

Installing Ubuntu Server image 20.04 ARM64 with Graphical User Interface on i.MX8MP Board

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1. Required Hardware

- phyCORE-i.MX 8MP Board: Main development board.
- Minimum 1GB RAM: Ensure the board has at least this amount of RAM.
- **Display**: HDMI or LVDS compatible display for visual output.
- **HDMI Cable**: For connecting the board to the display.
- Power Adapter (+24V): To power the board.
- MicroSD Card (16GB or larger): For installing the Ubuntu 20.04 server image.
- USB Keyboard and Mouse: For input during installation and configuration.
- Ethernet Cable: For network connectivity, if required.
- USB Cable: For connecting to peripherals.

Installing Required Packages in Ubuntu:

venkatesh@phytec:~ sudo apt update

venkatesh@phytec:~ sudo apt install gparted

venkatesh@phytec:~ sudo apt-get install qemu qemu-user-static

venkatesh@phytec:~ sudo apt install minicom

2. Downloading and preparing the SD Card Image

- ➤ NOTE: Download phytec-qt5demo-image-phyboard-pollux-imx8mp-2. Sdcard from the link below:
- venkatesh@phytec:~\$ wget https://download.phytec.de/Software/Linux/BSP-Yocto-i.MX8MP/BSP-Yocto-i.MX8MP-PD22.1.0/images/ampliphy-vendor-xwayland/phyboard-pollux-imx8mp-2/phytec-qt5demo-image-phyboard-pollux-imx8mp-2.sdcard
- Write the SD card image using the dd command:
- Insert your SD card and identify its device path (e.g., /dev/sdb).

venkatesh@phytec:~\$ sudo dd if=phytec-qt5demo-image-phyboard-pollux-imx8mp-2.sdcard of=/dev/sdb bs=4M status=progress && sync



3. Modifying Partitions with GParted

- 1. Launch GParted and locate your SD card (/dev/sdb).
- 2. Unmount the root partition (/dev/sdb2).
- 3. Delete the existing root partition (/dev/sdb2).
- 4. Create a new root partition:
 - Size: 14 × 1024 = 14336 MB (14 GB).
 - File system: ext4.
 - Name: root.
- 5. Apply changes (\checkmark) and close GParted.

4. Mounting and Extracting Ubuntu Base Image

4.1. Mount the root partition:

venkatesh@phytec:~\$ lsblk venkatesh@phytec:~\$ sudo mount /dev/sdb2 /mnt

➤ Note: Download ubuntu-20.04-server-cloudimg-arm64-root.tar.xz image using the bellow command.

venkatesh@phytec:~\$ wget https://cloud-
https://cloud-
https://cloud-
https://cloud-
https://cloud-

Now, extract the Ubuntu server image (ubuntu-20.04-server-cloudimg-arm64-root.tar.xz) into the mounted directory (/mnt).

venkatesh@phytec:~\$ sudo tar -xpf ubuntu-20.04-server-cloudimg-arm64-root.tar.xz -C /mnt



4.2. Copy essential configurations:

```
venkatesh@phytec:~ sudo cp /etc/resolv.conf /mnt/etc/resolv.conf
venkatesh@phytec:~ sudo mount --bind /dev /mnt/dev
venkatesh@phytec:~ sudo mount --bind /sys /mnt/sys
venkatesh@phytec:~ sudo mount --bind /proc /mnt/proc
venkatesh@phytec:~ sudo mount -t devpts devpts /mnt/dev/pts
```

4.3. Chroot into the Ubuntu environment:

➤ NOTE: sudo chroot changes the root directory for the current running process and its children to /mnt.

```
venkatesh@phytec:~$ sudo chroot /mnt
root@phytec:/#
```

5. Installing and configuring the Ubuntu Desktop GUI

5.1. Update the package lists:

root@phytec:/# apt update

5.2. Install the Ubuntu desktop environment:

root@phytec:/# apt install ubuntu-desktop

NOTE: During the installation process, you may encounter configuration prompts for graphical area, time zone, keyboard layout, and language. Here's how you would typically respond.

NOTE:

★ Graphical Area (Region) : Select 6 for Asia.★ Time Zone : Enter 45 for Kolkata.

★ Keyboard Layout
: Choose 33 for English (US).
★ Language
: Select 1 for English (US).



5.3. Set up locale settings if you encounter warnings:

root@phytec:/# apt install locales

root@phytec:/# locale-gen en_US.UTF-8

root@phytec:/# update-locale LANG=en_US.UTF-8

root@phytec:/# locale-gen en_IN.UTF-8

NOTE: If you encounter any libc-bin related errors, run bellow command.

root@phytec:/# apt-get install --reinstall libc-bin

5.4. Install essential packages:

root@phytec:/# apt upgrade

root@phytec:/# apt install sudo

root@phytec:/# sudo apt install build-essential

root@phytec:/# sudo apt install net-tools network-manager

root@phytec:/# sudo apt install iputils-ping

root@phytec:/# sudo apt install nano root@phytec:/# sudo apt install lightdm

root@phytec:/# sudo apt install xserver-xorg-video-fbdev xserver-xorg-video-vesa

6. Adding a New User

6.1. Create a new user phytec:

root@phytec:/# adduser phytec

Adding user 'phytec' ...

Adding new group 'phytec' (1000) ...

Adding new user 'phytec' (1000) with group 'phytec' ...

Creating home directory 'home/phytec' ...

Copying files from '/etc/skel' ...



New password:

Retype new password:

passwd: password updated successfully

Changing the user information for phytec

Enter the new value, or press ENTER for the default

Full Name []: phytec

Room Number []: phytec

Work Phone []:

Home Phone []:

Other []:

Is the information correct? [Y/n] Y

6.2. Add the user to the sudo group:

root@phytec:/# usermod -aG sudo phytec

6.3. Verify the group membership:

root@phytec:/# groups phytec

phytec : phytec sudo
root@phytec:/#

7. Assigning permissions to the above created user account:

7.1. Open the visudo file to grant sudo privileges:

root@phytec:/# visudo

7.2. In the visudo file, find the following line:

root ALL=(ALL:ALL) ALL



7.3. Replace root with the username you created earlier (in this case, phytec), so it looks like this:

```
phytec ALL=(ALL:ALL) ALL
```

7.4. Save and exit the editor (usually by pressing Ctrl+X, then Y, and Enter).

8. Checking if we can perform the update:

> Switch to the New User (phytec):

```
root@phytec:/# su - phytec

phytec@phytec:~$ sudo apt update

[sudo] password for phytec:

phytec@phytec:~$ sudo apt upgrade

phytec@phytec:~$ exit

exit

root@phytec:/# exit
```

> Unmount file systems

```
venkatesh@phytec:~$ sudo umount /mnt/dev
venkatesh@phytec:~$ sudo umount /mnt/proc
venkatesh@phytec:~$ sudo umount /mnt/sys
venkatesh@phytec:~$ sudo umount /mnt
venkatesh@phytec:~$ sudo sync
```

> NOTE: If target is busy use bellow commands to unmount

```
venkatesh@phytec:~$ sudo lsof /mnt
venkatesh@phytec:~$ sudo fuser -m /mnt
venkatesh@phytec:~$ sudo fuser -k /mnt/
venkatesh@phytec:~$ sudo umount -l /mnt
```



9. Booting the Ubuntu Image on i.MX8MP Board

- 1. Insert the SD card into the i.MX8MP board and power it on.
- 2. Use a terminal emulator like Minicom or Putty to access the terminal via UART (e.g., /dev/ttymxc0).
- 3. Log in with the username phytec and the password you created earlier.

10. Configuring X11 for Display Settings

10.1. Edit the X11 configuration:

phytec@phytec:~\$ sudo nano /etc/X11/xorg.conf

10.2. Add modelines for different resolutions. Example configuration:

```
Section "Monitor"
Identifier "default"
# Add multiple Modelines for different resolutions
Modeline "1920x1080_60.00" 173.00 1920 2048 2248 2576 1080 1083 1088 1120 +hsync +vsync
Modeline "1600x900_60.00" 118.25 1600 1696 1856 2112 900 903 908 934 -hsync +vsync
Modeline "1280x1024_60.00" 108.00 1280 1328 1440 1688 1024 1025 1028 1066 -hsync +vsync
Modeline "1280x800_60.00" 83.46 1280 1352 1480 1680 800 803 809 831 +hsync -vsync
Modeline "1024x768_60.00" 65.00 1024 1048 1184 1344 768 771 777 806 -hsync -vsync
Option "PreferredMode" "1920x1080_60.00" # Set the default resolution
EndSection
Section "Device"
Identifier "MyGPU"
Driver "fbdev" # Or use "vesa" if "fbdev" doesn't work
EndSection
Section "Screen"
Identifier "Screen0"
Device "MyGPU"
Monitor "default"
DefaultDepth 24
SubSection "Display"
Modes "1920x1080_60.00" "1600x900_60.00" "1280x1024_60.00" "1280x800_60.00" "1024x768_60.00"
EndSubSection
EndSection
```



10.3. Save and exit (Ctrl+X, then Y, and Enter).

10.4. Restart LightDM and investigate the Display:

NOTE: After making changes to the display settings or user configuration, restart the LightDM service to apply the changes.

phytec@localhost:~\$ sudo systemctl restart lightdm

10.5. Rename the Hostname.

NOTE: Edit the hostname to customize your system's identity on the network. You can change the hostname from localhost.localdomain to your desired name (e.g., ubuntu).

phytec@localhost:~\$ sudo nano /etc/hostname

Localhost.localdomain

- Action: Rename localhost.localdomain to ubuntu.
- Save and Exit:

10.6. Reboot the System.

- Log in using your username (phytec) and the associated password.
- In Dispaly username (phytec) will display and login with password.



11. Network Setup

11.1. Bring up the Ethernet interface:

phytec@ubuntu:~\$ sudo ip link set eth1 up

11.2. Obtain an IP address:

phytec@ubuntu:~\$ sudo dhclient eth1

11.3. Verify the network connection:

phytec@ubuntu:~\$ ip a

phytec@ubuntu:~\$ ping google.com

phytec@ubuntu:~\$ ping 8.8.8.8

phytec@ubuntu:~\$ sudo apt update

phytec@ubuntu:~\$ sudo apt upgrade