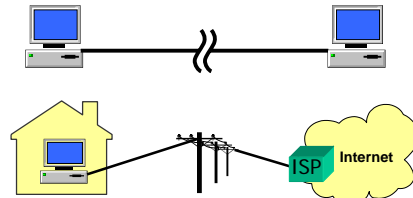


Point-to-Point Protocol (PPP)

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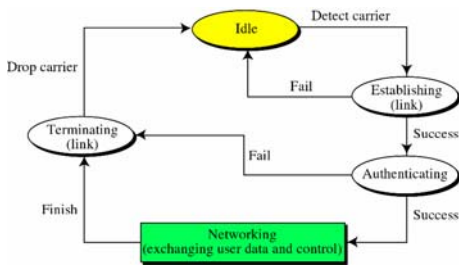
Point-to-Point Protocol



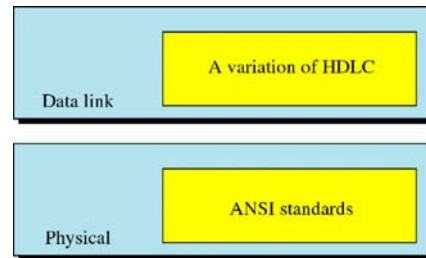
Many Internet users connect from home

- Dial-up (Telephone line)
- Leased line

PPP Transition states



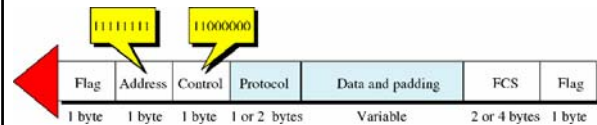
PPP Layers



PPP Layers (stacks)

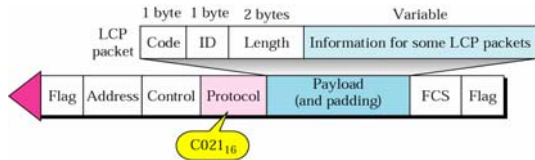
- Link Control Protocol (LCP)
- Authentication Protocols
- Network Control Protocol (NCP)
- Bit Padding
- Digital Signals (DS) Services

PPP Frame



Address: broadcast (avoid data link address)
 Control: U-frame format (HDLC)
Protocol: defines data field

Link Control Protocol (LCP)



Link Control Protocol (LCP)

- establish/terminate
- maintain
- configuration

Code: 01=Config-request
02=Config-ack
05=Terminate-req
...

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Common Options

Option	Default
Maximum receive unit	1500
Authentication protocol	None
Protocol field compression	Off
Address and control field compression	Off

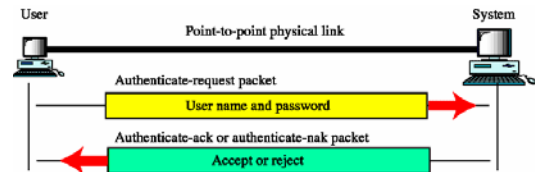
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Authentication

- Mostly PPP is dial-up user.
- Validating the user is important
- Password Authentication Protocol (PAP)
 - 2-way handshake
 - Less secure
- Challenge Handshake Authentication Protocol (CHAP)
 - 3-way handshake
 - More secure (no password sent)

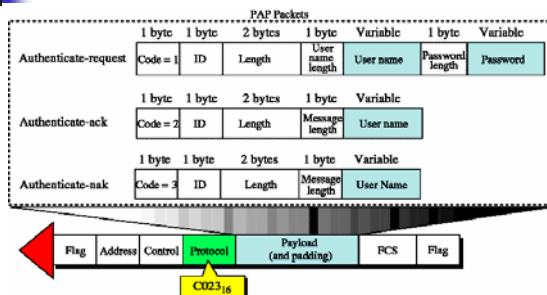
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Password Authentication Protocol (PAP)



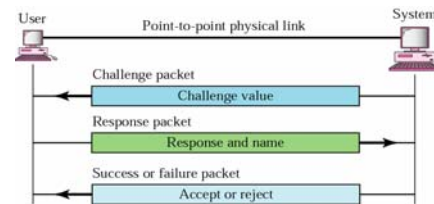
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PAP Packets



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Challenge Handshake Authentication Protocol (CHAP)



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