

CIDR & Subnetting — Practical Guide (AWS / DevOps)

1. CIDR Basics

CIDR format: IP / MASK. Example: 10.61.16.0/26.

The mask decides block size and valid starting boundaries.

2. Private IP Ranges

Allowed VPC ranges:

10.0.0.0/8

172.16.0.0 – 172.31.255.255

192.168.0.0/16

3. AWS Reserved IPs

AWS reserves 5 IPs in each subnet.

Usable IPs = Total IPs - 5

/28 -> 11 usable

/27 -> 27 usable

/26 -> 59 usable

/25 -> 123 usable

/24 -> 251 usable

4. Block Sizes

/28 = 16

/27 = 32

/26 = 64

/25 = 128

/24 = 256

5. Subnet Boundary Rule

Subnets must start at multiples of block size.

/27 starts: 0, 32, 64, 96...

/26 starts: 0, 64, 128, 192

6. Octet Roles

1st octet: private range

2nd octet: environment grouping

3rd octet: subnet group (/21, /22 logic)

4th octet: subnet boundary

7. Third Octet Explained

Think in /24 blocks (boxes).

/22 = groups of 4 /24s

/21 = groups of 8 /24s

You must start at the first box of a group.

8. Subnet Sizing Logic

~10 IPs -> /28

~20 IPs -> /27

~30-40 IPs -> /26

~60-100 IPs -> /25

9. Overlap Rule

Subnets must never overlap inside a VPC.

10. Final Checklist

- Boundary valid
- Enough usable IPs
- No overlap
- Inside VPC CIDR