Manajemen Jaringan Komputer
Routing - RIP

JTI FTI UII, Ganjil 2009/2010, Sofyan Wijaya

Ref APNIC Training Course 2008, Advanced Routing, Routing Principles,http://www.tcpipguide.com

RIP

- Salah satu dari TCP/IP interior routing protocols
- easiest to configure
- There are three versions of RIP:
  - RIP versions 1 and 2 for IP version 4 and
  - RIPng (*next generation*) for IP version 6

RIP Overview, History, Standards and Versions

- uses the distance-vector algorithm (also called the Bellman-Ford algorithm after two of its inventors) to determine routes
  - routes are selected based on the distance between networks
  - usually the number of “hops”, or routers between them
- two primary pieces of information:
  - the address of the network or host, and
  - the distance to it, measured in *hops*
- using UDP
- some important limitations
  - hops are often not the best metric to use in selecting routes
  - only supports a maximum of 15 hops between destinations

Development of RIP Version 2 (RIP-2) and RIPng for IPv6

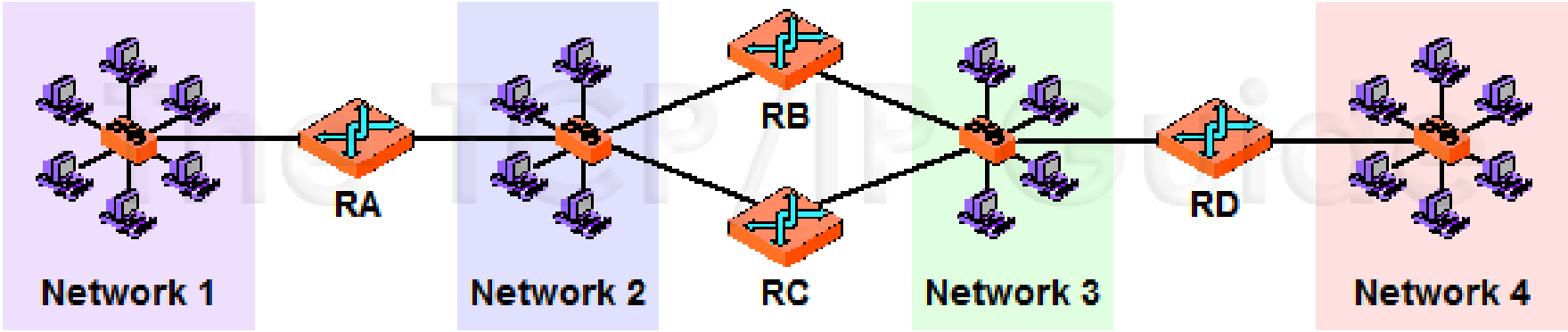
- RIP-2
  - support for classless addressing,
  - authentication, and
  - the use of multicasting

RIP Route Determination Algorithm and Metric

- In theory, the distance metric can be any assessment of cost, but in RIP, distance is measured in *hops*
- If a router connects to a network directly, then the distance is 1 hop
- If it goes through a single router, the distance is 2 hops, and so on

RIP Route Determination and Information Propagation Example

- Example
  - Router A (RA) connects Network 1 (N1) to Network 2 (N2).
  - Routers B (RB) and C (RC) connect Network 2 to



Example...

- Now, let's suppose that we just turned on router *RA*
  - Router *A* sends out an RIP message containing the entry {N1,1} on each of the networks to which it is connected.
    - There are no other routers on *N1*, so nothing happens there.
    - But *RB* and *RC* are on *N2* so they receive the information.
  - *RB* and *RC* will look in their routing tables to see if they already have entries for *N1*.
    - Assuming neither does, they will each create a routing table entry {N1,2} for Router *A*. This means "I can reach Network *1* at a cost of 2 hops by sending to Router *A*".

Example...

- Continue...
  - *RB* and *RC* will each send their own routing tables out over the networks to which they are connected: *N2* and *N3*. This will contain the entry {N1,2}.
    - *RA*will receive that message on *N2* but will ignore it, since it knows it can reach *N1* directly (cost of 1, which is less than 2).
    - But Router *D* will receive the message on *N3*.
  - *RD* will examine its routing table, and seeing no entry for *N1* will add the entry {N1,3} for *RB* or *RC*. Of course, either one will work, so which is chosen depends entirely on whether *RD* received information about *N1* first from *RB* or *RC*.
  - *RD* will send the entry {N1,3} on Network *4*, but of course there are no other routers there to hear it.