

CCNA (200-301) Cisco Certified Network Associate

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Lecture 6

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تسعى لتكون الكيان الأول الذي يتبنى مبدأ المجتمع التعليمي
التعاوني ويقدم العلم مقابل العمل لتنمية وبناء المجتمعات.

مزيد من التفاصيل

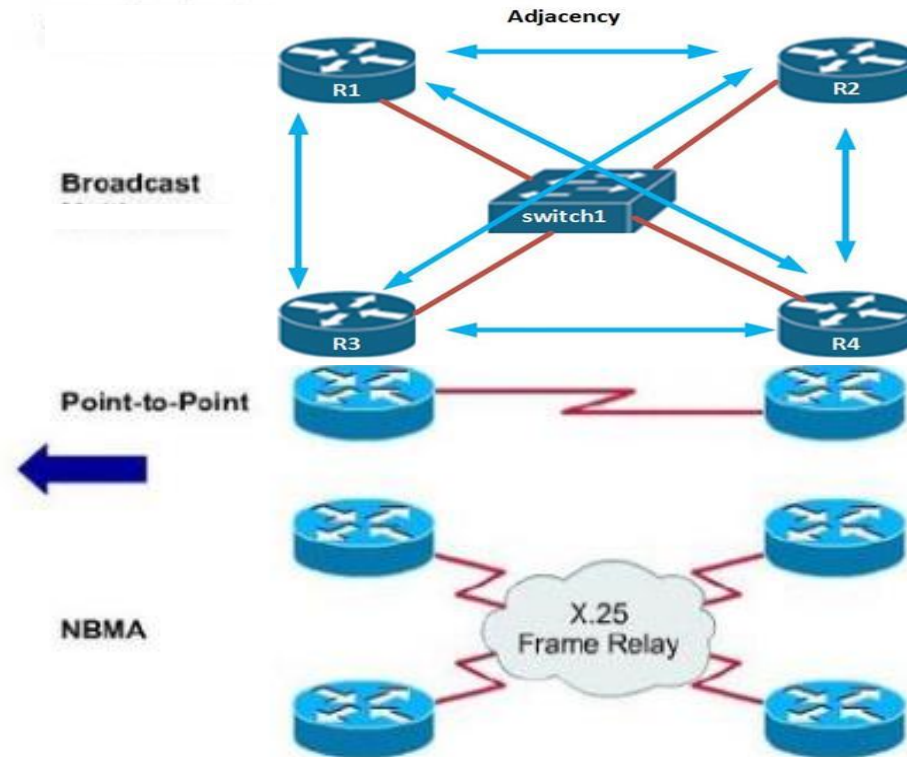
OSPF



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OSPF (open shortest path first)

OSPF Network Types



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OSPF Network Types

1. Point to point

when serial interface use encapsulation protocols :

HDLC : High Level Data Link Control

PPP : Point to Point protocol

❑ A Point-to-Point OSPF network type does not maintain a DR/BDR relationship. The Point-to-Point network type has a 10 second hello and 40 second dead timer.

❑ Point-to-Point network types are intended to be used between 2 directly connected routers.

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2.Broadcast

When using Ethernet ports connected to Ethernet switches

DR: Designated Router

BDR : Back up Designated Router

- ☐ The Broadcast network type is the default for an OSPF enabled Ethernet interface.
- ☐ The Broadcast network type requires that a link support Layer 2 Broadcast capabilities.
- ☐ The Broadcast network type has a 10 second hello and 40 second dead timer.
- ☐ An OSPF Broadcast network type requires the use of a DR/BDR.

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2.NBMA (Non Broadcast Multi-Access)

- ☐ Serial interface use Frame Relay Encapsulation
- ☐ Some times require DR&BDR

When using Ethernet ports connected to Ethernet switches

DR: Designated Router

BDR : Back up Designated Router

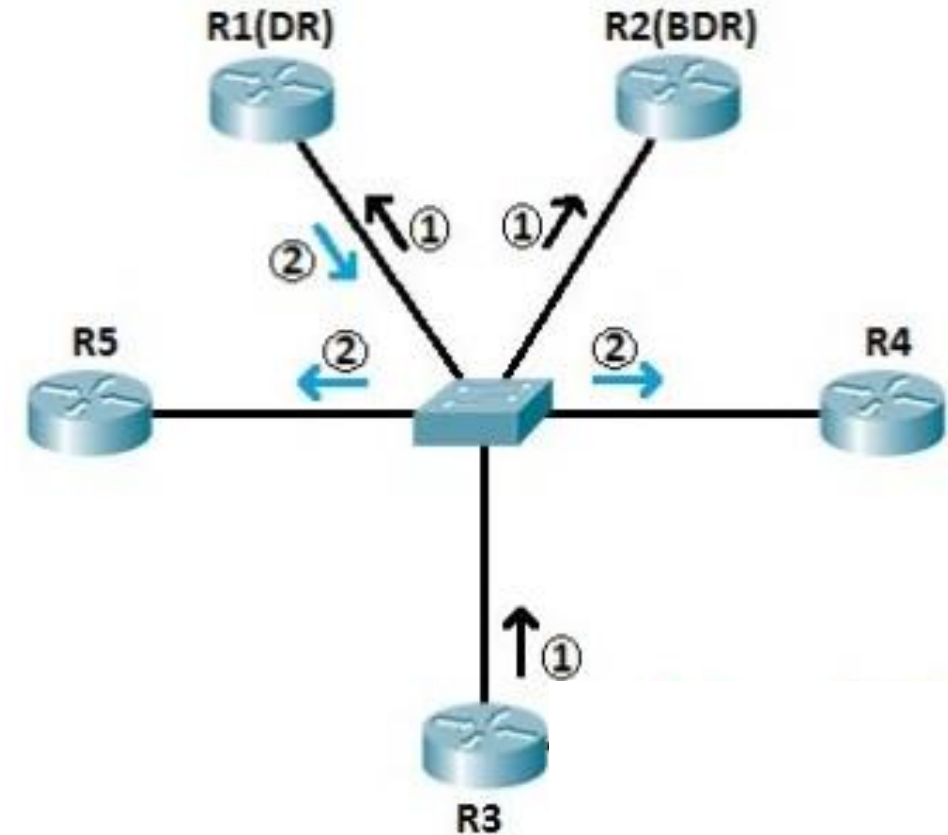
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- ☐ The Broadcast network type requires that a link support Layer 2 Broadcast capabilities.
- ☐ The Broadcast network type has a 10 second hello and 40 second dead timer.
- ☐ An OSPF Broadcast network type requires the use of a DR/BDR.



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Role of Designated Router and Backup Designated Router

- ❖ Based on the network type, OSPF router can elect one router to be a Designated Router (DR) and one router to be a Backup Designated Router (BDR).



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Designated Router and Backup Designated Router Election

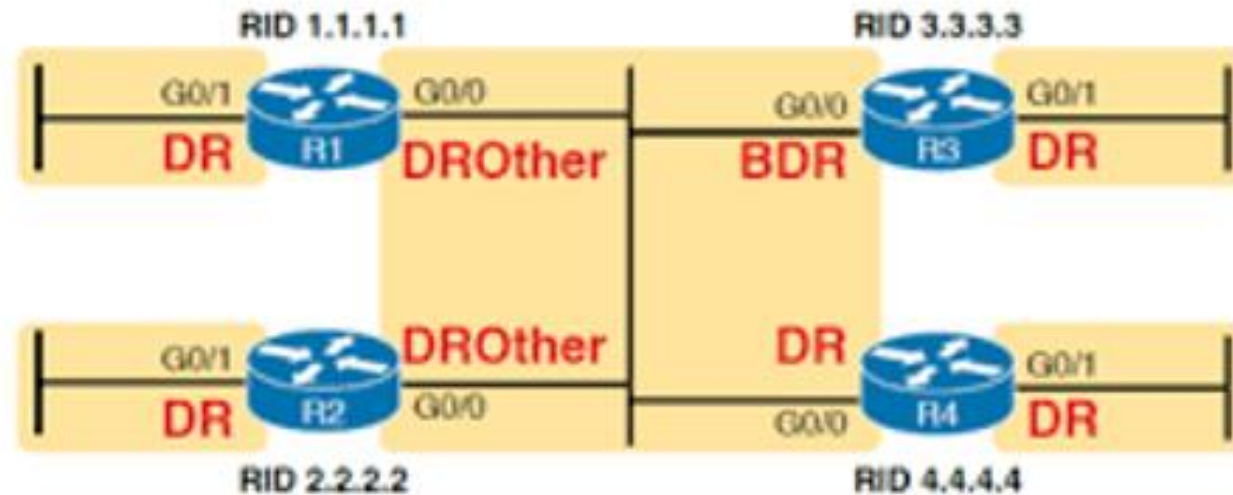
- ❑ After all routers on a broadcast or NBMA are on two-way state , the DR and BDR elected before loading state according to :
 1. Router with the highest interface priority is DR and the next highest priority is the BDR .
- ❖ Default priority is 1 for Ethernet interface
- ❖ Priority takes value (0- 255): **Zero priority** means router is the **DR OTHER**

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2. If there are a tie on priority , then the routers' election s depends on :

DR : Highest router-id

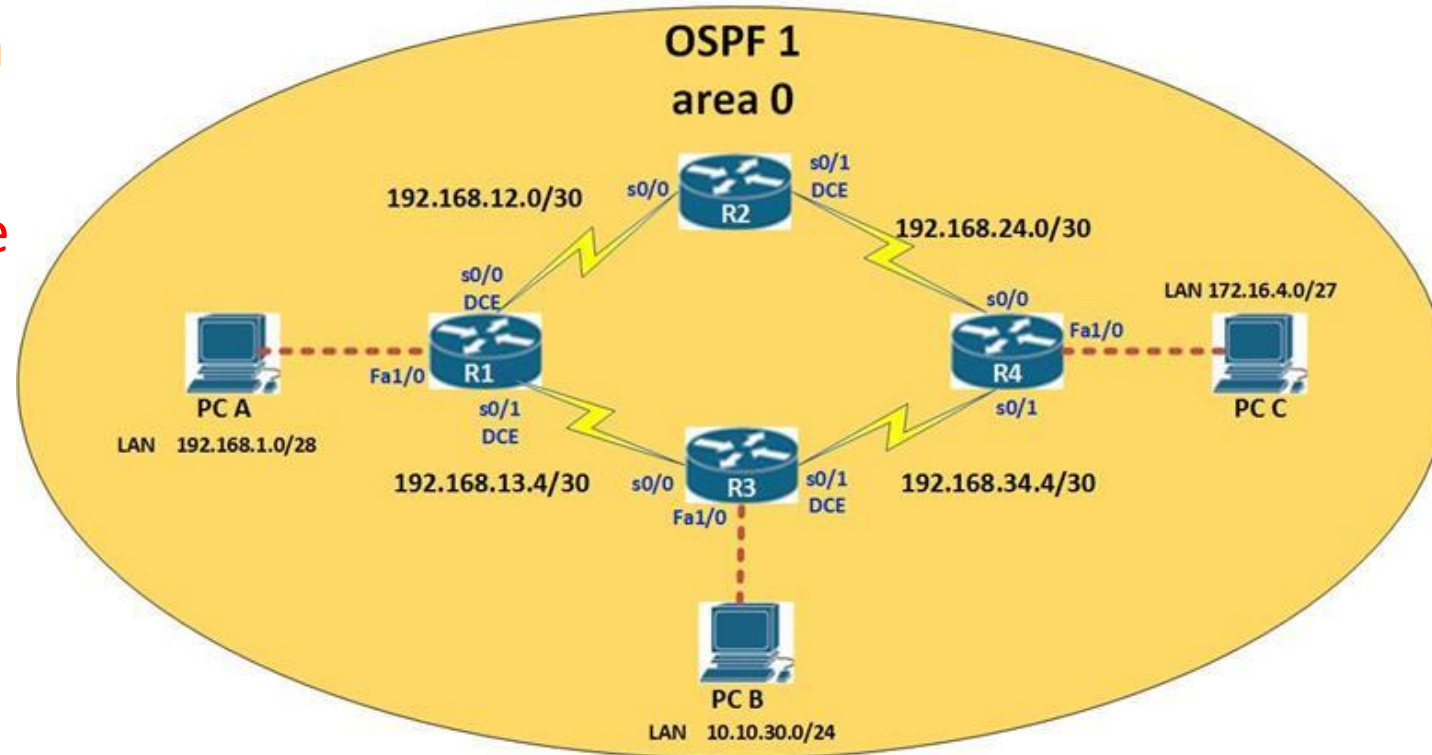
BDR : Next Highest router-id



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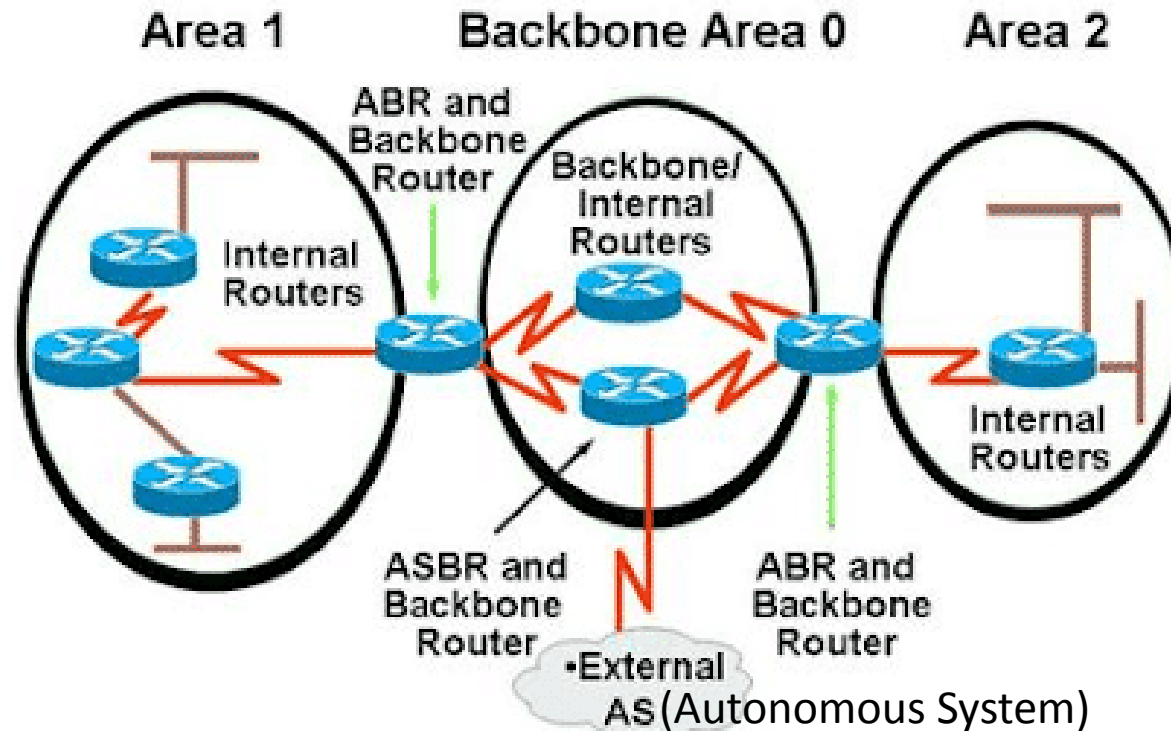
OSPF Area

- ❑ It is used to reduce the size of topology table to speed up the route calculation and reduce router hardware resources.
- ❑ Before using multiple Area
 - All routers know all topology information



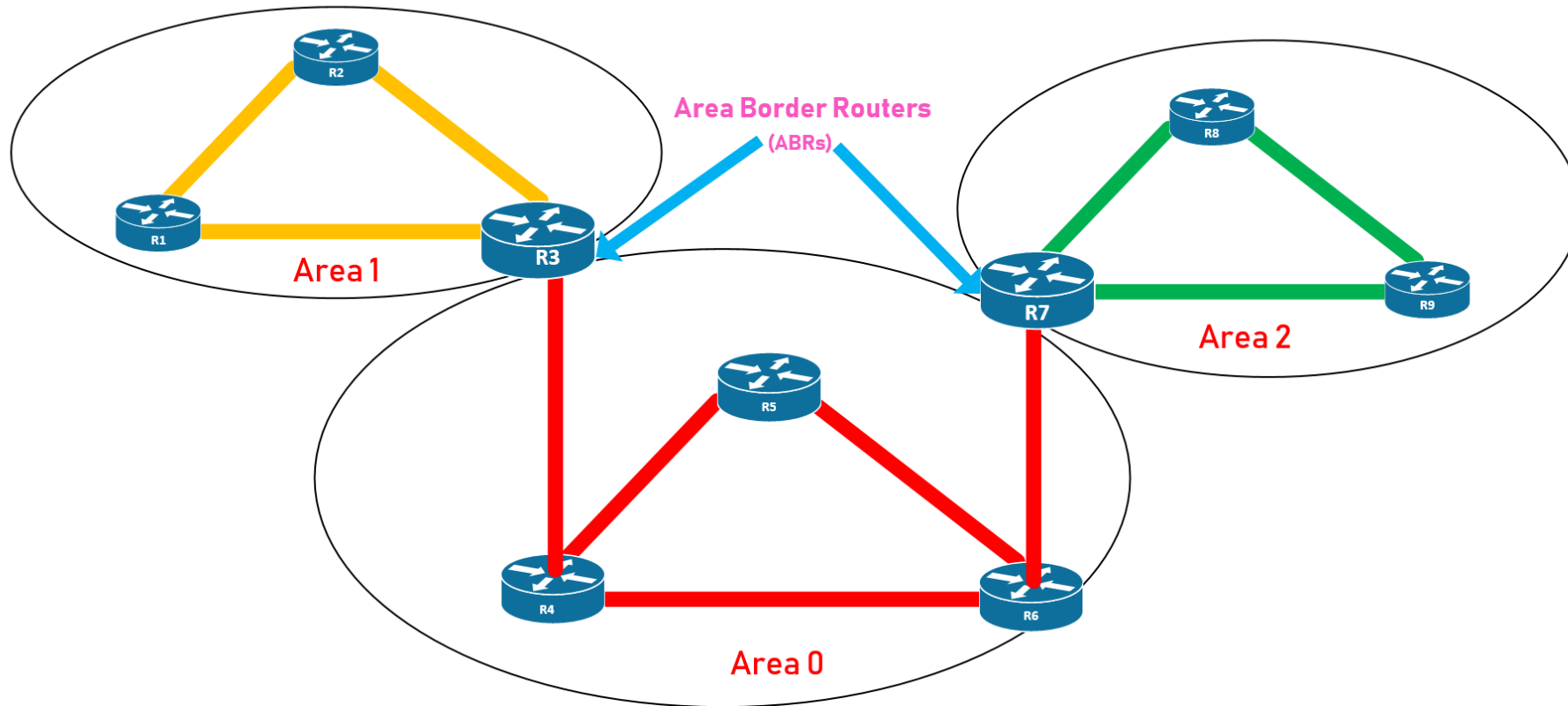
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After using multiple Area



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OSPF Area Design



OSPF (open shortest path first)

OSPF Area Design

- ❖ We must use central area called backbone area (Area 0)
- ❖ All other areas should be around backbone area
- ❖ Also areas help to organize ip structure
- ❖ OSPF route types:
 1. Intra Area :Routes from the same area
 2. Inter Area: Routes from an other Area through **ABR** (Area border Router)



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