

OSPF: Open Shortest Path First

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Abstract

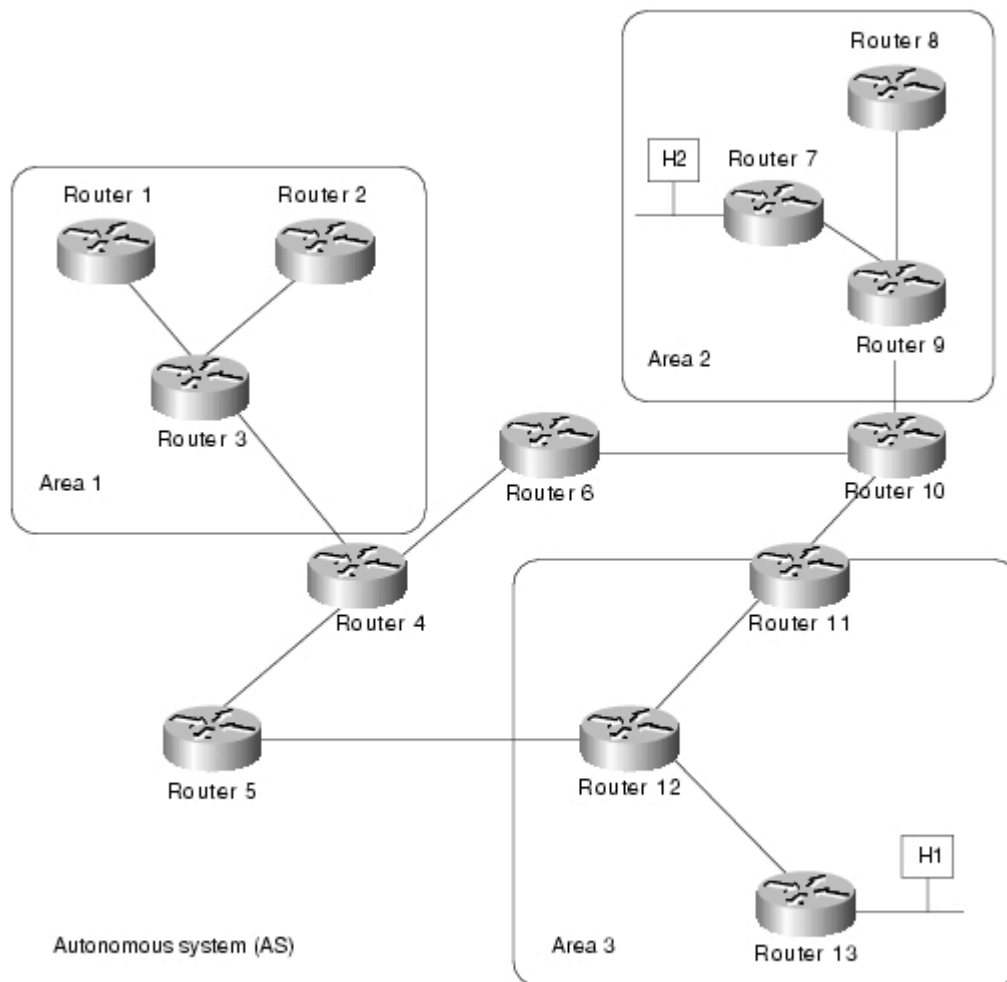
OSPF, which stands for Open Shortest Path First, is a routing protocol. The current version of OSPF (v2) is documented in detail in RFC 2178. “It [was] designed to be run internal to a single Autonomous System. Each OSPF router maintains an identical database describing the Autonomous System's topology. From this database, a routing table is calculated by constructing a shortest-path tree.” (Network Working Group, 1997)

One of the most widely used IGP routing protocols is OSPF. It is used especially in enterprise networks that have large routing tables (Wikipedia, 2008). OSPF was created because RIP was incapable of handling larger networks (Cisco Systems, Inc., 2006).

According to Microsoft, OSPF is more secure by default than RIPv1, which does not support authentication. “By default, OSPF interfaces on the server running Routing and Remote Access are configured to send the simple password of "12345678" in their OSPF Hello messages. The simple password helps prevent the corruption of OSPF data from an unauthorized OSPF router on a network. The password is sent in plaintext. Any user with a network sniffer, such as Microsoft Network Monitor, can capture the OSPF Hello messages and view the password (Microsoft Corp, 2005).” However, for even more robust security, the password can be encrypted in an MD5 hash so that it is not sent in plain text and therefore packet sniffing it will not reveal the password.

Some of the advantages of using OSPF are it's ability to handle large networks, enhanced security, low bandwidth overhead, it is area based, and supports advanced addressing structures. Some of the disadvantages are that it has a high memory and processor overhead. Routing tables can become very complex requiring a lot of memory and processing power to handle. OSPF can also be fairly difficult to setup, depending on your network. Most likely if you have a network large enough to warrant OSPF, it is going to be large enough to make configuration difficult (OSPF Information).

“Unlike RIP, OSPF can operate within a hierarchy. The largest entity within the hierarchy is the autonomous system (AS), which is a collection of networks under a common administration that share a common routing strategy. OSPF is an intra-AS (interior gateway) routing protocol, although it is capable of receiving routes from and sending routes to other ASs (Cisco Systems, Inc., 2006).”



(Cisco Systems, Inc., 2006)

This ability to separate a network into areas is one of the main differences between OSPF and other routing protocols.

OSPF is a secure, robust, highly expandable routing protocol. It is suitable for networks of medium and large sizes, but is overkill for small (home / SOHO) networks.

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