Advanced Networking Topics: BGP, BGP Hijacking, MPLS, MPLS-based VPNs, Segment Routing, and others

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http://ce.sc.edu/cyberinfra
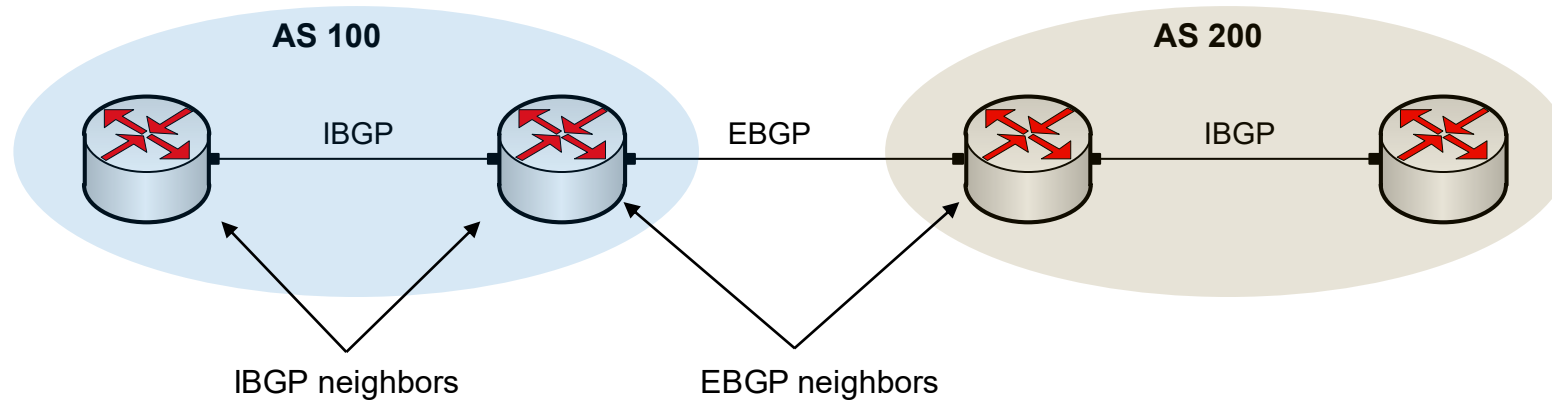aalsabeh@email.sc.edu, jcrichigno@cec.sc.edu

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South Carolina

Introduction to BGP

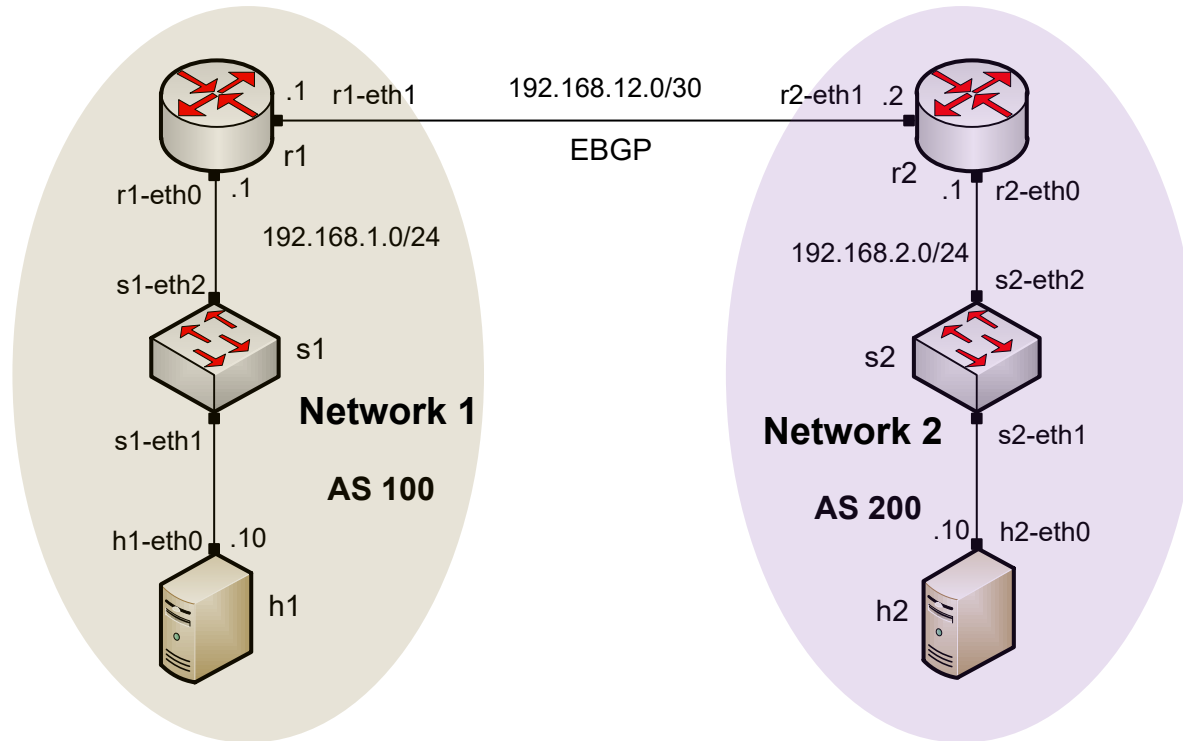Lab activities are described in Lab 3, BGP Lab Series

What is BGP?

- The Internet can be viewed as a collection of networks or Autonomous Systems (ASes) that are interconnected

- BGP is an exterior gateway protocol designed to exchange routing and reachability information among ASes on the Internet
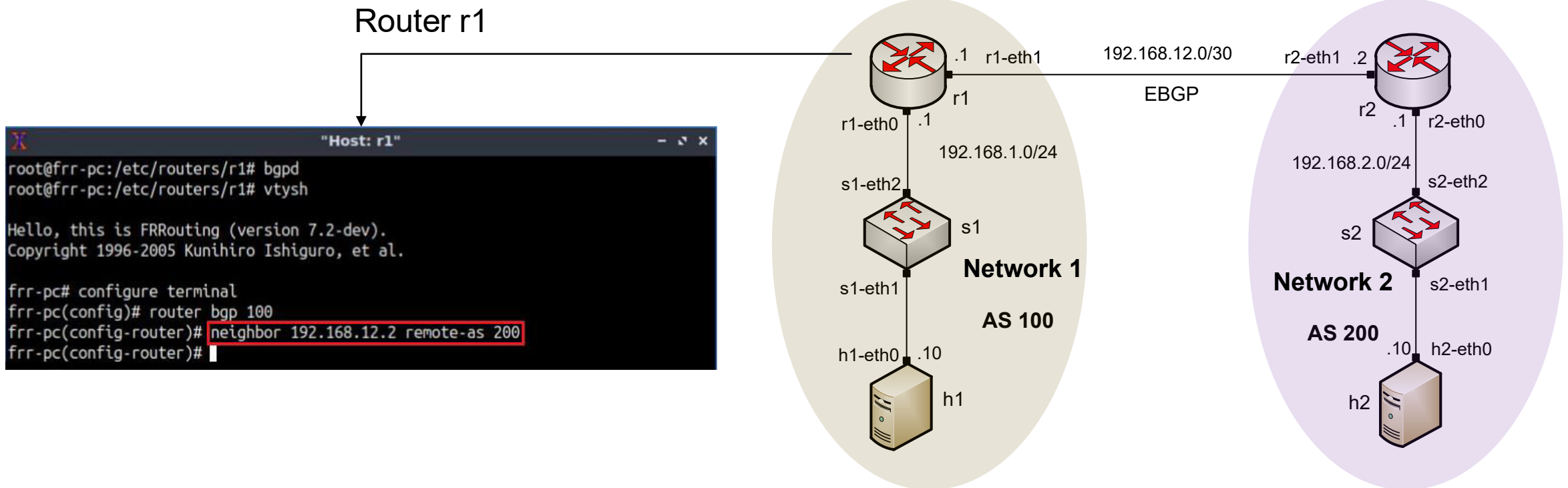

AS 100

AS 200

IBGP

EBGP

IBGP

IBGP neighbors

EBGP neighbors

Lab Topology

- Network 1 in AS 100 consists of a host, a switch, and a router
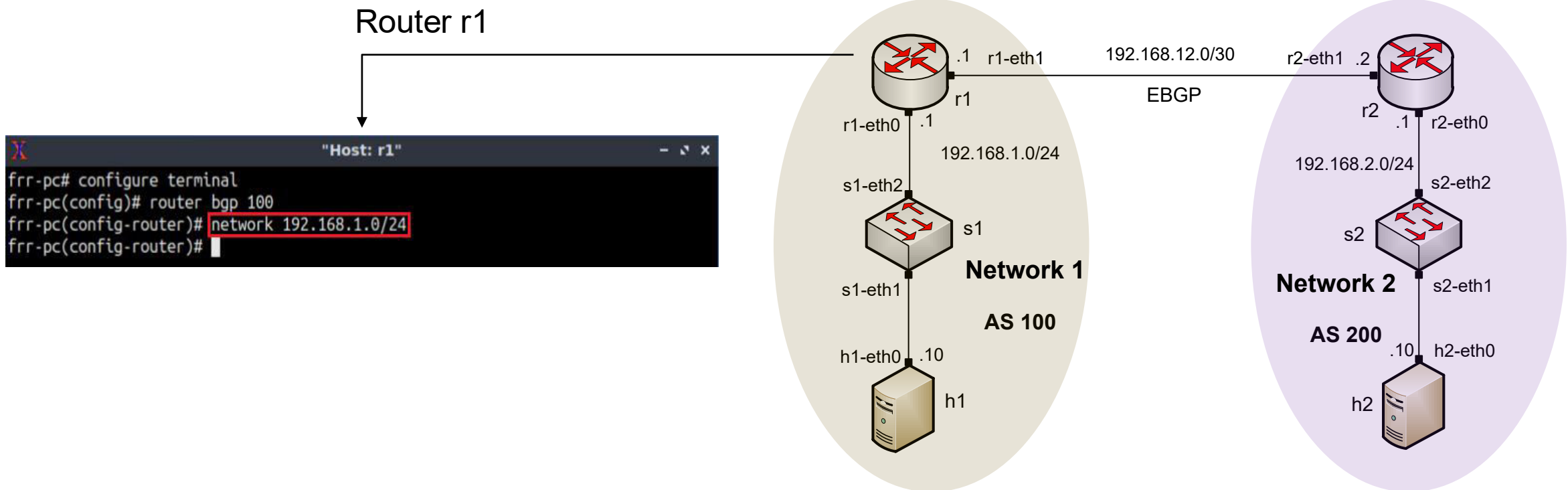- Network 2 in AS 200 consists of a host, a switch, and a router

Lab Configuration

- Establishing BGP neighborhood

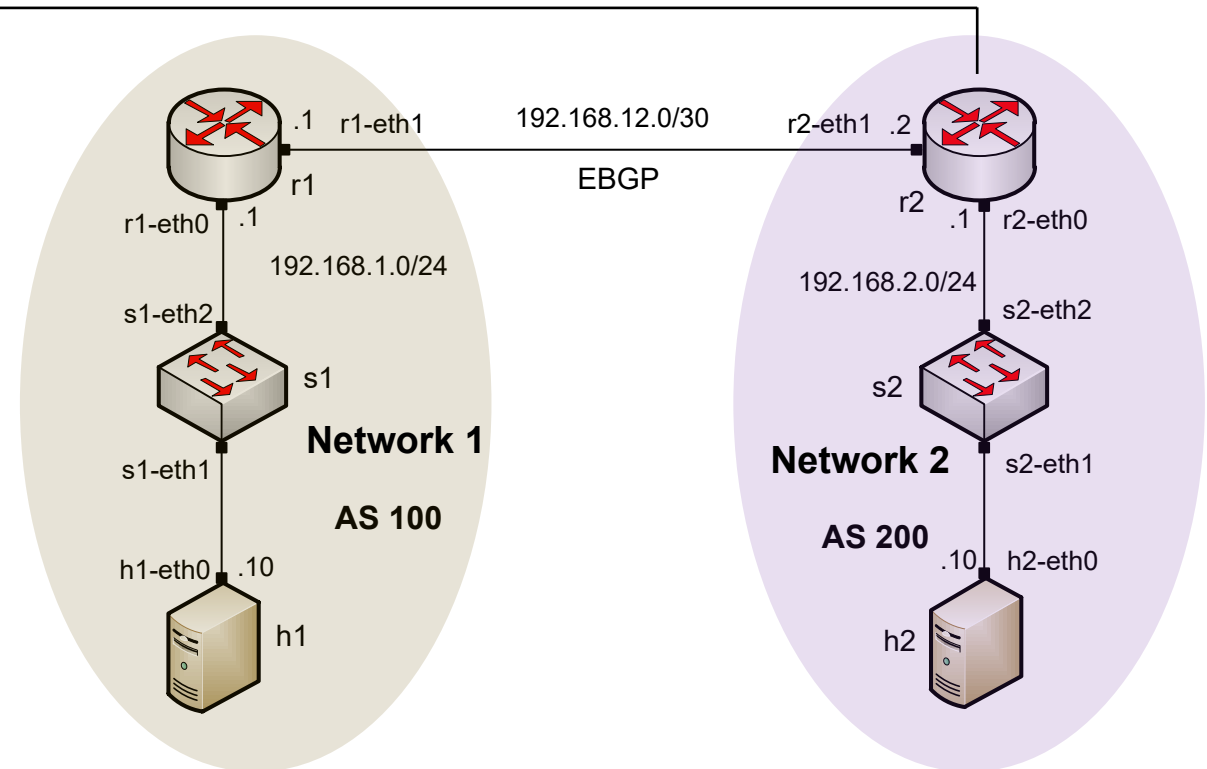# Lab Configuration

- Advertising a network in BGP

Router r1

```
"Host: r1"
frr-pc# configure terminal
frr-pc(config)# router bgp 100
frr-pc(config-router)# network 192.168.1.0/24
frr-pc(config-router)#
```

.1   r1-eth1   192.168.12.0/30   r2-eth1 .2

r1   EBGP   r2

r1-eth0 .1   .1 r2-eth0

192.168.1.0/24   192.168.2.0/24

s1-eth2   s2-eth2

s1   s2

Network 1   Network 2

s1-eth1   AS 100   s2-eth1   AS 200

h1-eth0 .10   .10 h2-eth0

h1   h2

Lab Configuration

- Routing table: lists the routes learned from different routing protocols

Router r2

Lab Configuration

- BGP table: lists the routes learned from BGP routing protocol