

RDK-B Emulator User Guide



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Introduction

RDK (Reference Design Kit) is an integrated set of software components, tools and documentation that help in the development of the software stack for set-top box based on the standard Linux operating system which is designed to meet the requirements of the latest generation media servers and clients.

The RDK emulator is an x86 based implementation of the RDK software stack. It is primarily targeted towards the RDK development community (integrators, component developers and application developers) that attempts to simplify the process of working with the RDK software stack without the need for a reference hardware platform.

Purpose of this Document

The purpose of this document is to enable RDK users and developers to be able to bring up the RDK stack and emulator on the PC platform. The document also includes step-by-step procedures to setup & build RDK Emulator

Known Issues

- eth0/erouter0 interface <ip address> is failing to connect ssh . But, able to connect ssh with host using port forwarding in Network settings of Virtual Box.
- Client is getting the <ip address> from Emulator . But, not in 10.x.x.x
- Failed to open webUI configuration .

Abbreviations and Acronyms

The following table describes the acronyms and abbreviations used in this document

Abbreviation/Acronym	Description
RDK	Reference Development Kit
VM	Virtual Machine
VBox	Virtual Box

Overview of RDK Emulator

- Executes on x86-based platforms including virtualization environments such as Virtual Box and QEMU.
- Built using Yocto and RDK build frameworks
- RDK-B Emulator runs RDK-B stack on PC platform, validated through the virtual box based virtualization platform .
- Hardware Abstraction Layer supporting Ethernet and Wi-Fi functionalities are introduced to adopt the PC platform.
- Wi-Fi Hotspot support through external wireless adapter.USB to Ethernet Adapter is used for Ethernet LAN connections.
- Support of advance configurations like firewall, parental control, WAN Manager and remote management etc ...

Supported Build Types

Build Types	RDK Components Involved	Features/Applications Supported	Final Image Name	Startup Application
rdk-generic-broadband-image	1. rdklogger 2. utopia 3. ccsp components	1. Wan Manager 2. parental control 3. firewall 4. Remote Managment 5. yocto 3.1, dunfell	rdk-generic-broadband-image-qemux86broadband.wic.vmdk	WebUI configuration

Build Setup Instructions

Setting up the Host Environment

[How to Build#SettinguptheHostEnvironment](#)

Downloading Source Code & Building

[RDK-B Emulator Dunfell Build Instructions](#)

Bringing up the Emulator on Virtual Box

Host Requirements

Requirement	Remarks
-------------	---------

Linux	32/64 bit Ubuntu 16.04 operating system
Free HDD Space	Minimum 100GB Free Memory
Oracle Virtual Box	4.3.18 or higher

Install Virtual Box and follow the following steps to bring up RDK Emulator on Virtual Box:

In the following steps, it is recommended to review the description and screenshot completely before proceeding with steps.

STEP 1: Create your new VM Instance:

- Open Virtualbox
- Select New [A popup will come up]
- Select Type as 'Linux'
- Select Version as 'Other Linux (32 Bit)'
- Click on "Next"



Create Virtual Machine

Name and operating system

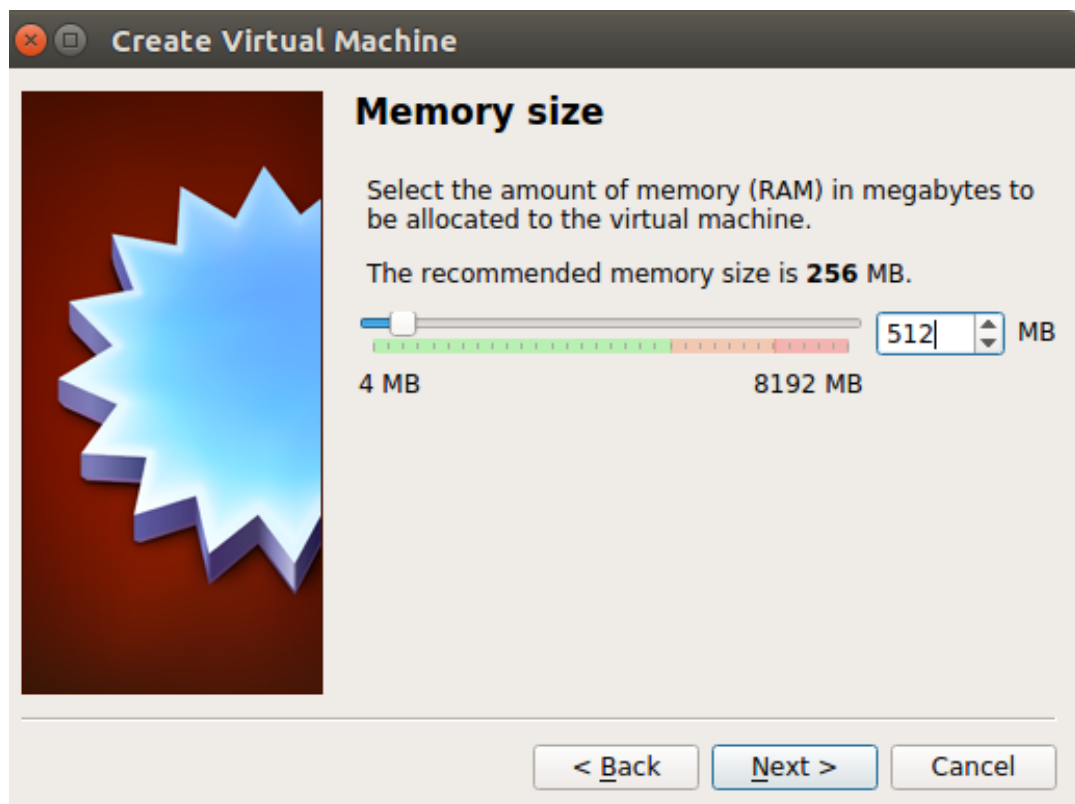
Please choose a descriptive name for the new virtual machine and select the type of operating system you intend to install on it. The name you choose will be used throughout VirtualBox to identify this machine.

Name:

Type: 

Version:

- Choose a Memory Size of 512 MB

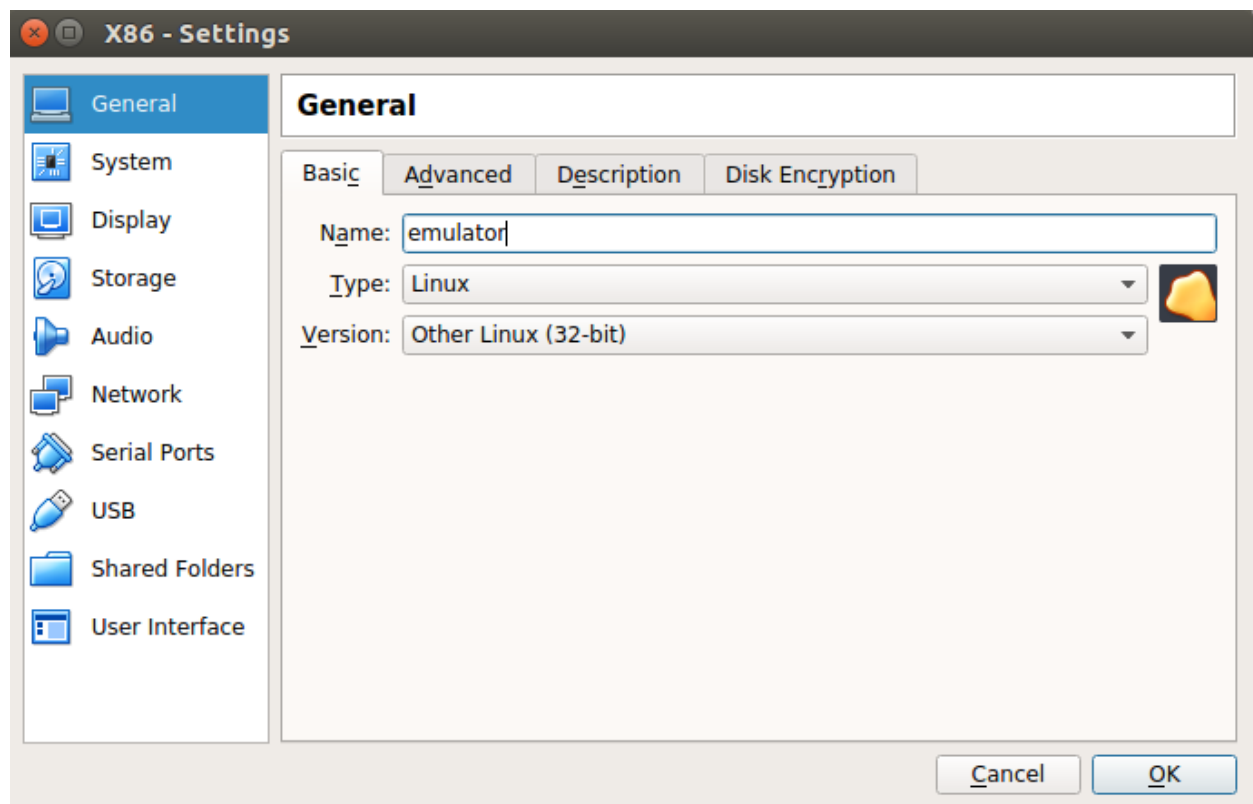


- Use an existing virtual hard drive file which would be your newly built image in *.vmdk format and create your VM:

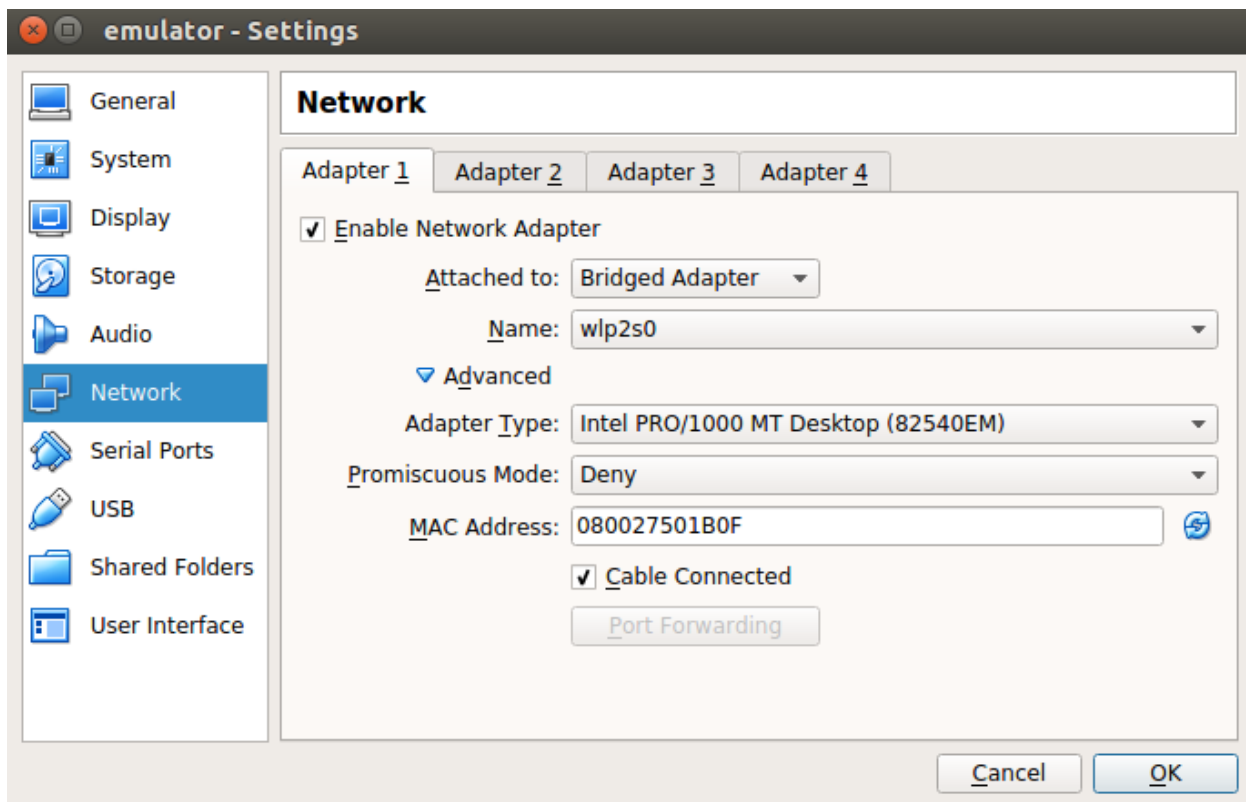


STEP 2: Configure your new VM Instance:

- Click on "Settings" tab to configure your new VM instance



- Configure your VMs network settings
- Choose "Bridged Adapter" mode as shown in the screenshot below



STEP 3: Run Emulator in VBox :

- Boot up your VM by clicking on start

- Click “start” to launch the Emulator vmdk image
- Provide “root” to login Emulator as shown in the screen shot
- Emulator usually fetches IP address by default,i.e "ifconfig erouter0"
- If not then assign statically using the commands.
- For ex: ifconfig eth0/erouter0 192.168.1.49
- route add default gw 192.168.1.1 eth0/erouter0
- Once IP address for Emulator is up, Emulator shall be accessed in the Host PC using the below command

Once you have the IP address you may SSH into your VM from your linux shell console. Use root as the ssh user.

```
$ ssh root@<erouter0 ip>
```

root@qemux86broadband:/# ifconfig

```
br106      Link encap:Ethernet  HWaddr E6:B3:27:79:E4:79
            inet addr:192.168.106.1  Bcast:192.168.106.255  Mask:255.255.255.0
            inet6 addr: fe80::e4b3:27ff:fe79:e479/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:0 errors:0 dropped:0 overruns:0 frame:0
            TX packets:14 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:0 (0.0 B)  TX bytes:1124 (1.0 KiB)

br403      Link encap:Ethernet  HWaddr 3E:7D:94:CE:18:42
            inet addr:192.168.245.1  Bcast:192.168.245.255  Mask:255.255.255.0
            inet6 addr: fe80::3c7d:94ff:fece:1842/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:0 errors:0 dropped:0 overruns:0 frame:0
            TX packets:14 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:0 (0.0 B)  TX bytes:1124 (1.0 KiB)

brebhaul   Link encap:Ethernet  HWaddr DA:B4:09:16:BD:69
            inet addr:169.254.85.1   Bcast:169.254.85.255  Mask:255.255.255.0
            inet6 addr: fe80::d8b4:9fff:fe16:bd69/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:0 errors:0 dropped:0 overruns:0 frame:0
            TX packets:14 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:0 (0.0 B)  TX bytes:1124 (1.0 KiB)

brlan0     Link encap:Ethernet  HWaddr 42:39:B8:18:9B:F3
            inet addr:10.0.0.1       Bcast:10.0.0.255    Mask:255.255.255.0
            inet6 addr: fe80::4039:b8ff:fe18:9bf3/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:0 errors:0 dropped:0 overruns:0 frame:0
            TX packets:12 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:0 (0.0 B)  TX bytes:1320 (1.2 KiB)

erouter0   Link encap:Ethernet  HWaddr 08:00:27:B4:EB:E3
            inet addr:192.168.1.49   Bcast:192.168.1.255  Mask:255.255.255.0
            inet6 addr: fe80::a00:27ff:feb4:ebe3/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:223 errors:0 dropped:0 overruns:0 frame:0
            TX packets:52 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:17548 (17.1 KiB)  TX bytes:9684 (9.4 KiB)

gre0       Link encap:UNSPEC  HWaddr 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00
            UP RUNNING NOARP  MTU:1476  Metric:1
            RX packets:0 errors:0 dropped:0 overruns:0 frame:0
            TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

lo         Link encap:Local Loopback
            inet addr:127.0.0.1      Mask:255.0.0.0
            inet6 addr: ::1/128 Scope:Host
            UP LOOPBACK RUNNING  MTU:65536  Metric:1
            RX packets:14866 errors:0 dropped:0 overruns:0 frame:0
            TX packets:14866 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:763416 (745.5 KiB)  TX bytes:763416 (745.5 KiB)

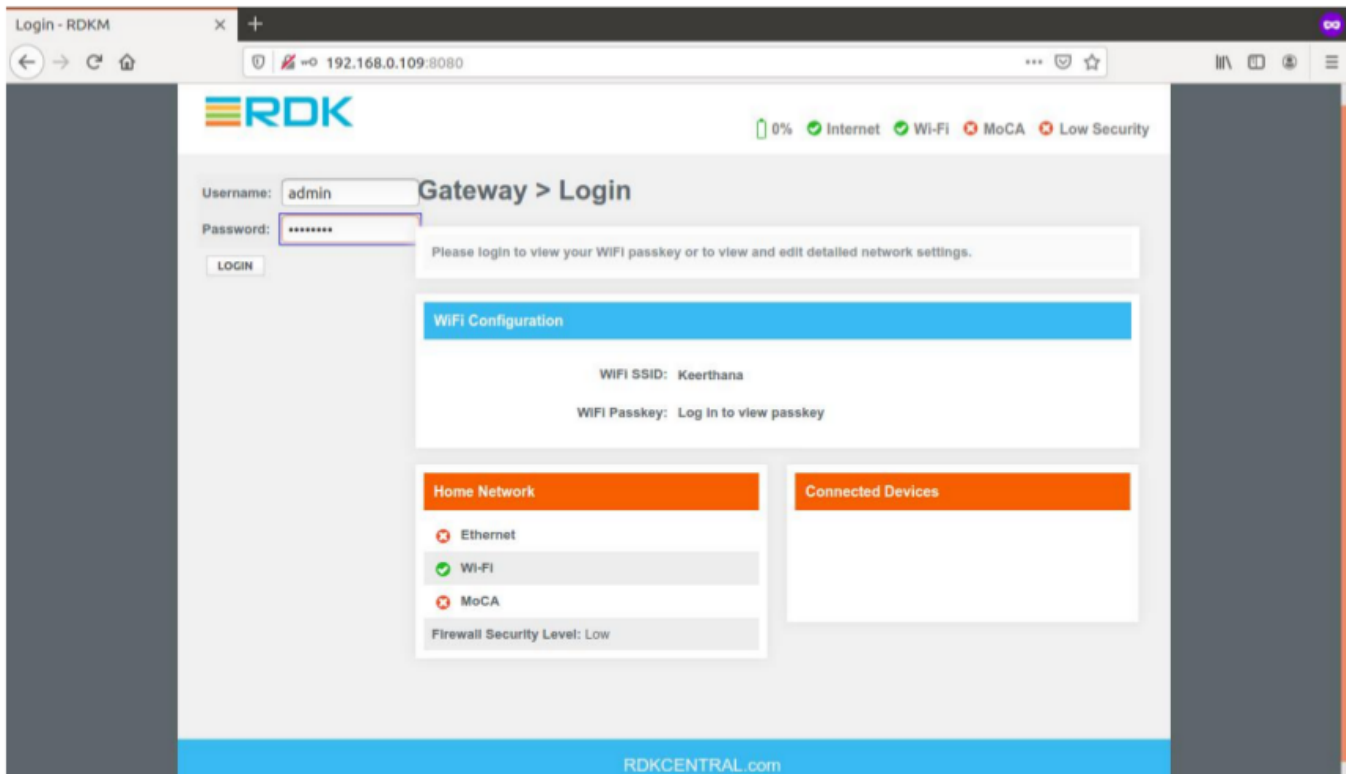
sit0       Link encap:IPv6-in-IPv4
            inet6 addr: ::127.0.0.1/96 Scope:Unknown
            UP RUNNING NOARP  MTU:1480  Metric:1
            RX packets:0 errors:0 dropped:0 overruns:0 frame:0
            TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
```

STEP 4: Lanching Emulator in WebUI :

- In the Host-PC Browser, Enter the eth0/erouter0 IP:8080 to get WebUI
Ex: <http://192.168.1.49:8080>
- WebUI Login Credential's
Username: admin
Password: password

Launching WebUI App

- In the Host-PC Browser, Enter the eth0 /erouter0 IP:8080 to get WebUI
Ex: <http://192.168.1.49:808>
- WebUI Login Credential's
Username: admin
Password: password



RDK-B Environment Setup

