Institute for the Wireless Internet of Things
at Northeastern University

Wi-Fi on Colosseum

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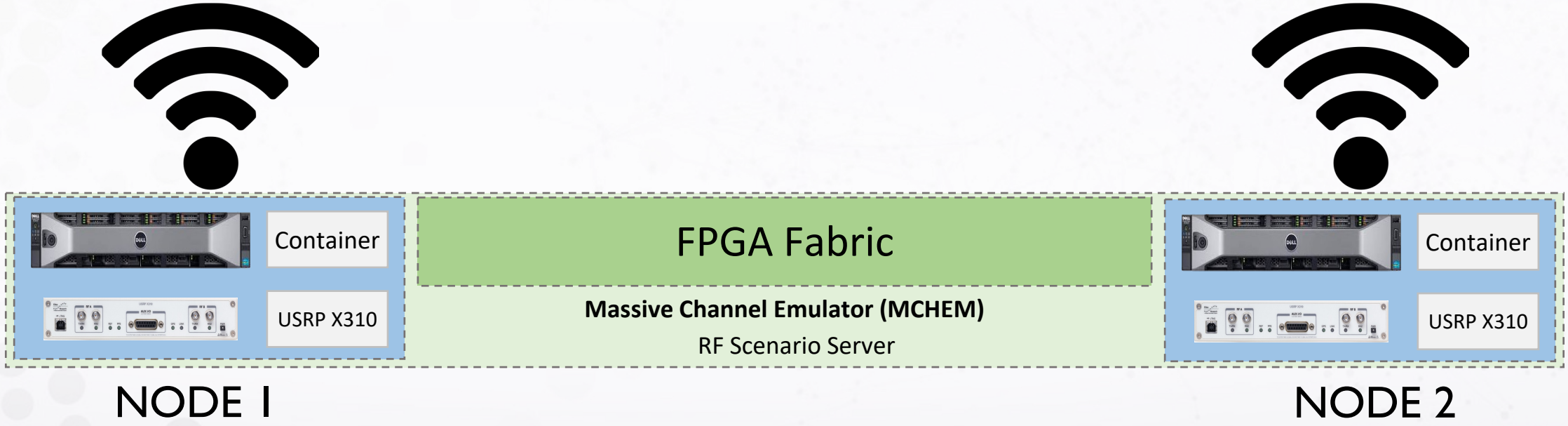
Our goal

- Ad hoc Wi-Fi on Software Defined Radios in Colosseum
- Do experiments by generating traffic over the emulated channel



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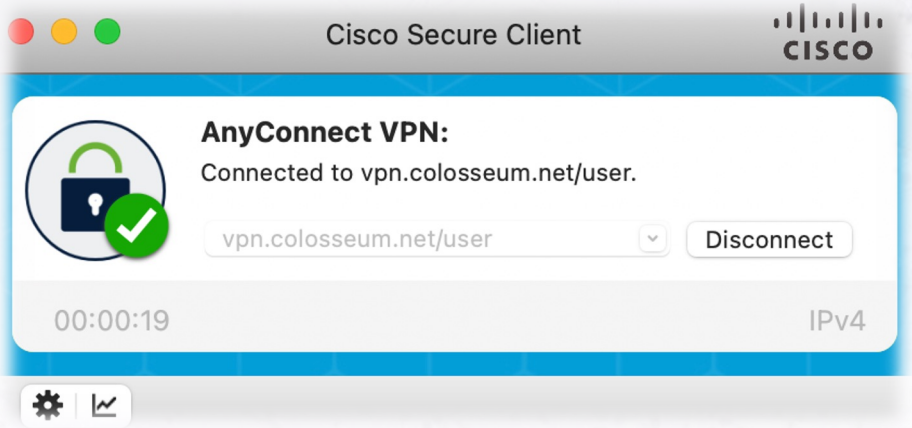
Let’s start!

- https://github.com/colosseum-wiot/colosseum-school-2025/tree/main/wifi-assignment

Getting ready

- Connecting to the VPN



- Starting a reservation with 2 nodes using *webinar-interactive-v1*

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Getting ready

- Connect to the two SRNs when the status becomes “allocated” (root/sunflower)

ID: 145327

Status: Future

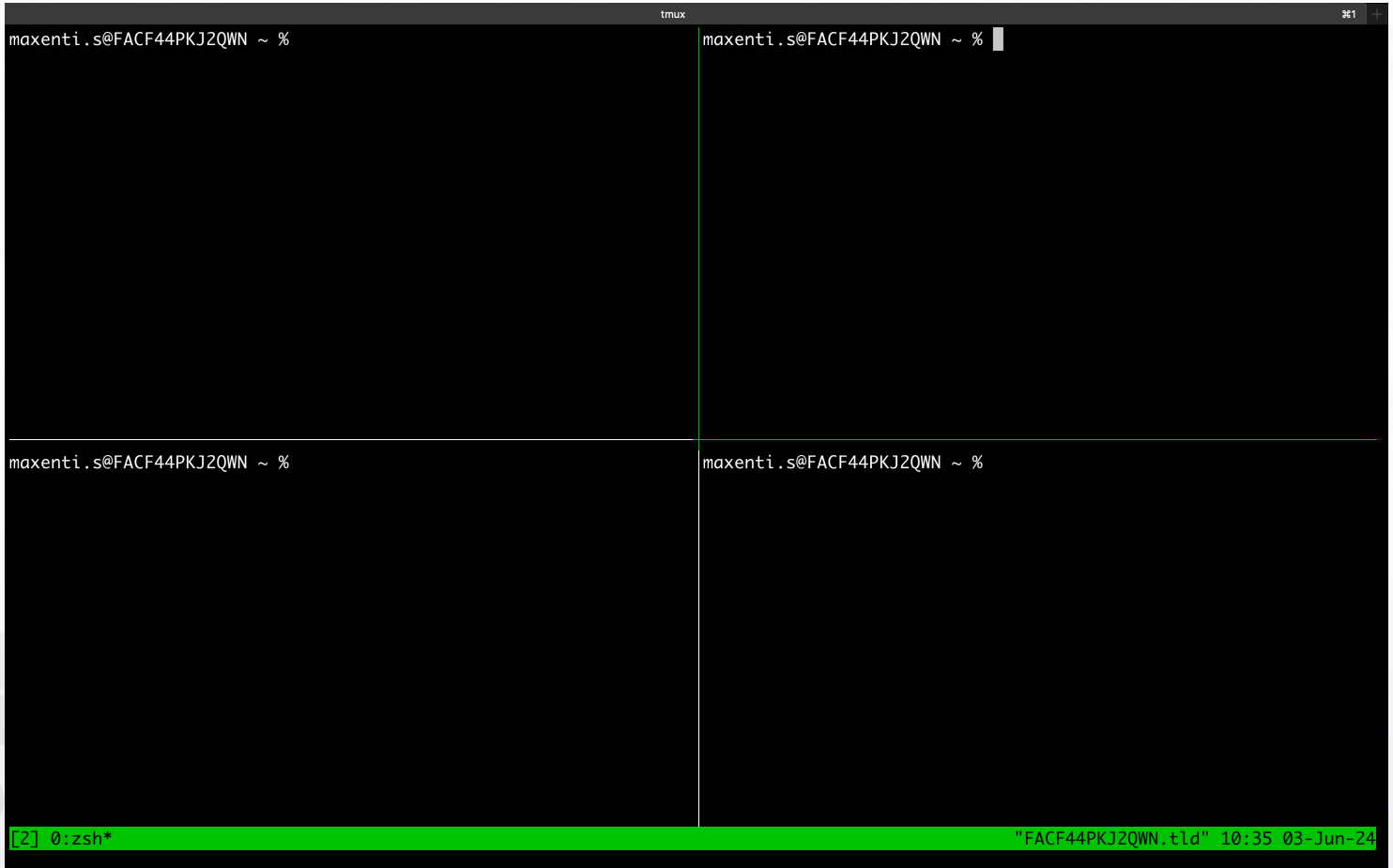
Nodes: 2

Time: 2024/06/03 10:39:00 AM - 2024/06/03 11:39:00 AM (60 minutes)

Node	Image	Hostname	Port	Status
SRN -98	webinar-interactive-v1	wineslab-098	-	-
SRN -99	webinar-interactive-v1	wineslab-099	-	-

Getting ready

- We will need 4 terminals, use the layout that you prefer



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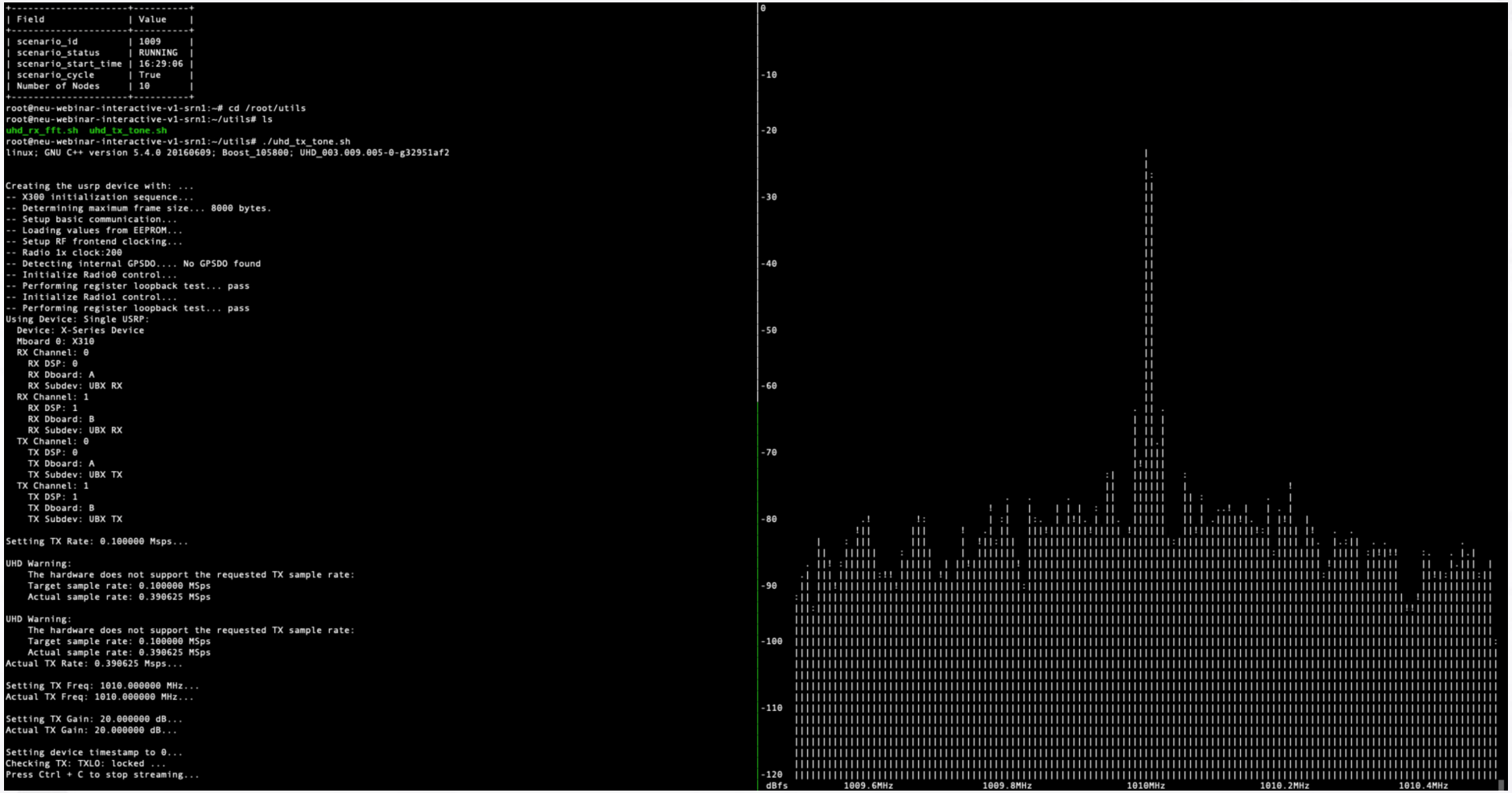
Testing if Colosseum is working

- In any of the SRNs, run:
  - *colosseumcli rf start 1009 –c*
  - Check if the scenario is active with *colosseumcli rf info*
- In one terminal, run: */root/utils/uhd_tx_tone.sh*
- In the other, run: */root/utils/uhd_rx_fft.sh*
- In *uhd_tx_tone.sh*, try to change the center frequency and see what happens

What you should see



SENDER

RECEIVER

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Getting ready: almost there

- Setting up routes to connect the two SRNs
  - */root/interactive_scripts/tap_setup.sh*
  - In each SRNs, run:
    - */root/interactive_scripts/route_setup.sh <ID of the other SRN>*
    - This sets up routes at L3 between the two SRNs and allows traffic routing
    - On the TAP interface, each SRN will have IP like this: 192.168.$(ID+100).1.

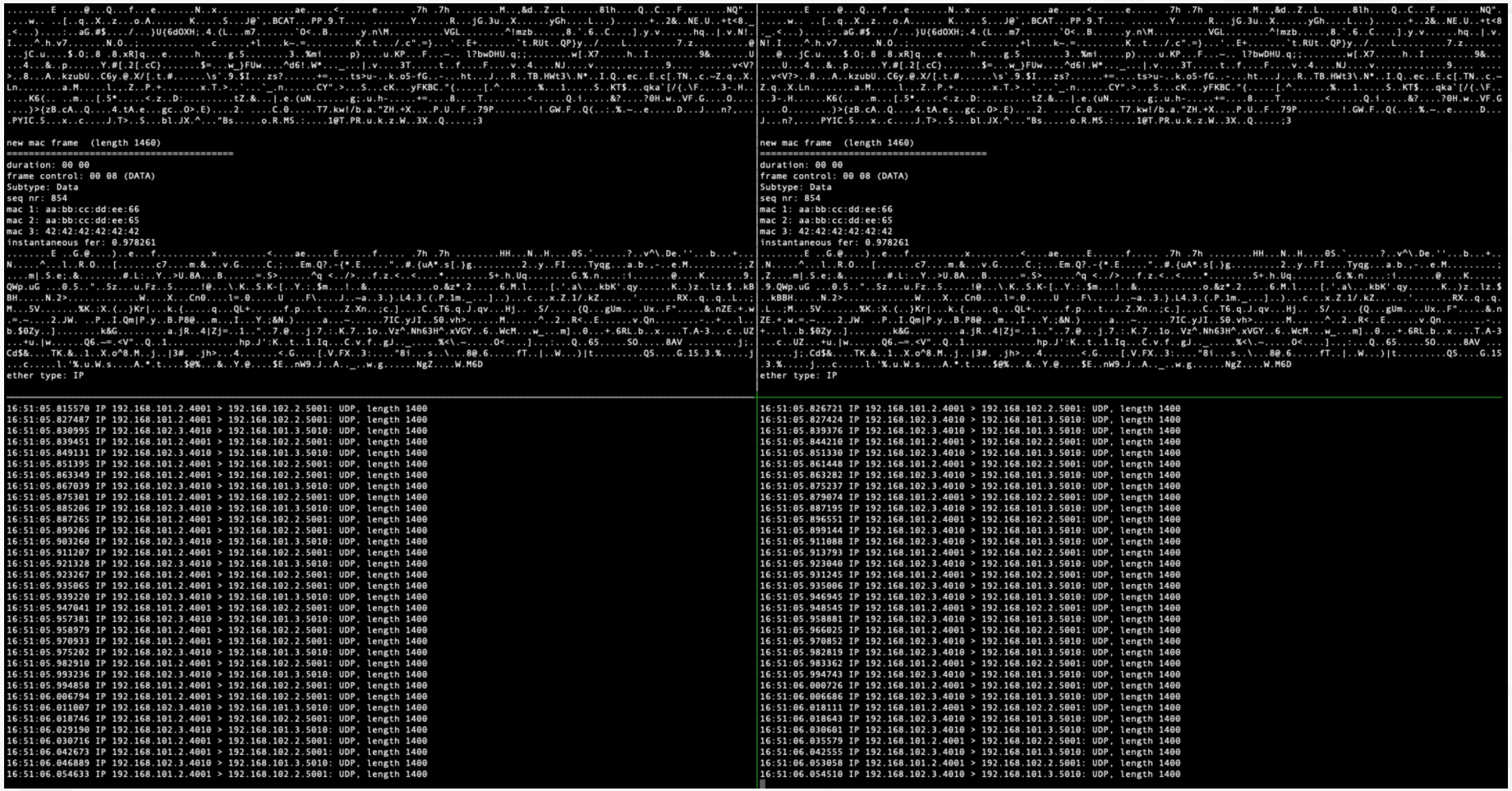
Finally, let's transmit!

- On each SRN, run
  - */root/interactive_scripts/modem_start.sh*
- This starts the transmission between the two nodes
- You should see some small traffic flowing between the nodes
- Connectivity can be checked with the ping command, or with iperf3

Let's create a lot of traffic

- We will be using the other two terminals you created
- We use TGEN
  - *colosseumcli tg start 10090*
  - *colosseumcli tg info* to check if it works
  - It takes around ~5min to start
- In the meanwhile, start on each node a traffic sniffer:
  - *tcpdump –i tr0*

What you should see



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Closing the experiment and ending the reservation

- *ctrl-c* on all terminals
- *colosseumcli tg stop #* to close the traffic generator
- *colosseumcli rf stop #* to close the channel emulator
- *exit* on all terminals
- **DONE**! You have transmitted over Wi-Fi on Colosseum

Thank you, any questions?