

# RIP Characteristics

- The Routing Information Protocol (RIP) is a Distance Vector routing protocol
- It uses hop count as its metric
- The maximum hop count is 15
- It will perform Equal Cost Multi Path, for up to 4 paths by default

# RIPv2 vs RIPv1



- RIPv1 is a legacy protocol which is not typically used anymore (although it is still supported on Cisco routers)
- RIPv1 does not send subnet mask information with routing updates so Variable Length Subnet Masking (VLSM) is not supported. RIPv2 does support VLSM.
- RIPv1 updates are sent every 30 seconds as broadcast traffic. RIPv2 uses multicast address 224.0.0.9
- RIPv2 supports authentication, RIPv1 does not.

# RIPng



- RIPng (RIP next generation) supports IPv6 networks
- It is not covered on the CCNA exam

# RIPv2 Configuration



```
R1(config)#router rip
```

```
R1(config-router)#version 2
```

```
R1(config-router)#network 10.0.0.0
```

- The 'network' command should reference a classful network. No subnet mask is specified.

# Auto-Summary

- RIP will automatically summarise routes to the classful boundary by default
- For example, 192.168.10.1/30 will be advertised as 192.168.10.0/24
- 172.16.10.1/30 will be advertised as 172.16.0.0/16
- This is almost never desirable

```
R1(config)#router rip
```

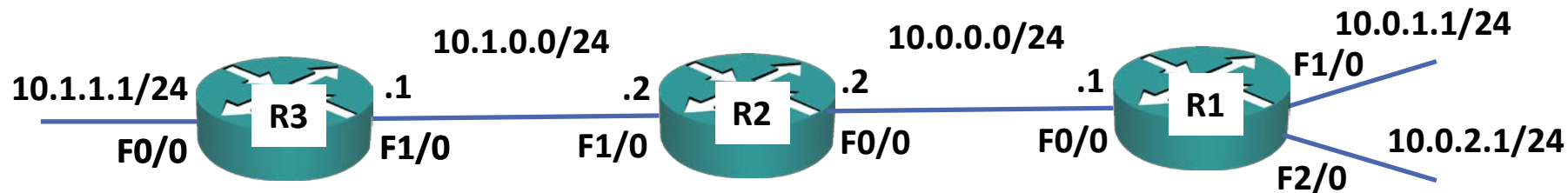
```
R1(config-router)#no auto-summary
```

# Manual Summarization

- Manual summarisation gives you control of exactly how you summarise
- The individual summarised routes are not advertised - only their summary route

```
R2(config-router)#interface f1/0
```

```
R2(config-if)#ip summary-address rip 10.0.0.0 255.255.0.0
```



# RIPv2 Verification – show ip protocols

```
R1#show ip protocols
*** IP Routing is NSF aware ***
```

## Routing Protocol is "rip"

```
Outgoing update filter list for all interfaces is not set
Incoming update filter list for all interfaces is not set
Sending updates every 30 seconds, next due in 27 seconds
Invalid after 180 seconds, hold down 180, flushed after 240
Redistributing: rip
Default version control: send version 2, receive version 2
  Interface          Send  Recv  Triggered RIP  Key-chain
  FastEthernet0/0      2      2
  FastEthernet1/0      2      2
  FastEthernet2/0      2      2
  FastEthernet3/0      2      2
Automatic network summarization is not in effect
Maximum path: 4
Routing for Networks:
  10.0.0.0
Routing Information Sources:
  Gateway            Distance      Last Update
  10.0.0.2             120          00:00:12
  10.0.3.2             120          00:00:01
Distance: (default is 120)
```

# RIPv2 Verification – show run | section rip

```
R1#sh run | section rip
router rip
  version 2
  network 10.0.0.0
  no auto-summary
```



# RIPv2 Verification – show ip route

## R1#show ip route

Codes: L - local, C - connected, S - static, **R - RIPv2**, M - mobile, B - BGP  
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area  
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2  
E1 - OSPF external type 1, E2 - OSPF external type 2  
i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2  
ia - IS-IS inter area, \* - candidate default, U - per-user static route  
o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP  
+ - replicated route, % - next hop override

Gateway of last resort is not set

```
10.0.0.0/8 is variably subnetted, 12 subnets, 2 masks
C       10.0.0.0/24 is directly connected, FastEthernet0/0
L       10.0.0.1/32 is directly connected, FastEthernet0/0
C       10.0.1.0/24 is directly connected, FastEthernet1/0
L       10.0.1.1/32 is directly connected, FastEthernet1/0
C       10.0.2.0/24 is directly connected, FastEthernet2/0
L       10.0.2.1/32 is directly connected, FastEthernet2/0
C       10.0.3.0/24 is directly connected, FastEthernet3/0
L       10.0.3.1/32 is directly connected, FastEthernet3/0
R       10.1.0.0/24 [120/1] via 10.0.0.2, 00:00:15, FastEthernet0/0
R       10.1.1.0/24 [120/2] via 10.0.3.2, 00:00:03, FastEthernet3/0
                        [120/2] via 10.0.0.2, 00:00:15, FastEthernet0/0
R       10.1.2.0/24 [120/2] via 10.0.3.2, 00:00:03, FastEthernet3/0
R       10.1.3.0/24 [120/1] via 10.0.3.2, 00:00:03, FastEthernet3/0
```

# RIPv2 Verification – show ip rip database

```
R1#show ip rip database
10.0.0.0/8      auto-summary
10.0.0.0/24     directly connected, FastEthernet0/0
10.0.1.0/24     directly connected, FastEthernet1/0
10.0.2.0/24     directly connected, FastEthernet2/0
10.0.3.0/24     directly connected, FastEthernet3/0
10.1.0.0/24
    [1] via 10.0.0.2, 00:00:12, FastEthernet0/0
10.1.1.0/24
    [2] via 10.0.3.2, 00:00:00, FastEthernet3/0
    [2] via 10.0.0.2, 00:00:12, FastEthernet0/0
10.1.2.0/24
    [2] via 10.0.3.2, 00:00:00, FastEthernet3/0
10.1.3.0/24
    [1] via 10.0.3.2, 00:00:00, FastEthernet3/0
```