

### Assignment2 : Build an experiment with four A8 nodes on Saclay site The nodes will have the traffic and consumption monitoring profiles activated. One A8 node will be installed with a Border Router firmware so that it will propagate IPV6 network (propagates the prefix). The second A8 node will be installed with MQTT-SN Broker firmware running on the node as a MQTT Broker. The third node will be installed with the application which contains a shell and a MQTT-SN client which connects to the Broker. ### Submit an experiment on IoT-LAB 1. Choose your site (grenoble|lille|saclay|strasbourg):

In [12]:

```
%env SITE=saclay
```

```
env: SITE=saclay
```

In [13]:

```
%env CHANNEL=19
```

```
env: CHANNEL=19
```

In [14]:

```
%env PAN_ID=0xBEEF
```

```
env: PAN_ID=0xBEEF
```

In [15]:

```
!iotlab-profile addm3 -n consumptionm3 -power -voltage -current -period 8244 -avg 4
```

```
HTTP Error 500:
```

```
{"code":500,"message":"Profile consumptionm3 already exist"}
```

In [6]:

```
!iotlab-profile adda8 -n consumptiona8 -power -voltage -current -period 8244 -avg 4
```

```
{
  "consumption": {
    "average": 4,
    "current": true,
    "period": 8244,
    "power": true,
    "voltage": true
  },
  "nodearch": "a8",
  "power": "dc",
  "profilename": "consumptiona8"
}
```

In [16]:

```
!iotlab-experiment submit -n "assignment2" -d 120 -l 4,archi=a8:at86rf231+site=$SITE,,consumptiona8 -l 4,archi=m3:at86rf231+site=$SITE,,consumptionm3
```

```
{
  "id": 271866
}
```

In [17]:

```
!iotlab-experiment wait --timeout 30 --cancel-on-timeout
```

```
Waiting that experiment 271866 gets in state Running
```

```
"Running"
```

In [18]:

```
!iotlab-experiment --jmespath="items[*].network_address | sort(@)" get --nodes
```

```
[
  "a8-100.saclay.iot-lab.info",
  "a8-101.saclay.iot-lab.info",
  "a8-102.saclay.iot-lab.info",
  "a8-103.saclay.iot-lab.info",
  "m3-10.saclay.iot-lab.info",
  "m3-11.saclay.iot-lab.info",
  "m3-12.saclay.iot-lab.info",
  "m3-9.saclay.iot-lab.info"
]
```

## Deploy public IPv6 network

### 1. Compile the RIOT gnrc\_border router example

A border router (BR) is a routing device to connect a wireless sensor network to the Internet based on IPv6 technology. Choose one node of your experiment which play the role of BR. Compile and flash BR firmware to this node. Replace <id> with the right value:

In [19]:

```
!mkdir -p ~/A8/riot
```

```
!cd ~/A8/riot
```

```
%env BR_ID = 100
```

```
%env RIOT_DIR = ../../RIOT
```

```
%env APP_DIR_BR = ../../RIOT/examples/gnrc_border_router
```

```
%env APP_DIR_NET = ../../RIOT/examples/gnrc_networking
```

```
%env BIN_DIR_BR = ../../RIOT/examples/gnrc_border_router/bin/iotlab-a8-m3
```

```
%env BIN_DIR_NET = ../../RIOT/examples/gnrc_networking/bin/iotlab-a8-m3
```

```
!source $RIOT_DIR/opt/riot.source
```

```
!make -C $APP_DIR_BR ETHOS_BAUDRATE=500000 BOARD=iotlab-a8-m3 DEFAULT_CHANNEL=$CHANNEL DEFAULT_PAN_ID=$PAN_ID clean all
```

```
!cp $BIN_DIR_BR/gnrc_border_router.elf ~/A8/
```

```
!make -C $APP_DIR_NET BOARD=iotlab-a8-m3 DEFAULT_CHANNEL=$CHANNEL DEFAULT_PAN_ID=$PAN_ID clean all
```

top \$BIN\_DIR/net/gnrc\_networking.elf ~/A8/

```
env: BR_ID=100
env: RIOT_DIR=../RIOT
env: APP_DIR_BR=../RIOT/examples/gnrc_border_router
env: APP_DIR_NET=../RIOT/examples/gnrc_networking
env: BIN_DIR_BR=../RIOT/examples/gnrc_border_router/bin/iotlab-a8-m3
env: BIN_DIR_NET=../RIOT/examples/gnrc_networking/bin/iotlab-a8-m3
/bin/bash: ../RIOT/opt/riot.source: No such file or directory
make: Entering directory '/home/jovyan/work/training/riot/RIOT/examples/gnrc_border_router'
Building application "gnrc_border_router" for "iotlab-a8-m3" with MCU "stm32".
```

```
"make" -C /home/jovyan/work/training/riot/RIOT/boards/iotlab-a8-m3
"make" -C /home/jovyan/work/training/riot/RIOT/boards/common/iotlab
"make" -C /home/jovyan/work/training/riot/RIOT/core
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/cortexm_common
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/cortexm_common/periph
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32/periph
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32/stmclk
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32/vectors
"make" -C /home/jovyan/work/training/riot/RIOT/drivers
"make" -C /home/jovyan/work/training/riot/RIOT/drivers/at86rf2xx
"make" -C /home/jovyan/work/training/riot/RIOT/drivers/ethos
"make" -C /home/jovyan/work/training/riot/RIOT/drivers/netdev
"make" -C /home/jovyan/work/training/riot/RIOT/drivers/periph_common
"make" -C /home/jovyan/work/training/riot/RIOT/sys
"make" -C /home/jovyan/work/training/riot/RIOT/sys/auto_init
"make" -C /home/jovyan/work/training/riot/RIOT/sys/div
"make" -C /home/jovyan/work/training/riot/RIOT/sys/evtimer
"make" -C /home/jovyan/work/training/riot/RIOT/sys/fmt
"make" -C /home/jovyan/work/training/riot/RIOT/sys/iolist
"make" -C /home/jovyan/work/training/riot/RIOT/sys/isrpipe
"make" -C /home/jovyan/work/training/riot/RIOT/sys/luid
"make" -C /home/jovyan/work/training/riot/RIOT/sys/malloc_thread_safe
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/application_layer/uhcp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/crosslayer/inet_csum
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netapi
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif/ethernet
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif/hdr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif/ieee802154
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif/init_devs
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netreg
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/icmpv6
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/icmpv6/echo
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ipv6
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ipv6/hdr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ipv6/nib
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ndp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/ctx
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/frag
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/frag/fb
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/frag/rb
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/iphc
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/nd
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/pkt
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/pktbuf
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/pktbuf_static
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/sock
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/sock/udp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/transport_layer/udp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/application_layer/uhcp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/link_layer/eui_provider
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/link_layer/ieee802154
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/link_layer/l2util
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/netif
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/icmpv6
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/ipv6/addr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/ipv6/hdr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/sixlowpan
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/transport_layer/udp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/newlib_syscalls_default
"make" -C /home/jovyan/work/training/riot/RIOT/sys/pm_layered
"make" -C /home/jovyan/work/training/riot/RIOT/sys/posix/inet
"make" -C /home/jovyan/work/training/riot/RIOT/sys/ps
"make" -C /home/jovyan/work/training/riot/RIOT/sys/random
"make" -C /home/jovyan/work/training/riot/RIOT/sys/random/tinymt32
"make" -C /home/jovyan/work/training/riot/RIOT/sys/shell
"make" -C /home/jovyan/work/training/riot/RIOT/sys/shell/commands
"make" -C /home/jovyan/work/training/riot/RIOT/sys/stdio_uart
```

```
"make" -C /home/jovyan/work/training/riot/RIOT/sys/tsrb
"make" -C /home/jovyan/work/training/riot/RIOT/sys/xtimer
  text data bss dec hex filename
79032 504 22080 101616 18cf0 /home/jovyan/work/training/riot/RIOT/examples/gnrc_border_router/bin/iotlab-a8-m3/gnrc_border_router.elf
make: Leaving directory '/home/jovyan/work/training/riot/RIOT/examples/gnrc_border_router'
make: Entering directory '/home/jovyan/work/training/riot/RIOT/examples/gnrc_networking'
Building application "gnrc_networking" for "iotlab-a8-m3" with MCU "stm32".

"make" -C /home/jovyan/work/training/riot/RIOT/boards/iotlab-a8-m3
"make" -C /home/jovyan/work/training/riot/RIOT/boards/common/iotlab
"make" -C /home/jovyan/work/training/riot/RIOT/core
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/cortexm_common
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/cortexm_common/periph
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32/periph
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32/stmclk
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32/vectors
"make" -C /home/jovyan/work/training/riot/RIOT/drivers
"make" -C /home/jovyan/work/training/riot/RIOT/drivers/at86rf2xx
"make" -C /home/jovyan/work/training/riot/RIOT/drivers/netdev
"make" -C /home/jovyan/work/training/riot/RIOT/drivers/periph_common
"make" -C /home/jovyan/work/training/riot/RIOT/sys
"make" -C /home/jovyan/work/training/riot/RIOT/sys/auto_init
"make" -C /home/jovyan/work/training/riot/RIOT/sys/div
"make" -C /home/jovyan/work/training/riot/RIOT/sys/evtimer
"make" -C /home/jovyan/work/training/riot/RIOT/sys/fmt
"make" -C /home/jovyan/work/training/riot/RIOT/sys/isrpipe
"make" -C /home/jovyan/work/training/riot/RIOT/sys/luid
"make" -C /home/jovyan/work/training/riot/RIOT/sys/malloc_thread_safe
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/crosslayer/inet_csum
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netapi
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif/hdr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif/ieee802154
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif/init_devs
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netreg
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/icmpv6
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/icmpv6/echo
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/icmpv6/error
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ipv6
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ipv6/hdr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ipv6/nib
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ndp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/ctx
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/frag
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/frag/fb
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/frag/rb
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/iphc
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/nd
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/pkt
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/pktbuf
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/pktbuf_static
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/pktdump
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/routing/rpl
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/transport_layer/udp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/link_layer/eui_provider
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/link_layer/ieee802154
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/link_layer/l2util
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/netif
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/icmpv6
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/ipv6/addr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/ipv6/hdr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/sixlowpan
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/transport_layer/udp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/newlib_syscalls_default
"make" -C /home/jovyan/work/training/riot/RIOT/sys/od
"make" -C /home/jovyan/work/training/riot/RIOT/sys/pm_layered
"make" -C /home/jovyan/work/training/riot/RIOT/sys/ps
"make" -C /home/jovyan/work/training/riot/RIOT/sys/random
"make" -C /home/jovyan/work/training/riot/RIOT/sys/random/tinyt32
"make" -C /home/jovyan/work/training/riot/RIOT/sys/shell
"make" -C /home/jovyan/work/training/riot/RIOT/sys/shell/commands
"make" -C /home/jovyan/work/training/riot/RIOT/sys/stdio_uart
"make" -C /home/jovyan/work/training/riot/RIOT/sys/trickle
"make" -C /home/jovyan/work/training/riot/RIOT/sys/tsrb
"make" -C /home/jovyan/work/training/riot/RIOT/sys/xtimer
  text data bss dec hex filename
89588 548 18992 109128 1aa48 /home/jovyan/work/training/riot/RIOT/examples/gnrc_networking/bin/iotlab-a8-m3/gnrc_networking.elf
make: Leaving directory '/home/jovyan/work/training/riot/RIOT/examples/gnrc_networking'
```

Launch the commands from the first terminal

From here, open a Jupyter terminal (use File > New > Terminal ).

Connect to the SSH frontend and replace <site> with the right value.

```
ssh $IOTLAB_LOGIN@.iot-lab.info
ssh root@node-a8-<id>
iotlab_flash A8/gnrc_border_router.elf
cd A8/riot/RIOT/dist/tools/uhcpd
make clean all
cd ../ethos
make clean all
reset_a8_m3
./start_network.sh /dev/ttyA8_M3 tap0 2001:660:3207:401::/64 500000
printenv (know the prefix)
```

Launch the commands from the second terminal

From here, open a Jupyter terminal (use File > New > Terminal ).

Connect to the SSH frontend and replace <site> with the right value.

```
ssh $IOTLAB_LOGIN@.iot-lab.info
scp $IOTLAB_LOGIN@saclay.iot-lab.info:hub/user-redirect/lab/tree/riot/networking/assignment2/config.conf config.conf
ip -6 -o addr show eth0
This global address must be noted and used later to connect to the MQTT Broker
broker_mqtts config.conf
%env BR_ID = 102
%env APP_DIR EMCUTE = ../../RIOT/examples/emcute_mqttsn
%env BIN_DIR EMCUTE = ../../RIOT/examples/emcute_mqttsn/bin/iotlab-a8-m3
!source /opt/riot.source
!make -C $APP_DIR EMCUTE ETHOS_BAUDRATE=500000 BOARD=iotlab-a8-m3 DEFAULT_CHANNEL=$CHANNEL DEFAULT_PAN_ID=$PAN_ID clea
!cp $BIN_DIR EMCUTE/emcute_mqttsn.elf ~/A8/
```

```
env: BR_ID=102
env: APP_DIR EMCUTE=../RIOT/examples/emcute_mqttsn
env: BIN_DIR EMCUTE=../RIOT/examples/emcute_mqttsn/bin/iotlab-a8-m3
/bin/bash: /opt/riot.source: No such file or directory
make: Entering directory '/home/jovyan/work/training/riot/RIOT/examples/emcute_mqttsn'
Building application "emcute_mqttsn" for "iotlab-a8-m3" with MCU "stm32".
```

```
"make" -C /home/jovyan/work/training/riot/RIOT/boards/iotlab-a8-m3
"make" -C /home/jovyan/work/training/riot/RIOT/boards/common/iotlab
"make" -C /home/jovyan/work/training/riot/RIOT/core
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/cortexm_common
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/cortexm_common/periph
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32/periph
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32/stmclk
"make" -C /home/jovyan/work/training/riot/RIOT/cpu/stm32/vectors
"make" -C /home/jovyan/work/training/riot/RIOT/drivers
"make" -C /home/jovyan/work/training/riot/RIOT/drivers/at86rf2xx
"make" -C /home/jovyan/work/training/riot/RIOT/drivers/netdev
"make" -C /home/jovyan/work/training/riot/RIOT/drivers/periph_common
"make" -C /home/jovyan/work/training/riot/RIOT/sys
"make" -C /home/jovyan/work/training/riot/RIOT/sys/auto_init
"make" -C /home/jovyan/work/training/riot/RIOT/sys/div
"make" -C /home/jovyan/work/training/riot/RIOT/sys/evtimer
"make" -C /home/jovyan/work/training/riot/RIOT/sys/fmt
"make" -C /home/jovyan/work/training/riot/RIOT/sys/isrpipe
"make" -C /home/jovyan/work/training/riot/RIOT/sys/luid
"make" -C /home/jovyan/work/training/riot/RIOT/sys/malloc_thread_safe
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/application_layer/emcute
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/crosslayer/inet_csum
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netapi
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif/hdr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif/ieee802154
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netif/init_devs
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/netreg
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/icmpv6
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/icmpv6/echo
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ipv6
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ipv6/hdr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ipv6/nib
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/ndp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/ctx
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/frag
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/frag/fb
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/frag/rb
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/iphc
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/network_layer/sixlowpan/nd
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/pkt
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/pktbuf
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/pktbuf_static
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/sock
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/sock/udp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/gnrc/transport_layer/udp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/link_layer/eui_provider
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/link_layer/ieee802154
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/link_layer/l2util
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/netif
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/icmpv6
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/ipv6/addr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/ipv6/hdr
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/network_layer/sixlowpan
"make" -C /home/jovyan/work/training/riot/RIOT/sys/net/transport_layer/udp
"make" -C /home/jovyan/work/training/riot/RIOT/sys/newlib_syscalls_default
"make" -C /home/jovyan/work/training/riot/RIOT/sys/pm_layered
"make" -C /home/jovyan/work/training/riot/RIOT/sys/ps
"make" -C /home/jovyan/work/training/riot/RIOT/sys/random
"make" -C /home/jovyan/work/training/riot/RIOT/sys/random/tinymt32
"make" -C /home/jovyan/work/training/riot/RIOT/sys/shell
"make" -C /home/jovyan/work/training/riot/RIOT/sys/shell/commands
"make" -C /home/jovyan/work/training/riot/RIOT/sys/stdio_uart
"make" -C /home/jovyan/work/training/riot/RIOT/sys/tsrb
"make" -C /home/jovyan/work/training/riot/RIOT/sys/xtimer
text data bss dec hex filename
72396 508 18792 91696 16630 /home/jovyan/work/training/riot/RIOT/examples/emcute_mqttsn/bin/iotlab-a8-m3/emcute_mqttsn.elf
make: Leaving directory '/home/jovyan/work/training/riot/RIOT/examples/emcute_mqttsn'
```

Launch the commands from the third terminal

From here, open a Jupyter terminal (use File > New > Terminal ).

Connect to the SSH frontend and replace <site> with the right value.

ssh \$IOTLAB\_LOGIN@.iot-lab.info

In [ ]:

ssh root@node-a8-<id>

In [ ]:

iotlab\_flash A8/emcute\_mqttsn.elf

In [ ]:

reset\_a8\_m3

In [ ]:

1. Open a Jupyter terminal (use File > New > Terminal ) and open the serial link.

make BOARD=iotlab-a8-m3 IOTLAB\_NODE=auto-ssh -C riot/basics/shell term

In [ ]:

miniterm.py /dev/ttyA8\_M3 500000

Interact with the shell to get the command output:

con (ip del broker) 1885

In [ ]:

sub topic

Free up the resources

Since you finished the training, stop your experiment to free up the experiment nodes:

In [11]:

!iotlab-experiment stop

usage: iotlab-experiment [-h] [-u USERNAME] [-p PASSWORD] [-v]
 [--jmespath JMESPATH] [--format FORMAT]
 {submit,script,stop,get,load,reload,info,wait} ...

iotlab-experiment: error: You have no 'Running' experiment

In [ ]: