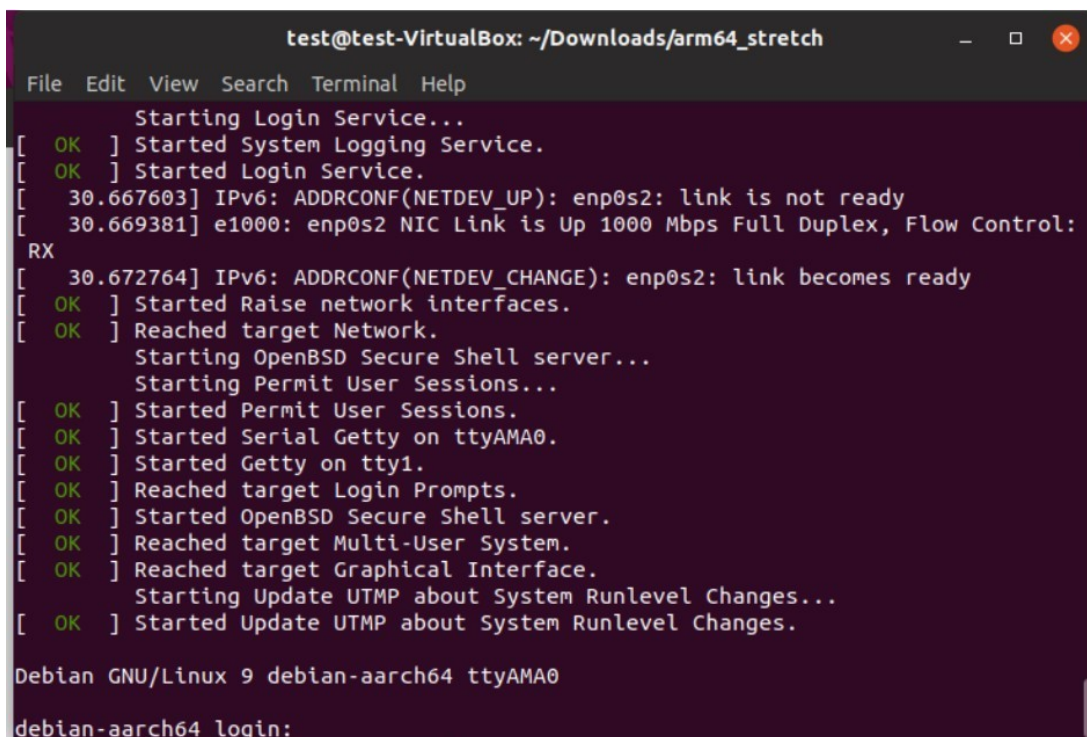


ARM Emulator Setup (Unix)

1. Download the latest version of QEMU:
 - a. For Ubuntu/Debian, run “sudo apt install qemu-system-arm”
 - b. For Arch/Manjaro, run “sudo pacman -S qemu-arch-extra”
 - c. For other distros, install whatever package “contains qemu-system-aarch64”.
2. Download the pre-compiled ARM image and scripts:
<https://drive.google.com/file/d/1C12uSIH37IZQgV9X0am8pBpwsP1laumL/view?usp=sharing>
3. Unzip “qemu-arm-img.zip”.
4. Navigate to the extracted folder in the terminal.
5. Navigate to the folder “Unix Scripts” in the terminal.
6. Run the following commands:
 - a. “chmod +x start.sh”
 - b. “chmod +x connect.sh”
 - c. “chmod +x transfer.sh”
7. Now, run the emulator for the first time.
 - a. Run the following command: “./start.sh”
 - b. Wait for this screen:

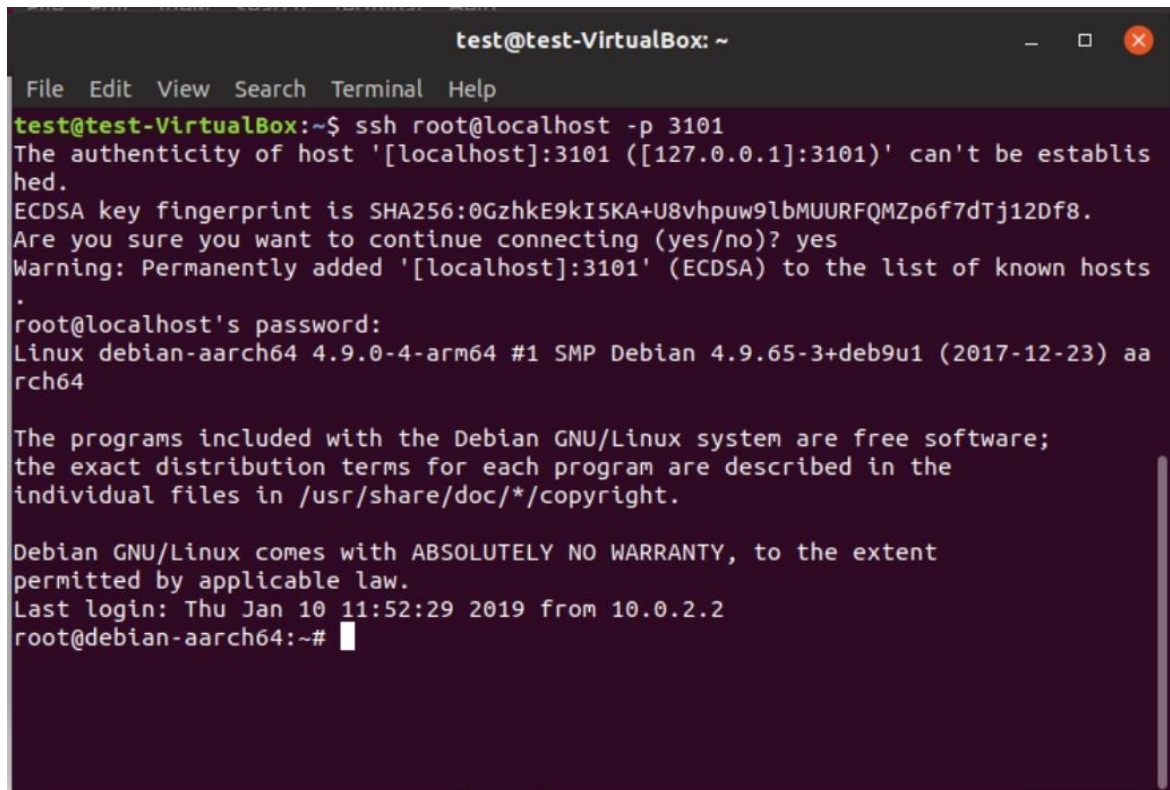


```
test@test-VirtualBox: ~/Downloads/arm64_stretch
File Edit View Search Terminal Help
Starting Login Service...
[ OK ] Started System Logging Service.
[ OK ] Started Login Service.
[ 30.667603] IPv6: ADDRCONF(NETDEV_UP): enp0s2: link is not ready
[ 30.669381] e1000: enp0s2 NIC Link is Up 1000 Mbps Full Duplex, Flow Control:
RX
[ 30.672764] IPv6: ADDRCONF(NETDEV_CHANGE): enp0s2: link becomes ready
[ OK ] Started Raise network interfaces.
[ OK ] Reached target Network.
Starting OpenBSD Secure Shell server...
Starting Permit User Sessions...
[ OK ] Started Permit User Sessions.
[ OK ] Started Serial Getty on ttyAMA0.
[ OK ] Started Getty on tty1.
[ OK ] Reached target Login Prompts.
[ OK ] Started OpenBSD Secure Shell server.
[ OK ] Reached target Multi-User System.
[ OK ] Reached target Graphical Interface.
Starting Update UTMP about System Runlevel Changes...
[ OK ] Started Update UTMP about System Runlevel Changes.

Debian GNU/Linux 9 debian-aarch64 ttyAMA0
debian-aarch64 login:
```

8. Now the emulator is running; all that’s left is connecting to it.
 - a. Open a new terminal window and navigate again to the folder “Unix Scripts”.
 - b. Run the following command: “./connect.sh”

- c. Wait for the script to prompt you for the password
- d. Enter “root” as the password.
- e. This should lead to the following screen if you see this your emulator is set up!

A screenshot of a terminal window titled "test@test-VirtualBox: ~". The terminal shows a user running the command "ssh root@localhost -p 3101". The output includes a warning about the host's authenticity, a confirmation to continue connecting, and the password prompt. After entering the password, the user is logged in as root on a Debian aarch64 system. The terminal displays the system version, login time, and the root prompt.

```
test@test-VirtualBox: ~  
File Edit View Search Terminal Help  
test@test-VirtualBox:~$ ssh root@localhost -p 3101  
The authenticity of host '[localhost]:3101 ([127.0.0.1]:3101)' can't be established.  
ECDSA key fingerprint is SHA256:0GzhkE9kI5KA+U8vhpuw9lbMUURFQMZp6f7dTj12Df8.  
Are you sure you want to continue connecting (yes/no)? yes  
Warning: Permanently added '[localhost]:3101' (ECDSA) to the list of known hosts  
root@localhost's password:  
Linux debian-aarch64 4.9.0-4-arm64 #1 SMP Debian 4.9.65-3+deb9u1 (2017-12-23) aarch64  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Thu Jan 10 11:52:29 2019 from 10.0.2.2  
root@debian-aarch64:~#
```

Credits:

“Hugsy” for the Debian aarch64 image
Boris E-Spektor for the Linux instructions and images