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Tutorial 03

IP V6

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04. Calculate the EUI-64 interface ID for IPv6 address for the following device MAC addresses.

a. 3463:adad:adad
b. 2C55:CAFE:ABCD

a. 3463:adad:adad

3463:ad ad:adad Separate into 2 parts

3 4 63:ad **FFFE** ad:adad INSERT FFFE

0011 0100 63:ad **FFFE** ad:adad → 0011 0110 63:ad **FFFE** ad:adad Toggle the 7th bit

36 63:ad **FFFE** ad:adad

b. 2C55:CAFE:ABCD

2C55:CA FE:ABCD Separate into 2 parts

2 C 55:CA **FFFE** AB: ABCD INSERT FFFE

0010 1100 55:CA **FFFE** AB: ABCD → 0010 1110 55:CA **FFFE** AB:ABCD Toggle the 7th bit

2D55:CA **FFFE** AB:ABCD

05. Write the simplified version of the following IPv6 addresses.

a. 2001:0db8:85a3:0000:0000:8a2e:0370:7334

b. 2001:0000:85a3:0000:0000:8a2e:0370:7334

a. 2001:0db8:85a3:0000:0000:8a2e:0370:7334

2001:db8:85a3:0:0:8a2e:370:7334

2001:db8:85a3 :: 8a2e:370:7334

b. 2001:0000:85a3:0000:0000:8a2e:0370:7334

2001:0:85a3:0:0:8a2e:370:7334

2001:0:85a3:: 8a2e:370:7334 or 2001::85a3:0:0:8a2e:370:7334

06. Calculate the original IPv6 address of the following compressed IPv6 addresses.

a. 52:8d30:0:2345::190

b. a052:30::3567:0:0:cd9

c. a052:30:3:40:3567:5640::

a. 52:8d30:0:2345::190

0052:8d30:0000:2345::0190

0052:8d30:0000:2345:0000:0000:0000:0190

b. a052:30::3567:0:0:cd9

a052:0030::3567:0000:0000:0cd9

a052:0030:0000:0000:3567:0000:0000:0cd9

c. a052:30:3:40:3567:5640::

a052:0030:0003:0040:3567:5640::

a052:0030:0003:0040:3567:5640:0000:0000

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Tutorial 04

Routing

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1. Which of the following describes static routing?

a) Routes are determined by a static RARP table.
b) Routes are automatically entered into a routing table.
c) Routes are manually entered into the routing table by the network administrator.
d) Routes are received from the local name server and are permanently entered into the routing table.

2. What are the basic functions of a router?

Maintaining the configuration files

Selecting the best paths (routes) to the remote networks

Maintaining an updated routing tables

3. Describe an AS (Autonomous System).

A collection of interconnected routers and networks under one administrative domain area

4. Why do we use Routing Protocols

To select the best path towards remote networks and maintain an updated routing table in every router based on the receiving routing updated from the neighboring routers

5. State the main difference between the Interior Routing protocols and Exterior Routing Protocol. Give examples of IP Routing protocols.

Interior Routing Protocols	Exterior Routing Protocols
Routing protocols used within an autonomous system	Routing protocols used between Autonomous systems
Ex-RIP,EIGRP,OSPF	Ex- BGP

6. What are the problems in RIP and write the solutions for them.

Problems	Solution
Slow convergence	Triggered Updates
Instability	Split Horizen
Counting to infinity	Route Poisoning
RIP V1 cannot identify classless addresses	RIPV2

7. Compare and contrast RIPv1 and RIPv2.

RIPV1	RIPV2
Used in Classful networks only	Used in Classful and classless both networks
Does not automatically summarize Network addresses	Automatically summarize Network Addresses

8. Compare and contrast RIP and EIGRP

RIP	EIGRP
Used in small networks lesser than 16 routers	Used in larger networks lesser than 256 routers
AD is 120	AD is 90
Uses a single metric of hop count	Uses a composite matric of bandwidth, delay of the line, Reliability ,load and maximum transmission unit(MTU)
Not a proprietary protocol	A CISCO proprietary protocol