

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

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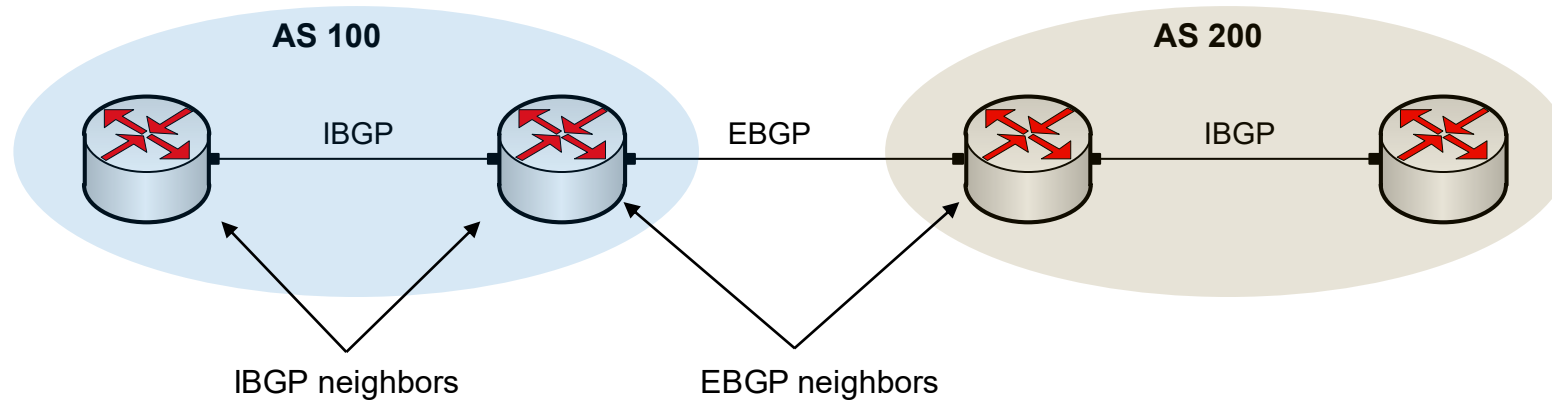
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Introduction to BGP

Lab activities are described in Lab 3, BGP Lab Series

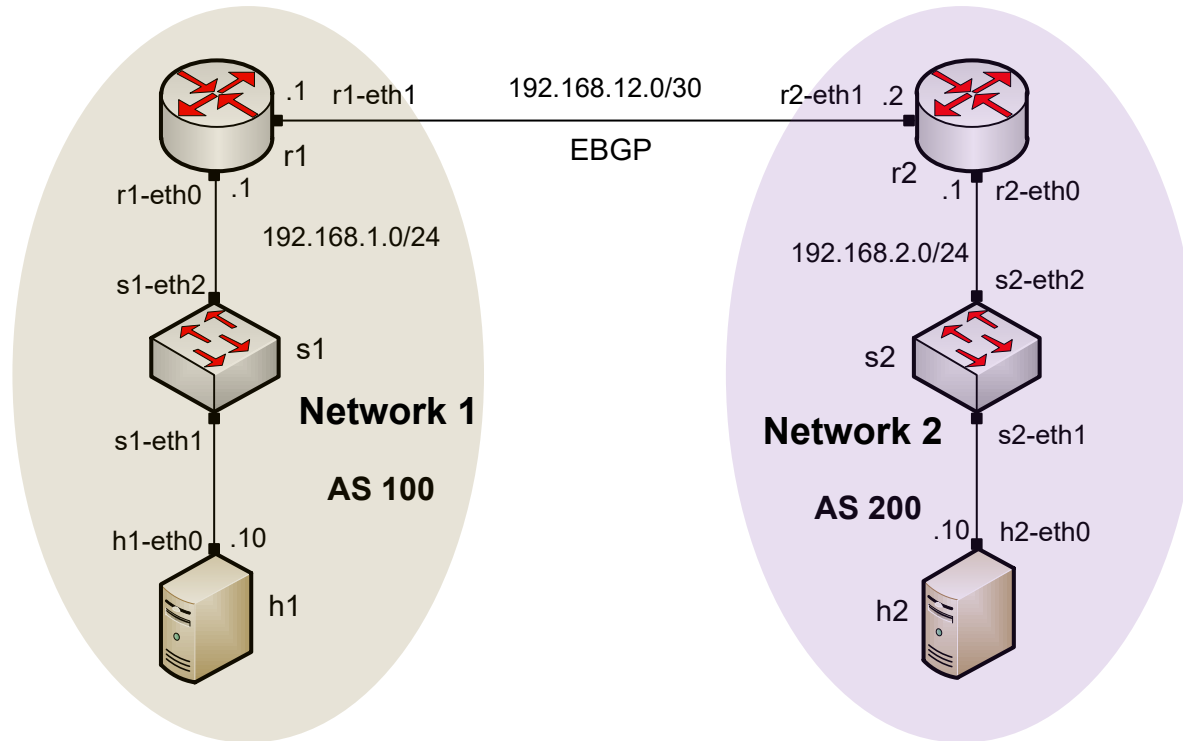
What is BGP?

- 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



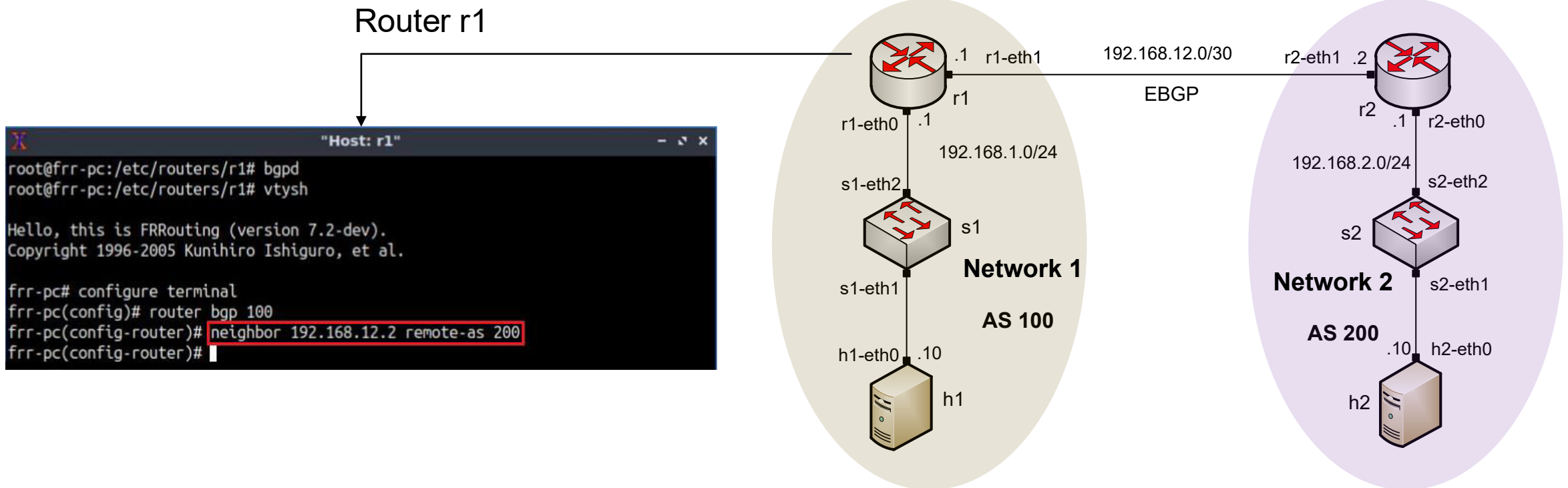
Lab Topology

- 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



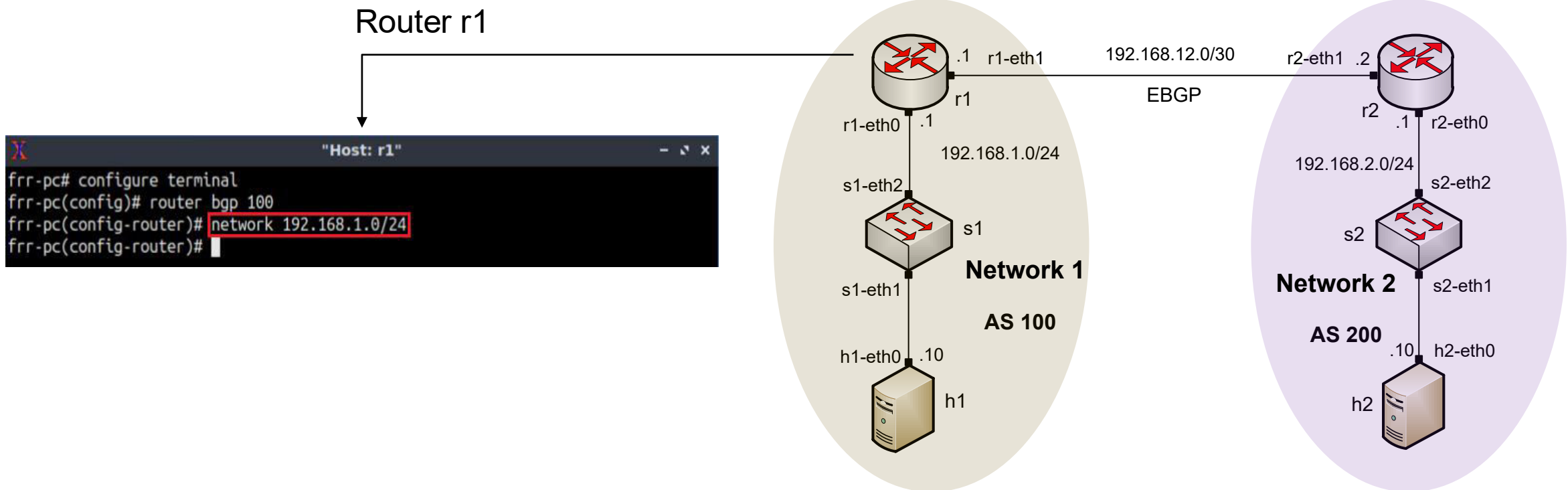
Lab Configuration

- Establishing BGP neighborhood



Lab Configuration

- Advertising a network in BGP



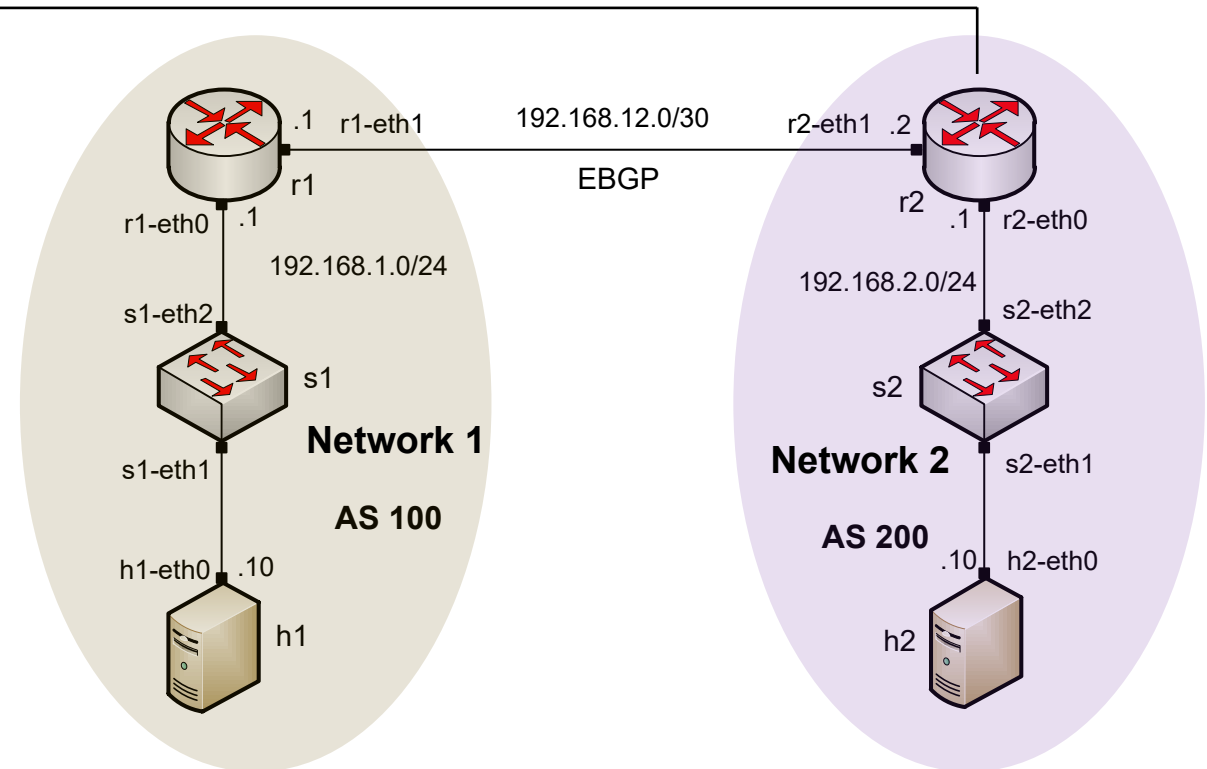
Lab Configuration

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

Router r2

```
Host: r2
frr-pc# show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued route, r - rejected route

B>* 192.168.1.0/24 [20/0] via 192.168.12.1, r2-eth1, 00:00:52
C>* 192.168.2.0/24 is directly connected, r2-eth0, 00:18:36
C>* 192.168.12.0/30 is directly connected, r2-eth1, 00:18:02
frr-pc#
```



Lab Configuration

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

Router r2

```
Host: r2
frr-pc# show ip bgp
BGP table version is 2, local router ID is 192.168.12.2, vrf id 0
Default local pref 100, local AS 200
Status codes: s suppressed, d damped, h history, * valid, > best, = multipath,
               i internal, r RIB-failure, S Stale, R Removed
Next hop codes: @NNN next hop's vrf id, < announce-nh-self
Origin codes: i - IGP, e - EGP, ? - incomplete

   Network        Next Hop        Metric LocPrf Weight Path
*> 192.168.1.0/24  192.168.12.1      0         0   100  i
*> 192.168.2.0/24  0.0.0.0          0         0  32768  i

Displayed 2 routes and 2 total paths
frr-pc#
```

