# CCIE DATA CENTER MULTICAST

PIM Phantom RP

Phantom RP Overview

- In Bidir PIM, the RP is only used as the root of the shared tree and is not used to process any packet (like the PIM register in ASM).
- How to achieve RP redundancy in the Bidir PIM network?
  - Use Phantom RP.
- Phantom RP means the RP address (RPA) does not belong to any physical router's interface but only belongs to a reachable network.
  - Phantom RP is provided using loopback interfaces configured in more than one router, with different subnet masks to the RP address. (none of them is the exact /32 address)
  - Then, we rely on the unicast routing longest match rule to choose the active RP.
  - In case the active RP fails, the secondary RP with the shorter mask, still advertising the RP subnet, will appear in the routing table as the best route.

Phantom RP Example
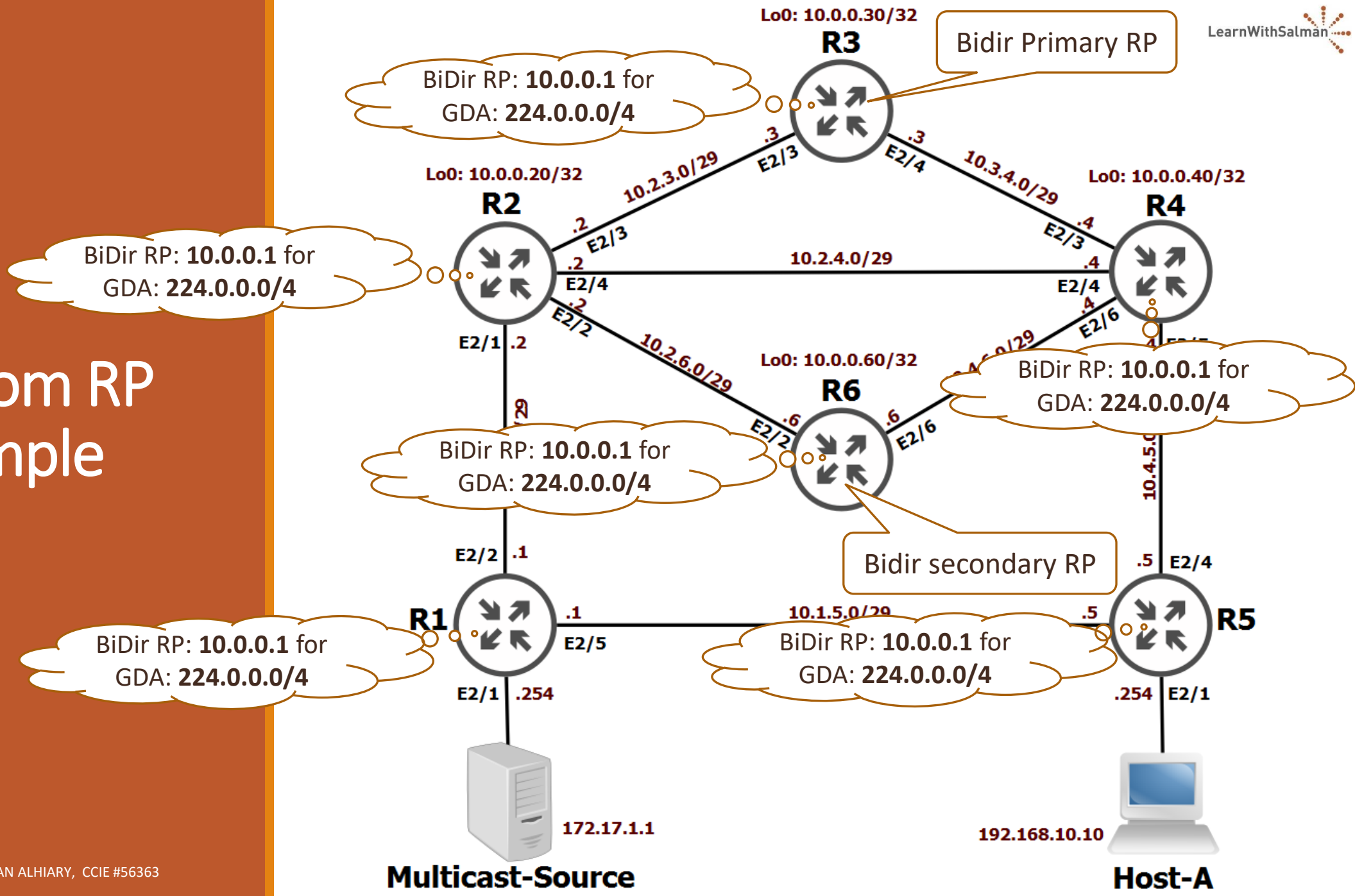
Phantom RP Example

Loopback 1 configuration
```
int lo1
  ip address 10.0.0.2/30
  ip pim sparse-mode
  ip ospf network point-to-point
  ip router ospf CCIE area 0
```
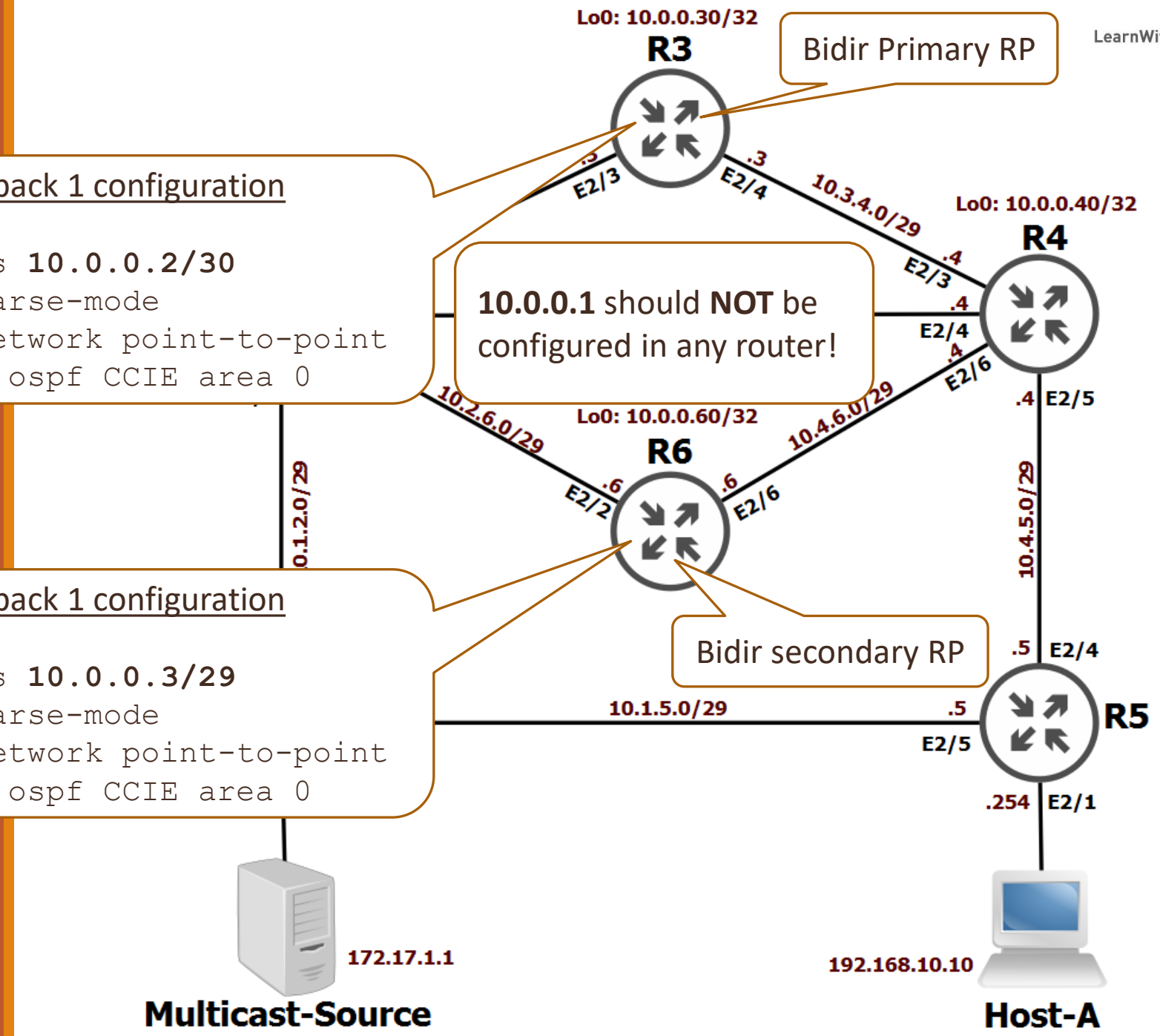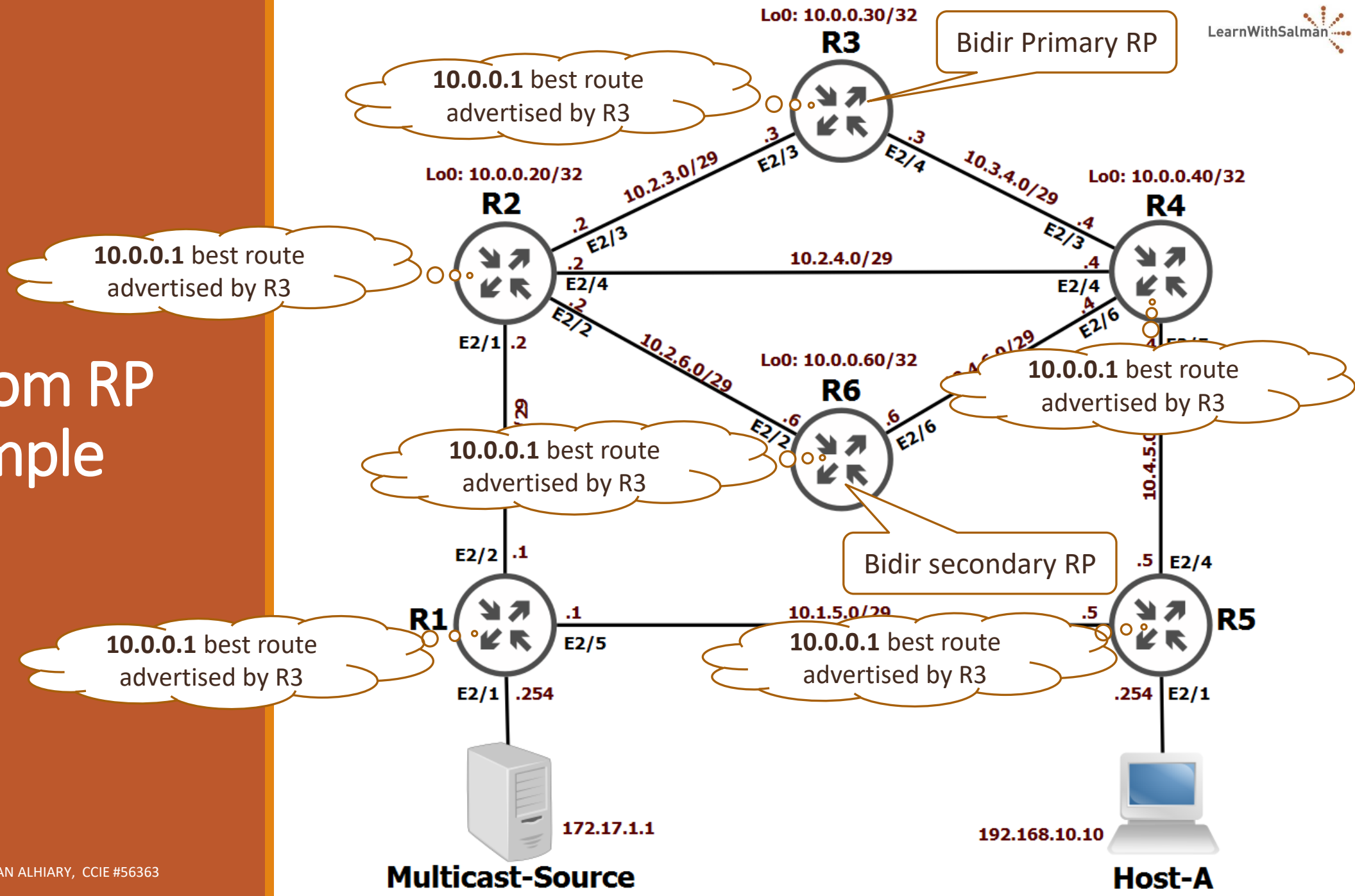
Loopback 1 configuration
```
int lo1
  ip address 10.0.0.3/29
  ip pim sparse-mode
  ip ospf network point-to-point
  ip router ospf CCIE area 0
```
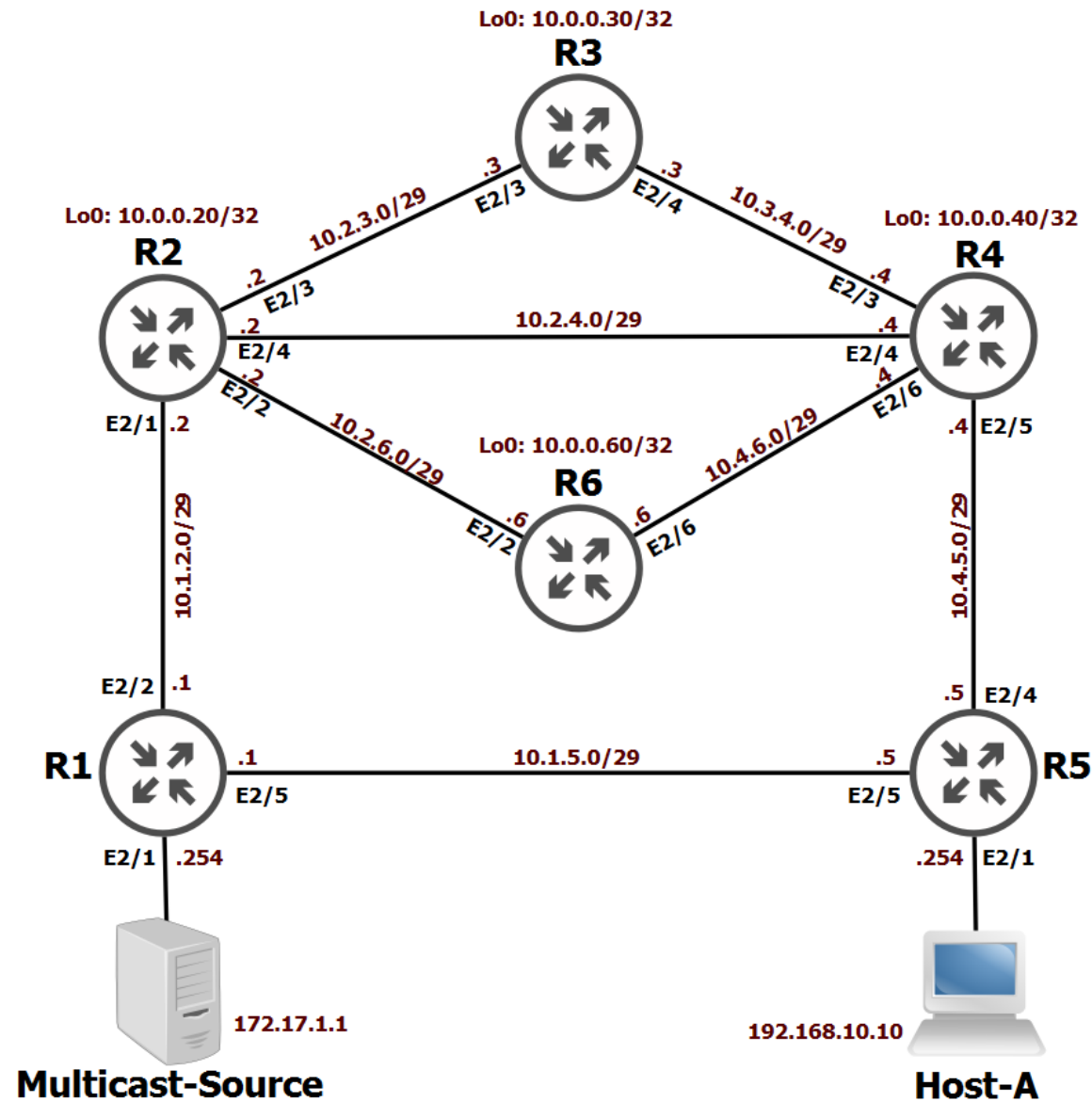
Bidir Primary RP

10.0.0.1 should **NOT** be configured in any router!

Bidir secondary RP

Lo0: 10.0.0.30/32
R3

Lo0: 10.0.0.40/32
R4

Lo0: 10.0.0.60/32
R6

R5

E2/3   E2/4   .3   10.3.4.0/29   .4   E2/3
.4   E2/4   .4   E2/6
10.2.6.0/29   10.4.6.0/29   .4   E2/5
E2/2   .6   .6   E2/6
10.4.5.0/29
.5   E2/4
10.1.5.0/29   .5
E2/5
10.1.2.0/29
.254   E2/1

172.17.1.1

Multicast-Source

192.168.10.10

Host-A

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Phantom RP Example

Thanks for watching!

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