

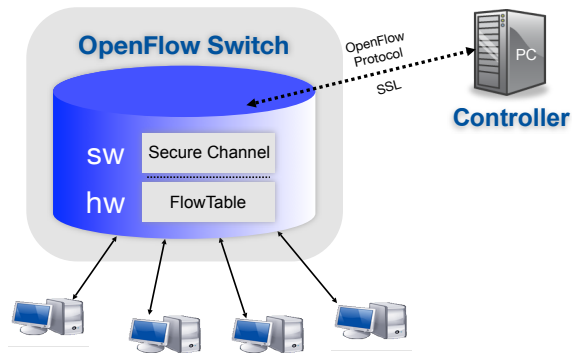


Innovate in your Network...

What is OpenFlow?

Goals:

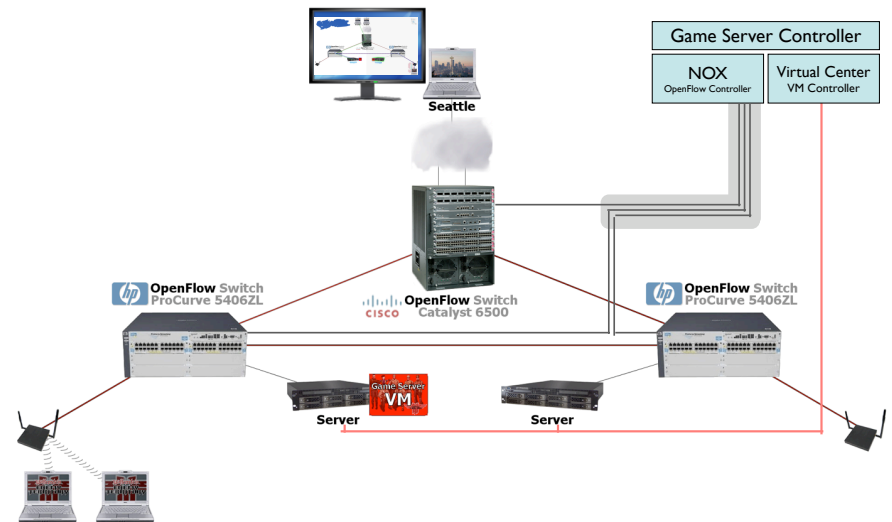
1. Enable innovation in campus and enterprise networks
2. Create a platform so we can **all** add new functions to our networks



This Demo...

Here we demonstrate:

1. Application control of Routing via OpenFlow
2. The use of OpenFlow for Virtual Machine mobility



Basics

Separation of **Control** from **Datapath**

- **Control:** Remote, open-source controller
- **Datapath:** Simple flow-based switches

Usage Examples

- Centralized management for enterprises (Ethane)
- Application or user specific routing
- Seamless mobility management

Approach

We are adding OpenFlow as a feature to existing commercial switches and routers

- ✓ 8 in progress; 2 shown here (HP and Cisco)
- Publish OpenFlow Protocol Specification at <http://OpenFlowSwitch.org>
- Deploy at Stanford: Production networks in CS and EE buildings
- Deploy on other campuses
- Encourage community to add new functionality and experiments in our networks

OpenFlow enables researchers to run experimental protocols in the networks they use every day. OpenFlow is based on an Ethernet switch, with an internal flow-table, and a standardized interface to add and remove flow entries. Our goal is to encourage networking vendors to add OpenFlow to their switch products for deployment in college campus backbones and wiring closets.

Scenario

- Two players with mobile clients are playing a game on a game server
- The game server is running inside a virtual machine (VM)
- A Game Server Controller tries to minimize latency for the players

How OpenFlow is Used

- Move the Virtual Machine with a Game Server close to the gamers.
- OpenFlow enables migration across subnets
- Chose flow paths, e.g. to minimize latency, maximize available bandwidth, or minimize power consumption



<http://OpenFlowSwitch.org>



The Stanford Clean Slate Program