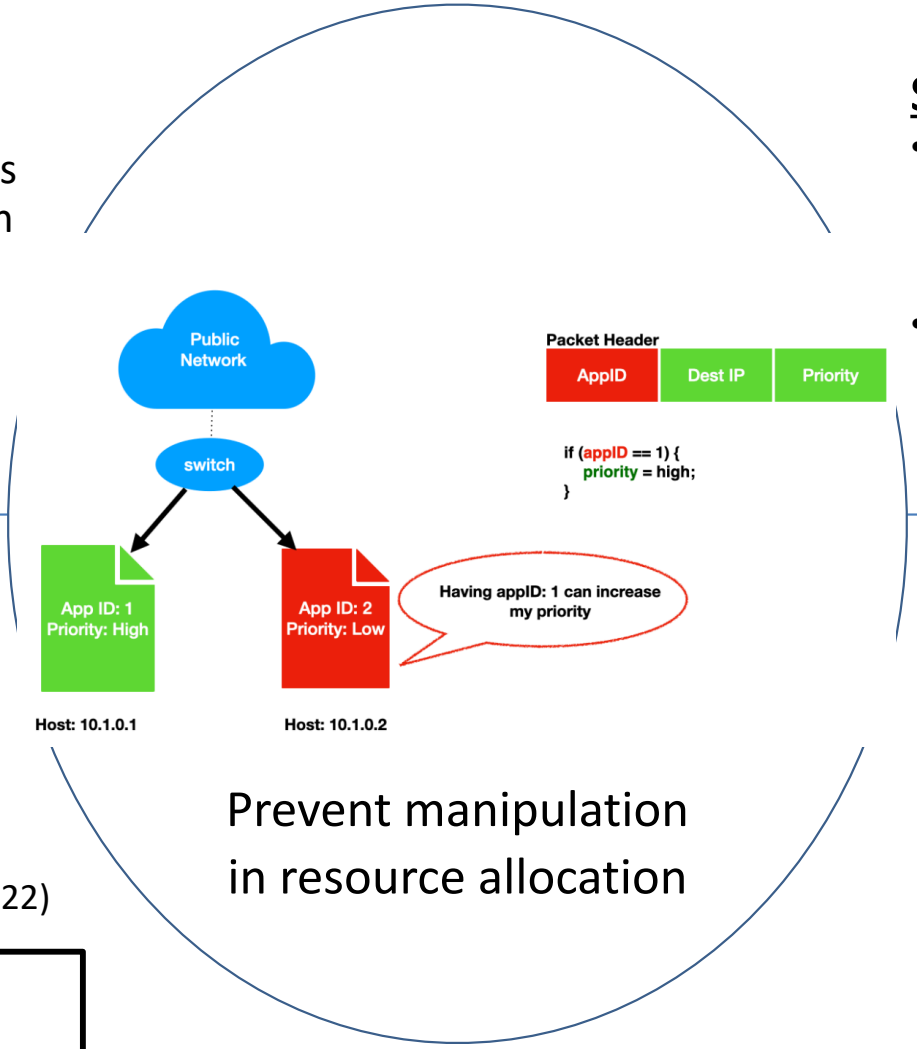
CORE: Medium: SPIPS: Security and Privacy in Programmable Switches

Challenge:

- Emerging network switches are programmable: can run custom applications
- New risk of security and privacy problems for in-network programs

Solution:

- Leverage formal methods (type systems, automated reasoning, runtime verification) to catch security and privacy bugs.
- Design a information-flow type system for P4, network programming language (PLDI 2022)



Scientific Impact:

- Evaluate security and privacy threats to programmable networks before they become widespread
- Design mechanisms for detecting, mitigating, and defending against such threats.

Broader Impact and Broader Participation:

- Increasing risk of security and privacy problems for in-network programs.
- Increase confidence for in-network programs that operate on sensitive data.
- Training and support for underrepresented graduate students, organizing mentoring workshops.

Award: #2152831

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