INSTALLING ARCH LINUX FROM SCRATCH

1. INTRODUCTION

In This report, we will document the process of installing Arch Linux from scratch. We will also summarize our findings from that series of processes.

2. THE PROCESS THAT I MADE

A. installing preparation

After downloading the ISO file from the download page, we set up the keyboard layout and connected to the Internet.

After that, we set up what is called a partition. A partition is a division of a physical disk into logical parts that allow for the creation of multiple file systems and the storage of different data. When installing Arch Linux, at least two partitions are usually required. The first contains the root file system for the boot loader, kernel, system files, etc. The second contains the home file system for user data, applications, etc.

Following picture shows the partition setting.

```
[root@archboot /]# fdisk /dev/vda

Welcome to fdisk (util-linux 2.38.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Device does not contain a recognized partition table.
Created a new DOS disklabel with disk identifier 0xfe575c28.

Command (m for help): g
Created a new GPT disklabel (GUID: 35F9BA71-201E-6849-8F08-2E405624332B).

Command (m for help): n
Partition number (1-128, default 1):
First sector (2048-134217694, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-134217694, default 134215679): +500M

Created a new partition 1 of type 'Linux filesystem' and of size 500 MiB.

Command (m for help): t
Selected partition 1
Partition type or alias (type L to list all): 1
Changed type of partition 'Linux filesystem' to 'EFI System'.

Command (m for help): n
Partition number (2-128, default 2):
First sector (1026048-134217694, default 1026048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (1026048-134217694, default 134215679): +500M
```

Following picture shows the partition format.

```
[root@archboot /]# mkfs.ext4 /dev/vda3
mke2fs 1.47.0 (5-Feb-2023)
Discarding device blocks: done
Creating filesystem with 16520704 4k blocks and 4136960 inodes
Filesystem UUID: 5874fcfa-9142-4548-977b-718732c10848
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
        4096000, 7962624, 11239424

Allocating group tables: done
Writing inode tables: done
Creating journal (65536 blocks): done
Writing superblocks and filesystem accounting information: done

[root@archboot /]# mkswap /dev/vda2
Setting up swapspace version 1, size = 500 MiB (524283904 bytes)
no label, UUID=dcdef8c4-7b2f-485c-8629-c9e4a18cfa5f
[root@archboot /]#
[root@archboot /]#
[root@archboot /]# mkfs.fat -F 32 /dev/vda1
mkfs.fat 4.2 (2021-01-31)
[root@archboot /]# _
```

Following picture shows mounting the file systems

```
[root@archboot /]# mount /dev/vda3 /mnt
[root@archboot /]#
[root@archboot /]#
[root@archboot /]# mount --mkdir /dev/vda1 /mnt/boot
[root@archboot /]#
[root@archboot /]#
[root@archboot /]# swapon /dev/vda2
[root@archboot /]# _
```

B. Installing

We installed the required packages using the pacstrap(8) script. In addition to the base package, we will need to install other packages as appropriate.

Following picture shows installing packages.

```
[root@archboot /]# pacstrap -K /mnt base linux linux-firmware
==> Creating install root at /mnt
gpg: /mnt/etc/pacman.d/gnupg/trustdb.gpg: trustdb created
gpg: no ultimately trusted keys found
gpg: starting migration from earlier GnuPG versions
gpg: porting secret keys from '/mnt/etc/pacman.d/gnupg/secring.gpg' to gpg-agent
gpg: migration succeeded
==> Generating pacman master key. This may take some time.
gpg: Generating pacman keyring master key...
gpg: directory '/mnt/etc/pacman.d/gnupg/openpgp-revocs.d' created
gpg: revocation certificate stored as '/mnt/etc/pacman.d/gnupg/openpgp-revocs.d/D351C347574D2FE38840
24BEB352E46DE6DC448C.rev'
gpg: Done
==> Updating trust database...
gpg: marginals needed: 3  completes needed: 1  trust model: pgp
gpg: depth: 0  valid:   1  signed:   0  trust: 0-, 0q, 0n, 0m, 0f, 1u
```

C. System configuration

After installation, we configured the system. First, we generated the fstab file. After that, we changed the root and set the time zone, region, password and so on.

```
[root@archboot /]# genfstab -U /mnt >> /mnt/etc/fstab
[root@archboot /]#
[root@archboot /]#
[root@archboot /]# arch-chroot /mnt
[root@archboot /]#
[root@archboot /]#
```

3. WHAT I LEARNED

In this assignment, the process that we should focus on is "partitioning".

I found that the reason why we did partitioning when installing Arch Linux is that multiple operating systems and data can be placed on the same disk by dividing the disk into logical compartments.