
CHAPTER 18

Virtual Circuit Switching: Frame Relay and ATM

Review Questions

1. See Table 18.1. The control field is missing in the Frame Relay because flow and error control are left to upper layers.

Table 18.1

<i>Fields</i>	<i>HDLC</i>	<i>Frame Relay</i>
Flag	X	X
Address	X	X
Control	X	
Information	X	X
FCS	X	X

3. I-frame.
5. DLCIs are unique only for a particular interface. A switch assigns a DLCI to each virtual connection in an interface. This way two different connections belonging to two different interfaces may have the same DLCI.
7. In a PVC, two DTEs are connected permanently through a virtual connection. In a SVC, a virtual circuit needs to be established each time a DTE wants to be connected with another DTE.
9. If data packets are different sizes there might variable delays in delivery.
11. A TP (transmission path) is the physical connection between a user and a switch or between two switches. It is divided into several VPs (virtual paths), which provide a connection or a set of connections between two switches. VPs in turn consist of several VCs (virtual circuits) that logically connect two points together.
13. The Application Adaptation Layer allows existing networks to connect to ATM facilities by mapping packet data into fixed-sized ATM cells. The ATM layer provides routing, traffic management, switching, and multiplexing services.

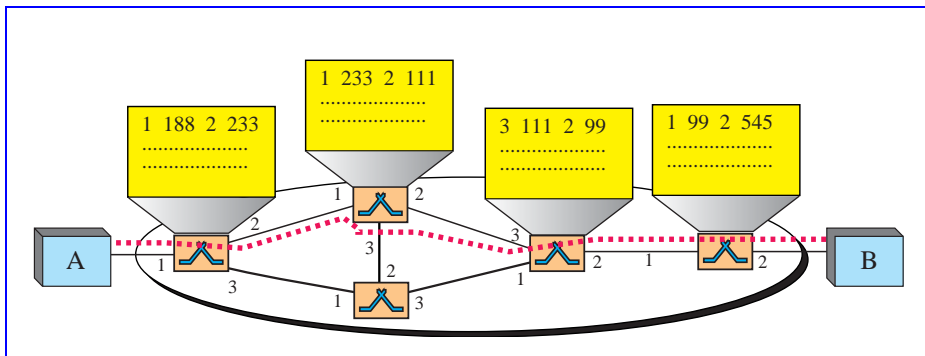
Multiple-Choice Questions

- 15. b
- 17. a
- 19. d
- 21. a
- 23. d
- 25. c
- 27. a
- 29. c
- 31. a
- 33. b

Exercises

- 35. Not valid, there is only 15 bits instead of 16 bits
- 37. 2C 21
- 39. See Figure 18.1.

Figure 18.1 Exercise 39



- 41. The efficiency of ATM using AAL1 is 47/ 53 or 89%.
- 43. Yes. The efficiency depends on the size of the packet. Larger packets are more efficient.
- 45.
 - a. The minimum number of cells is 1 (no data, 40 bytes of padding and 8 bytes of header in the CS sublayer).
 - b. The maximum number of cells is 1366.
- 47.
 - a. The number of bytes in the final segment is 40.
 - b. The number of bytes is 0.
 - c. The last unit has 41 bytes.

49. See Table 18.2.

Table 18.2 *Exercise 49*

<i>Sublayer</i>	<i>AAL1</i>	<i>AAL2</i>	<i>AAL3/4</i>	<i>AAL5</i>
SAR	47	45	44	48

