

Hands-on Workshop on Open vSwitch and Software-defined Networking

Ali ALSabeh, Jorge Crichigno
University of South Carolina
<http://ce.sc.edu/cyberinfra>
aalsabeh@email.sc.edu, jcrichigno@cec.sc.edu

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Overview of SDN Lab Series

SDN Lab Series

The labs provide learning experiences on essential SDN topics

- Mininet
- Legacy networks, Border Gateway Protocol (BGP)
- FRR routing, an open routing implementation
- MPLS networks – early efforts toward SDN
- SDN fundamentals – controllers, switches
 - ONOS controller
 - Open Virtual Switch (OVS)
- Traffic isolation with VXLAN
- OpenFlow
- Interconnection between SDN and legacy Networks, etc.

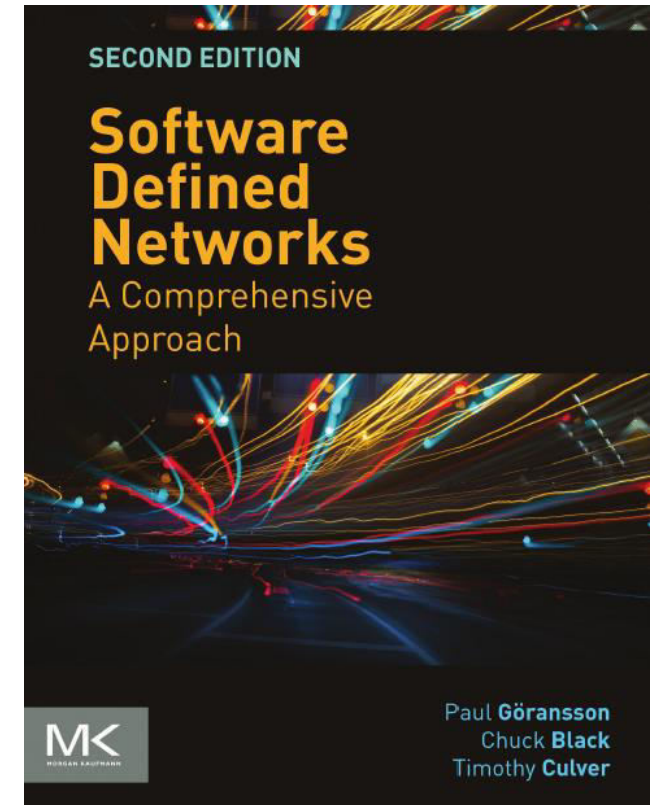
SDN Lab Series

Lab experiments

- Lab 1: Introduction to Mininet
- Lab 2: Legacy Networks: BGP Example as a Distributed System and Autonomous Forwarding Decisions
- Lab 3: Early efforts of SDN: MPLS example of a control plane that establishes semi-static forwarding paths
- Lab 4: Introduction to SDN
- Lab 5: Configuring VXLAN to Provide Network Traffic Isolation
- Lab 6: Introduction to OpenFlow
- Lab 7: Routing within an SDN network
- Lab 8: Interconnection between legacy networks and SDN networks
- Lab 9: Configuring Virtual Private LAN Service (VPLS)
- Lab 10: Applying Equal-cost Multi-path Protocol (ECMP) within SDN networks

SDN Lab Series

- The goal of the SDN Lab Series is to provide a practical experience to students and IT practitioners
- The labs provide background information which is reinforced with hands-on activities
- A good book on SDN network (which matches the SDN Lab Series) is “Software Defined Networking, A Comprehensive Approach”



Organization of Lab Manuals

Each lab starts with a section *Overview*

- Objectives
- Lab settings: passwords, device names
- Roadmap: organization of the lab

Section 1

- Background information of the topic being covered (e.g., Introduction to SDN)
- Section 1 is optional (i.e., the reader can skip this section and move to lab directions)

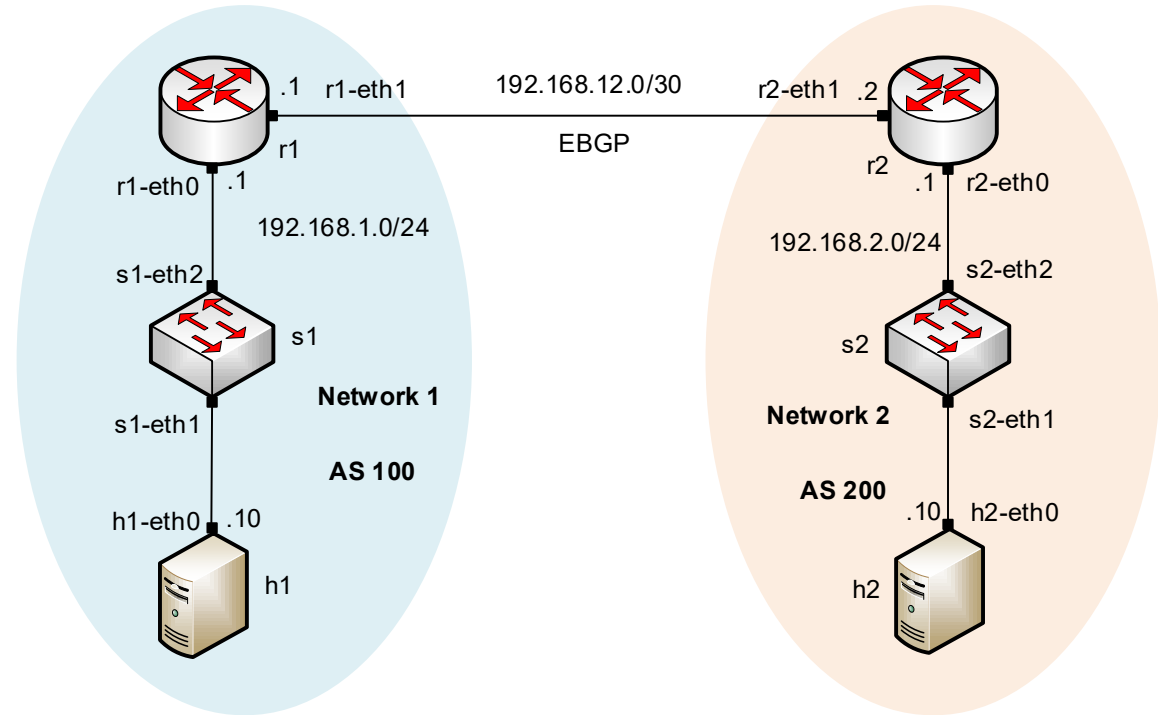
Section 2... n

- Step-by-step directions

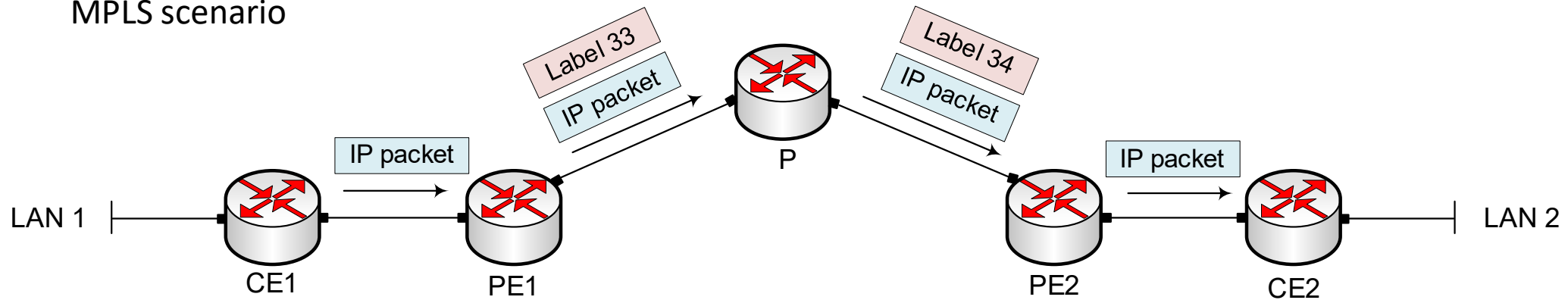
Examples

Legacy networks

BGP scenario

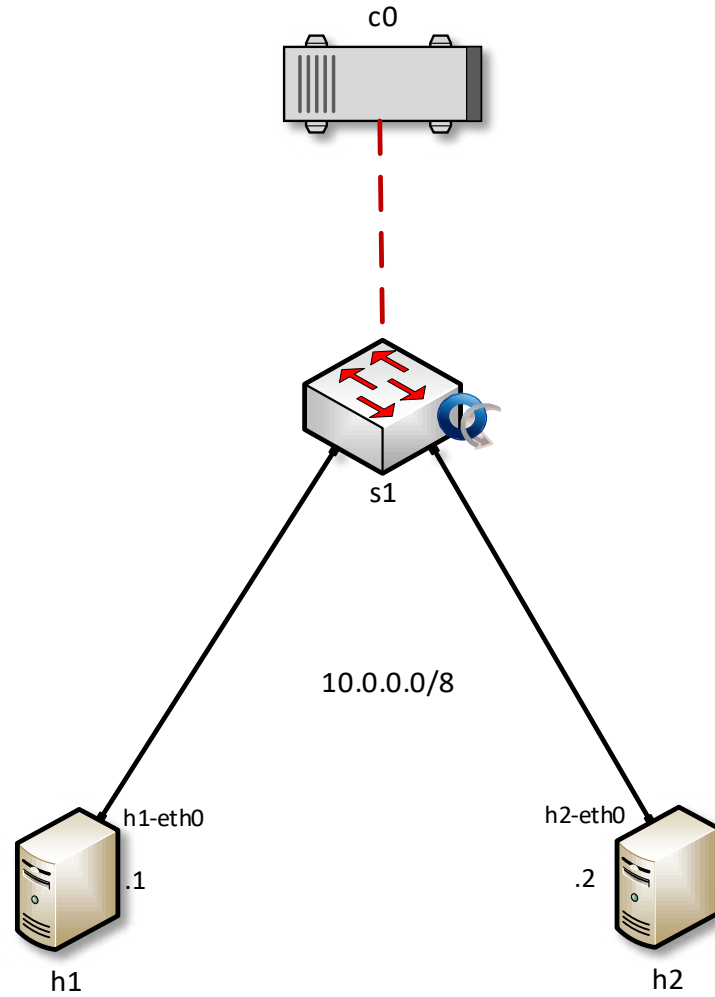


MPLS scenario



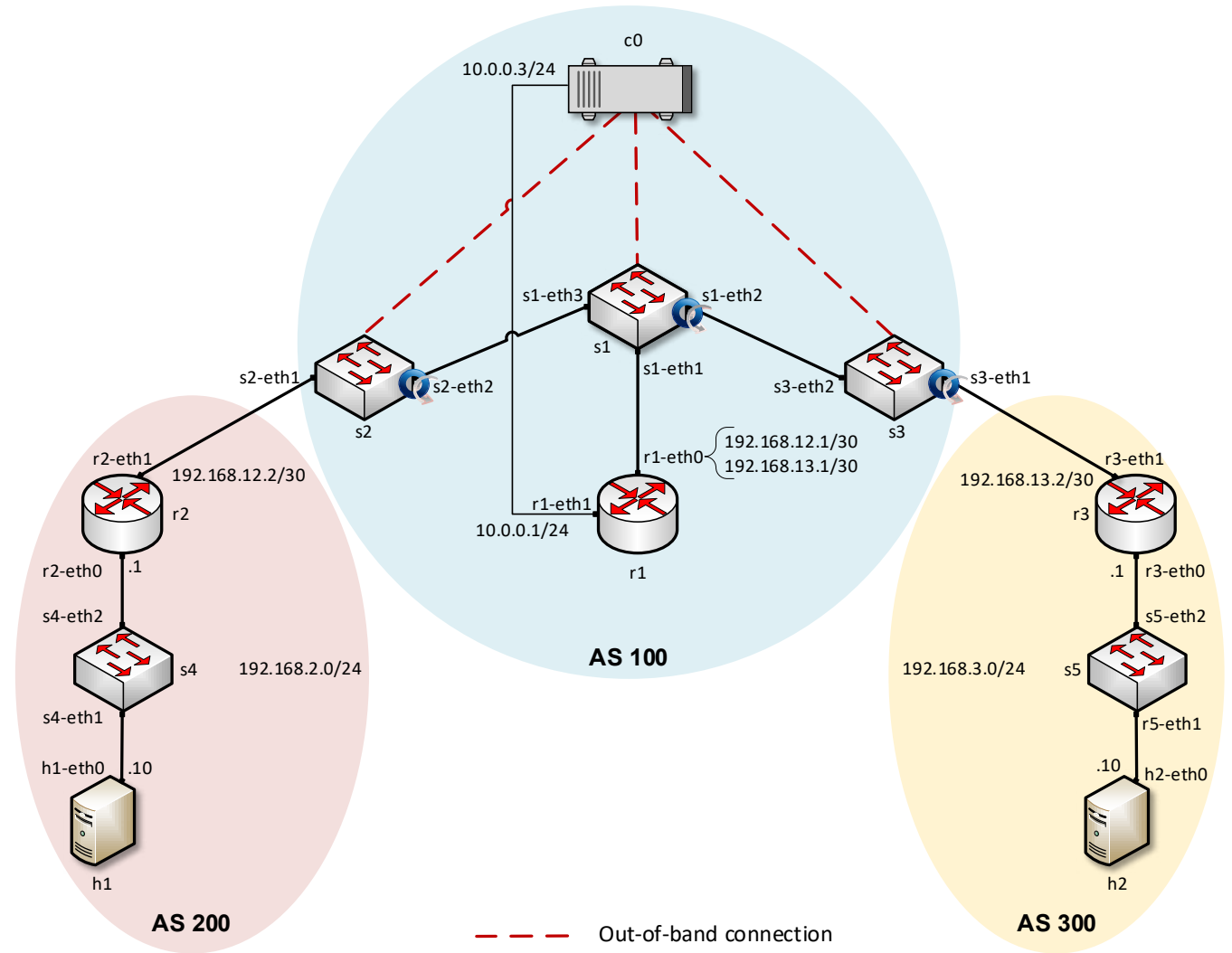
Examples

SDN networks



Examples

Interconnection of SDN and legacy networks



Examples

Applying ECMP to perform Load-balancing

