Past Paper.

Q 1 (b)

Diff b/w access router vs border router? What is the diff b/w the term transit and peering?

A router in a LAN of a single organization is called an interior router. A router i.e operated in the internet backbone is described as exterior router. While a router that connect a LAN with the internet or a WAN is called border router or gateway router.

PEERING	TRANSIT
① Settlement-free interconnection b/w two networks	① Connecting smaller IPs, for a fee, to the larger internet
② Cost efficient	② Historically more expensive
③ No control over routes	③ Traffic optimization and low latency.

Q1 (c) An asynchronous devices such as teletype, ... such problem be resolved?

For bus and ring network, each individual character could be sent out as a separate packet, resulting in tremendous overhead. The problem could be overcome by buffering characters and only sending out blocks of character.

Q1(d) diff b/w

(IGP)

INTERIOR GATEWAY Protocol	Exterior Gateway Protocol (EGP)
① Automatic neighbour discovery	① Specifically configured peers
② Generally trust your IGP routers.	② Neighbours are not trusted
③ Routers go to all IGP routers	③ set administrative boundaries
④ Usually not filtered	④ Filters based on policy.

Q2 (a) The IPV4 standard states that if a packet ..... sending an ICMP messages?

There may be some disadvantages in treating the event as error and discarding the packet. They are:-

① Unknow Flow Labels may also occur if a router crashes and loses its state.

② By discarding a packet a flow shortents the delay of all other packets that follow the discarded one and even collisions may occur.

Q2 (b) Explain the following:-

i) Redirect:-

- Default route may cause extra hop.
- Router that forward data gram on same interface sends ICMP redirect.

. Host installs new route with correct router as next hop.

ii) DESTINATION UNREACHABLE:-

ICMP Type 3 message destination unreachable alerts a source host of delivery problems encountered while trying to reach the destination.

iii) ROUTER DISCOVERY:-

Router Advertisement and solicitation - Type 9 and 10

Rather than initializing a routing table with static routes specified in configuration files, you can use the router ICMP advertisement and solicitation messages.

iv) Fragmentation Required.

Fragmentation is needed, but don't fragment bit set.

This message occurs when a router receives a datagram that requires fragmentation, but the router has the DF (Don't fragment) flag turned on.

Q2 (c) What is the benefit of ~~TCP~~ three way handshaking mechanism? Define the urgent and push features in TCP?

THREE WAY HANDSHAKE

TCP uses 3-way handshake for reliable connection establishment and termination

* Host 1 sends segment with SYN bit set and random sequence number.
* Host 2 responds with segment with SYN bit set, acknowledgement to Host 1 and random sequence number
* Host 1 responds with acknowledgement.

URGENT (URG)

Indicates that the urgent pointer field is significant in this segment.

PUSH (PSH): Push function

Q2 (d) Explain the different type of TCP Timer.

TIME OUT TIMER:-
TCP uses a time-out timer for retransmission of lost segment.
Also called Retransmission Timer.

TIME WAIT TIMER:-
TCP uses a time wait timer during connection termination.

KEEP ALIVE TIMER:
TCP uses a keep alive timer to prevent long idle TCP connections.

PERSISTENT TIMER:-
TCP uses persistent timer to deal with a zero-window-size deadlock situation.

- Address auto-configuration

- QUALITY OF SERVICE

. Flow control and QoS options allow for better connections of high bandwidth & high reliability applications.

- SECURITY

. Extension headers allow for standard encryption of data and standard authentication of users to hosts.

Q3(a)

with its hardware address

Q. Why a router does not propogate an Ethernet broadcast?

- ARP is transparent to bridging, since bridgeing will propogate, ARP broadcast like any other Ethernet broadcast and will transparently bridge the ~~copy~~ replies.

- A router doesnot propogate ~~Ethernet~~ Ethernet broadcast because the router is a network level device and Ethernet is a datalink layer protocol. Therefore internet host must use its routing protocol to select an appropriate router that can reach via Ethernet ARP

Q3 (b)

Identify the use of proxy ARP?

PROXY ARP:-

It is a technique that can be used by router to handle traffic b/w host that don't expect to use the router as described above probably, the most common of its use would be the gradual subnetting of large networks.

- A router using proxy ARP recognizes ARP request for host on the otherside of the router that can't reply for themselves. The router answers for those addresses with an ARP reply, matching the remote IP with the router's ethernet address.

Q3(b) continue

RP → (Reverse ARP)

- RARP :- MAC ⟶ IP

Sometime it is also neccessary to findout the IP address associated with a given MAC address, this happens when a disless machine want to boot from a server on the network which is a qute common situation on a Local area Network. A disless client has virtually no info about itself except for its MAC address.

Q3(d)

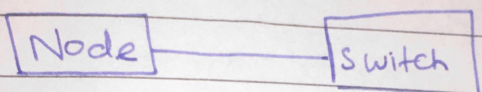
IP

INVERSE ARP

- Used on point to point links
- Find IP address of the host on the other end
- Used in frame relay and ATM

Q3(d) continue

- Uses codes [illegible] (response)
- Ref: RCF 1293



Q3 (c) Define same circumstances when it might be desirable to use source routing rather than let the routers make the routing decision?

Ans. POSSIBLE REASONS FOR STRICT SOURCE ROUTING:-

① The source wishes to avoid certain unprotected networks for security reasons.
② The source does not trust that the routers are routing properly.

POSSIBLE REASONS FOR LOOSE ROUTING:-

① Allows the source to control some aspects of the route.
② It may be that not all of the routers recognize all addresses and that for a particular remote decision.

Q4(a)

INCHANNEL	COMMON CHANNEL
① Trunks are held up during signalling	① Trunk are not required for signalling
② Signalling is relatively slow	② Signalling is much faster
③ It is difficult to change or add signals	③ There is flexibility to change or add signals.

Q4(c) Define the purpose of follow in IPV6 :

① FLOW LABEL:- 20 bits

① Distinguish the packets that require some ~~treatment~~ treatment.

② Route keep track of flow label, so doesn't need to re process header of each packet.

② NEXT HEADER:- 1 bit

① Similar to ~~IPV4~~ protocol in IPV4

② Name changed to capture the exterior header along with protocol.

Q4 (a)

SIGNIFICANCE OF PACKET SIZE:-

The longer the packet the longer the transmission time The shorter the packet the more efficient transmission will be.

Q4 (b)

CAMPUS NETWORKING BEST PRACTICES:-

Rules:-

① Build separate core and edge network.

② Minimize no. of network device

③ Use standard solution.

④ Provide service near the core.

⑤ Separate border routers from core.

Q. Function Of ARP

The function of ARP in IP routing is that it finds the hardware address which is also known as MAC address of host from its own IP address.

Q. CIDR in IPV6?

CIDR stands for class less Inter Domain Routing. It ~~was~~ elemindtes the traditional concepts of classes A, B, and C networks. and replaces it with concept of "network prefix." CIDR supports the deployment of arbitary size networks rather than the standard 8- bit, 16 bit or 24-bit network numbers associated.

Q. Layers of DoD Model?

1. Network Access layer
2. The Internet layer
3. Host to Host layer
4. Process layer.

Q. Benefits of VLANs

1. Flexible network segmentation
2. Simple Managements
3. Increased performance
4. Better use of severs resources
5. Enhanced network security.

Benefits of VPN.

1. data security
2. Cost saving.

Q. What is DHCP and BootP?

DHCP:-

DHCP stands for Dynamic Host Configuration Protocol which provides a frame work for passing configuration information to host on a TCP/IP network.

BootP:-

BootP stands for Bootstrap protocol which provide multiple parameter

Q. Is Apple Talk and IPx support DHCP?

No, Apple Talk and IPx did not support DHCP because they have their own automated mechanism for assigning their own network address.

Q. What is the purpose of multiple header in IPV6?

The purpose of multiple header in IPV6 is to allow standard encryption of data and standard authentication of users to host.

Q Advantages and Disadvantages of ATM?

Advantages:-

- High Aggregate bandwidth.
- Single Networks.
- High speed.

DISADVANTAGES:-

- cost, although it decrease with time.
- New customer promises hardware and software required.

Q Diff b/w

Switching	Routing
switching is done with in the network	Router Routes b/w different network.