

Chapter 10

RIPv1

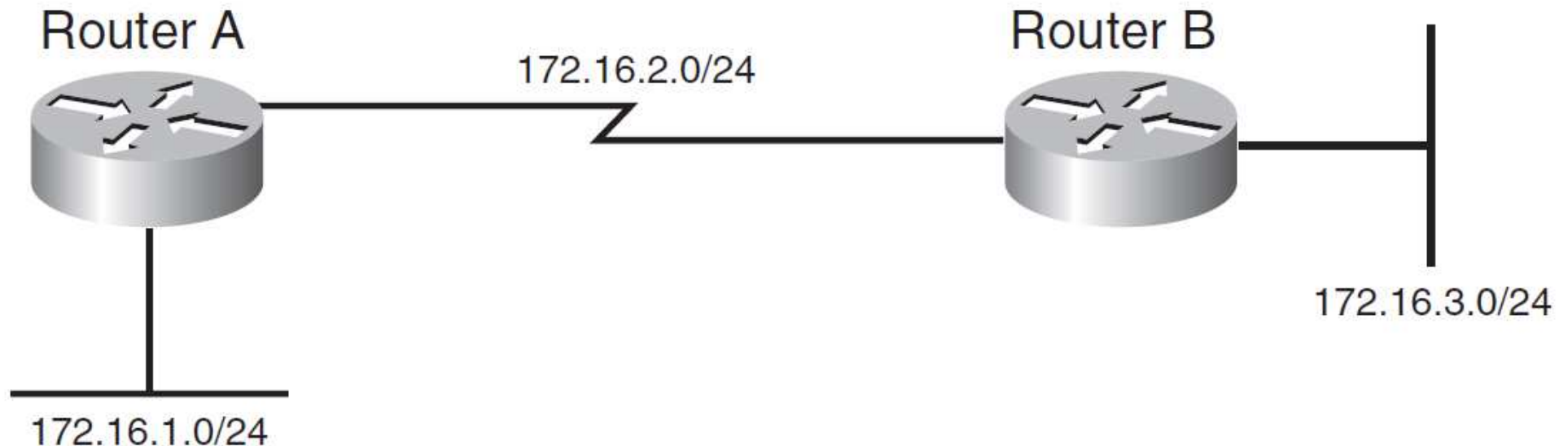
- RIPv1 is no longer a topic on the CCDA test
- Distance-vector
- RFC 1058
- IGP
- Classful
- UDP port 520
- Broadcast (255.255.255.255)

0				1				2				3											
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1		
Command								Version								Unused (must be zero)							
Address Family Identifier																Unused (must be zero)							
IP address (1st route entry)																							
Unused (must be zero)																							
Unused (must be zero)																							
Metric																							
Address Family Identifier																Unused (must be zero)							
IP address (2nd route entry - up to 25)																							
Unused																							
Unused																							
Metric																							

Chapter 10

RIPv1 Timers

- Update(30s)
- Invalid(180s)
- Flush(240s)
- Holddown(180s)



Chapter 10

RIPv2

- RFC 2453
- Som RIPv1
- VLSM & CIDR
- Multicast (224.0.0.9)
- Authentication

0								1								2								3															
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
Command									Version									Unused (must be zero)																					
Address Family Identifier																Route Tag																							
IP address (1st route entry)																																							
Subnet Mask																																							
Next Hop																																							
Metric																																							
Address Family Identifier																Route Tag																							
IP address (2nd route entry - up to 25)																																							
Subnet Mask																																							
Next Hop																																							
Metric																																							

Chapter 10

RIPng

- RFC 2080
- Som RIPv2
- Multicast (FF02::9)
- UDP port 521
- No Authentication

0 1 2 3
01234567890123456789012345678901

Command	Version	Must be zero
Route entry 1: IPv6 Prefix 128 bits		
Route tag	Prefix length	metric
Route entry 2: IPv6 prefix 128 bits		
Route tag	Prefix length	metric

Chapter 10

IGRP

- IGRP is no longer a topic on the CCDA test
- Classful
- IGRP design guide: Do not use!!

$$\text{IGRP}_{\text{metric}} = \{k1 * \text{BW} + [(k2 * \text{BW}) / (256 - \text{load})] + k3 * \text{delay}\} * \{k5 / (\text{reliability} + k4)\}$$

$$\text{IGRP}_{\text{metric}} = \{1 * \text{BW} + [(0 * \text{BW}) / (256 - \text{load})] + 1 * \text{delay}\} * \{0 / (\text{reliability} + 0)\}$$

$$\text{IGRP}_{\text{metric}} = \text{BW} + \text{delay}$$

IGRP Timer	Default Time
Update	90 seconds
Invalid	270 seconds
Holddown	280 seconds
Flush	630 seconds

Chapter 10

EIGRP for IPv4 Networks

- Classless, VLSM & CIDR
- Authentication
- Load-balance over unequal-cost paths
- Hybrid protocol
- IP protocol 88

Chapter 10

EIGRP Components

- **Protocol-dependent modules**
- **Neighbor discovery and recovery**
 - Multicast (224.0.0.10)
- **Reliable Transport Protocol (RTP)**
 - IP protocol number 88
- **DUAL**
 - Successor
 - Feasible successor
- **EIGRP Metrics**
 - $\text{EIGRPmetric} = \{k1 * \text{BW} + [(k2 * \text{BW}) / (256 - \text{load})] + k3 * \text{delay}\} * \{k5 / (\text{reliability} + k4)\}$

Chapter 10

EIGRP Packet Types

- Hello
- Acknowledgment
- Update
- Query
- Reply

Chapter 10



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