Ip - **172.164.96.0 / 20 - 23**

So the subnet mask will be

```
11111111.11111111.11110000.00000000

000
001
010


Converting to binary
172.164.96.0 = 10101100.10100100.01100000.00000000
Subnet mask  = 11111111.11111111.11110000.00000000
End Function. = 10101100.10100100.01100000.00000000
Network adrs(binary)= 172.164.96.0

6
2^1=2
2^2=4
2^3=8 = 2
2^4=16

In order to create five subnetworks from this
network, we borrowed 3 bits from the host bits,
which allows us to create 2^3 = 8 subnetworks.
Therefore, our five subnetwork addresses are
as follows:

New Subnet for CIDR = 23
Binary = 11111111.11111111.11111110.00000000
Decimal = 255.255.254.0
```

Subnet 1 -

From: 172.164.01100000.00000000 = 172.164.96.0 / 23

To : 172.164.01100001.11111111 = 172.164.97.255 / 23

Subnet 2 -

From: 172.164.01100010.00000000 = 172.164.98.0 / 23

To: 172.164.01100011.11111111 = 172.164.99.255 / 23

Subnet 3 -

From: 172.164.01100100.00000000 = 172.164.100.0 / 23

To: 172.164.01100101.11111111 = 172.164.101.255 / 23

Subnet4

From: 172.164.01100110.00000000 = 172.164.102.0 / 23

To: 172.164.01100111.11111111 = 172.164.103.255 / 23

Subnet5

From: 172.164.01101000.00000000 = 172.164.104.0 / 23

To: 172.164.01101001.11111111 = 172.164.105.255 / 23

Subnet 6

From: 172.164.01101010.00000000 = 172.164.106.0 / 23

To: 172.164.01101011.11111111 = 172.164.107.255 / 23

Routing Protocol (EIGRP): (for this CLI turn it to Network default [last one 0])

IT

IT self : 172.164.96.1
IT - Reception: 192.168.1.1
IT - Store: 192.168.6.1
IT - Management: 192.168.4.1
IT - Human: 192.168.7.1
IT - Food: 192.168.8.1

Reception
Reception self: 172.164.98.1
Reception - IT : 192.168.1.2
Reception - Store: 192.168.2.1
Reception to management - 192.168.5.1

Store and Logistics
Store and Logistics self - 172.164.100.1
Store and Logistics to reception - 192.168.2.2
Store and Logistics to management - 192.168.3.1
Store and Logistics to it - 192.168.6.2

Management
Management to Self - 172.164.102.1
Management to store and logistics - 192.168.3.2
Management to reception - 192.168.5.2
Management to IT - 192.168.4.2

Human And Resources

H&R self - 172.164.104.1
H&R to IT - 192.168.7.2

Food and Beverages

F&B self - 172.164.106.1
F&B to IT - 192.168.8.2

SERVER

STATIC IPS
IT -
DHCP - 172.164.96.2
DNS - 172.164.96.3
HTTP - 172.164.96.4

RECEPTION
DNS - 172.164.98.2
HTTP - 172.164.98.3

MANAGEMENT
DNS - 172.164.102.2
HTTP - 172.164.102.3

POSSIBLE QUESTIONS -

1.Subnetting Procedures

Assigned ip - 172.164.96.0 / 20

So,
Since we are assigned 20 bit, we will place 20 Ones and then divide the Bits (y.y.y.y) to create the subnet mask for **172.164.96.0** - 11111111.11111111.11110000.00000000

Converting to binary

172.164.96.0 = 10101100.10100100.01100000.00000000
Subnet mask = 11111111.11111111.11110000.00000000
End Function. = 10101100.10100100.01100000.00000000
Convert End Function(binary) to Network addresss(decimal) = **172.164.96.0**

Since we need 6 Subnets

```
2^1=2 Too low, cant create 6
2^2=4 Too low, cant create 6
2^3=8 = Perfect, We can create 6 network from here
and still have to additional free networks

2^4=16 too much, we need 6 but here we have extra
10 combos

So,2^3 = 8, 3 will be taken for CIDR
```


```
So,2^3 = 8, 3 will be taken for CIDR
```

So, Our default subnet for 20 bit is

Subnet/20 - 11111111.11111111.11110000.00000000
So for our new Subnet we need to create 6 variants out of this. And for that we will take 3 extra bits.

Normal - 11111111.11111111.11110000.00000000
CIDR - 11111111.11111111.11110000.00000000

The **three ZEROES** will give **6 combinations**

Subnet 1 (000) : 172.164.01100000.00000000 = 172.164.96.0 / 23

Subnet 2 (001) : 172.164.01100010.00000000 = 172.164.98.0 / 23

Subnet 3 (010) : 172.164.01100100.00000000 = 172.164.100.0 / 23

Subnet 4 (011) : 172.164.01100110.00000000 = 172.164.102.0 / 23

Subnet5 (100) : 172.164.01101000.00000000 = 172.164.104.0 / 23

Subnet 6 (101) : 172.164.01101010.00000000 = 172.164.106.0 / 23