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(Q 1) (i)

Packet switching is a network communication method in which data broken down into smaller packets and then reassembled at destination. Principles of packet switching will increase stability and other by following:

By Packet switching, the load from traffic ~~increase~~ can be distributed to multiple networks.

Packet switching allows to share same network simultaneously even if data increases.

(ii)

Suppose OSI model as guide for effective communication in a industry's network. It is like a breaking down tasks into ~~even~~ Seven layers. All the layers working together making the communication of network organized.

i) Transport Layer

- i) Physical Layer
  - ii) Data Link Layer
  - iii) Network Layer
  - iv) Session Layer
  - v) Presentation Layer
  - vi) Application Layer
- ( 000  
111 )

When packet is switched ~~from~~  
data travelling from one device  
to another and some of the  
packets do not arrive to destination  
called as packet loss.

### Affects of packet Loss :-

- Incomplete data when  
affect integrity of transmitted  
data
- Delays as whole message  
will wait for lost packet.

Packet loss can be minimized  
by:

- Use protocols of detection  
and correction.

→ Regularly check network performance to identify issues.

(iv)

HTTP stands for Hyper Text Transfer Protocol used for creating web pages. It is just like a set of rules for PCs to talk each other. When you click on link to load web pages - HTTP makes sure your PC understand what server is saying - HTTP helps in transferring pictures, files, audios, videos you see on web sites.

(v)

Web caching helps in storing of web pages, images and other static assets which reduces the need to reflect them. It save Bandwidth like if two user requested at the same data then it will provide cached copy of it. It provide stability by allowing servers to handle more

requests efficiently.  
(vi)

Protocols are the set of rules and principles that computers follow to communicate with each other. Protocols operate at various layers. In CN protocols make sure that devices understand each other's message.

We can relate to human protocols. Consider the language serves as a protocol for human communication providing ~~the same~~ a structured framework for providing ideas as different cultures have diff languages but still they can communicate with shared protocol. In devices of protocols having common communication.

(Q2)

(?)

i) Internet Lagging / Slow Internet Speed

→ Cause of issue Creation = ~~Bandwidth~~  
Bandwidth is insufficient due to increased demand on network devices.

→ Solution = Upgrade Internet

Bandwidth usage and conduct and perform thorough configuration checks.

→ Troubleshooting = ~~Now~~ Check Bandwidth usage and conduct network tests.

ii) Intermittent Connectivity:

→ Cause is incompatible hardware or software configuration arising conflicts b/w old or new devices.

→ Solution is Update firmware on all network devices and ensure compatibility.

→ Troubleshooting is to review and update permission, validate and correct network configuration.

### iii) Disruption In Accessing Shared Devices:-

- Cause is permission issues on new device or misconfiguration affecting resource accessibility.
- Solution is review and update permission and validate and correct network configuration.

(Q2) (ii)

- Cause = ISP outages, hardware failure on ~~at~~ the ISP side or routing issues.

Routings

- Solution = Diversify ISPs for redundancy. Implement

failover mechanism and establish SLA's with ISP.

→ Trouble Shooting = Check ISP status using network ~~related~~ monitoring tools regularly test failover mechanism.

(02) (000)  
(111)

→ Cause = Less amount of bandwidth network ~~configuration~~ Congestion or configuration issues on video conferencing software.

→ Solution = Increase available bandwidth and update and optimize video conferencing software.

→ Trouble Shooting = Conduct bandwidth tests during peak usage analysis of network traffic patterns and collect feedback from users regarding software issues.

(Q2) (iv)

## Network Congestion

Issues :-

→ Cause is single router and limited switches growing no. of desktop computers.

→ Solution is ~~add~~ insert more switches to distribute load and upgrade the router for increased capacity.

## WIFI Coverage Implementation

→ Challenges that occurred are limited wifi coverage in certain areas.

→ Solution is that install additional access point. Strategically ensure proper channel allocation to avoid interference.

## Goals :-

Settle the increasing number of employees, enhance network performance and reliability and provide good connectivity.

## Strategies :-

Do a site survey for optimal access point placement, implement quality service check (CoAs) to prioritize optical traffic and update network architecture to meet the needs.

(Q2) (v) (a)

- i) Smartphones are used by employees for calls and for mobile banking tasks.
- ii) Terminals located in each branch.
- iii) Wireless access point for each branch.
- iv) Smartphones used by customers for Mobile Banking.

### Core Devices :-

~~Dedicated lines like ATM  
private protocol~~

- 1) ~~②~~ Dedicated Internet line
- 2) ~~③~~ ISP internet connection
- 3) ~~④~~ Branch Lams (Lam A, Lam B, Lam C)

- 4) Leased lines connecting Branch to Head Quarters.

## Protocols:

- i) Leased lines likely used a private protocol like MPLS or Frame Relay.
- ii) Wireless access point likely use wifi protocols (802.11x)
- iii) Mobile Banking apps may use HTTPS.

## Applications:

- i) Web Browsing by Employees.
- ii) Mobile Banking apps used by Customers.

(b)

Edge network could be used to increase performance and security for branch traffic. By caching frequently accessed data and application locally edge devices could reduce latency and bandwidth usage on the WAN links.

### Web Caches

It could be used to increase web browsing performance for employees caching frequently web pages and files.

### P2P:

It could be used for certain applications such as content delivery or file sharing b/w branches. Security is important for P2P banking environment.

## HTTP:

It is foundation of most web based apps. including including mobile ~~off~~ banking, employee web browsing, etc.

Optimizing http traffic improve performance and efficiency.

(c)

- i) Strong Communication and Problem solving skills.
- ii) Security Principles and best practices.
- iii) Network troubleshooting and diagnostic skills.
- iv) Knowledge of emerging networking technologies i.e SDN, NFN, etc.

Ques

(d)

Dif Computer technologies are evolving, It is essential to stay informed about new development and upgrades. This can be done by reading, searching on browser, communicating by tech people and attending seminars regarding innovative technologies.

In addition, It is also important to be able to adopt new challenges and requirements. Dif industries i.e Telecommunication industry, Banking Industry, etc are constantly changing and so are the networking needs of Banks. By being adaptable and willing to learn new innovation, you can ensure that you are always able to meet the needs.