



**FLOWFORWARDING.ORG**

# **SDN with Network White Boxes**

Shivaram Mysore, September 2013

# What are Software Defined Networks

**Application aware networks - an application may request and receive network-wide guarantees**

**Programmable networks – Defining and deploying basic primitives which allow any software provider to deliver network centric software**

**Build on the pervasive reach of Ethernet as opposed to Ethernet replacement like InfiniBand**

**FlowForwarding.org is focused in enabling OpenFlow based SDN on Network White boxes**



# FlowForwarding.org & LINC

## FlowForwarding.org

- **Open Source community promoting Open Network Foundation Standard implementations**
- **Implementations under Apache v2 License**
- **Supported by Industry**

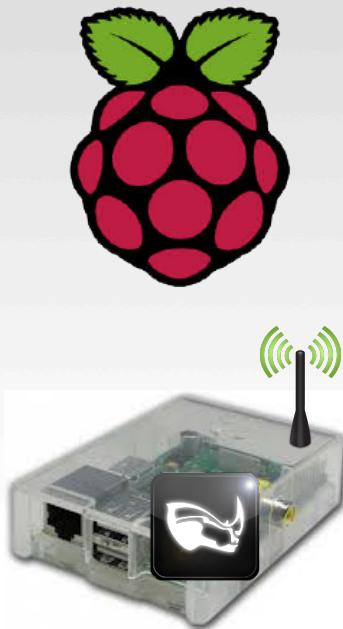
## LINC

- **Open Flow v1.2/1.3.1 based Capable Switch with support for OF-Config 1.1**
- **Works with any Open Flow controller supporting corresponding OF protocols**



# LINC Platform Support

## Raspberry Pi



This slide features the Intel logo at the top. Below it are two Intel product logos: "intel inside Xeon" and "intel Atom inside". The central part of the slide is a diagram titled "Open Network Platform Switch Reference Design". It shows a network stack with an "SDN Controller" at the top, followed by "SP App", "OEM App", and "ISV App". Below this is a box labeled "Open Network Platform Software: Open Extensible Management APIs, Open Source Linux OS, OpenFlow, Open vSwitch". This is connected to a "SW" section containing "Intel Architecture", "Intel Communications Chipset 89xx Series", and "Intel FM 6700 Switch". An "HW" section shows a physical network switch module. At the bottom, there are buttons for "Intel Product", "Wind River Product", and "3rd Party". The entire diagram is set against a blue background with wavy lines.

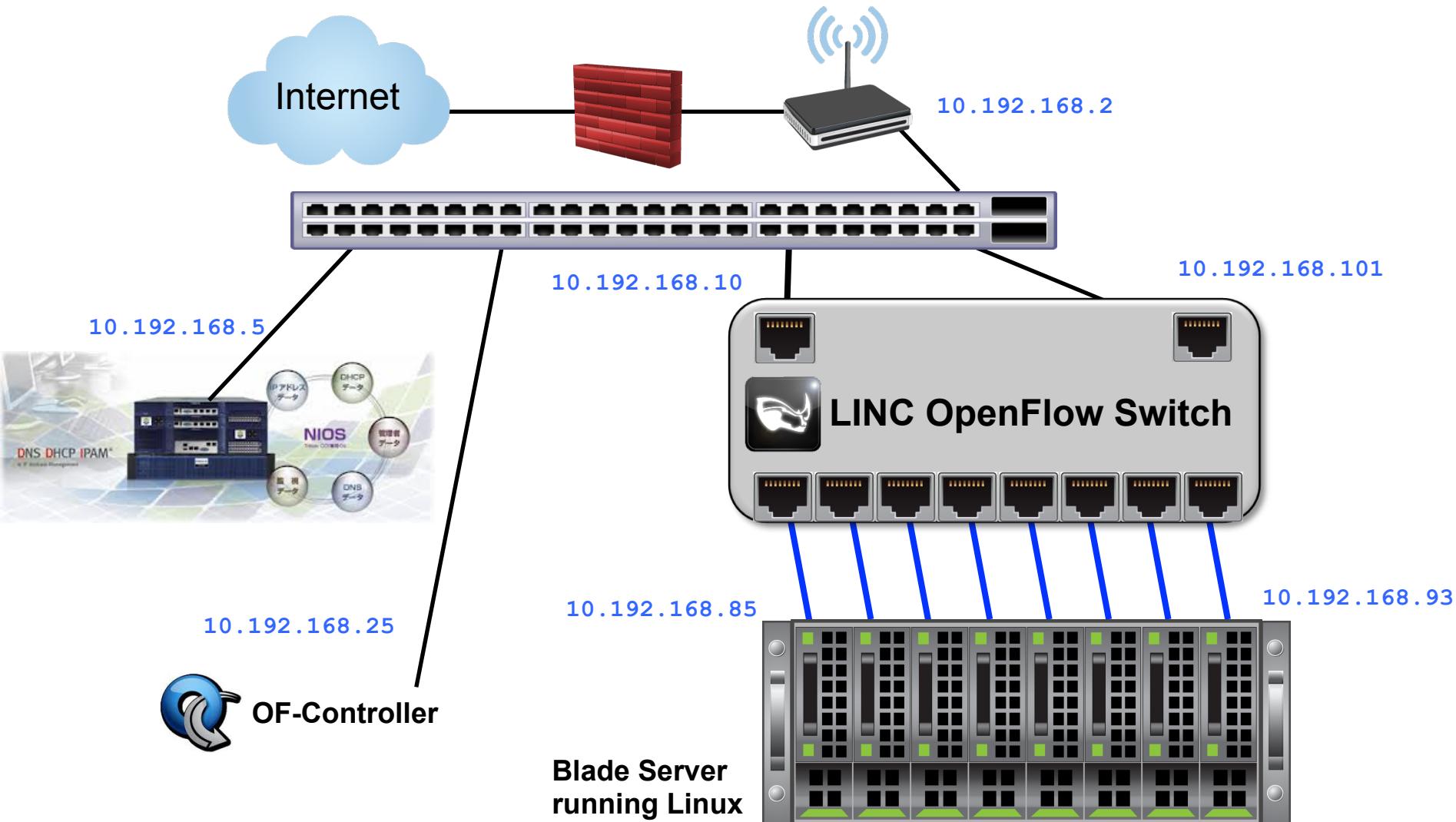




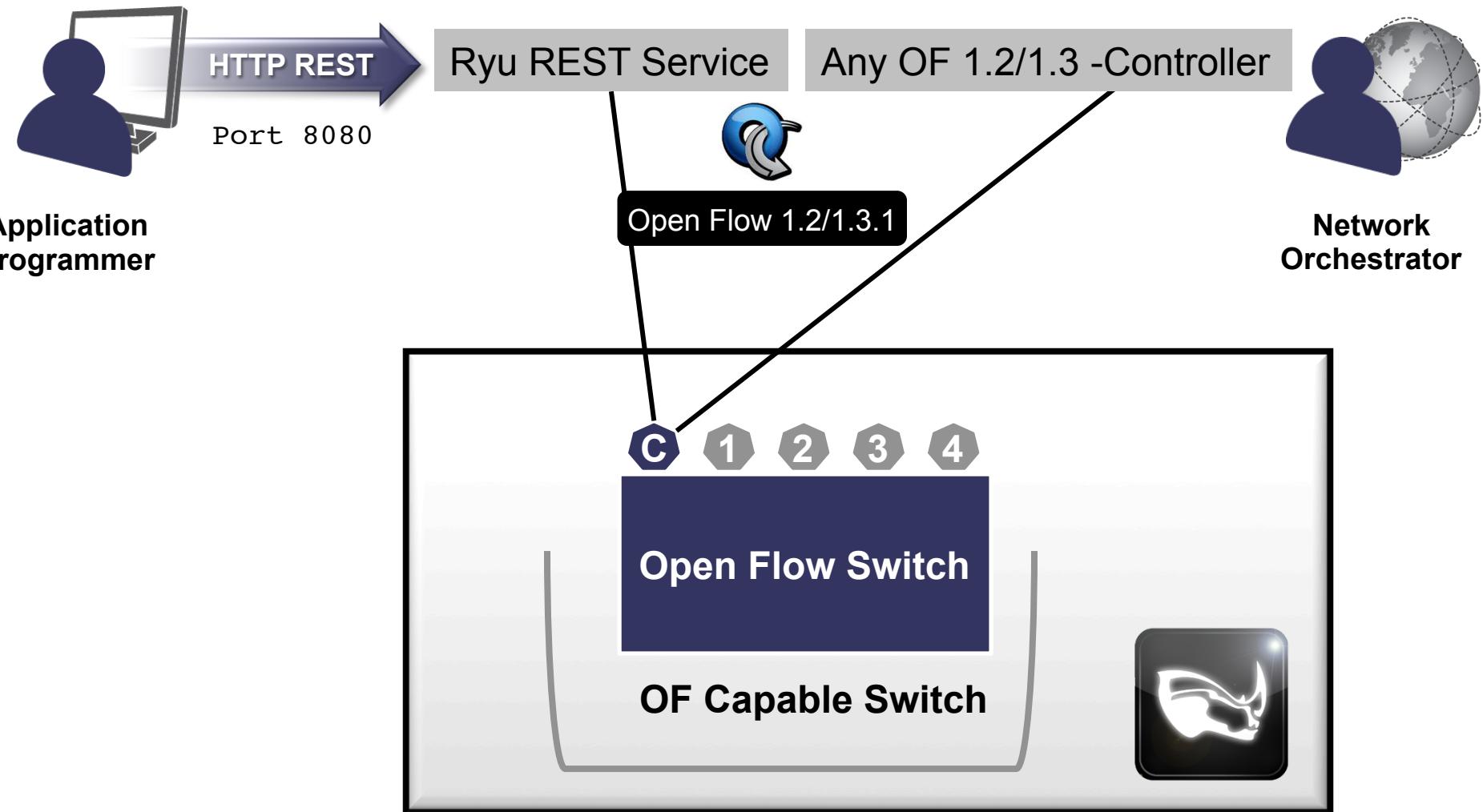
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**OpenFlow SDN by Use Cases**

# LINC Deployed on Corporate Networks (Overlay)

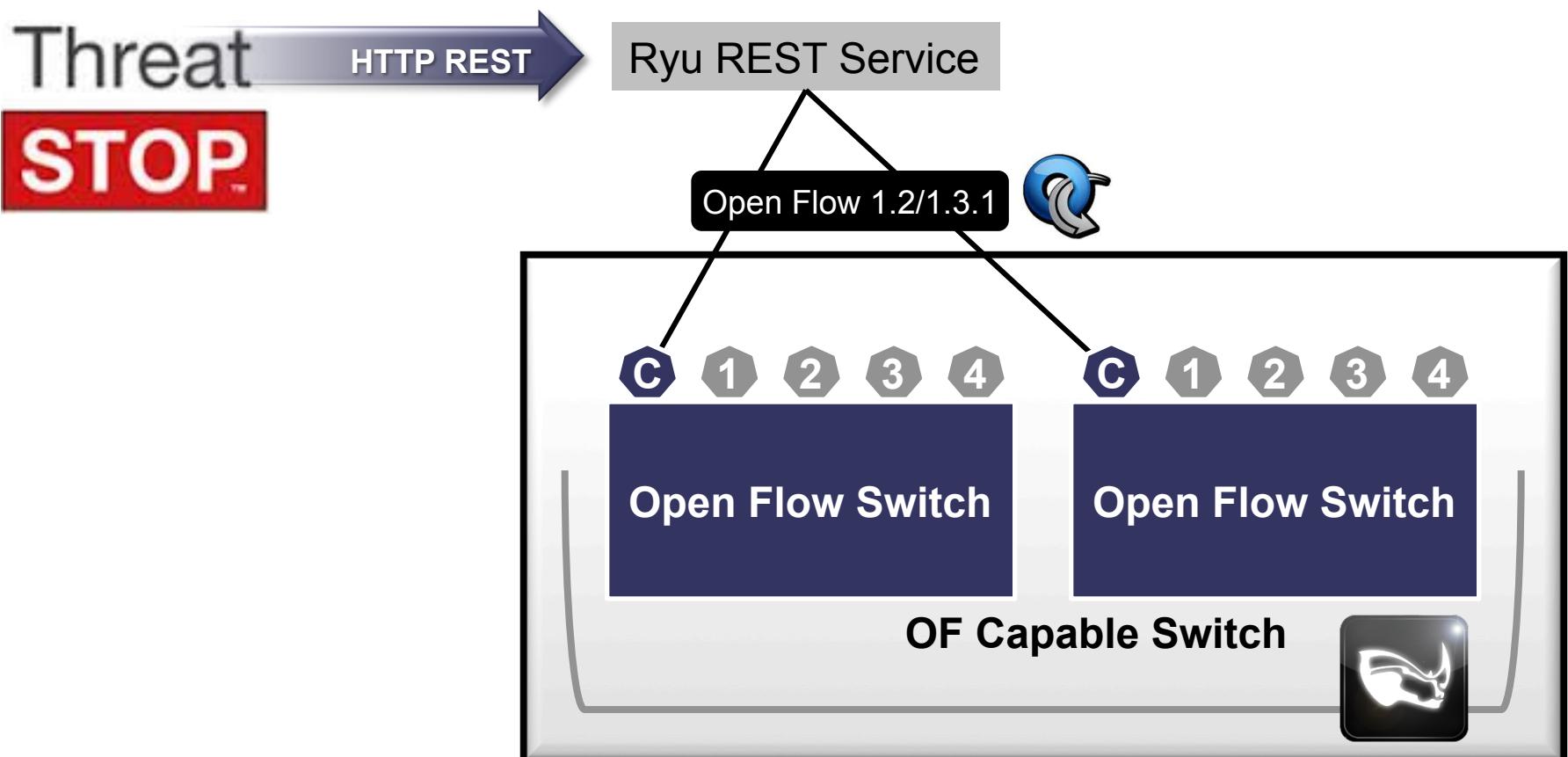


# SDN for OpenFlow Networks

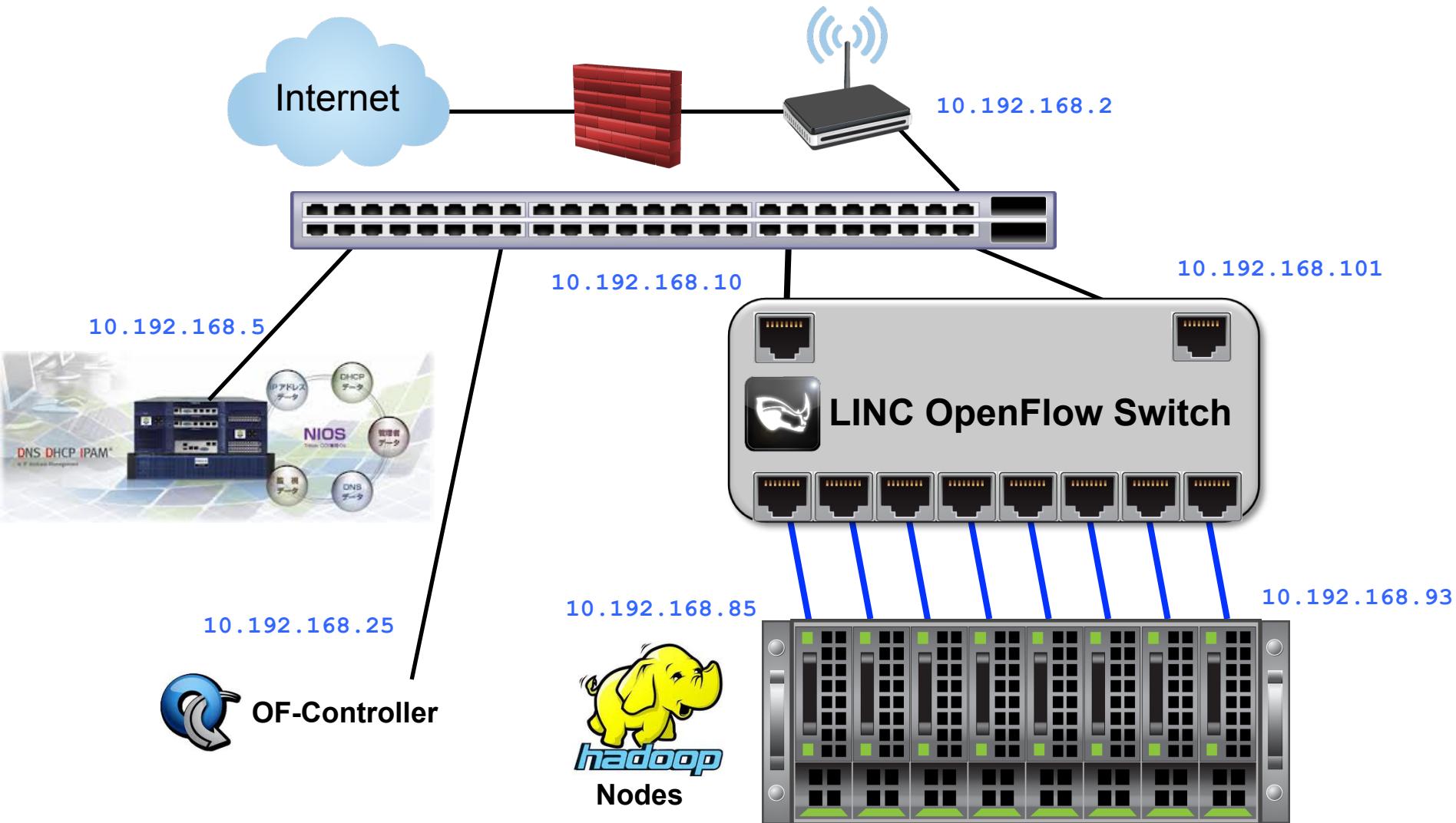


# Dynamically Programmable Firewall for SDN

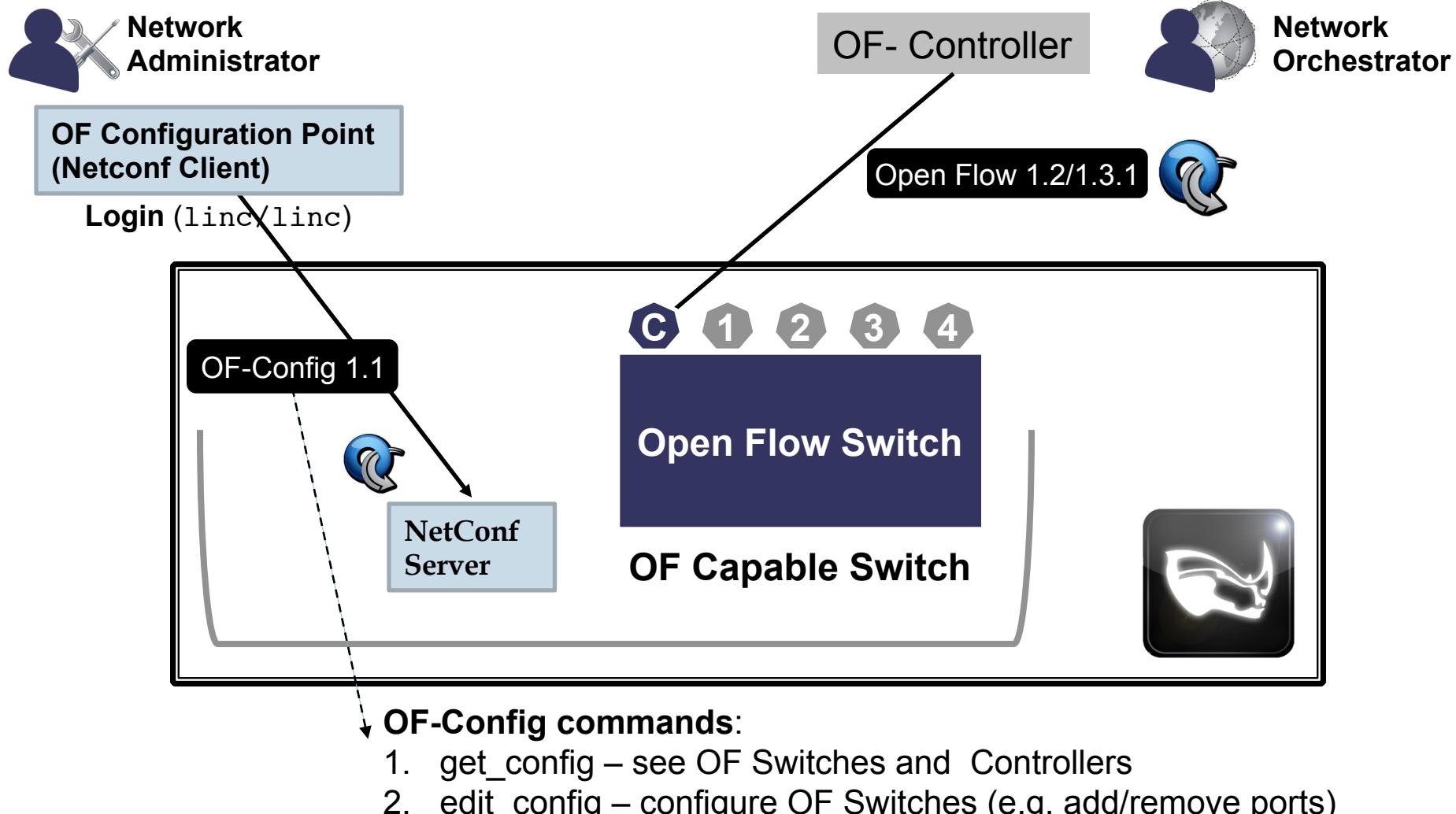
Install and Update firewall rules as flows based on ThreatSTOP events



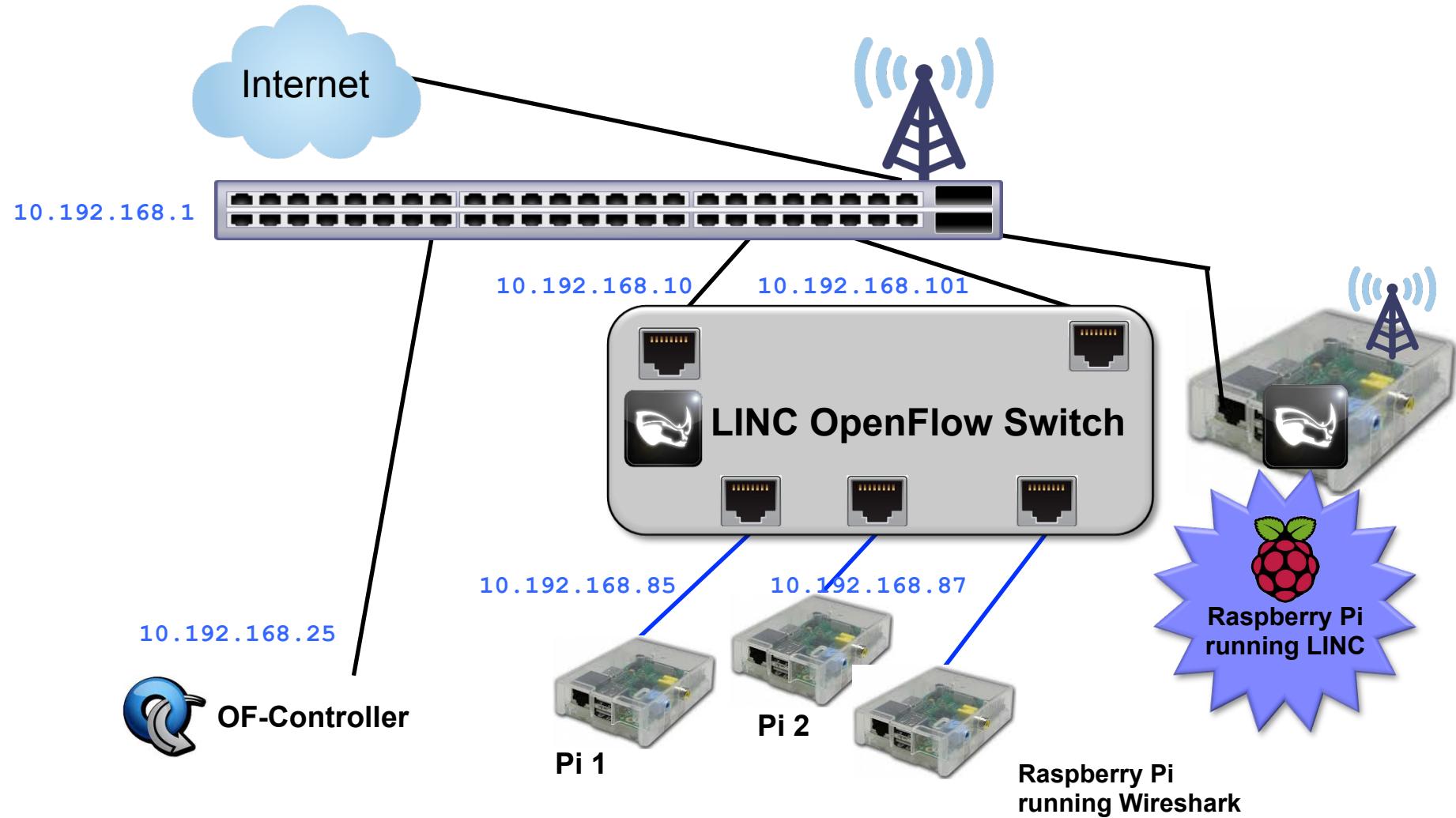
# Big Data Apache Hadoop Acceleration with OpenFlow



# Scalable, Programmable OF Switch Deployments with OF-Config



# OpenFlow Switch Discovery & Network Tap/Monitor



# FlowForwarding.org Roadmap

## LINC – OpenFlow Switch

- Standards Support: OpenFlow 1.3.2 and 1.4
- Security: Configuration with OF-Config
- Performance: Kernel modules and Intel DPDK support
- Hardware support: Intel x86 (Atom, Atom2, Xeon, etc), Intel Seacliff Trail, Tilera

## Controller

- A basic controller comes with the Switch
- A REST based Java Controller (OF1.3.1) library for SDN Programmers – FFController
- Tested with other controllers such as Ryu and Ixia

## Testing

- Continuous testing with OpenSource Twister Framework



# March With Us

- Contact – [info@FlowForwarding.org](mailto:info@FlowForwarding.org)
- Visit – [www.FlowForwarding.org](http://www.FlowForwarding.org)
- Subscribe – [linc-dev@FlowForwarding.org](mailto:linc-dev@FlowForwarding.org)
- Contribute – [github.com/FlowForwarding/LINC-Switch](https://github.com/FlowForwarding/LINC-Switch)

