Robust Composition of Network and Security Applications using Software-Defined Networking

Manuscript review
Overview

Managing Security Infrastructure

Policy + Resource Management

Using Software-Defined Networking and optimization
Motivation

• Security and networking optimizations *coexist* on a network
  • Firewall management
  • Load balancing
  • Networking Quality of Service (QoS)
• Express these as SDN applications
• Composing them remains difficult
Hypothesis

A unified optimization provides better fairness, resource efficiency and resiliency than other ad-hoc approaches
Design

Chopin
- Coordinated path selection
- Optimization

Developer(s)
- Objective
- Constraints
- Traffic classes
- Resource costs

Operator
- Composition
- Config

Solver (e.g., Gurobi)

Control platform (e.g., ONOS)

Solutions
- Traffic paths
Evaluation setup

- Compare Chopin to previous work, such as voting frameworks
- Try to evaluate sensitivity of the framework (to traffic variations, number of applications, etc.)
RFC

• General outline

• Is it clear how applications & policies are expressed?

• Evaluation improvement ideas?