

International Workshop on OMNeT++

Code Contribution

On the Implementation Code of the Secure Mesh Routing Protocol PASER in OMNeT++: The Big Picture

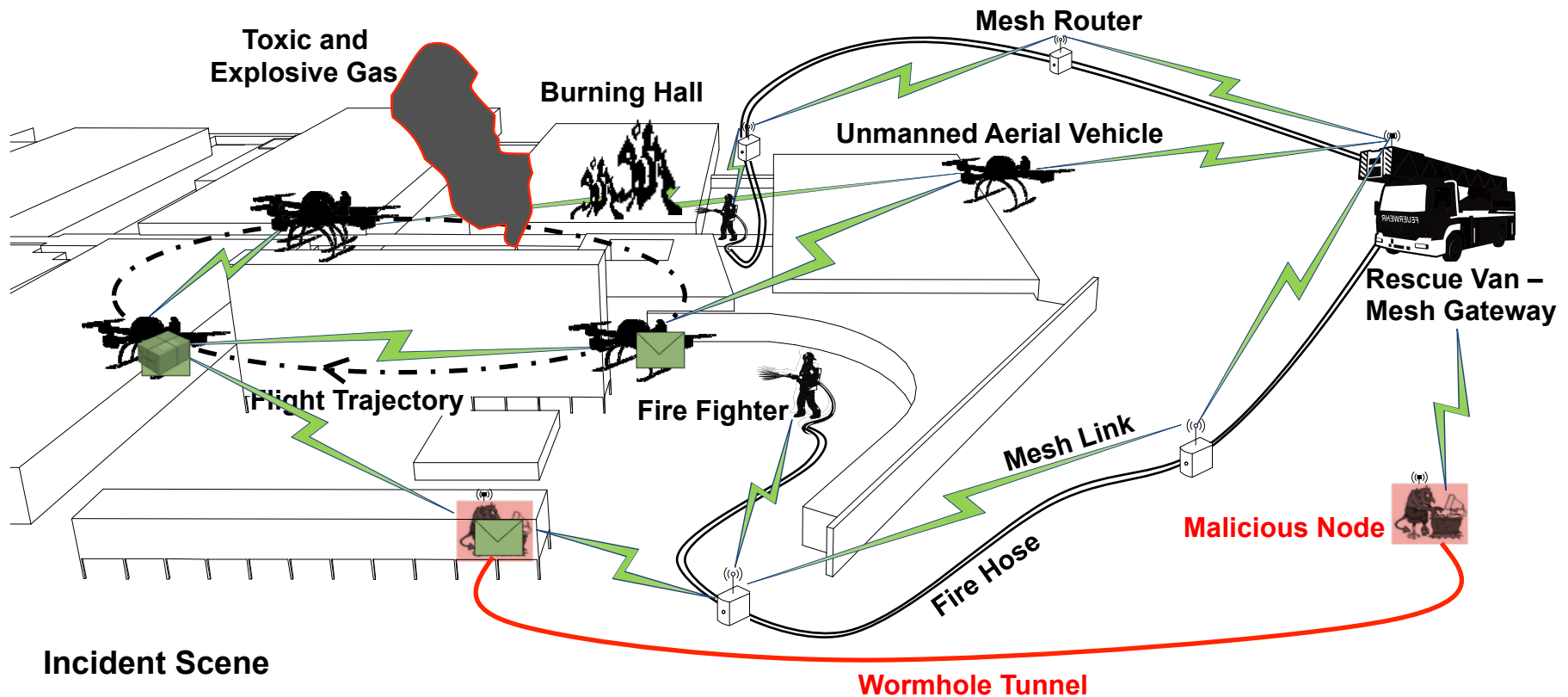
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Sample Use Case of Wireless Mesh Networks



Sample Use Case of Wireless Mesh Networks

- Lack of efficient security mechanisms in wireless mesh networks especially with respect to routing attacks such as wormhole
 - Design of PASER
- Lack of implementations of security mechanisms in OMNeT++
 - Contribution of the PASER code

PASER:= Position Aware Secure and Efficient Mesh Routing Protocol



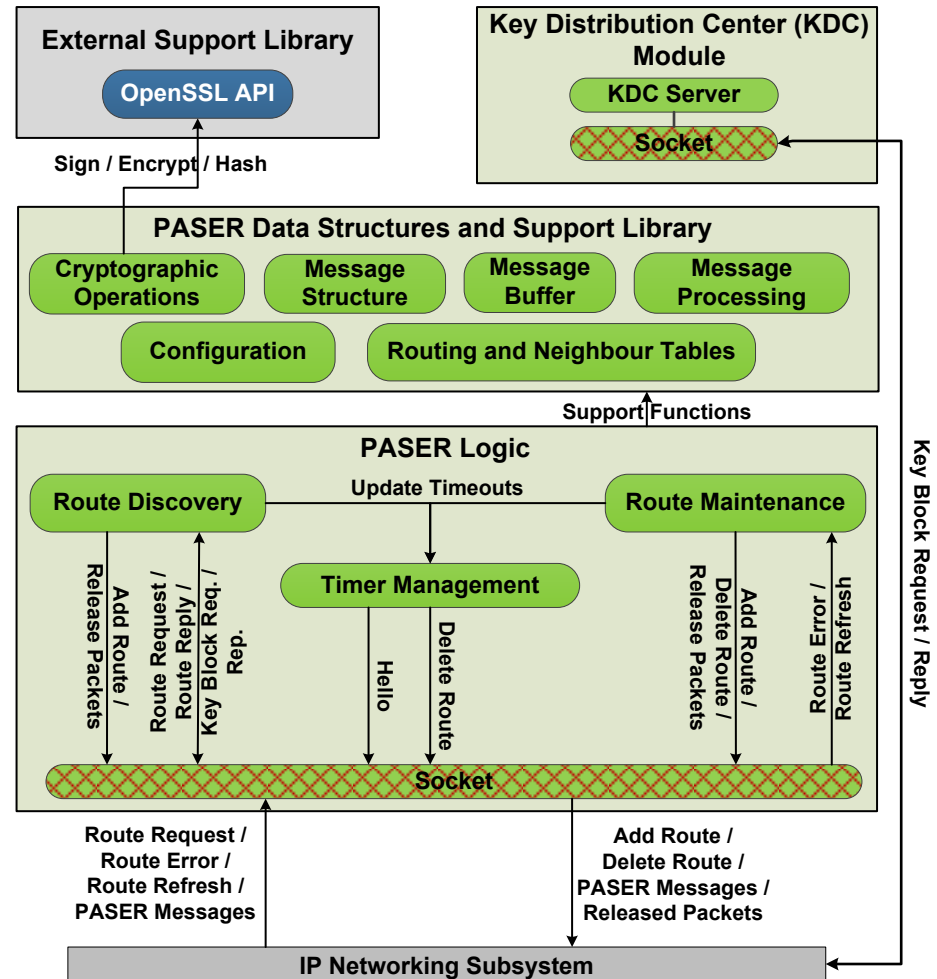
Incident Scene

Wormhole Tunnel

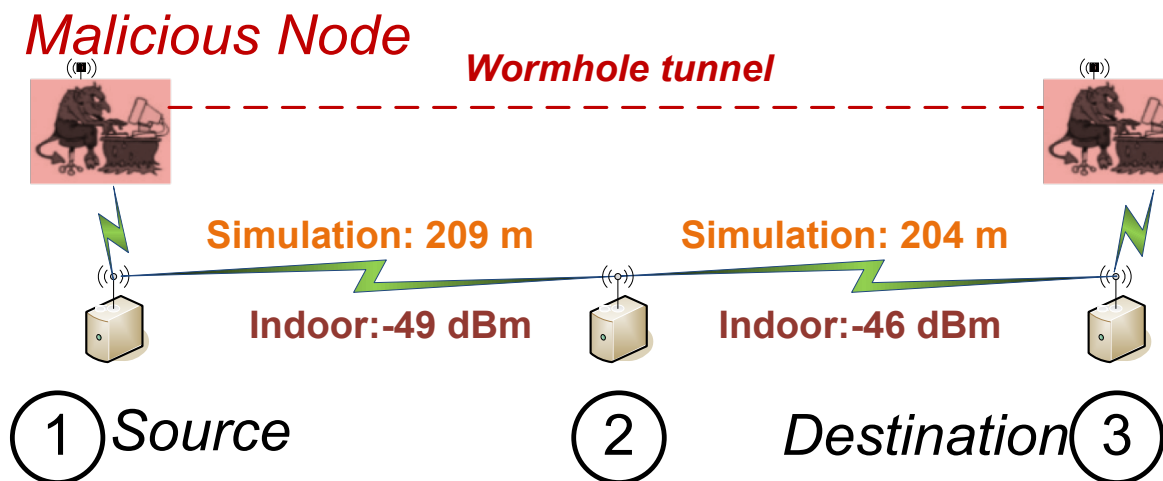
Overview of the Implementation Design of PASER in OMNeT++

Implementation Goals

- Performance evaluation
- Low-effort optimization
- Verification of the protocol robustness against well-known attacks
- Portable code



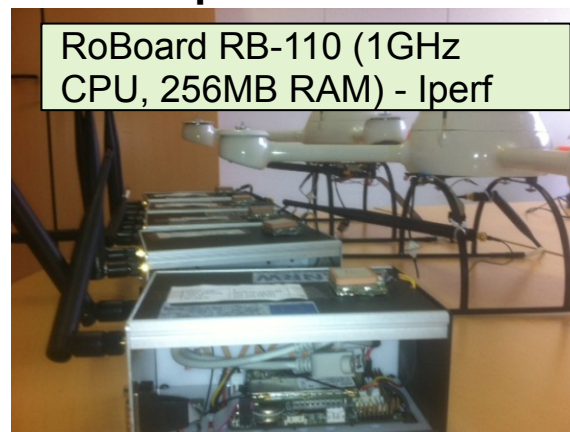
Validation Setup – Static Scenario



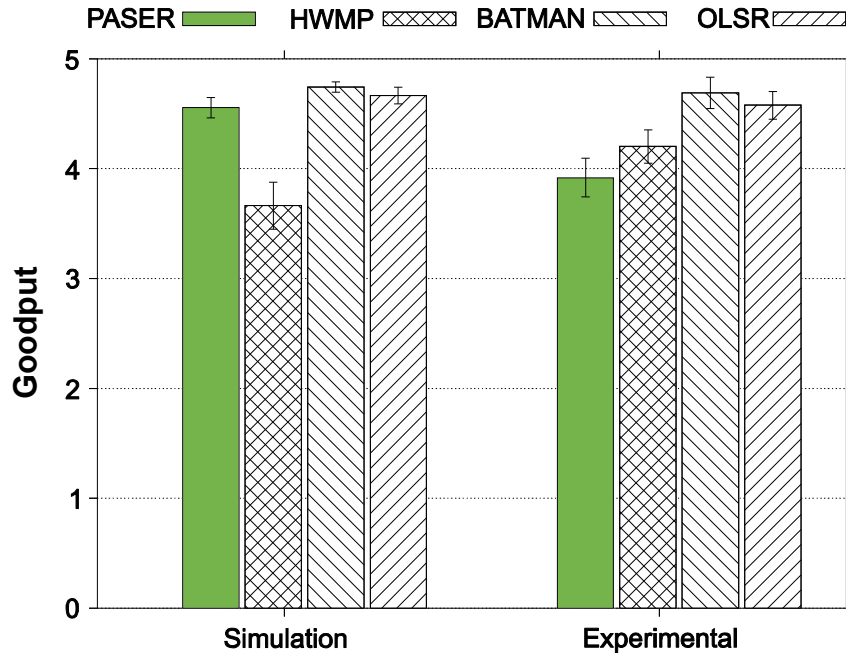
Simulation

WLAN Type	Application	Data Rates [Mbit/s]
IEEE 802.11 g IBSS	UDP-CBR	5
Channel Model	Simulation Time [s]	# Runs
Nakagami m= 9	100	10

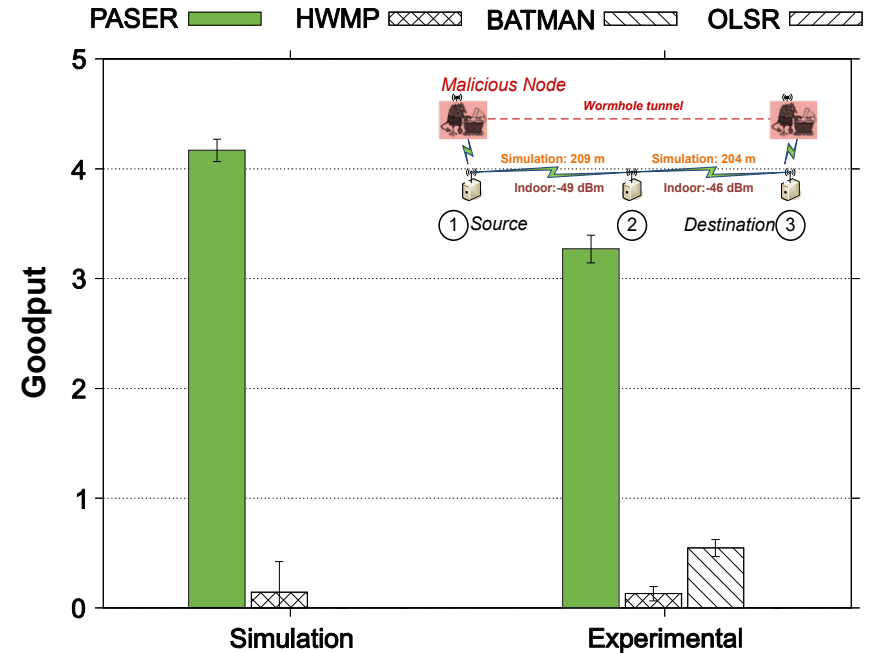
Experimental



Validation Results



Without wormhole attack



With wormhole attack

- ➔ Experimental measurements validate to a large extent simulation results
- ➔ PASER is robust against wormhole attack

Thank you for your attention



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*“Good and (secure) communication is as stimulating as black coffee,
and just as hard to sleep after.”*

- Anne Morrow Lindbergh -