servers were specified.

QUESTION 45

What is a significant difference between host and zone keys generated by `dnssec-keygen`?

- A. There is no difference.
- B. Zone key files contain a public and private key.
- C. Host keys files contain a public and private key.

- D. Host keys must always be generated if DNSSEC is used; zone keys are optional
- E. Zone keys must always be generated if DNSSEC is used; host keys are optional

Correct Answer: B

Section: 207.3 Securing a DNS server

Explanation

Explanation/Reference:

ZONE Keys (KSK and ZSK) consist of a Public/Private Key Pair, while HOST and USER Keys are Shared Secret Keys.

QUESTION 46

A system is running out of swap space. To initialise 5GB of additional swap space, which combination of commands should be used?

- A. `dd if=/dev/zero of=/tmp/swapfile bs=1024 count=5120000; mkswap /tmp/swapfile; swapon /tmp/swapfile`
- B. `dd if=/dev/zero of=/tmp/swapfile bs=1024 count=5120000; swap on /tmp/swapfile`
- C. `dd if=/dev/zero of=/tmp/swapfile bs=1024 count=5120000; mkswap /tmp/swapfile; mount /tmp/swapfile`
- D. `touch -5G /tmp/swapfile; swapon /tmp/swapfile`
- E. `mkswap /tmp/swapfile 512000; swapon /tmp/swapfile`

Correct Answer: A

Section: 203.2 Maintaining a Linux filesystem

Explanation

Explanation/Reference:

see <http://www.cyberciti.biz/faq/linux-add-a-swap-file-howto/>

While Linux primarily expects a whole swap partition to be used, it works with files also.

Create a file big enough for your purposes, designate the file as swapspace (`mkswap`), instruct the kernel to use the additional space (`swapon`).

Add the swapfile in `/etc/fstab` to enable swapping after the next reboot automatically.

QUESTION 47

Hundreds of people log in to a server from remote locations per day. Which of the following commands show remote SSH, FTP & telnet sessions for a particular day?

- A. `cat /var/log/messages | grep "'date "+%b %e'" | egrep '(telnet|ssh|ftp)'`
- B. `cat /var/log/messages | egrep '(telnet|ssh|ftp)'`
- C. `cat /var/log/messages | grep "'date "+%b %e'" | grep -E '(telnet|ssh|ftp)'`
- D. `cat /var/log/messages | date | egrep '(telnet|ssh|ftp)'`
- E. `cat /var/log/messages > grep "'date "+%b %e'" > egrep '(telnet|ssh|ftp)'`

Correct Answer: AC

Section: 205.3 Troubleshooting network issues

Explanation

Explanation/Reference:

example for `/var/log/messages`:

```
Jan 1 01:02:03 host kernel: [ 1730.648910] usb 2-6: new high speed USB device using ehci_hcd and address 3
```

`'date "+%b %e"'` gets the current date in the format "Jan 1", so you filter entries for these dates only.

Then use the extended grep (egrep or grep -E) to filter for telnet or ssh or ftp.

QUESTION 48

What command is used to mount a floppy disk image under /mnt/floppy?

- A. mount -l root.img /mnt/floppy
- B. mount --loop root.img /mnt/floppy
- C. mount root.img /mnt/floppy
- D. mount root.img
- E. mount -o loop root.img /mnt/floppy

Correct Answer: E

Section: 203.1 Operating the Linux filesystem

Explanation

Explanation/Reference:

see http://en.wikipedia.org/wiki/Loop_device

QUESTION 49

What information can be found in the log file specified by the status parameter in OpenVPN's server.conf? (Select TWO correct answers)

- A. Errors and warnings generated by the openvpn daemon
- B. Routing information
- C. Statistical information regarding the currently running openvpn daemon
- D. A list of currently connected clients
- E. A history of all clients who have connected at some point

Correct Answer: BD

Section: 205.2 Advanced Network Configuration and Troubleshooting

Explanation

Explanation/Reference:

Status can be written to the syslog by sending a SIGUSR2 signal. This is an example of the status report:

```
# killall -SIGUSR2 openvpn
#tail /var/log/syslog
Jan 1 01:02:03 linuxserver ovpn-server[1532]: OpenVPN CLIENT LIST
Jan 1 01:02:03 linuxserver ovpn-server[1532]: Updated,Wed Feb 2 13:38:39 2011
Jan 1 01:02:03 linuxserver ovpn-server[1532]: Common Name,Real Address,Bytes Received,Bytes Sent,
Connected Since
Jan 1 01:02:03 linuxserver ovpn-server[1532]: VPNClient,172.16.202.128:1194,34224,6679,Wed Jan 1
01:02:03 2011
Jan 1 01:02:03 linuxserver ovpn-server[1532]: ROUTING TABLE
Jan 1 01:02:03 linuxserver ovpn-server[1532]: Virtual Address,Common Name,Real Address,Last Ref
Jan 1 01:02:03 linuxserver ovpn-server[1532]: 00:aa:bb:cc:dd:ee,VPNClient,172.16.202.128:1194,Wed Jan
1 01:02:03 2011
Jan 1 01:02:03 linuxserver ovpn-server[1532]: GLOBAL STATS
Jan 1 01:02:03 linuxserver ovpn-server[1532]: Max bcast/mcast queue length,0
Jan 1 01:02:03 linuxserver ovpn-server[1532]: END
```

QUESTION 50

After changing the default runlevel in the init configuration file, the system boots in a different than the intended runlevel. Where else could be this different runlevel be defined?

- A. Nowhere. The init configuration file wasn't properly modified
- B. In the boot loader configuration file
- C. In /etc/ runlevel under default
- D. In the initrd image file
- E. In the /etc/rc.d/rc.local file

Correct Answer: B

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

see http://www.centos.org/docs/5/html/Installation_Guide-en-US/s1-grub-runlevels.html or http://www.comptechdoc.org/os/linux/usersguide/linux_uglilo.html

QUESTION 51

A BIND server should never answer queries from certain networks or hosts. Which configuration directive could be used for this purpose?

- A. deny-query { ...; };
- B. no-answer { ...; };
- C. deny-answer { ...; };
- D. deny-access { ...; };
- E. blackhole { ...; };

Correct Answer: E

Section: 207.3 Securing a DNS server

Explanation

Explanation/Reference:

see http://www.centos.org/docs/5/html/Deployment_Guide-en-US/s1-bind-namedconf.html

QUESTION 52

What is the purpose of a PTR record?

- A. To provide name to IP resolution.
- B. To provide IP to name resolution.
- C. To direct email to a specific host.
- D. To provide additional host information.
- E. To direct clients to another nameserver.

Correct Answer: B

Section: 207.1 Basic DNS server configuration

Explanation

Explanation/Reference:

see http://en.wikipedia.org/wiki/Reverse_DNS_lookup

QUESTION 53

What directive can be used in named.conf to restrict zone transfers to the 192.168.1.0/24 network?

- A. allow-transfer { 192.168.1.0/24; };
- B. allow-transfer { 192.168.1.0-192.168.1.0.255; };
- C. allow-axfr { 192.168.1.0/24; };

D. allow-xfer { 192.168.1.0/24; };

Correct Answer: A

Section: 207.3 Securing a DNS server

Explanation

Explanation/Reference:

see http://h30097.www3.hp.com/docs/base_doc/DOCUMENTATION/BIND/DOCU0010.HTM

Exam C

QUESTION 1

How would you run named inside a chroot jail as user nobody and group nogroup?

- A. Add "user nobody; group nogroup; chroot /var/named/root" to named.conf
- B. named runs as nobody/nogroup by default, so just invoke it as "name --chroot /var/named/root"
- C. Use /usr/bin/chroot after running "chown nobody.nogroup named"
- D. Invoke named as "named -t /var/named/root -u nobody"

Correct Answer: D

Section: 207.3 Securing a DNS server

Explanation

Explanation/Reference:

<http://unixwiz.net/techtips/bind9-chroot.html>

The group is taken automatically from the group of the specified user. `nobody` must be member of `nogroup`.

QUESTION 2

Select the TWO correct alternatives regarding the kill -9 command:

- A. Its use should be avoided and other alternatives should be tried before it.
- B. Its use can occasionally cause the data loss.
- C. It is possible that zombie processes can be created as a consequence of its use.
- D. It can always be used with no restrictions.
- E. Its frequent use can increase the RAM utilization.

Correct Answer: AB

Section: 207.1 Basic DNS server configuration

Explanation

Explanation/Reference:

see <http://en.wikipedia.org/wiki/SIGKILL>

QUESTION 3

The server has two network cards. The driver for the first card is the module 8139too and the driver for the second card is the module ne2k-pci. How is it possible to ensure that the card using the 8139too driver is detected before the card using the ne2k-pci driver?

- A. `modprobe 8139too dev=eth0; modprobe ne2k-pci dev=eth1`
- B. `install mod 8139too; install mod ne2k-pci`
- C. `modprobe eth0=8139too, eth1=ne2k-pci`
- D. `ifconfig modadd eth0=8139too, eth1=ne2k-pci`
- E. `modprobe 8139too; modprobe ne2k-pci`

Correct Answer: A

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

Explanation: At System booting time, tries to bring up the Ethernet devices, first try to eth0 and then eth1. We can set the module to specific device using modprobe command `modprobe 8139too dev=eth0` than means 8139too alias to eth0 and system first try to

bring up the eth0 device.

QUESTION 4

Which of these would be the simplest way to configure BIND to return a different version number to queries?

- A. Compile BIND with the option `-blur-version=my version`.
- B. Set `version-string "my version"` in BIND's configuration file.
- C. Set `version "my version"` in BIND's configuration file.
- D. Set `version=my version` in BIND's configuration file.
- E. Set `version-bind "my version"` in BIND's configuration file.

Correct Answer: C

Section: 207.1 Basic DNS server configuration

Explanation

Explanation/Reference:

QUESTION 5

An administrator has placed an executable in the directory `/etc/init.d`, however it is not being executed when the system boots into runlevel 2. What is the most likely cause of this?

- A. The script has not been declared in `/etc/services`
- B. runlevel 2 is not declared in `/etc/inittab`
- C. The script has the permissions 700 and is owned by root
- D. A corresponding link was not created in `/etc/rc2.d`

Correct Answer: D

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

QUESTION 6

Consider the following output from `df -i`:

Filesystem	Inodes	IUsed	IFree	IUse%	Mounted on
/dev/md0	1966080	45044	1921036	3%	/
none	125731	712	125019	1%	/dev
none	127729	1	127728	1%	/dev/shm
none	127729	17	127712	1%	/var/run
none	127729	2	127727	1%	/var/lock
none	1966080	45044	1921036	3%	/var/lib/ureadahead/debugfs
/dev/sde1	0	0	0	-	/mnt

What filesystem does `/dev/sde1` most likely use?

- A. ext2
- B. ext3
- C. reiserfs
- D. xfs

Correct Answer: C

Section: 203.3 Creating and configuring filesystem options

Explanation

Explanation/Reference:

ReiserFS works with dynamic inodes and does not show a inodecount when queried with df -i.

QUESTION 7

Why shouldn't you use the options -z and -j when using tar with a magnetic tape backup?

- A. In case of damaged tape uncompressed tar archives may allow partial recovery of the backup
- B. Standard Linux compression software and hardware compression in the tape drive will cause bigger files on the tapes.
- C. Standard Linux compression software won't be able to write to sequential tape media.
- D. Backup and restore performance will be better if we don't introduce the compression delay into the process
- E. The tape drive hardware-based compression achieves higher compression rates than either gzip or bzip2 software based compression.

Correct Answer: A

Section: 206.2 Backup operations

Explanation

Explanation/Reference:

???

Exam D

QUESTION 1

Using only commands included with named, what is the command, with options or parameters, to make named re-read its zone files?

Correct Answer: rndc reload

Section: 207.2 Create and maintain DNS zones

Explanation

Explanation/Reference:

QUESTION 2

Which file contains configuration data for automount? Please enter the complete path.

Correct Answer: /etc/auto.master

Section: 203.3 Creating and configuring filesystem options

Explanation

Explanation/Reference:

From the man pages:

The auto.master map is consulted to set up automount managed mount points when the autofs(8) script is invoked or the automount(8) program is run. Each line describes a mount point and refers to an autofs map describing file systems to be mounted under the mount point.

The default location of the master map is /etc/auto.master but an alternate name may be given on the command line when running the automounter and the default master map may be changed by setting the MASTER_MAP_NAME configuration variable in /etc/default/autofs. If the master map name has no path then the system Name Service Switch configuration will be consulted and each of the sources searched in line with the rules given in the Name Service Switch configuration.

QUESTION 3

On a system with separate partitions for /, /usr, /var & /tmp, which filesystem can safely be mounted read-only?

Correct Answer: /usr

Section: 203.1 Operating the Linux filesystem

Explanation

Explanation/Reference:

QUESTION 4

Which mount option must be used in the example `/etc/fstab` entry below, to ensure that a specific filesystem is not mounted when the system is booted?

```
/dev/hdd /media/cdrom iso9660 _____,ro 0 0
```

Correct Answer: noauto

Section: 203.1 Operating the Linux filesystem

Explanation

Explanation/Reference:

noauto Can only be mounted explicitly (i.e., the -a option will not cause the filesystem to be mounted).

QUESTION 5

With which command can the reserved blocks on /dev/hda1 be displayed? (Enter the command with all parameters and/or options)

Correct Answer: tune2fs -l /dev/hda1

Section: 203.2 Maintaining a Linux filesystem

Explanation

Explanation/Reference:

-l List the contents of the filesystem superblock, including the current values of the parameters that can be set via this program.

QUESTION 6

After a lot of write operations, the changes should be written to the disk.

Please enter the appropriate command, without the path or any options or parameters, that would achieve this.

Correct Answer: sync

Section: 203.2 Maintaining a Linux filesystem

Explanation

Explanation/Reference:

sync writes any data buffered in memory out to disk. This can include (but is not limited to) modified superblocks, modified inodes, and delayed reads and writes. This must be implemented by the kernel; The sync program does nothing but exercise the sync(2) system call.

QUESTION 7

Which command, with options, could be used to change an ext2 file system on /dev/hda1 to an ext3 file system?

Correct Answer: tune2fs -j /dev/hda1

Section: 203.1 Operating the Linux filesystem

Explanation

Explanation/Reference:

From the man pages:

tune2fs - adjust tunable filesystem parameters on ext2/ext3/ext4 filesystems

-j Add an ext3 journal to the filesystem. If the -J option is not specified, the default journal parameters will be used to create an appropriately sized journal (given the size of the filesystem) stored within the filesystem. Note that you must be using a kernel which has ext3 support in order to actually make use of the journal.

QUESTION 8

Configuration of X is complete and now the default runlevel can be changed from runlevel 3 to runlevel 5. In which of the following configuration files should this be done?

Correct Answer: /etc/inittab

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

from the man pages:

inittab - init daemon configuration

The /etc/inittab file was the configuration file used by the original System V init(8) daemon.

The Upstart init(8) daemon does not use this file, and instead reads its configuration from files in /etc/init.

See init(5) for more details.

QUESTION 9

Which keyword is used in the `/etc/inittab` file to define the default system runlevel?

Correct Answer: `initdefault`

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

see <http://linux.die.net/man/5/inittab>

respawn - The process will be restarted whenever it terminates (e.g. `getty`).

wait - The process will be started once when the specified runlevel is entered and `init` will wait for its termination.

once - The process will be executed once when the specified runlevel is entered.

boot - The process will be executed during system boot. The runlevels field is ignored.

bootwait - The process will be executed during system boot, while `init` waits for its termination (e.g. `/etc/rc`). The runlevels field is ignored.

off - This does nothing.

ondemand - A process marked with an ondemand runlevel will be executed whenever the specified ondemand runlevel is called. However, no runlevel change will occur (ondemand runlevels are 'a', 'b', and 'c').

initdefault - An `initdefault` entry specifies the runlevel which should be entered after system boot. If none exists, `init` will ask for a runlevel on the console. The process field is ignored.

sysinit - The process will be executed during system boot. It will be executed before any `boot` or `bootwait` entries. The runlevels field is ignored.

powerwait - The process will be executed when the power goes down. `init` is usually informed about this by a process talking to a UPS connected to the computer. `init` will wait for the process to finish before continuing.

powerfail - As for `powerwait`, except that `init` does not wait for the process's completion.

powerokwait - This process will be executed as soon as `init` is informed that the power has been restored.

powerfailnow - This process will be executed when `init` is told that the battery of the external UPS is almost empty and the power is failing (provided that the external UPS and the monitoring process are able to detect this condition).

ctrlaltdel - The process will be executed when `init` receives the SIGINT signal. This means that someone on the system console has pressed the CTRL-ALT-DEL key combination. Typically one wants to execute some sort of shutdown either to get into single-user level or to reboot the machine.

kbrequest - The process will be executed when `init` receives a signal from the keyboard handler that a special key combination was pressed on the console keyboard.

QUESTION 10

When using SysV init system, the file `/etc/rc3.d/S55sshd` is a symbolic link. Type the full path and file name to which this is linked.

Correct Answer: `/etc/init.d/sshd`

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

see <http://www.debian.org/doc/debian-policy/ch-opersys.html>

The `/etc/init.d` directory contains the scripts executed by `init` at boot time and when the `init` state (or "runlevel") is changed (see `init(8)`). [...] These scripts are referenced by symbolic links in the `/etc/rcn.d` directories. When changing runlevels, `init` looks in the directory `/etc/rcn.d` for the scripts it should execute, where `n` is the runlevel that is being changed to, or `S` for the boot-up scripts.

QUESTION 11

Please enter the complete path to the main `init` process configuration file.

Correct Answer: /etc/inittab

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

from the man pages:

inittab - init daemon configuration in /etc/inittab

QUESTION 12

Which e2fsck option is used to automatically repair an ext2 filesystem?

Correct Answer: -p

Section: 203.2 Maintaining a Linux filesystem

Explanation

Explanation/Reference:

From the man pages:

e2fsck - check a Linux ext2/ext3/ext4 file system

-p Automatically repair ("preen") the file system. This option will cause e2fsck to automatically fix any filesystem problems that can be safely fixed without human intervention. If e2fsck discovers a problem which may require the system administrator to take additional corrective action, e2fsck will print a description of the problem and then exit with the value 4 logically or'ed into the exit code. This option is normally used by the system's boot scripts.

QUESTION 13

In which subdirectory of /proc is information about PC Cards, which are connected and recognized by a 2.6 kernel stored? Please enter the complete path.

Correct Answer: /proc/bus/pccard

Section: 201.5 Manage/Query kernel at runtime

Explanation

Explanation/Reference:

see <http://tldp.org/HOWTO/PCMCIA-HOWTO-7.html>

On 2.2 and later kernels, the PCMCIA package will create a tree of status information under /proc/bus/pccard. Much of the information can only be interpreted using the data sheets for the PCMCIA host controller. Its contents may depend on how the drivers were configured, but may include all or some of the following:

/proc/bus/pccard/{irq,ioport,memory} If present, these files contain resource allocation information to supplement the normal kernel resource tables. Recent versions of the PCMCIA system may obtain additional resource information from the Plug and Play BIOS if configured to do so.

/proc/bus/pccard/drivers In recent releases, this lists all currently loaded PCMCIA client drivers. Unlike /proc/modules, it also lists drivers that may be statically linked into the kernel.

/proc/bus/pccard/*/info For each socket, describes that socket's host controller and its capabilities.

/proc/bus/pccard/*/exca This contains a dump of a controller's "ExCA" Intel i82365sl-compatible register set.

/proc/bus/pccard/*/{"pci,cardbus} For CardBus bridges, a dump of the bridge's PCI configuration space, and a dump of the bridge's CardBus configuration registers.

QUESTION 14

Which file contains the software RAID configuration? (Please enter the file-name without the path)

Correct Answer: raidtab

Section: 204.1 Configuring RAID

Explanation

Explanation/Reference:

From the man pages:

/etc/raidtab is the default configuration file for the raid tools (raidstart and company). It defines how RAID devices are configured on a system.

QUESTION 15

Which program can be used to adjust the DMA settings of an IDE hard drive? Please enter it without path, parameters or arguments

Correct Answer: hdparm

Section: 203.3 Creating and configuring filesystem options

Explanation

Explanation/Reference:

From the man pages:

hdparm - get/set SATA/IDE device parameters
-d Disable/enable the "using_dma" flag for this drive.

QUESTION 16

A database application requires a maximum shared memory segment (shmmax) of 2GB (2147483648 Bytes). Which configuration file should be modified, to set this kernel parameter permanently? Please enter the complete path to the file.

Correct Answer: /etc/sysctl.conf

Section: 204.2 Adjusting Storage Device Access

Explanation

Explanation/Reference:

From the man pages:

sysctl.conf - sysctl(8) preload/configuration file
sysctl.conf is a simple file containing sysctl values to be **read in and set by sysctl(8)**.

QUESTION 17

A new kernel version needs to be compiled to use a new feature. If the old kernel configuration file is available, which make target will only update the configuration file for the new kernel version? (Please enter only the make target.)

Correct Answer: oldconfig

Section: 201.4 Customize, build and install a custom kernel

Explanation

Explanation/Reference:

see http://www.gentoo.org/doc/en/kernel-upgrade.xml#doc_chap10

To reuse your old .config, you simply need to copy it over and then run make oldconfig.

QUESTION 18

Your newly-compiled kernel can not find any modules it needs to load. What command was missed when compiling and installing the kernel?

Correct Answer: make modules_install

Section: 201.2 Compiling a kernel

Explanation

Explanation/Reference:

see <http://www.faqs.org/docs/Linux-mini/Modules.html#KERNEL> and http://www.sysdesign.ca/guides/linux_kernel.html

mod_install: This will copy all the modules to a new directory, "/lib/modules/a.b.c" where a.b.c is the kernel version

```
# make dep clean modules modules_install zImage
```

QUESTION 19

What is the correct parameter to pass to the kernel at boot time to force it to use only one of the available processors?

Correct Answer: nosmp

Section: 201.4 Customize, build and install a custom kernel

Explanation**Explanation/Reference:**

see <http://www.mjmwired.net/kernel/Documentation/kernel-parameters.txt>

QUESTION 20

Consider the following /etc/fstab file:

```
/dev/hda1 swap swap defaults 0 0
/dev/hda2 / ext2 defaults 1 1
/dev/hda3 /home ext2 defaults 1 2
none /proc proc defaults 0 0
/dev/fd0 /media/floppy vfat user,noauto 0 0
```

What command can an ordinary (non-root) user use to mount a floppy disk in this system? (Please enter the command with all parameters and/or options)

Correct Answer: mount /dev/fd0

Section: 203.1 Operating the Linux filesystem

Explanation**Explanation/Reference:**

also valid command would be mount /media/floppy

QUESTION 21

How can the label root be added to the ext2 file-system on /dev/sda1? Please enter the command with all parameter(s) and/or option(s):

Correct Answer: tune2fs -L root /dev/sda1

Section: 203.2 Maintaining a Linux filesystem

Explanation**Explanation/Reference:**

from the man pages:

tune2fs - adjust tunable filesystem parameters on second extended filesystems

```
tune2fs [ -L volume-name ] device
```

QUESTION 22

How can a journal added, non-destructively, to the ext2 file-system on /dev/dg/lv05?

Please enter the command with all parameter(s):

Correct Answer: `tune2fs -j /dev/dg/lv05`

Section: 203.2 Maintaining a Linux filesystem

Explanation

Explanation/Reference:

From the man pages

tune2fs - adjust tunable filesystem parameters on second extended filesystems

tune2fs [-j] [-J journal-options] device

-j Add an ext3 journal to the filesystem. If the -J option is not specified, the default journal parameters will be used to create an appropriately sized journal (given the size of the filesystem) stored within the filesystem. Note that you must be using a kernel which has ext3 support in order to actually make use of the journal.

QUESTION 23

You want to change the file that contains the message which is used at the login prompt when users log in locally. Please enter the file including the path.

Correct Answer: `/etc/issue`

Section: 205.4 Notify users on system-related issues

Explanation

Explanation/Reference:

from the man pages:

issue - pre-login message and identification file

The file `/etc/issue` is a text file which contains a message or system identification to be printed before the login prompt.

QUESTION 24

Which environment variable you have to setup to use shared libraries that are not in the standard search path?

Correct Answer: `LD_LIBRARY_PATH`

Section: 206.1 Make and install programs from source

Explanation

Explanation/Reference:

see <http://tldp.org/HOWTO/Program-Library-HOWTO/shared-libraries.html>

You can temporarily substitute a different library for this particular execution. In Linux, the environment variable `LD_LIBRARY_PATH` is a colon-separated set of directories where libraries should be searched for first, before the standard set of directories; this is useful when debugging a new library or using a nonstandard library for special purposes

QUESTION 25

You wish to notify all users that you have to take down a service on which they rely. What command will allow you to send a message to all currently logged on users? Enter only the command, not the path.

Correct Answer: `wall`

Section: 205.4 Notify users on system-related issues

Explanation

Explanation/Reference:

from the man pages:

wall - write a message to users

Wall displays the contents of file or, by default, its standard input, on the terminals of all currently logged in users. Only the super-user can write on the terminals of users who have chosen to deny messages or are using a program which automatically denies messages.

QUESTION 26

According to the configuration below, what is the e-mail address of the administrator for this domain?

```
$TTL 86400
$ORIGIN lpi.org
@ IN SOA test.lpi.org hostmaster.lpi.org (
    2005010101
    10800
    3600
    604800
    86400 )
```

Correct Answer: hostmaster@lpi.org

Section: 207.1 Basic DNS server configuration

Explanation

Explanation/Reference:

see <http://tools.ietf.org/html/rfc1035#page-18>

The field in question is RNAME.

QUESTION 27

When configuring a new kernel, what file under /usr/src/linux/ contains the configuration?

Correct Answer: .config

Section: 201.2 Compiling a kernel

Explanation

Explanation/Reference:

QUESTION 28

What is the command that will extract information, such as module parameters, from the Linux Kernel modules and print this information to the command line? (Please specify only the command with no path information)

Correct Answer: modinfo

Section: 201.4 Customize, build and install a custom kernel

Explanation

Explanation/Reference:

from the man pages:

modinfo -- program to show information about a Linux Kernel module
modinfo by default lists each attribute of the module in form fieldname : value, for easy reading. The filename is listed the same way (although it's not really an attribute).

QUESTION 29

In which directory is the Linux kernel documentation be found?

Correct Answer: /usr/src/linux/Documentation

Section: 201.2 Compiling a kernel

Explanation

Explanation/Reference:

see <http://tldp.org/LDP/Linux-Filesystem-Hierarchy/html/usr.html>

`/usr/src/linux/Documentation`

Contains documentation that may be necessary in order to re-compile a kernel. However, it also provides quite a lot of information about your Linux system in general as well. For those who wish to seek further information on the contents of this directory you may consult the `/usr/src/linux/Documentation/00-INDEX` file. Further, more detailed documentation may be found in `/usr/src/linux/Documentation/Docbook`.

QUESTION 30

When compiling kernel modules, which make target will remove most generated files but keep the config file and enough build support to build external modules? (Please enter only the make target and no other words)

Correct Answer: clean

Section: 201.2 Compiling a kernel

Explanation

Explanation/Reference:

QUESTION 31

You need to recover some data from a magnetic tape and it is the second file on the media. The following command is being attempted:

```
mt -f /dev/nst0 _____
```

What is the mt operation that will position the tape on the first block of the second file? (Please specify the operation with no other parameters)

Correct Answer: asf 2

Section: 206.2 Backup operations

Explanation

Explanation/Reference:

From the man pages:

`mt` - control magnetic tape drive operation

`asf` The tape is positioned at the beginning of the count file. Positioning is done by first rewinding the tape and then spacing forward over count filemarks.

QUESTION 32

The users of the local network complain that name resolution is not fast enough. Enter the command, without the path or any options, that shows the time taken to resolve a DNS query.

Correct Answer: dig

Section: 205.2 Advanced Network Configuration and Troubleshooting

Explanation

Explanation/Reference:

QUESTION 33

Which option, when passed to the `hostname` command, will return the name of the DNS domain? (Provide only the option)

Correct Answer: -d

Section: 205.1 Basic networking configuration

Explanation

Explanation/Reference:

-d, --domain

Display the name of the DNS domain. Don't use the command `domainname` to get the DNS domain name because it will show the NIS domain name and not the DNS domain name. Use `dnsdomainname` instead.

QUESTION 34

What tool can be used to send kernel boot messages to a remote server?

Correct Answer: netconsole

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

see <http://www.kernel.org/doc/Documentation/networking/netconsole.txt>

QUESTION 35

Which directory in `/dev/disk/` can be used to determine the UUID of a connected hard disk?

Correct Answer: by-uuid

Section: 203.3 Creating and configuring filesystem options

Explanation

Explanation/Reference:

see <http://linuxshellaccount.blogspot.com/2008/08/how-to-manage-your-disk-by-uuid-on.html>

QUESTION 36

What command will search for physical defects on a hard drive and will mark these defects so that they are no longer used? (Please specify the command with no path information)

Correct Answer: badblocks

Section: 203.2 Maintaining a Linux filesystem

Explanation

Explanation/Reference:

from the man pages:

badblocks - search a device for bad blocks

badblocks [-svwnf] [-b block-size] [-c blocks_at_once] [-i input_file] [-o output_file] [-p num_passes] [-t test_pattern] device [last-block] [start-block]

QUESTION 37

Which command will prevent the service `ldap` from starting on a Debian system in all runlevels, forcing the removal of all symlinks in `/etc/rcX.d`?

(Provide the command without any options or parameters)

Correct Answer: update-rc.d

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

from the man pages:

update-rc.d - install and remove System-V style init script links

EXAMPLES

Insert links using the defaults: `update-rc.d foobar defaults`

Equivalent command using explicit argument sets: `update-rc.d foobar start 20 2 3 4 5 . stop 20 0 1 6 .`

More typical command using explicit argument sets: `update-rc.d foobar start 30 2 3 4 5 . stop 70 0 1 6 .`

Remove all links for a script (assuming foobar has been deleted already): `update-rc.d foobar remove`

QUESTION 38

What command will remove the physical volume `/dev/sda4` from the volume group `/dev/vg0`?

(Provide the command with options and parameters)

Correct Answer: `vgreduce /dev/vg0 /dev/sda4`

Section: 204.3 Logical Volume Manager

Explanation

Explanation/Reference:

from the man pages:

`vgreduce` - reduce a volume group

`vgreduce` allows you to remove one or more unused physical volumes from a volume group.

QUESTION 39

In order to provide notices and information to users when they log in to a server, what file must be modified to give these notices? (Please provide the file with full path information)

Correct Answer: `/etc/motd`

Section: 205.4 Notify users on system-related issues

Explanation

Explanation/Reference:

from the man pages:

The file `/etc/motd` is normally displayed by `login(1)` after a user has logged in but before the shell is run. It is generally used for important system-wide announcements. Individual users may suppress the display of this file by creating a file named ``.hushlogin'` in their home directories.

QUESTION 40

Which single parameter, when passed to `nmap`, will instruct `nmap` to perform a fast scan? (Provide only the option)

Correct Answer: `-F`

Section: 205.3 Troubleshooting network issues

Explanation

Explanation/Reference:

From the man pages:

`-F` (Fast (limited port) scan)

Specifies that you only wish to scan for ports listed in the `nmap-services` file which comes with `nmap` (or the `protocols` file for `-sO`). This is much faster than scanning all 65535 ports on a host. Because this list contains so many TCP ports (more than 1200), the speed difference from a default TCP scan (about 1650 ports) isn't dramatic. The difference can be enormous if you specify your own tiny `nmap-services` file using the `--datadir` option.

QUESTION 41

Which directory contains the PCMCIA configuration files?

Correct Answer: /etc/pcmcia

Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:

see <http://linuxmafia.com/pub/linux/suse-linux-internals/chapter2.html#Tab2-5>

QUESTION 42

After configuring a new 2.4 series kernel, all dependencies, such as include files, need to be created. How can this be achieved? Please enter the complete command.

Correct Answer: make dep

Section: 201.2 Compiling a kernel

Explanation

Explanation/Reference:

make dep = makes and build the dependencies

QUESTION 43

You are not sure whether the kernel has detected a piece of hardware in your machine. What command, without options or parameters, should be run to present the contents of the kernel ring- buffer?

Correct Answer: /bin/dmesg

Section: 201.5 Manage/Query kernel at runtime

Explanation

Explanation/Reference:

From the man pages:

dmesg - print or control the kernel ring buffer

QUESTION 44

According to the tcpdump output below, what is the IP address of the client host?

```
14:17:19.225220 IP 192.168.1.106.33239 > 192.168.1.127.22: S 4158312222, win 5840, options [mss 1460,sackOK,TS val 806043 ecr 0,nop,wscale 6]
14:17:19.242943 IP 192.168.1.127.22 > 192.168.1.106.33239: S. 4013568495 ack 4158312223, win 5792, options [mss 1460,sackOK,TS val 565852 ecr 806043,nop,wscale 6]
14:17:19.243111 IP 192.168.1.106.33239 > 192.168.1.127.22: . ack 1, win 92, options [nop,nop,TS val 806045 ecr 565852]
14:17:19.264654 IP 192.168.1.127.22 > 192.168.1.106.33239: P. seq 1:40, ack 1, win 91, options [nop,nop,TS val 565856 ecr 806045]
```

Correct Answer: 192.168.1.106

Section: 205.3 Troubleshooting network issues

Explanation

Explanation/Reference:

192.168.1.127.22 means Port 22 on Host 192.168.1.127, which is the ssh-server; which leaves 192.168.1.106 as the client host.

WARNING: actual IP may be different in the LPI test! (192.168.246.11 was the original IP i think)

QUESTION 45

Which chkconfig command will display whether or not the service ldap is configured to start in each runlevel? (Provide the command and any options or parameters)

Correct Answer: chkconfig --list ldap
Section: 201.1 Kernel Components
Explanation

Explanation/Reference:
From the man pages:

chkconfig - updates and queries runlevel information for system services

--list name This option lists all of the services which chkconfig knows about, and whether they are stopped or started in each runlevel. If name is specified, information is only displayed about service name.

QUESTION 46

On a server running the 2.6.27-11 Linux kernel, which file in the /boot directory contains the kernel configuration parameters?

Correct Answer: config-2.6.27-11
Section: 201.4 Customize, build and install a custom kernel
Explanation

Explanation/Reference:

QUESTION 47

Which program lists information about files opened by processes and produces output that can be parsed by other programs?

Correct Answer: lsof
Section: 205.2 Advanced Network Configuration and Troubleshooting
Explanation

Explanation/Reference:
From the man pages:

lsof - list open files

QUESTION 48

Please enter the complete path to the main configuration file for syslogd, which logs system messages on Linux systems?

Correct Answer: /etc/syslog.conf
Section: 205.3 Troubleshooting network issues
Explanation

Explanation/Reference:

QUESTION 49

With which command can the reserved blocks count for a file-system be seen? (Please enter only the command without the path or any parameters or options)

Correct Answer: tune2fs
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:

QUESTION 50

What command is used to create a file-system to be burned to a CD? (Please enter the command without the path or any options or parameters)

Correct Answer: mkisofs

Section: 203.3 Creating and configuring filesystem options

Explanation

Explanation/Reference:

From the man pages:

mkisofs - create an hybrid ISO9660/JOLIET/HFS filesystem with optional Rock Ridge attributes.

Was replaced by genisoimage

QUESTION 51

The administrator notices that a 10GB ext2 file-system used only for data storage has approximately 540MB reserved for root. Which command can be used to change the file-system parameters to make all of the partition available to users, WITHOUT losing data? Please enter only the command without path, options or parameters.

Correct Answer: tune2fs

Section: 203.3 Creating and configuring filesystem options

Explanation

Explanation/Reference:

QUESTION 52

What directive can be used in named.conf to restrict zone transfers to the 192.168.1.0/24 network?

Correct Answer: allow-transfer { 192.168.1.0/24; };

Section: 207.1 Basic DNS server configuration

Explanation

Explanation/Reference:

QUESTION 53

This program has 3 operating modes: copy-in mode, copy-out mode, and copy-pass mode, and is used to copy files into or out of archives. What program is this? (Please provide the command name only, with no arguments or path.)

Correct Answer: cpio

Section: 206.2 Backup operations

Explanation

Explanation/Reference:

QUESTION 54

Running tcpdump -nli eth1 'icmp' shows the following output:

```
11:56:35.599063 IP 192.168.123.5 > 194.25.2.129: icmp 64: echo request seq 1  
11:56:35.670910 IP 194.25.2.129 > 192.168.123.5: icmp 64: echo reply seq 1
```

What command was used on the host 192.168.123.5, to generate this output?

Correct Answer: ping

Section: 205.3 Troubleshooting network issues

Explanation

Explanation/Reference:

QUESTION 55

Which port must be open on a firewall, to allow a DNS server to receive queries? (Enter only the port number).

Correct Answer: 53

Section: 205.3 Troubleshooting network issues

Explanation

Explanation/Reference:

QUESTION 56

Which type of DNS record defines which server(s) email for a domain should be sent to?

Correct Answer: MX

Section: 207.1 Basic DNS server configuration

Explanation

Explanation/Reference:

QUESTION 57

What is the location of the main udev configuration file? (Specify the full path and filename)

Correct Answer: /etc/udev/udev.conf

Section: 203.4 udev Device Management

Explanation

Explanation/Reference:

From the man pages:

udev - Linux dynamic device management

udev expects its main configuration file at /etc/udev/udev.conf.

QUESTION 58

After calling `./configure` with its appropriate parameters and no errors, what would be the next command to run?

Correct Answer: make all -or- make

Section: 206.1 Make and install programs from source

Explanation

Explanation/Reference:

configure prepares the makefile for the system it is used for. run the make or make all command to start the building process.

QUESTION 59

Please enter, separated with a space but without paths, the TWO archive programs needed in addition to gzip, to extract files from a .deb file without using the Debian package manager.

Correct Answer: ar tar
Section: (none)
Explanation

Explanation/Reference:

Exam E

QUESTION 1

When building an RPM package, which rpmbuild option is used to unpack sources and apply patches before proceeding with the next steps?

- A. -ba
- B. -bb
- C. -be
- D. -bs
- E. -bp

Correct Answer: E

Section: (none)

Explanation

Explanation/Reference:

QUESTION 2

A system has one hard disk, configured as master and connected to the primary IDE controller, and one CD writer, configured as slave and connected to the secondary IDE controller. If the system is correctly configured, which device is used to represent the CD writer?

- A. /dev/scd0
- B. /dev/hdd
- C. /dev/hdb
- D. /dev/sr1
- E. /dev/scd1

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

IDE Device Recognition

Primary Master /dev/hda

Primary Slave /dev/hdb

Secondary Master /dev/hdc

Secondary Slave /dev/hdd

According to question CD-ROM is connected as Secondary Slave so device named should be /dev/hdd.

QUESTION 3

A new PCMCIA network card is not functioning correctly. To troubleshoot this, the socket information should be checked. How can this be done? (Choose two.)

- A. cardctl info
- B. cardctl -s
- C. cardmgr -s
- D. cat /var/lib/pcmcia/stab
- E. cat /proc/pcmcia

Correct Answer: BD

Section: (none)

Explanation

Explanation/Reference:

QUESTION 4

Which command displays information about connected USB devices?

- A. `cat /proc/usbdevices`
- B. `cat /proc/usb/devices`
- C. `cat /proc/bus/usb/devices`
- D. `cat /proc/usbbus/devices`
- E. `cat /proc/hotplug/usb`

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

QUESTION 5

What command is used to re-add a partition to a software RAID setup?

- A. `raidhotadd`
- B. `raidadd`
- C. `addraid`
- D. `raidaddhot`

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

: `raidhotadd` command is used to add the new disk on RAID array or as a RAID spare disk.

Example: `raidhotadd /dev/hda13 /dev/md0`

QUESTION 6

Which TWO of the following sentences are true about this package?

Consider the following excerpt from an RPM spec file:

Summary: Complete Web authoring system for linux

Name: nvu

Version: 0.50

Release: 5

Source0: `%{name}-%{version}.tar.bz2`

Patch0: `nvu-freetype2.patch.bz2`

Patch1: `nvu-mozilla-1.1-system-myspell-dicts.patch.bz2` Patch2: `nvu-mozilla-1.7-spellcheck-full-langname.patch.bz2` License: MPL/LGPL/GPL

Group: Development/Other

Url: `http://www.nvu.com`

BuildRoot: `%{_tmppath}/%{name}-buildroot`

BuildRequires: `libjpeg-devel libpng-devel libIDL-devel` BuildRequires: `zip tcsh`

BuildRequires: `gtk+2-devel >= 2.2.0`

Which TWO of the following sentences are true about this package?

- A. Package gtk+2-devel version 2.2.0 or higher needs to be present in the system before this nvu package may be installed.
- B. The file nvu-freetype2.patch.bz2 must be present in the SOURCES/PATCHES directory.
- C. The macro %_tmppath must be defined in system-wide or in local configuration files.
- D. The nvu-0.50.tar.bz2 will be unpacked into %{_tmppath}/%{name}-buildroot.
- E. The nvu-0.50.tar.bz2 file contains pristine sources for nvu.

Correct Answer: AE

Section: (none)

Explanation

Explanation/Reference:

QUESTION 7

To check winbind functionality, you have try:

```
wbinfo -u  
getent passwd
```

What is the next action?

- A. The contents of smb.conf should be verified
- B. The contents of resolv.conf should be verified
- C. The contents of nsswitch.conf should be verified
- D. The contents of winbind.conf should be verified
- E. The contents of lmhosts should be verified

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

QUESTION 8

Which TWO of the following wireless tools can be used to check the wireless network link quality?

- A. iwconfig
- B. iwlink
- C. iwscan
- D. iwifi
- E. iwspy

Correct Answer: AE

Section: (none)

Explanation

Explanation/Reference:

QUESTION 9

What command is used to permanently set the options in the kernel when making a boot disk?

- A. blockdev
- B. kconfig
- C. lilo
- D. rdev
- E. dd

Correct Answer: D

Section: (none)

Explanation

Explanation/Reference:

QUESTION 10

What command can be used to install a Perl module ('\$module') from the CPAN archive?

- A. perl -MCPAN -e "install \$module"
- B. perl -MCPAN -install \$module
- C. perl -i \$module
- D. perl -cpan -e "make \$module"
- E. perl -cpan -i \$module

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:
man perlmod

QUESTION 11

The server has two network cards. The driver for the first card is the module 8139too and the driver for the second card is the module ne2k-pci. How is it possible to ensure that the card using the 8139too driver is detected before the card using the ne2k-pci driver?

- A. modprobe 8139too dev=eth0; modprobe ne2k-pci dev=eth1
- B. install mod 8139too; install mod ne2k-pci
- C. modprobe eth0=8139too, eth1=ne2k-pci
- D. ifconfig modadd eth0=8139too, eth1=ne2k-pci
- E. modprobe 8139too; modprobe ne2k-pci

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

: At System booting time, tries to bring up the Ethernet devices, first try to eth0 and then eth1. We can set the module to specific device using modprobe command modprobe 8139too dev=eth0 than means 8139too alias to eth0 and system first try to bring up the eth0 device.

Exam F

QUESTION 1

How to mount a USB flash drive for recovery ?

Correct Answer: mount /dev/sdb1 /mnt

Section: (none)

Explanation

Explanation/Reference:

QUESTION 2

How to test a software before compiling with make ?

Correct Answer: make test

Section: (none)

Explanation

Explanation/Reference:

QUESTION 3

Choose two backup programmes run under linux

- A. BackupPc
- B. Shadow
- C. Amanda
- D. TronBackup

Correct Answer: AC

Section: (none)

Explanation

Explanation/Reference:

Correct answers A&C

QUESTION 4

Why backup with Dump are not good for admins

- A. because the files can change during the Backup and then there is no consistency
- B.
- C.
- D.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

I saw the question on the exam study why dump is not good because then answers where too long to remember them

QUESTION 5

How to erase the disk /dev/sda3

- A. dd /dev/sda3
- B. dd of=/dev/zero if=/dev/sda3
- C. dd of=/dev/sda3 if=delete
- D. dd</dev/zero >/dev/sda3

Correct Answer: D

Section: (none)

Explanation

Explanation/Reference:

People say on the comments the answer D is correct I wonder why it's not B. Check this also.

QUESTION 6

How you can you jump on boot directly to grub shell

- A. e
- B. m
- C. o
- D. g

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

QUESTION 7

*What is means "0" in fstab on the last line ?

- A. Fsk counter is now 0
- B. on boot the Fs dont mount and dont check,
- C. on boot the fs would not be checked
- D. fsck would not run while booting

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Here I don't know the answer I put C but you ll see on exam that C and D could be both correct. So read carefully the question on the exam

QUESTION 8

What Network programm can make TCP actions ?

- A. curl
- B. netstat
- C. netcat
- D. traceroute

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Please check not sure

QUESTION 9

Command to remove ldap service on Debian (full command)

Correct Answer: update-rc.d ldap remove

Section: (none)

Explanation

Explanation/Reference:

QUESTION 10

What LD_LIBRARY_PATH's purpose ?

- A. directs ld to its system library director managing other system library
- B. list additional dir to search for libraries when running program
- C. list directories with manual o library
- D. to configure ld.so.conf

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

LD_LIBRARY_PATH is an environment variable that lists all the directories to search for libraries in before searching standard directories.

QUESTION 11

Put the system at level 3 by default

id:3:_____:

Correct Answer: initdefault

Section: (none)

Explanation

Explanation/Reference:

QUESTION 12

Command to check virtual memory

- A. free
- B. menshow
- C. vmstat
- D. top

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

QUESTION 13

USB flash device writable for user fred

/dev/sda1 (mnt/usbflash vfat default,users,_____)=fred umask=022, 0 , 0

Correct Answer: uid

Section: (none)

Explanation

Explanation/Reference:

Please check !!!! I'am not sure at all this is the correct answer

QUESTION 14

how to load modules ? (choose 2)

- A. insmod
- B. modprobe
- C. install modules
- D. addmod

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

QUESTION 15

which RAID level value must used with mdadm create array mirrored stripper ?

- A. 4
- B. 10
- C. container
- D. mirro

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

QUESTION 16

Simulate failure in RAID

- A. mdam --remove /dev/md0 /dev/sda1
- B. mdam --zero-superblock /dev/md0 /dev/sda1
- C. mdam --force-fail /dev/md0 /dev/sda1
- D. mdam -fail /dev/md0 /dev/sda1

Correct Answer: D

Section: (none)

Explanation

Explanation/Reference:

QUESTION 17

command to mount floppy (non-root)

- A. mount /dev/fd0
- B. fill /etc/fstab
- C. remount /dev/hdd
- D. mount /dev/df0

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

QUESTION 18

Doing a file system check how we can answer to all question "yes".

Correct Answer: fsck -y

Section: (none)

Explanation

Explanation/Reference:

QUESTION 19

With what programmes can you find out the IP and MAC of your network neighbors (choose Two):

- A. netstat
- B. arp
- C. traceoute
- D. ipconfig

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

QUESTION 20

Which command would you use to apply a diff file to an original?

- A. patch > diff-file
- B. patch < diff-file
- C. patch << diff-file
- D. cat diff-file >> kernel

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

patch takes a patch file patchfile containing a difference listing produced by the diff program and applies those differences to one or more original files, producing patched versions. Normally the patched versions are put in place of the originals. Running patch command by taking input from the diff-file

QUESTION 21

If the current directory is /root and the kernel source is located in /usr/src/linux, which of the following commands should be used to apply the patch /tmp/foopatch?

- A. cat /tmp/foopatch | patch -p0
- B. cd /usr/src/linux; patch -p1 < /tmp/foopatch
- C. cd /usr/src/linux; patch -p1 > /tmp/foopatch
- D. cd /usr/src/linux; cat /tmp/foopatch | patch -p0

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

QUESTION 22

which record in DNS should be present so that the application could use reverse DNS

Correct Answer: PTR

Section: (none)

Explanation

Explanation/Reference:

QUESTION 23

Folder location of runlevel 2 related files

Correct Answer: /etc/rc2.d

Section: (none)

Explanation

Explanation/Reference:

QUESTION 24

ls -l file.txt --> 400Kb

du -sh file.txt --> 4Kb

is the same file , why the result are different?

- A. file contain blocks of zero bits
- B.
- C.
- D.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference: