Arch Linux installation guide

Introduction

My Notes on Installing Arch Linux

Download the ISO

First, download the ISO here https://www.archlinux.org/download/ and burn to a drive.

Inital setup

Check if the system is under UEFI:

```
ls /sys/firmware/efi/efivars
```

Enable NTP and set timezone

```
timedatectl set-ntp true
```

Disk management

- https://wiki.archlinux.org/index.php/Partitioning
- https://wiki.archlinux.org/index.php/EFI_system_partition

```
fdisk /dev/sda
```

UEFI/GPT:

Partition	Space	Type
/dev/sda1	512M	EFI System
/dev/sda2	xG	Linux Filesystem

Partition	Space	Type
/dev/sda3	xG	Linux swap
/dev/sda4	xG	Home Partition

BIOS/MBR:

Partition	Space	Type
/dev/sda1	xG	Linux Filesystem
/dev/sda2	xG	Linux swap
/dev/sda3	xG	Home Partition

File systems

`/` partition:

```
mkfs.ext4 /dev/sda2
mount /dev/sda2 /mnt
```

`/boot` partition: (UEFI/GPT)

```
mkfs.fat -F32 /dev/sda1
mkdir /mnt/boot/EFI
mount /dev/sda1 /mnt/boot/EFI
```

`swap` partition:

```
mkswap /dev/sda3
swapon /dev/sda3
```

`home` partition:

```
mkfs.ext4 /dev/sda4
mkdir /mnt/home
mount /dev/sda4 /mnt/home
```

Install system

Install the base packages:

```
pacstrap /mnt base base-devel linux linux-firmware
```

System setup

Generate fstab:

```
genfstab -U /mnt > /mnt/etc/fstab
```

Enter the chroot:

```
arch-chroot /mnt
```

Set timezone:

```
ln -sf /usr/share/zoneinfo/Region/City /etc/localtime
hwclock --systohc
```

Uncomment `en_US.UTF-8 UTF-8` in `/etc/locale.gen`.

Generate locales:

```
locale-gen
```

Set default locale:

```
echo "LANG=en_US.UTF-8" > /etc/locale.conf
```

Set hostname:

```
echo "$HOSTNAME" > /etc/hostname
```

/etc/hosts file:

```
echo "127.0.0.1 localhost
::1 localhost
127.0.1.1 $HOSTNAME.localdomain $HOSTNAME" >> /etc/hosts
```

Set root password:

```
passwd
```

Microcode

- https://wiki.archlinux.org/index.php/Microcode

Intel

```
pacman -S intel-ucode
```

AMD

```
pacman -S amd-ucode
```

Bootloader: GRUB

- https://wiki.archlinux.org/title/GRUB

UEFI/GPT

```
pacman -S grub efibootmgr grub
grub-install --target=x86_64-efi --bootloader-id=grub_uefi --recheck
```

```
grub-mkconfig -o /boot/grub/grub.cfg
```

BIOS/MBR

```
pacman -S grub dosfstools
grub-install /dev/sda
grub-mkconfig -o /boot/grub/grub.cfg
```

Networking: NetworkManager

- https://wiki.archlinux.org/index.php/NetworkManager

```
pacman -S networkmanager
systemctl enable NetworkManager
```

Reboot! (Optional)

```
exit
mount -R /mnt
reboot
```

User accounts

Add user:

```
useradd -m -g wheel -C 'Full name' -s /usr/bin/zsh username
```

To enable root access, create a file as /etc/doas.conf (I will be using doas instead of sudo)

```
permit :wheel # Permit users in wheel group to run commands as root
permit persist :wheel
permit nopass :wheel as root cmd pacman args -Syu # Allows users in
wheel to run pacman -Syu without password
```

Desktop Environment: Plasma KDE

- https://wiki.archlinux.org/index.php/KDE

```
pacman -S plasma
```

Display Manager: SDDM

- https://wiki.archlinux.org/index.php/SDDM

```
pacman -S sddm
systemctl enable --now sddm
```

AUR Helper: paru

- https://wiki.archlinux.org/index.php/AUR_helpers

I use `paru`

```
git clone https://aur.archlinux.org/paru.git
cd paru
makepkg -si
```

Installing Thermald

"thermald is a Linux daemon used to prevent the overheating of Intel CPUs. This daemon monitors temperature and applies compensation using available cooling methods."

```
doas pacman -S thermald
doas systemctl enable --now thermald.service
```

Enabling Hardware Acceleration

Enabling hardware acceleration is important it'll use your laptops GPU for stuff like video decoding or encoding instead of your CPU, it will make your laptop run cooler and faster while saving power this can resolve issues like videos stuttering and your laptop being hot while watching videos, I recommend looking into the Arch Wiki guide hardware acceleration for applications below after you've set this up.

run `lspci | grep VGA` to see your GPU

For Intel GPU's 2014 and newer I recommend you install `doas pacman -S intel-media-driver` - From Arch Wiki. > ***"HD Graphics series starting from Broadwell (2014) and newer are supported by intel-media-driver."***

For Intel GPU's 2013 and older I recommend you install `doas pacman -S libva-intel-driver` - From Arch Wiki > ***"GMA 4500 (2008) and newer GPUs, including HD Graphics up to Coffee Lake (2017) are supported by libva-intel-driver."***

You'll also want to `sudo pacman -S libvdpau-va-gl libva-utils vdpauinfo`

run `export LIBVA\_DRIVER\_NAME=iHD` - (If you installed intel-media-driver)

run `export LIBVA\_DRIVER\_NAME=i965` - (If you install libva-intel-driver)

run `export VDPAU\_DRIVER=va\_gl`

run `vainfo` to confirm everything is working.

run `vdpauinfo` to confirm everything is working.

If everything is working run `doas nano /etc/environment` and add ***LIBVA_DRIVER_NAME=iHD*** or ***LIBVA_DRIVER_NAME=i965*** (Depending on which driver you installed.) Then add ***VDPAU_DRIVER=va_gl*** save and exit.

Here is the Arch Wiki guide to hardware acceleration for NVIDIA and AMD users.

I recommend looking at this to enable hardware acceleration in applications.

On the hardware acceleration Arch Wiki page check if your GPU and hardware acceleration driver can decode VP9 if it can't install the h264ify browser extension otherwise you wont be able to watch stuff like YouTube videos with hardware video decoding keep in mind h264ify will disable resolutions above 1080p.

General recommendations

- https://wiki.archlinux.org/index.php/General_recommendations