

Networking Cheat Sheet

Networking · Arun R Kaushik · 2026-06-15

Subnetting, CIDR, common ports, and the OSI model on one page—quick reference for engineers and interview prep.

OSI Model

Layer	Name	Examples
7	Application	HTTP, DNS, SMTP, FTP
6	Presentation	TLS, encoding, compression
5	Session	sessions, sockets
4	Transport	TCP, UDP
3	Network	IP, ICMP, routing
2	Data Link	Ethernet, switches, MAC
1	Physical	cables, fiber, radio

CIDR Quick Reference

CIDR	Subnet Mask	Hosts
/24	255.255.255.0	254
/25	255.255.255.128	126
/26	255.255.255.192	62
/27	255.255.255.224	30
/28	255.255.255.240	14
/29	255.255.255.248	6
/30	255.255.255.252	2

Usable hosts = $2^{(32 - \text{prefix})} - 2$

Private IP Ranges (RFC 1918)

- 10.0.0.0/8
- 172.16.0.0/12
- 192.168.0.0/16

Common Ports

Port	Protocol	Service
20/21	TCP	FTP
22	TCP	SSH
23	TCP	Telnet
25	TCP	SMTP
53	TCP/UDP	DNS
67/68	UDP	DHCP
80	TCP	HTTP
110	TCP	POP3
123	UDP	NTP
143	TCP	IMAP
161/162	UDP	SNMP
179	TCP	BGP
389	TCP	LDAP
443	TCP	HTTPS
445	TCP	SMB
514	UDP	Syslog
3389	TCP	RDP

TCP vs UDP

	TCP	UDP
Connection	Connection-oriented	Connectionless
Reliability	Guaranteed delivery, ordering	Best effort
Overhead	Higher (handshake, ACKs)	Lower
Use cases	HTTP, SSH, databases	DNS, VoIP, streaming

TCP Three-Way Handshake

1. Client → Server: **SYN**
2. Server → Client: **SYN-ACK**
3. Client → Server: **ACK**

VLSM Quick Tip

When subnetting for multiple sized networks, allocate the largest subnets first, then carve smaller ones from the remaining space to avoid fragmentation.

Useful Commands

```
# Show interfaces and IPs
ip addr show

# Show routing table
ip route show

# Trace path to a host
traceroute example.com

# DNS lookup
dig example.com
nslookup example.com

# Test a TCP port
nc -zv example.com 443
```

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