

# **Incorporation SDN for Reliable Routing in Distributed Edge-Computing-Assisted Industrial Internet of Things**

- Working Plan (Plan-B)**
- Tawan Hohum**

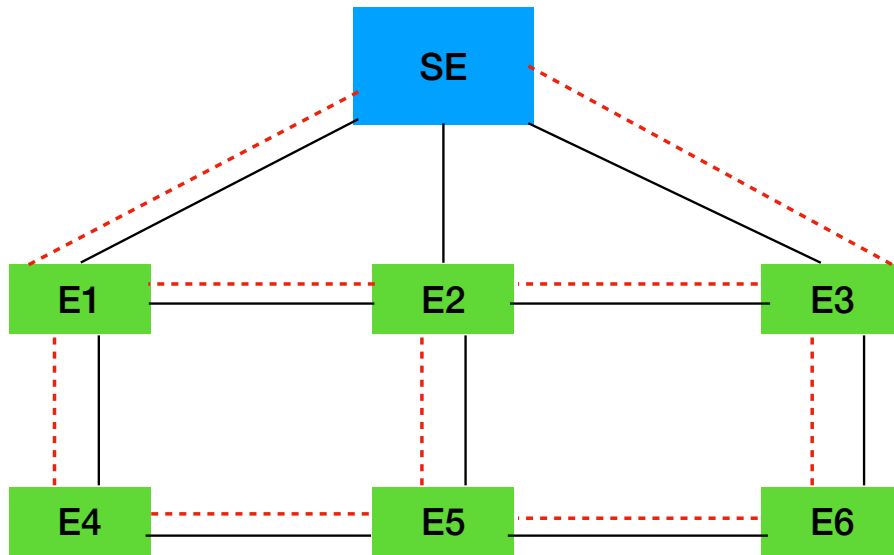
15 July 2021

# Objective

- SDN controller is used to improve reliability in wireless mesh network
  - SDN controller is a brain of the network
- Distributed Edge Computing was formatted by wireless mesh network
  - Edge node forwards the data packets

# Network Topology

## - Definition & Setup



SE

Super Edge:

- > SDN controller
- > Ad-hoc mode
- > Flow rule



E3

Edge:

- > OVS
- > Ad-hoc mode
- > Forwarding

----- Control plane

———— Data plane

Antenna#1



Antenna#1 : Use for the control plane

Antenna#2



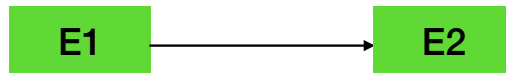
Antenna#2 : Use for the data plane

# Experiment 1

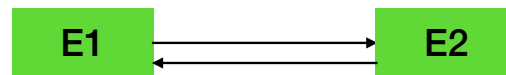
## - Maximum Throughput

- Use iperf3 UDP to find the maximum throughput of links

1. Find the maximum throughput by sending packets from node E1 to E2

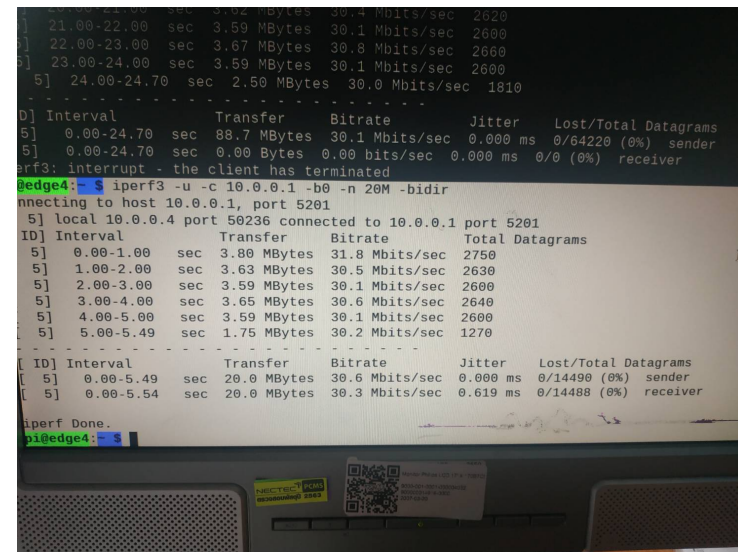
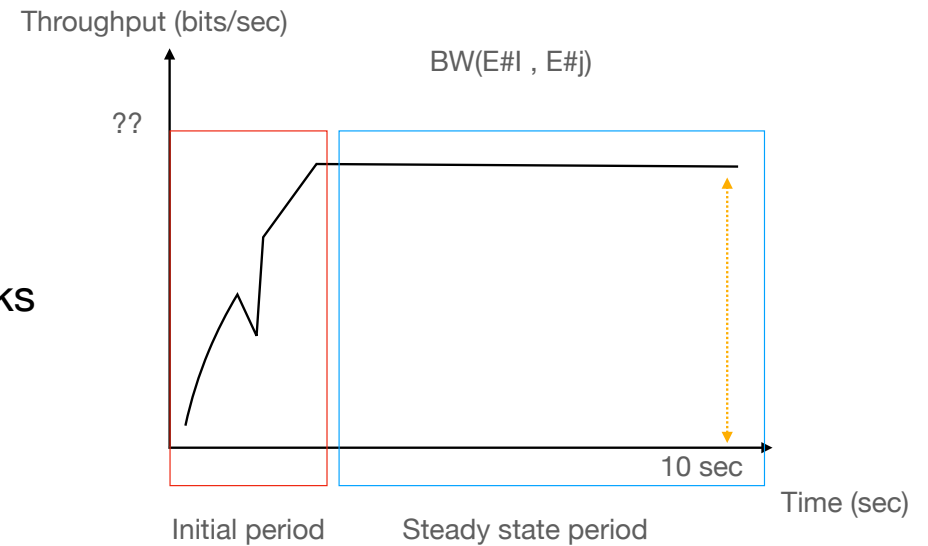


2. Find the maximum throughput by sending packets from node E1 to E2 and E2 to E1 simultaneously.



### Expected results

- 1 point of average of the maximum throughput is obtained from 10 sec measurement long. (Write the result in a log file.)
- Plot the graphs of the results from time 0 to 10 sec
- Find the average value of 10 points

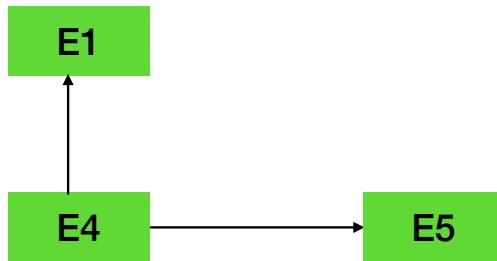


# Experiment 2

## - Maximum Throughput

- Use iperf3 UDP to find the maximum throughput of links

1. Find the maximum throughput by sending packets from node E4 to E1, while E4 forwards packet to E5.



### Expected results

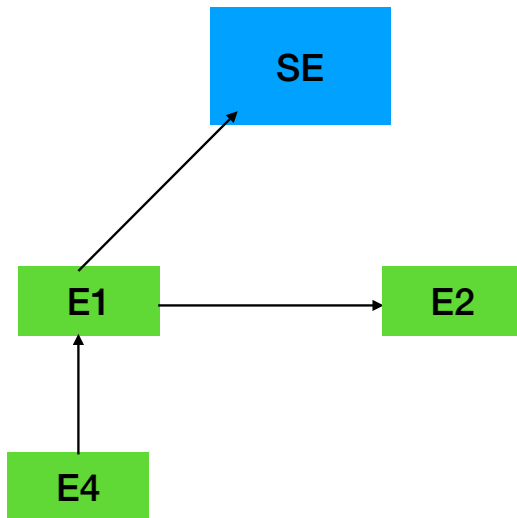
- 1 point of average of the maximum throughput is obtained from 10 sec measurement long. (Write the result in a log file.)
- Plot the graphs of the results from time 0 to 10 sec
- Find the average value of 10 points

# Experiment 3

## - Maximum Throughput

- Use iperf3 UDP to find the maximum throughput of links

1. Find the maximum throughput by sending packets from node E1 to SE, while E4 forwards the packets to E1 and E1 forwards the packets to E2 .



Expected results

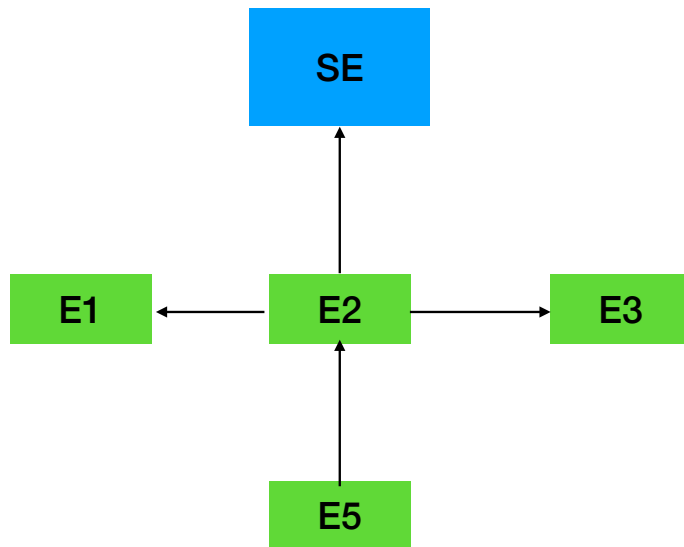
- 1 point of average of the maximum throughput is obtained from 10 sec measurement long. (Write the result in a log file.)
- Plot the graphs of the results from time 0 to 10 sec
- Find the average value of 10 points

# Experiment 4

## - Maximum Throughput

- Use iperf3 UDP to find the maximum throughput of links

1. Find the maximum throughput by sending packets from node E2 to SE, while E2 forwards the packets to E1, and E2 forwards the packets to E2 .



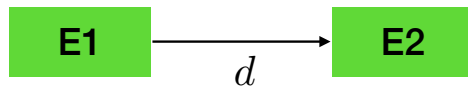
Expected results

- 1 point of average of the maximum throughput is obtained from 10 sec measurement long. (Write the result in a log file.)
- Plot the graphs of the results from time 0 to 10 sec
- Find the average value of 10 points

# Experiment 5

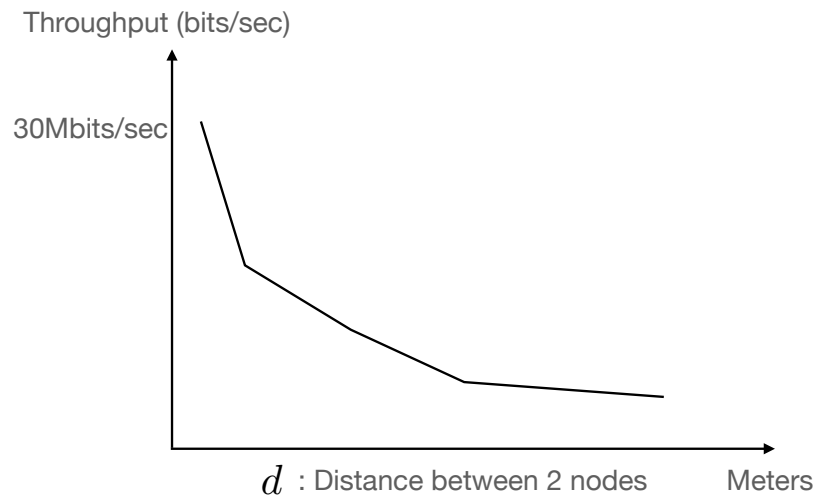
## - Test the effect of link distance

- Use iperf3 UDP to find the maximum throughput of links



Expected results

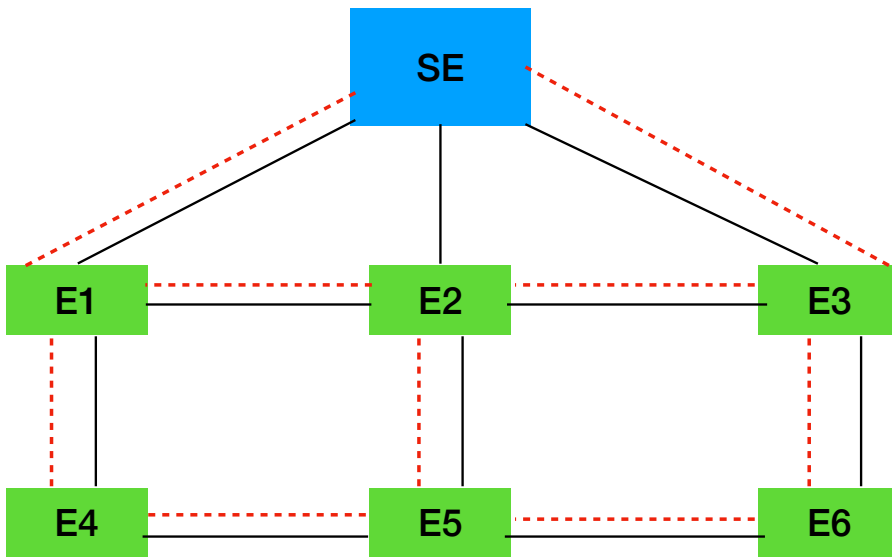
- 1 point of average of the maximum throughput is obtained from 10 sec measurement long. (Write the result in a log file.)
- Plot the graphs of the results from time 0 to 10 sec
- Find the average value of 10 points





# Experiment 6

## -Static routing



1. Test with the code in Github

[https://github.com/TNatapon/Privacy\\_SDN\\_Edge\\_IoT](https://github.com/TNatapon/Privacy_SDN_Edge_IoT)

1.1 Scenario 1 : To check the code, does it run correctly?  
Random packets sending form every node to SE

- Measure the packet lost of every flow
- Link throughput