

HOW TO INSTALL PIKVM x86 - Oracle VirtualBox

by @srepac

srepac@kvmnerds.com

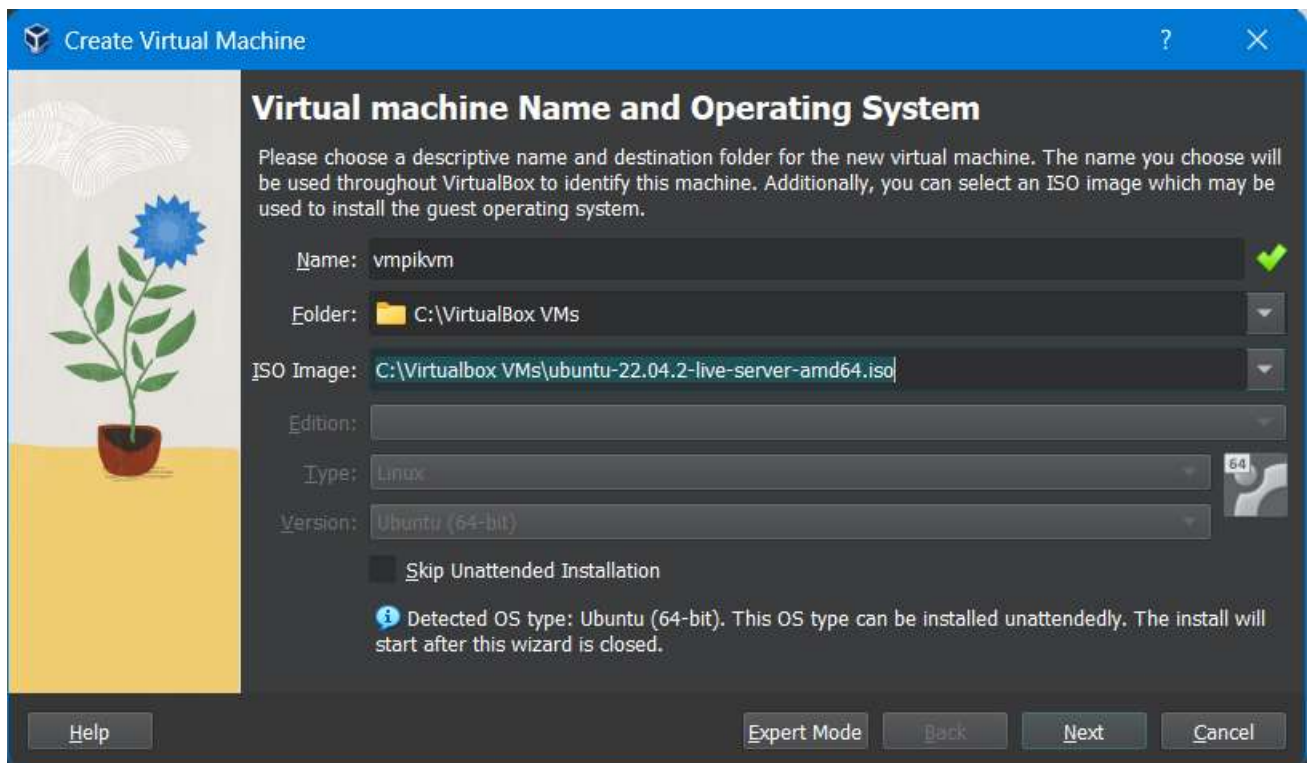
May 30, 2023

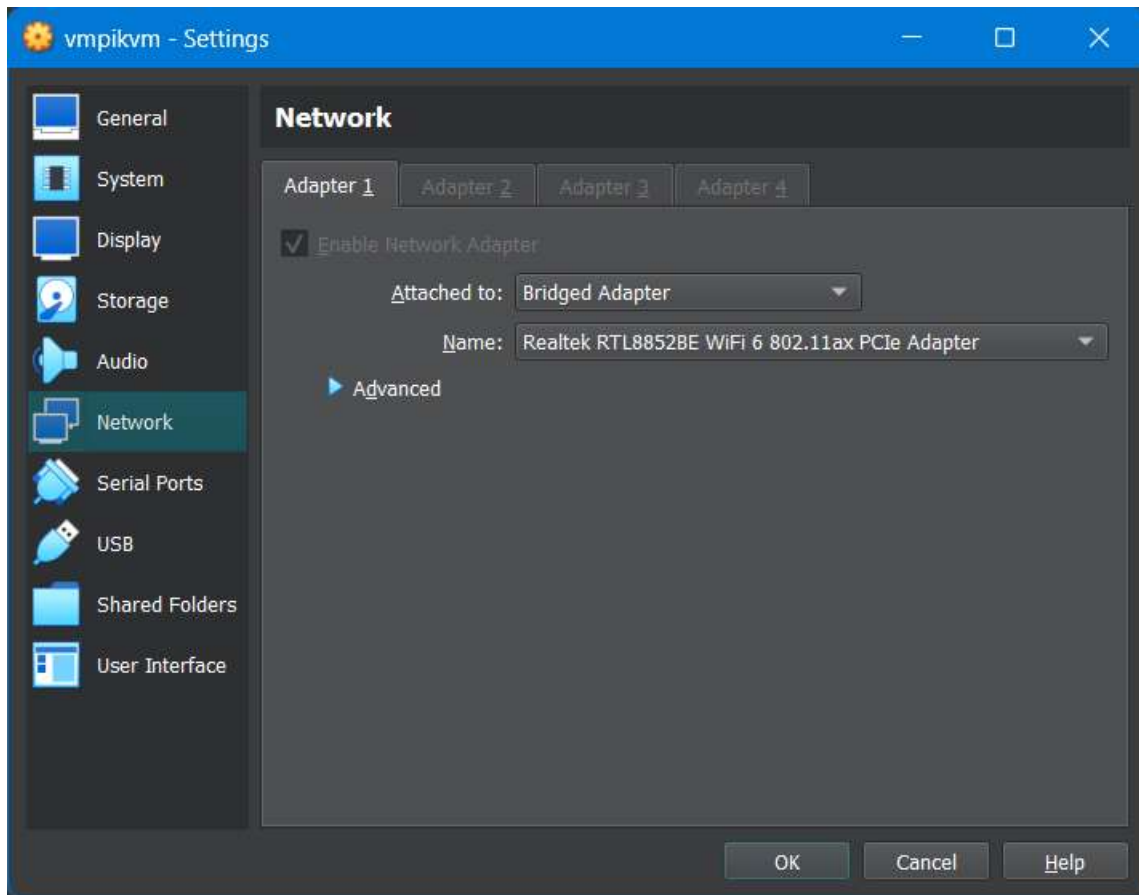
REQUIREMENTS:

- Laptop/PC running Oracle VirtualBox or physical laptop/desktop running ubuntu
- USB UART cable
- ch9329 serial HID
- USB HDMI capture dongle or USB loop capture

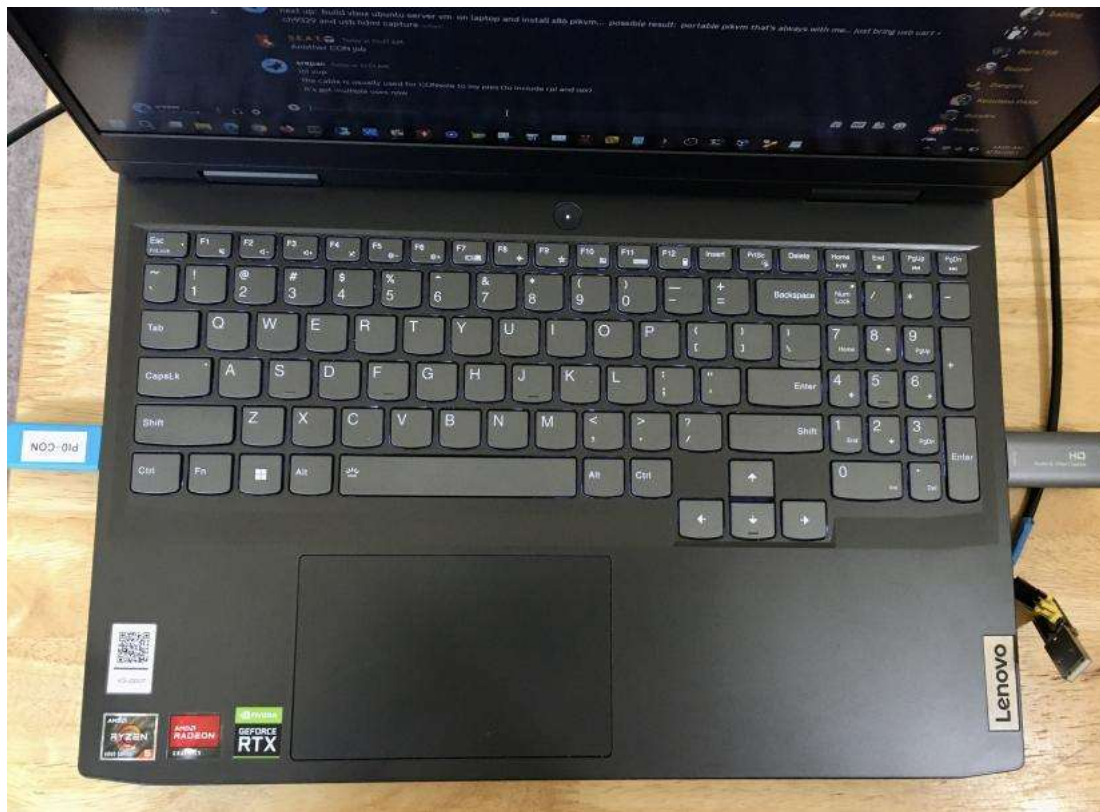
STEP-BY-STEP INSTRUCTIONS:

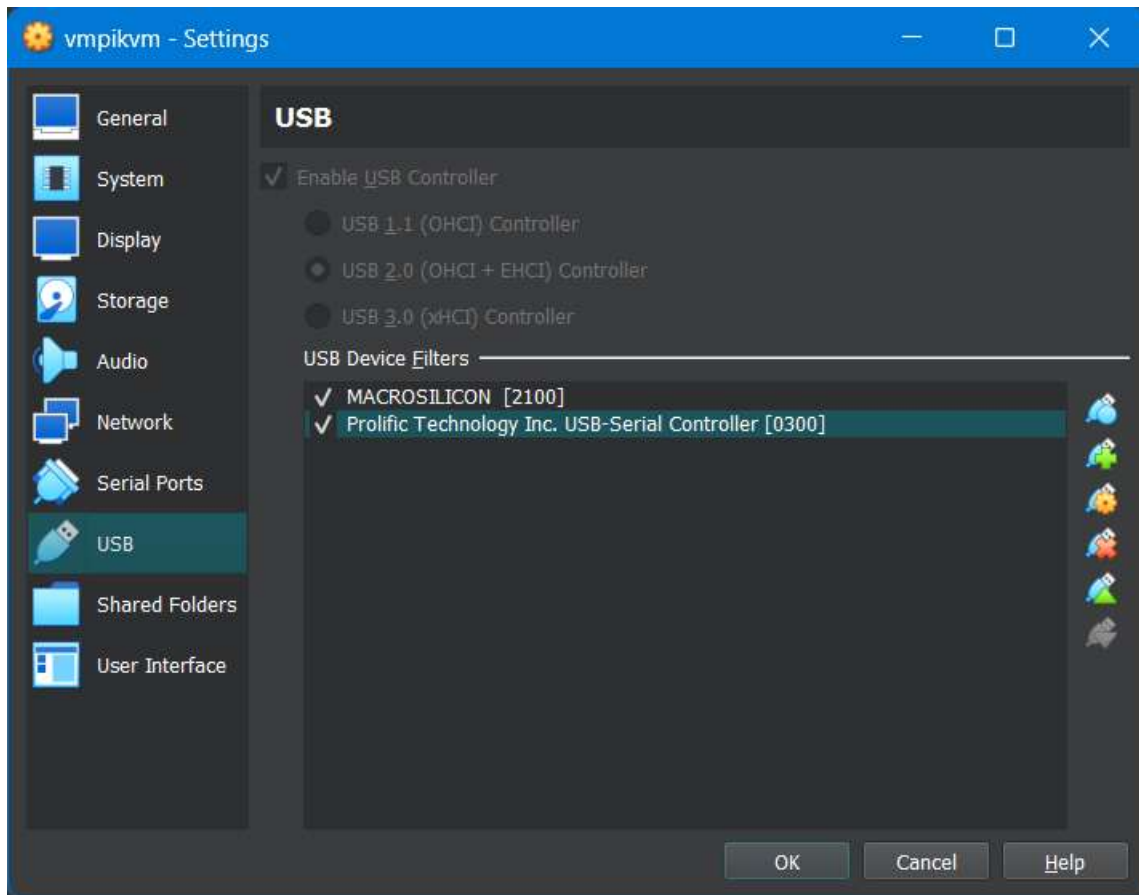
1. Create new VM and make sure network adapter is in Bridged mode.





2. Passthru USB HDMI capture and USB UART + ch9329 after connecting USB HDMI dongle and USB UART to laptop/desktop.

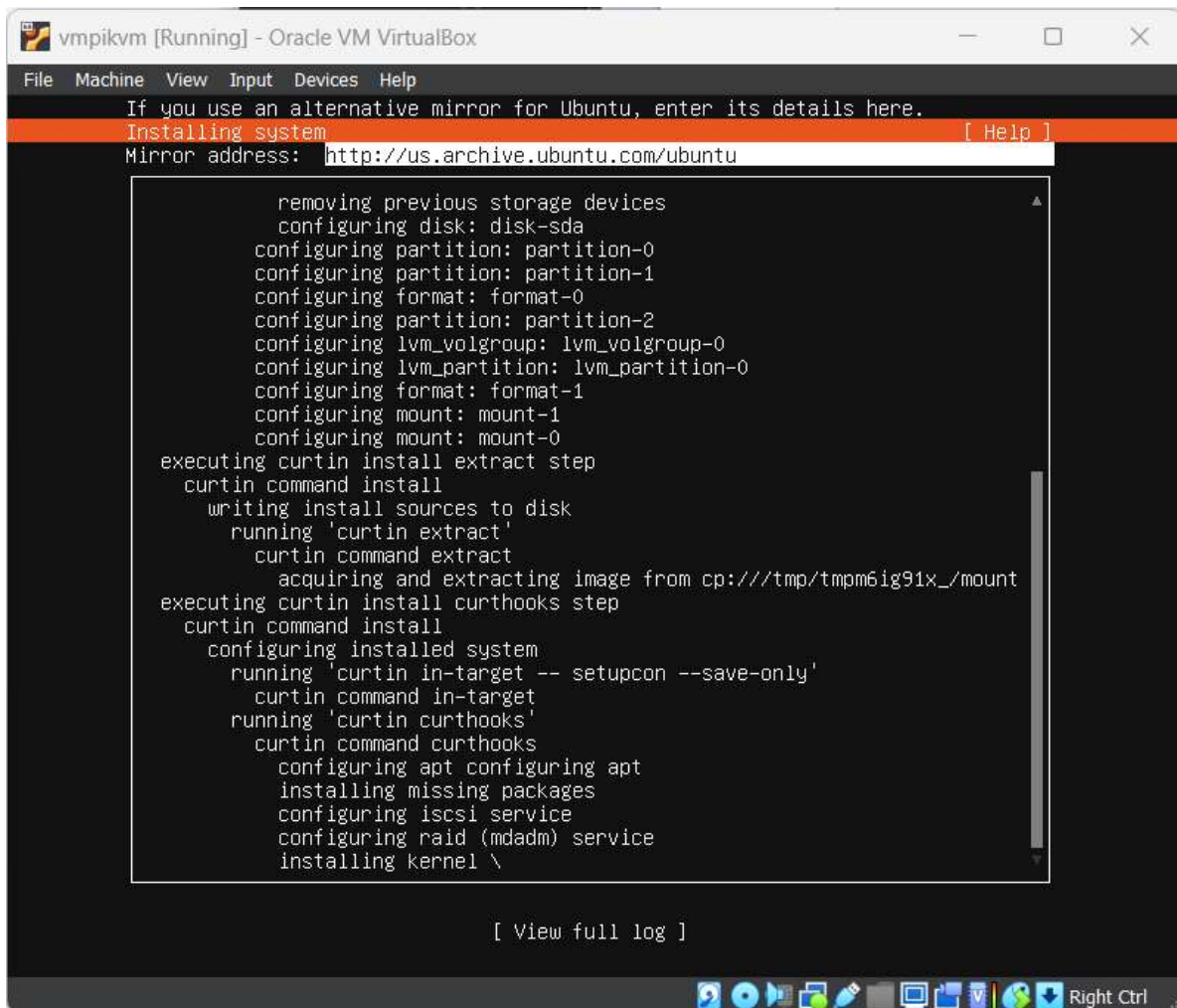




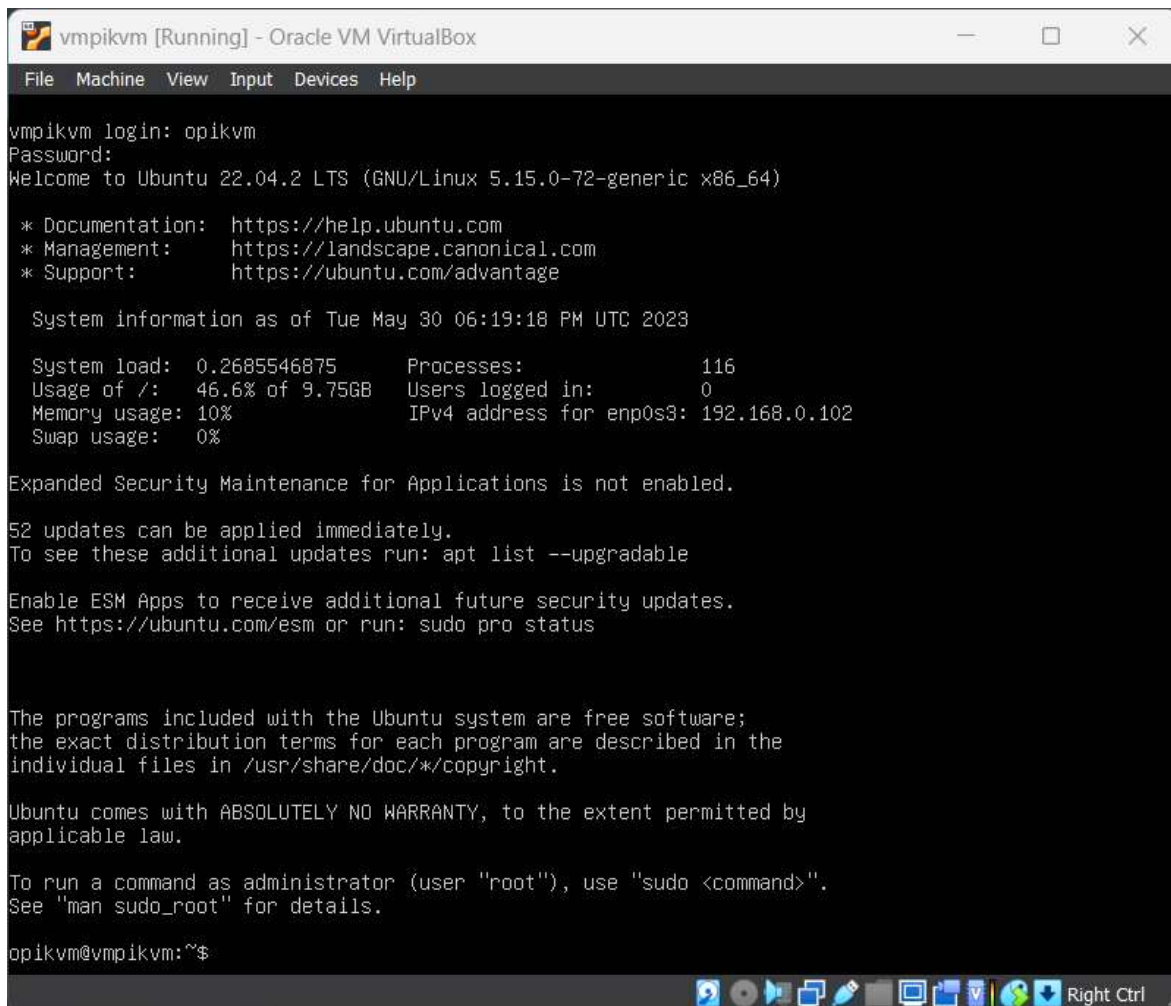
3. Proceed to install ubuntu server. During the install, create new user/password:

opikvm/opikvm

The user will be used later to login via SSH and install pikvm x86.



4. Login to console/SSH with user/password: **opikvm/opikvm**



```
vmpikvm login: opikvm
Password:
Welcome to Ubuntu 22.04.2 LTS (GNU/Linux 5.15.0-72-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Tue May 30 06:19:18 PM UTC 2023

System load:  0.2685546875   Processes:           116
Usage of /:   46.6% of 9.75GB Users logged in:       0
Memory usage: 10%          IPv4 address for enp0s3: 192.168.0.102
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

52 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

opikvm@vmpikvm:~$
```

5. Run the following commands (as root) to get the kvmd-armbian git clone and the install-x86.sh script and run part 1 of the installer. Press ENTER when asked to reboot.

```
sudo su -
apt update
apt upgrade -y

apt install -y git vim make python3-dev gcc
git clone https://github.com/srepac/kvmd-armbian.git
cd kvmd-armbian/
wget https://kvmnerds.com/RPiKVM/kvmd-armbian/x86/install-x86.sh
chmod +x install-x86.sh
./install-x86.sh
```

```

root@vmpikvm: ~/kvmd-armbian
root@vmpikvm:~/kvmd-armbian# ./install-x86.sh
Python 3.10 is supported.
./install-x86.sh: line 55: /proc/device-tree/model: No such file or directory

Running part 1 of PikVM installer script for x86 by @srepac

-> Getting Pi-KVM packages from https://files.pikvm.org/repos/arch/rpi4

wget https://files.pikvm.org/repos/arch/rpi4 -O /var/cache/kvmd/packages.txt

wget https://files.pikvm.org/repos/arch/rpi4/janus-gateway-pikvm-0.13.3-1-armv7h.pkg.tar.xz -O /var/cache/kvmd/janus-gateway-pikvm-0.13.3-1-armv7h.pkg.tar.xz
wget https://files.pikvm.org/repos/arch/rpi4/kvmd-3.221-1-any.pkg.tar.xz -O /var/cache/kvmd/kvmd-3.221-1-any.pkg.tar.xz
wget https://files.pikvm.org/repos/arch/rpi4/kvmd-platform-v0-hdmi-rpi3-3.221-1-any.pkg.tar.xz -O /var/cache/kvmd/kvmd-platform-v0-hdmi-rpi3-3.221-1-any.pkg.tar.xz
wget https://files.pikvm.org/repos/arch/rpi4/kvmd-platform-v0-hdmiusb-rpi3-3.221-1-any.pkg.tar.xz -O /var/cache/kvmd/kvmd-platform-v0-hdmiusb-rpi3-3.221-1-any.pkg.tar.xz
wget https://files.pikvm.org/repos/arch/rpi4/kvmd-platform-v2-hdmi-rpi3-3.221-1-any.pkg.tar.xz -O /var/cache/kvmd/kvmd-platform-v2-hdmi-rpi3-3.221-1-any.pkg.tar.xz
wget https://files.pikvm.org/repos/arch/rpi4/kvmd-webterm-0.43-1-any.pkg.tar.xz -O /var/cache/kvmd/kvmd-webterm-0.43-1-any.pkg.tar.xz

ls -l /var/cache/kvmd
total 2164
drwxr-xr-x 2 root root 4096 May 30 18:30 ARCHIVE
-rw-r--r-- 1 root root 1054380 May 28 21:37 janus-gateway-pikvm-0.13.3-1-armv7h.pkg.tar.xz
-rw-r--r-- 1 root root 1100132 May 28 21:37 kvmd-3.221-1-any.pkg.tar.xz
-rw-r--r-- 1 root root 6168 May 28 21:37 kvmd-platform-v0-hdmi-rpi3-3.221-1-any.pkg.tar.xz
-rw-r--r-- 1 root root 6628 May 28 21:37 kvmd-platform-v0-hdmiusb-rpi3-3.221-1-any.pkg.tar.xz
-rw-r--r-- 1 root root 6204 May 28 21:37 kvmd-platform-v2-hdmi-rpi3-3.221-1-any.pkg.tar.xz
-rw-r--r-- 1 root root 6468 May 28 21:37 kvmd-webterm-0.43-1-any.pkg.tar.xz
-rw-r--r-- 1 root root 19603 May 30 18:30 packages.txt

Platform selected -> kvmd-platform-v0-hdmiusb-rpi3

/etc/modules

# /etc/modules: kernel modules to load at boot time.
#
# This file contains the names of kernel modules that should be loaded
# at boot time, one per line. Lines beginning with "#" are ignored.

dwc2
libcomposite
i2c-dev

# https://unix.stackexchange.com/questions/66901/how-to-bind-usb-device-under-a-static-name
# https://wiki.archlinux.org/index.php/Udev#Setting_static_device_names
KERNEL=="video[0-9]*", SUBSYSTEM=="video4linux", PROGRAM="/usr/bin/kvmd-udev-hdmiusb-check rpi3 1-1.4:1.0", ATTR{index}=="0",
GROUP="kvmd", SYMLINK+="kvmd-video"
KERNEL=="ttyUSB0", SYMLINK+="kvmd-hid"

-> Installing dependencies for pikvm
apt install -y nginx python3 net-tools bc expect v4l-utils iptables vim dos2unix screen tmate nfs-common gpiod ffmpeg dialog
iptables dnsmasq git python3-pip tesseract-ocr tesseract-ocr-eng libasound2-dev libsndfile-dev libspeexdsp-dev lm-sensors

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

Extracting templates from packages: 100%
Scanning processes...
Scanning candidates...
Scanning linux images...

```

```

-> Installing dependencies for pikvm
apt install -y nginx python3 net-tools bc expect v4l-utils iptables vim dos2unix screen tmate nfs-common gpiod ffmpeg dialog
iptables dnsmasq git python3-pip tesseract-ocr tesseract-ocr-eng libasound2-dev libsndfile-dev libspeexdsp-dev lm-sensors

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

Extracting templates from packages: 100%
Scanning processes...
Scanning candidates...
Scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...
Service restarts being deferred:
/etc/needrestart/restart.d/dbus.service
systemctl restart networkd-dispatcher.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service
systemctl restart user@1000.service

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.

apt-get install python3-aiofiles -y
Scanning processes...
Scanning candidates...
Scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...
Service restarts being deferred:

```

NOTE: During the install, whenever you see "**Restart services...**" while running install-x86.sh, please press ENTER key. If you don't ubuntu will be waiting for you in order to go to the next command.

6. Log back in as opikvm/opikvm and run part 2 of installer after reboot (as root).

```

sudo su -
cd kvmd-armbian/
./install-x86.sh

```



```

root@vmpikvm: ~/kvmd-armbian
opikvm@vmpikvm:~$ sudo su -
[sudo] password for opikvm:
root@vmpikvm:~# cd kvmd-armbian/
root@vmpikvm:~/kvmd-armbian# ./install-x86.sh
Python 3.10 is supported.
./install-x86.sh: line 55: /proc/device-tree/model: No such file or directory

Running part 2 of PiKVM installer script for x86 by @srepac
==> Ensuring KVMD users and groups ...

-> Disabling nginx service, so that we can use kvmd-nginx instead
Synchronizing state of nginx.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install disable nginx
Removed /etc/systemd/system/multi-user.target.wants/nginx.service.

-> Creating symlinks for use with kvmd python scripts

-> Creating kvmd-webterm homedir
drwxr-xr-x 2 kvmd-webterm root 4096 May 30 18:54 /home/kvmd-webterm
tar xvf ch9329.tar -C /usr/lib/python3/dist-packages
kvmd/plugins/hid/ch9329/
kvmd/plugins/hid/ch9329/__init__.py
kvmd/plugins/hid/ch9329/keyboard.py
kvmd/plugins/hid/ch9329/tty.py
kvmd/plugins/hid/ch9329/mouse.py
total 28
-rw-r--r-- 1 root root 10421 May 16 16:41 __init__.py
-rw-r--r-- 1 root root 3021 May 16 16:42 keyboard.py
-rw-r--r-- 1 root root 4145 May 16 16:42 mouse.py
-rw-r--r-- 1 root root 2718 May 16 16:42 tty.py
-> Making backup of files that require modification
cp /usr/lib/python3/dist-packages/kvmd/plugins/ugpio/gpio.py /usr/lib/python3/dist-packages/kvmd/plugins/ugpio/gpio.py.orig
cp /usr/lib/python3/dist-packages/kvmd/apps/kvmd/info/hw.py /usr/lib/python3/dist-packages/kvmd/apps/kvmd/info/hw.py.orig
cp /usr/lib/python3/dist-packages/kvmd/apps/kvmd/info/base.py /usr/lib/python3/dist-packages/kvmd/apps/kvmd/info/base.py.orig
-rw-r--r-- 1 root/root 4291 2023-05-29 01:27 kvmd/plugins/ugpio/gpio.py
-rw-r--r-- 1 root/root 5567 2023-05-29 01:27 kvmd/apps/kvmd/info/hw.py
-rw-r--r-- 1 root/root 1713 2023-05-29 01:27 kvmd/apps/kvmd/info/base.py
tar xvf x86-mods.tar -C /usr/lib/python3/dist-packages
kvmd/plugins/ugpio/gpio.py
kvmd/apps/kvmd/info/hw.py
kvmd/apps/kvmd/info/base.py
-rw-r--r-- 1 root/root 4291 May 29 01:27 /usr/lib/python3/dist-packages/kvmd/plugins/ugpio/gpio.py
-rw-r--r-- 1 root/root 5567 May 29 01:27 /usr/lib/python3/dist-packages/kvmd/apps/kvmd/info/hw.py
-rw-r--r-- 1 root/root 1713 May 29 01:27 /usr/lib/python3/dist-packages/kvmd/apps/kvmd/info/base.py
-> Checking kvmd -m works before continuing
ipmi:
  auth:
    file: /etc/kvmd/ipmipasswd

  kvmd:
    timeout: 5.0
    unix: /run/kvmd/kvmd.sock

  server:
    host: '::'
    port: 623
    timeout: 10.0

  sol:
    device: ''
    proxy_port: 0
    select_timeout: 0.1
    speed: 115200

```

```
root@vmpikvm: ~/kvmd-ambian
timeout: 300

Did kvmd -m run properly? [y/n] y
-> Enabling kvmd-nginx kvmd-webterm and kvmd services, but do not start them.
Created symlink /etc/systemd/system/multi-user.target.wants/kvmd-nginx.service -> /lib/systemd/system/kvmd-nginx.service.
Created symlink /etc/systemd/system/multi-user.target.wants/kvmd-webterm.service -> /lib/systemd/system/kvmd-webterm.service.
Created symlink /etc/systemd/system/multi-user.target.wants/kvmd.service -> /lib/systemd/system/kvmd.service.
Created symlink /etc/systemd/system/multi-user.target.wants/kvmd-fix.service -> /lib/systemd/system/kvmd-fix.service.

Check kvmd devices

lrwxrwxrwx 1 root root 7 May 30 18:51 /dev/kvmd-hid -> ttyUSB0
lrwxrwxrwx 1 root root 6 May 30 18:51 /dev/kvmd-video -> video0

You should see devices for keyboard, mouse, and video.

Point a browser to https://vmpikvm
If it doesn't work, then reboot one last time.
Please make sure kvmd services are running after reboot.
Loaded: loaded (/lib/systemd/system/kvmd-nginx.service; enabled; vendor preset: enabled)
Loaded: loaded (/lib/systemd/system/kvmd-webterm.service; enabled; vendor preset: enabled)
Loaded: loaded (/lib/systemd/system/kvmd.service; enabled; vendor preset: enabled)
Loaded: loaded (/lib/systemd/system/kvmd-fix.service; enabled; vendor preset: enabled)
-> Extracting aiofiles.tar into /usr/lib/python3.11/site-packages
aiofiles/
aiofiles/__pycache__/
aiofiles/__pycache__/base.cpython-310.pyc
aiofiles/__pycache__/__init__.cpython-310.opt-1.pyc
aiofiles/__pycache__/os.cpython-310.opt-1.pyc
aiofiles/__pycache__/base.cpython-310.opt-1.pyc
aiofiles/__pycache__/__init__.cpython-310.pyc
aiofiles/__pycache__/ospath.cpython-310.pyc
aiofiles/__pycache__/ospath.cpython-310.opt-1.pyc
aiofiles/__pycache__/os.cpython-310.pyc
aiofiles/os.py
aiofiles/threadpool/
aiofiles/threadpool/__pycache__/
aiofiles/threadpool/__pycache__/__init__.cpython-310.opt-1.pyc
aiofiles/threadpool/__pycache__/utils.cpython-310.opt-1.pyc
aiofiles/threadpool/__pycache__/binary.cpython-310.opt-1.pyc
aiofiles/threadpool/__pycache__/utils.cpython-310.pyc
aiofiles/threadpool/__pycache__/__init__.cpython-310.pyc
aiofiles/threadpool/__pycache__/text.cpython-310.opt-1.pyc
aiofiles/threadpool/__pycache__/text.cpython-310.pyc
aiofiles/threadpool/__pycache__/binary.cpython-310.pyc
aiofiles/threadpool/__init__.py
aiofiles/threadpool/binary.py
aiofiles/threadpool/utils.py
aiofiles/threadpool/text.py
aiofiles/__init__.py
aiofiles/tempfile/
aiofiles/tempfile/__pycache__/
aiofiles/tempfile/__pycache__/__init__.cpython-310.opt-1.pyc
aiofiles/tempfile/__pycache__/tempypes.cpython-310.opt-1.pyc
aiofiles/tempfile/__pycache__/tempypes.cpython-310.pyc
aiofiles/tempfile/__pycache__/__init__.cpython-310.pyc
aiofiles/tempfile/__init__.py
aiofiles/tempfile/tempypes.py
aiofiles/base.py
aiofiles/ospath.py
-> Renaming original aiofiles and creating symlink to correct aiofiles
lrwxrwxrwx 1 root root 42 May 30 18:54 aiofiles -> /usr/lib/python3.11/site-packages/aiofiles
drwxr-xr-x 2 root root 4096 May 30 18:43 aiofiles-0.8.0.dist-info
drwxr-xr-x 5 root root 4096 May 30 18:43 aiofiles.20230530.1854
root@vmpikvm:~/kvmd-ambian#
```

7. Connect the ch9329 and HDMI to your target system and enjoy!



The Open Source IP-KVM

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Server: [vmpikvm](#)



KVM



Terminal



Logout

Please note that when you are working with a KVM session or another application that captures the keyboard, you can't use some keyboard shortcuts such as Ctrl+Alt+Del (which will be caught by your OS) or Ctrl+W (caught by your browser).

To override this limitation you can use [Google Chrome](#) or [Chromium](#) in application mode.

```
# On Linux using Chromium/Chrome via any terminal:
$ `which chromium 2>/dev/null || which chrome 2>/dev/null || which google-chrome` --app="https://vmpikvm/"

# On MacOS using Terminal application:
$ /Applications/Google\ Chrome.app/Contents/MacOS/Google\ Chrome --app="https://vmpikvm/"

# On Windows via cmd.exe:
C:\> start chrome --app="https://vmpikvm/"
```

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