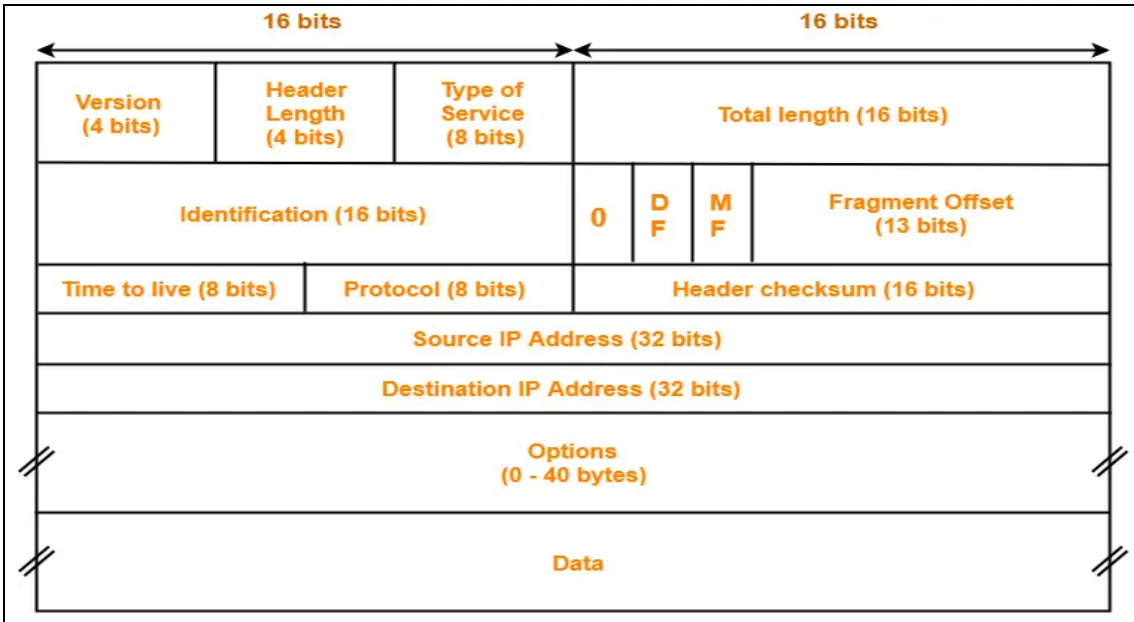
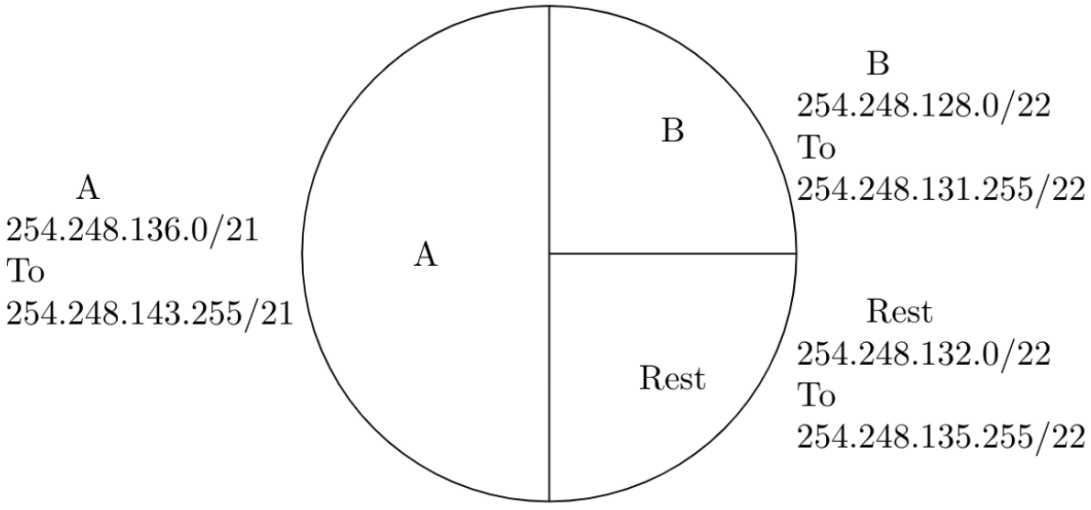


IPv4 Header

An Internet Service Provider (ISP) has the following chunk of CIDR-based IP addresses available with it: $245.248.128.0/20$. The ISP wants to give half of this chunk of addresses to Organization A, and a quarter to Organization B, while retaining the remaining with itself. Which of the following is a valid allocation of addresses to A and B?

A. $245.248.136.0/21$ and $245.248.128.0/22$
B. $245.248.128.0/21$ and $245.248.128.0/22$
C. $245.248.132.0/22$ and $245.248.132.0/21$
D. $245.248.136.0/24$ and $245.248.132.0/21$



Consider a network with three routers P, Q, R shown in the figure below. All the links have cost of unity.

The routers exchange distance vector routing information and have converged on the routing tables, after which the link Q-R fails. Assume that P and Q send out routing updates at random times, each at the same average rate. The probability of a routing loop formation (rounded off to one decimal place) between P and Q, leading to count-to-infinity problem, is ___

A 0.25

B 0.33

C 0.50

D 0.75

Consider routing table of an organization's router shown below:

$SubnetNumber$	$SubnetMask$	$NextHop$
12.20.164.0	255.255.252.0	$R1$
12.20.170.0	255.255.254.0	$R2$
12.20.168.0	255.255.254.0	$Interface0$
12.20.166.0	255.255.254.0	$Interface1$
$default$		$R3$

Which of the following prefixes in CIDR notation can be collectively used to correctly aggregate all of the subnets in the routing table?

MSQ

A 12.20.164.0/20

B 12.20.164.0/22

C 12.20.164.0/21

D 12.20.168.0/22

Consider an IP packet with a length of 4,500 bytes that includes a 20-byte IPv4 header and a 40-byte TCP header. The packet is forwarded to an IPv4 router that supports a Maximum Transmission Unit (MTU) of 600 bytes. Assume that the length of the IP header in all the outgoing fragments of this packet is 20 bytes. Assume that the fragmentation offset value stored in the first fragment is 0.

The fragmentation offset value stored in the third fragment is _____.

A 120

B 144

C 210

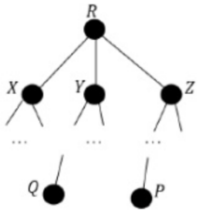
D 175

An organization requires a range of IP address to assign one to each of its 1500 computers. The organization has approached an Internet Service Provider (ISP) for this task. The ISP uses CIDR and serves the requests from the available IP address space 202.61.0.0/17. The ISP wants to assign an address space to the organization which will minimize the number of routing entries in the ISP?s router using route aggregation. Which of the following address spaces are potential candidates from which the ISP can allot any one of the organization?

I. 202.61.84.0/21
II. 202.61.104.0/21
III. 202.61.64.0/21
IV. 202.61.144.0/21

A. I and II only
B. II and III only
C. III and IV only
D. I and IV only

Consider a computer network using the distance vector routing algorithm in its network layer. The partial topology of the network is shown below.



The objective is to find the shortest-cost path from the router R to routers P and Q. Assume that R does not initially know the shortest routes to P and Q. Assume that R has three neighboring routers denoted as X, Y and Z. During one iteration, R measures its distance to its neighbors X, Y, and Z as 3, 2 and 5, respectively. Router R gets routing vectors from its neighbors that indicate that the distance to router P from routers X, Y and Z are 7, 6 and 5, respectively. The routing vector also indicates that the distance to router Q from routers X, Y and Z are 4, 6 and 8 respectively. Which of the following statement(s) is/are correct with respect to the new routing table o R, after updation during this iteration?

[MSQ]

A. The distance from R to P will be stored as 10

B. The distance from R to Q will be stored as 7

C. The next hop router for a packet from R to P is Y

D. The next hop router for a packet from R to Q is Z