

## RIP Implementations

### RIPv1

Original RIP implementation, limited to classful routing (obsolete)

### RIPv2

Introduced support for classless routing, authentication, triggered updates, and multicast announcements (RFC 2453)

### RIPng (RIP Next Generation)

Extends RIPv2 to support IPv6 routing (RFC 2080); functions very similarly to RIPv2 and is subsequently as limited

## Protocols Comparison

	RIPv1	RIPv2	RIPng
<b>IP</b>	IPv4	IPv4	IPv6
<b>Admin Distance</b>	120	120	120
<b>UDP Port</b>	520	520	521
<b>Classless</b>	No	Yes	Yes
<b>Adv. Address</b>	Broadcast	224.0.0.9	FF02::9
<b>Authentication</b>	None	Plain, MD5	None

## RIPv2 Configuration

```
! Enable RIPv2 IPv4 routing
router rip
version 2

! Disable RIPv2 automatic summarization
no auto-summary

! Designate RIPv2 interfaces by network
network network

! Identify unicast-only neighbors
neighbor IP-address

! Originate a default route
default-information originate

! Designate passive interfaces
passive-interface {interface | default}

! Modify timers
timers basic update invalid hold flush
```

## RIPng Configuration

```
! Enable IPv6 routing
ipv6 unicast-routing

! Enable RIPng IPv6 routing
ipv6 router rip name

! Toggle split-horizon and poison-reverse
[no] split-horizon
[no] poison-reverse

! Modify timers
timers basic update invalid hold flush
```

## Attributes

<b>Type</b>	Distance Vector
<b>Algorithm</b>	Bellman-Ford
<b>Admin Distance</b>	120
<b>Metric</b>	Hop count (max 15)
<b>Standard</b>	RFCs 2080, 2453
<b>Protocols</b>	IPv4, IPv6
<b>Transport</b>	UDP
<b>Authentication</b>	Plaintext, MD5
<b>Multicast IP</b>	224.0.0.9/FF02::9

## Terminology

### Split Horizon

A rule that states a router may not advertise a route back to the neighbor from which it was learned

### Route Poisoning

When a network becomes unreachable, an update with an infinite metric is generated to explicitly advertise the route as unreachable

### Poison Reverse

A router advertises a network as unreachable through the interface on which it was learned

## Timer Defaults

<b>Update</b>	30 sec	<b>Flush</b>	240 sec
<b>Invalid</b>	180 sec	<b>Hold-down</b>	180 sec

## RIPv2 Interface Configuration

```
! Configure manual route summarization
ip summary-address rip network mask

! Enable MD5 authentication (RIPv2 only)
ip rip authentication mode md5
ip rip authentication key-chain key-chain
```

## RIPng Interface Configuration

```
! Enable RIPng on the interface
ipv6 rip name enable

! Configure manual route summarization
ipv6 rip name summary-address prefix
```

## Troubleshooting

```
show ip[v6] protocols
show ip[v6] rip database
show ip[v6] route rip
debug ip rip { database | events }
debug ipv6 rip [interface]
```