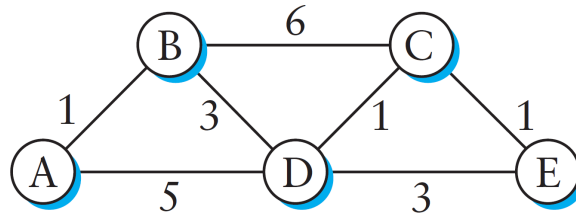


SE331: Introduction to Computer Networks
Semester 1 5785
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OSPF Steps and Protocol

1 Dijkstra's Algorithm (OSPF)



Give the steps as in the table from the slides for the forward search algorithm as it builds the routing database for node A in the network shown.

2 OSPF Sample Traces

We'll look at a sample trace of OSPF using Wireshark. The example shows hello messages, request messages, updates, and acks. We'll look at RFC 2328 [1] for reference as well.

2.1 Analyzing Trace 1

The first trace (Trace1-OSPF-HELLO-Simple-Password.cap) shows a trace of a single message type (HELLO) and a password authentication from a router. Use RFC 2328 to answer the following questions:

1. What is the purpose of a HELLO message? How often is the HELLO message sent?
2. Who is the sender of the HELLO message shown in the trace?
3. Who is the recipient of the HELLO message shown in the trace?
4. What is the password sent in the HELLO message?
5. Explain the meaning of the following fields:
 - (a) Hello Interval
 - (b) Router Dead Interval
 - (c) Designated Router
 - (d) Options: Multicast

The field values and locations can be found by using Wireshark's packet analysis capabilities.

2.2 Analyzing Trace 2

The second trace (Trace2-OSPF-HELLO-Description-REQUEST-UPDATE.pcap) shows a more complete trace of OSPF with more than one sender and recipient. Look through the trace and use RFC 2328 [1] to answer the following questions:

1. Who are the senders in the OSPF trace shown?
2. What is the purpose of the DB Description messages? What causes the sender to send a DB Description message?
3. Message 12 shows a DB Description message with LSA information. What does each LSA entry indicate?
4. What is the meaning of the DB Description: Master field? What is the meaning of the More field?
5. What is the purpose of the LS Request message? What causes a sender to send it?
6. Message 18 is an LS request message. Who is the sender of the request? What information is the message requesting?
7. What is the purpose of the LS Update message? How does it differ from the DB Description message?
8. What is the purpose of the LS Acknowledge message? What information is included in the LSA entries?

References

- [1] J. Moy. *RFC 2328: OSPF Version 2*. Internet Engineering Task Force (IETF), April 1998. <https://tools.ietf.org/html/rfc2328>.