ATLANTIC-eVISION: Cross-Atlantic Experimental Validation of Intelligent SDN-controlled IoT Networks

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3rd Open Call
Objectives

- To test inter-testbed connectivity by performing experiments on EU and US testbeds
- To achieve automatic configuration of SDN/OpenFlow in Wireless Ad hoc Networks
- To achieve the best data-plane latency for an e-healthcare secure application
- Recover from a failure when it occurs in a network
ML Assisted SDN Controlled IoT Experiment on EU-US Testbeds

1. Automatic Configuration
2. ML in Telecommunications
   1. Data collection through real testbed experimentation
   2. Experiments in real settings

EU

- Fed4Fire – iLab.t/GPULAB
  - IoT application (Smart Health application)

Cloud Servers

Data Capture

EU

Internet

US

- COSMOS
  - Global SDN Controller

Machine Learning

Train

Evaluate

EU

- Local Controller
  - Wireless IoT Network
  - SDN Enabled IoT Devices

US

- Local Controller
  - Wireless IoT Network
  - SDN Enabled IoT Devices

POWDER

SDN Enabled IoT Devices

Fed4Fire-CityLab

Fed4Fire-WiLab.t

PNG
Current Inter-Testbed Experiment

- Internet2 Network
- Powder Internal Network
  - Powder (US)
  - Public IPv4
  - No Public IPv6
- Belnet Network at Belgium
- Router A
- Control Network
- Router G
- Private Control Network
- NAT
- Virtual Wall (EU)
  - Public IPv4
  - Private IPv4
  - Public IPv6
- CityLab at Antwerp (EU)
  - Public IPv4
  - Public IPv6
- W-ilab1.t at Ghent (EU)
  - Private IPv4
  - Public IPv6
- W-ilab2.t at Ghent (EU)
  - Private IPv4
  - Public IPv6
- Out of Band Network
- Controller (Located at Powder or Virtual Wall)
- N is varied from 1 to 40
Results

The controller is placed at the virtual wall node

The controller is placed at the Powder testbed

Flow Establishment Time at Powder switches
Flow Establishment Time at the W-ilab.t and Virtual Wall switches
Flow Establishment Time at Powder Switches
Published or Accepted Papers


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Thank You!
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