Chapter 5

1．Assuming that all routers and hosts are working properly and that all software in both is free of all errors, is there any chance, however small, that a packet will be delivered to the wrong destination?

Solution:

有可能。当有ip冲突或者传输过程中发生ip地址变更时，可能会被投递到错误的目的地。使用k位的检验和，差错仍然有2^k的概率被漏检，如果分组的目的地段或虚电路号码被改变，分组将会被投递到错误的目的地，并且可能被接收为正确的分组。

2．Consider the subnet of Fig 5-13(a). Distance vector routing is used, and the following vectors have just come in to router C: from B:(5,0,8,12,6,2); from D:(16,12,6,0,9,10); and from E:(7,6,3,9,0,4). The measured delays to B, D and E, are 6, 3, and 5, respectively. What is C’ s new routing table? Give both the outgoing line to use and the expected delay.

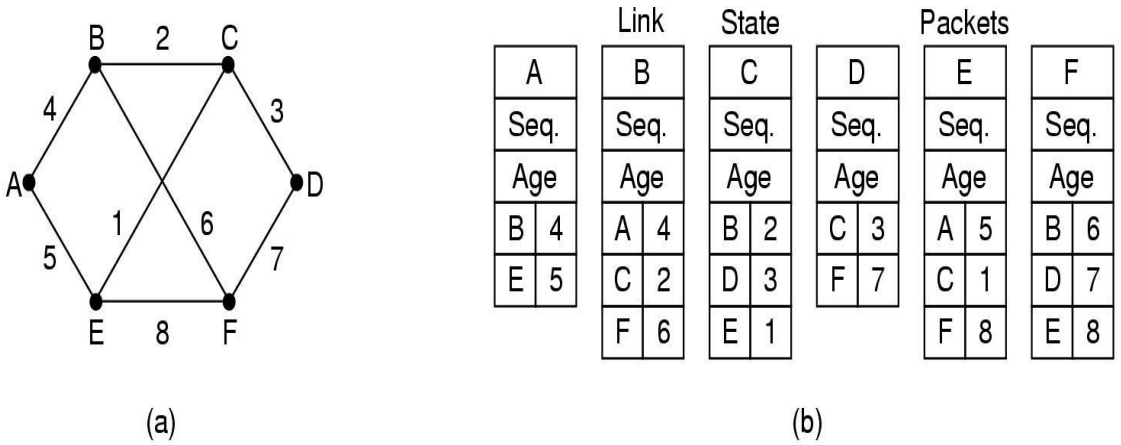

Fig. 5-13. (a) A subnet. (b) The link state packets for this subnet.

Solution:

通过B (11,6,14,18,12,8)

通过D(19,15,9,3,12,13)

通过E(12,11,8,14,5,9)

取出到达每一个目的地的最小值（除C外），得到估计的延迟，为(11,6,0,3,5,8)，输出路线为(B,B,-,D,E,B)

3．Suppose that both host A is connected to a router R1, R1 is connected to another router R2, and R2 is connected to host B. Suppose that a TCP message that contains 900 bytes of data and 20 bytes of TCP header is passed to the IP code at host A for delivery to B. Show the Total length, Identification, DF, MF, and Fragment offset fields of the IP header in each packet transmitted over the th

ree links. Assume that link A-R1 can support a maximum frame size of 1024 bytes including a 14-byte frame header, link R1-R2 can support a maximum frame size of 512 bytes, including an 8-byte frame header, and

link R2-B can support a maximum frame size of 512 bytes including a 12-byte frame header.

Solution:

在最初，IP 数据报会被分割成两个 IP 数据报，之后不会再进行分割

Link A-R1： Length=940, ID=x, DF=0, MF=0, Offset=0

Link R1-R2：

(1) Length=500, ID=x, DF=0, MF=1, Offset=0

(2) Length=460, ID=x, DF=0, MF=0, Offset=60

Link R2-B：

(1) Length=500, ID=x, DF=0, MF=1, Offset=0

(2) Length=460, ID=x, DF=0, MF=0, Offset=60

4．Convert the IP address whose hexadecimal representation is C22F1582 to dotted decimal notation.

Solution:

将十六进制转为二进制得到：

11000010，00101111，00010101，10000010

由此可知，其点分十进制为：194.47.21.130

5. A router has the following (CIDR) entries in its routing table:

Address/mask	Next hop
135.46.56.0/22	Interface 0

135.46.60.0/22	Interface 1
192.53.40.0/23	Router 1
Default	Router 2

For each of the following IP address, what does the router do if a packet with that address arrives?

a) 135.46.63.10
b) 135.46.57.14
c) 135.46.52.2
d) 192.53.40.7
e) 192.53.56.7

Solution:

a) 135.46.63.10 和 255.255.252.0 做与运算，得到 135.46.60.0，所以会发送给 Interface 1
b) 135.46.57.14 和 255.255.252.0 做与运算，得到 135.46.56.0，所以会发送给 Interface 0
c) 135.46.52.2 和 255.255.252.0 做与运算，得到 135.46.52.0，所以会发送给 Router2
d) 192.53.40.7 和 255.255.254.0 做与运算，得到 192.53.40.0，所以会发送给 Router1
e) 192.53.56.7 和 255.255.254.0 做与运算，得到 192.53.56.0，所以会发送给 Router2