

ETWORK PROGRAMMING

4 qp solved

What tasks are performed in disk management ? List the steps to be followed in secure disk management.

Disk management

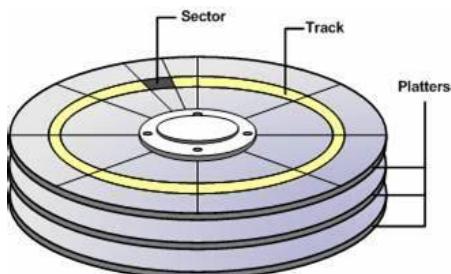
1. DM computer ke storage devices ko manage karta h, partition banata h, format karta h aur space allocate karta h
2. Ex. Apne phone ki storage organize karna, jaise apps uninstall karna ya photos delete karna, taaki naye data ke liye jagah ban sake

Disk Management ke Important Kaam

1. Partition Banana, Partition Bada/Chhota Karna, Disk Clean Karna, Format Karna, Extra Space Banana
2. Disk ke problems fix karna.
3. Backup Rakhna
4. Encrypt Karna: Important data ko lock karna taaki safe rahe.
5. Disk Type Change Karna: MBR se GPT ya file system change karna.

Secure Disk Manage Karne Ke Steps

1. Backup Lo
2. Safe Software Use Karo
3. Encrypt Karo
4. Clean aur Maintain Karo: Time-to-time bekaar files delete karo aur Disk ko pura bharne se bachao., Safely Eject Karo
5. Drivers Update Rakho: Disk drivers updated hone chahiye



What are the following Linux commands used for ?

- (i) ps-aef
- (ii) ls-of
- (iii) netstat

ps -aef: background me chal rahe programs ki list aur unke details ko dikhata hai.

ls-of: Jo files abhi open hain aur kaunse programs un files ko use kar rahe hain, ye batata hai

netstat: Network connections aur data flow ki details dikhata hai.

Where is password file stored ? Describe its components.

1. Unix-like systems mein /etc/passwd file har user ki basic information rakhti hai, lekin password nahi.
2. Passwords /etc/shadow file mein hashed form mein stored hote hain.

/etc/passwd ke main parts:

1. Username: User ka login naam.
2. UID: User ka unique ID.
3. GID: User ka group ID.
4. User Info: User ka naam ya info.
5. Home Directory: User ka home folder ka path.
6. Shell: User ka shell ka path.

For what purpose is listen() system call used in context of socket programming ?

Write its syntax also.

1. Listen () Socket programming mein use hota h
2. listen() function server ko connection request bhejta h aur server accept karta h
3. Syntax:
`int listen(int sockfd, int backlog);`
 - sockfd: Socket ka ID jo server ko represent karta h
 - backlog: Maximum requests jo queue mein wait kar sakti hain.

What are the similarities between file and socket I/O ?

1. File I/O files se data read/write hota h
2. socket I/O network se data send/receive hota h
3. file socket io me read(), write(), open(), aur close() Same Functions use hote hain.
4. file socket io me resource ko pehchanne ke liye ek special ID ya number hota hai.
5. file socket io Blocking/Non-blocking Dono modes mein kaam karte hain
6. file socket io data ko efficient bhejne ke liye buffering use karte hain.
7. file socket io Dono mein common errors aate hain

QoS (Quality of Service) parameters

1. Qos measurable factors hote hain
2. Qos network ya service ki performance ko measure karte hain
3. jese latency, bandwidth, jitter aur packet loss, delay

Bandwidth

ek network ki speed hai
ek samay par kitna data transfer ho rha h
1 second me 1gb transfer ho rha h

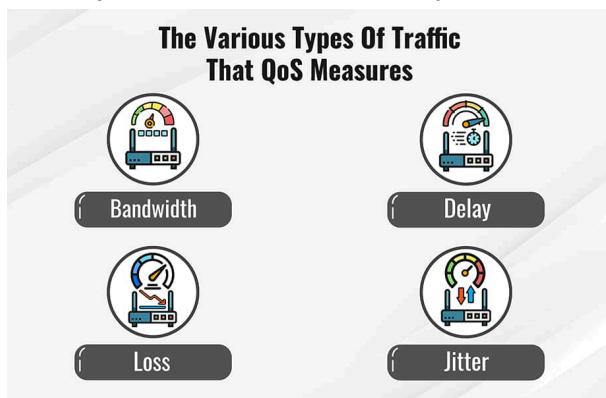
Latency

data ko ek point se doosre point tak pahunchne mein lagne wala time hota hai.

Jitter

data transfer hone k time par aata h

jo communication ki quality ko kharab kar sakta hai.



Byte ordering

user local pc par ip address send karta h

tab pc IP address ka data samjhne k liye ek fixed order follow karta hai.

Find the error in the following

IP addresses :

- (i) 100.015.15.15
- (ii) 01010011.35.75.80
- (iii) 150.18.18.18.15

100.015.15.15: "015" mein leading zero hai, jo nahi hona chahiye.

01010011.35.75.80 sahi h 4 octets h

150.18.18.18.15: 5 octets hain, sirf 4 hone chahiye.

FTP

1. (File Transfer Protocol)
2. Ftp ek internet protocol hai
3. Ftp internet par files ko ek computer se doosre computer par transfer karta h
4. Ftp web servers se files ko download ya upload karta h
5. FTP ko connect karne k liye default port number 21 hota h
6. FTP par secure file transfer ke liye (SFTP) ya FTPS ka use hota h jisme encryption ka use hota h
7. Ex. share it, nearby share, quick share



FTP clients

1. FTP client ek software application hota hai
2. FTP client file ko ek computer se doosre computer ya server par transfer karta hai

FTP server

1. FTP server ek computer system ya server hai
2. FTP server network ya internet par file ko ek computer se doosre computer ya server par transfer, store karta hai

FTP session mein client basic steps work:

1. Server se connect karna

Client server se connection shuru karta hai
jahan IP address aur port number 21 use hota hai

2. Login karna

Client server par Username aur password daalkar login karta h.

3. Folders mein navigate karna

Client Server k folders mein jaakar files ko explore karta h

4. Files transfer karna

Client server se. Files ko upload ya download karta h

5. Files manage karna

Client Files ka naam badalna, delete karna, naye folders create karta h

6. Disconnect karna

Client server se Session khatam karke disconnect karta h

For what purpose FTP is used ? Describe

the FTP commands for copying files to or

from remote host.

Files copy karne ke liye kuch simple FTP commands

1. Put

local computer se file ko server par upload karta h

Example: put file.txt (Yeh file ko server par upload karega)

2. get

file ko server se computer par recieve karta h

Example: get file.txt (Yeh file ko server se download karega)

3. mput

ek saath bhot saari files ko server par upload karta h

Example: mput *file.txt (Yeh saari files ko server par upload karega)

4. mget

ek saath bhot sari files ko server se download karta h

Example: mget *.txt (Yeh saari files ko server se download karega)

5. lcd

Ye command ftp k saath computer par folder badalne ke liye hota hai

Example: lcd /path/to/local/dir

6. cd

Yeh command server par folder badalne ke liye hota hai.

Example: cd /path/to/remote/dir

LINK STATE ROUTING

1. Lsr me har router network ka map share karta hai ek dusre ke sath
2. Lsr data packet send karne k liye best path calculate Kiya jata hai
3. Lsr Dijkstra Algorithm ka use karta h
4. Ex. OSPF Open Shortest Path First, jo large networks mein data bhejne ke liye sabse achha raasta dhoondhne mein madad karta hai.

Update

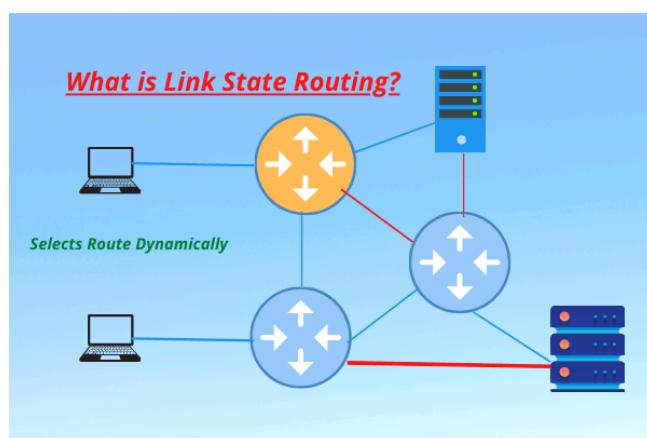
Routers ko Network ke changes per time per update karte h

Coverage

Routers ko complete information ka pata hota h isiliye routers ka coverage tej aur fast hota h

Routing table

ek data table hoti hai



DISTANCE VECTOR ROUTING ALGO

1. Ek routing protocol h
2. dvr har router ki bich ki duri k base per data packet bhejne ke liye sabse best path select karta h
3. dvr algorithm Bellman-Ford algorithm ka use karta hai
4. Each route share information for best path
5. Each route receive information for updating routing table
6. Ex. Delivery Route Optimization in a City

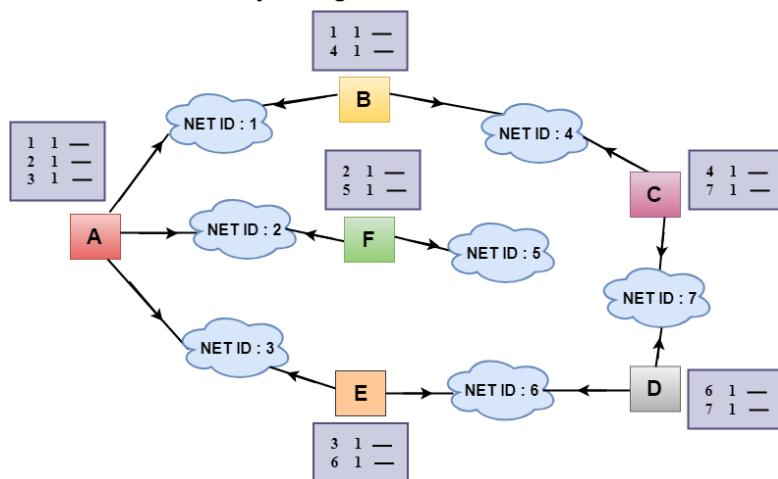


Steps in the Distance-Vector Routing Algorithm

1. Shuruat:
2. Information Share Karna
3. Table Update Karna
4. Changes Handle Karna
5. Routing Loops Se Bachna

What is count to infinity problem in distance vector routing protocol

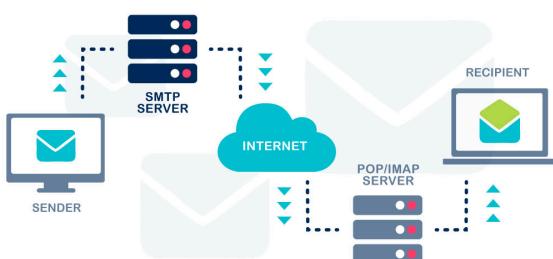
1. Count to infinity problem router loop ke bich router ki vajah se hota hai
2. Ismein router ek dusre ko galat jankari bhejte rahte Hain
3. Aur infinity Tak ginti karte rahte hain



PROTOCOLS

SMTP

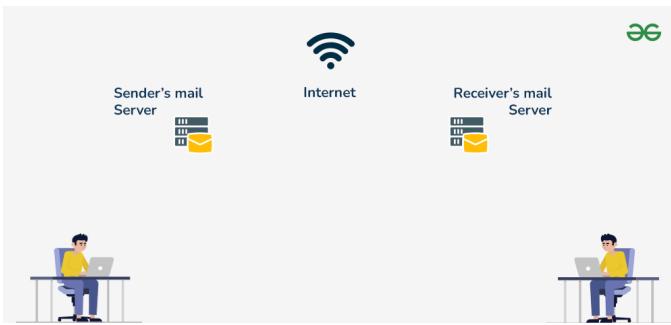
1. Simple Mail Transfer Protocol
2. SMTP ek internet protocol hai
3. smtp email message ko ek server se dusre server tak bhejta hai.
4. SMTP ek client-server model pe kaam karta hai
5. Ex. SMTP ek postman ki tarah kaam karta hai, jo aapka message ek server se dusre server tak pahuchata h



IMAP

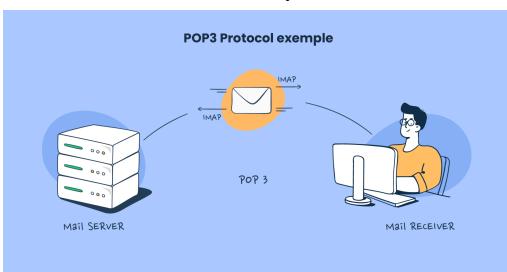
1. Internet Message Access Protocol
2. IMAP ek internet protocol hai
3. Imap me User email ko poora download kiye bina computer par dekh aur manage karta h
4. Imap me synchronization hota h

- Ex. Gmail app ka use, jo server se emails sync karke aapke phone par dikhata hai, bina unhe permanently download kiyे



POP3

- Post Office Protocol version 3
- ek email communication protocol h
- Client aur server k beech me email transfer hota h server se client ko email recieve hota h
- Ex. jab ek email client, jaise Outlook server se email messages download karta hai aur unhe local device par store karta h



PING

- PING network connection ki speed aur reliability check karta hai.
- Ping se Speed Check, Connection Test, fix problems hota h
- PING se network issues ko identify kar sakte hain jaise latency, packet loss, aur connectivity problems.
- Ex ping online game me khai corner par show hota h internet connection ki speed ko dekhne k liye



Tracert / Trace route

- Tracert har device ka data packet ka path ko step-by-step trace karta h
- Tracert har device ki destination / location ka rasta pata karta h
- Tracert har network device ka IP addresses aur response times (latency) dikhata h
- Ex. Internet par ek website kholte waqt tracert use karke data kaunsa route follow kar raha hai aur kahin delay ya problem ho rahi hai toh wo kis point par h



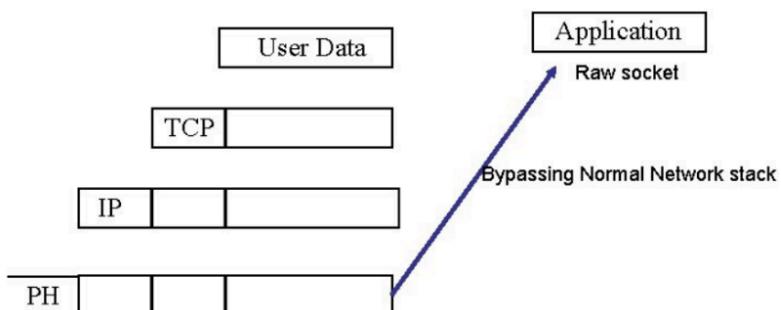
Network administrator

1. Na computer network ko manage aur maintain karta h
2. Na Network Ki Dekhbhal aur Sudhar(troubleshooting) karta h
3. Na ek computer network ki planning, installation, configuration, maintenance, aur monitoring karta h
4. Na sabhi network devices (jaise routers aur switches) ko check karta h
5. Na Network ki security badhanta h, firewalls aur VPNs se
6. Network administrator user ki help karta h



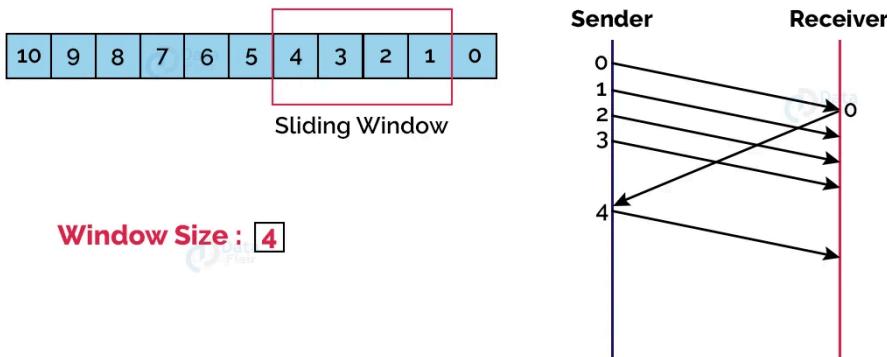
Raw socket

1. Raw socket ek network socket hai
2. Rs network protocols ko bypass karke data ko direct send aur receive karta h
3. Rs data ko Direct Access karta h, Rs custom packets bhejta h
4. rs Administrator ya root ki permissions se kaam karta h
5. Rs Sabhi OS par same kaam nhi karta h, jaise Linux mein kuch features hain jo Windows mein nahi h



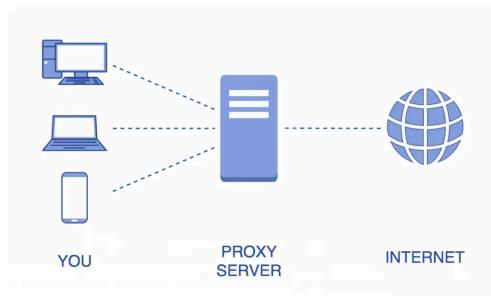
SLIDING WINDOW PROTOCOL

1. Swp ek data communication protocol h
2. Swp me sender ek fixed size ka window use karta hai
3. Swp me sender ek time pe multiple packets bhejta h
4. Swp me receiver un packets ko sequentially receive karta h aur acknowledge karta h



PROXY SERVER

1. Proxy server ek middleman hota hai
2. ps client aur internet ke beech ka connection banata hai
3. Ps IP address ya location ko hide karta h
4. Ps browsing ko secure karta h
5. Ps web traffic kam karta h



Draw the structure of a socket and discuss any two types of sockets.

Sockets

1. Socket ek network communication endpoint hai
2. socket do devices ke beech data transfer karta h
3. Socket do devices k beech messages exchange karta hai.
4. Ex. WhatsApp par message bhejte hain, toh aapka phone aur server ke beech jo connection banta hai, usi ko socket connection kehte hain.

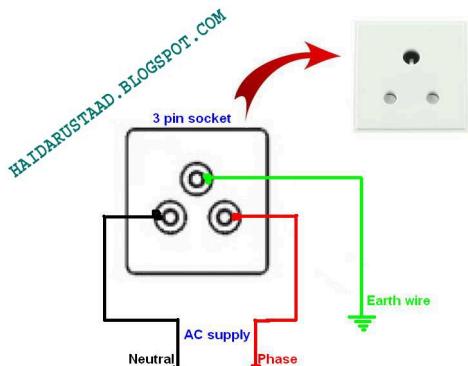
Stream socket

1. Ss internet par connection k Saath data ko send aur receive karta h bina rukawaat k
2. Ss tcp protocol ka use karta h isliye Connecton oriented hota h
3. Ss me data ki delivery reliable hoti hain
4. Ss data order me hota aur duplicate nhi ho sakta h
5. Ss Reliable Data Transfer, Continuous Data Stream karta h
6. Ex. Ss web browsing ya video streaming me use hota h



datagram socket

1. Ds internet par bina connection k data ko chote packets mein bhejta aur recieve karta h
2. Datagram socket UDP protocol ka use karta h isliye Connection less hota h
3. Ds me data ki delivery unreliable hoti hain
4. Ds data order me nahi hota aur duplicate ho saktा h



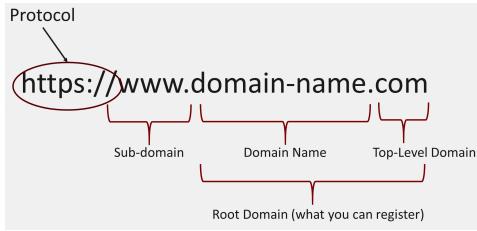
DHCP

1. DHCP (Dynamic Host Configuration Protocol) ek network management protocol hai
2. jo network devices ko IP addresses, subnet masks, aur other network configuration information automatically provide karta hai
3. DHCP network devices ko temporary IP address deta hai
4. DHCP large networks mein use hota h



DNS DOMAIN NAME SYSTEM

1. DNS (Domain Name System) ek internet protocol hai
2. DNS domain names ko IP addresses mein convert karta hai aur aur oolta bhi karta h
3. DNS internet पर websites को identify करनेवाले unique name hota h
4. Ex google.com
5. Kisi website ka name jese google.com ko uske IP addresses jese 172.217.164.78 me convert karta h jisse Browser usse connect ho



DNS server kaam kaise karta hai

1. Browser mein website ka naam type karte h
2. Browser website ka IP address dhoondta hai
3. Agar IP address nahi milta, to Browser DNS server se poochta hai.
4. aur fir DNS server root, TLD, aur authoritative server se poochta hai.
5. Authoritative server se IP address milta hai.
6. IP address milne par browser website ko load karta h

Resolver

Resolver sab kuch khud karta h aur final result deta h

Iterative

Iterative khud step-by-step har server se query karta h

Recursive DNS Resolution (Sab kaam resolver karega)

Isme client (jaise aapka browser) ek baar query karta hai, aur resolver pura kaam khud karta hai. Aur fir Client ko directly final result milta h

Steps:

1. Client resolver se www.example.com ka IP address poochta h
2. Resolver Root Server ke paas jata h Phir Root server TLD Server ke paas jata h
3. Fir TLD Server Authoritative Server se ip address maangta h
4. Ip address client ko mil jata h

Example:

Jaise aap dukan par jaake bolte ho Mujhe yeh saman laake do aur wo dukan wala khud dusri jagah se le aata hai aur aapko de deta hai.

2. Iterative DNS Resolution (Client khud kaam karega)

Isme client step-by-step har server se query khud karta hai jab tak final result nhi mil jata

Steps:

1. Client Root Server se www.example.com ka IP address poochta h
2. Phir client Root server k paas jata h
3. phir client TLD Server ke paas jata h
4. Phir client Authoritative Server ke paas jata h
5. Phir client ko final IP mil jata h

Example:

har shop pe jaake poochhte ho ki "Mujhe ye saman kahan milega?" Jab tak last shop se saman na mil jaye

A DNS client is looking for IP address of XXX.YYY.com. Show the complete procedure for mapping a domain name to IP address.

1. Client Request
2. Local DNS Cache
3. DNS Resolver
4. Root Server Query
5. TLD Server Query
6. Authoritative Server Query
7. Response to Client
8. Caching

Why do we need to provide security in the network system ? Discuss any four network security service parameters.

OR

Define Integrity in the context of network security.

1. Authentication

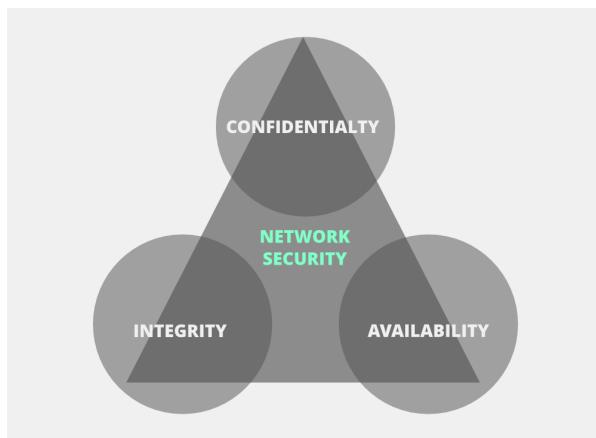
System ya service ko secure access karne k lie user ko identify ya verify kiya jata h ex. 2FA, phone **unlock** karne ke liye **password ya fingerprint** use karte h toh hum apna pehchaan dikhate hain

2. Confidentiality

User ka data sirf un logon ke haat me hota h jinke paas user ki permission hoti h
Ex. user ka personal data google k paas hota h

3. Non-repudiation

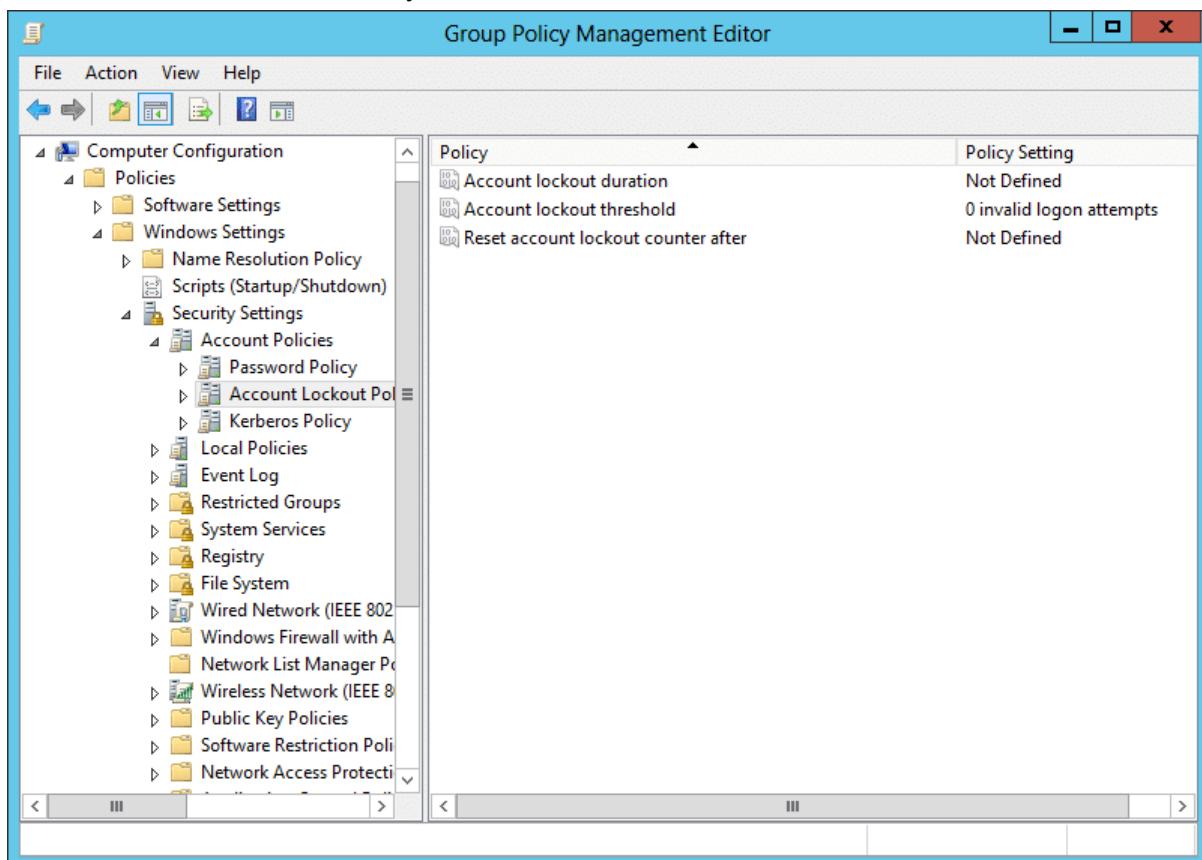
agar user ne kisi aur ko data bheja h to vo ise inkaar nahi kar sakta kyoki iska proof hota h
Ex. paytm, phone pay history



with respect to user security management, list the policies to be implemented as part of user management in a security Perspective.

Account policies users ke liye rules aur constitution hote hain jo network mein user access aur security settings karte hain.

1. Access Control Policy
2. Password Policy
3. Authentication Policy
4. Account Lockout Policy
5. Data Protection Policy



USER KA ACCOUNT

1. Account creating

2. User Authentication
3. Account Usage
4. Account Monitoring aur Maintenance
5. Account Security
6. Account Termination
7. privacy policy, Documentation
8. Cyber rules aware: Strong account, fake url
9. Security:

Networking mein user management

1. User k Account ko permission dena, access karna, organize karna aur control kiya jata h
2. Networking mein user management ka istemal network administrators aur IT professionals karte hain
3. Ex. Corporate networks mein, IT team ka employees ke access rights aur permissions ko manage karna.

Access Control

User network k kisi bhi part ko access karne ki permission rakhta h

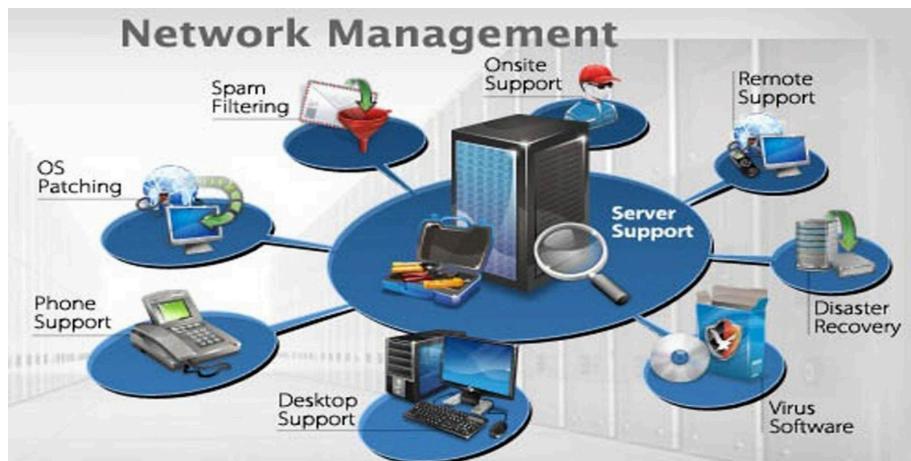
Ex. "Office building mein sirf authorized employees ko keycard se entry milti hai."

Account Setup and Removal

Jab naya user network join karta hai to uska account banaya jata hai aur permissions set kiye jate hain.

Jab user network chodta hai to uska account aur access rights deactivate kar diye jate hain

Ex. Bank account opening and closing



rsh, rlogin, putty, virtual network computing (with reference to remote administration)

rsh (Remote Shell)

1. Rsh me User ek computer se dusre computer ko door location se remotely control karta
2. Rsh me User door se ek computer se dusre computer par commands chalata h
3. Rsh Unix-like operating systems mein zyada istemal hota h
4. rsh insecure hota hai kyunki yeh data ko plain text mein transmit karta hai
5. ssh is better than rsh

- Ex. jese hackers rsh se ek computer se dusre remote computer par login karke uspar commands chalate h, jisse hackers server ko control karta h

```
linuxhint@ubuntu-PC:~$ rsh -l kali 192.168.56.102 "pwd ; ls"
/home/kali ←
Desktop
Documents
Downloads
Music
Pictures
Public
Templates
Videos
linuxhint@ubuntu-PC:~$
```

rlogin (Remote Login)

- User ek computer se dusre computer ko door location se remotely login karta h
- User ek computer se dusre computer ko door location se commands chalata h
- Rlogin me user Unix-based machines par remotely login karta h
- rlogin ek old method hai, rlogin insecure hota h isme data encrypted nahi hota h
- Aaj kal log rlogin ki jagah SSH ka use karte h kyunki ye zyada surakshit hai
- Ex. ek computer se doosre computer par login karke kaam karna

```
root@kali:~# rlogin -l root $RHOST
Password:
Login incorrect
metasploitable-[REDACTED] login: ^C
rlogin: connection closed.
root@kali:~# rlogin -l msfadmin $RHOST
Last login: Fri Jun 12 16:16:12 EDT 2015 from [REDACTED] on pts/0
No mail.
msfadmin@metasploitable-[REDACTED]:~$ whoami
msfadmin
msfadmin@metasploitable-[REDACTED]:~$
```

PuTTY

- putty ek free aur open-source terminal emulator hai
- putty alag-alag network protocols jaise SSH, Telnet, rlogin, aur raw socket connection ko support karta h
- Putty Windows me jyaada use hota hai
- Putty Unix-like systems ko remote administration karta h
- Putty SSH secure protocols ko support karta hai jo data ko encrypt karta h
- Ex. remote server ko securely access karna aur manage karna, jaise ek website ke backend files ko SSH ke through modify karna.



Working:

- PuTTY ko open karein.
- Hostname ya IP address enter karein.
- Connection type mein SSH select karein.
- "Open" par click karke session start karein.

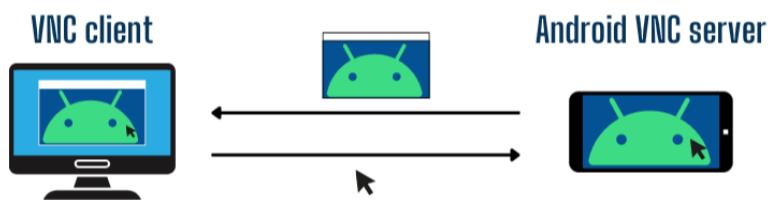
VNC (Virtual Network Computing)

- User ek computer se dusre computer k desktop interface ko remotely control karta h

2. Vnc graphical remote desktop provide karta hai.
3. Vnc Alag-alag operating systems mein use hota h
4. VNC secure nahi hota, lekin isko SSH se tunnel karke secure kiya jata h
5. Ex. remote desktop access, jaise ek IT admin apne office ke computer ko ghar se troubleshoot karne ke liye access karta h

working:

- Remote machine par VNC server install karein.
- Local machine par VNC viewer install karein.
- VNC viewer ka use karke server ka IP address aur port enter karke remote machine se connect kare



DIFFERENCE:

rsh aur rlogin

aaj k yug mein security weak k karan ise avoid kiya jata hai.

PuTTY

Windows par secure remote shell access ke liye recommend kiya jata hai, khaaskar SSH support ke liye.

VNC

Graphical remote access ke liye accha hai, lekin isko encryption ke saath use karna zaroori hai (jaise ki SSH tunnel) data suraksha ke liye.

package manager aur package metadata

Package manager aur package metadata dono software distribution aur management mein use hote hain Jese android, windows

Package manager

1. Package manager packages ko install aur manage karta hai
2. Ex. mobile par ek app store se app download karte hain, toh store ek package manager jaisa kaam karta hai

Package metadata

1. package metadata packages ko details mein describe karta hai.
2. Ex. Jab aap us app ka page dekhte hain aur wahaan app ka naam, version, aur required permissions dekhte hain, yeh sab package metadata hota hai.



List the services provided by TCP. Explain the operation of stream delivery service.

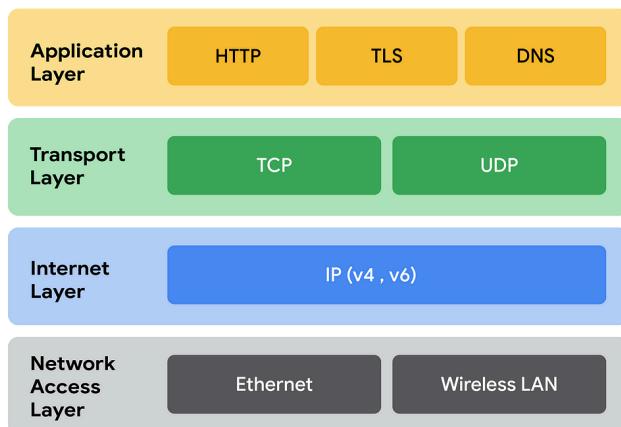
OR

How does TCP manage lost acknowledgement and out-of-order segments ? Explain it with the help of diagrams.

OR

TCP ARCHITECTURE

1. TCP architecture internet par data ko chote-chote packets mein todkar, bina error ke, order k saath, safely ek jagah se dusri jagah tak destination par bhejta h
2. TCP architecture connection-oriented protocol hai jisme data reliable aur order mein bheja jata h, integrity
3. Ex. Chat Applications (e.g., WhatsApp, Signal), Online Shopping and Transactions

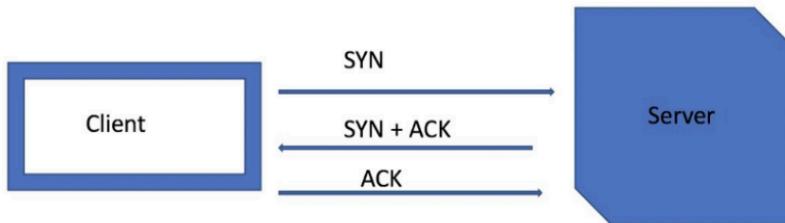


With the help of a diagram, explain 3-way handshaking technique to establish a TCP connection.

TCP connection banane ke liye 3-way handshake process

1. **SYN (Synchronize)**
 - Sabse phele client server ko ek SYN message bhejta hai connection shuru karne ke liye
2. **SYN-ACK (Synchronize-Acknowledge)**
 - Phir server client ka message accept karta hai aur
 - server SYN message ka jawab ek SYN-ACK message bhej kar deta hai
3. **ACK (Acknowledge)**
 - Last mein, client ek ACK message wapas server ko bhejta hai
 - jo server ke message ko confirm karta hai
 - Iske baad connection ban jata hai aur dono data exchange kar sakte h

Ex. Ek call karne ka socho: Pehle tum "Hello" bolte ho (SYN), samnewala "Hello" kehta h (ACK), aur tum confirm karte ho "Haan, sunai de raha hai" (SYN-ACK). Phir baat shuru hoti h



DEFAULT MASK

1. Default mask ek fixed number hota hai
2. Dm network ke hisaab se customize nahi hota
3. Default mask network mein iP addresses ko class k according groups mein automatically divide karke assign kiya jata h
4. Dm ka default ip 255.255.255.0 hota h class C networks ke liye
5. Ex. Jab aap ATM par apna PIN dalte ho to numbers "*" ya "•" mein dikhte hain, taaki PIN chhupa rahe

Subnet mask

1. subnet mask dynamic number hota
2. Sm network ke hisaab se customize hota h
3. Sm specific network ko chhote subnetworks mein divide karta h
4. Jaise ek colony mein alag-alag street ka number hota hai, waise hi subnet mask network mein devices ko alag-alag groups mein divide karta hai

Default Mask

255.0.0.0

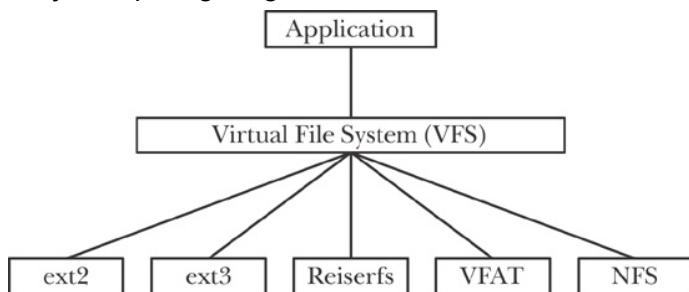
Vs

Subnet Mask

255.128.0.0

VFS

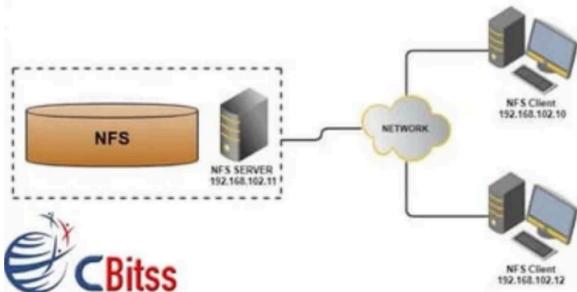
1. Virtual File System (VFS)
2. Vfs alag-alag file systems ko ek hi tarike se access karta h
3. vfs ek simple interface provide karta h
4. vfs ka istemal operating systems karte h
5. vfs NTFS ya FAT file systems ko alag-alag use nhi karta h
6. Ex. jab aap alag-alag drives se files ko ek hi interface par access karte h



NFS

1. NFS (Network File System) ek protocol hai
2. ek computer par stored files ko dusre computer se access, share karte h

3. Ex. ek organization jahan users centralized server se files share karte hain



NFS background mounting

1. ek system doosre system ke shared file system ko remotely mount karta hai
2. Nfs me background mouting process background mein chalta hai
3. Nfs background mounting process me user interrupted nhi hota h
4. Ex. Jab ek computer doosre computer se files use karta hai tab NFS background mein automatically wo files connect karta hai bina user ko disturb kiye

FLASH FILE SYSTEM

Flash File System ek tarika hai jo flash memory (jaise pendrive ya memory card) mein data ko store aur manage karne ke kaam aata hai.

What are the issues related to the configuration of network settings ?
Elaborate.

OR

To solve incompatibility problems at the software level when setting up a computer network

OR

What are reasons for occurrence of networking problem ? Describe the following network troubleshooting tools :

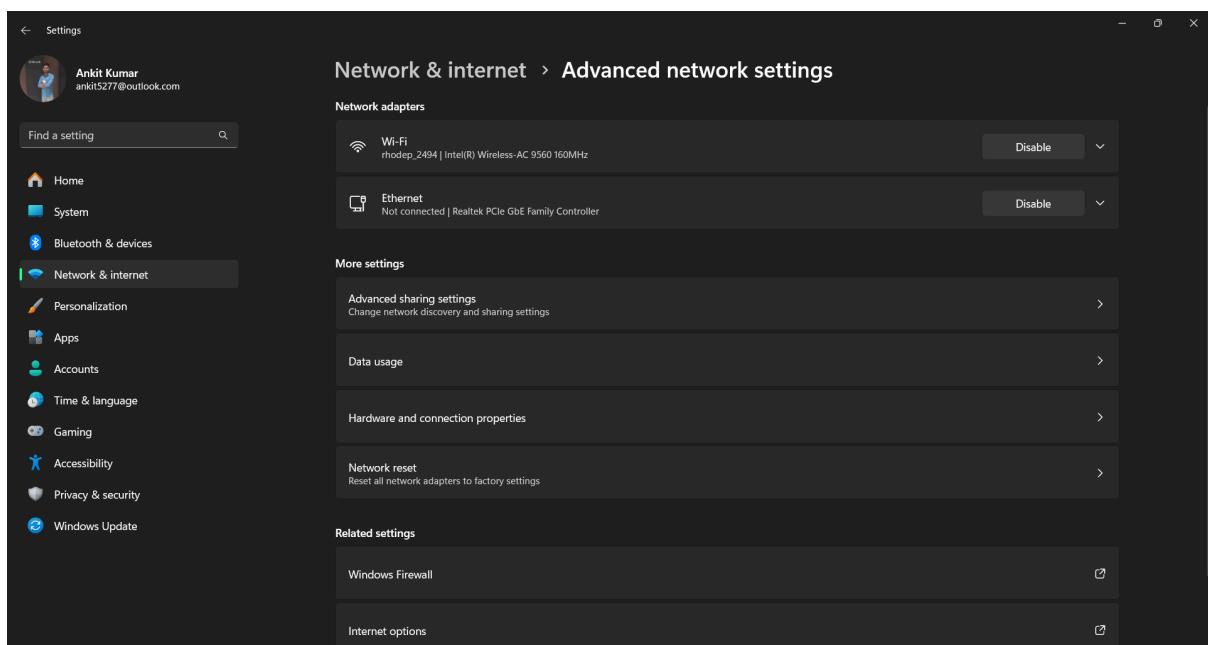
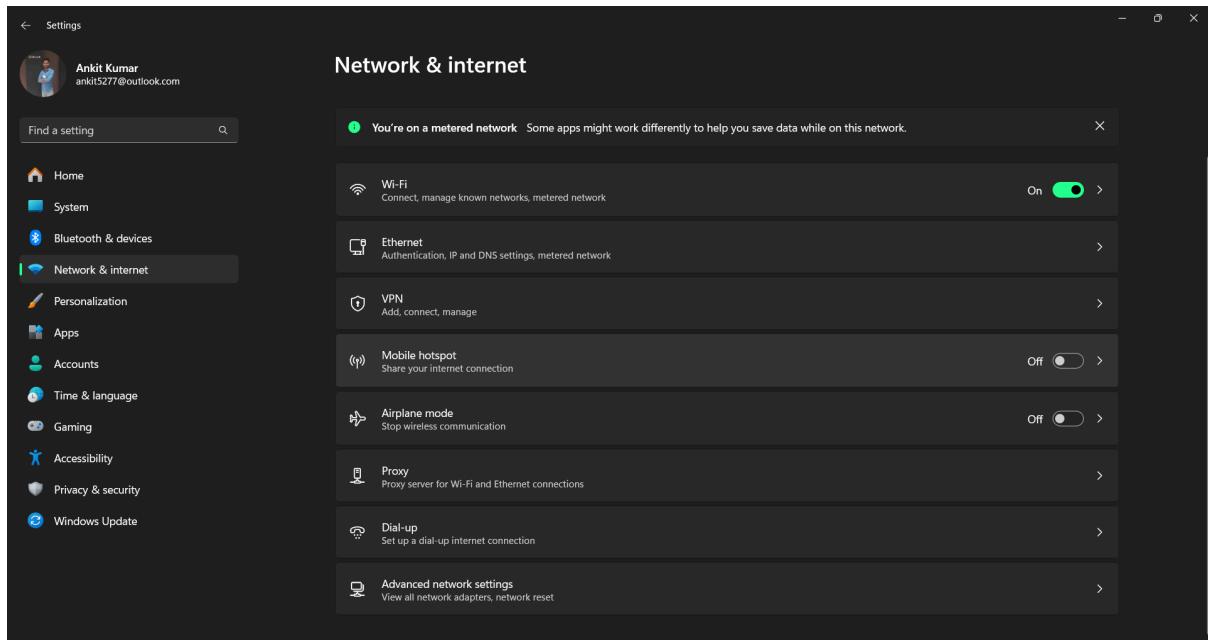
- (i) Wmap
- (ii) Traceroute
- (iii) Netstat

Networking Problems ke Aasan Reasons:

1. Hardware Problems, Galat Settings, Zyada Traffic, Network Congestion:
2. Security Problems: Virus, hacking, ya DDoS attacks se network ko nuksan phaucna
3. ISP Issues: Internet Service Provider ki taraf se agar problem hai, to network slow ya band ho saktा hai.

4. Software Bugs

5. external effect: Bijli jaane se, ya koi natural disaster hone se network band ho sakta h



Network Troubleshooting Tools:

Wmap:

1. Wmap web applications me security ke problems ko dhundhta h
2. Wmap web application ke problems find karke solve karta h

Socket descriptor and its fields

1. Sd ek unique number hota hai
2. Sd computer network pe connection ko identify karta h
3. Sd computer network pe data bhejta aur receive karta h
4. Ex. WhatsApp par message bhejte hain,
toh server aapke connection ko track karne ke liye socket descriptor ka use karta hai.

ch

sql	
+-----+	
Socket Descriptor	
+-----+	
Socket ID <- Socket ka unique ID	

Protocol Type <- Protocol (jaise TCP ya UDP)	

Local Address <- Local IP address aur port	

Remote Address <- Remote IP address aur port	

State Info <- Socket ka state (jaise connected ya listening)	

Buffer Pointers <- Data buffers ke pointers (send/receive buffers)	

Additional Flags <- Flags (jaise non-blocking, reuse address)	
+-----+	

Fields ka Description:

1. Socket ID: Socket ka unique ID jo operating system par use kiya jata hai.
2. Protocol Type: socket Protocol type ko use karta hai, jaise TCP ya UDP.

3. Local Address: machine ka IP address aur port number.
4. Remote Address: Remote machine ka IP address aur port number.
5. **State Info:** Socket ka current state, jaise connected, listening, etc.
6. **Buffer Pointers:** Pointers jo data store karte hain jab data send ya receive hota hai.
7. Additional Flags: Flags jo socket ka behavior specify karte hain, jaise non-blocking mode, address reuse, etc.

Socket programming mein, **getsockname()**

Iska use socket ka local IP address aur port number jaan k liye hota h

socket()

ek naya socket bana sakte h

getsockname()

addr structure mein local IP address aur port number store hota h

How do computers belonging to different networks exchange message ? Explain with the help of a diagram.

Isme message ko ek networks ke computer se dusre network k computer tak bhejte h

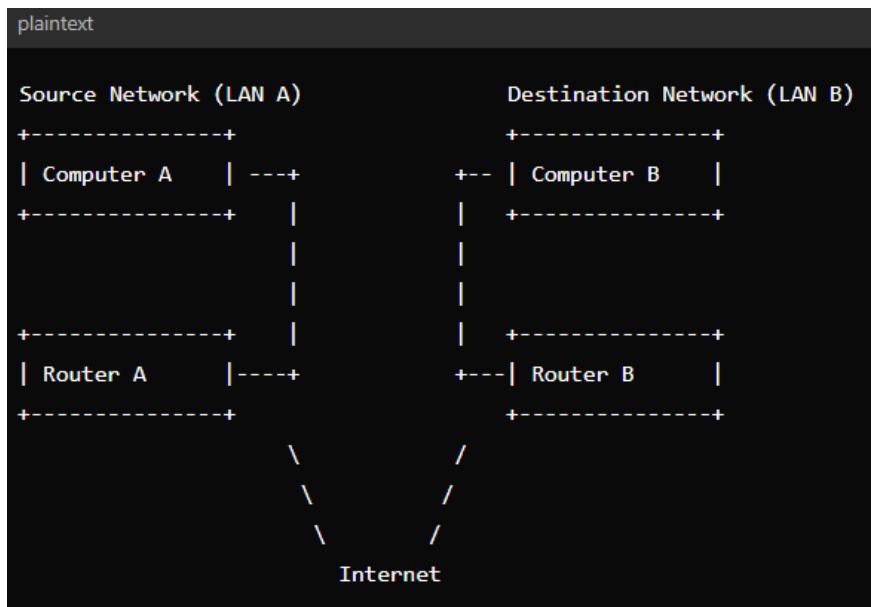
Isme internet se message ko ek router se dusre router tak bhejte h

message sahi jagah phochane k liye Routers best route dhundhte hain

1. **computer A:** computer A se message bhejna shuru karta h jo Lan ka part hota h
2. **Router A:** Computer A se message ek router ke paas jata hai.
Router ek device hai jo message ko agle network ko bhejta h
3. **Internet:** Router A se message Internet par jata hai Internet ek bahut bada network h jo alag-alag networks ko jodne ka kaam karta hai.
4. **Destination Router B:** Internet se message doosre network ke router B par pahunchta h
5. **Destination Computer B:** Router B se message network ke Computer B tak pahunchta h

Diagram:

1. Source Network LAN A
2. Router A
3. Internet
4. Router B
5. Destination Network LAN B



ARP

1. ARP (Address Resolution Protocol)
2. Arp network protocol hai
3. Arp IP address ko MAC address mein convert karta hai
4. Arp se data link layer par communication hoti

ICMP

1. ICMP (Internet Control Message Protocol)
2. Icmp ek network protocol hai
3. Icmp internet devices k beech errors aur network problems ki information bhejta h

IGMP

Internet Group Management Protocol

ek protocol hai jo devices ko ek group mein judne aur ek saath data receive karne mein madad karta hai.

MIME

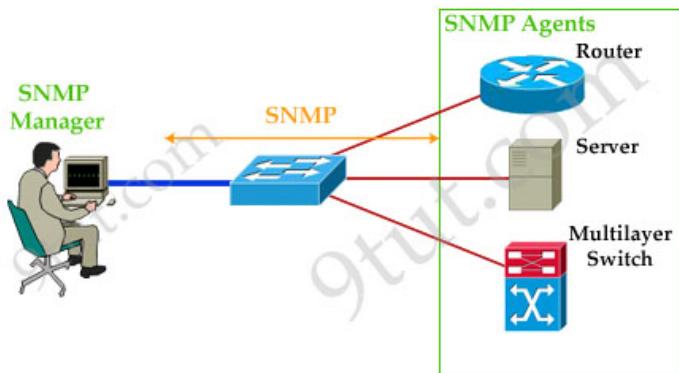
Multipurpose Internet Mail Extensions

ek tarika hai jo batata hai ki email ya web par bheji gayi file kis tarah ki hai, jaise text, image, ya video.

Show the components of SNMP diagrammatically. What are the tasks performed by agent and managed components ? Why SNMP is considered to be robust and simple ? Explain.

1. SNMP (Simple Network Management Protocol) ek protocol h
2. Snmp jo network devices, jaise routers aur switches, ko monitor aur manage karta h
3. SNMP jo network devices ko monitor aur manage karta h

- Ex. jab network administrators routers aur switches ko remotely monitor karte h



Components & Tasks

- Managed Devices:** network devices (routers, switches, etc) me data bhejte aur recieve karte h
- SNMP Agent:** Device par installed software hote h jo device ka data collect aur send karta hai.
- SNMP Manager:** Central system h jo device se data collect karke network ko monitor aur manage karta h

Simple

Snmp ka Simple structure hota h
 Snmp Kam commands use karta h jese (GET, SET, TRAP)
 Snmp Kam resources leta hai
 Snmp Har device ko support karta h

Robust - strong

- Scalable: snmp Bohot saare devices ko manage kar sakta hai.
- Low Overhead: snmp Kam resources use karta hai.
- Snmp Different devices ke saath kaam karta hai.
- Snmp Device aur network ka status real-time mein dikhata h
- SNMPv3 mein strong security k features hote h

V1

SNMP V1 ek simple protocol hai
 jo network devices ko monitor aur manage karta h
 Aur basic security aur features provide karta h

V2

SNMP v2 ek simple protocol h
 jo network devices (jaise routers aur switches) ka data monitor aur manage karta h
 aur yeh pehle se zyada fast, features aur performance hoti h

V3

ek simple protocol h
 jo network devices (jaise routers aur switches) ka data monitor aur manage karta h
 Aur isme jyaada secaurity hoti h jese authentication, encryption, aur data integrity

BRIEFLY EXPLAIN HOW PASSWORD POLICY IS IMPLEMENTED LINUX

Pluggable Authentication Module (PAM)

Jab user Linux/Unix computers mein alag-alag tarike se authentication karke login ya access karte h

Password Strength

Password kitna strong hona chahiye
jaise usme kitne characters, numbers, aur special symbols hone chahiye.

Password Change

Users ko kitni jaldi password change karna chahiye aur ek hi password kitni baar use kar sakte hain.

Account Lock

Agar koi user galat password baar-baar dalta hai, to unka account temporarily lock ho sakta hai. Is tarah se system secure rehta h

Password History

Password history pehle se use kiye gaye passwords ka record hota hai jisse reuse ko roktah aur account ki security badhata h

Password Complexity

password mein uppercase, lowercase letters, numbers, special characters ka mix ho aur wo kaafi lamba ho, taki wo guess ya crack karna mushkil ho



What are the important tasks performed at internet and transport layers ?

Internet Layer (Network Layer):

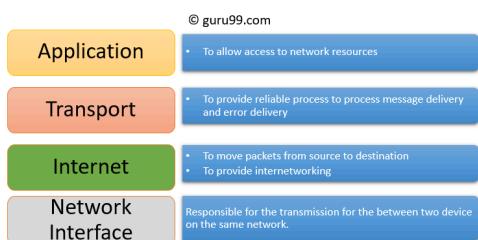
1. Internet Layer Data ko ek network se dusre network par bhejne ka rasta dhoondta hai.
2. Internet Layer har Device ko ek unique IP addresses deta hai jisse har device ko identify kiya jata h
3. Internet Layer osi model ki 3rd layer hoti h
4. Ex. gps, google map

Transport Layer:

1. Transport layer End-to-End Communication provide karta h
2. Transport layer Devices ke beech data bhejta h
3. Transport layer Bada data ko chote tukdon mein todta hai aur fir se jodta hai
4. Transport layer osi model ki 4th layer hoti h
5. Ex. whatsapp messaging



Tcp / ip



What are the outputs of the following address conversion functions ?

- (i) inet()
- (ii) inet_addr()
- (iii) inet_ntoa()

inet()

1. Networking programming me ek function hai jo terminal ya ide par chalta h
2. ye function IP address ko string me convert data h ("192.168.1.1")

inet_addr():

1. Networking programming me ek function hai jo terminal ya ide par chalta h
2. Yeh function ek string ko IP address mein convert karta hai 192.168.1.1 jisse computer ko samajh mein aata hai.

inet_ntoa():

1. Networking programming me ek function hai jo terminal ya ide par chalta h
2. Yeh function IP address ko wapas readable string mein convert karta hai ("192.168.1.1") taaki log usse asaani se samajh saken

How does user management work ?
Discuss.

User management work

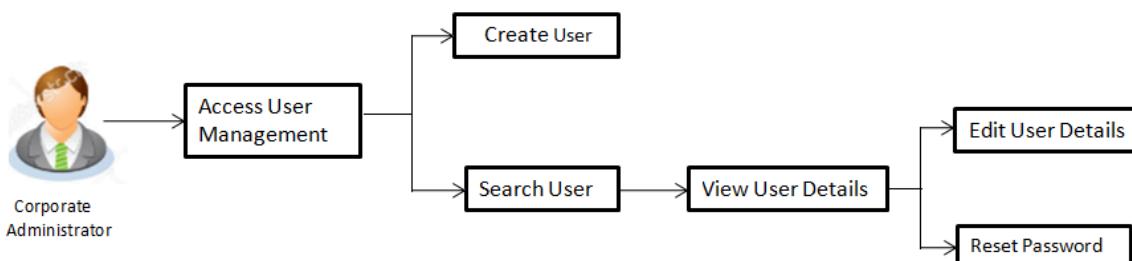
User ke account ko permission dena access karna aur manage karte h jisse system ya platform properly kaam karta h aur secure rheta h

1. User Registration

2. Authentication
3. Password Management
4. Authorization aur Access Control
5. User Profile Management:
6. Monitoring
7. Auditing: Regular reviews karna ensure karne
8. De-provisioning: Jab users ko access nahi chahiye hota, to unke accounts aur permissions revoke kar diye jate hain
9. Self-Service

Benefits of User Management:

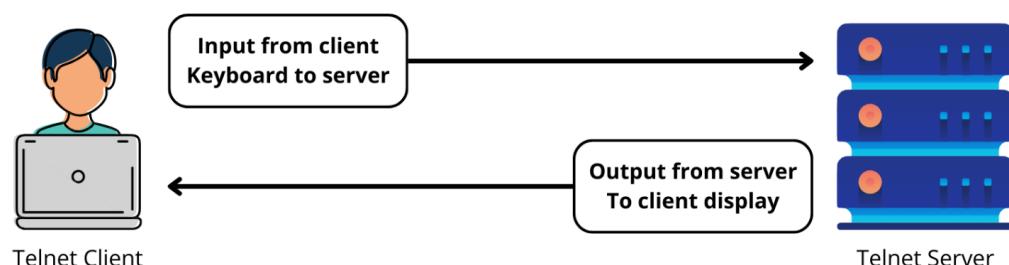
- Security: Unauthorized access aur data breaches ka risk kam hota hai.
- Organizations ko regulations follow karne mein help karta hai.
- Automate karne se time aur effort bachta hai
- Users ko resources ka access aasani se milta h



How does remote log-in process work in Telnet ? Explain with the help of a diagram. How is the local log-in different from the remote log-in ?

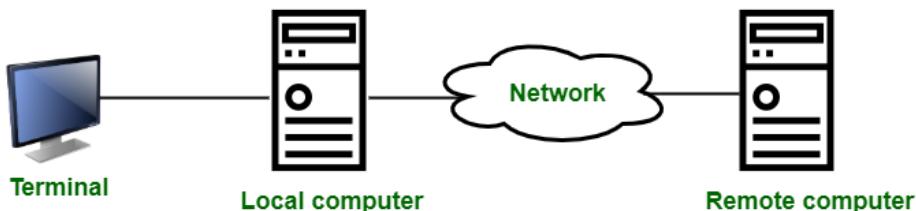
Telnet

1. Telnet ek network protocol hai
2. telnet me user ek system se dusre remote system par connect hota h
3. Telnet me user ek system se dusre remote system par command chalata h aur login karta h
4. EX. jab ek network administrator remote server par login karke system ko manage karta hai



Remote Log-in Process

1. Start karna: User apne local computer pe Telnet client ko start karta hai.
2. Connection Request: Telnet client remote server ko connection request bhejta h
3. Authentication: User local computer par apne username aur password dalta hai.
4. Session Start: Jab username aur password sahi hote hain, to remote server pe session shuru hota h
5. Commands Chalana: Ab user remote server pe commands chala sakta hai, jaise woh wahaan physically maujood ho
6. End Karna: Session khatam hone par user logout karta hai ya connection band ho jata hai



Local Log-in Process

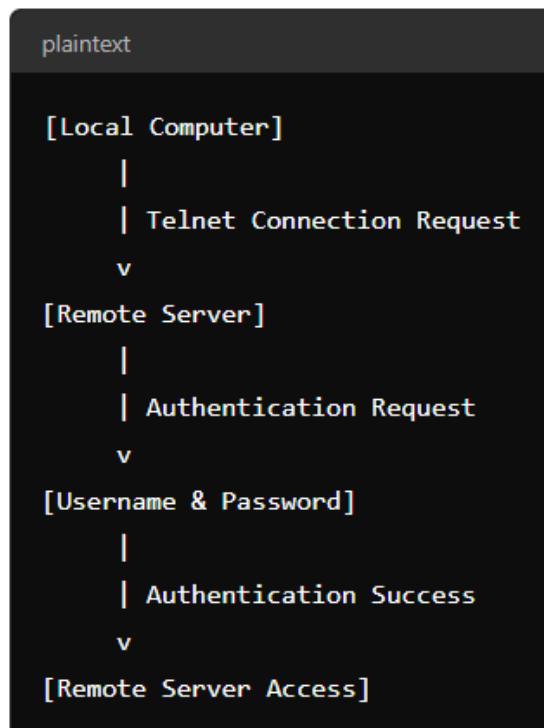
1. Start karna: User apne local computer pe terminal kholkar session start karta hai
2. Authentication: User apna username aur password dalta hai.
3. Commands Chalana: Ab user apne local computer pe commands chala sakta hai.
4. End Karna: Session khatam hone par user logout karta hai ya terminal band karta h



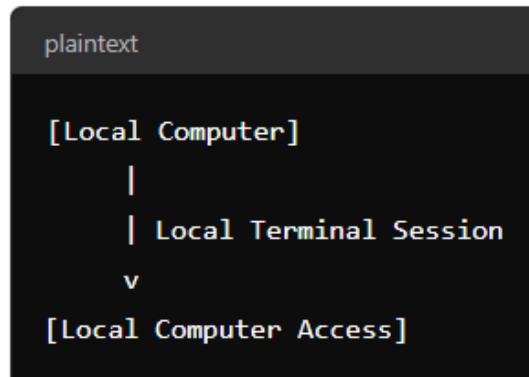
Differences between Local and Remote Log-in

- Execution Location:
 - Local log-in me commands apne computer pe chalti hain.
 - Remote log-in me commands remote server pe chalti hain.
- Network Usage:
 - Local log-in me network ki zaroorat nahi hoti.
 - Remote log-in me network connection chahiye hota hai.
- Security Concerns:
 - Local log-in zyada secure hota hai kyunki isme network connection ka use nahi hota h
 - Remote log-in, Telnet, kam secure hota hai kyunki Telnet data plain text me bhejta h

Remote Log-in Process Diagram



Local Log-in Process Diagram



What command is used in Linux to check how much hard drive space is available ? What information is displayed as an output by running this command ?

1. df command linux os me use hota h
2. df means disk file system.
3. df command se hard drive ka available aur used space check karte h
4. Aur disk space usage ki information dikhata h

```
bash                                     Copy code

Filesystem      1K-blocks    Used   Available Use% Mounted on
/dev/sda1        10000000  6000000  4000000  60% /
tmpfs           1024000       64  1023936   1% /dev/shm
tmpfs           512000       500  511500   1% /run
tmpfs            5120        4   51116   1% /run/lock
tmpfs           2048000        0  2048000   0% /sys/fs/cgroup
/dev/sdb1        20000000 10000000 10000000  50% /mnt
```

Is output mein:

- Filesystem: Disk ya partition ka naam.
- 1K-blocks: Total size (1K blocks mein).
- Used: Kitna space use ho chuka hai
- Available: Kitna space bacha h
- Use%: Kitna percentage space use ho gaya h
- Mounted on: Mount devices, drives

(ii) What command is used in Linux to find out CPU utilization ? In what form the output is displayed by running this command ?

1. top command se CPU utilization check hota h
2. top command linux me use hota h
3. top command computer par chal rahe processes aur unke usage (jaise CPU aur memory) ko live dikhata h
4. top command programs ko sort ya kill karta h
5. Htop ek aur command hai jo top ka improved version hai aur jyada user-friendly hai

hector@helloworld-vbox:~\$ sar 5 10		Linux 5.4.0-56-generic (helloworld-vbox)		12/09/2020	_x86_64_	(4 CPU)
04:53:56 PM	CPU	%user	%nice	%system	%iowait	%steal
04:54:01 PM	all	0.00	0.00	0.00	0.00	100.00
04:54:06 PM	all	0.00	0.00	0.00	0.00	100.00
04:54:11 PM	all	0.05	0.00	0.05	0.00	99.90
04:54:16 PM	all	0.10	0.00	0.05	0.05	99.80
04:54:21 PM	all	0.00	0.00	0.05	0.00	99.95
04:54:26 PM	all	0.00	0.00	0.00	0.00	100.00
04:54:31 PM	all	0.10	0.00	0.05	0.00	99.85
04:54:36 PM	all	0.00	0.00	0.00	0.00	100.00
04:54:41 PM	all	0.05	0.00	0.00	0.00	99.95
04:54:46 PM	all	0.00	0.00	0.00	0.00	100.00
Average:	all	0.03	0.00	0.02	0.01	99.94

System me kya dikhata h ?

- Tasks: kon kon se task ya program run ho rahe h
- CPU usage: konse sa program kitna cpu use kar rha h
- Memory usage: konse sa program kitna memory use kar rha h aur kitna bacha h

Processes ki list

- PID: Process ID
- USER: Kaunsa user process chala raha hai.
- %CPU: Process kitna CPU use kar raha hai.
- %MEM: Process kitni memory use kar raha hai
- COMMAND: process konse command par chal raha h

What is the kernel initialization process ?
What tasks are performed during the initialization process ? Elaborate on init () process.

1. Kernal hardware aur soft. Me bich ki layer hoti h
2. Kernal hardware aur soft. ko aaps me jodti h

3. Kernel initialization process OS par boot hota hai
4. Kernel system k resource manage karta h
5. kernel user programs ko start karta h
6. Ex. jab mobile on karte h to boot process kernel me soft aur hardware ko check kiya jata h start hone k liye

Kernel Initialization Process and performed tasks

1. Boot Loader Execution

Boot loader kernel ko memory mein load karta hai aur bootloader kernel ko control pass karta h

2. Kernel Startup

Koi device boot hota h to ees process me soft aur hardware ko check kiya jata h start hone k liye

3. Hardware Detection and Initialization

Kernel CPU, memory, aur other hardware components ko detect aur setup karta hai.

4. Memory Management Setup

Kernel Memory k structure ko setup karta hai jisme data ko store karne ke liye memory allocate karta hai.

5. Device Driver Initialization:

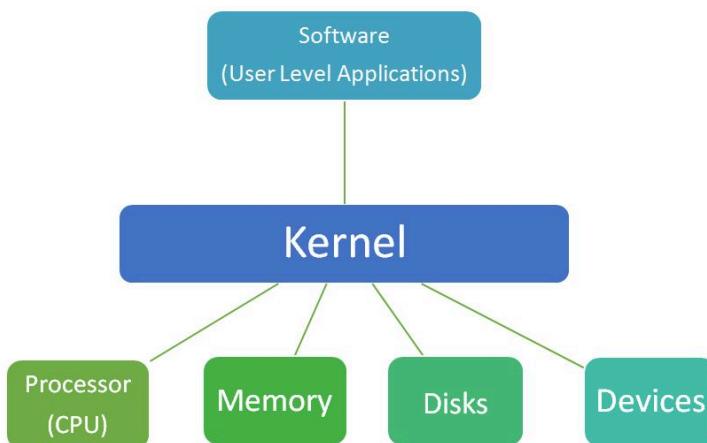
Kernel hardware devices ko chalane ke liye drivers ko install aur setup kiya jata h

6. File System Initialization:

Kernel internal aur external file system ko mount karta h files access karne k liye

7. Kernel Modules Initialization:

Kernel device me important module ko load karta h



Init() Process

program shuru karte samay zaroori setup aur resources ready karta hai
jisse program ya application theek se chalta h
init() system services aur daemons ko start karta hai

Ports

computer mein un jagahon ko kehte hain jahan data ek app ya service ke saath connect hota hai.

Types : tcp, udp

- Port 80: For HTTP web traffic.
- Port 443: For HTTPS (secure web traffic).
- Port 21: For FTP (File Transfer Protocol).

IP Routing

data ko ek network se doosre network tak sahi rasta dikhane ka tarika hai.

Cidr

1. classless inter domain routing
2. cidr ek ip address method h
3. cidr ip address ko efficiently manage karta h
4. cidr ip address k waste ko rokta h
5. cidr internet k traffic route ko madad karta h
6. Cidr Routing tables ko shrink karne mein help Karta h
7. Cidr k do methods hote Hain

Write on UDP client UDP server program in C language in Linux/Unix environment as per the following specifications :

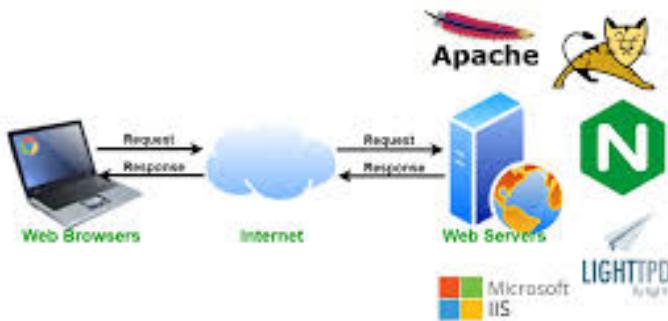
- (i) The UDP client sends five integer numbers to the server.
- (ii) The server program sends the average of five numbers to the client

Ch <https://www.geeksforgeeks.org/udp-client-server-using-connect-c-implementation/>

What is the primary function of a web server ? Explain the importance of Apache and Samba web servers.

Web server

1. Web server websites k data ko store karta h
2. Web server website k data ko users tak pahuchana hota h
3. Web server me user browser mein kisi website ko open karta hai, tab web server website ko dhoondh kar user tak pahunchata h



Apache Web Server:

1. AWS free aur open-source web server hai
2. AWS websites k data ko store karta h
3. AWS data ko users tak pahuchana hota h
4. AWS websites ko internet par chalata h
5. AWS website ke content ko browser me bhejta hai.
6. AWS Sabse Zyada Popular aur Linux me use hota h
7. AWS Platform independence hota hai: Yeh Linux, Windows, aur Unix jaise alag-alag systems pe kaam karta hai.
8. AWS Customizable hota h apni zaroorat ke hisaab se changes kar sakte ho.



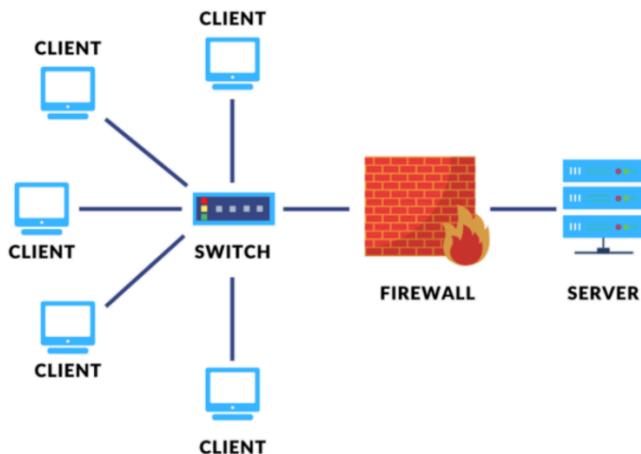
SAMBA SERVER

1. Ss ek open-source software hai
2. Ss Windows aur Unix/Linux systems ke beech mein file sharing karta h
3. Ss Cross-Platform support karta h jisme windows, Linux, macOS, etc operating systems ke beech mein file sharing kar sakte h,
4. Ss me security hoti h like authentication
5. Ss Windows Ke Saath Integrate hota h



BIND ka Use:

1. BIND (Berkeley Internet Name Domain)
2. Bind ek open-source software hai
3. Bind Internet par domain names ko IP addresses me translate karta h aur websites ko access karne me help karta h
4. Bind Internet par domain names ko manage karta h
5. Bind internet par sabse zyada use hota h



Named: Main program, jo domain names ko IP addresses mein badalta hai.

Configuration Files: BIND ke settings aur rules

Zone Files: Domain ka specific data, jaise IP address

Rndc: BIND server ko control karne ka tool

Logging: Server activities aur errors ko record karta h

What are the common services for which remote administration is used ? Describe

the following utilities for secure data communication :

- (i) SSH
- (ii) rlog in

Remote Administration ke Common Services:

1. Ra Ek computer ko dusre computer se remotely control aur manage karta h

- bina physical us remote computer ki location par jaaye
2. Ex. IT administrator remotely apne company's servers ko manage karta hai,
 3. Ra me Server Management, Network Management, Desktop Support, Database Management, Virtual Machine Management, Secure Data Communication hota h
 4. Ra me security hoti h jisme data ko encrypt karke send kiya jata hai taaki unauthorized log us data ko access na kar sake

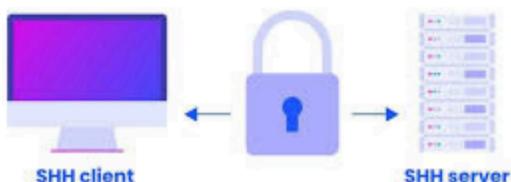


Secure Data Communication ke Liye Utilities:

Ex. Online banking transactions, jahan sensitive information jaise account details aur passwords encrypted form mein send kiye jaate hain taaki unauthorized access se bacha ja sake

(i) SSH (Secure Shell):

1. Ssh secure shell protocol hota h
2. Ssh Ek computer ko dusre computer se login karta h
3. Ssh Ek computer ko dusre computer se manage karta h aur chalaya jata h
4. Ssh secure hota h jisme encrypted data transfer hota h
5. Ssh web hosting ke liye server ki setting karta h



(ii) rlogin (Remote Login):

Discuss the importance of the following

flags of TCP header :

- (i) Urgent pointer
- (ii) Push
- (iii) Acknowledgement

TCP header

1. Tcp ka use karke data packets ko ek jaghe se dusri jaghe bhejte h
2. Tcp header flags TCP se data ko order me bhejte h taaki communication mein problem na ho

(i) Urgent Pointer (URG Flag)

user data ko jaldi se receiver tak bhejta h process karne k liye
Ex. remote desktop

(ii) Push (PSH Flag)

user data ko bina deri k receiver ko bhejta process karne k liye

Ex. jaise chat ya live communication mein

(iii) Acknowledgement (ACK Flag)

Sender datapackets ko bhejne se phele receiver se confirm karta h

user data ko confirm karta h ki data successfully receive hogya h

Ex. browsing a website

What is the use of the following Ethernet

configuration tools ?

- (i) IPconfig
- (ii) routelnetstat-rn
- (iii) lsmod
- (iv) ping.IP-address
- (v) dhclient

Yeh tools network ka setup aur problems ko solve karne ke liye use hote hain commands

1. route/netstat -rn

routelnetstat -rn Ek windows command h

routelnetstat -rn packets send karne ka rasta find karta h

routelnetstat -rn network ki problems ko samajhta h

2. Lsmode

Lsmode Ek Linux command h

Lsmode linux system me load hue drivers ko dikhata hai

3. ping IP-address

4. Dhclient

Dhclient Ek Linux command h

Dhclient computer ko automatically IP address aur network settings assign karta h taaki aap network se connect ho sake

Ipconfig

- 1. Ipconfig Ek windows command h
- 2. Ipconfig Windows computer ka current network status dikhata hai jaise IP address aur gateway
jab network kaam nahi karta to isse check kiya jata hai.
- 3. Ipconfig se system ka IP address dekh sakte hain
- 4. **Ipconfig se** Subnet mask prapt hoti hai
subnet mask dynamic number hota h jisse network ke hisaab se customize kar sakte h
- 5. **Default Gateway:** ek network device se dusre network device ko internet, se connect karta h

```
C:\Windows\System32>ipconfig
```

```
Windows IP Configuration
```

```
Ethernet adapter Ethernet:
```

```
Connection-specific DNS Suffix . : Technologyrss.local
IPv4 Address . . . . . : 192.168.1.2
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.1.1
```

Nslookup

1. Nslookup domain names ko IP addresses mein convert karta hai.
2. Nslookup DNS se related information like domain names ka IP address pata kiya jata h
3. Nslookup command Windows, linux, me use kiya jata h
4. Ex. ek website kaunse IP address par host ho rahi hai
5. Nslookup wikipedia.org

```
c:\Users\hp>nslookup www.flowchartnow.com
Server: UnKnown
Address: 192.168.43.1

Non-authoritative answer:
Name: flowchartnow.com
Address: 162.241.123.34
Aliases: www.flowchartnow.com
```

Draw the UDP header format and explain

the purpose of the following fields :

- (i) Source Port No.
- (ii) Checksum

UDP ka header 8 bytes ka hota hai aur isme 4 main parts hote hain
har ek 16 bits ka hota h

Source Port (16 bits):

1. Source port sender ka address aur port number hota ha
2. Sp kis port se data send ho rha h ye identify karta hai
3. Sp me kab reciever ko response send karna h
4. Source port ko 0 bhi set kiya ja sakta hai

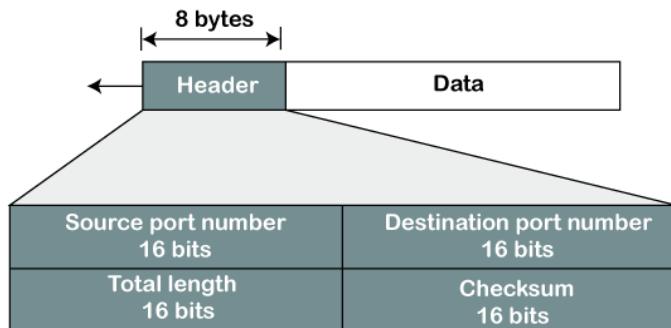
Checksum (16 bits):

1. checksum ek data integrity verification technique hai,
jo received hue data packets mein errors ko detect karta h
2. **Packet Check**
3. **Checksum Error:** Agar checksum galat ho jata hai, toh packet delete kar diya jata h

4. Data Safety

5. **Sahi Pahunchana:** UDP packets ke header aur data ko sahi jagah phochaya jata h jo checksum se check aur confirm hota h
Ex. letter bhejne se pehle check karte h ki sab pages sahi hain ya nahi

UDP Header Format



Explain the purpose of the following **TCP** header formats :

- (i) Source port number
- (ii) Sequence number
- (iii) Acknowledgment number
- (iv) Checksum

Tcp header

Tcp ka use karke data packets ko ek jaghe se dusri jaghe bhejte h

Source Port Number

Checksum

Sequence Port Number

sender internet par badi file k data packet receiver ko transfer karta h
sequence aur accurate mein

Acknowledgment number

Sender datapackets ko bhejne se phele reciever se confirm karta h

Given below are the list of advanced system calls for data transfer.

explain their use and the parameter list that these calls hold:

readv() writev() recvmsg() sendmsg()

readv()

readv() ek function h network programming me use hota h
ek baar mein file par data ko alag alag buffers me padne k liye use hota h

writev()

writev() ek function hai network programming me use hota h
ek baar mein file par data ko alag-alag buffers mein likhne ke liye use hota hai

recvmsg()

recvmsg() ek function hai network programming me use hota h
Ye function socket se message receive karta h

Ye function message ke saath extra data bhi receive karta hain, jaise ki file descriptors

sendmsg()

sendmsg() ek function hai network programming me use hota h

Ye function socket ke through message send karta h

Ye function message ke saath extra data bhi send karta h

Differentiate between `getsocket()` and

`setsocket()` system calls.

system calls

Sc socket ke settings ko dekhte aur change karte h

getsockopt():

1. Ek function h jo network programming me use hota h
2. socket par kaunsa setting (option) laga hua hai ye check karne k liye
3. jaise timeout kitna hai ya buffer size kitni hai, options check kiye jaaate h

setsockopt():

1. Ek function h jo network programming me use hota h
2. socket ki settings ko change karta h
3. jaise timeout set karna ya buffer size badhana, ya koi setting on/off karna.

What information do we obtain from the following functions ? How are they useful in socket programming ?

(i) `gethostbyname()`

(ii) `gethostaddress()`

(iii) `getsockname()`

(iv) `getservbyname()`

gethostbyname():

1. Network programming mein c lang ka function h
2. kisi website ke naam se uska IP address nikalta hai.
www.example.com -> 123.456.789.000
3. Isse Socket Programming Mein internet par kisi se connect kar sakte h

gethostaddress():

1. Network programming mein c lang ka function h
2. Socket Programming Mein internet par IP address se site ka naam nikalta hai.

getsockname()

1. Network programming mein c lang ka function h
2. pc ka local IP address aur port number nikalta hai
3. Socket Programming me machine ka IP address aur port number nikaalta h

getservbyname():

1. Network programming mein c lang ka function h
2. kisi bhi service name (jaise http) ka port number batata h
3. Socket Programming mein service name ka uska port number nikalta h directly

What are the two ways to close a socket ? What is the difference between the two ?

Socket ko band karne ke do aasaan tareeke hain:

Graceful Shutdown (shutdown method)

Isse socket ko aaram se band karte hain
Aap data bhejna band kar sakte hain ya data recieve karna band kar sakte hain
ya dono band kar sakte hain

Example:

1. shutdown(socket.SHUT_RD)
Sirf data recieve karna band ho jayega, lekin aap bhej sakte hain.
2. shutdown(socket.SHUT_WR)
Sirf data bhejna band ho jayega, lekin aap recieve kar sakte hain.
3. shutdown(socket.SHUT_RDWR): Dono band ho jayenge, na bhej sakte hain, na le sakte h

Abrupt Closure (close method):

1. aap socket ko direct band kar dete hain
2. Yeh bina kisi warning ke connection ko khatam kar deta hai
3. aur jo data bheja ya liya nahi gaya, wo chala jaata hai.

Farak:

Graceful Shutdown socket aram se band hota h jise data lose ka chance kam hota h

Abrupt Closure socket seedha band hota hai, aur data lose hota h

Write the syntax and explain the use of the following system calls :

- (i) send()
- (ii) sendto()
- (iii) recvfrom()

send()

1. send() connection banakar data bhejta h (jaise TCP mein).

sendto()

1. sendto() bina connection banaye data bhejta h (jaise UDP mein). Isme aapko destination ka address bhi dena padta h

recvfrom()

1. recvfrom() bina connection ke data receive karta hai (jaise UDP mein). bhejne wale ka address bhi milta h

(c) Write an algorithm for UDP client and UDP server as per the following specifications :

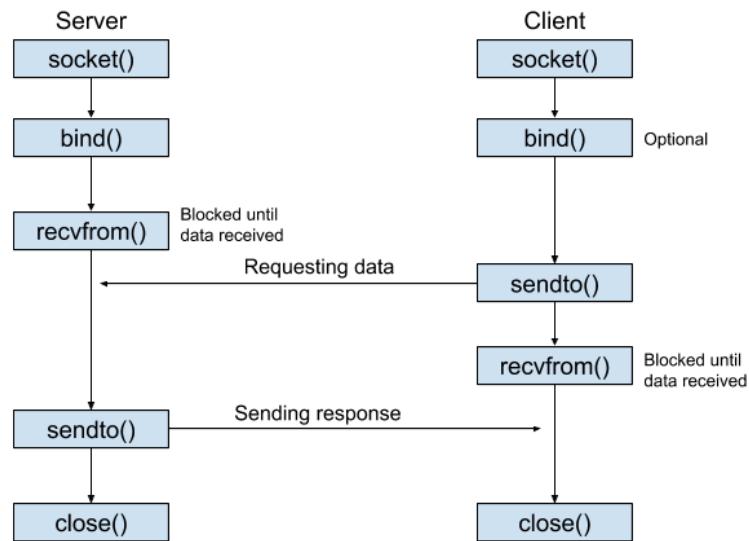
- (i) UDP client will send a number to the server.
- (ii) The UDP server will return the factorial of that number.

UDP Client

1. Udpclient Ek client network pe data packets bhejta aur receive karta h bina connection establish kiye.
2. Udpclient me datapackets unreliable aur order me transfer nhi hote
3. Ex. video streaming apps, jahan fast and continuous data transmission ke liye UDP ka use hota hai, bina delivery confirmation ke

UDP server

1. Udpserver ek server hota hai jo data receive aur send karta hai bina connection establish kiye.
2. Udpserver me datapackets unreliable aur order me transfer nhi hote
3. Ex. Live video streaming services, jaise YouTube Live aur Zoom, UDP server jo fast data transfer ensure karte hain, even if some packets are lost



<https://chatgpt.com/c/6739091b-e108-8006-938c-6d88a2f33fa3>