
Routing Information Protocol (RIP) - The Core of Your Home Router

Have you ever wondered how your home router “knows” how to communicate with “the Internet”? For most home routers, this knowledge is housed in a TCP/IP routing protocol known as Routing Information Protocol or RIP. Based on algorithms developed in 1969 for ARPANET and CYCLADES networks, RIP remains the most popular and simplest routing protocol for small networks.

RIP uses UDP as its transport medium and is defined by two message types:

- Request messages
- Response messages.

Request messages ask neighbor routers (your ISP’s routers) for updates to routing tables, response messages carry the route table information.

When a response message is received by a requesting router, the routing table updates are processed along with the address of the router that sent the update. These requests/responses are sent, on the average, about every 25 to 30 seconds. If no update/response is received for approximately 180 seconds, the route to that router is deemed unreachable (down). If after 240 seconds no update is received, the route is “flushed” or removed from the routing table.

RIP also includes the capability to update routing tables (without a request) when a route changes (triggered update) and timers to ensure that triggered updates do not result in a “storm” of updates to individual routers.

RIP, unlike more powerful routing protocols like OSPF does not support the concept of “areas” (which significantly reduce CPU and memory requirements and provide a way to build hierarchical network topologies), load balancing, authentication, route tagging and other capabilities required in large, complex, TCP/IP network implementations. However, for small, home-based networks, its efficiency and simplicity outweigh its lack of scalability and reduced functionality.

November 2005