



OSPF

(Open Shortest Path First)

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Introduction to OSPF

1 Open Standard

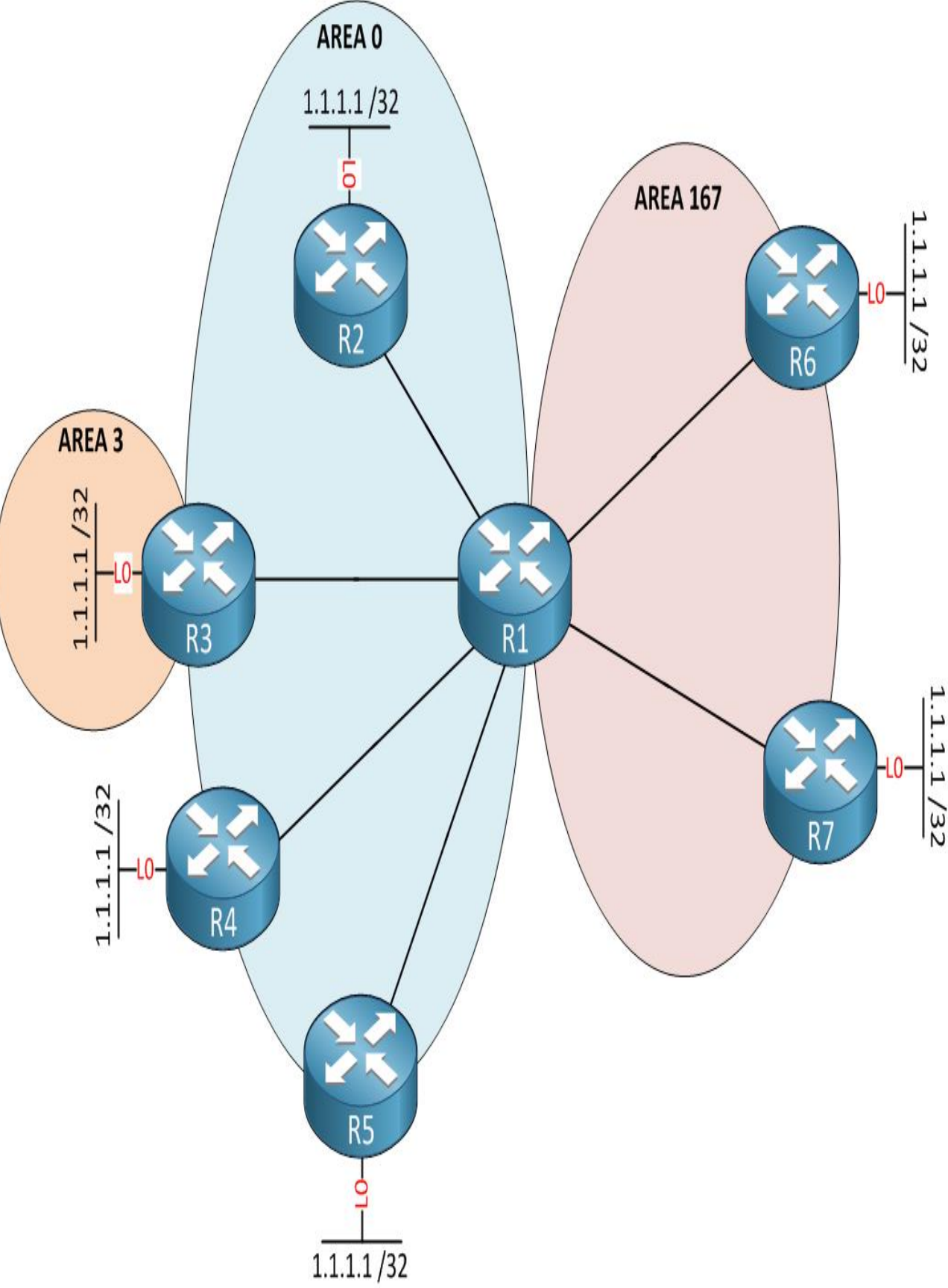
OSPF is an open standard protocol, allowing easy implementation and interoperability.

2 Link-State Routing

OSPF uses a link-state algorithm to determine the best paths.

3 Hierarchical Design

OSPF supports a hierarchical network structure with areas and backbone.



OSPF Network Types and Adjacencies

1

Point-to-Point

Directly connected links, like serial links.

2

Broadcast

Shared media, like Ethernet, with a Designated Router (DR).

3

Non-Broadcast

Shared media without broadcast capabilities, like Frame Relay.

OSPF Packet Types and Their Functions

Hello

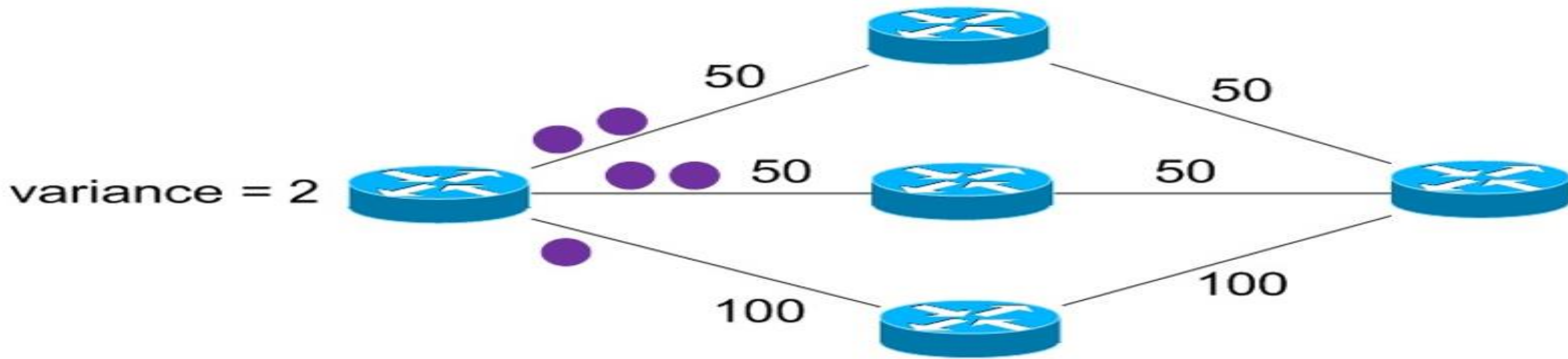
Establish and maintain neighbor relationships.

Database Description

Describe the local link-state database.

Link State Request/Update/Ack

Synchronize and update the link-state database.



OSPF Route Selection Process

Link Cost

OSPF selects paths based on the cumulative link cost.

Administrative Distance

OSPF prefers routes with lower administrative distance.

Tie-Breaking

OSPF uses additional criteria to break routing path ties.

OSPF Area Concept and Hierarchical Design

1

Backbone Area

The central area that interconnects all other areas.

2

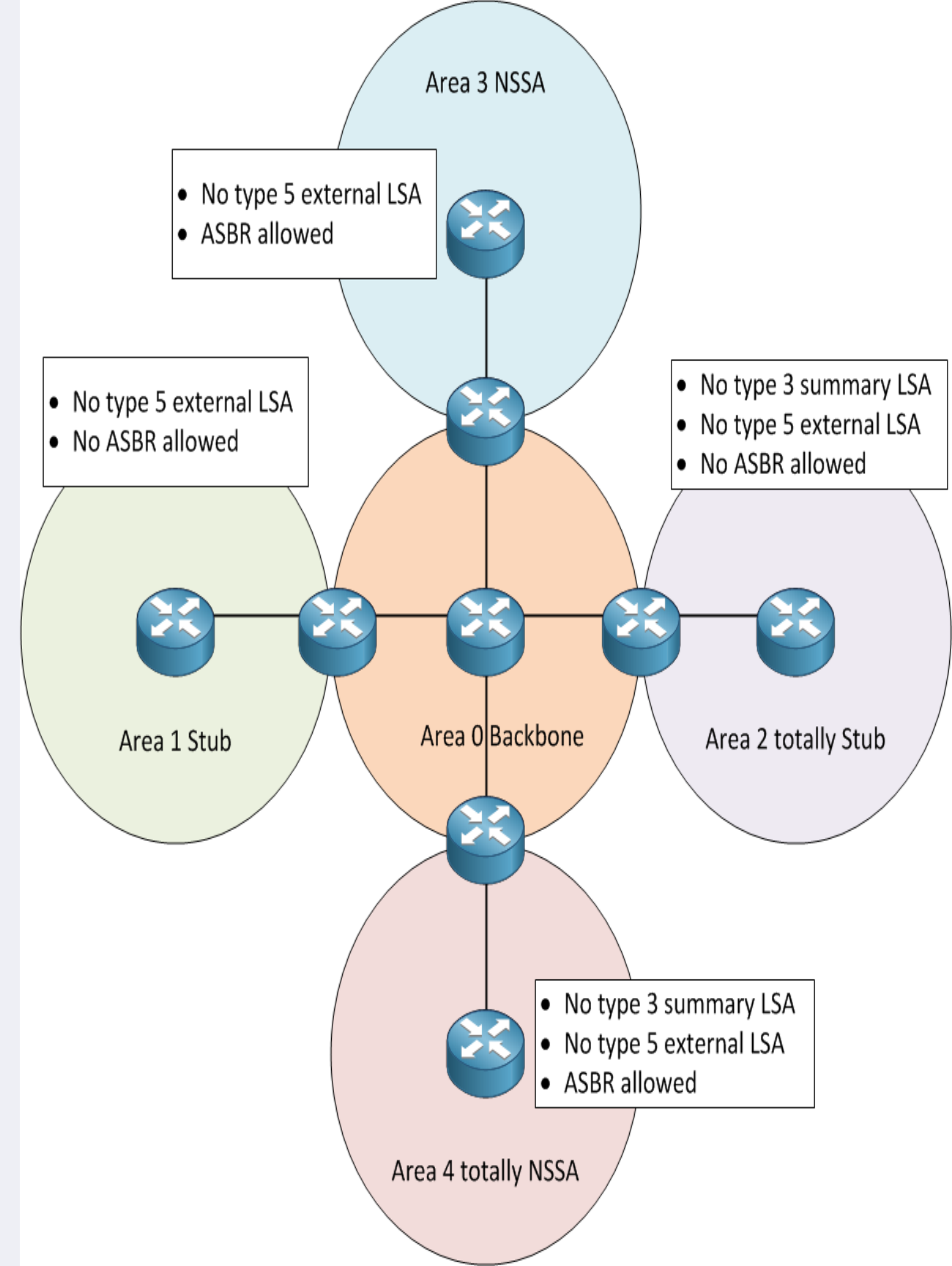
Transit Areas

Areas that allow traffic to pass through from other areas.

3

Stubby Areas

Areas that only have routing information about their own network.



OSPF Configuration and Troubleshooting



Router Configuration

Enabling OSPF, setting area IDs, and configuring interfaces.



Network Design

Optimizing the OSPF hierarchy and area structure.



Troubleshooting

Analyzing OSPF adjacencies, database, and routing table issues.



Benefits and Use Cases of OSPF

Scalability

- 1 OSPF can handle large, complex networks effectively.

Rapid Convergence

- 2 OSPF quickly adapts to network changes and topology updates.

Load Balancing

- 3 OSPF supports equal-cost multi-path (ECMP) routing.



Thank You!