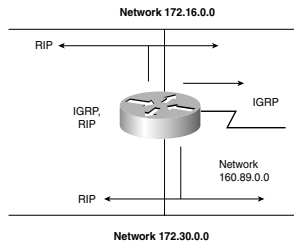


Enabling RIP

To enable a dynamic routing protocol, you must do the following:

- Select a routing protocol (such as RIP or IGRP).
- Assign IP network numbers.
- Assign network/subnet addresses and the appropriate subnet mask to interfaces.

The **network** command starts up the routing protocol. The **network** command also specifies a directly connected network and advertises that network.



RIP

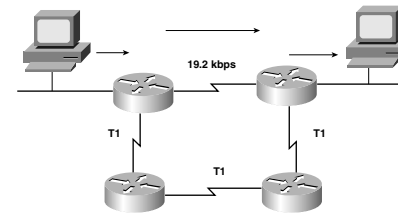
Cisco devices support two versions of *Routing Information Protocol* (RIP): RIP Version 1 (RFC 1058) and an enhanced version, RIP Version 2, a classless routing protocol.

Here are key RIP characteristics:

- RIP is a distance vector routing protocol.
- Hop count is used as the metric for path selection (the maximum is 15).
- Routing updates broadcast every 30 seconds (the default).
- RIP can load-balance over six equal-cost paths (the default is 4).
- Only one network mask can be used for each classful network (RIPv1).
- RIPv2 permits variable-length subnet masks on the internetwork.
- RIPv2 performs triggered updates.

A *classless routing protocol* allows routers to summarize information about several routes in order to cut down on the quantity of information carried by the core routers. With classless IP configured, packets received with an unknown subnet of a directly attached network are sent to the next hop on the default route. With *classless interdomain routing* (CIDR), several IP networks appear to networks outside the group as a single, larger entity.

Defining Paths



Load balancing occurs when a router has several equal-cost paths to the same destination. *Load sharing* is when a router has several unequal-cost paths to the same destination. If a router has unequal-cost paths to the destination, it does not load-balance unless the **variance** command is used. RIPv1 doesn't support unequal load balancing. Load balancing can be

disabled by setting the maximum number of paths to 1.

Here's the procedure for configuring RIP:

```
RouterA>enable
RouterA#config term
RouterA(config)#router rip
RouterA(config-router)#network 10.3.2.0
RouterA(config-router)#exit
RouterA(config)#exit
RouterA#show ip protocols
```

- **show ip protocols**—Shows whether a router is delivering bad routing information
- **show ip route**—Shows RIP routing tables
- **debug ip rip**—Displays RIP routing updates (no **debug all** disables)

Note: The **network** command specifies the autonomous system and starts up the routing protocol in the specified network. The **network** command also allows the router to advertise that network.

Enabling RIP Summary

- To configure a dynamic routing protocol, select a protocol, assign a network number, and assign network addresses for each interface.
- RIP, a distance vector routing protocol, uses hop count as a route selection metric. RIP can load-balance across equal-cost paths.
- The **ip classless** command prevents the router from dropping packets destined for unknown subnets of directly connected networks.