

RDK-B meta-cmf-arm Virtualisation guide with virt-manager (GUI)

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System Pre-requisites

- Qemu Arm64 installed (qemu-system-aarch64)
- Virt-manager installed and functional
- A bridge interface for LAN (and optionally, WAN)
side interfaces

These instructions have been tested on Ubuntu 24.10

Instructions for ‘headless’ (no GUI manager) setup can be found in the meta-cmf-arm documentation

RDK-B build prerequisites

- You will need the “.wic.qcow2” generated by meta-arm-cmf’s rdk-generic-broadband-image
- If you only have the ‘.wic’ file, you can convert to qcow2 with qemu-img:

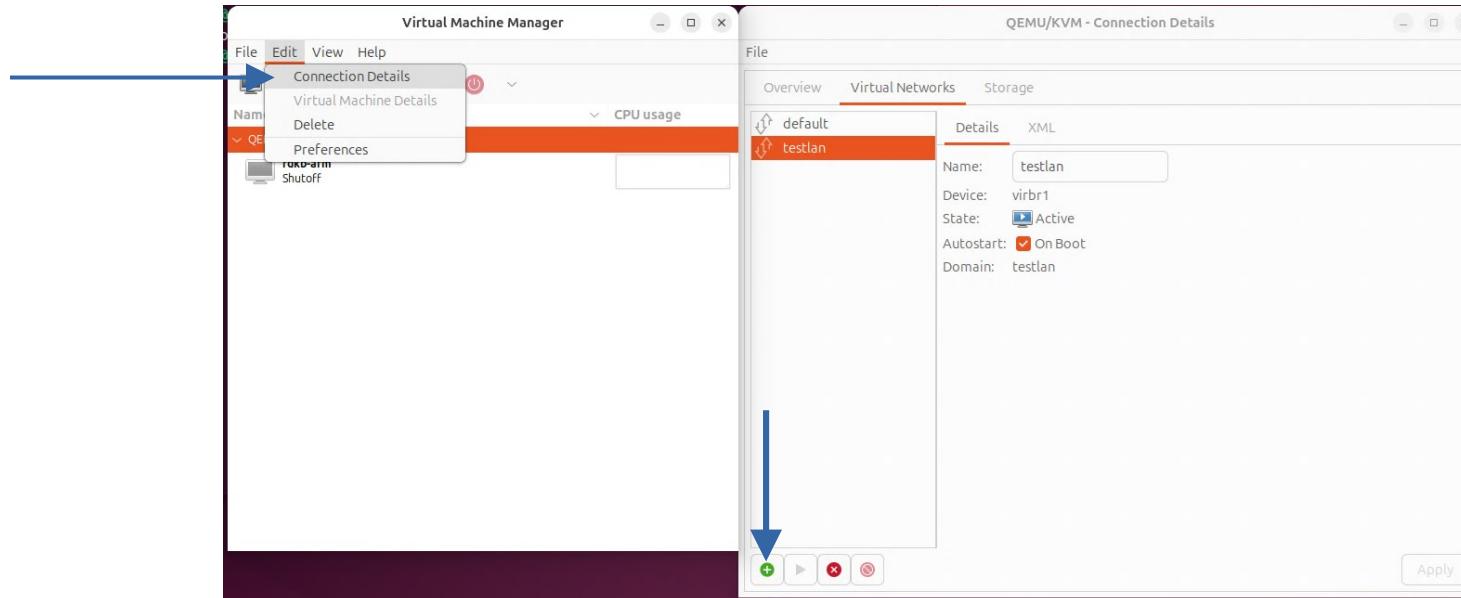
```
qemu-img convert -O qcow2 rdk.wic rdk.qcow2
```

- To allow upgrades, resize the disk before using it:

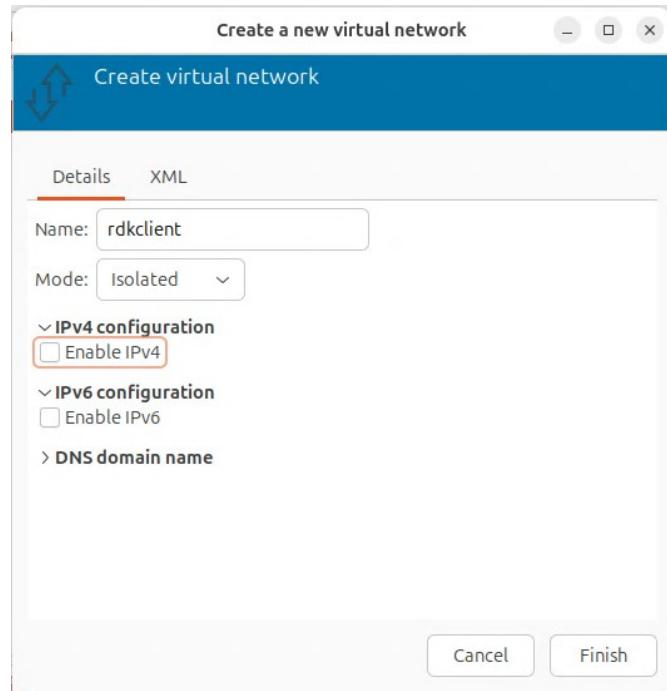
```
qemu-img resize rdk.qcow2 10G
```

Virtual Networking (1)

- It is best to create an “isolated” network to simulate the “LAN” side of the RDK-B router

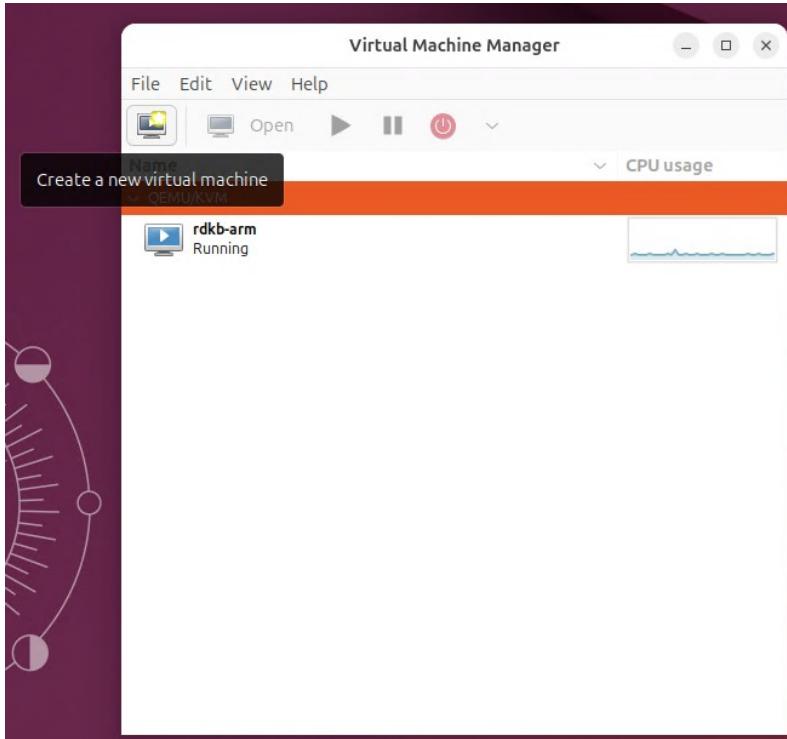


Virtual Networking (2)



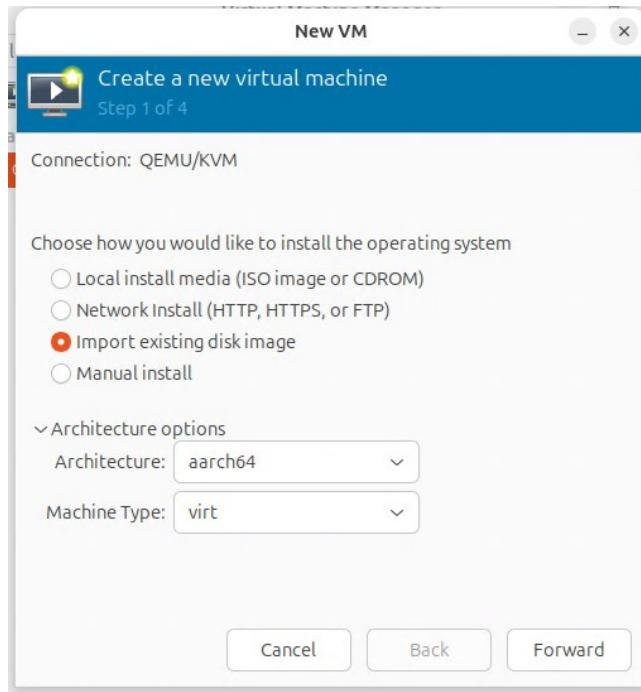
- Use the following settings:
 - Mode: Isolated
 - Uncheck 'Enable IPv4'
 - Uncheck 'Enable IPv6'

Start



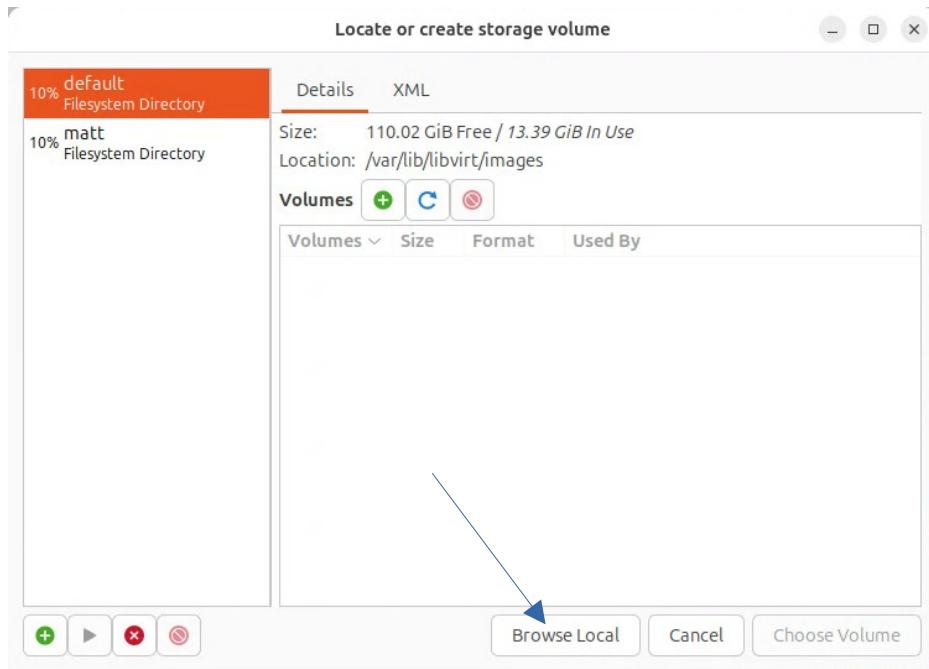
- At the home screen of Virtual Machine Manager, click the *Create a new virtual machine* icon in the toolbar

Create a new ARM64 VM



- Select *Import Existing disk Image*
- Expand *Architecture Options* and select **Architecture: aarch64**
 - If this option is missing, you need to install `qemu-system-aarch64`

Select RDK-B qcow2 image (1)



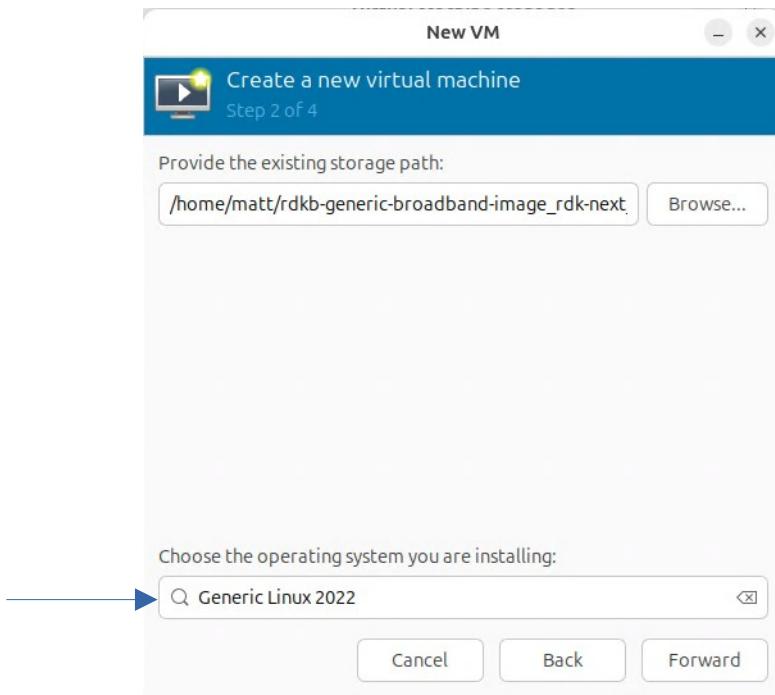
- In the ‘Locate or create storage volume’ window, click ‘Browse Local’

Select RDK-B qcow2 image (2)



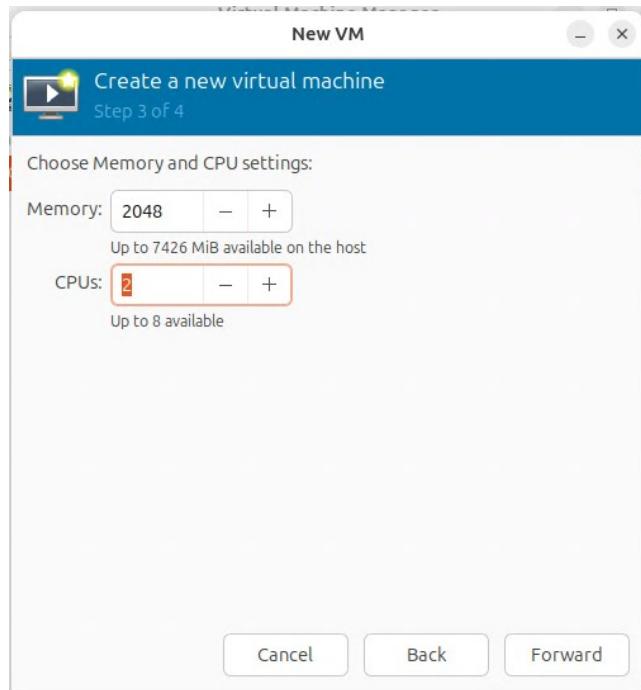
- Select the .wic.qcow2 from the RDK-B build on your local filesystem
- Click “Open”
- On first usage, you may get a message asking to modify the security configuration to allow access to the image. Accept this change.

Select OS type



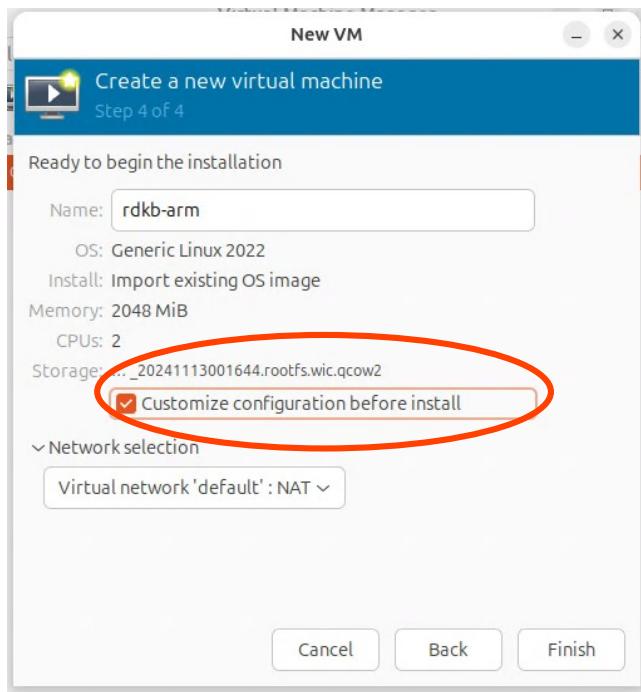
- In the “Choose the operating” system box at the bottom, search and choose “Generic Linux 2022”

Set RAM and CPU allocation



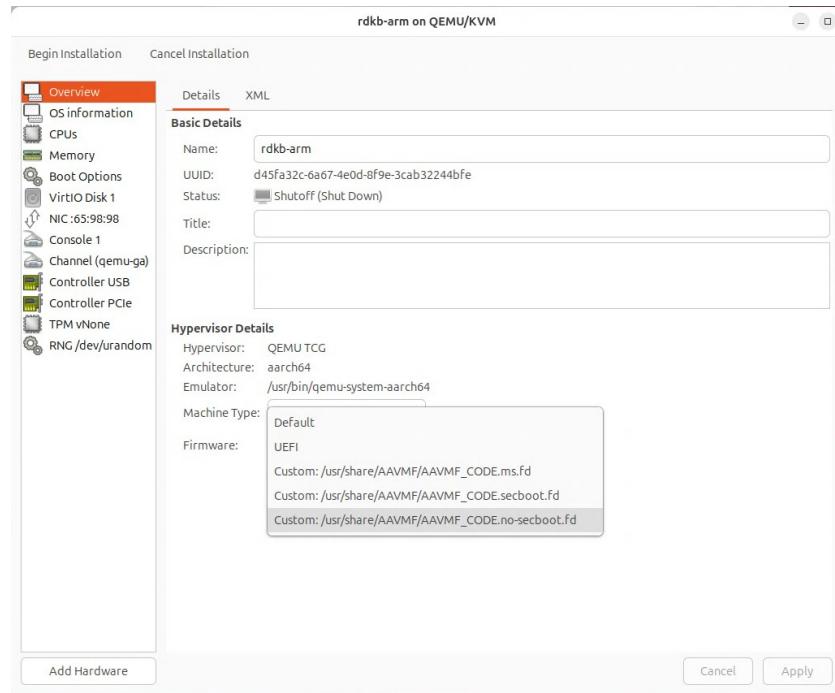
- 2GB RAM and 2 vCPUs are sufficient

Name and customization



- Give the VM a name (like *rdkb-arm*)
- Ensure *Customize configuration before install* is checked

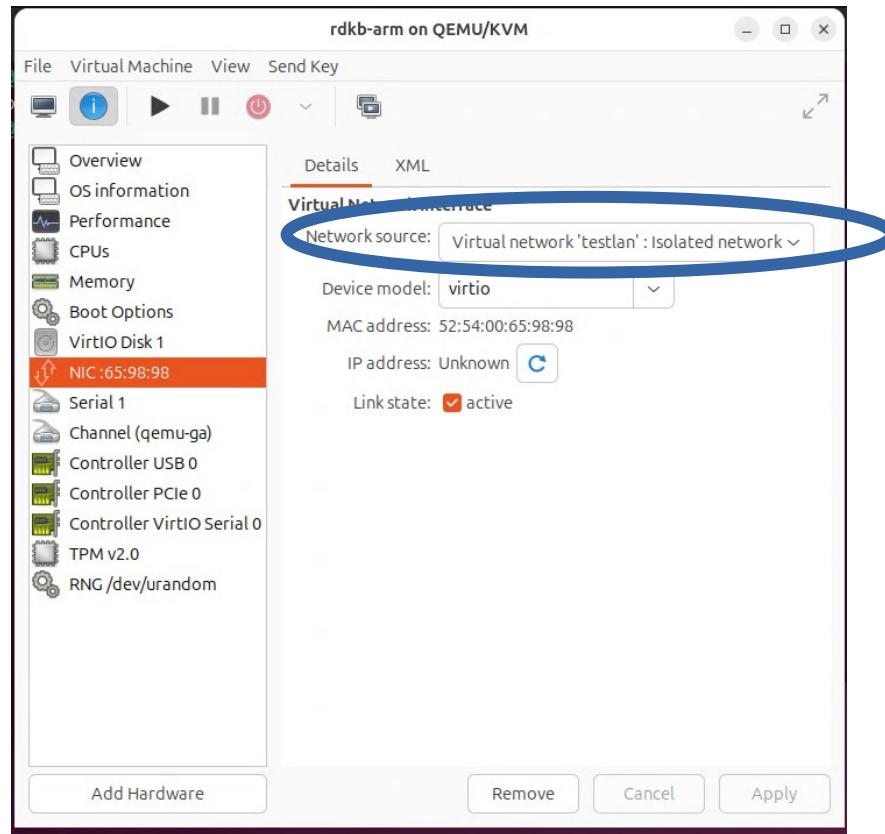
Choose Non secure boot firmware



IMPORTANT!

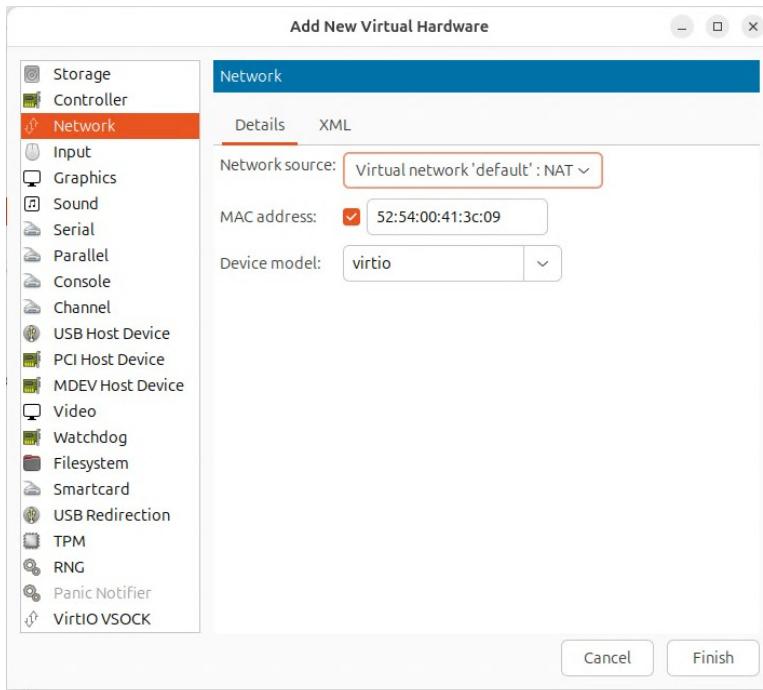
- In the firmware dropdown, select the non-secure boot firmware
(AAVMF_CODE.no-secboot.fd)

Change LAN network



- Change the first NIC to be on your isolated LAN network

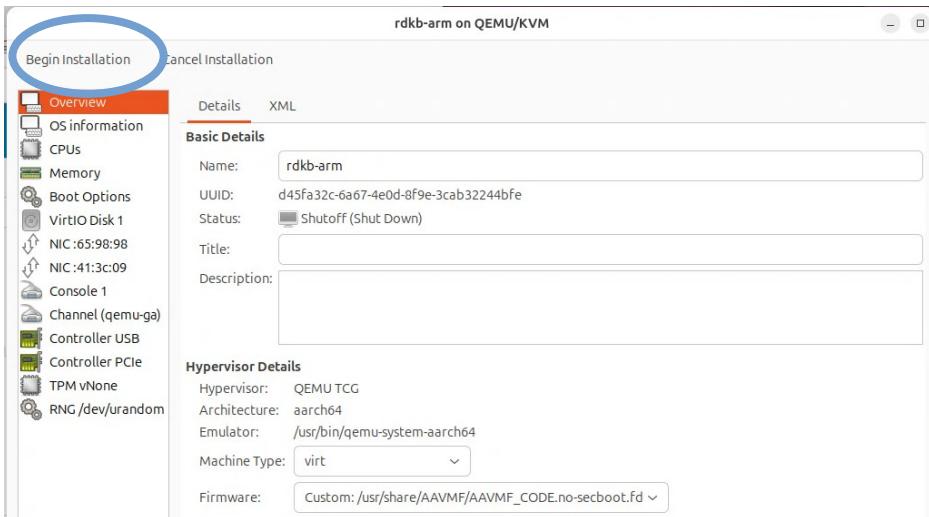
Add a WAN NIC



- Click “*Add Hardware*” and add a second network controller
- This will be the WAN interface
- *NAT* is OK for now

Finish VM configuration

- Click *Begin Installation* at the top left to finish installation



Boot RDK-B

```
[ OK ] Started Broadband DAC (DSM).
[ OK ] Started CccpCrSsp service...
      Starting PsmSsp service...
      Starting rdkblLogMonitor service...
[ 10.245453] Started bpfilter
[ 10.272641] audit: type=1325 audit(1731466369.196:8): table=filter family=2 entries=0 op=xt_register pid=1870 comm="iptables"
[ 10.277173] audit: type=1300 audit(1731466369.196:8): arch=c000000t syscall=209 success=yes exit=0 a0=6 a1=0 a2=40 a3=fffffc94ffffb8 items=0 ppid=1721 pid=1870 auid=4294967295 uid=0 gid=0 euid=0 suid=0 egid=0 sgid=0 tty=(none) ses=4294967295 comm="iptables" exe="/usr/sbin/iptables-legacy-multi" key=(null)
[ 10.285726] audit: type=1327 audit(1731466369.196:8): proctitle=69707461626C6573002D04100494E505554002D690062726C616E30002D7000746370002D2D64706F7274003233002D6A0044524F50
[ 10.295226] audit: type=1325 audit(1731466369.232:9): table=filter family=2 entries=4 op=xt_replace pid=1870 comm="iptables"
[ 10.295927] audit: type=1300 audit(1731466369.232:9): arch=c000000b7 syscall=208 success=yes exit=0 a0=6 a1=0 a2=40 a3=39949a0 items=0 ppid=1721 pid=1870 auid=4294967295 uid=0 gid=0 euid=0 suid=0 egid=0 sgid=0 tty=(none) ses=4294967295 comm="iptables" exe="/usr/sbin/iptables-legacy-multi" key=(null)
[ 10.299424] audit: type=1327 audit(1731466369.232:9): proctitle=69707461626C6573002D04100494E505554002D690062726C616E30002D7000746370002D2D64706F7274003233002D6A0044524F50
[ OK ] Started PsmSsp service.
      Starting Handle the partner_defaults.json file...
      Starting RDK VlanManager service...
[ OK ] Started RDK VlanManager service.
[ OK ] Finished Handle the partner_defaults.json file.
      Starting CccpPandMssp service...
[ 11.410965] brMtUMod: loading out-of-tree module taints kernel.

RDK (A Yocto Project based Distro) 2.0 Traverse-Gateway ttyAMA0

Traverse-Gateway login: root (automatic login)

root@Traverse-Gateway:~# service bridge.sh called with bridge-stop 0
[ 14.721323] kaudited printk_skb: 37 callbacks suppressed
[ 14.721379] audit: type=1325 audit(1731466373.624:25): table=filter family=7 entries=0 op=xt_register pid=2195 comm="ebtables"
[ 14.724456] audit: type=1300 audit(1731466373.624:25): arch=c00000b7 syscall=209 success=yes exit=0 a0=5 a1=0 a2=80 a3=ffffc2136618 items=0 ppid=2115 pid=219
```

- RDK-B will boot inside the virtual machine