# packetlife.net

#### **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
IP	IPv4	IPv4	IPv6
Admin Distance	120	120	120
UDP Port	520	520	521
Classless	No	Yes	Yes
Adv. Address	Broadcast	224.0.0.9	FF02::9
Authentication	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

Type Distance Vector

Algorithm Bellman-Ford

Admin Distance 120

Metric Hop count (max 15)

**Standard** RFCs 2080, 2453

Protocols IPv4, IPv6

Transport UDP

Authentication Plaintext, MD5

Multicast IP 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**

Update 30 sec

Flush 240 sec

Invalid 180 sec Hold-down 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]