Arch Linux Installation From Scratch To “Gnome”

1. UEFI & Keyboard & Locale

```
ls /sys/firmware/efi/efivars <--> if any error change to MBR+BIOS Legacy
efibootmgr <--> should list "Linux Boot Manager"

loadkeys br-abnt2

nano /etc/locale.gen <--> unmark LANG=pt_BR.UTF-8
locale-gen
nano /etc/locale.conf <--> set LANG=pt_BR.UTF-8
```

2. Network & Connectivity

```
ip link
iwctl
device list
station wlan0 scan
station wlan0 get-networks
station wlan0 connect
exit
ping archlinux.org

timedatectl

ls /usr/share/kbd/consolefonts/ | grep ter-128b
if yes: setfont ter-128b
if not: pacman -Sy terminus-font
if ok:  setfont ter-128b <--> for best readability
```

3. Partitioning & Formatting

```
parted /dev/nvme0n1 mklabel gpt
parted /dev/nvme0n1 mkpart ESP fat32 1MiB 1025MiB
parted /dev/nvme0n1 set 1 esp on
parted /dev/nvme0n1 mkpart primary linux-swap 1025MiB 9217MiB
parted /dev/nvme0n1 mkpart primary btrfs 9217MiB 100%

mkfs.fat -F32 /dev/nvme0n1p1
mkswap /dev/nvme0n1p2
swapon /dev/nvme0n1p2
mkfs.btrfs -L ROOT /dev/nvme0n1p3
```

4. Mounting btrfs Subvolumes

```
mount /dev/nvme0n1p3 /mnt
btrfs subvolume create /mnt/@
btrfs subvolume create /mnt/@home
btrfs subvolume create /mnt/@log
btrfs subvolume create /mnt/@cache
btrfs subvolume create /mnt/@snapshots
umount /mnt
```

```
mount -o subvol=@ /dev/nvme0n1p3 /mnt
mkdir -p /mnt/{home,var/log,var/cache,var/snapshots}
mount -o subvol=@home /dev/nvme0n1p3 /mnt/home
mount -o subvol=@log /dev/nvme0n1p3 /mnt/var/log
mount -o subvol=@cache /dev/nvme0n1p3 /mnt/var/cache
mount -o subvol=@snapshots /dev/nvme0n1p3 /mnt/var/snapshots
mkdir -p /mnt/boot
mount /dev/nvme0n1p1 /mnt/boot

5. Base System Installation for Intel Chipset

reflector --latest 20 --sort rate --save /etc/pacman.d/mirrorlist

pacstrap -K /mnt base linux-zen linux-firmware intel-ucode vulkan-intel
vulkan-mesa-device-select vulkan-tools apparmor btrfs-progs dhcpcd hwdetect
iproute2 iwd mkinitcpio mkinitcpio-busybox mkinitcpio-systemd-tool
mkinitcpio-utils net-tools netctl networkmanager sudo systemd systemd-
resolvconf util-linux wpa_supplicant

genfstab -U /mnt > /mnt/etc/fstab <--> disk partition mount table

6. Chroot Configuration

arch-chroot /mnt <--> entering to chroot environment

ln -sf /usr/share/zoneinfo/America/Araguaina /etc/localtime
hwclock --systohc
nano /etc/locale.gen <--> check if LANG=pt_BR.UTF-8 is enabled
locale-gen
nano /etc/locale.conf <--> set LANG=pt_BR.UTF-8
nano /etc/vconsole.conf <--> set KEYMAP=br-abnt2
nano /etc/hostname <--> set book (choice a name as prefer)

passwd <--> setting “root” admin password
useradd -m -g users -G wheel -s /bin/bash archer (choice a name as prefer)
passwd archer <--> setting “archer” sudo password
EDITOR=nano visudo
%wheel ALL=(ALL:ALL) ALL <--> uncomment for enabling sudo for “archer” user

7. Bootloader (systemd-boot)

bootctl install

blkid /dev/nvme0n1p3 <--> catch the UUID in PARTUUID field

nano /boot/loader/entries/arch.conf

title   Arch Linux Zen
linux   /vmlinuz-linux-zen
initrd  /intel-ucode.img
initrd  /initramfs-linux-zen.img
```

```
options root=PARTUUID=<UUID catched> rw
rootflags=subvol=@,compress=zstd,ssd,discard=async,space_cache=v2 apparmor=1
security=apparmor quiet loglevel=3

nano /boot/loader/entries/arch-fallback.conf

title   Arch Linux Fallback
linux   /vmlinuz-linux-zen
initrd  /intel-ucode.img
initrd  /initramfs-linux-zen-fallback.img
options root=PARTUUID=<UUID catched> rw
rootflags=subvol=@,compress=zstd,ssd,discard=async,space_cache=v2 apparmor=1
security=apparmor quiet loglevel=3

nano /boot/loader/loader.conf

default arch.conf
timeout 2
console-mode max
editor no

ls /sys/firmware/efi/efivars <--> check if UEFI remain active
efibootmgr <--> should list "Linux Boot Manager"

systemctl enable NetworkManager.service <--> enable network access options

mkinitcpio -P

exit <--> exiting from chroot environment

umount -R /mnt
swapoff -a

shutdown

remove the USB drive before “initiate”

8. Post-Installation Network Configuration

Login: root

systemctl start NetworkManager.service

nmcli general status
nmcli device status
nmcli device wifi list
nmcli device wifi connect "wifi name" password "wifi password"

e.g.: nmcli device wifi connect "my-network" password "1234567890"

pacman -Sy terminus-font
setfont ter-128b
```

9. Installing GNOME and Essential Packages

```
pacman -S adwaita-icon-theme contrast decibels eog eyedropper file-roller
firefox firefox-i18n-pt-br foliate fragments gdm gedit gedit-plugins gimp
gimp-help-pt_br gnome gnome-applets gnome-backgrounds gnome-bluetooth gnome-
browser-connector gnome-calendar gnome-characters gnome-clocks gnome-color-
manager gnome-commander gnome-control-center gnome-disk-utility gnome-
firmware gnome-info-collect gnome-keyring gnome-logs gnome-menus gnome-music
gnome-nettool gnome-online-accounts gnome-packagekit gnome-power-manager
gnome-remote-desktop gnome-screenshot gnome-session gnome-settings-daemon
gnome-shell gnome-shell-extension-appindicator gnome-shell-extension-arc-menu
gnome-shell-extension-caffeine gnome-shell-extension-dash-to-panel gnome-
shell-extension-weather-oclock gnome-shell-extensions gnome-system-monitor
gnome-terminal gnome-text-editor gnome-themes-extra gnome-tweaks gnome-usage
gnome-user-docs gnome-user-share gnome-weather gparted grilo-plugins gthumb
gvfs gvfs-afc gvfs-dnssd gvfs-goa gvfs-gphoto2 gvfs-mtp gvfs-nfs gvfs-smb
gvfs-wsdd letterpress loupe morphosis mpv mutter nautilus network-manager-
applet orca papers pavucontrol qalculate-gtk rygel seahorse shotwell showtime
simple-scan snapshot system-config-printer timeshift xdg-desktop-portal-gnome
xdg-user-dirs-gtk xkeyboard-config xorg-server yelp yelp-tools yelp-xsl zed

pacman -S alsa-utils aspell aspell-en aspell-pt at-spi2-core avahi bat bind-
tools bluez bluez-utils colord cronie cups cups-browsed cups-filters cups-pdf
curl ethtool fail2ban fd ffmpeg firewalld foomatic-db foomatic-db-engine
foomatic-db-ppds fwupd fzf git glances grc gst-plugins-base gst-plugins-base-
libs gutenprint hspell htop hunspell imagemagick inxi less libinput libssh
libssh2 libvncserver libvoikko libwireplumber localsearch lsd lsof man-db
man-pages mesa-utils meson micro ninja nmap nss-mdns nuspell p7zip pacman-
contrib parted pipewire pipewire-pulse powertop pwgen qt5-wayland qt6-wayland
ripgrep smartmontools speedtest-cli tecla tinysparql tlp tree unzip upower
v4l-utils v4l2loopback-utils wget wireless_tools wireplumber yt-dlp zip zram-
generator zsh zsh-autocomplete zsh-autosuggestions zsh-completions zsh-
history-substring-search zsh-lovers zsh-syntax-highlighting

systemctl enable gdm.service
systemctl status gdm.service
systemctl enable apparmor.service
systemctl enable avahi-daemon.service
systemctl enable bluetooth.service
systemctl enable cups.service
systemctl enable cups-browsed.service
systemctl enable firewalld.service
systemctl enable timeshift.timer
systemctl enable tlp.service

reboot

Login: user <--> if fail → make login by CLI

CLI command: sudo systemctl start gdm.service
```

11. Services and Optimizations

```
sudo nano /etc/mkinitcpio.conf
```

HOOKS=(base udev autodetect microcode modconf kms keyboard keymap consolefont block filesystems fsck) <--> fields that must be verified

1. make setup in gnome-control-center
2. make setup in gnome-shell-extensions
3. make setup in gnome-tweaker
4. configure fstab: sudo nano /etc/fstab
5. configure timeshift
6. configure zram-generator
7. zsh <--> chsh -s /bin/zsh $USER
8. install fonts :

sudo pacman -S gnu-free-fonts ttf-atkinson-hyperlegible ttf-bitstream-vera ttf-caladea ttf-carlito ttf-cascadia-code ttf-croscore ttf-dejavu ttf-droid ttf-fira-code ttf-fira-mono ttf-fira-sans ttf-firacode-nerd ttf-hack ttf-ibm-plex ttf-inconsolata ttf-input ttf-jetbrains-mono ttf-junicode ttf-junicode-variable ttf-liberation ttf-libertinus ttf-linux-libertine ttf-linux-libertine-g ttf-meslo-nerd ttf-mona-sans ttf-monaspace-frozen ttf-monaspace-variable ttf-opensans ttf-roboto ttf-roboto-mono

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