Summary Report

By Kriangsak Lekdee
& Adisak Bunsaranun

Training Theme:

Final Report: OpenFlow Training

Topics

Introduction

Introduce

My name is Kriangsak Lekdee.

My Office:

Office of Information Technology Administration For Educational Development:UniNet, Thailand

Department:

Network Operation Center(NOC)

Position:

Network Engineer(Data Center)

Introduce

My name is Adisak Busaranun.

My Office:

National Electronics and Computer Technology Center:NECTEC, Thailand

Department:

Network Technology Laboratory(NTL)

Position:

Network Engineer

Training and Activities
in Japan

Training Period & Seminars

Final Report: Openflow Training

Training Period.

Training Period: 2013/1/7-2013/3/31

Weeks	Date	Topic
1	2013/1/7 - 2013/1/13	- Study OpenFlow theory
2	2013/1/14 - 2013/1/20	- Study Trema theory and install Trema
3	2013/1/21 - 2013/1/27	- Conduct experiments based on Trema simulation
4	2013/1/28 - 2013/2/3	- Conduct experiments on real OpenFlow switches
5	2013/2/4 - 2013/2/10	- Study Ruby language
6	2013/2/11 - 2013/2/17	- Design & prepare applications
7	2013/2/18 - 2013/2/24	- Develop & test applications-week 1
8	2013/2/25 - 2013/3/3	- Develop & test applications-week 2
9	2013/3/4 - 2013/3/10	- Develop & test applications-week 3
10	2013/3/11 - 2013/3/17	- Prepare OpenFlow & Trema tutorial
11	2013/3/18 - 2013/1/24	- Present Openflow & Trema tutorial at NII(Thai Students) (on 2013/3/19) - Summary report
12	2013/3/25 - 2013/3/31	- Summary report

Training & Seminar

No.	Date	Subject	Place
1	22 Jan.	- OpenFlow theory by Dr. Tananun	NICT
2	14 Feb.	- Introduction to Trema by Kriangsak - Trema tutorial by Adisak - Introduction to DCN by Dr.Tananun - Introduction to CCN by Dr. Kalika	NICT
3	18 Feb.	- OpenFlow tutorial (based on contents of OpenFlow tutorial in TIP2013) by Dr. Kien - Qos in SDN-based on Wireless Network by Dr.Lei Zhong	NII
4	5 Mar.	- OpenID Technology	NII
5	19 Mar.	- OpenFlow overview by Kriangsak - Trema tutorial by Adisak	NII

Experiments

Application1(Path management), Application2(NAT) and Application3(Multi-vlan routing)

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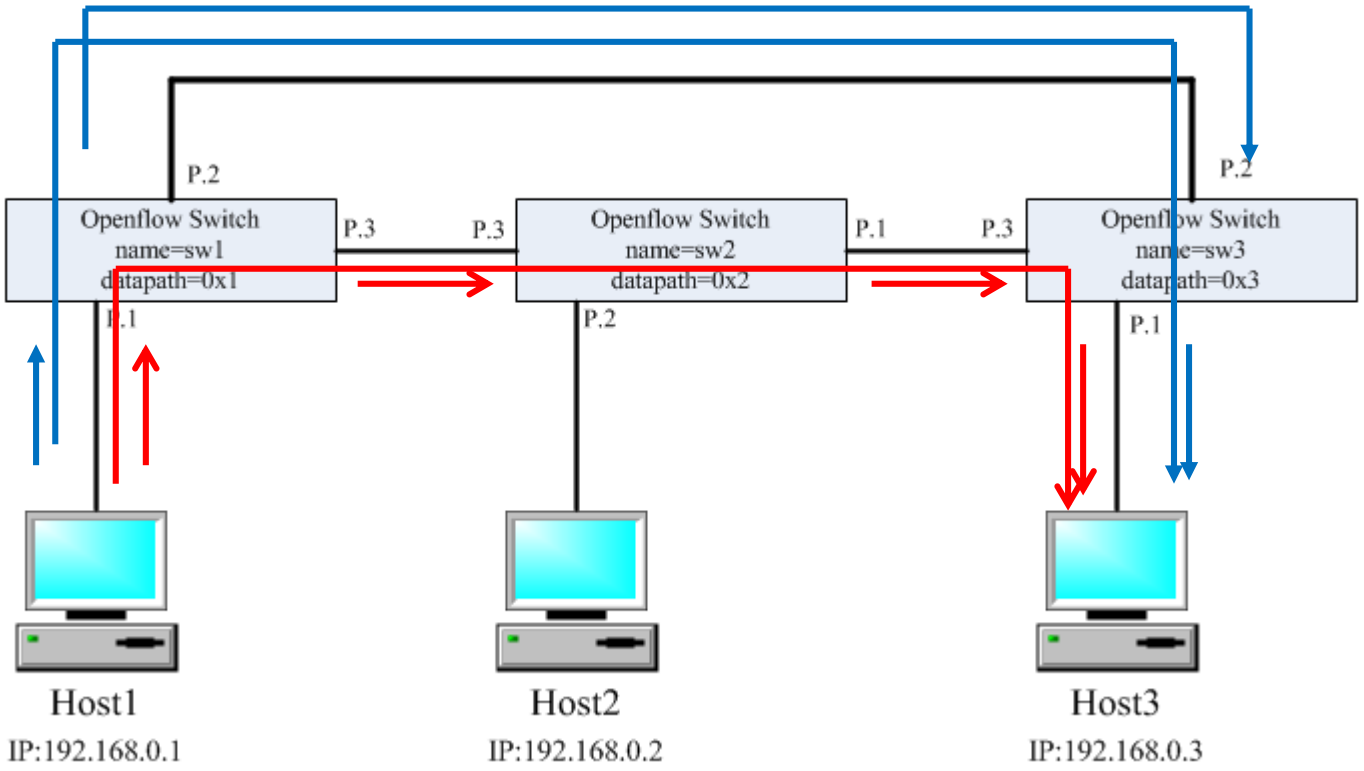
Application1:Path Management

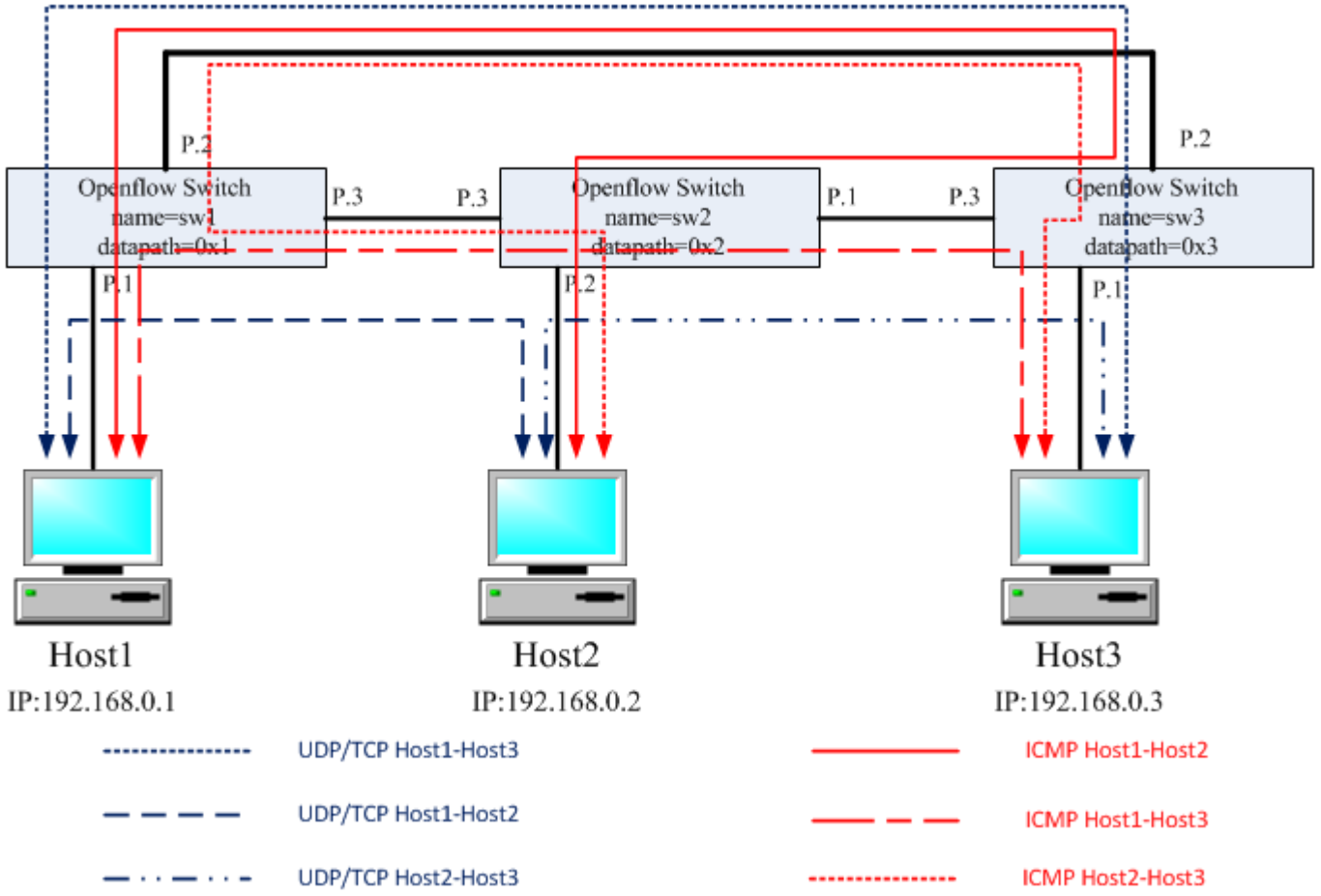
Application1:**Path management**



ICMP

TCP/UDP

Application1:**Path management**



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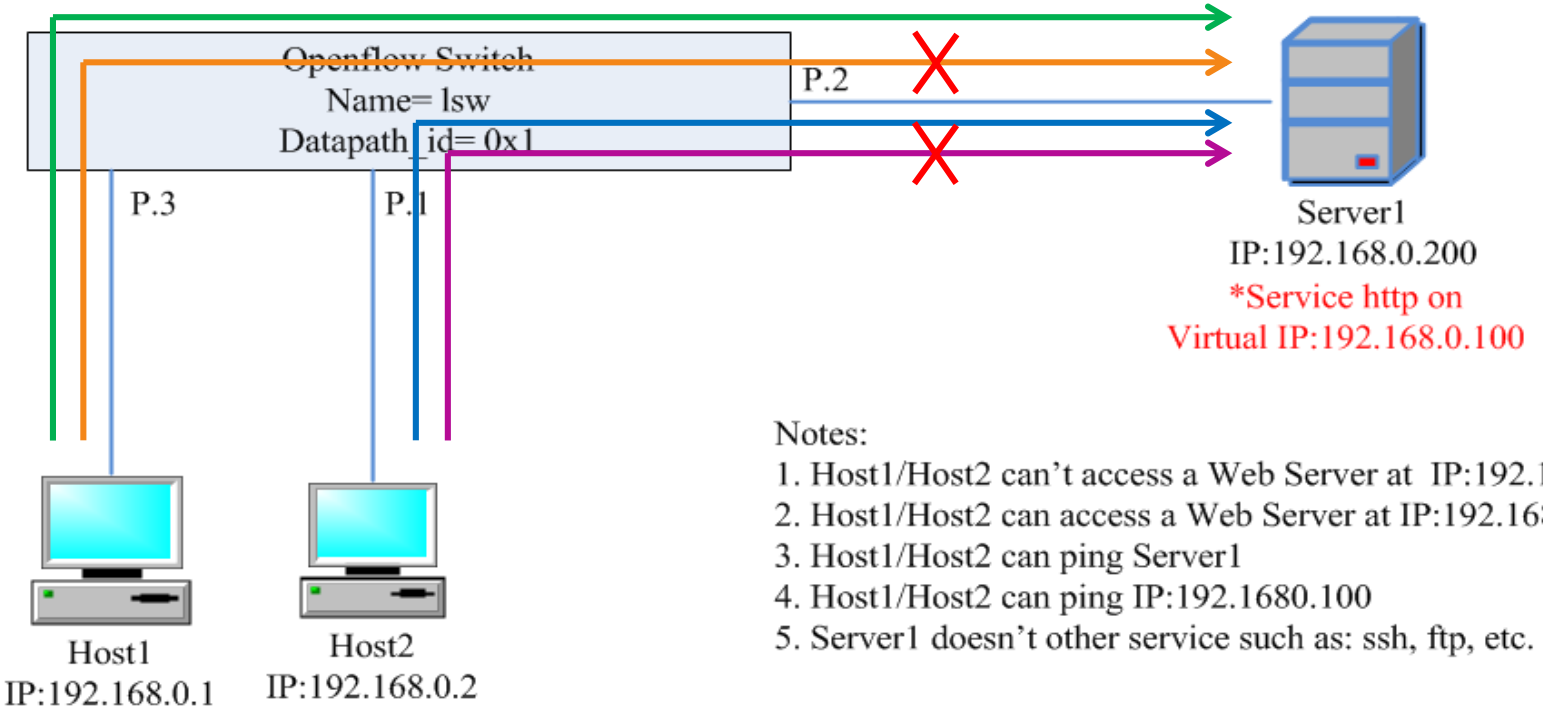
Application2: Network Address Translation (NAT)

Application2:NAT



Notes:

1. Host1/Host2 can't access a Web Server at IP:192.168.0.200
2. Host1/Host2 can access a Web Server at IP:192.168.0.100
3. Host1/Host2 can ping Server1
4. Host1/Host2 can ping IP:192.1680.100
5. Server1 doesn't other service such as: ssh, ftp, etc.

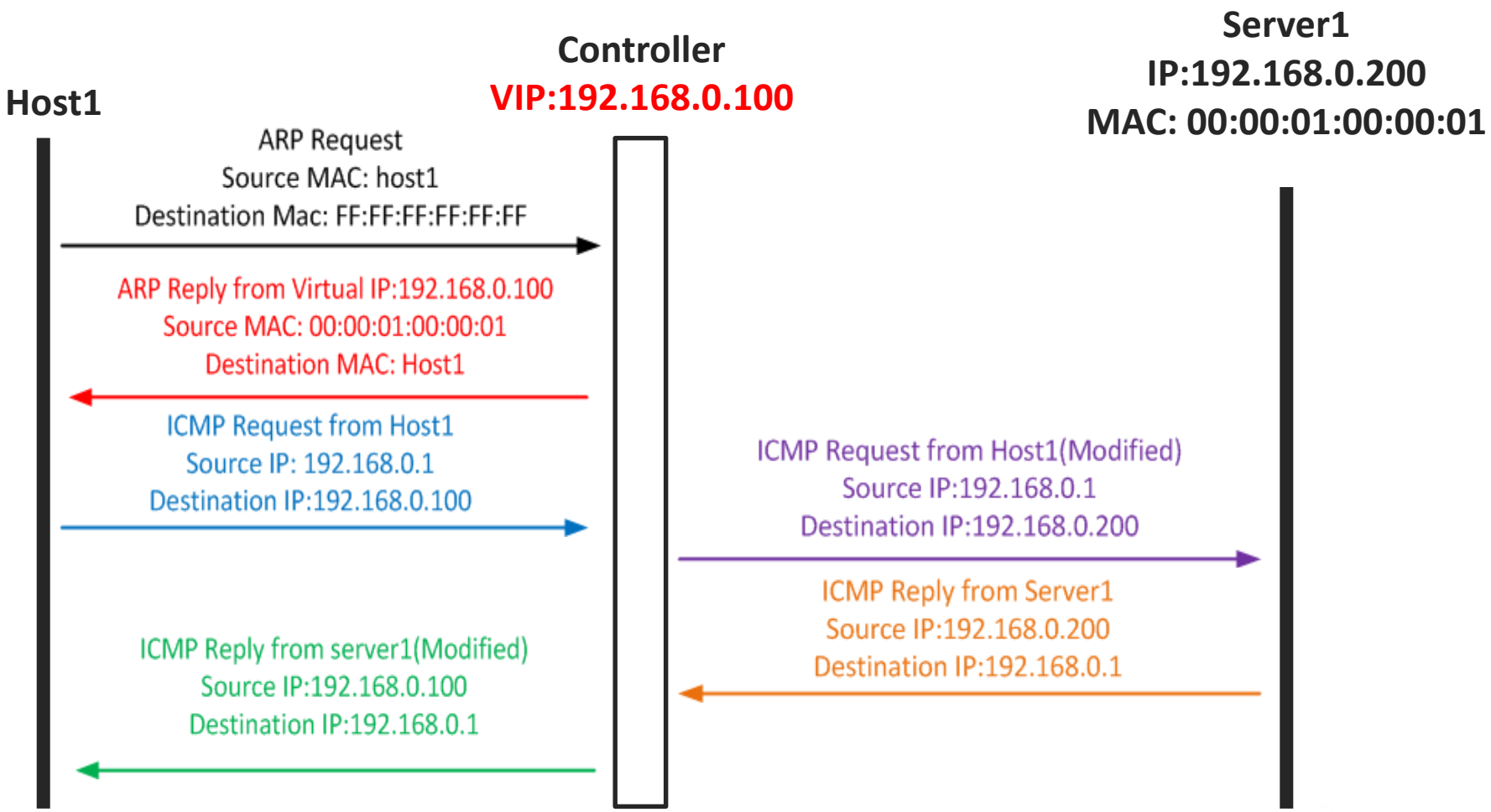
Host1 access web IP:192.168.0.200

Host1 ping server IP:192.168.0.200

Host2 access web IP:192.168.0.100

Host2 ssh server IP:192.168.0.100

Flow Diagram: Host1 Pings IP:192.168.0.100



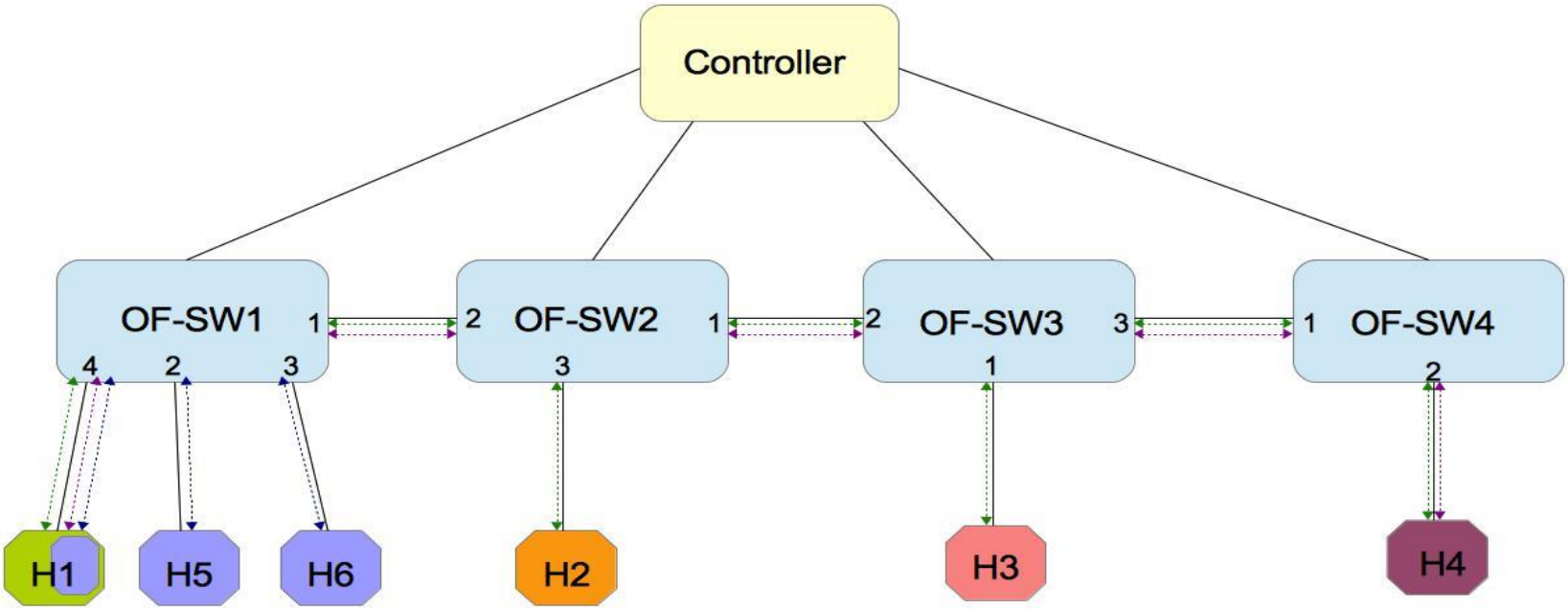
Multi-vlan routing

Application3:

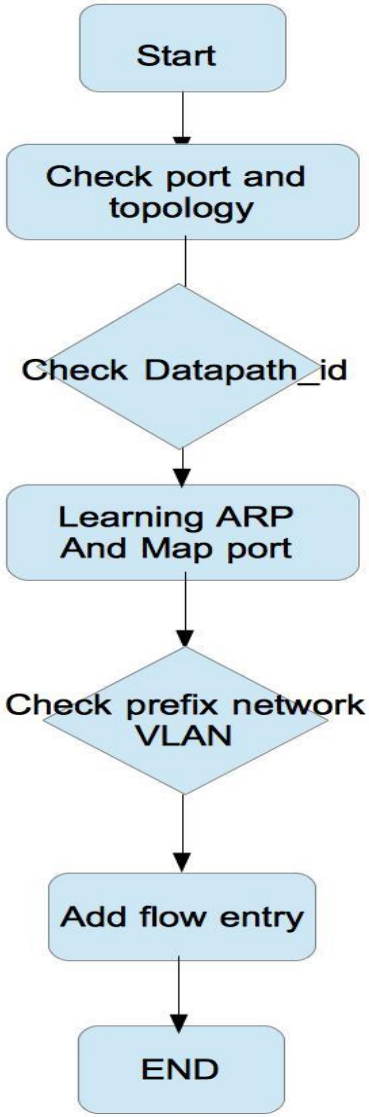
By Adisak Bunsaranun

My Application3: Multi-vlan routing

- In typical networks, the layer3 routing gateway is required for communications across different vlan networks.
- The goal of my developed application is to integrate OpenFlow and existing traditional layer2 networks.
- Enable the controller to perform layer3 routing gateway.
- No gateway setting at the clients' PC.
- Use same subnet network and separate by VLAN
- Easy to manage VLAN numbers.
- In case of port/switch failure, administrators can manually move flow entry of failure port/switch to others.



VLAN10	[ALLOW] VLAN10:H1	<--->	VLAN20:H2, VLAN30:H3, VLAN40:H4
VLAN20	[ALLOW] VLAN20:H2	<--->	VLAN10:H1
VLAN30	[ALLOW] VLAN30:H3	<--->	VLAN10:H1
VLAN40	[ALLOW] VLAN40:H4	<--->	VLAN10:H1
VLAN1	[ALLOW] VLAN1:H1	<--->	VLAN1:H5,H6


Start
Check port and topology
Check Datapath_id
Learning ARP And Map port
Check prefix network VLAN
Add flow entry
END

Problems and Future Work

- Ruby API framework is complicated and it consists of many details
- My developed application cannot work in real Openflow switches
- My current application manually maps port&vlan
- My future work is to extend a previously developed application to automatically learn and map port&vlan
- Can access from another vlan to Web service VLAN10

Questions & Answers…

We are very happy in Japan ^^

Thank you everybody