

# IEEE World AI IoT 2021 IoT Workshop

## SSH: MacOS & Raspberry Pi

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### SUMMARY

This document shows how to get SSH running between your RPIs and MacOS. It also shows how to install necessary systems.

This also shows how to install git on the RPIs at <https://worldaiiotcongress.org/>

### DETAILS

SSH is the remote secure shell. The RPIs need their SSH server running so your host (MacOS) machine can interact directly with the RPIs.

Git is necessary to get some code for our RPIs.

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## STEPS

### STEP 1: CREATE TWO RASPBERRY PI FOLDERS

On your MacOS machine duplicate the folder `~/workshop/Rpi` to two new folders:

`Rpi_1`  
`Rpi_2`

In the workshop folder.

Each folder should contain the files:

`2021_01.qcow2`  
`qemukernel`  
`versatile-pb.dtb`

`Host> ls ~/workshop`

`Rpi`  
`Rpi_1`  
`Rpi_2`

## STEP 2: TURN ON SSH ON RASPBERRY PIS

On each RPi enable and run SSH:

```
Rpi_*> sudo systemctl enable ssh
```

```
Rpi_*> sudo systemctl start ssh
```

Check the SSH status:

```
Rpi_*> sudo systemctl status ssh
```

You should get an indication that ssh is up and running.

## STEP 3: RASPBERRY PI GIT INSTALLATION

```
pi@raspberrypi $ sudo apt-get install -y git  
pi@raspberrypi $ git version
```

Git should be version 2.20.

#### STEP 4: RUN A RASPBERRY PI QEMU VIRTUAL MACHINE

You should do this next step with both RPI\_1 and RPI\_2.

Generate a public-secret key pair for RPI\_1.

**MacOS > ssh-keygen -t rsa**

>>Type name of keyfile to use: **“rsa\_rpi\_1\_2021\_01\_23”**

>>Type passcode: *you may leave it empty*

>>Repeat passcode: *you may leave it empty*

Prepare the known-hosts file:

**MacOS > ssh-keyscan -t rsa 127.0.0.1**

Add the private key to the Mac keychain. Do this as follows,

**MacOS > ssh-add -K ~/.ssh/rsa\_rpi\_1\_2021\_01\_23**

Then copy that ssh key file to the raspberry pi:

**MacOS > ssh-copy-id -i ~/.ssh/rsa\_rpi\_1\_2021\_01\_23.pub -p 5022 pi@localhost**

>>It will ask for the raspberry pi password.

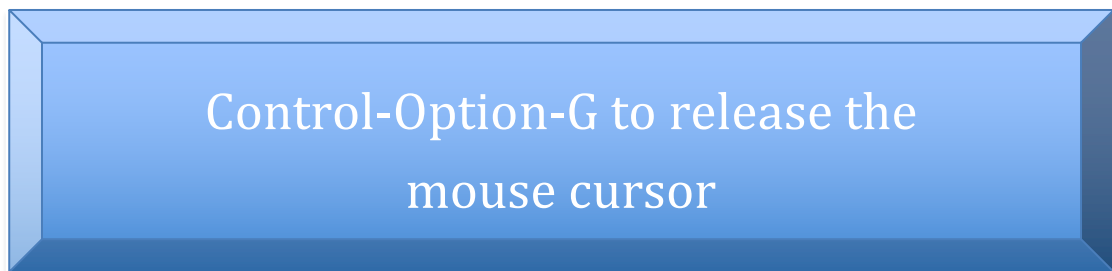
Then test it by trying to connect to the raspberry pi with the following command. It should not ask you for a password:

**MacOS > ssh -p 5022 pi@localhost**

Do the same for RPI\_2 using a key name `rsa_rpi_2_2021_01_23`

STEP 5: RUN A RASPBERRY PI QEMU VIRTUAL MACHINE

If your mouse cursor gets lost, then:



To shut down the Raspberry Pi gracefully, go to the Raspberry Pi's prompt and shut it down

```
RaspberryPi> sudo shutdown -h now
```