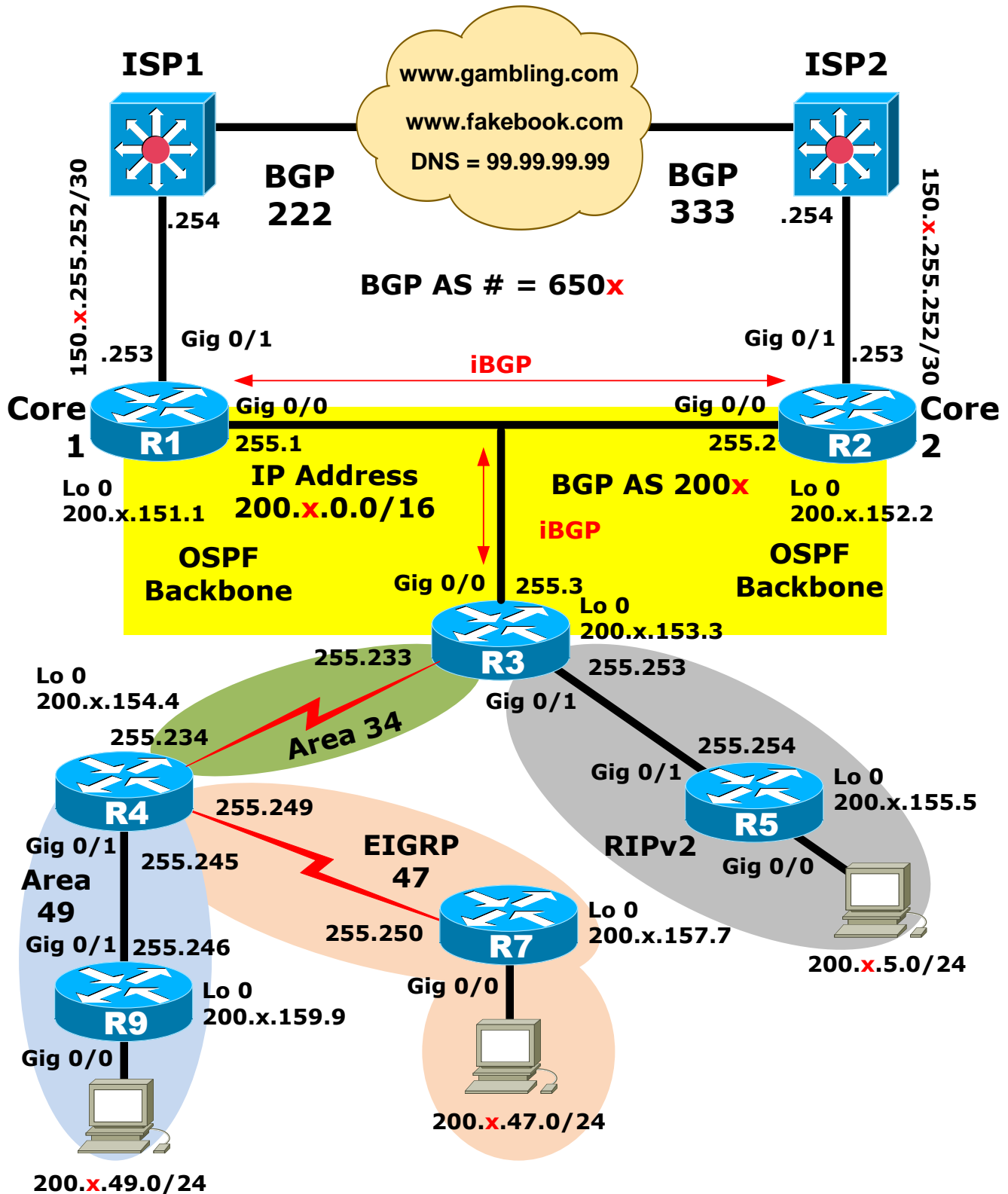


CCNP ROUTE

Final Case Study Fall 2015

IPv4 Topology



Tasks:

- 1) Build the Topology and IP Addresses per the IPv4 Topology Diagram.
 1. All loopback 0 addresses use a 32 bit mask
 2. All Point-to-Point links use a 30 bit mask
 3. All LANs use a 24 bit mask
 4. The Core1 – Core2 – R3 link uses a 29 bit mask.
 5. Configure IPv6 Link local addresses for all links
- 2) Your internal IP address is 200.x.0.0/16
- 3) Configure OSPF v3 Address Family for IPv4 and IPv6
- 4) Configure EIGRP using the virtual instance name for IPv4 and IPv6
- 5) Build the Topology and configure BGP using the new AS 200x
- 6) Specify an eBGP neighborship to the ISP router.
- 7) Specify the “old” AS number(650x) to the ISP router (eBGP) using the **local-as** keyword
- 8) Advertise your internal network prefix 200.x.0.0/16 via eBGP to each ISP using a /16
- 9) Configure iBGP neighbors between Core1 and Core2 and R3 using the new AS 200x
 1. specify Loopback 0
 2. specify **update-source loopback 0**
 3. specify the **next-hop-self**
- 10) Do not allow **AS 200x** to become a transit AS.
- 11) Configure OSPFv3 via the backbone
 1. Propagate a default OSPF route from Core1 and Core2
- 12) Configure OSPF in Area 34 between R3 and R4
- 13) Configure OSPF in Area 49 between R4 and R9.
 1. Ensure that no LSA 4's or 5's are permitted in area 49
 2. On R9 redistribute loopbacks 1-4 into Area 49
- 14) Configure EIGRP in **AS 47** between R4 and R7
 1. On R7 redistribute the loopbacks into Area EIGRP
 2. Summarize loopbacks 1-4 and Gig 0/0 networks on R7
- 15) Configure RIPv2 Based on the Topology.
 1. Advertise Loopbacks 1-4 on R5 using the **redistribute** command
 2. Ensure that R3 has a single summary route for the networks on R5

16) Redistribution

1. On R4 redistribute between OSPF and EIGRP
2. On R3 Redistribute between RIPv2 and OSPF
3. On R3 redistribute only the 200.x.255.248/30 prefix into BGP

17) Route Filtering

1. Ensure the R5 does not have the Area 34 prefix 200.x.255.232/30 in the routing table
 - a. do not use a distribute list

18) BGP Path Attribute Manipulation

2. Ensure the R3 prefers the path via Core2 for any prefixes that transit AS 888
 - a. specify the **local preference**
3. Ensure the R3 prefers the path via Core1 for any **111.3.x.x** prefixes
 - a. specify the **weight** attribute

19) Ensure full connectivity between all PC's

1. Ensure all IPv4 PC's have connectivity to all external Web Servers

| Router Loopback Interfaces | | |
|----------------------------|---------------------------|---------------------------|
| R5 | R7 | R9 |
| Loopback 1 200.x.1.1 /24 | Loopback 1 200.x.32.1 /24 | Loopback 1 200.x.50.1 /24 |
| Loopback 2 200.x.2.1 /24 | Loopback 2 200.x.35.1 /24 | Loopback 2 200.x.53.1 /24 |
| Loopback 3 200.x.3.1 /24 | Loopback 3 200.x.39.1 /24 | Loopback 3 200.x.57.1 /24 |
| Loopback 4 200.x.7.1 /24 | Loopback 4 200.x.45.1 /24 | Loopback 4 200.x.59.1 /24 |

Note: for OSPF use the loopback interface command **ip ospf network point-to-point**

IPv6 Configuration

- 1) Configure IPv6 addressing based on the IPv6 Topology
- 2) Your internal IPv6 address is **2001:db8:x::/48**
- 3) Configure eBGP to the ISP.
- 4) Specify the "old" AS number(650x) to the ISP router (eBGP) using the **local-as** keyword
- 5) Configure ORF filtering to limit IPv6 prefixes to only the default route
- 6) Configure a floating static IPv6 address on Core1 to the ISP.
- 7) Configure OSPFv3 using the Address Family
- 8) Configure IPv6 for OSPFv3 on Core1, R3, and the link between R4 and R3
 1. Propagate a default IPv6 route from Core1

- 9) Configure the loopbacks on R3 and advertise the two loopbacks in OSPFv3
 1. Then summarize the two loopback networks into OSPF
- 10) Configure OSPFv3 Area 43 as a Totally NSSA area.
- 11) Configure EIGRP using the Virtual Instance Name
 1. Only configure EIGRP in AS 47 on the link between R4 and R7.
 2. Configure EIGRP in AS 47 for all networks on R7
 3. Summarize the IPv6 networks on R7
- 12) Redistribute IPv6 EIGRP and OSPFv3 on R4.
- 13) Verify IPv6 connectivity from R7 PC and www.ipv6.com

IPv6 Topology

