

Chapter 17

RIP Overview

The Routing Information Protocol (RIP) is an interior gateway protocol (IGP) that uses a distance-vector algorithm to determine the best route to a destination, using the hop count as the metric.

This chapter discusses the following topics that provide background information about RIP:

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RIP Protocol Overview

The RIP IGP uses the Bellman-Ford, or *distance-vector*, algorithm to determine the best route to a destination. RIP uses the hop count as the metric. RIP allows hosts and routers to exchange information for computing routes through an IP-based network. RIP is intended to be used as an IGP in reasonably homogeneous networks of moderate size.

The JUNOS software supports RIP versions 1 and 2.



NOTE: RIP is not supported for multipoint interfaces.

RIP version 1 packets contain the minimal information necessary to route packets through a network. However, this version of RIP does not support authentication or subnetting.

RIP uses User Datagram Protocol (UDP) port 520.

RIP has the following architectural limitations:

The longest network path cannot exceed 15 hops (assuming that each network, or hop, has a cost of 1).

RIP depends on counting to infinity to resolve certain unusual situations—When the network consists of several hundred routers, and when a routing loop has formed, the amount of time and network bandwidth required to resolve a next hop might be great.

RIP uses only a fixed metric to select a route. Other IGPs use additional parameters, such as measured delay, reliability, and load.

RIP Standards

RIP is defined in the following documents:

RFC 1058, *Routing Information Protocol*

RFC 2082, *RIP-2 MD-5 Authentication*

RFC 2453, *RIP Version 2*

To access Internet Requests for Comments (RFCs) and drafts, go to the Internet Engineering Task Force (IETF) Web site at <http://www.ietf.org>.

RIP Packets

RIP packets contain the following fields:

Command—Indicates whether the packet is a request or response message. Request messages seek information for the router's routing table. Response messages are sent periodically and also when a request message is received. Periodic response messages are called *update messages*. Update messages contain the command and version fields and 25 destinations (by default), each of which includes the destination IP address and the metric to reach that destination.

Version number—Version of RIP that the originating router is running.

Address family identifier—Address family used by the originating router. The family is always IP.

Address—IP address included in the packet.

Metric—Value of the metric advertised for the address.

Mask—Mask associated with the IP address (RIP version 2 only).

Next hop—IP address of the next-hop router (RIP version 2 only).