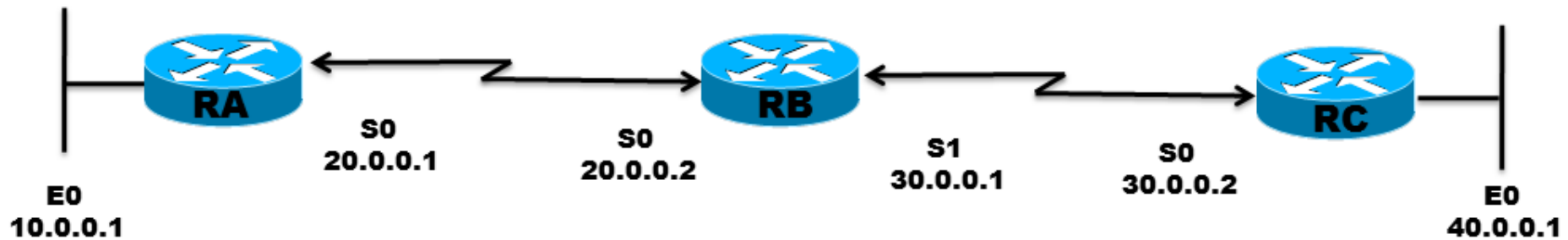


OSPF(Open Shortest Path First)

- ✓ OSPF is a link state routing protocol.
- ✓ OSPF supports class less routing protocols.
- ✓ It is used in very large network. e.g.: Internet and intranet.
- ✓ OSPF support VLSM and Different network.
- ✓ OSPF supports other vendor routers.
- ✓ It uses SPF algorithm to find out best path.
- ✓ Default Priority is 1.
- ✓ OSPF backbone area 0.
- ✓ It has no hop count limit.
- ✓ Administrative Distance is 110.
- ✓ Process ID (1 to 65535).
- ✓ Hierarchical network design using Areas
- ✓ Ospf sends updates (LSAs) when there is a change to one of its links
- ✓ LSAs are additionally refreshed every 30 minuets
- ✓ Updates are sent through multicast IP 224.0.0.5 & 224.0.0.6

POINT TO POINT:



RA

```
# router ospf 100
# network 10.0.0.0 0.255.255.255 area 0
# network 20.0.0.0 0.255.255.255 area 0
```

RB

```
# router ospf 100
# network 20.0.0.0 0.255.255.255 area 0
# network 30.0.0.0 0.255.255.255 area 0
```

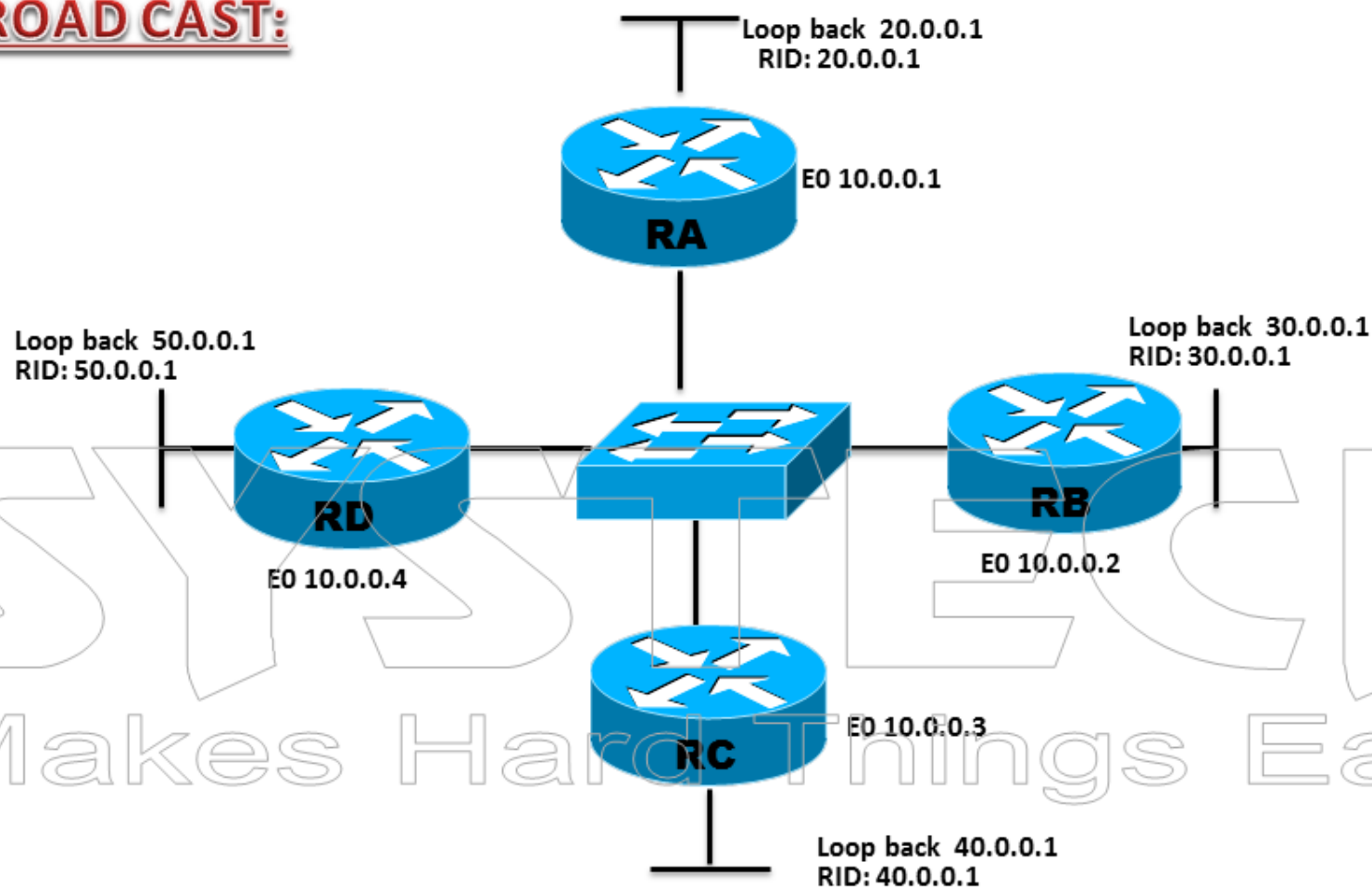
RC

```
# router ospf 100
# network 30.0.0.0 0.255.255.255 area 0
# network 40.0.0.0 0.255.255.255 area 0
```

#Sh ip ospf neighbor

#show ip ospf database

BROADCAST:



Directly connected code: C

OSPF Code: O

Administrative Distance: 110

Designated Router (DR): Router D.

Backup Designated Router (BDR): Router C

DR others :Router A and Router B.



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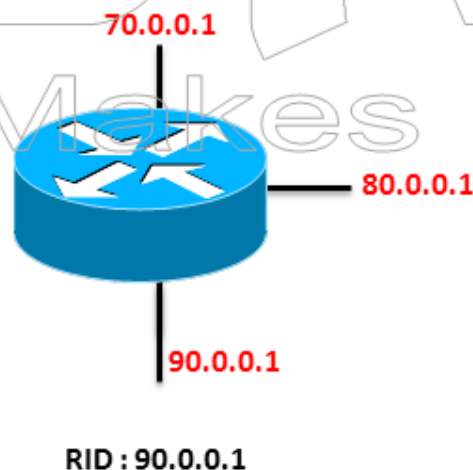
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- ✓ It will not send Routing information to all Routers . it sends only to Designated Router (DR).
- ✓ DR is the Master of the network. It has entire topology of the network.
- ✓ BDR : Backup Designated Router : Backup copy of DR.
- ✓ By Default Loop back will be up, No need to set no shutdown.
- ✓ DR is the Router with largest RID (Router ID). So Router D (50.0.0.1) is DR.
- ✓ BDR is the Router with the next largest RID. So Router C (40.0.0.1) is BDR.
- ✓ Router A and Router B are other DR.
- ✓ Election Process :

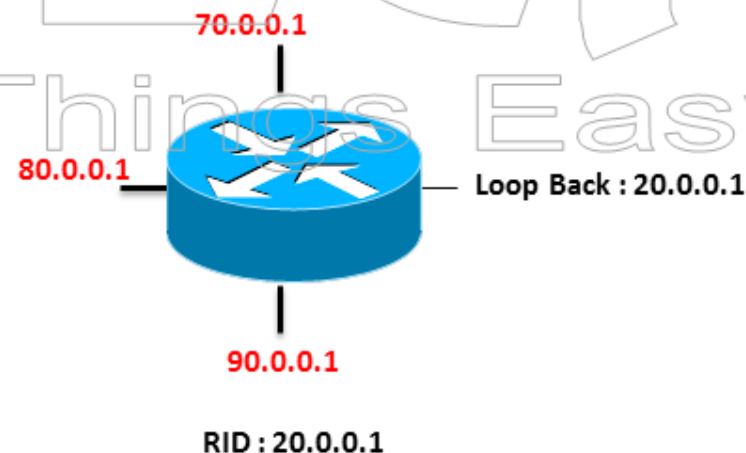
1) It checks Priority.

2) It checks RID

If there is no loop back Address:



If there is loop back Address:



RA

Router >
Router #
Router(config)#
Router(config-if)#

Enable
Configure Terminal
Interface loopback 0
ip address 20.0.0.1 255.0.0.0

Router#
Router #
Router(config)#
Router(config-if)#
Router(config-if)#

show ip interface brief
Configure Terminal
interface Ethernet 0
ip address 10.0.0.1 255.0.0.0
no shutdown

RB

Router >
Router #
Router(config)#
Router(config-if)#
Router(config)#
Router(config-if)#
Router(config-if)#

Enable
Configure Terminal
Interface loopback 0
ip address 30.0.0.1 255.0.0.0
interface Ethernet 0
ip address 10.0.0.2 255.0.0.0
no shutdown

RA

Router >

Router #

Router(config)#

Router(config-router)#

Router(config-router)#

Enable

Configure Terminal

router ospf 10 (Process Id)

network 10.0.0.0 0.255.255.255 area 0

network 20.0.0.0 0.255.255.255 area 0

RB

Router >

Router #

Router(config)#

Router(config-router)#

Router(config-router)#

Enable

Configure Terminal

router ospf 10

network 10.0.0.0 0.255.255.255 area 0

network 30.0.0.0 0.255.255.255 area 0

RA & RB

Shutdown e0 and no shutdown

#Sh ip ospf interface.

Priority

RA

Router >

Router #

Router(config)#

Router(config-if)#

Enable

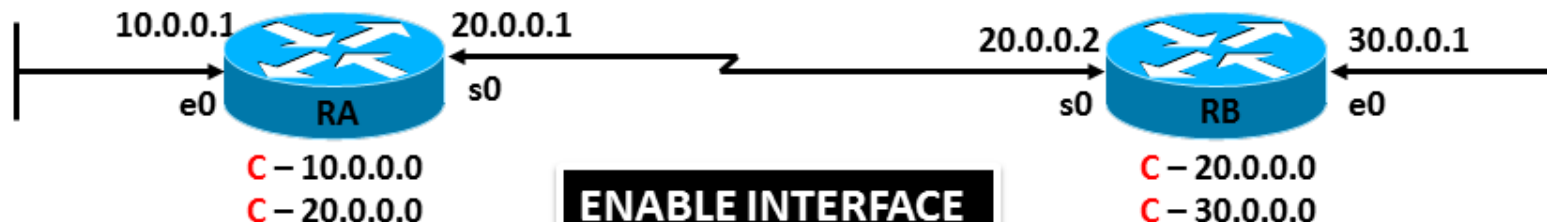
Configure Terminal

Interface e0

Ip ospf priority 2 (default Priority is 1)

#Sh ip ospf interface.

Administrative Distance



- ❖ Configure **STATIC ROUTING**. (AD-1).
- ❖ Configure **EIGRP**. (AD-90).
- ❖ Configure **OSPF**. (AD-110).
- ❖ Configure **Default Routing**. (AD-255).

Changing AD in Static Routing:

RA - # ip route 30.0.0.0 255.0.0.0 20.0.0.2 150

RB - # ip route 10.0.0.0 255.0.0.0 20.0.0.1 150

Changing AD in EIGRP (RA & RB)

```
#router eigrp 100
#distance 125
```

Changing AD in Default Routing:

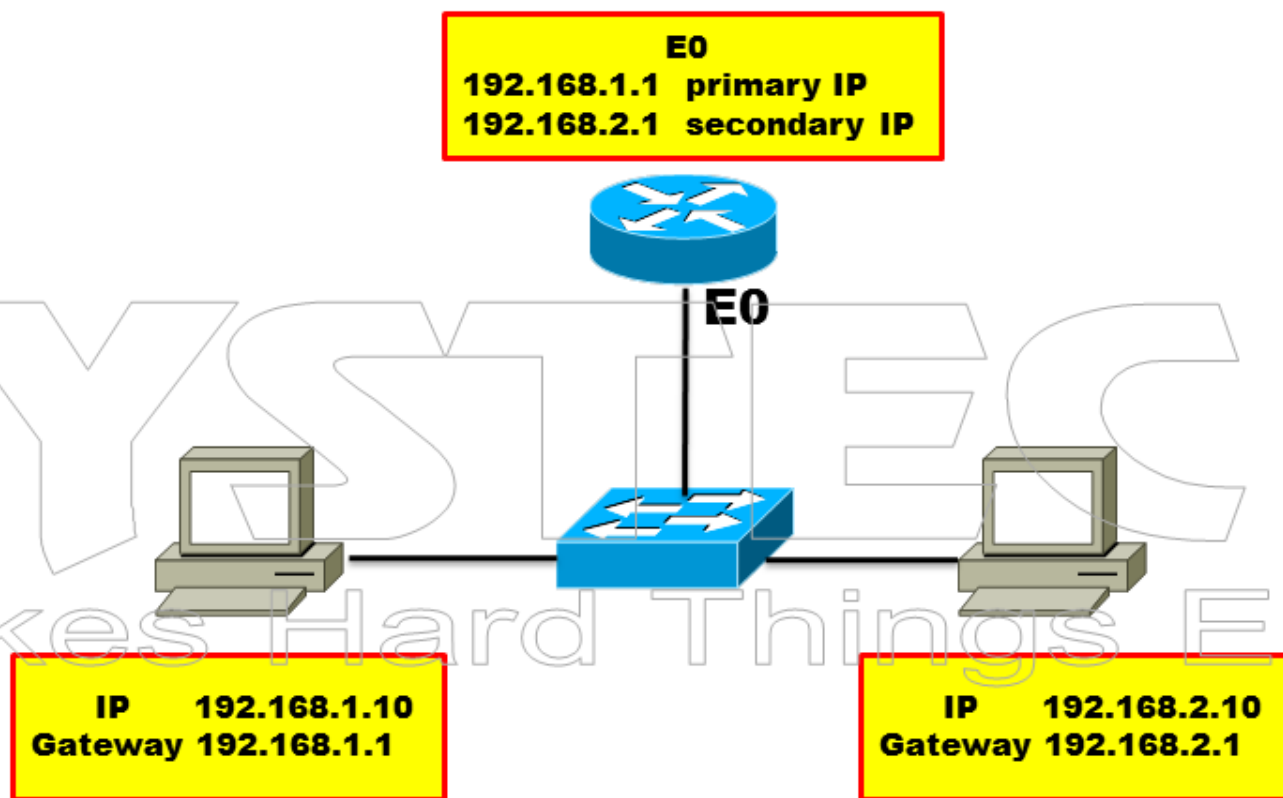
RA - # ip route 0.0.0.0 0.0.0.0 s0 200

RB - # ip route 0.0.0.0 0.0.0.0 s0 200

Changing AD in OSPF (RA & RB)

```
#router ospf 10
#distance 115
```


SECONDARY IP



RA# int e0

RA# ip address 192.168.1.1 255.255.255.0

RA# ip address 192.168.2.1 255.255.255.0 secondary



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