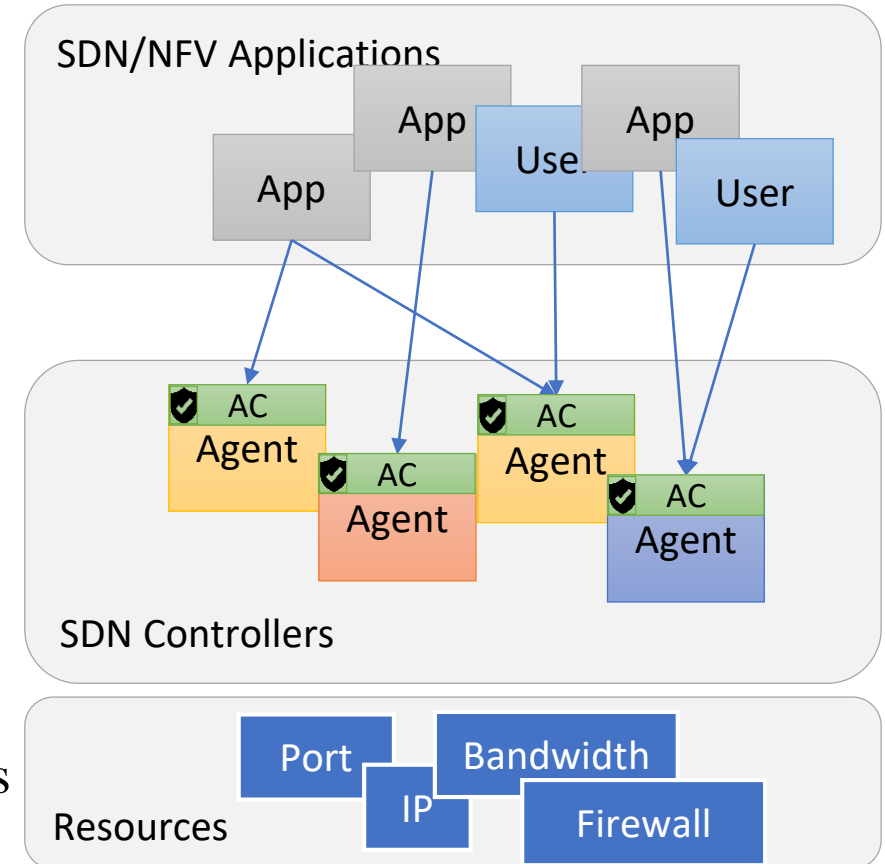


On Secure, Reliable and Efficient Management of Software-Defined Networks

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- Challenges:
Security, Reliability, Efficiency
- Security:
vulnerable and malicious CP software
- 提出SDNShield, 来实现对北向API的访问控制
- 在控制器和APP之间加了一层AC
- Agent可以选择将AC作为访问服务的过滤器
- A generic, and flexible permission control system for apps
- Fine-grained permission abstractions
- Limited increase on administration burden



Application Driven Data Center Networks (AD-DCN) via Slice Scheduling 田臣老师 南京大学

- Motivation

1. Multi-apps, multi-objectives (LS, CS, DS etc)
2. App-objective slice
3. Existing approaches either focus on isolation or optimization
4. Severe interference when coexist. (Demonstrated)

- AD-DCN framework

1. Completely take over congestion control
2. Two congestion control mechanisms (intra-slice, inter-slice)
3. Inter-slice: isolation
4. Intra-slice: optimization



Dynamic Service Chaining with Dysco (NFV Section)

Pamela Zave (AT&T Labs—Research). Ronaldo A Ferreira (Federal University of Mato Grosso do Sul). X Kelvin Zou (Google). Masaharu Morimoto (NEC Corporation of America). Jennier Rexford (Princeton University)

- Motivation

1. Middleboxes are crucial for improving network security and performance (right traffic, right middleboxes, right time)
2. Existing traffic-steering techniques rely on a central controller (large number of rules, a central point of failure...)

- Dysco: session-level protocol

1. Enable new capabilities like dynamic service chaining (i.e. reconfigure the chain)
2. No changes to end-host and middlebox applications, host TCP stacks, or IP routing
3. Provably correct, highly scalable.

NFVnice: Dynamic Backpressure and Scheduling for NFV Service Chains (NFV Section)

Sameer G Kulkarni (University of Gottingen), Wei Zhang (George Washington University), Jinho Hwang and Shriram Rajagopalan (IBM T J Watson Research center), K K Ramakrishnan (University of California, Riverside). Timothy Wood (George Washington University). Mayutan Arumathurai and Xiaoming Fu (University of Gottingen)

- Motivation

Provide fair, efficient and dynamic resource scheduling capabilities on NFV platforms.

- NFVnice: a user space NF scheduling and service chain management framework

1. Monitor load on service chains, employ backpressure to shed load preventing wasted work
2. Leverage cgroups to control when network functions should be scheduled
3. NFVnice significantly improves NF performance (throughput and loss) by reducing wasted work across an NF chain

SketchVisor: Robust Network Measurement for Software Packet Processing (Network Monitoring Section)

Qun Huang (Huawei Future Network Theory Lab), Xin Jin (Johns Hopkins University), Patrick P.C.Lee (CUHK), Runhui Li (Huawei Future Network Theory Lab), Lu Tang (CUHK), Yi-Chao Chen and Gong Zhang (Huawei Future Network Theory Lab)

- Motivation

1. Network measurement remains a missing piece in software packet processing platforms
2. Sketches fill this void with fixed-size memory and bounded errors
3. Existing sketch-based measurement solutions suffer from severe performance drop under high traffic load

- SketchVisor: robust network measurement framework for software packet processing

1. Augments a fast path activated under high traffic load
2. Recovers accurate network-wide measurement results via compressive sensing
3. Prototype on top of OvS