

## GOALS

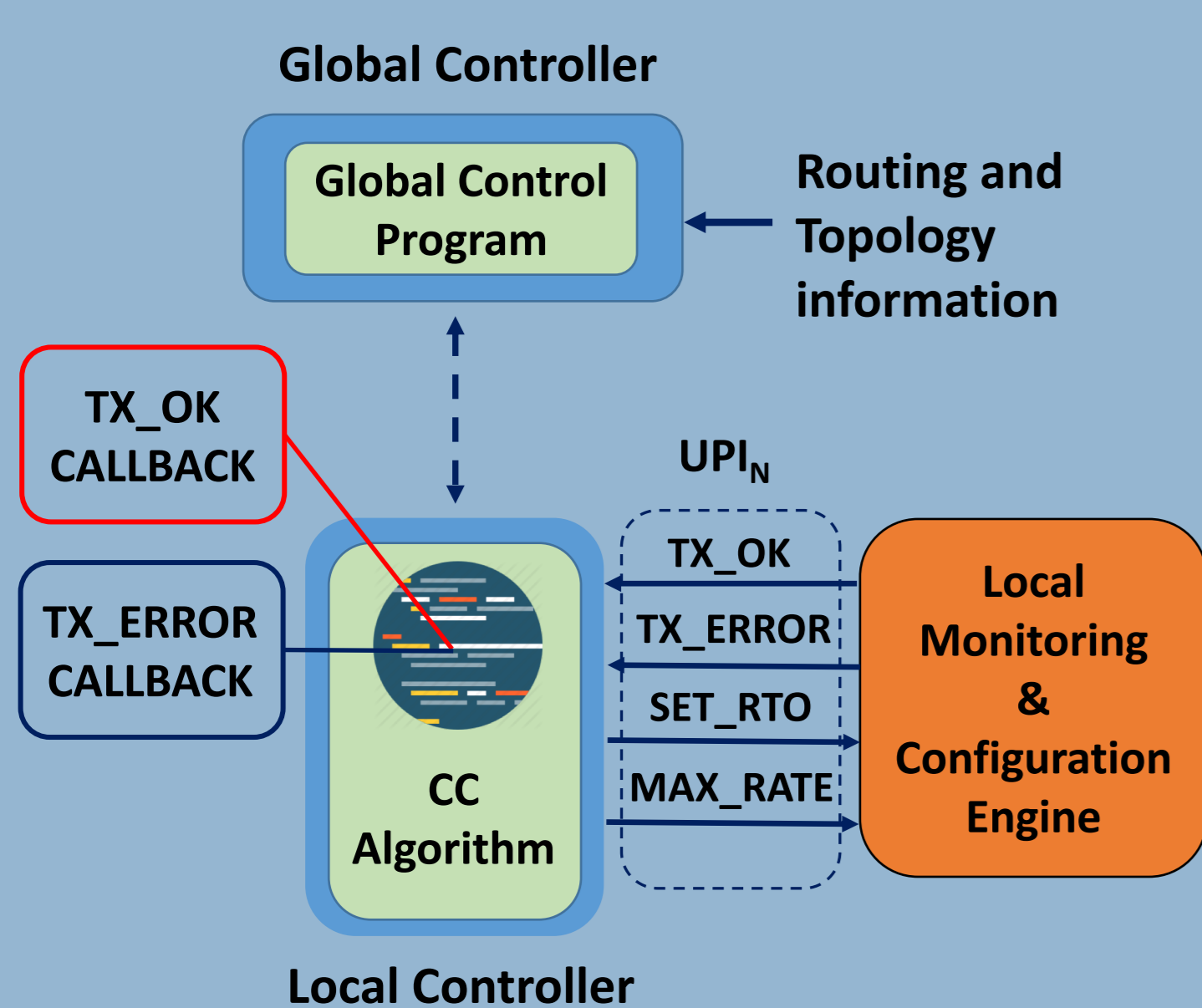
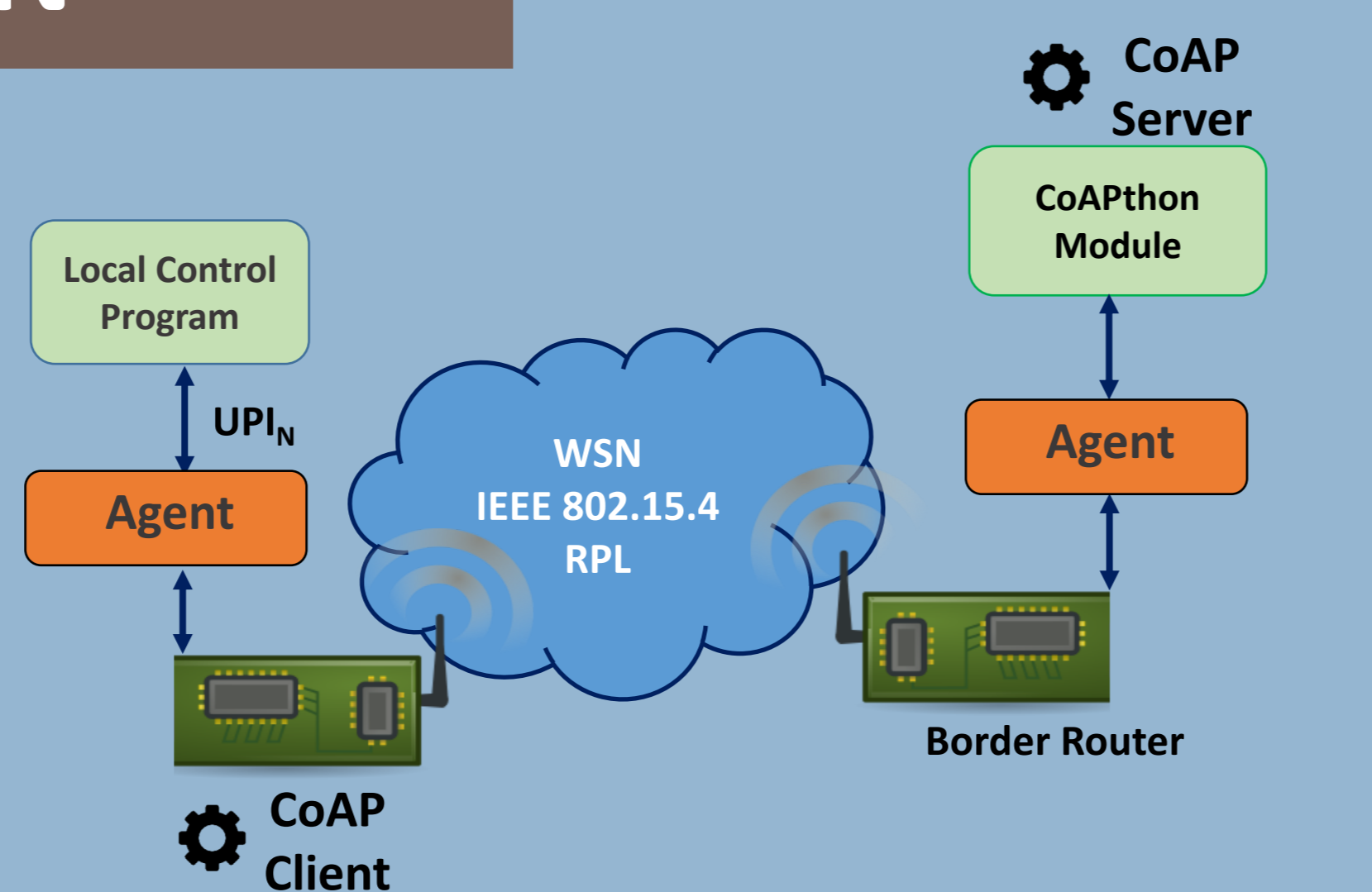
- Assess different congestion control strategies for the Constrained Application Protocol (CoAP) under realistic conditions
- Create a ready-to-use experimentation environment to test novel CoAP congestion control strategies

## CHALLENGES

- Extend the WiSHFUL platform to include the possibility to exploit CoAP traffic in the experiments
- Extend the UPI to allow experimenters to define new CoAP congestion control policies as local and global controllers

## IMPLEMENTATION

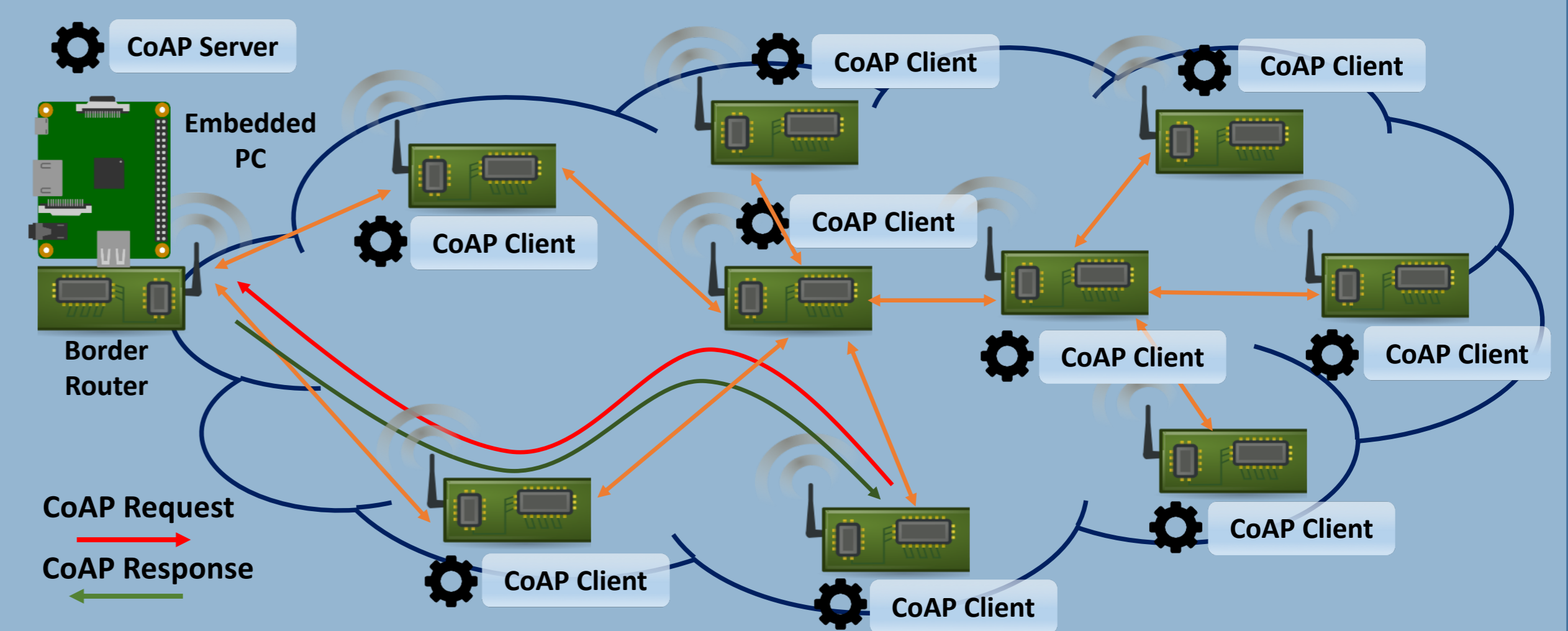
New CoAP module to generate CoAP traffic. The module allows to instantiate CoAP endpoints on both embedded PCs and sensors nodes



UPI<sub>N</sub> interface extended to allow the configuration of CoAP endpoints and to allow the implementation of congestion control policies from local controllers

## SCENARIO

- IoT network with a Wireless Sensor Network (WSN) using the IPv6 communication stack (6LoWPAN and RPL)
- The default CoAP congestion control, CoCoA and other congestion control policies were considered

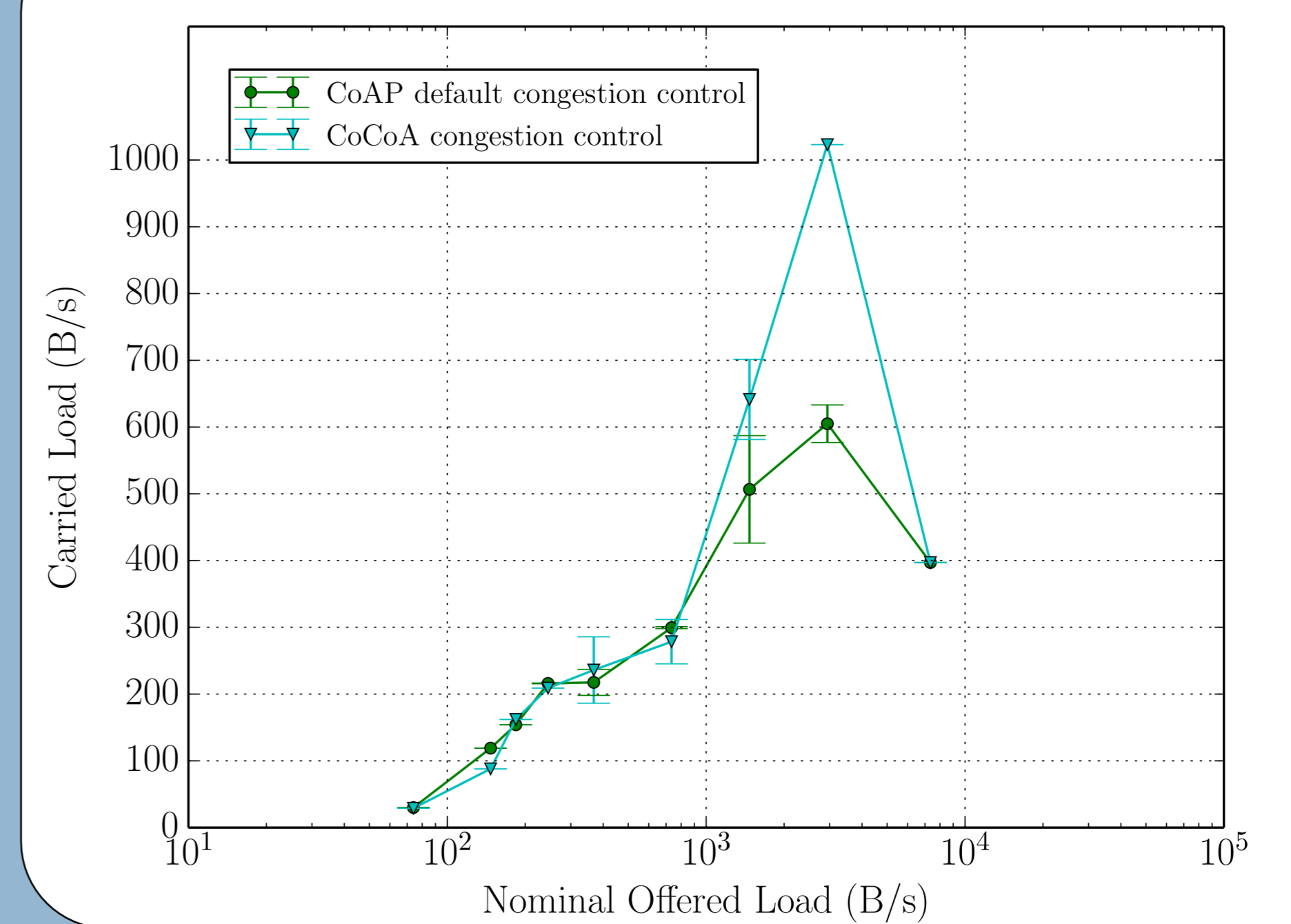
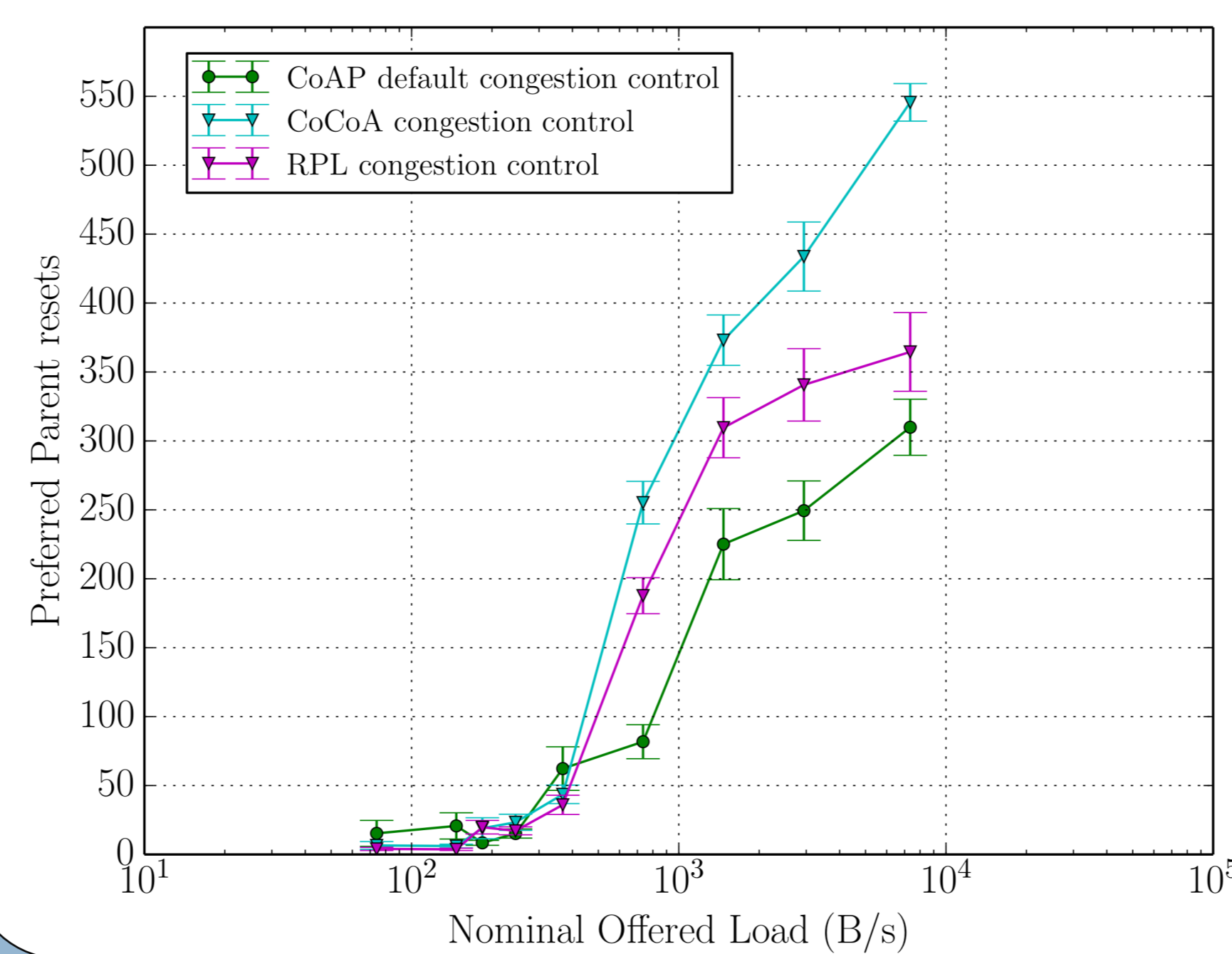
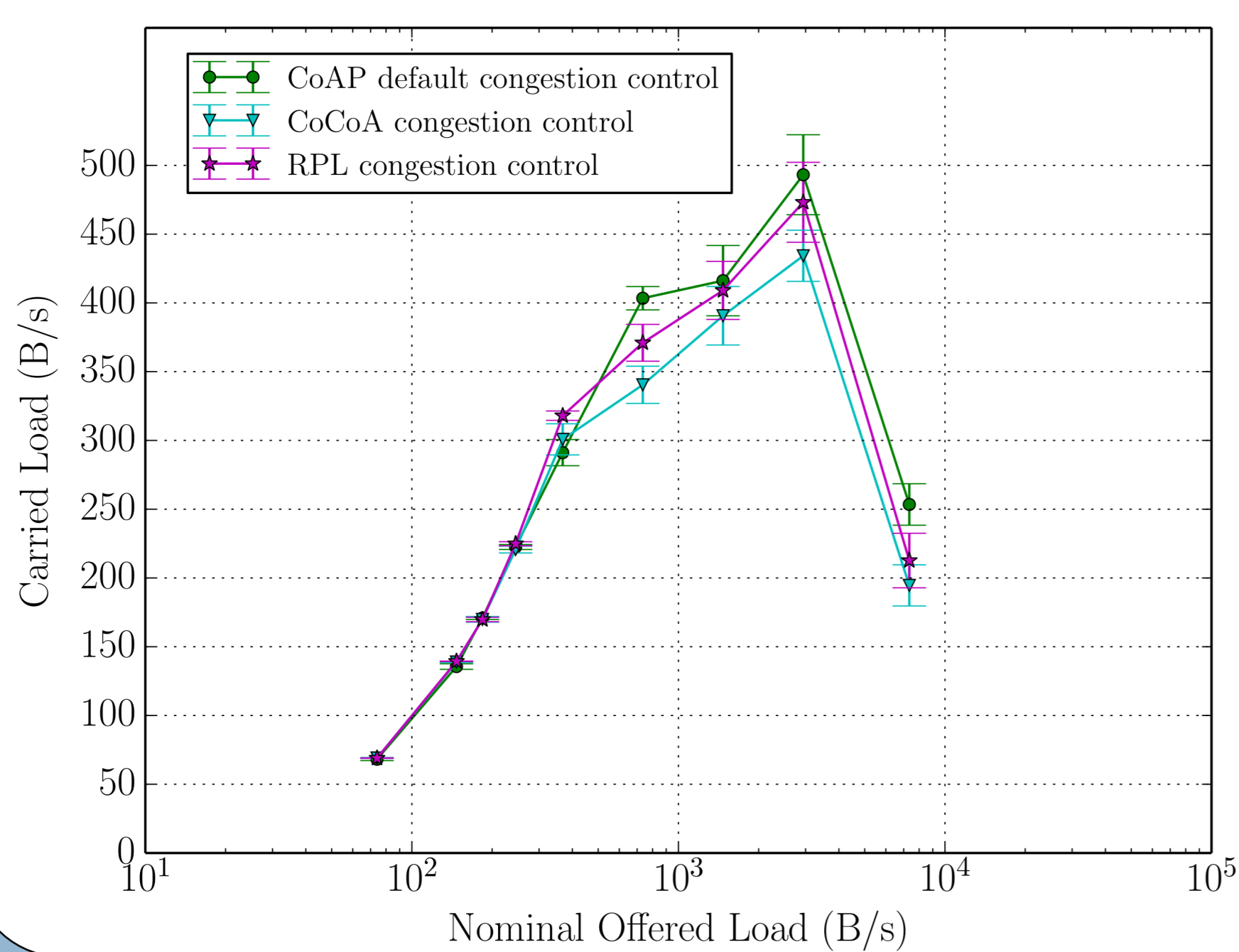


## RESULTS

The default CoAP congestion control policy results in higher Carried Load than CoCoA, differently from the results obtained in the literature

This behavior is due to the instability of RPL routing protocol, characterized by periods in which routes are lost. CoCoA exacerbates this issue with its dynamics

When static routing is adopted, the results from the literature are confirmed. CoCoA results in better performance when the network is congested



## CONCLUSIONS

- The routing protocol RPL has a noticeable influence on the performance of the CoAP congestion control policies
- Its instability can result in a significant reduction of the network carried load, thus impairing the functionalities of some congestion control policies

## FEEDBACK

- The unified interface allowed us to implement different congestion control policies in a short amount of time
- The WiSHFUL platform allowed us to run and manage a large number of experiments easily