



Set up UIC on Raspberry Pi

This lab procedure walks through the steps to install and run the UIC on the Raspberry Pi platform. The first part of the lab is the basic set up of the Raspberry Pi 4. The second part is similar to the Getting Started section in the UIC User Guide. The final section is verifying we can connect to the UIC client.

KEY POINTS

- Basic set up of raspberry pi 4
- Load UIC files
- Install UIC
- Run UIC
- Verify client connectivity

Prerequisites

1 Prerequisites

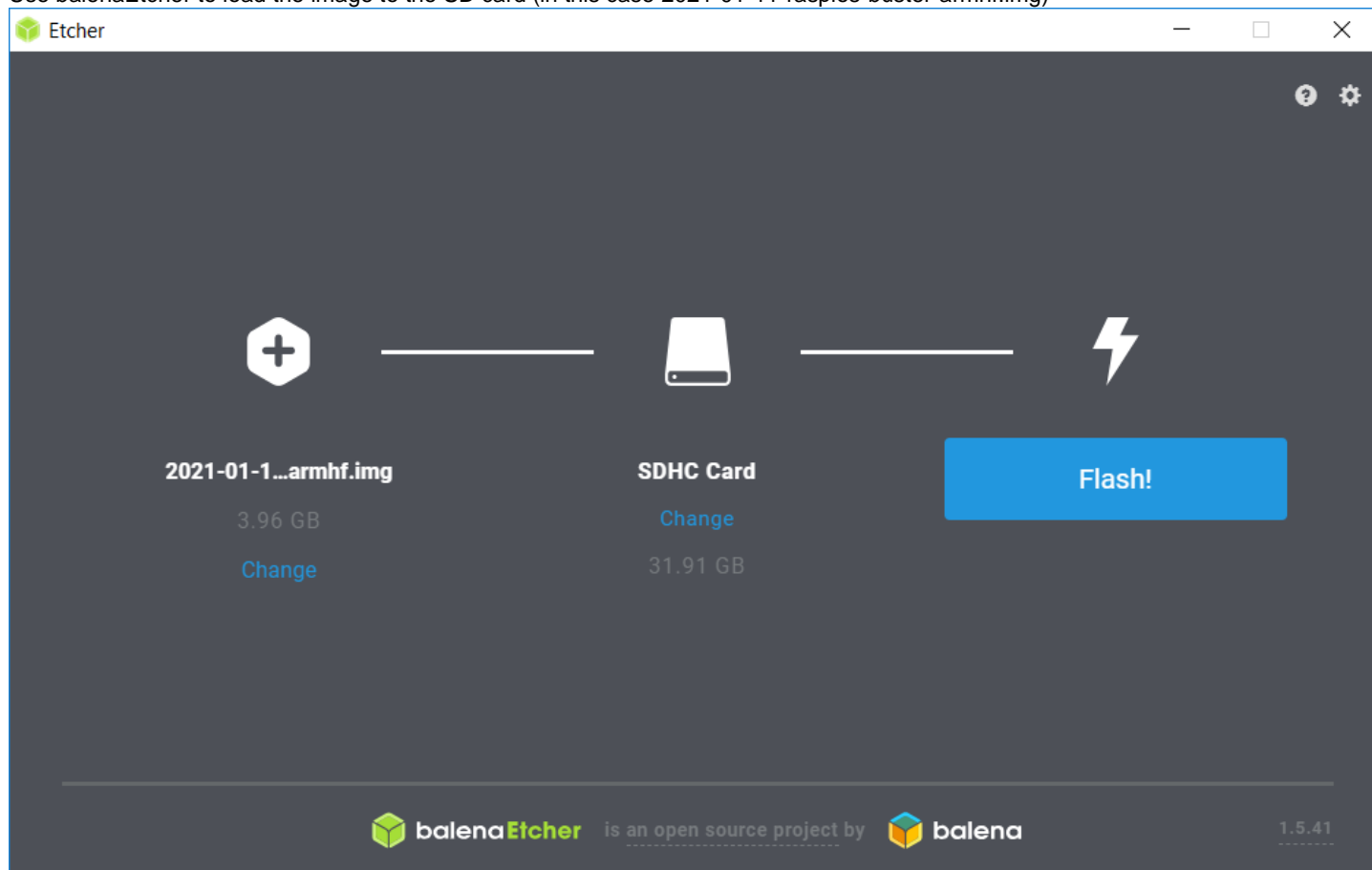
For this lab you will need the following:

- Raspberry Pi 4
 - SD card for Raspberry Pi 4
 - SD card reader for your PC
- UZB 7 serial dongle for Z-Wave
- 1 IP router with built-in DHCP
- VNC viewer <https://www.realvnc.com/en/connect/download/viewer/>
- Filezilla <https://filezilla-project.org/>
- balenaEtcher <https://www.balena.io/etcher/>
- Putty <https://www.putty.org/>

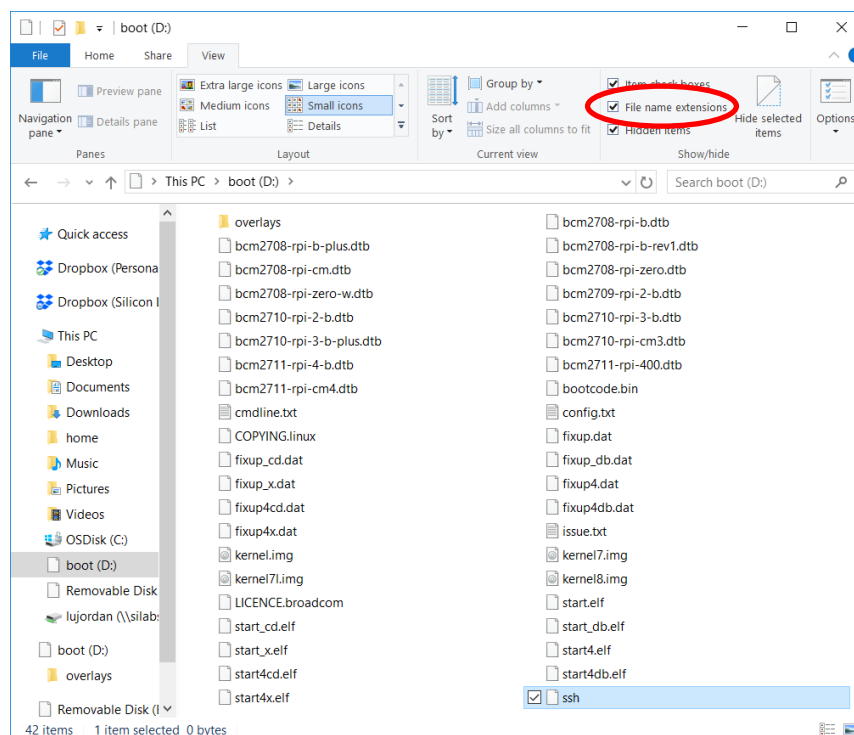
1.1 Prepare Raspberry Pi 4 SD card

Follow these steps to prepare the raspberry pi 4 to run the UIC.

1. Insert the SD card into the SD card reader
2. Use balenaEtcher to load the image to the SD card (in this case 2021-01-11-raspios-buster-armhf.img)



3. When flashing is complete, and before ejecting the SD card, navigate to the boot volume on the SD card. Create an empty file with the name "ssh". Do this by right clicking on the white space in file explorer and creating a new text file (make sure to remove the .txt extension). You may need to change the view settings in File Explorer to be able to remove the .txt extension (see below).

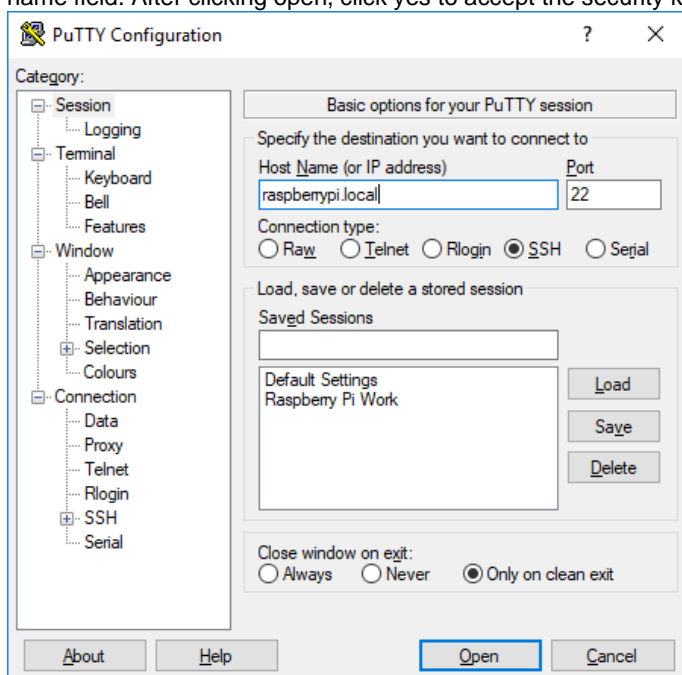


4. Insert the SD card into the Raspberry Pi 4 and power it on.

1.2 Connect to Raspberry Pi

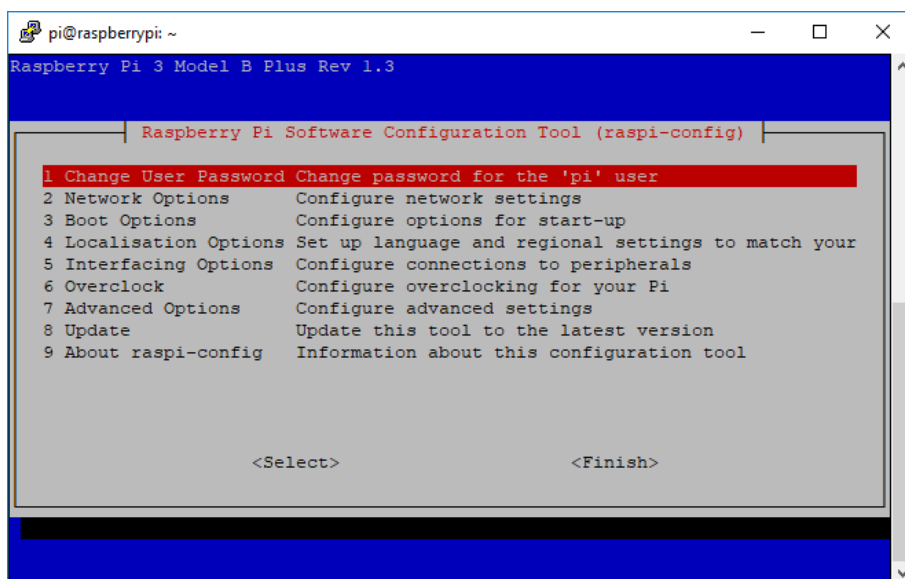
The following section details how to connect to the Raspberry Pi

1. Power up the router. Connect the PC to the router using ethernet or WiFi. Connect the Raspberry Pi to the router using ethernet.
2. Open a terminal with ssh (such as PuTTY), and type in either raspberrypi.local or the IP address of the Raspberry Pi in the host name field. After clicking open, click yes to accept the security key, and the default user name is pi and password is raspberry.



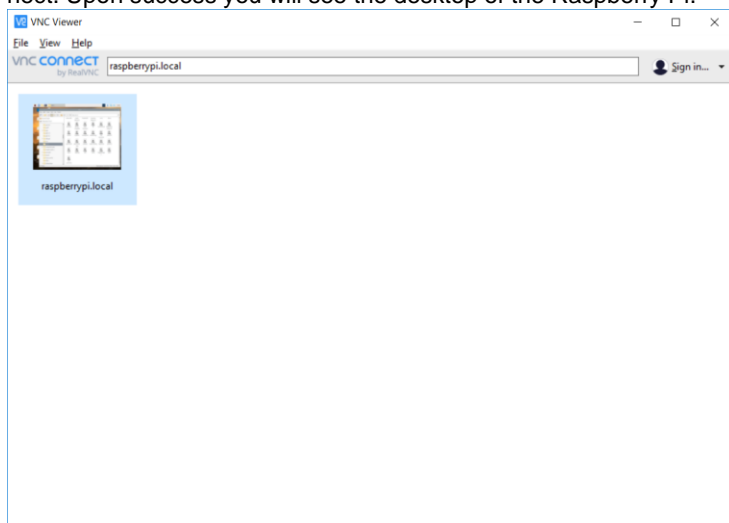
3. Now we can enable the VNC server. Run raspi-config by typing the command “sudo raspi-config” in the ssh command line.

Prerequisites



Select “interfacing options”, “VNC”, and “yes” to enable. This may also be a good time to increase screen resolution. Select “Display options”, select “resolution”, and select a suitable resolution, e.g. 1920 x 1080. Finally, select “Finish”, and “yes” to reboot.

- Wait for the Raspberry Pi to reboot and then open VNC Viewer. Connect to raspberrypi.local, or use the IP address. The IP address can be found using the DHCP client list in the router. Use the same username and password (pi/raspberry) to connect. Upon success you will see the desktop of the Raspberry Pi.



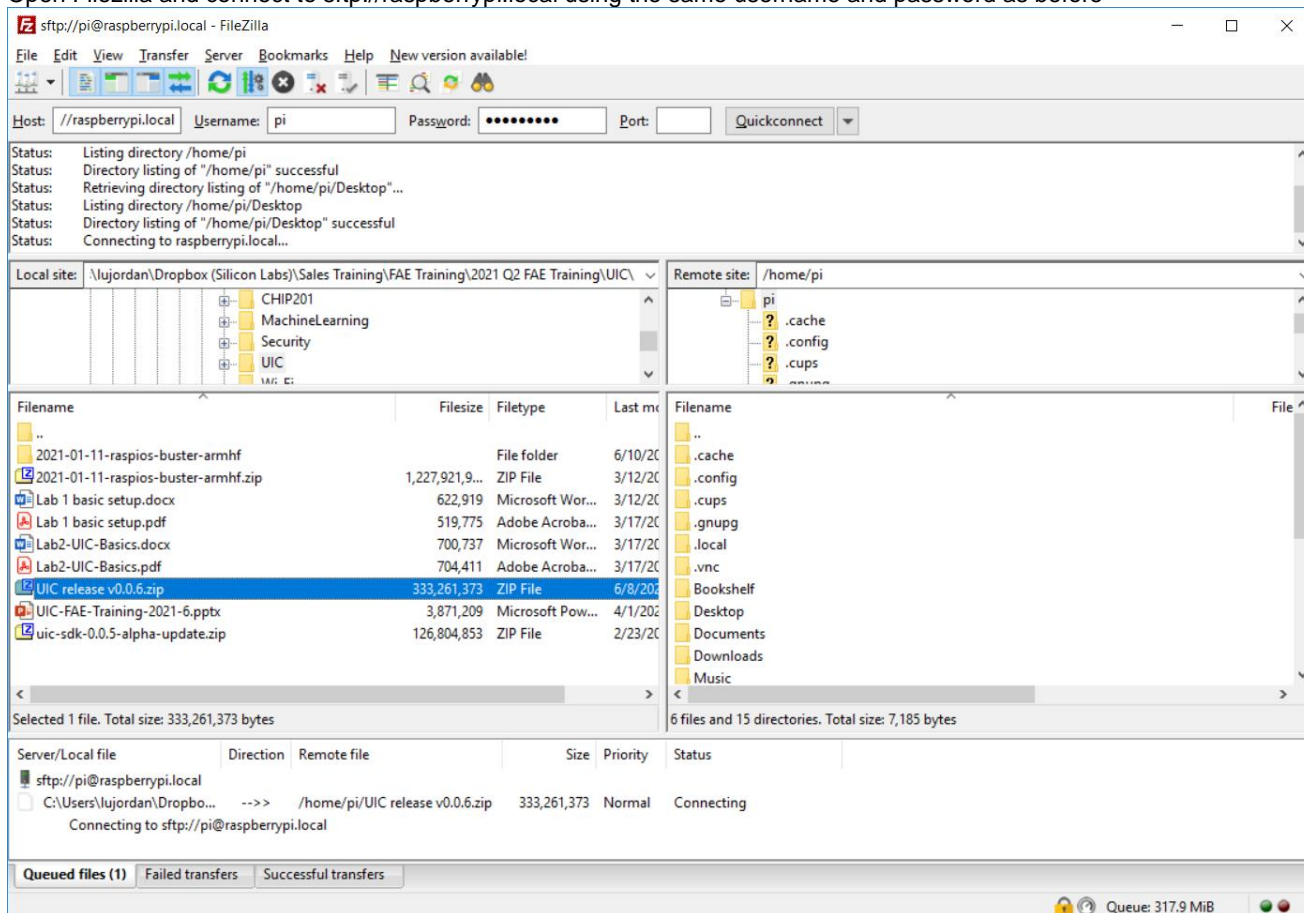
Open a terminal on the raspberry pi desktop and type “ifconfig” to find the IP address of the raspberry pi, in case it is needed later.

2 Installing UIC

2.1 Copy UIC files to Raspberry Pi

The following section details how to transfer the UIC files to the Raspberry Pi

1. Open Filezilla and connect to `sftp://raspberrypi.local` using the same username and password as before



2. On the left side (local site) locate the `uic-sdk` zip file on your computer, and on the right side (remote site) choose a location on the Raspberry Pi to copy to (for example `/home/pi`).
3. Right click on the zip file and choose “Upload” to start the transfer

2.2 Installing UIC

The following section details how to install the UIC.

1. Go to VNC Viewer and open a terminal on the Raspberry Pi
2. Type `unzip UIC-release-v0.0.6.zip` at the command prompt to extract the contents of the UIC package
3. Connect the UZB 7 to the Raspberry Pi and type `dmesg|grep usb` at the command prompt. Make a note of the tty device (in the example below it is `ttyUSB0`)

```

pi@raspberrypi: ~
File Edit Tabs Help
pi@raspberrypi:~ $ dmesg|grep usb
[ 0.063290] usbcore: registered new interface driver usbfs
[ 0.063341] usbcore: registered new interface driver hub
[ 0.063425] usbcore: registered new device driver usb
[ 0.283922] usbcore: registered new interface driver lan78xx
[ 0.283975] usbcore: registered new interface driver smsc95xx
[ 0.311903] dwc_otg 3f980000.usb: base=0xf0980000
[ 0.713003] dwc_otg 3f980000.usb: DWC OTG Controller
[ 0.713035] dwc_otg 3f980000.usb: new USB bus registered, assigned bus number
1
[ 0.713066] dwc_otg 3f980000.usb: irq 62, io mem 0x00000000
[ 0.713324] usb usb1: New USB device found, idVendor=1d6b, idProduct=0002
[ 0.713335] usb usb1: New USB device strings: Mfr=3, Product=2, SerialNumber=
1
[ 0.713344] usb usb1: Product: DWC OTG Controller
[ 0.713352] usb usb1: Manufacturer: Linux 4.14.98-v7+ dwc_otg_hcd
[ 0.713360] usb usb1: SerialNumber: 3f980000.usb
[ 0.714871] usbcore: registered new interface driver usb-storage
[ 0.718987] usbcore: registered new interface driver usbhid
[ 0.718992] usbhid: USB HID core driver
[ 1.141580] usb 1-1: new high-speed USB device number 2 using dwc_otg
[ 1.381859] usb 1-1: New USB device found, idVendor=0424, idProduct=9514
[ 1.381873] usb 1-1: New USB device strings: Mfr=0, Product=0, SerialNumber=0
[ 1.701610] usb 1-1.1: new high-speed USB device number 3 using dwc_otg
[ 1.831960] usb 1-1.1: New USB device found, idVendor=0424, idProduct=ec00
[ 1.831979] usb 1-1.1: New USB device strings: Mfr=0, Product=0, SerialNumber
=0
[ 1.925101] smsc95xx 1-1.1:1.0 eth0: register 'smc95xx' at usb-3f980000.usb-
1.1, smc95xx USB 2.0 Ethernet, b8:27:eb:f8:65:12
[ 3.482259] usbcore: registered new interface driver brcmfmac
[ 392.041302] usb 1-1.3: new full-speed USB device number 4 using dwc_otg
[ 392.176230] usb 1-1.3: New USB device found, idVendor=10c4, idProduct=ea60
[ 392.176247] usb 1-1.3: New USB device strings: Mfr=1, Product=2, SerialNumber
=3
[ 392.176256] usb 1-1.3: Product: CP2102N USB to UART Bridge Controller
[ 392.176264] usb 1-1.3: Manufacturer: Silicon Labs
[ 392.176273] usb 1-1.3: SerialNumber: 002f0723874fe811942337fdc2460985
[ 392.234092] usbcore: registered new interface driver usbserial
[ 392.236004] usbcore: registered new interface driver usbserial_generic
[ 392.237732] usbserial: USB Serial support registered for generic
[ 392.244629] usbcore: registered new interface driver cp210x
[ 392.244703] usbserial: USB Serial support registered for cp210x
[ 392.247576] usb 1-1.3: cp210x converter now attached to ttyUSB0
pi@raspberrypi:~ $

```

4. Then "cd uic-sdk-0.0.6/Binaries" and then type the following lines (this assumes the Raspberry Pi has internet access)

```

curl -s http://repo.mosquitto.org/debian/mosquitto-repo.gpg.key | sudo
apt-key add -

sudo curl -s http://repo.mosquitto.org/debian/mosquitto-buster.list -o
/etc/apt/sources.list.d/mosquitto-buster.list

sudo apt update

sudo apt install mosquitto mosquitto-clients

sudo apt install ./libuic_0.0.6_armhf.deb ./uic-dev-gui_0.0.6_armhf.deb
./uic-dev-cli_0.0.6_armhf.deb ./uic-upv1_0.0.6_armhf.deb ./uic-
zpc_0.0.6_armhf.deb

```

5. When prompted by the configuration dialog, enter the tty device name for the USB 7 from the previous step and choose the correct region. The region must be the same as used in the next lab.

2.3 Running UIC

The following section details how to run the UIC.

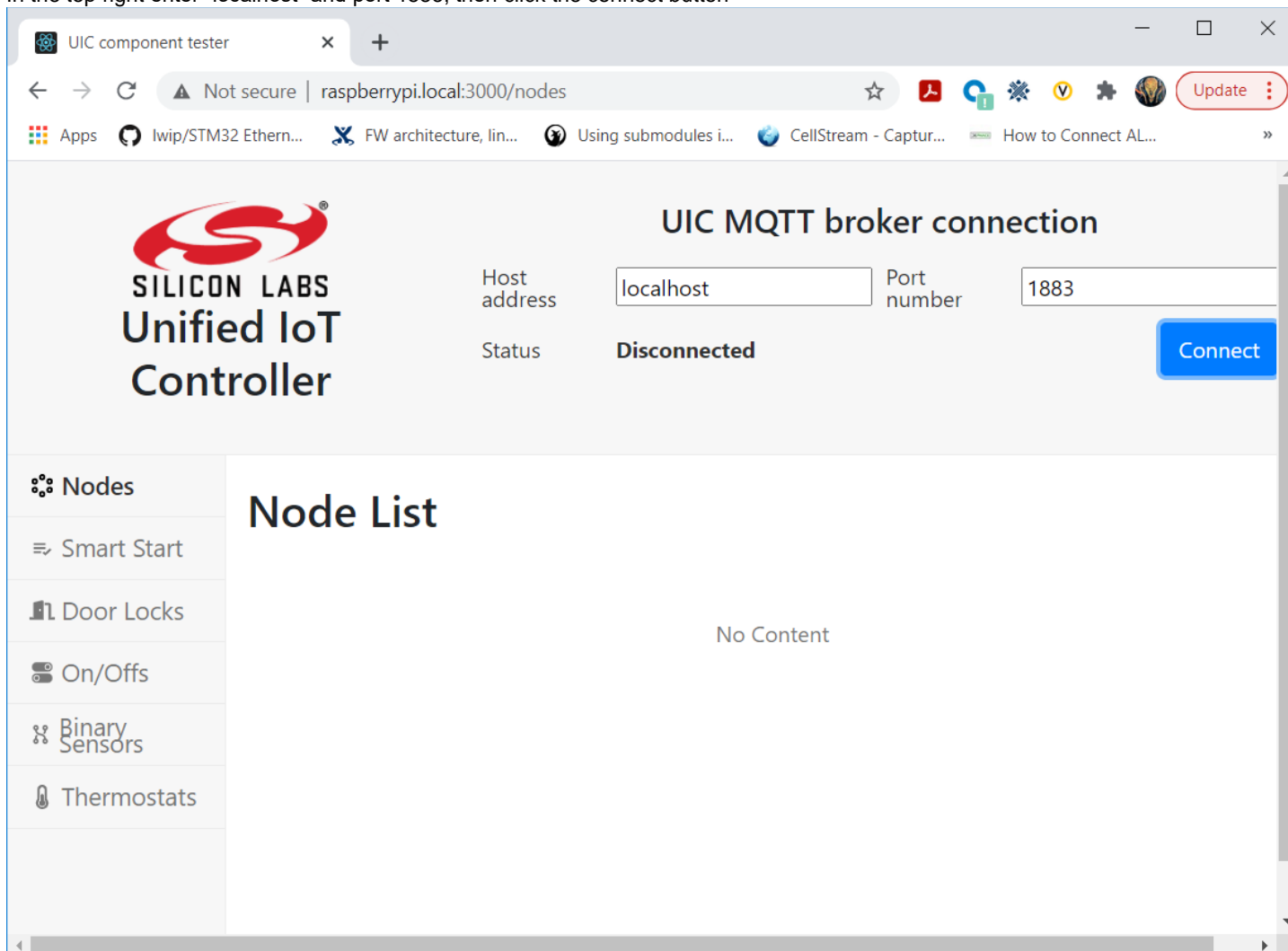
1. At the command prompt type “sudo systemctl enable uic-zpc” to enable zpc at boot
2. Type “sudo systemctl start uic-zpc” to start zpc

3 Connecting to the UIC UI

In this section we verify we can connect to the UIC web interface

3.1 Open web interface

1. Launch a web browser on your PC and connect to <http://raspberrypi.local:3000>
2. In the top right enter "localhost" and port 1883, then click the connect button



The screenshot shows a web browser window with the title "UIC component tester". The address bar shows "Not secure | raspberrypi.local:3000/nodes". The page content includes the Silicon Labs Unified IoT Controller logo on the left. On the right, there is a section titled "UIC MQTT broker connection" with the following details:

Host address	<input type="text" value="localhost"/>	Port number	<input type="text" value="1883"/>
Status	Disconnected		<input type="button" value="Connect"/>

Below this section is a sidebar menu with the following items:

- Nodes
- Smart Start
- Door Locks
- On/Offs
- Binary Sensors
- Thermostats

The main content area is titled "Node List" and currently displays "No Content".