Module : 7 – Linux server -deployment of network services

1) What is the different of the LILO and GRUB ?

ANSWER:

LILO (LInux LOader) and GRUB (GRand Unified Bootloader) are both bootloaders used to load Linux and other operating systems during the boot process, but they differ in several ways:

1. Flexibility and Support for Multiple Operating Systems:

- LILO: LILO is simpler and primarily supports booting Linux. It doesn't natively support booting other operating systems like Windows, although it can be configured for dual-boot setups.
- GRUB: GRUB is more flexible and supports multiple operating systems, including Linux, Windows, BSD, and others. It can load complex configurations and has a richer feature set for dual-booting.

2. Configuration Files:

- LILO: LILO uses a configuration file (/etc/lilo.conf), which must be reloaded or updated every time a change is made to the boot setup. After modifying the configuration, you need to run lilo to apply changes.
- **GRUB: GRUB uses a configuration file (usually /boot/grub/grub.cfg for GRUB2). It is more dynamic, allowing changes to be made directly from the GRUB menu or through configuration files.**

3. Support for UEFI (Unified Extensible Firmware Interface):

- LILO: LILO does not support UEFI, as it was designed for BIOS-based systems.
- GRUB: GRUB (especially GRUB2) supports UEFI, which is necessary for modern systems that use UEFI firmware instead of BIOS**.**

4. Interactive Boot Menu:

- LILO: LILO lacks an interactive boot menu. It simply displays a list of available operating systems, and users must select one, but there is no capability for runtime modifications or advanced menu features.
- GRUB: GRUB provides an interactive boot menu and allows users to edit boot parameters, choose from multiple operating systems, or boot into recovery or single-user modes. It also supports graphical themes and customization**.**

5. Error Handling:

- LILO: LILO is less user-friendly when it comes to error handling. If there is a problem with the boot process, it may show a cryptic error message, and you may have to troubleshoot manually.
- **GRUB: GRUB has better error handling and offers more detailed error messages. It can also provide a rescue mode to help fix boot issues.**

6. Installation and Update:

- LILO: LILO is a simple bootloader, and its installation requires writing the bootloader to the MBR (Master Boot Record) using the lilo command. Any changes to the configuration require running lilo again.
- GRUB: GRUB is more advanced and can be installed in multiple places (e.g., MBR, EFI system partition, or root partition). GRUB2 can automatically detect and configure multiple operating systems without requiring manual updates as often.

7. Support for Disk and Filesystem Types:

- LILO: LILO has limited support for filesystems and disk types.
- GRUB: GRUB supports many different filesystems (e.g., ext4, Btrfs, NTFS) and can read from various partition schemes (MBR, GPT).

8. Popularity and Use:

- LILO: LILO has been largely replaced by GRUB in most modern Linux distributions. It's considered outdated and less commonly used today.
- GRUB: GRUB is the default bootloader for most modern Linux distributions due to its flexibility, support for UEFI, and ease of configuration.

2) How to recover a linux password?

ANSWER:

Method 1: Resetting Password via GRUB (Single-User Mode)

1. **Reboot the System: Start or restart your computer.**
2. **Access the GRUB Menu:**
    - **As your system boots, press the Shift key (on BIOS systems) or Esc key (on UEFI systems) to bring up the GRUB menu. This step may vary depending on your distribution.**
3. **Edit the GRUB Boot Parameters:**
    - **Once the GRUB menu appears, use the arrow keys to highlight the boot entry you want to edit (usually the first entry).**
    - **Press e to edit the boot parameters.**
4. **Modify the Boot Parameters:**
    - **Find the line that starts with linux or linux16 (this line defines the kernel parameters).**
    - **At the end of this line, append single or init=/bin/bash. This will boot the system into single-user mode or directly into a shell.**
    - **It should look something like this:**

bash

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linux /boot/vmlinuz-... ro quiet splash single

or

bash

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linux /boot/vmlinuz-... ro quiet splash init=/bin/bash

5. **Boot into Single-User Mode:**
    - **Press Ctrl + X or F10 to boot with the modified parameters.**
6. **Reset the Password:**
    - **Once the system boots into single-user mode or a root shell, you should have root access without needing a password.**
    - **To reset the password, type:**

bash

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passwd username

Replace username with the actual username for which you want to reset the password.

7. **Reboot the System:**
    - **After resetting the password, type reboot to restart the system.**
    - **You can now log in using the new password.**

Method 2: Using a Live CD/USB (if Single-User Mode Doesn't Work)

If you're unable to access the system via GRUB or if single-user mode doesn't work, you can use a live Linux distribution (such as Ubuntu or Kali Linux) to reset the password:

1. **Boot from a Live CD/USB:**
    - **Insert a bootable Linux USB or CD into your system and boot from it.**
    - **Choose the option to "Try Ubuntu" or "Try Linux."**
2. **Mount the Root Partition:**
    - **Once the live environment has booted, open a terminal.**
    - **Find the root partition by running:**

bash

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sudo fdisk -l

    - **Mount the root partition (replace /dev/sdXn with your actual root partition):**

bash

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sudo mount /dev/sdXn /mnt

3. **Change the Root Directory:**

- **Use the following command to change the root directory to the mounted partition:**

bash

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sudo chroot /mnt

4. **Reset the Password:**
   - **Now, you can change the password for the user:**

bash

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passwd username

5. **Exit and Reboot:**
   - **Exit the chroot environment:**

bash

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exit

   - **Unmount the partition:**

bash

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sudo umount /mnt

   - **Reboot the system:**

bash

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sudo reboot

3) Which command is used to format partition in linux -OS?

ANSWER:

- **fdisk (for MBR partitioning)**
- **parted (for both MBR and GPT partitioning)**
- **gparted (Graphical Tool)**
- **lsblk (List Block Devices)**
- **blkid (Identify Block Devices)**

4) How to mount partition In linux?

ANSWER:

1. **Create a mount point:**

bash

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sudo mkdir /mnt/mydrive

2. **Mount the partition:**

bash
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sudo mount /dev/sdXn /mnt/mydrive
Replace /dev/sdXn with your actual partition name (e.g., /dev/sda1).

3. **Check if it's mounted:**
   bash
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   df -h

5) What is use of a mdadm command ??
   ANSWER:
   Create, assemble, monitor, and manage RAID (Redundant Array of Independent Disks) devices.

6) How to configure secure apache web server in linux?
   ANSWER:
   Install Apache
   sudo apt update
   sudo apt install apache2
   On RHEL/CentOS/Fedora:
   sudo yum install httpd # CentOS/RHEL 7
   sudo dnf install httpd # Fedora or RHEL 8+
   Start and Enable Apache
   sudo systemctl start apache2 # Debian/Ubuntu
   sudo systemctl start httpd # RHEL/Fedora

   sudo systemctl enable apache2 # Enable on boot
   sudo systemctl enable httpd

   Check Apache Status
   sudo systemctl status apache2 # Ubuntu/Debian
   sudo systemctl status httpd # RHEL/Fedora
   http://localhost
   Or use your server IP:
   http://<your-server-ip>
   Configure a Website (Virtual Host)
   sudo mkdir -p /var/www/mywebsite
   echo "<h1>Hello from Apache</h1>" | sudo tee /var/www/mywebsite/index.html

sudo nano /etc/apache2/sites-available/mywebsite.conf

```
<VirtualHost *:80>
    ServerAdmin webmaster@localhost
    DocumentRoot /var/www/mywebsite
    ServerName mywebsite.local
    ErrorLog ${APACHE_LOG_DIR}/error.log
    CustomLog ${APACHE_LOG_DIR}/access.log combined
</VirtualHost>
```