
CHAPTER 15

PPP

15.1 REVIEW QUESTIONS

1. PPP is designed for users who need a point-to-point connection.
3. PPP supports any protocols recognized by ANSI.
5. The HDLC format of a U-frame is used for the control field in a PPP frame. The frame has no sequence numbers and there is no error or flow control.
7. LCP packets are encapsulated in the payload field of a PPP frame, whose protocol field value is then set to $C021_{16}$ to indicate that it's carrying the LCP packet.
9. Password Authentication Protocol (PAP) and Challenge Handshake Authentication Protocol (CHAP).
11. CHAP is a three-way authentication protocol. The system sends the user a challenge packet with a challenge value. The user applies a predefined function to the challenge value and sends the result back to the system. The system checks the result by doing the same computations with the user's password and challenge value and grants or denies access depending on the result. CHAP is a more secure protocol than PAP.
13. NCP is a set of protocols which allows the encapsulation of data coming from network layer protocols in the PPP frame.

15.2 MULTIPLE CHOICE QUESTIONS

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

15.3 EXERCISES

33. See Table 15.1.

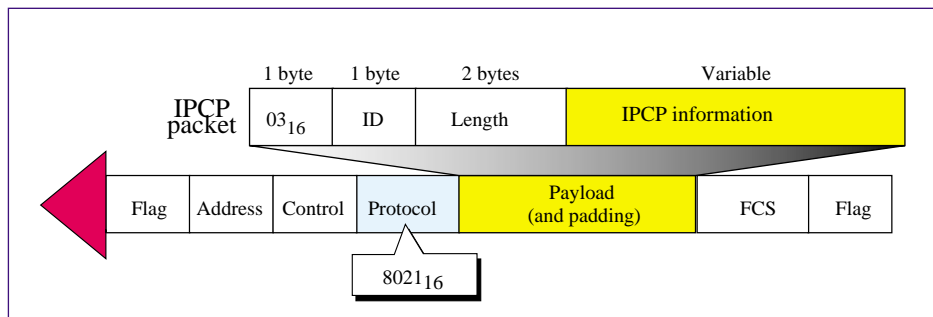
Table 15.1 Exercise 33

Field	HDLC	PPP
Flag	01111110	01111110
Address	Address of secondary station	11111111
Control	One or two bytes	11000000
Protocol	-----	One or two bytes
Information	Data and padding	Data and padding
FCS	Two or four bytes	Two or four bytes

35. The protocol is the Link Control Protocol carrying a echo-request packet. The ID of the packet is 11_{16} and the length is 0014_{16} , which means 20 bytes.

37. See Figure 15.1.

Figure 15.1 Exercise 37



39. Echo request: 09 01 0009 48454C4C4F

PPP frame: 7E FF C0 C021 09 01 0009 48454C4C4F (FCS) 7E

41. Authenticate request: 01 01 0014 08 464F524F555A414E 06 373937393739

PPP Frame:

7E FF C0 C023 01 01 0014 08 464F524F555A414E 06 373937393739 (FCS) 7E

43. Challenge: 01 01 0009 04 A4253616 (We used no challenge name)

PPP Frame: 7E FF C0 C223 01 01 0009 04 A4253616 (FCS) 7E

45. 36364C3C

47. The connection is in the establishing state; one of the sides should revise the options.

49.

7E FF C0 C021 (Configure-request, LCP) (FCS) 7E

7E FF C0 C021 (Configure-ack, LCP) (FCS) 7E

7E FF C0 C023 (Authenticate-request, PAP) (FCS) 7E

7E FF C0 C023 (Authenticate-ack, PAP) (FCS) 7E
7E FF C0 8021 (Configure-request, IPCP) (FCS) 7E
7E FF C0 8021 (Configure-ack, IPCP) (FCS) 7E
7E FF C0 0021 (Data, IP) (FCS) 7E
...
...
7E FF C0 0021 (Data, IP) (FCS) 7E
7E FF C0 8021 (Terminate-request, IPCP) (FCS) 7E
7E FF C0 8021 (Terminate-ack, IPCP) (FCS) 7E
7E FF C0 C021 (Terminate-request, LCP) (FCS) 7E
7E FF C0 C021 (Terminate-ack, LCP) (FCS) 7E

