



# OSPF

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# Overview

- Introduction
- What is OSPF
- Properties
- Messages

# Introduction

- Development began in 1987
- OSPFv2 first established in 1991
- Many new features added since then
- Updated OSPFv2 specification in RFC 2178

- Based on Bellman-Ford Algorithm
- Worked well in small systems
- Suffered from problems of Distance Vector Protocol
  - Count to Infinity Problem

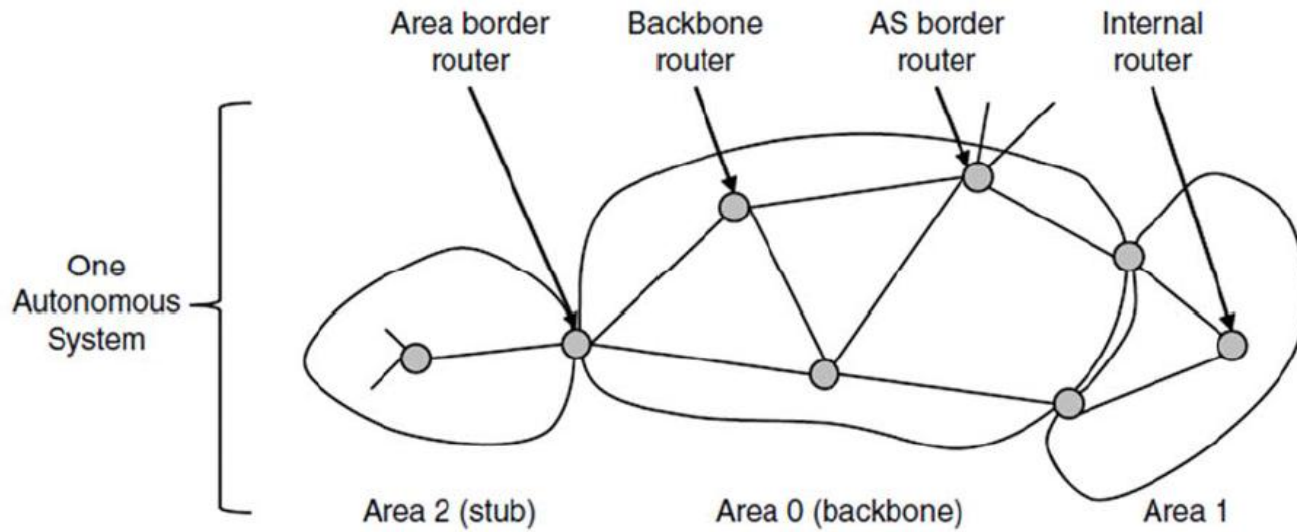
- Problems with Distance Vector Protocol
  - Large update packets
  - Slow response to topological changes
- Need for a Link State Protocol

# What is OSPF?

- OSPF is a standardized Link-State.
- designed to scale , efficiently to support larger networks.

# Properties

- interior gateway protocol
- Support variety of distance metrics
- Support hierarchical systems
- Security, prevent spoofing false routing info





- **Area border router:** connect multiple areas
- **Internal routers:** inside the area
- **backbone area:** Every AS has this area , called also: area 0
- **backbone routers :** Routers in area 0
- **AS boundary router:** injects routes to external destinations on other ASes into the area

# Messages

<b>Message type</b>	<b>Description</b>
Hello	Used to discover who the neighbors are
Link state update	Provides the sender's costs to its neighbors
Link state ack	Acknowledges link state update
Database description	Announces which updates the sender has
Link state request	Requests information from the partner

# Hello Message

The messages establish relationships between neighboring devices (called adjacencies) and communicate key parameters about how OSPF is to be used in the autonomous system or area.

# Link State Update

These messages contain updated information about the state of certain links on the LSDB. They are sent in response to a Link State Request message, and also broadcast or multicast by routers on a regular basis. Their contents are used to update the information in the LSDBs of routers that receive them.

# Link Stat Ack.

These messages provide reliability to the link-state exchange process, by explicitly acknowledging receipt of a Link State Update message.

# Database description

These messages contain descriptions of the topology of the AS or area.

# Link state request

Request infors. About the connection from partner