**Review**

1 Definition：give one or two sentence（s）standard or nuts-and-bolts description of the word listed below

定义：给出一个或两个句子的标准或具体的下面单词的描述

Protocol，Socket， Subnet，network mask，forwarding，routing

Filtering，congestion，multiplexing

（draw inferences about other cases from one instance 举一反三）

**2** [Term Interpretation](http://dict.youdao.com/w/term%20interpretation/" \l "keyfrom=E2Ctranslation) 术语解释

TCP UDP DNS CSMA/CD ARP CDMA ARQ ICMP P2P TDM HTTP

3 Translation(reading and understanding further appreciating, so can we utilizing)

翻译

1. A link layer address is variously called a LAN address, a physical address, or a MAC address. Because MAC address seems to be the most popular term, we’ll henceforth refer to link-layer addresses as MAC address. For most LANs( including Ethernet and 802.11 wireless LANs), the MAC address is 6 bytes long, giving 248 possible MAC addresses.

(note there is a type error in the passage, where is it?)

链路层地址被不同地称为LAN地址、物理地址或MAC地址。因为MAC地址似乎是最流行的术语，所以我们以后将链接层地址称为MAC地址。对于大多数局域网（包括以太网和802.11无线局域网），MAC地址是6字节长，给出248个可能的MAC地址。

1. Because there are both network-layer addresses and link-layer addresses, there is a need to translate between them. For the Internet, this is the job of the Address Resolution Protocol(ARP).

因为存在网络层地址和链路层地址，所以需要在它们之间进行转换。对于互联网来说，这是地址解析协议（ARP）的工作。

1. A switch has the wonderful property(particularly for the already-overworked network administrator) that its table is built automatically, dynamically, and autonomously-without any intervention from a network administrator or from a configuration protocol. In other words, switches are self-learning.(p515, link layer switch section, please study)

交换机具有奇妙的属性（特别是对于已经过度工作的网络管理员），其表是自动、动态地、自主地构建的，而不受网络管理员或配置协议的任何干预。换言之，交换机是自学习的。（P515，链路层开关部分，请学习）

1. SMTP is at heart of Internet electronic mail. As mentioned above, SMTP transfers messages from senders’ mail servers to the recipients’ mail servers. SMTP is much older than SMTP.

SMTP是互联网电子邮件的核心。如上所述，SMTP将发件人邮件服务器的消息传递给收件人的邮件服务器。SMTP比SMTP要高得多

4 Short Answer Question 简答

1. What are the characteristics of CSMA/CD?
2. What is the difference between routing and forwarding?
3. What is the difference between filtering and forwarding in a link layer switch? What are their main functions?
4. For a communication session between a pair of process, which process is the client and which is the server?

(1)CSMA/CD有什么特点？

(2)路由和转发有什么区别？

(3)在链路层交换机中，过滤和转发有什么区别？它们的主要功能是什么？

(4)对于一对进程之间的通信会话，哪个进程是客户端，哪个是服务器？

5 Calculation problems计算

(1)Suppose we want to transmit the message101001 and protect it from errors using the CRC, the value of generator is 1101.

(a)Use polynomial（多项式的） long division（除法） to determine the message that should be transmitted.

(b)Suppose the leftmost bit of the message is inverted due to noise on the transmission link. What is the result of the receiver’s CRC calculation? How does the receiver know that an error has occurred?

**（1）假设我们希望用CRC发送消息101001并保护它不出错，发生器的值是1101。**

**（a）使用多项式（South-Studio）长除法来确定应该发送的消息。**

**（b）假设消息的最左位由于传输链路上的噪声而被反转。接收机的CRC计算结果如何？接收方如何知道发生了错误？**

(2)Table-1 is the routing table using CIDR. Address bytes are in hexadecimal. The notation “/23”in C4.5E.2.0 means a network-mask with 23 leading 1 bits ，that is FF.FF.FE.0,what next hop the following will be delivered：表1是使用CIDR的路由表。地址字节是十六进制。C4.5E 2中的符号“23”表示一个具有23个前导1位的网络掩码，即FF.FF.F. 0，下面将给出下一跳：

1. C4.4B.31.2E
2. C4.5E.05.09
3. C4.4D.31.2E
4. C4.5E.03.87
5. C4.5E.7E.12
6. C4.5E.D1.02

Table-1

|  |  |
| --- | --- |
| Netmask Length | NextHop |
| C4.5E.2.0/23 | A |
| C4.5E.4.0/22 | B |
| C4.5E.C0.0/19 | C |
| C4.5E.40.0/18 | D |
| C4.4C.0.0/14 | E |
| C0.0.0.0/2 | F |
| 80.0.0.0/1 | G |

(3)Suppose Host A wants to send a large file to Host B. The path from Host A to Host B has three links, the transmission rates R1=500kbps, R2=2Mbps, and R3=1Mbps.

1. Assuming no other traffic in the network, what is the throughput for the file transfer.
2. Suppose the file is 4 million bytes. Roughly, how long will it take to transfer the file to Host B?
3. Repeat (a) and (b), but now with R2 reduced to 100kbps.

（3）假设主机A想发送一个大文件到主机B。从主机A到主机B的路径有三个链路，传输速率R1= 500 Kbps，R2= 2Mbps，R3＝1Mbps。

a.假设网络中没有其他流量，文件传输的吞吐量是多少。

b.假设文件是400万字节。粗略地说，将文件传送到主机B需要多长时间？

c.重复（a）和（b），但现在R2减少到100kbPs。

(4)how to calculate the checksum for a given header(a series of 16-bit numbers)

(5)CDMA calculation

(6)bit stuffing and byte stuffing calculations

（7）DV and LS algorithms examples（calculation）

（8）network bridge（2-layer switch） forward-table establishment

（4）如何计算给定报头的校验和（一系列16位数字）

（5）CDMA计算

（6）位填充和字节填充计算

（7）DV和LS算法实例（计算）

（8）网桥（2层交换机）前向表的建立