

CCNA Exploration: Accessing the WAN (Version 4.0)

Chapter 2 – Point-to-Point Protocol

1 What function do Network Control Protocols provide for a PPP connection?

- ☐ to supply error detection
 - ☐ to establish and terminate data links
 - ☐ to provide authentication capabilities to PPP
 - ☐ to manage network congestion and to allow quality testing of the link
 - ☒ to allow multiple Layer 3 protocols to operate over the same physical link
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```
R1(config)# username R3 password Cisco
R1(config)# interface Serial 0/0/0
R1(config-if)# clockrate 64000
R1(config-if)# encapsulation ppp
R1(config-if)# ip address 172.16.3.1 255.255.255.0
R1(config-if)# ppp authentication chap
```

Refer to the exhibit. Router R1, the DCE device, has just been configured for PPP encapsulation with authentication. What series of commands will allow another router, the DTE device, to communicate over its serial 0/0/0 interface to router R1?

- ☒ Router(config)# **hostname R3**
R3(config)# **username R1 password Cisco**
R3(config)# **interface Serial 0/0/0**
R3(config-if)# **encapsulation ppp**
R3(config-if)# **ip address 172.16.3.3 255.255.255.0**
R3(config-if)# **ppp authentication chap**
 - ☐ Router(config)# **hostname R3**
R3(config)# **username R3 password Cisco**
R3(config)# **interface Serial 0/0/0**
R3(config-if)# **encapsulation ppp**
R3(config-if)# **ip address 172.16.3.3 255.255.255.0**
R3(config-if)# **ppp authentication chap**
 - ☐ Router (config)# **username Router password Cisco**
Router (config)# **interface Serial 0/0/0**
Router (config-if)# **clockrate 64000**
Router (config-if)# **encapsulation ppp**
Router (config-if)# **ip address 172.16.3.1 255.255.255.0**
Router config-if)# **ppp authentication chap**
 - ☐ Router (config)# **username R1 password Cisco**
Router config)# **interface Serial 0/0/0**
Router (config-if)# **clockrate 64000**
Router config-if)# **encapsulation ppp**
Router (config-if)# **ip address 172.16.3.1 255.255.255.0**
Router (config-if)# **ppp authentication chap**
-

3 **Serial1 is up, line protocol is up**
Hardware is HD64570
Internet address is 200.200.200.1/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, loopback not set
Keepalive set (10 sec)
LCP Open
Open: IPCP, CDPCP
Last input 00:00:04, output 00:00:04, output hang never
Last clearing of "show interface" counters 00:08:59
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/1/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 1158 kilobits/sec

Refer to the exhibit. Which statement is true about PPP operation?

- ☐ Layer 2 is down.
 - ☐ LCP, IPCP, and CDPCP negotiations are in progress.
 - ☐ Only the link-establishment phase completed successfully.
 - ☒ Both the link-establishment and network-layer phase completed successfully.
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4 Which authentication protocol can be spoofed to allow playback attacks?

- ☐ MD5
 - ☐ CHAP
 - ☒ PAP
 - ☐ NCP
-

5 Which PPP configuration option can be used to establish load balancing over the interfaces of a router?

- ☐ callback
 - ☒ multilink
 - ☐ compression
 - ☐ error detection
-

6 Which serial communications DTE/DCE interface standard is used to provide high-speed connectivity of up to 52 Mbps between LANs and is found on many high-end Cisco routers?

- ☐ EIA/TIA 232 (RS-232)
 - ☐ EIA/TIA 422 (RS-422)
 - ☐ EIA/TIA 423 (RS-423)
 - ☒ EIA/TIA-612/613 (HSSI)
 - ☐ ITU V.35
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7 Which two options can LCP negotiate? (Choose two)

- ☒ link quality
 - ☒ authentication
 - ☐ dynamic flow control
 - ☐ compression and network layer address for IP
 - ☐ connection-oriented or connectionless communication methods
-

8 Why are serial connections preferred over parallel connections for long transmission lengths?

- ☐ Parallel connections do not support error checking.
 - ☐ Parallel connections are subject to excessive attenuation.
 - ☒ Parallel connections are subject to clock skew and to crosstalk between wires.
 - ☐ Parallel connections transmit over only two wires and therefore transmit data more slowly.
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9 Which three statements correctly describe PPP authentication? (Choose three)

- ☒ PAP sends passwords in clear text.
 - ☐ PAP uses a 3-way handshake to establish a link.
 - ☐ PAP provides protection from repeated trial-and-error attacks.
 - ☐ CHAP uses a 2-way handshake to establish a link.
 - ☒ CHAP uses a challenge/response that is based on the MD5 hash algorithm.
 - ☒ CHAP uses repeated challenges for verification.
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```
Router# show interface serial0/0
Serial0/0 is up, line protocol is up
Hardware is HD64570
Internet address is 10.140.1.2/24
MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255
Encapsulation PPP, loopback not set, keepalive set (10 sec)
LCP Open
Open: IPCP, CDPCP
38097 packets output, 2135697 bytes, 0 underruns
0 output errors, 0 collisions, 6045 interface resets
0 output buffer failures, 0 output buffers swapped out
482 carrier transitions
DCD=up DSR=up DTR=up RTS=up CTS=up
```

Refer to the exhibit. On the **show interface Serial0/0** output, how many NCP sessions have been established?

- ☐ one
 - ☒ two
 - ☐ three
 - ☐ four
-

11 What does the demarcation point represent in data communication physical circuits?

- ☐ DTE/DCE interface on the device connecting to the Internet
 - ☐ location of the firewall or router
 - ☒ physical point at which the public network ends and the private customer network begins
 - ☐ tag assigned to the physical block where a cross-connect occurs
-

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```
ppp: ipcp_reqci: returning CONFACK
```

Refer to the exhibit. Which two statements are true regarding the output shown? (Choose two)

- ☒ The router has agreed on IP parameters.
 - ☒ The router has negotiated LCP successfully.
 - ☐ The router is negotiating IP compression options.
 - ☐ The router is requesting an IP address from its peer.
 - ☐ The router has accepted IP but not the suggested IP options.
-

13 Which three statements are correct about HDLC encapsulation? (Choose three)

- ☐ HDLC does not support CDP.
 - ☐ HDLC and PPP are compatible.
 - ☐ HDLC supports PAP and CHAP authentication.
 - ☒ HDLC implementation in Cisco routers is proprietary.
 - ☒ HDLC is the default serial interface encapsulation on Cisco routers.
 - ☒ HDLC uses frame delimiters to mark the beginnings and ends of frames.
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14 Which three statements are true regarding LCP? (Choose three)

- ☒ It is responsible for negotiating link establishment.
 - ☐ It negotiates options for Layer 3 protocols running over PPP.
 - ☐ It uses MD5 encryption while negotiating link establishment parameters.
 - ☒ It terminates the link upon user request or the expiration of an inactivity timer.
 - ☒ It can test the link to determine if link quality is sufficient to bring up the link.
 - ☐ It monitors the link for congestion and dynamically adjusts the acceptable window size.
-

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```
Router# show interfaces serial 0/0/0
Serial 0/0/0 is up, line protocol is down
<output omitted>
```

Refer to the exhibit. While troubleshooting a serial interface, a technician enters the command **show interface serial 0/0/0**. If the interface is in DCE mode, what two problems are likely to cause the indicated problem? (Choose two)

- ☒ The remote CSU or DSU has failed.
 - ☐ The router is not sensing a CD signal.
 - ☒ A timing problem has occurred on the cable.
 - ☐ The line is not physically connected to the CSU/DSU.
 - ☐ The router configuration contains the **shutdown** interface configuration command.
-

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```
Router(config)# interface s0/0/0
Router(config-if)# encapsulation ppp
Router(config-if)# compress stac
Router(config-if)# ppp quality 90
Router(config-if)# ppp authentication chap callin
```

Refer to the exhibit. What can be concluded about the function of the Serial 0/0/0 interface on the router after the commands are entered?

- ☐ All username and password information that is sent will be encrypted.
 - ☐ All authentication on the serial link will be accomplished using a two-way handshake.
 - ☐ The Predictor algorithm will be used to compress all packets that are sent and received on the serial link.
 - ☒ The serial link will be closed if the number of received packets at the destination node falls below 90 percent of the packets that are sent.
-

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```
R1# show interfaces serial 0/0/0
Serial0/0/0 is administratively down, line protocol is down
Hardware is CD2430 in sync mode
Internet address is 172.16.3.1/24
MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec,
  reliability 255/255, txload 1/255, rxload 1/255
Encapsulation PPP, LCP Closed, loopback not set
Keepalive set (10 sec)
Last input 00:00:17, output 00:00:14, output hang 01:50:01
Last clearing of "show interface" counters 00:37:31
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue: 0/40 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
 680 packets input, 18845 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
   1 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 1 abort
 712 packets output, 19762 bytes, 0 underruns
   0 output errors, 0 collisions, 121 interface resets
   0 output buffer failures, 0 output buffers swapped out
 212 carrier transitions
 DCD=up DSR=up DTR=down RTS=down CTS=up
```

Refer to the exhibit. Router R1 is not able to communicate with a neighbor router that is directly connected to serial 0/0/0. What is the reason for this?

- ☐ Interface Serial0/0/0 resets very frequently.
- ☐ PPP LQM has shutdown the serial interface.
- ☐ The serial interface has no input or output queues available.
- ☐ The serial interface is not configured for a Layer 2 protocol.
- ☒ The interface has been administratively shutdown with the **shutdown** command.

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```
LCP: I CONFREQ [ACKrcvd] id 8 len 14
LCP: AuthProto PAP (0x0304C023)
LCP: MagicNumber 0x507A214D (0x0506507A214D)
LCP: O CONFNAK [ACKrcvd] id 8 len 9
LCP: AuthProto CHAP (0x0305C22305)
```

Refer to the exhibit. What statement is true regarding the output shown?

- ☐ NCP has successfully negotiated.
- ☐ The PAP passwords did not match, so the routers are trying CHAP authentication.
- ☒ One router has suggested PAP authentication, and the other has accepted authentication but suggested CHAP authentication.
- ☐ One router can only use PAP authentication while the other router can only use CHAP, so the connection has been rejected.

19 Which two statements are true about time-division multiplexing (TDM)? (Choose two)

- ☐ TDM relies on Layer 3 protocols to operate.
 - ☒ Multiple channels can transmit over a single link.
 - ☒ Original data streams must be reconstructed at the destination.
 - ☐ TDM methods vary depending on the Layer 2 protocol that is used.
 - ☐ It allows information from multiple channels to be allocated bandwidth on multiple wires.
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Encapsulation PPP, LCP Open
Open IPCP, CCP, CDCP, loopback not set

Refer to the exhibit. What statement is true regarding the output shown?

- ☐ LCP is in the process of negotiating a link.
 - ☐ LCP and NCP are waiting for CHAP authentication to complete.
 - ☐ LCP negotiation has been successful, but NCP negotiation is in progress.
 - ☒ Data is able to flow across this link.
-

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What advantage does PPP have over HDLC for serial communications?

- ☐ It can communicate more efficiently with other Cisco devices
 - ☐ It is less complex to configure
 - ☐ It has less Layer 2 overhead
 - ☒ It supports authentication
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