

## GOALS

- Perform security analysis in real deployments:
  - Detect simple attacks (e.g. ICMP flooding) in IoT/5G.
- Analyse the traffic extraction performance of MMT-IoT:
  - Determine limits and how it can scale further.

General Objective:

**Evaluate the MMT-IoT solution and its efficiency in real-life scenarios.**

## CHALLENGES

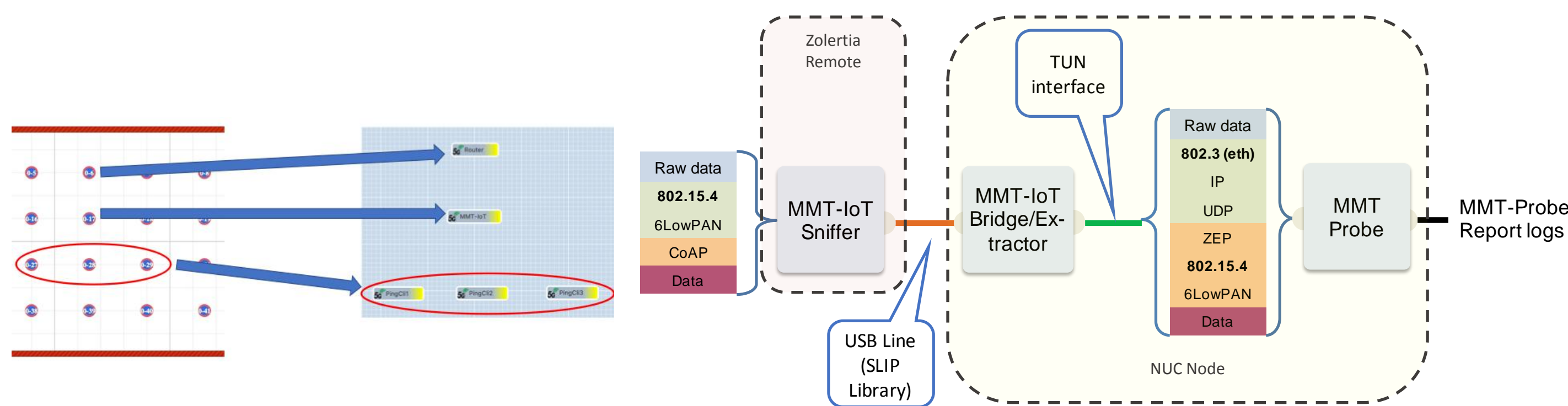
- Adaptations were needed to deploy in real IoT devices:
  - Initial Proof of Concept was developed in an emulator.
  - Development on real radio drivers was required.
- Communication with existing IoT deployment required technical efforts:
  - Fine tuning of the radio parameters to allow communications between two IoT nodes.

## DEMO SETUP

Experiments performed using the w.iLab NUC nodes with Zolertia ReMote IoT. Nodes were reserved and mapped using the jFED tool (see figure below right).

In NUC nodes, part of the MMT-IoT was run on the Zolertia mote, and part on the NUC machine.

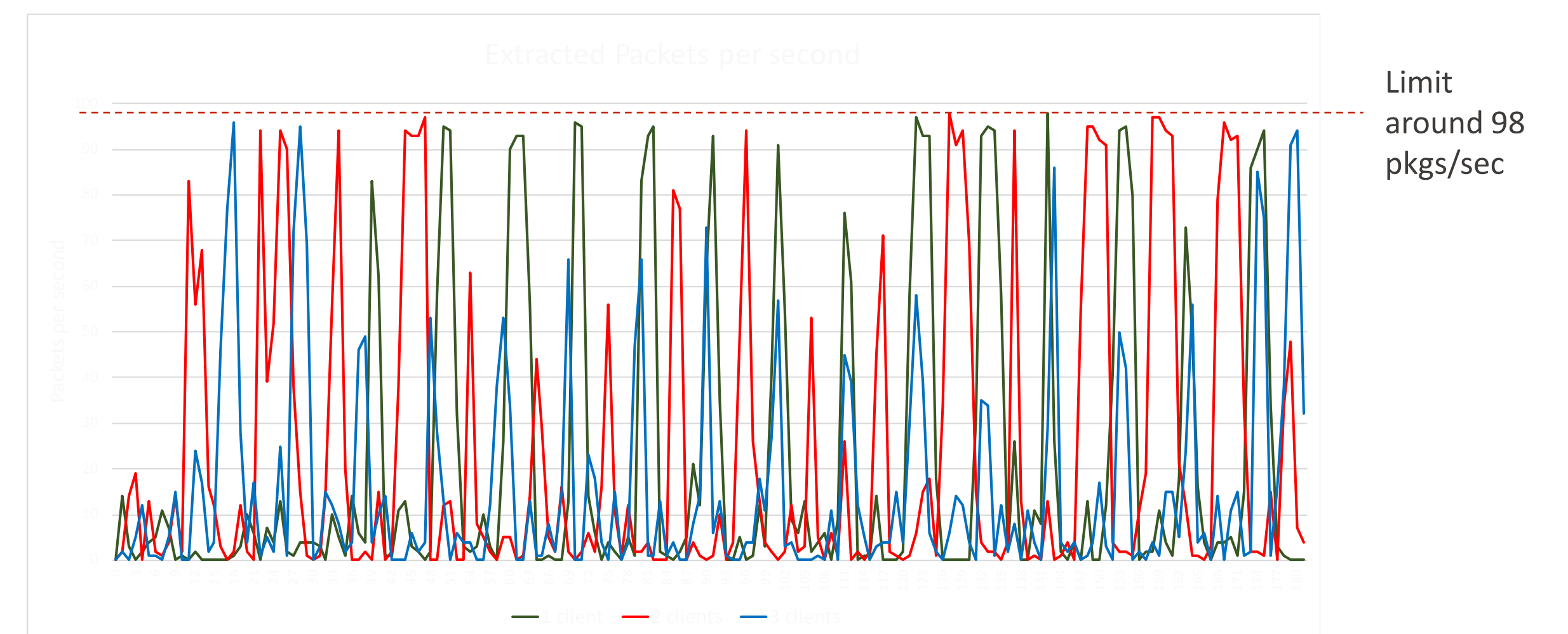
MMT-Probe used as security analysis engine, for detecting attack on the IoT network: ICMP flooding between devices.



## RESULTS

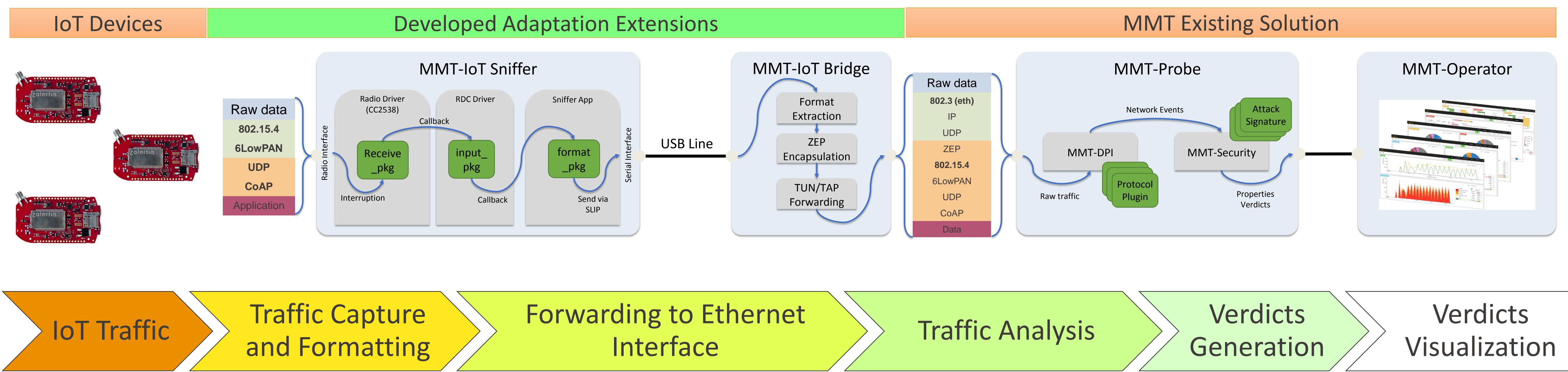
Initial test with 1 client showed that a simple attack (ICMP flooding) is correctly detected.

A scalability test with 1, 2 and 3 clients showed that the solution is capable of extracting a fixed number of packets per second (around 90 pkg/sec). This is probably due to radio channel limits.



## MMT-IoT DESIGN

The *Montimage Monitoring Tool (MMT)* has been designed for traditional ethernet Networks. Adaptations were required to use DPI techniques in IoT environments. The general design of the MMT-IoT is shown below:



## CONCLUSIONS

- The deployment allowed validating the MMT-IoT solution in a real Environment:
  - Detection of cyber attacks using DPI on IoT networks.
- Performance/energy consumption issues need to be addressed:
  - What are the real limits for extracting packets?
  - What is the maximal throughput that MMT-IoT can handle?
- This makes it interesting to continue with new experiments.

## ACKNOWLEDGMENTS & CONTACT

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