

# Chapter 21

## 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.

RIP Version 2 packets contain the minimal amount of information necessary to route packets through a network. However, this version of RIP does not support ASs or subnetting.

RIP uses 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 2453, *RIP Version 2*

To access Internet RFCs and drafts, go to the 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).