

## Formal verification of P4 programs

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P4 [1, 3] is a novel, domain-specific programming language, developed mainly for describing packet processing algorithms in a high abstraction level. It allows for applicability of more flexible network switches describing data plane functionalities in a protocol and target independent way.

The language has a formal operational semantics [2] defined using the  $\mathbb{K}$  framework [4], a language-independent verification framework. The framework treats both the operational semantics and the program correctness specifications and try to prove the specifications using the semantics. The defined semantics is usable mainly for proving low-level properties based on symbolic program execution.

This paper provides an other, more transparent way for analyzing properties of P4 programs. It introduces P4 specific axioms and inference rules make possible the formal verification of the properties in a higher abstraction level. The paper also presents some case-studies illustrating the applicability of the proposed approach.

## References

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