

---

## CHAPTER 12

# *Point-to-Point Access: PPP*

### Review Questions

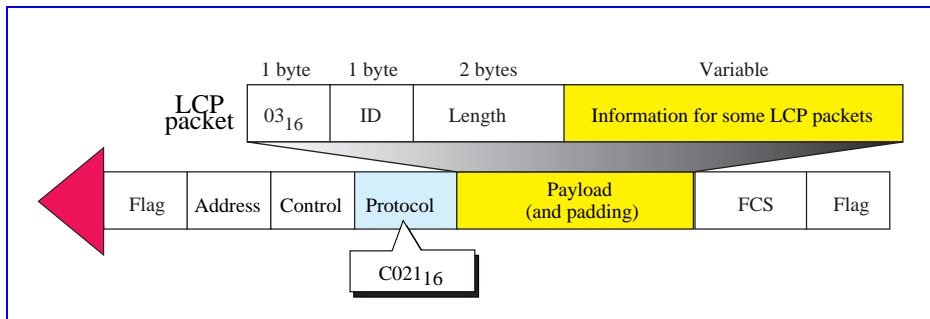
1. PPP is designed for users who need a point-to-point connection.
3. Link Control Protocol, Password Authentication Protocol or Challenge Handshake Authentication Protocol, and Network Control Protocol.
5. The HDLC format of a U-frame is used for the control field in a PPP frame. The frame has no sequence 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.

### Multiple-Choice Questions

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

**Exercises**

29. flag = 7E; address = FF; control = C0  
 31. The protocol is the Link Control Protocol carrying a terminate-request packet.  
 33. See Figure 12.1.

**Figure 12.1** Exercise 33

35. The protocol fields and the payload fields are different.  
 37. Echo reply: 0A 01 0009 48454C4C4F  
 PPP frame: 7E FF C0 C021 0A 01 0009 48454C4C4F (FCS) 7E  
 39. Authenticate ack: 02 01 0014 08 464F524F555A414E  
 PPP Frame: 7E FF C0 C023 02 01 0014 08 464F524F555A414E (FCS) 7E  
 41. Response: 02 01 0009 04 6163524A (We used no response name)  
 PPP Frame: 7E FF C0 C223 02 01 0009 04 6163524A (FCS) 7E  
 43. The negotiation was successful, connection is established, the next state is either authentication or networking.  
 45. Networking state.