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SDN-actors: modeling and verification of SDN programs. (English) Zbl 1460.68052


Summary: Software-Defined Networking (SDN) is a recent networking paradigm that has become increasingly popular in the last decade. It gives unprecedented control over the global behavior of the network and provides a new opportunity for formal methods. Much work has appeared in the last few years on providing bridges between SDN and verification. This paper advances this research line and provides a link between SDN and traditional work on formal methods for verification of distributed software – actor-based modelling. We show how SDN programs can be seamlessly modelled using actors, and thus existing advanced model checking techniques developed for actors can be directly applied to verify a range of properties of SDN networks, including consistency of flow tables, violation of safety policies, and forwarding loops.

For the entire collection see Zbl 1391.68007.

MSC:

68Q60 Specification and verification (program logics, model checking, etc.)
68N19 Other programming paradigms (object-oriented, sequential, concurrent, automatic, etc.)

Full Text: DOI Link

References:
