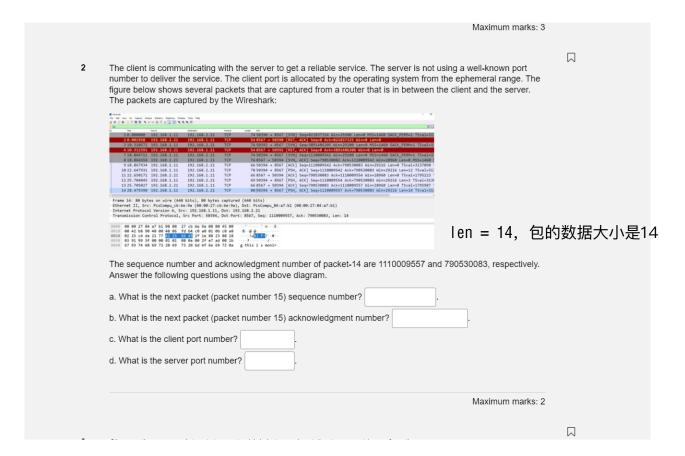
复习

前一半内容:

1	Study a TCP segment header. List each field of the TCP header along with the value in decimal according to the given facts below.
	 The TCP segment is from a secure web server to a secure web client. A port number of 59500 was assigned on the client-side. There were no options. The server instructs the client not to send more than 5500 bytes at any one time. The previous segment from the client was acknowledged by the server with an ack/data segment that had an acknowledgment number of 12500 and a sequence number of 6201 (consider there is no data in this packet that is going from the server to the client). The TCP checksum was calculated to equal binary zero.
	a. What is the client port number? b. What is the server port number? c. What is the sequence number of the next segment that is going from the client to the server?
	d. What is the acknowledgment number of the next segment that is going from the client to the server? e. What is the receiver window size? f. What is the header length value?
	Maximum marks: 3

a:59500 b:80 c:12500 d:6201 e:5500 f:20 d题为什么是6201,因为上一个包没占数据.根据final 2的讲解可知,就是6201.

f为什么是20, 因为题干确认header没有options。所以就是默认的20



a:790530083 b:1110009571 c:50394 d:8567

3	Choose the appropriate statement which is true about the transport layer function. Select one alternative:	,
	TCP and UDP can provide reliable service.	
	TCP and UDP can provide congestion control.	
	TCP and UDP are connectionless.	
	TCP and UDP use port numbers to identify a process.	

TCP can help to control the congestion. In order to control the congestion, the size of the congestion window increases exponentially until it reaches a threshold. Choose which algorithm of TCP is used to control the congestion where the window size increases exponentially. Select one alternative:	
O Congestion detection	
○ Congestion avoidance	
○ Slow start	
O None of the above	
Reset Maximum marks: 1	

Assume that an ISP has 5 subscribers which have been allocated the following IP address blocks: 192.168.10.0/29

192.168.10.8/29

192.168.10.16/29

192.168.10.24/29

192.168.10.32/29

The ISP would like to aggregate the above blocks into a single address block and advertise this block for routing. Note down the advertised IP address block in the space provided below in the a.b.c.d/x format. No explanation is required.

192.168.10.0/26

如果有很多子网号位数相同的i tem,从上到下依次判断即可。

Cons	ider a router with the follow	ving forwarding table.		
Des	tination Network	Interface or port numbe	r]
200.	.10.20.0/28	Port 1		
200.	.10.20.32/28	Port 2		
	.10.20.16/28	Port 3		
200.	.10.20.48/28	Port 4		
200.	.10.21.0/24	Port 5		
Defa	ault	Port 6		
Selec	et one alternative:	datagram with destination address 200		
0 F	Port 5			
0 F	Port 3			
O F	Port 1			
O F	Port 2			
O F	Port 4			
b. Wh	nich interface would an IP o	datagram with destination address 200	0.10.20.70 be forwa	rded to?
Selec	ct one alternative			
O F	Port 4			
O F	Port 5			
O F	Port 2			
O F	Port 6			
O F	Port 3			
O F	Port 1			
Rese	t			Maximum marks: 2

a: port 4 b: port 6

3220

0 20 1480 MF=

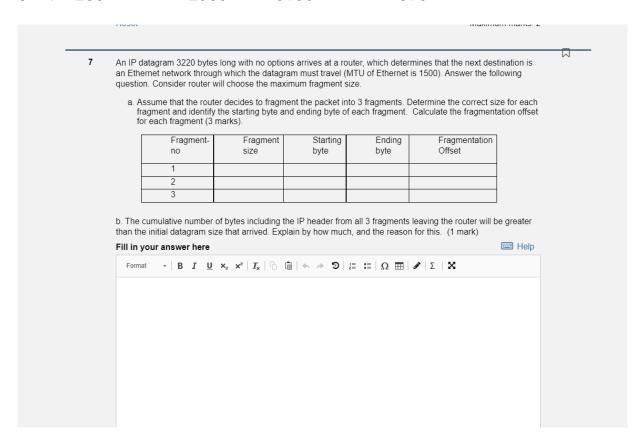
3	70	
20	260	
۱۱	ME	- (

- 7 An IP datagram 3220 bytes long with no options arrives at a router, which determines that the next destination is an Ethernet network through which the datagram must travel (MTU of Ethernet is 1500). Answer the following question. Consider router will choose the maximum fragment size.
 - a. Assume that the router decides to fragment the packet into 3 fragments. Determine the correct size for each fragment and identify the starting byte and ending byte of each fragment. Calculate the fragmentation offset for each fragment (3 marks).

Fragment- no	Fragment size	Starting byte	Ending byte	Fragmentation Offset
1				
2				
3				

1 : 1500 0 1479 0

3 : 280 2960 3199 370



b.首先回答: 多了多少内容。1 个数据报被分成了 3 个, 多了 2 个 IP 头, 也就是 40bytes.

为什么要这样做:说清楚理由:从 MTU 太小处考虑说清楚。

因为底层只允许通过最大的传输单元是1500,而原本的包是一个包3220bytes,所以需要拆开传输。

1. MTU 就这么大,只能分组。

•					\square	
8						
	PCO					
	192.168.5.1	E-th0 E-th1				
	Sw itch	195.12.15.20 Router	,——·			
	<u></u>		Server 200.10.30.40			
	PC1 192.168.5.2					
o tt c ir a b r	consider two clients PC0 and PC1 rganization. Clients' port numbers ne above diagram. The router is se onnected to the Internet (i.e., publi nterface to connect to the private nudress is 200.10.30.40. The router ought only one public address while puter, clients can be given a port nuty on the property of the propert	are given randomly from 400 parating between the private c network) through the interfacetwork. Two clients want to gets external interface (E-th1) lich is 195.12.15.20. Consider umber from 50000 to 50003. In the router interface, E-th1 til	00 to 40003. Ignore the network and the public ce E-th1, and the roust a web service from P address is 195.12.1 the router is acting as then fill the following taken and the service form and the following taken fill the f	ne green and red triangle ic network. The router is ter is using the E-th0 the server whose IP 5.20. The company has is a NAT router. In the NA	a AT	
re	equest to the server, 200.10.30.40	for getting a web service with	out security.			
	What is the source IP address?		here.			
	Vhat is the destination IP addres		here.			
	What is the source port number?		here.			
v	Vhat is the destination port num	per?	here.			
	low consider the web response is obuter interface E-th0.	coming from the web server to	o the client, PC1 and	you capture the packet	from	
V	What is the source IP address?		here.			
V	Vhat is the destination IP addres	s?	here.			
v	Vhat is the source port number?		here.			
v	What is the destination port num	per?	here.			
rc IP : 195.1 0002 dest	2.15.20 dest port : 80	IP: 200.10.3	0.40 sr	Maximum mar c PORT:填		者 50001 或者
0001 或者 4	0.30.40 src po 0002 或者 4000	3				
191.56.12	Company has requested 5.34/25.	a block of IP addit	esses irom an	ISP. THE DIOCK	inai was allocai	ed to XYZ was
Calculate t	he number of addresse	es in this block.				
Find the ne	etwork address. Answe	er in the a.b.c.d/x f	ormat.			
Find the br	roadcast address. Ans v	wer in the a.b.c.d/x	format.			
Find the ra	inge of addresses that to		or use by host	s. Answer in th	ne a.b.c.d/x form	mat from
					Ma	ximum marks: 3

network address: 191.56.125.34/25 broadcast:

191.56.125.127/25 range: 191.56.125.35/25 191.56.125.126/25

10	What is the problem with the distance vector routing protocol? Select one alternative:	
	O Complex Configuration	
	○ Slow convergence	
	○ The use of broadcasts	
	Routing support for classless networks	

slow convergence

距离向量无广播的机制 慢的收敛,可能会慢到无限循环的情况,所以才引出反向中毒的机制。

后一 内容:

11		\overline{A}
- 11	A1-11-22-50-80-70	
	Ť	
	3	
	1 87 2	
	3	
	1 59 2 1 58 2	
	PC0 PC1 PC2 A1-11-22-50-60-71 A1-11-22-50-60-72 A1-11-22-50-60-73 A1-11-22-50-60-74	
	Consider the local area network (LAN) in the figure above. There are 3 layer-2 switches (S7, s8, and S9) and 5	
	PCs (PC0, PC1, PC2, PC3, and PC4). The MAC address of 5 PCs are given in the diagram. The switch maintains a table called the switching table to forward the frame. Initially switch tables are empty.	
	a. If PC0 wants to send data PC4, then which PC will receive the data, and which switch will receive the data.	
	2 marks b.	
	Now consider each switch knows the MAC address of all PCs. You need to fill the switching table of the switch, S9	
	as below: (s9 has three interfaces: 1,2, and 3) 3 marks	
	MAC address of PC Switch interface	
	All answers are to be provided below. In part b, draw a table or simply write the MAC address and corresponding switch interface.	
	Fill in your answer here	
	Format - B I <u>U</u> × ₂ × ² <u>I</u> _X · · · · · · · · · · · · · · · · · ·	
	Words: 0	
	Maximum marks: 5	

第11题

a.

只填交换机即可, S7, S8, S9

b.

A1-11-22-50-60-70 3

A1-11-22-50-60-71 1

A1-11-22-50-60-72 2

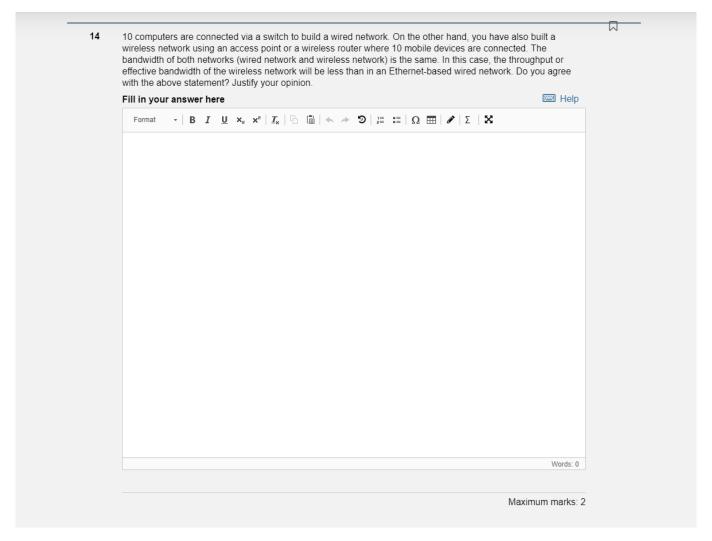
A1-11-22-50-60-73 3

A1-11-22-50-60-74 3

	Maximum marks: 5
12	Which of the following represent valid Ethernet frame headers for a packet captured on your local network? The total size of the frame is 14 bytes where the first 6 bytes belong to the destination MAC address and next 6 bytes belong to the source MAC address, and the last 2 bytes belong to the frame type. The frame header value is represented using a hexadecimal number.
	Select one or more alternatives:
	□ 00-80-C7-67-A0-93 00-80-C7-67-A0-93 08-06 源和目的不可以是一个mac地址
	□ 00-80-9A-43-88-1F FF-FF-FF-FF-FF 08-06
	FF-FF-FF-FF-FF 00-80-C7-67-A0-93 08-06
	□ 00-80-C7-67-A0-93 00-41-7B-32-ED-64 08-06 因为是多选题
	Reset Maximum marks: 1
13	Address Resolution Protocol (ARP) protocol is used to resolve from the IP address into to MAC or physical
	address. Consider your computer is connected to a subnet 192.168.10.0/24. Your computer would like to communicate with another computer whose IP address is 192.168.10.10/24. In this case, explain how ARP will resolve the MAC address of 192.168.10.10/24 so that your computer will be able to communicate with another computer.
	Fill in your answer here
	Format ${\bf v} \mid {\bf B} \mid {\bf I} \mid {\bf U} \mid {\bf x}_{{\bf v}} \mid {\bf x}_{{\bf v}} \mid {\bf I}_{{\bf v}} \mid {\bf G} \mid {\bf G} \mid {\bf v} \Rightarrow {\bf D} \mid {\bf G} \mid {\bf G} \mid {\bf G} \mid {\bf X}$
	Words: 0
	Maximum marks: 2

12. CD

Use A refering to my computer and B refering to the computer I want to communicate with. A broadcasts ARP query packet, containing B's IP address. The dest MAC address is FF-FF-FF-FF in the query packet. Then all nodes on the subnet receive ARP query. Because A and B are in the same subnet. When B receives ARP query from A, B replies to A with B's MAC address. Finally, A can get B's MAC address.



Yes, I agree with the statement.

吞吐量会更大,有效带宽会更小。

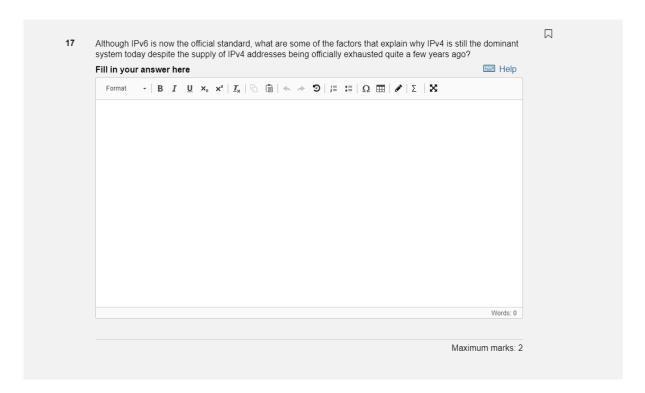
- 无线一定比有线的传输的稳定性差。
- 2. 原因:有线的有外皮,抗干扰。 3. 所以,无线网会有更多坏掉的包,所以有效带宽小。
- 4. 同时,为了重传坏掉的包,吞吐量会更大

In a wireless network, a device radiates a signal to the area around it. Since the radio areas of different devices overlap, they will interfere with each other. The CSMA/CA protocol needs to be used to avoid collision, and the device needs to suspend transmission frequently to avoid collision, which reduces the throughput of the wireless network. In addition, the wireless network has the problem of signal attenuation, which

increases the probability of packet loss, requires more acknowledgement, and reduces the throughput.

In a wired network, devices are directly connected through network cables without mutual interference, and the transmission in the channel is more stable. Throughput will be relatively higher.

public, Bill.
private, Bill
private, Jinia
private, Jinia



这道题建议同学上网百度 为什么说 ipv4 地址快耗尽了,但仍然作为主要的协议? 然后翻译就行。

- 1. compatibility. Because ipv4 has been widely used around the world for decades, many software and hardware only support ipv4 and not ipv6. If IPv6 is to be widely used, a large number of software and hardware updates and upgrades are required, which requires a great cost.
- 2. Although the ipv4 address pool is now exhausted, due to the NAT technology, different local networks can reuse the same address, which alleviates the problem of insufficient ipv4 addresses to a certain extent, so that ipv4 can still be used for new hosts.