Routing

What is the difference between routing and forwarding?

Routing protocols:

- Implemented distributed algorithms (scalability)

- Routers should have mutually consistent view of the network.

- Can be classified into:
  - Intradomain versus interdomain routing protocols.
  - Distance vector versus link state routing protocols.
RIP: Distance Vector Protocol

- Employs Bellman-Ford algorithm.

- Meant for introdomain routing.

- Maximum supported network diameter = 16.

- Widely deployed: not going to disappear soon.

RIP (contd.)

- UDP-based protocol.

- RIP port for messaging: 520.

- Periodic updates at 30-second intervals.

- Each update entry = 20 bytes.

- Between 1 - 25 entries per update.

- 180-second timer to detect link breaks.
Problems with RIP

*Count-to-infinity (16):* results in slow convergence.

**Solution:**

- *Split horizon:* do not advertise destination information to node from which the information is learned.

- *Poison reverse:* advertise infinite cost, instead of omitting the advertisement, for that destination.

- *Triggered updates:* for fast convergence.
  - Guard against excessive updates.
  - Bundle multiple updates using 1-5 second timer.

Split horizon is required, while poison reverse is optional.
Authentication in RIP

- Supported in RIP-2.

- If present, occupies first RIP entry (20 bytes).

- Authentication header contains 16-octet plain text password.