Netspec: Software-Defined Network Behavior Test Tool

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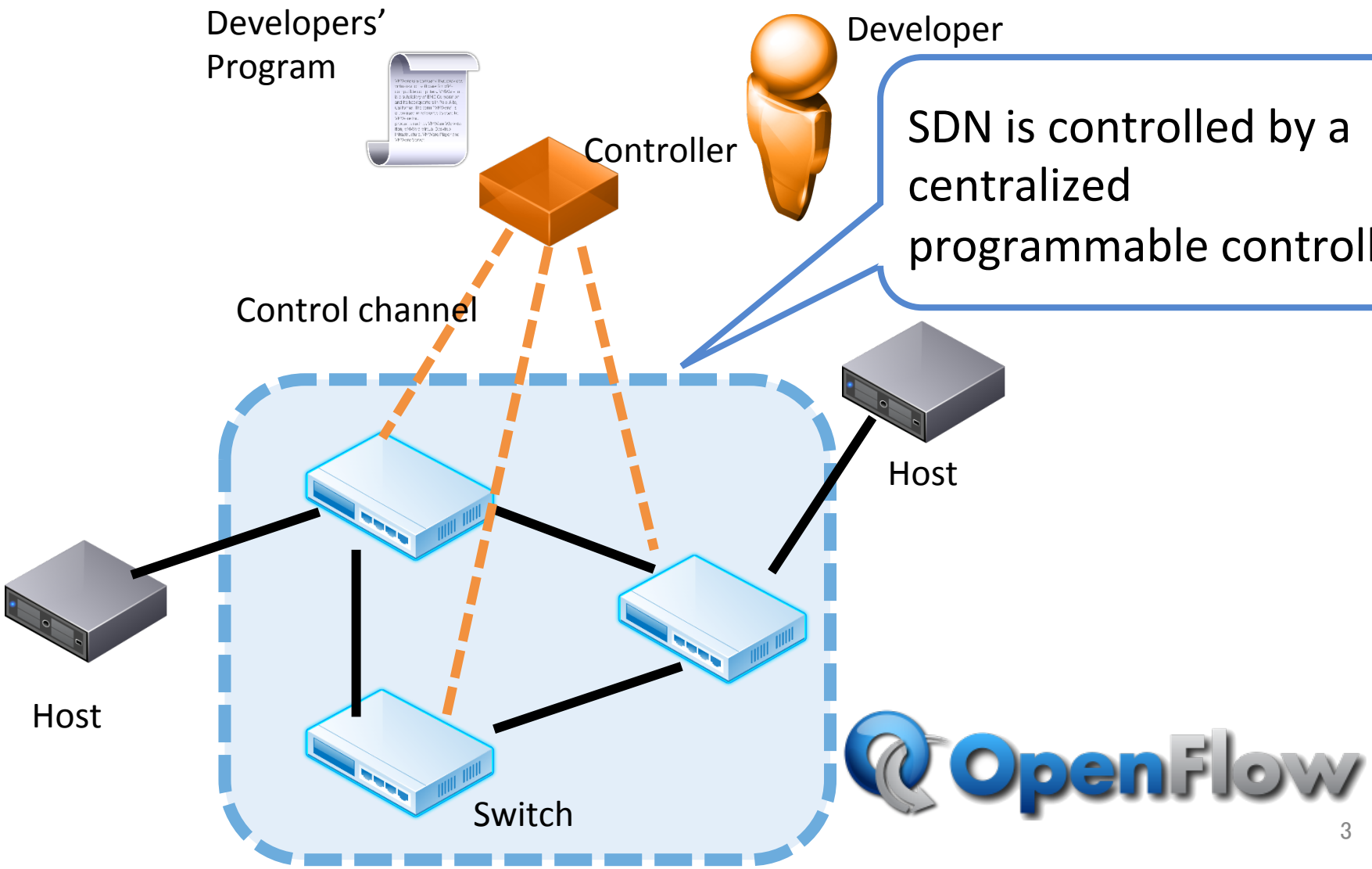
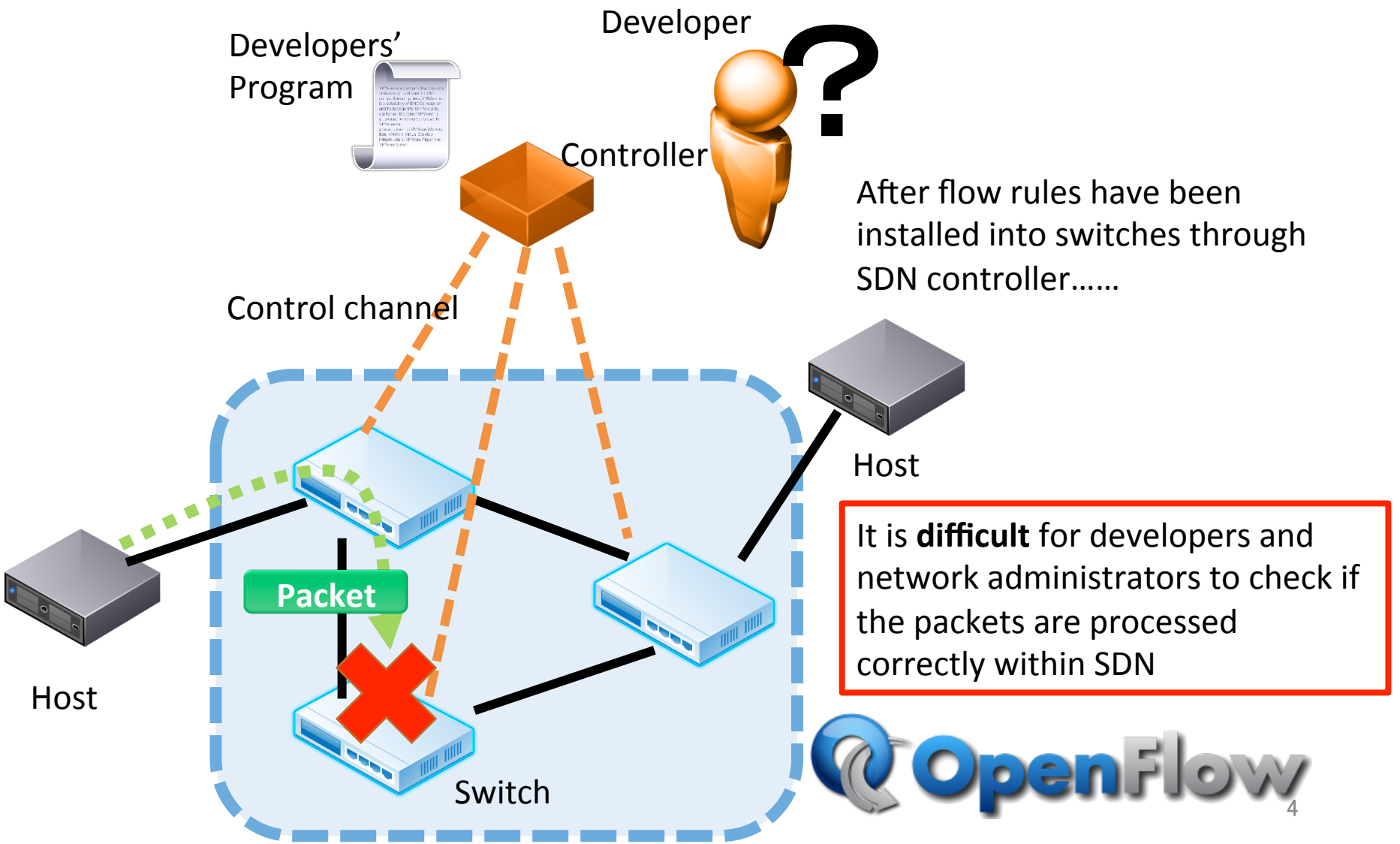
Outline

- Software-Defined Network (SDN)
- Problem
- Existing Integrated Test Tools
- Idea of Software-Defined Network Behavior Test Tool (Netspec)
- Conclusions
- Future Work

Software-Defined Network (SDN)



Problem


Developers' Program
Developer
Controller
Control channel
After flow rules have been installed into switches through SDN controller……
Host
Host
Packet
Switch
It is **difficult** for developers and network administrators to check if the packets are processed correctly within SDN
OpenFlow

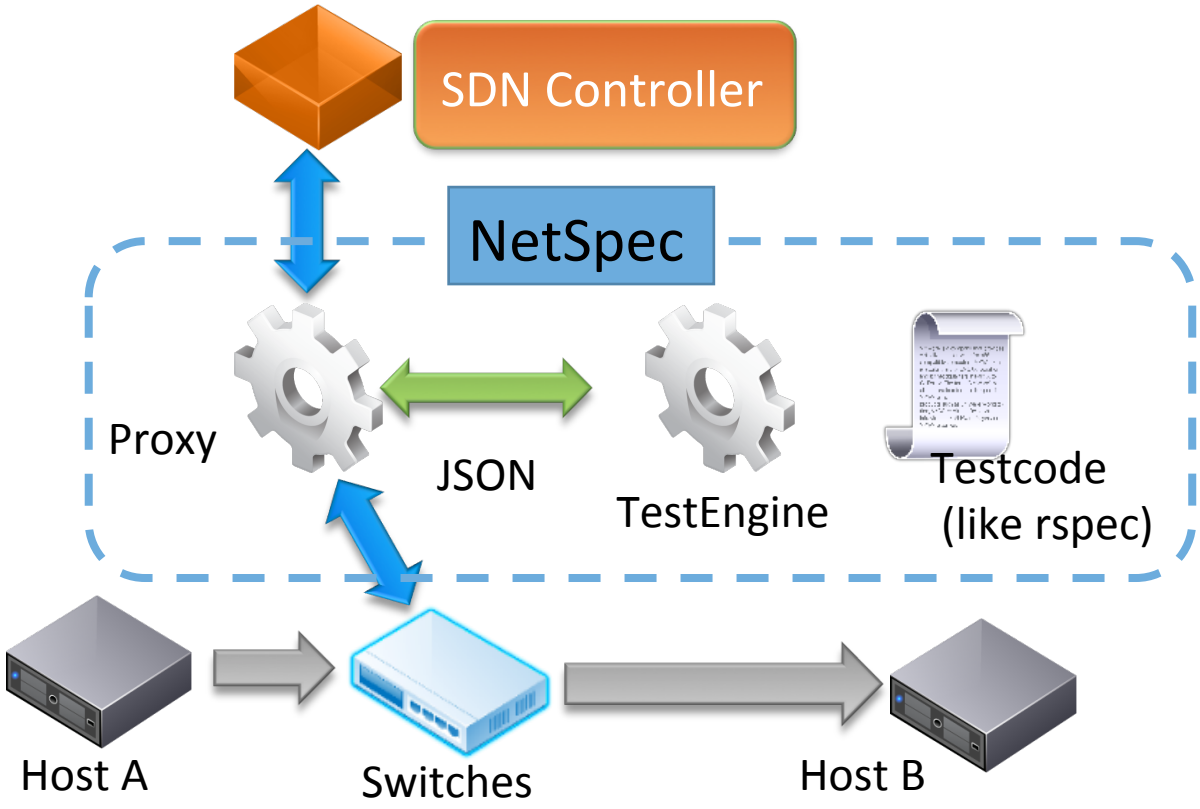
Existing Integrated Test Tools

- Test framework and Test domain-specific language (DSL)
- Checks if developers' programs run correctly
  - Test programs are written in DSL

- Checks if servers had been set up required components as developers' expectations

This research is inspired by these two existing integrated test tools.

Idea of Software-Defined Network Behavior Test Tool (Netspec)



- Netspec consists of Proxy and Test Engine
- Test Engine provides SDN Test DSL, like rspec
- Proxy inspects OpenFlow Control Messages

Conclusions & Future works

- Problem
  - It is **difficult** for developers and network administrators to check if the packets are processed correctly within SDN
- Approach
  - **SDN Behavior Test**
  - Use **proxy** between a SDN controller and SDN switches
  - Enable to write SDN behaviors in Test **DSL** (like rspec)

- Implement Netspec (Proxy and Test Engine)
- Define typical SDN behaviors test patterns