Linux Disk Management and Storage Management MCQs

Disk Partitioning

1. **Which command is used to display the partition table of a disk?**
   a) `mkfs`
   b) `fdisk -l`
   c) `lsblk`
   d) `parted`
   Answer: b) `fdisk -l`
   Explanation: The `fdisk -l` command lists the partition table of all disks connected to the system.
2. **What is the default partition type for Linux filesystems?**
   a) NTFS
   b) ext4
   c) FAT32
   d) swap
   Answer: b) ext4
   Explanation: Ext4 is the default filesystem type for most modern Linux distributions.
3. **Which tool can be used for creating and resizing partitions interactively?**
   a) `mkfs`
   b) `gparted`
   c) `dd`
   d) `lsblk`
   Answer: b) `gparted`
   Explanation: `gparted` is a graphical tool for creating, resizing, and managing disk partitions.
4. **Which of the following commands initializes a GPT partition table?**
   a) `fdisk /dev/sdX`
   b) `parted /dev/sdX mklabel gpt`
   c) `mkfs -t gpt /dev/sdX`
   d) `lsblk --gpt /dev/sdX`
   Answer: b) `parted /dev/sdX mklabel gpt`
   Explanation: The `parted` command with the `mklabel gpt` option creates a GPT partition table.
5. **What is the purpose of the `mkfs` command?**
   a) To mount a filesystem
   b) To create a filesystem
   c) To list filesystems
   d) To check disk health
   Answer: b) To create a filesystem
   Explanation: `mkfs` is used to format a partition with a specific filesystem type, such as ext4 or xfs.

6. **Which command displays information about all mounted filesystems?**
   a) `mount`
   b) `df`
   c) `blkid`
   d) `lsblk`
   Answer: a) `mount`
   Explanation: The `mount` command lists all mounted filesystems along with their mount points.
7. **What does the `partprobe` command do?**
   a) Creates a new partition
   b) Rescans the partition table
   c) Formats a partition
   d) Mounts a partition
   Answer: b) Rescans the partition table
   Explanation: `partprobe` forces the kernel to re-read the partition table without rebooting the system.
8. **Which tool is recommended for creating partitions on larger disks?**
   a) `fdisk`
   b) `parted`
   c) `mkfs`
   d) `lsblk`
   Answer: b) `parted`
   Explanation: `parted` is preferred for disks larger than 2TB, as `fdisk` has limitations with older partition table formats.
9. **What does the `/etc/fstab` file contain?**
   a) List of users
   b) Mount configuration for filesystems
   c) Network configuration
   d) Disk health status
   Answer: b) Mount configuration for filesystems
   Explanation: `/etc/fstab` defines how filesystems should be mounted during boot.
10. **How can you verify the UUID of a partition?**
    a) `lsblk -f`
    b) `df -h`
    c) `mkfs -u`
    d) `du -u`
    Answer: a) `lsblk -f`
    Explanation: The `lsblk -f` command lists block devices and their UUIDs.

Logical Volume Management (LVM)

11. **What is the first step to create an LVM?**
    a) Create a volume group
    b) Create a physical volume
    c) Create a logical volume

d) Format the disk
Answer: b) Create a physical volume
Explanation: The first step is to initialize the disk as a physical volume using `pvcreate`.

12. **Which command creates a volume group?**
    a) `vgextend`
    b) `vgcreate`
    c) `lvcreate`
    d) `pvcreate`
    Answer: b) `vgcreate`
    Explanation: `vgcreate` is used to create a volume group from physical volumes.
13. **How do you resize a logical volume?**
    a) `lvextend`
    b) `lvresize`
    c) `lvreduce`
    d) All of the above
    Answer: d) All of the above
    Explanation: You can resize logical volumes using `lvextend` (expand), `lvresize` (resize), or `lvreduce` (shrink).
14. **Which command displays detailed information about volume groups?**
    a) `vginfo`
    b) `vgdisplay`
    c) `lvdisplay`
    d) `pvdisplay`
    Answer: b) `vgdisplay`
    Explanation: `vgdisplay` shows detailed information about volume groups.
15. **What does the `lvremove` command do?**
    a) Removes a physical volume
    b) Removes a logical volume
    c) Removes a volume group
    d) Formats a logical volume
    Answer: b) Removes a logical volume
    Explanation: `lvremove` deletes a logical volume from a volume group.
16. **Which LVM feature allows dynamic resizing of volumes without downtime?**
    a) Stripping
    b) Mirroring
    c) Thin provisioning
    d) Snapshots
    Answer: c) Thin provisioning
    Explanation: Thin provisioning allows the allocation of storage dynamically as needed, enabling resizing without downtime.

NFS (Network File System)

17. **Which package needs to be installed to configure an NFS server on Linux?**
    a) `nfs-utils`
    b) `nfs-common`
    c) `samba`
    d) `rpcbind`
    Answer: a) `nfs-utils`
    Explanation: `nfs-utils` is required to set up and manage an NFS server.
18. **What is the purpose of the `/etc/exports` file?**
    a) To list all NFS shares
    b) To configure network mounts
    c) To define access permissions for NFS shares
    d) To list mounted NFS shares
    Answer: c) To define access permissions for NFS shares
    Explanation: The `/etc/exports` file specifies directories to be shared via NFS and their access permissions.
19. **Which command mounts an NFS share on a client system?**
    a) `mount -t nfs`
    b) `nfs-mount`
    c) `nfsmount`
    d) `mount-nfs`
    Answer: a) `mount -t nfs`
    Explanation: The `mount -t nfs` command mounts an NFS share on a client system.

20. Which command is used to check the free and used space of mounted filesystems?

a) `df`
b) `du`
c) `lsblk`
d) `fdisk`

Answer: a) `df`
Explanation: The `df` command reports the disk space usage and available space for all mounted filesystems. Use `df -h` for human-readable format.

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21. What is the primary configuration file for mounting filesystems during boot?

a) `/etc/mtab`
b) `/etc/fstab`
c) `/etc/mount.conf`
d) `/etc/boot.mounts`

Answer: b) `/etc/fstab`
Explanation: The `/etc/fstab` file contains information about filesystems that should be mounted at boot time, including device paths, mount points, and options.

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22. How do you create a new partition using the `fdisk` utility?

a) `fdisk -new /dev/sdX`
b) `fdisk /dev/sdX` followed by n
c) `create-part /dev/sdX`
d) `parted /dev/sdX --new`

Answer: b) `fdisk /dev/sdX` followed by n
Explanation: The `fdisk` utility is used to manage partitions. After selecting the disk (`/dev/sdX`), pressing n creates a new partition.

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23. Which command formats a partition with the ext4 filesystem?

a) `mkfs.ext4 /dev/sdX1`
b) `format.ext4 /dev/sdX1`
c) `mkpart -ext4 /dev/sdX1`
d) `fscreate.ext4 /dev/sdX1`

Answer: a) `mkfs.ext4 /dev/sdX1`
Explanation: The `mkfs.ext4` command formats the specified partition (`/dev/sdX1`) with the ext4 filesystem.

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24. Which command is used to scan and assemble a RAID array?

a) `raidscan`
b) `cat /proc/mdstat`
c) `mdadm --assemble --scan`
d) `lvm scan raid`

Answer: c) `mdadm --assemble --scan`
Explanation: The `mdadm --assemble --scan` command scans for RAID configurations and assembles the RAID array accordingly.

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25. How can you add a new physical volume to an existing volume group?

a) `pvextend /dev/sdX vg1`
b) `vgadd /dev/sdX vg1`
c) `vgextend vg1 /dev/sdX`
d) `lvextend vg1 /dev/sdX`

Answer: c) `vgextend vg1 /dev/sdX`
Explanation: The `vgextend` command is used to add a new physical volume to an existing volume group, increasing its storage capacity.

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26. What is the correct command to mount an NFS share temporarily?

a) `mount -t nfs <server_ip>:/share /mnt`
b) `nfs -mount <server_ip>:/share /mnt`
c) `nfs-client <server_ip>:/share /mnt`
d) `mount.nfs /mnt <server_ip>:/share`

Answer: a) `mount -t nfs <server_ip>:/share /mnt`
Explanation: The `mount` command with the `-t nfs` option mounts an NFS share temporarily. Replace `<server_ip>` with the server's IP address.

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27. Which command displays the UUID of a disk or partition?

a) `blkid /dev/sdX`
b) `lsblk --uuid /dev/sdX`
c) `find /dev/sdX uuid`
d) `uuidshow /dev/sdX`

Answer: a) `blkid /dev/sdX`
Explanation: The `blkid` command shows attributes of block devices, including the UUID (universally unique identifier).

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28. How do you synchronize files between local and remote systems?

a) `rsync -avz /local/path user@remote:/remote/path`
b) `scp /local/path user@remote:/remote/path`
c) `sync --remote /local/path /remote/path`
d) `dd if=/local/path of=remote:/remote/path`

Answer: a) `rsync -avz /local/path user@remote:/remote/path`
Explanation: The `rsync` command efficiently synchronizes files between local and remote systems, preserving file permissions and timestamps.

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29. What is the purpose of the `vgdisplay` command?

a) To create a volume group
b) To display details about volume groups
c) To delete a volume group
d) To format a volume group

Answer: b) To display details about volume groups
Explanation: The `vgdisplay` command provides information about existing volume groups, including size, physical volumes, and usage.

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30. Which command tests the connection to an iSCSI target?

a) `ping <target_ip>`
b) `iscsiadm -m discovery -t sendtargets -p <target_ip>`
c) `iscsiadm -m node -T <target_name> --login`
d) `iscsiadm -m session`

Answer: b) `iscsiadm -m discovery -t sendtargets -p <target_ip>`
Explanation: This command sends a discovery request to the iSCSI target, verifying its availability.

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31. How can you reduce the size of a logical volume?

a) `lvreduce -L -10G /dev/vg1/lv1`
b) `lvresize -r -10G /dev/vg1/lv1`
c) `lvreduce -L 10G /dev/vg1/lv1`
d) `lvreduce -r -L -10G /dev/vg1/lv1`

Answer: a) `lvreduce -L -10G /dev/vg1/lv1`
Explanation: The `lvreduce` command decreases the size of a logical volume by the specified amount. Be sure to shrink the filesystem beforehand.

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32. Which file tracks mounted NFS shares?

a) `/proc/mounts`
b) `/etc/mtab`
c) `/var/log/mounts`
d) `/etc/nfsmount`

Answer: b) `/etc/mtab`
Explanation: The `/etc/mtab` file contains information about all mounted filesystems, including NFS shares.

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33. What is the first step in creating an LVM setup?

a) Create a volume group
b) Create a logical volume
c) Create physical volumes
d) Mount the filesystem

Answer: c) Create physical volumes
Explanation: Physical volumes are the foundation of LVM, created using `pvcreate`. These are then added to volume groups.

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34. Which command enables auto-mounting of an NFS share at boot?

a) Add entry to `/etc/mtab`
b) Add entry to `/etc/fstab`
c) `systemctl enable nfs.mount`
d) Add entry to `/etc/autofs`

Answer: b) Add entry to `/etc/fstab`
Explanation: Adding an NFS share to `/etc/fstab` ensures it is mounted automatically during boot.

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35. How can you delete a RAID array?

a) `mdadm --stop /dev/md0 && mdadm --remove /dev/md0`
b) `raid-delete /dev/md0`
c) `mdadm --remove-all /dev/md0`
d) `stop-raid /dev/md0`

Answer: a) `mdadm --stop /dev/md0 && mdadm --remove /dev/md0`
Explanation: Stopping the RAID array (`mdadm --stop`) and then removing it (`mdadm --remove`) completely deletes the RAID configuration.

36. What is the primary purpose of swap space in Linux?

a) To store logs
b) To extend the physical memory (RAM)
c) To back up the filesystem
d) To optimize CPU utilization

Answer: b) To extend the physical memory (RAM)
Explanation: Swap space is used when the system's physical RAM is full. It allows the kernel to move inactive memory pages to disk, freeing up RAM for active processes.

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37. Which command can be used to view current swap usage?

a) `df -h`
b) `free -h`
c) `lsblk -s`
d) `swapshow`

Answer: b) `free -h`
Explanation: The `free -h` command displays memory and swap usage in a human-readable format, showing both total and used swap space.

38. Which file contains swap entries that are activated at boot?

a) `/etc/mtab`
b) `/etc/fstab`
c) `/etc/swap.conf`
d) `/proc/swap`

Answer: b) `/etc/fstab`
Explanation: The `/etc/fstab` file is used to define swap partitions or files that should be enabled automatically during system boot.

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39. How can you deactivate a swap file or partition temporarily?

a) `swapoff /swapfile`
b) `rm /swapfile`
c) `swapon -d /swapfile`
d) `disable /swapfile`

Answer: a) `swapoff /swapfile`
Explanation: The `swapoff` command deactivates a swap file or partition temporarily. This is useful if you want to resize or remove the swap space.

40. Which option in the `rsync` command is used to synchronize files recursively, preserving symbolic links, permissions, and timestamps?

a) `-z`
b) `-avz`
c) `--dry-run`
d) `--progress`

Answer: b) `-avz`
Explanation:

- `-a` stands for "archive mode," which enables recursive file synchronization while preserving symbolic links, file permissions, timestamps, and other attributes.
- `-v` enables verbose output, showing details of the files being synced.
- `-z` compresses data during transfer, optimizing bandwidth usage.
  Hence, `-avz` is a commonly used combination for efficient and detailed file synchronization.

41. Which RAID level provides both mirroring and striping?

a) RAID 0
b) RAID 1
c) RAID 5
d) RAID 10

Answer: d) RAID 10
Explanation: RAID 10 combines the features of RAID 1 (mirroring) and RAID 0 (striping), providing both high performance and redundancy.

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42. Which command is used to display detailed RAID information?

a) `cat /proc/mdstat`
b) `mdadm --detail /dev/md0`
c) `raidctl --status`
d) `lsblk -r`

Answer: b) `mdadm --detail /dev/md0`
Explanation: The `mdadm --detail` command provides detailed information about a specific RAID array, such as its state, level, and devices used.

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43. What is the purpose of the `resize2fs` command?

a) To resize a volume group
b) To resize a logical volume
c) To resize an ext2/ext3/ext4 filesystem
d) To create a new filesystem

Answer: c) To resize an ext2/ext3/ext4 filesystem
Explanation: The `resize2fs` command is used to grow or shrink an ext2, ext3, or ext4 filesystem after resizing the underlying partition or logical volume.

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44. Which command checks the integrity of an ext4 filesystem?

a) `fsck.ext4 /dev/sdX1`
b) `e2fsck /dev/sdX1`
c) `checkfs.ext4 /dev/sdX1`
d) `chkdsk /dev/sdX1`

Answer: b) `e2fsck /dev/sdX1`
Explanation: The `e2fsck` command is used to check and optionally repair ext2, ext3, and ext4 filesystems.

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45. Which command is used to create an iSCSI target on a server?

a) `targetcli`
b) `iscsiadm`

c) `scsiadm`
d) `create-iscsi-target`

Answer: a) `targetcli`
Explanation: The `targetcli` tool is used to configure iSCSI targets on a Linux server. It allows you to define storage backends and set up iSCSI LUNs.

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46. How can you persistently enable a logical volume at boot?

a) By adding it to `/etc/fstab`
b) By enabling it in `/etc/lvm.conf`
c) By running `vgchange -a y`
d) By adding it to `/boot/initrd`

Answer: a) By adding it to `/etc/fstab`
Explanation: Adding the logical volume's mount point to `/etc/fstab` ensures that it is mounted automatically during boot.

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47. Which option in the `mount` command ensures a partition is mounted read-only?

a) `-r`
b) `-o readonly`
c) `-o ro`
d) `--read-only`

Answer: c) `-o ro`
Explanation: The `-o ro` option mounts the partition in read-only mode, preventing any write operations on it.

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48. What does the `tune2fs` command do?

a) Formats ext4 filesystems
b) Tunes performance of ext2/ext3/ext4 filesystems
c) Checks and repairs filesystem errors
d) Extends logical volumes

Answer: b) Tunes performance of ext2/ext3/ext4 filesystems
Explanation: The `tune2fs` command adjusts various parameters of ext2, ext3, and ext4 filesystems, such as enabling/disabling journaling or changing reserved block settings.

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49. Which command adds a storage volume to an NFS export list?

a) `exportfs -a`
b) `nfs-export /share`
c) `add-export /etc/exports`
d) `nfsmount`

Answer: a) `exportfs -a`
Explanation: The `exportfs -a` command re-exports all NFS shares defined in the `/etc/exports` file.

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50. How do you verify the active swap spaces on your system?

a) `cat /proc/meminfo`
b) `free -m`
c) `swapon --show`
d) `lsblk -s`

Answer: c) `swapon --show`
Explanation: The `swapon --show` command lists all active swap spaces, including their size and usage.

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51. Which of the following is NOT a valid LVM state?

a) Active
b) Inactive
c) Suspended
d) Offline

Answer: d) Offline
Explanation: In LVM, logical volumes can be in active, inactive, or suspended states, but "offline" is not a valid state.

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52. What is the function of the `lvreduce` command?

a) To resize the filesystem
b) To reduce the size of a logical volume
c) To extend the size of a logical volume
d) To create a new logical volume

Answer: b) To reduce the size of a logical volume
Explanation: The `lvreduce` command is used to decrease the size of an existing logical volume. Care must be taken to resize the filesystem before using this command.

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53. Which tool is used to manage persistent networked storage in Linux?

a) `iscsiadm`
b) `swapon`
c) `lvmadm`
d) `nfsadm`

Answer: a) `iscsiadm`
Explanation: The `iscsiadm` command is used to discover, log in, and manage iSCSI storage in Linux.

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54. Which command shows mounted filesystems along with their type and mount options?

a) `df -T`
b) `lsblk -f`
c) `cat /etc/mtab`
d) `mount | column -t`

Answer: d) `mount | column -t`
Explanation: The `mount | column -t` command formats the output of `mount` to display mounted filesystems, their types, and mount options in a tabular format.

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55. How can you remove an active swap partition?

a) `swapoff /dev/sdX2 && fdisk /dev/sdX2`
b) `swapdel /dev/sdX2`
c) `mkswap --delete /dev/sdX2`
d) `dd if=/dev/zero of=/dev/sdX2`

Answer: a) `swapoff /dev/sdX2 && fdisk /dev/sdX2`
Explanation: First, deactivate the swap partition with `swapoff`, then use `fdisk` or another partitioning tool to delete or reconfigure the partition.