Linux Essentials

Using kali linux

-1- man

-2- ls

-3- cd

-4- cp

-5- mv

-6- mkdir

-7- rmdir

-8- rm

-9- touch

-10- locate

-11- find

-12- grep

-13- sudo	19-chmod
-14- df	20- chown
-15- du	-21- ps
-16- head	-22- kill
-17- tail	-23- wget
-18- tar	-24- curl

-25- top
-26- htop
-27- pwd
-28- zip
-29- unzip
-31- echo

-32- useradd
-33- userdel
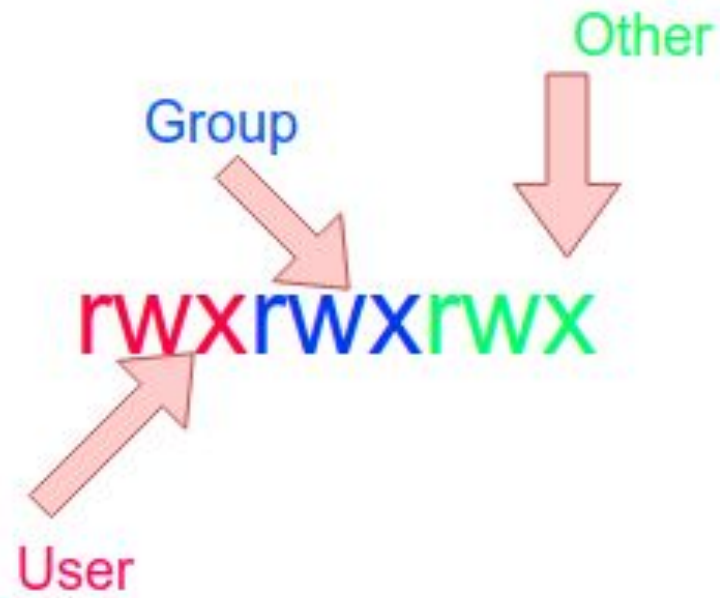
Owner	Group	Other
r w x	r - x	r - x
4+2+1	4+0+1	4+0+1
7	5	5

- apt-cache search software
- apt-get autoremove software
- apt-get install software

Encryption Essentials

Symmetric Encryption vs. Asymmetric Encryption

AES , DES , TWOFISH , Caesar Cipher

Symmetric Encryption vs. Asymmetric Encryption

HASH

MD5 , SHA 256

Encryption
(used to protect sensitive information)

Plain text — Encryption — Encrypted text — Decryption — Plain text

Hashing
(used to validate information)

Plain text — Hash Function — Hashed Text

okta

Encoding

Network Essentials

OSI

Open Systems Interconnection

7 Layers of the OSI Model
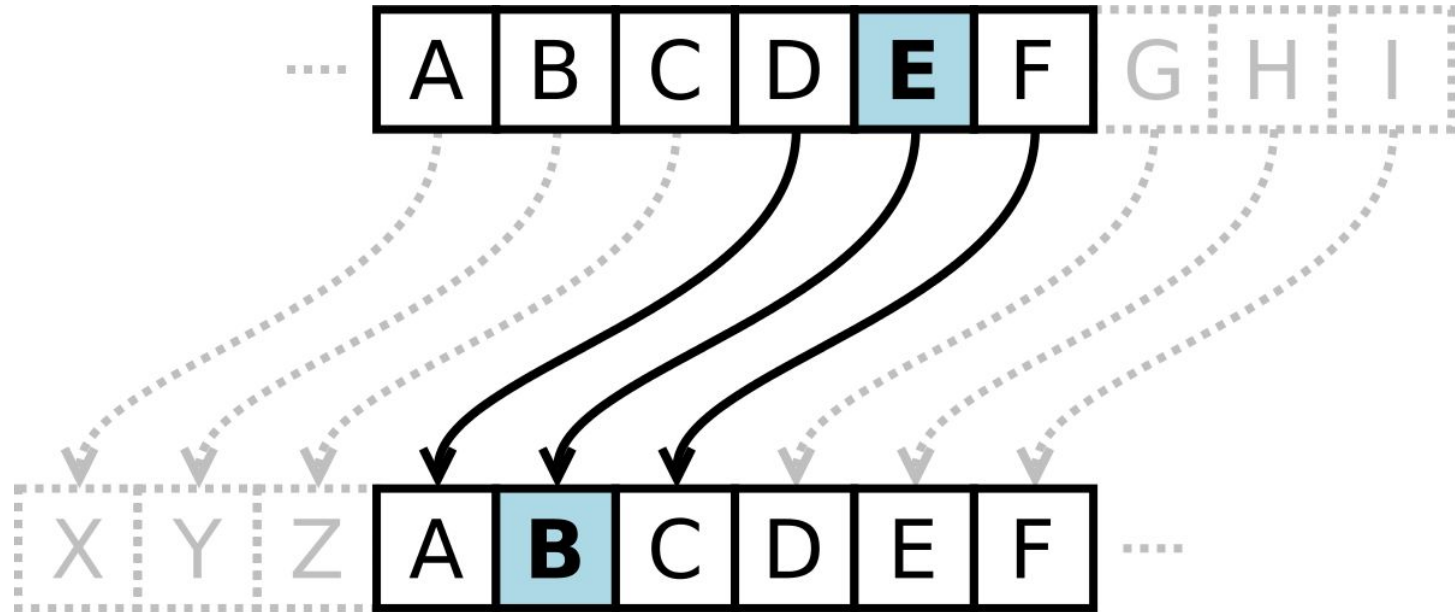
Application	• End User layer • HTTP, FTP, IRC, SSH, DNS
Presentation	• Syntax layer • SSL, SSH, IMAP, FTP, MPEG, JPEG
Session	• Synch & send to port • API's, Sockets, WinSock
Transport	• End-to-end connections • TCP, UDP
Network	• Packets • IP, ICMP, IPSec, IGMP
Data Link	• Frames • Ethernet, PPP, Switch, Bridge
Physical	• Physical structure • Coax, Fiber, Wireless, Hubs, Repeaters

Physical Layer

RJ-45

RJ-11

Data Link Layer

Switch

Switch

Rj45 Cable
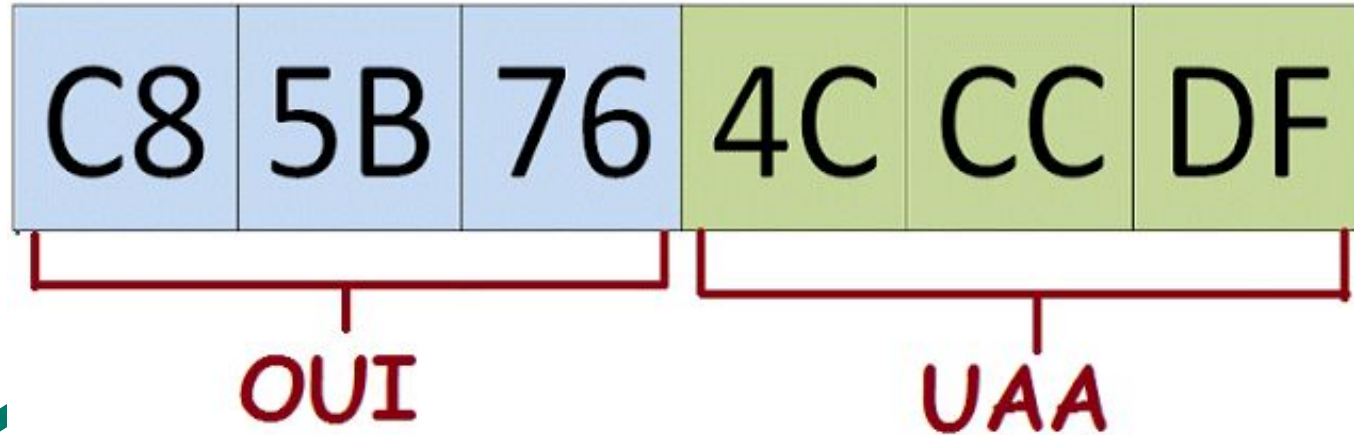
Network Layer

IP V4   DHCP   NAT

IPv4 Address Example

17.172.224.47

8 bits
(1 byte)

8 bits
(1 byte)

8 bits
(1 byte)

8 bits
(1 byte)

32 bits = 4 bytes
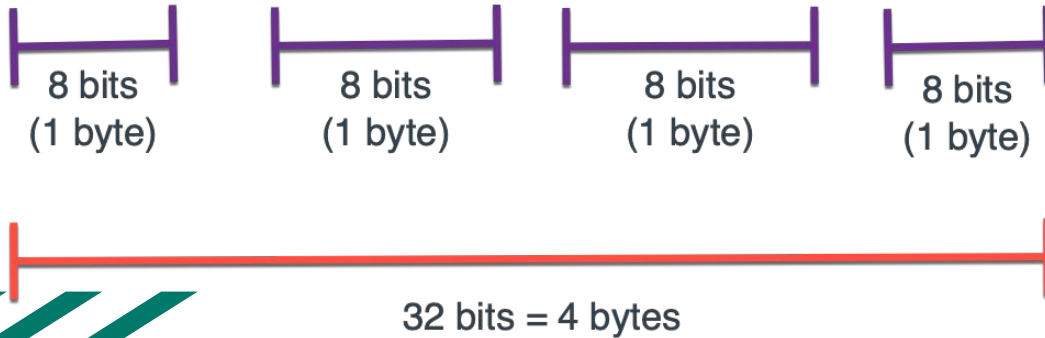
Network Layer

Network Layer

DHCP and netmask
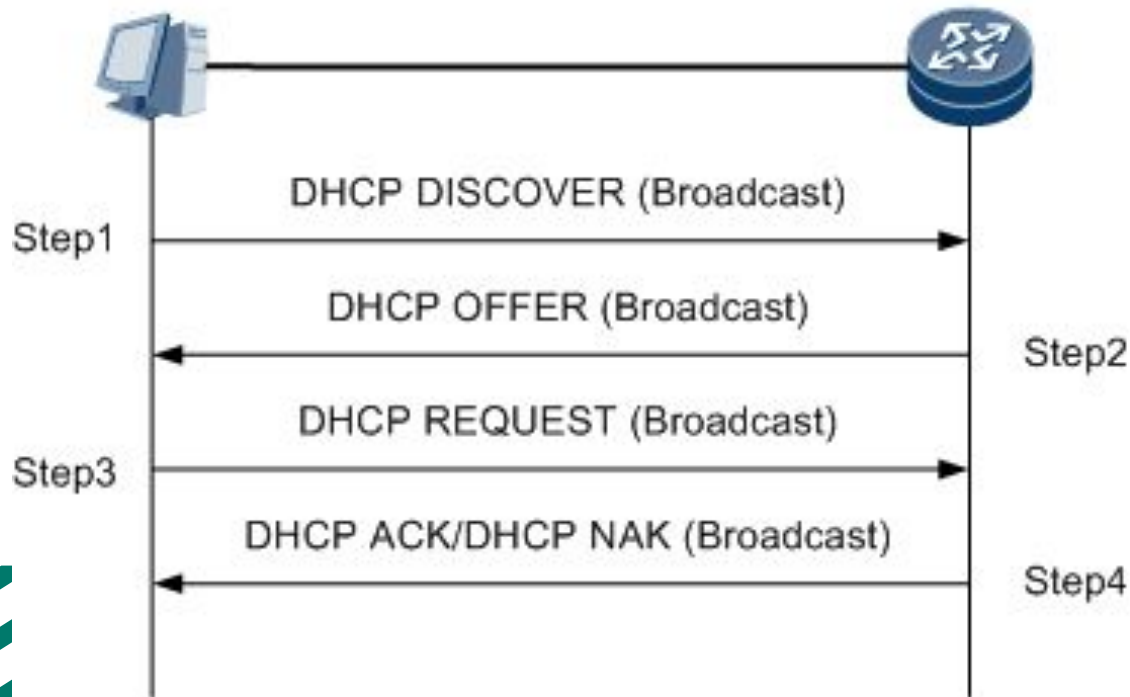
Network Layer

Host

Router + NAT

Server

Private Network

Internet

10.0.0.1

150.150.0.1

200.100.10.1

	Source IP	Destination IP	
…	10.0.0.1	200.100.10.1	…

	Source IP	Destination IP	
…	150.150.0.1	200.100.10.1	…

Changes according to NAT

	Source IP	Destination IP	
…	200.100.10.1	10.0.0.1	…

	Source IP	Destination IP	
…	200.100.10.1	150.150.0.1	…
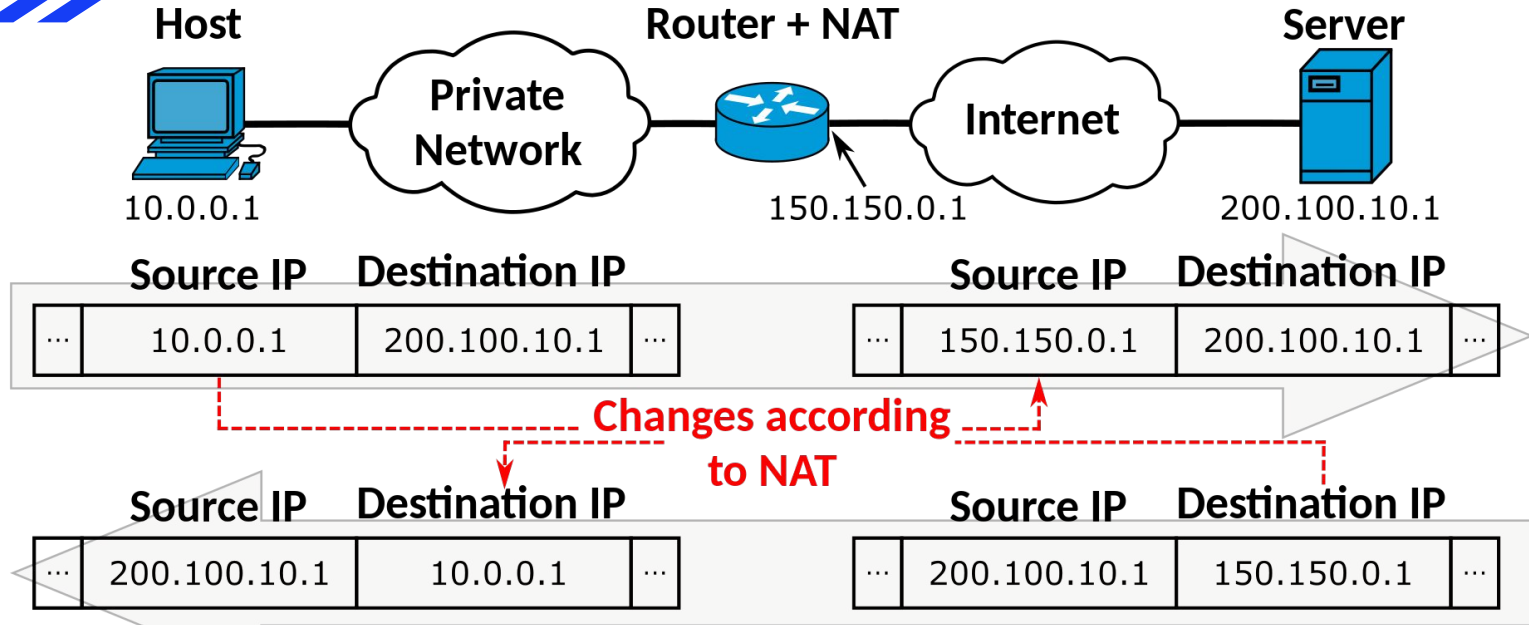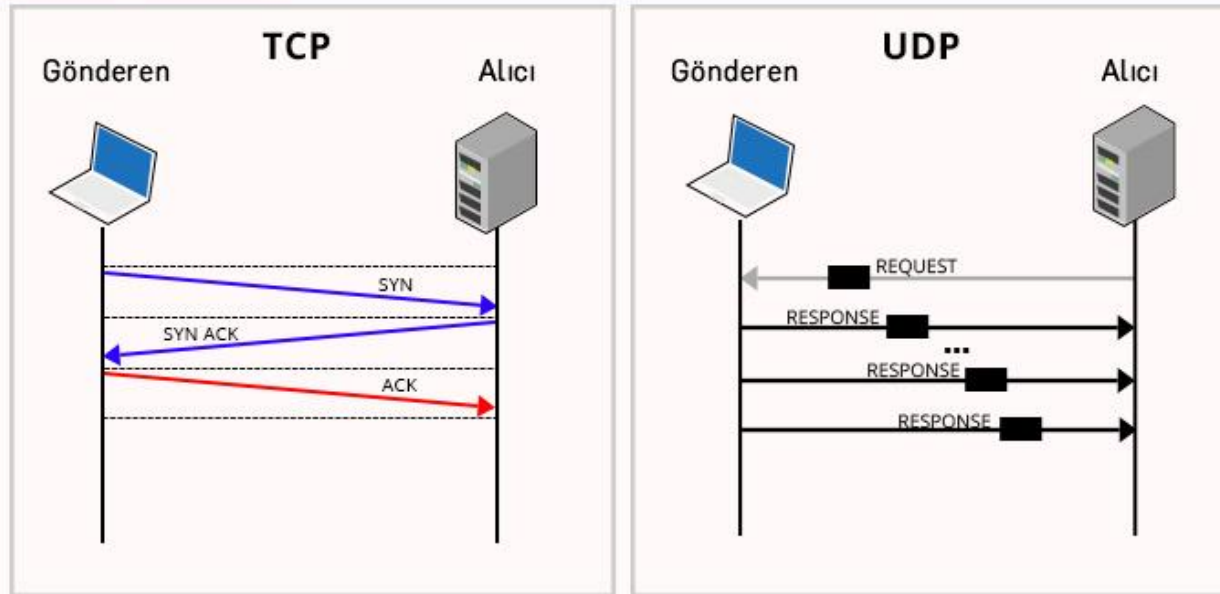
Transport Layer

Transport Layer

TCP = **Transmission Control Protocol**

UDP = **User Datagram Protocol**

Transport Layer

TCP = Transmission Control Protocol

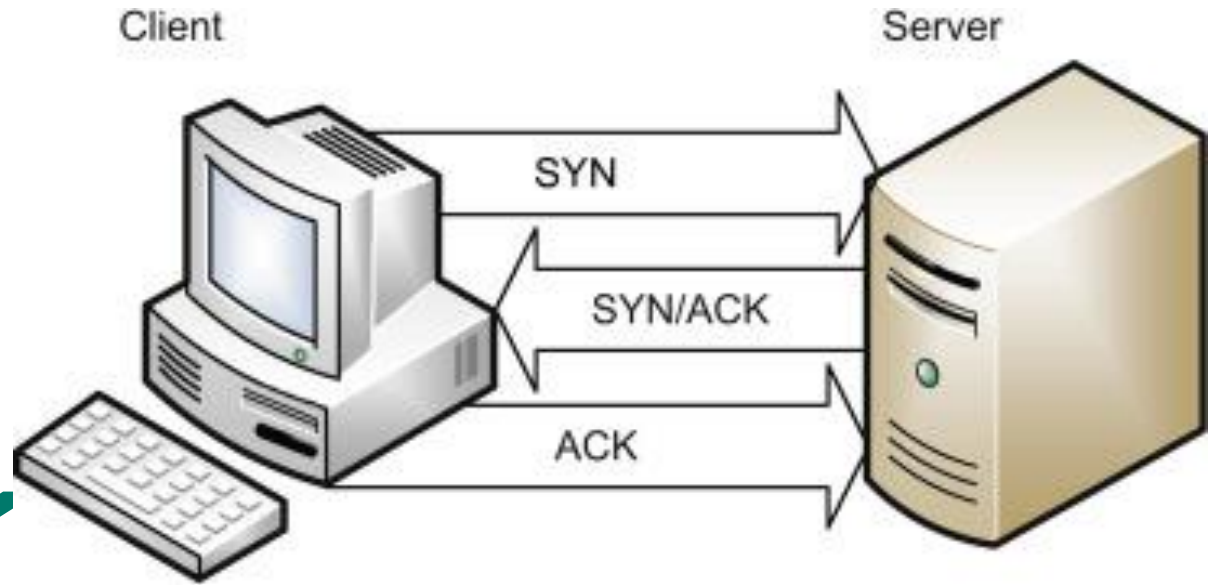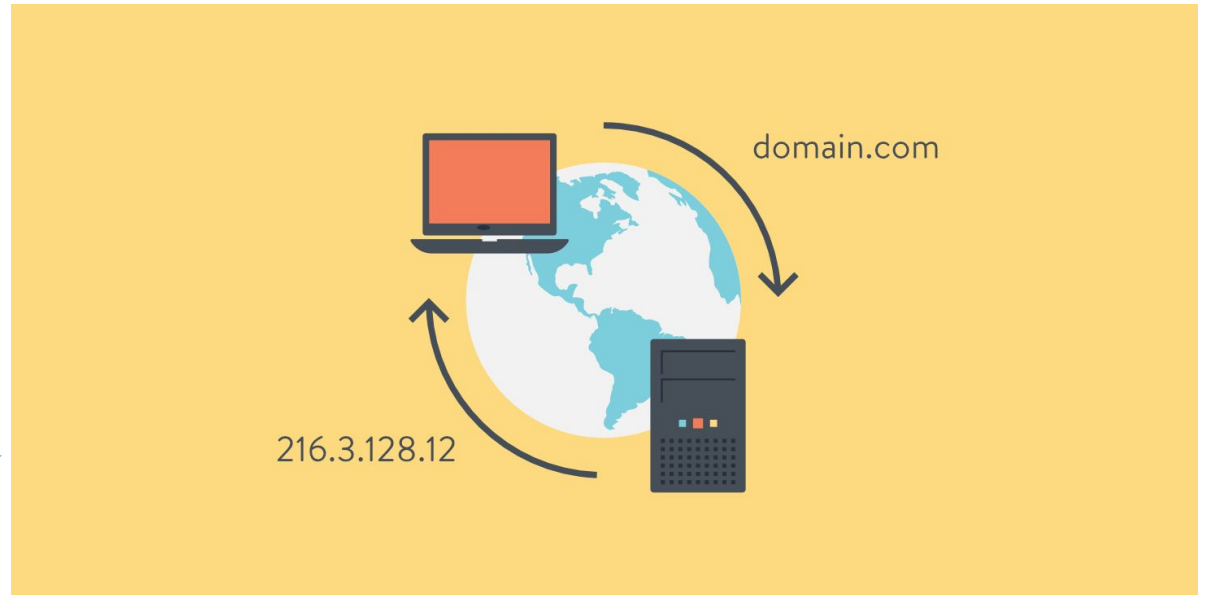# Transport Layer

PORTS

- **HTTP – Port 80.**
- **HTTPS – 443.**
- **FTP – 21.**
- **FTPS / SSH – 22.**
- **POP3 – 110.**
- **POP3 SSL – 995.**
- **IMAP – 143.**
- **IMAP SSL – 993.**

5 & 6 Layer

DNS = Domain Name System

DNS

Domain Name Space

NS RR ("resource record") names the nameserver authoritative for delegated subzone

"zone delegation"

"delegated subzone"

When a system administrator wants to let another administrator manage a part of a zone, the first administrator's nameserver **delegates** part of the zone to another nameserver.

= **resource records** associated with name

= **zone** of authority, managed by a **name server**

see also: RFC 1034 4.2: How the database is divided into zones.

HTTP vs HTTPS

HTTP = **Hypertext Transfer Protocol , 80**

HTTPS = **Hypertext Transfer Protocol Secure , 443**

HTTP vs HTTPS

What Is a Certificate Authority (CA)?

HTTP vs HTTPS

HTTPS = Hypertext Transfer Protocol Secure , 443

CRL: What Is a Certificate Revocation List?

What Is a OCSP ?

SSL ENCRYPTION

What Happens When You Type google.com

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My WebSite: 404 Not Found !