Hands-on walkthrough of the system

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How to set up and run the system using the IoT-Lab facility

Open a terminal and type the following

ssh rbruzzes@saclay.iot-lab.info

iotlab-auth -u rbruzzes

Password

then launch an experiment with three   nodes

iotlab-experiment submit -n riot_a8 -d 60 -l 1,archi=a8:at86rf231+site=saclay -l 3,archi=m3:at86rf231+site=saclay

in order to know the nodes involved in the experiment

iotlab-experiment get -i <exp_id> -n

Now set-up the border router on M3 :

login@saclay:~$ mkdir -p ~/riot

login@saclay:~$ cd ~/riot

login@saclay:~/riot$ git clone https://github.com/RIOT-OS/RIOT.git -b 2020.10-branch

login@saclay:~/riot$ cd RIOT

login@saclay:~/riot/RIOT/$ source /opt/riot.source

login@saclay:~/riot/RIOT/$ make ETHOS_BAUDRATE=500000 DEFAULT_CHANNEL=19 BOARD=iotlab-m3 -C examples/gnrc_border_router clean all

login>@saclay:~/riot/RIOT/$ iotlab-node --flash examples/gnrc_border_router/bin/iotlab-m3/gnrc_border_router.elf -l saclay,m3,<node-id>

now first look at network interface and then choose the ipv6 address

ip addr show | grep tap

ip -6 route

You must choose a tap<id> and Ip address that are free and not busy and which are the next in the sequence

sudo ethos_uhcpd.py m3-<node-id> tap0 2001:660:3207:04c1::1/64

Now, **in another terminal**,

Now set-up the MQTT Broker node on A8:

ssh **rbruzzes@saclay.iot-lab.info**

ssh root@node-a8-100

Edit a file config.conf (**vim config.conf**)

 # add some debug output
trace_output protocol

 # listen for MQTT-SN traffic on UDP port 1885
listener 1885 INADDR_ANY mqtts
max_connections 100
ipv6 true

 # listen to MQTT connections on tcp port 1886
listener 1886 INADDR_ANY
max_connections 100
ipv6 true

Take a note of the IPV6 address of this node before starting the Broker

ip -6 -o addr show eth0

broker_mqtts config.conf

Now, **in another terminal**,

Now set-up the application node on M3:

mkdir -p ~/riot

cd ~/riot

git clone https://github.com/RIOT-OS/RIOT.git -b 2020.10-branch

cd RIOT

source /opt/riot.source

make ETHOS_BAUDRATE=500000 DEFAULT_CHANNEL=19 **BOARD=iotlab-m3 -C examples/application clean all**

iotlab-node --flash examples/application/bin/iotlab-m3/application.elf -l saclay,m3,<node-id>

nc m3-<node-id>20000

```
At thid point the application is able to automatically connect to the broker
since it has assigned  a global Ip from the border router
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Use the con command to connect to the MQTT-SN broker on node-a8-2<node-id>and subscribe to the topic using the sub command.

Open a fourth terminal

ssh rbruzzes@saclay.iot-lab.info

run the following command

mosquitto_pub -h 2001:660:3207:400::66 -p 1886 -t test/riot -m iotlab

On the RIOT shell (node-a8-3, third terminal), you get the following message:

```
### got publication for topic 'test/riot' [1] ###
iotlab
```

Stop the experiment with the command

iotlab-experiment stop