

# IoT: Client Devices

Testing the QEMU Image

# QEMU VM is Up

## OUR VM IS RUNNING

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- ▶ Excellent!
- ▶ Slightly different - running in terminal
- ▶ Go ahead and log in
  - ▶ root user has no password (we can set this in Buildroot)

## WE NEED TO ADD A USER

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- ▶ adduser to the rescue
- ▶ `$ adduser -h /<username> -s /bin/sh <username>`

# Test SSH

## NOW TEST SSH

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- ▶ from your Linux host, attempt to SSH to QEMU image
  - ▶ `$ ssh -p 2222 <username>@localhost`
  - ▶ Remember the line `-redir tcp:2222:22`

## FAILED!

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- ▶ It keeps asking to change my password, then won't let me in!

# Configuration Details

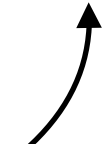
## .../ETC/SHADOW PROBLEMS

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- ▶ the /etc/shadow file is not updated, and we're not running password management services
- ▶ we'll need to update manually
- ▶ as root edit /etc/shadow so the last line looks like this:

<username>:\$1\$7UvOizz/\$SOcRUgT9PVcpyaQ9O3E9I0:10933:0:99999:7:::

*This was 0, now 10933*



# Test Cross-Compilation

## NOW TEST CROSS-COMPILATION

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- ▶ Simple test program in C:

```
#include <stdio.h>

int main(void) {
    printf("running.\n");
    return 0;
}
```

- ▶ `$ arm-linux-gnueabi-gcc -static -o test main.c`
- ▶ `$ scp -P 2222 ./test cclamb@localhost:~/`
- ▶ ...run test program on ARM image

# Solid!

## CONGRATS!

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- ▶ Embedded linux system on emulated ARM processor
- ▶ Cross-compiled a C program
- ▶ Moved program to ARM host
- ▶ Ran program

WE CAN FINALLY GET STARTED WITH CODE

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