ASSIGNMENT - III

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Course Name : Computer Networks

Course Code : CSA-0735

Course faculity : Dr. Rajaram
Dr. Anand.

Topic : A Cloud Provider InterConnects Data Centers Using OSPF and minimizes routing table Entries Using Summarization.

* Scenario :- A cloud provider Inter Connects Data Centers using OSPF and minimizes routing table entries using Summarization.

* Parameters :-

1. OSPF Convergence.
2. Summarization
3. Routing table Optimization.

Questions :-

1. If $\frac{16}{24}$ networks are Summarized into $\frac{a}{20}$, how many routes are Saved ?

Sol. Each /20 24 network contains 256 IPs, and if there are 16 of them
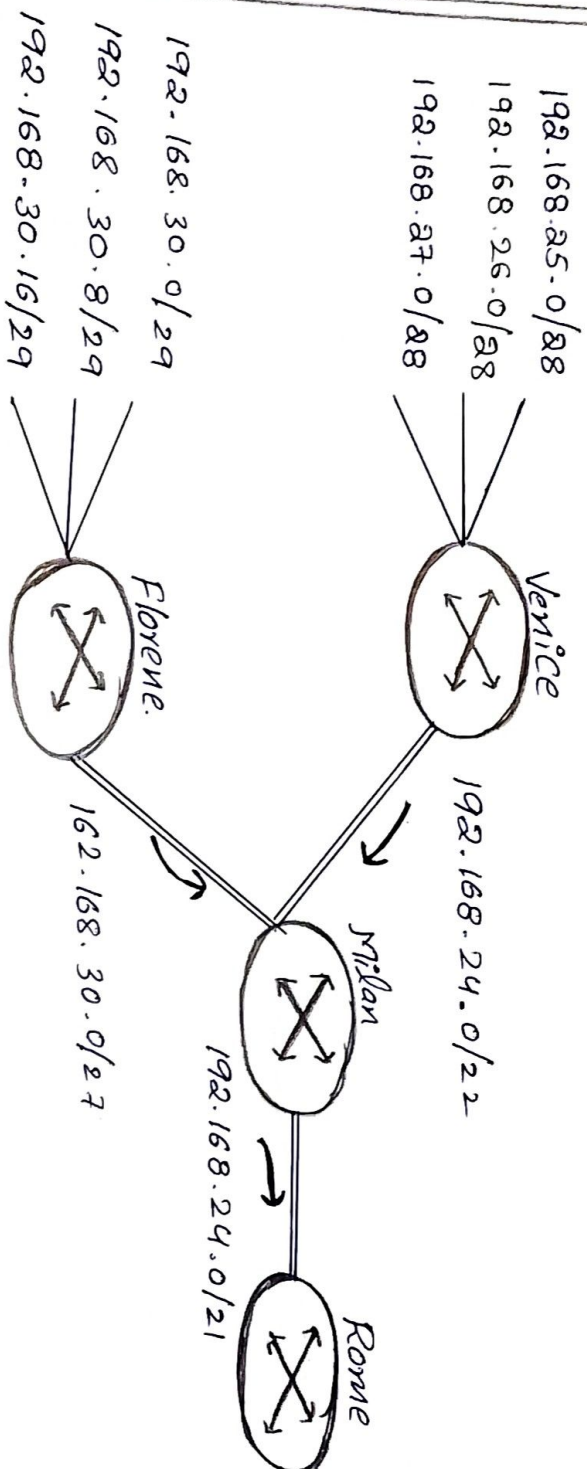
Number of Original routes = 16 routes

After Summarization into a Single /20 :

Only 1 Summarized route.

Routes Saved ⇒ 16 - 1

⇒ $\boxed{15}$

Route Summarization.

192.168.25.0/28
192.168.26.0/28
192.168.27.0/28

192.168.30.0/29
192.168.30.8/29
192.168.30.16/29

Venice

Florene.

192.168.24.0/22

Milan

192.168.30.0/27

192.168.24.0/21

Rome

2. What is the total Number of IPs in a $\frac{a}{20}$ Subnet?

Sol) An IPv4 address in 32 bits.

$\Rightarrow \frac{A}{20}$ Subnet has $\Rightarrow 32-20$

$\Rightarrow 12$ Bits for host portion.

$\Rightarrow 2^n \Rightarrow 2^{12} = 4096$ IP address.

Total IPs in $9/20 \Rightarrow \boxed{4096}$

3. How does OSPF cost metric Influence route Selection Between two 1 Gbps links?

Sol) OSPF calculates costs as :
Default reference bandwidth in OSPF is 100 Mbps, Unless changed.
So, for a 1 Gbps (1000 Mbps) link:
If both links are 1 Gbps, their OSPF cost is Equal, So OSPF May.
use Equal-Cost load balancing.
choose based on additional metrics
Eg : router ID, path stability.