

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

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Overview Border Gateway Protocol (BGP) Lab Series

Lab Series: Border Gateway Protocol

- Lab 1: Introduction to Mininet
- Lab 2: Introduction to Free Range Routing (FRR)
- Lab 3: Introduction to BGP
- Lab 4: Configure and verify EBGP
- Lab 5: BGP Authentication
- Lab 6: Configure BGP with Default Route
- Lab 7: Using AS_PATH BGP Attribute
- Lab 8: Configuring IBGP and EBGP Sessions, Local Preference, and MED
- Lab 8.1: Configuring OSPF, IBGP and EBGP Sessions, Local Preference, and MED
- Lab 9: IBGP, Next Hop and Full Mesh Topology
- Lab 10: BGP Route Reflection

Organization of Lab Manuals

Each lab starts with a section *Overview*

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

Section 1

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

Section 2... n

- Step-by-step directions

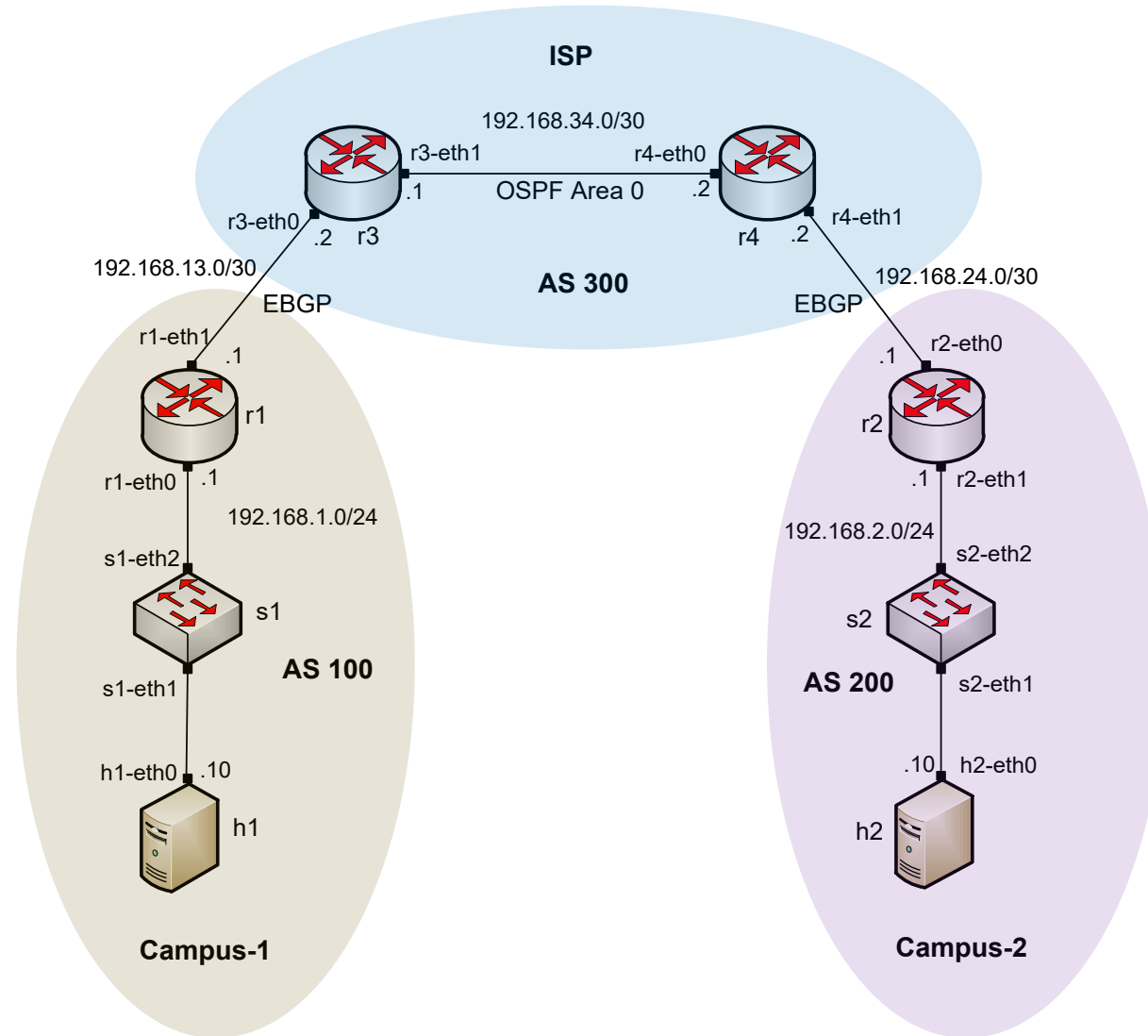
Configure and Verify EBGP

Lab activities are described in Lab 4, BGP Lab Series

Lab Objectives

- Explain the concept of BGP
- Configure and verify EBGP between two ASes
- Enable OSPF redistribution to advertise BGP routes
- Enable BGP redistribution to advertise OSPF routes

Lab Topology

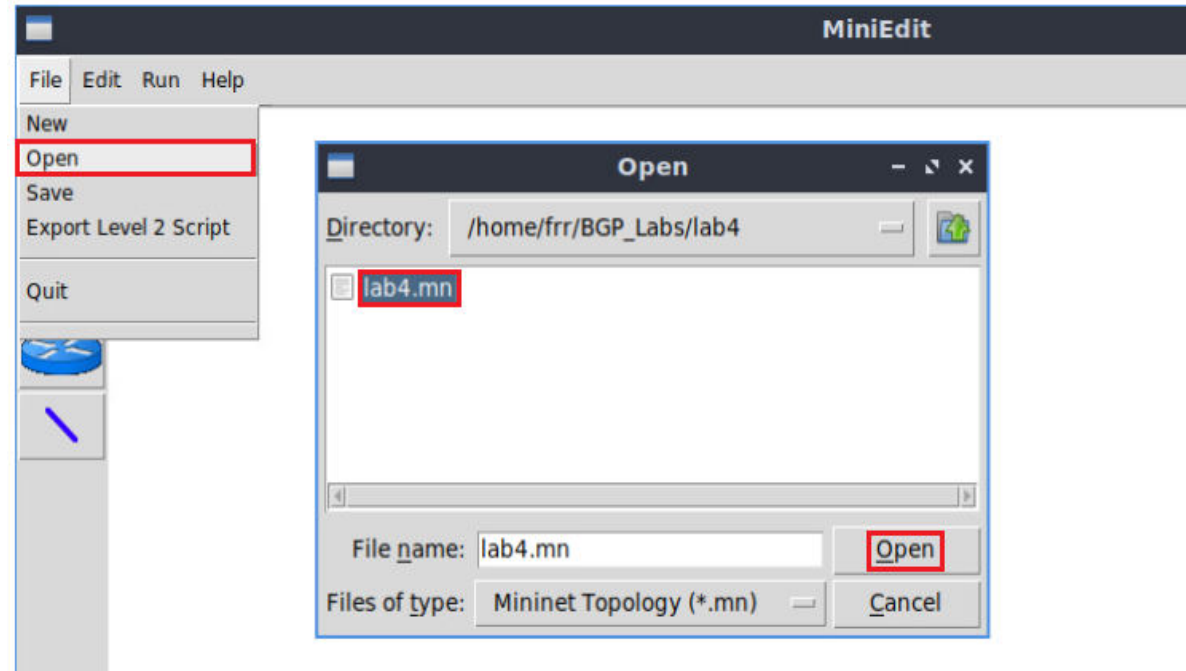


Lab Roadmap

- Section 1: Introduction
- Section 2: Lab topology
- Section 3: Configure OSPF on router r3 and router r4
- Section 4: Configure BGP on all routers
- Section 5: Redistribute routes on router r3 and router r4
- Section 6: Verify connections

Step-by-step Directions

Opening the lab topology



Step-by-step Directions

Enable BGP daemon

```
root@frr-pc:/etc/routers/r1# bgpd
root@frr-pc:/etc/routers/r1#
```

Configure BGP

```
root@frr-pc:/etc/routers/r1# bgpd
root@frr-pc:/etc/routers/r1# vtysh

Hello, this is FRRouting (version 7.2-dev).
Copyright 1996-2005 Kunihiro Ishiguro, et al.

frr-pc# configure terminal
frr-pc(config)# router bgp 100
frr-pc(config-router)#
```