

LV14 – WAN PPP enkapsulacija – rad na uređajima

PRIPREMA

1. Password Authentication Protocol (PAP):

Sloj djelovanja: PAP je sloj veze podataka (data link layer) protokol.

Opis: PAP je jednostavan i temelji se na lozinkama. Klijent šalje korisničko ime i lozinku poslužitelju. Ako se korisničko ime i lozinka podudaraju, poslužitelj odobrava PPP sesiju. Međutim, PAP nije siguran jer lozinke putuju u otvorenom tekstu, što omogućava napadačima da ih presretnu.

Prednosti:

Jednostavan za implementaciju.

Podržan na svim operacijskim sustavima.

Nedostaci:

Lozinke se prenose nekriptirano.

Ranjiv na napade kao što su pogađanje lozinki i prisluškivanje.

2. Challenge Handshake Authentication Protocol (CHAP):

Sloj djelovanja: CHAP također djeluje na sloju veze podataka.

Opis: CHAP koristi izazovno-ručni mehanizam za autentifikaciju. Periodički provjerava identitet korisnika. Evo kako CHAP funkcionira:

Klijent šalje zahtjev za autentifikacijom poslužitelju.

Poslužitelj generira nasumični izazov (challenge) i šalje ga klijentu.

Klijent koristi svoju lozinku i izazov za stvaranje kriptografskog hash-a.

Klijent šalje hash poslužitelju.

Poslužitelj provjerava hash. Ako se podudara s očekivanim hash-om, autentifikacija je uspješna.

Prednosti:

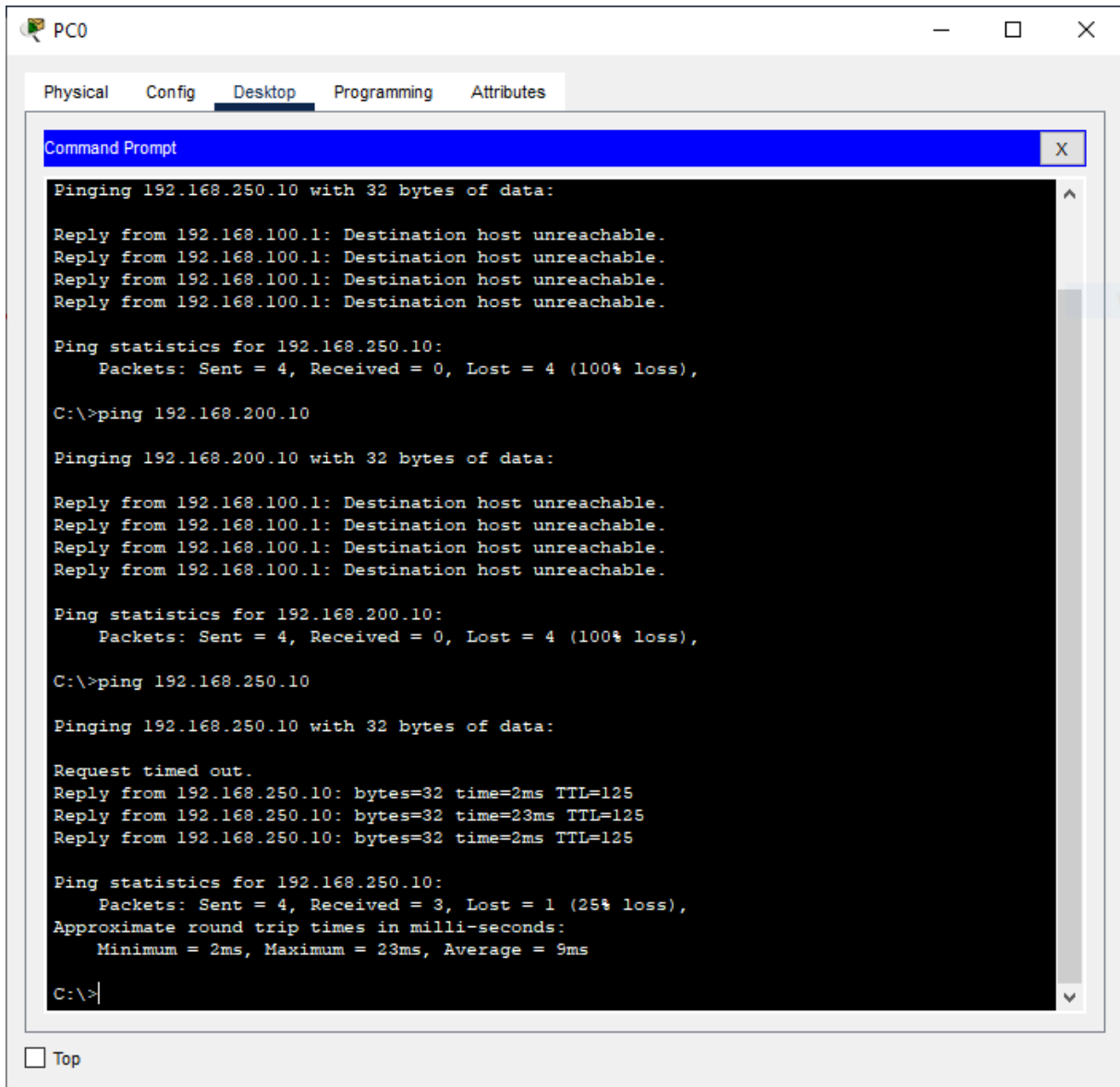
Koristi kriptografske hash funkcije za poboljšanu sigurnost. Sigurniji od PAP-a.

Nedostaci:

Ne podržava vrlo stare operacijske sustave.

VJEŽBA

4.



The screenshot shows a desktop environment for a PC named 'PC0'. The 'Desktop' tab is selected in the top navigation bar. A 'Command Prompt' window is open, displaying the results of three ping tests. The first two tests, to 192.168.250.10 and 192.168.200.10, both show 100% loss. The third test, to 192.168.250.10, shows a 25% loss with detailed statistics.

```
Command Prompt
Pinging 192.168.250.10 with 32 bytes of data:
Reply from 192.168.100.1: Destination host unreachable.
Reply from 192.168.100.1: Destination host unreachable.
Reply from 192.168.100.1: Destination host unreachable.
Reply from 192.168.100.1: Destination host unreachable.

Ping statistics for 192.168.250.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.200.10

Pinging 192.168.200.10 with 32 bytes of data:

Reply from 192.168.100.1: Destination host unreachable.
Reply from 192.168.100.1: Destination host unreachable.
Reply from 192.168.100.1: Destination host unreachable.
Reply from 192.168.100.1: Destination host unreachable.

Ping statistics for 192.168.200.10:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.250.10

Pinging 192.168.250.10 with 32 bytes of data:

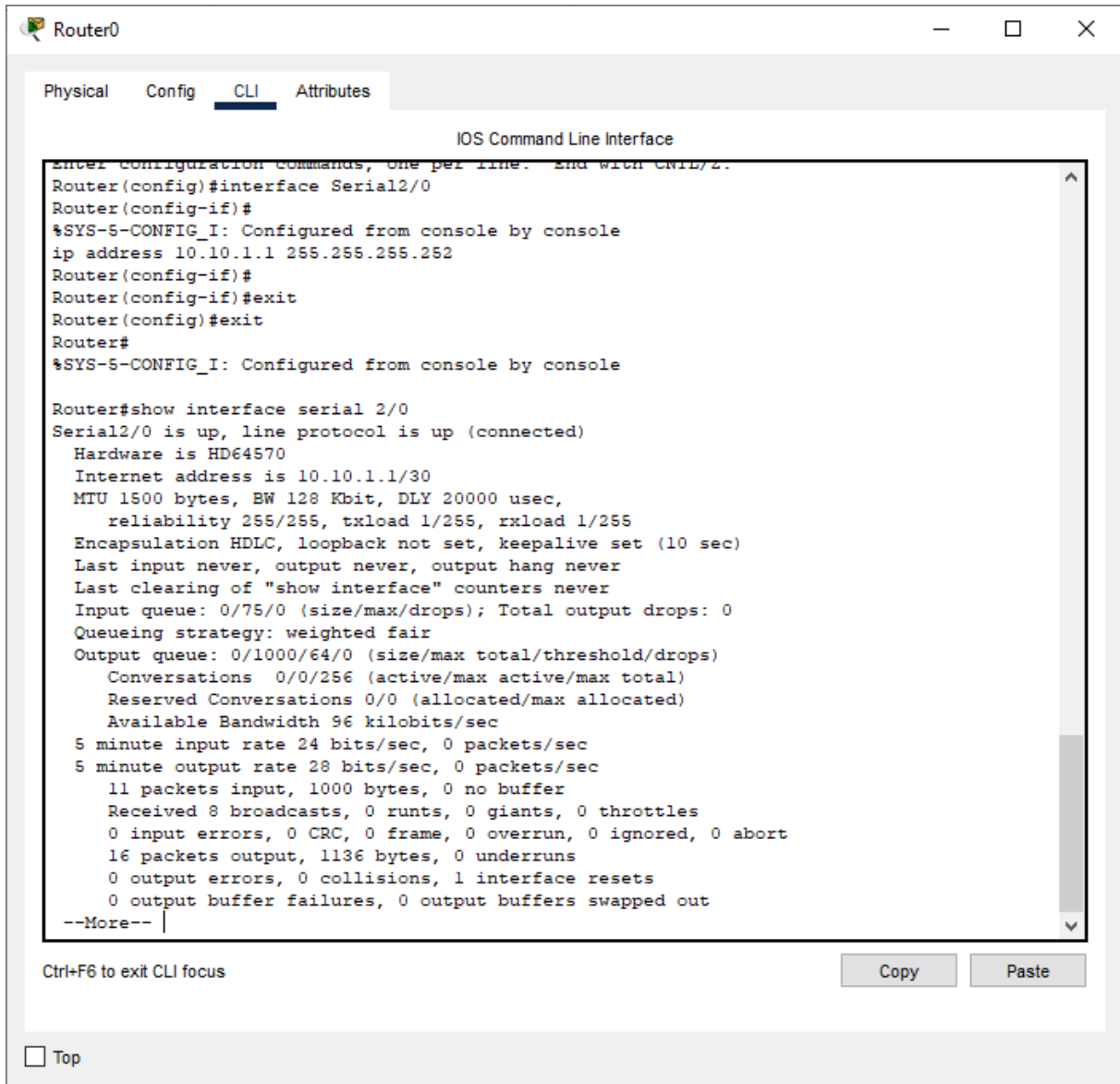
Request timed out.
Reply from 192.168.250.10: bytes=32 time=2ms TTL=125
Reply from 192.168.250.10: bytes=32 time=23ms TTL=125
Reply from 192.168.250.10: bytes=32 time=2ms TTL=125

Ping statistics for 192.168.250.10:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 23ms, Average = 9ms

C:\>
```

Top

5.



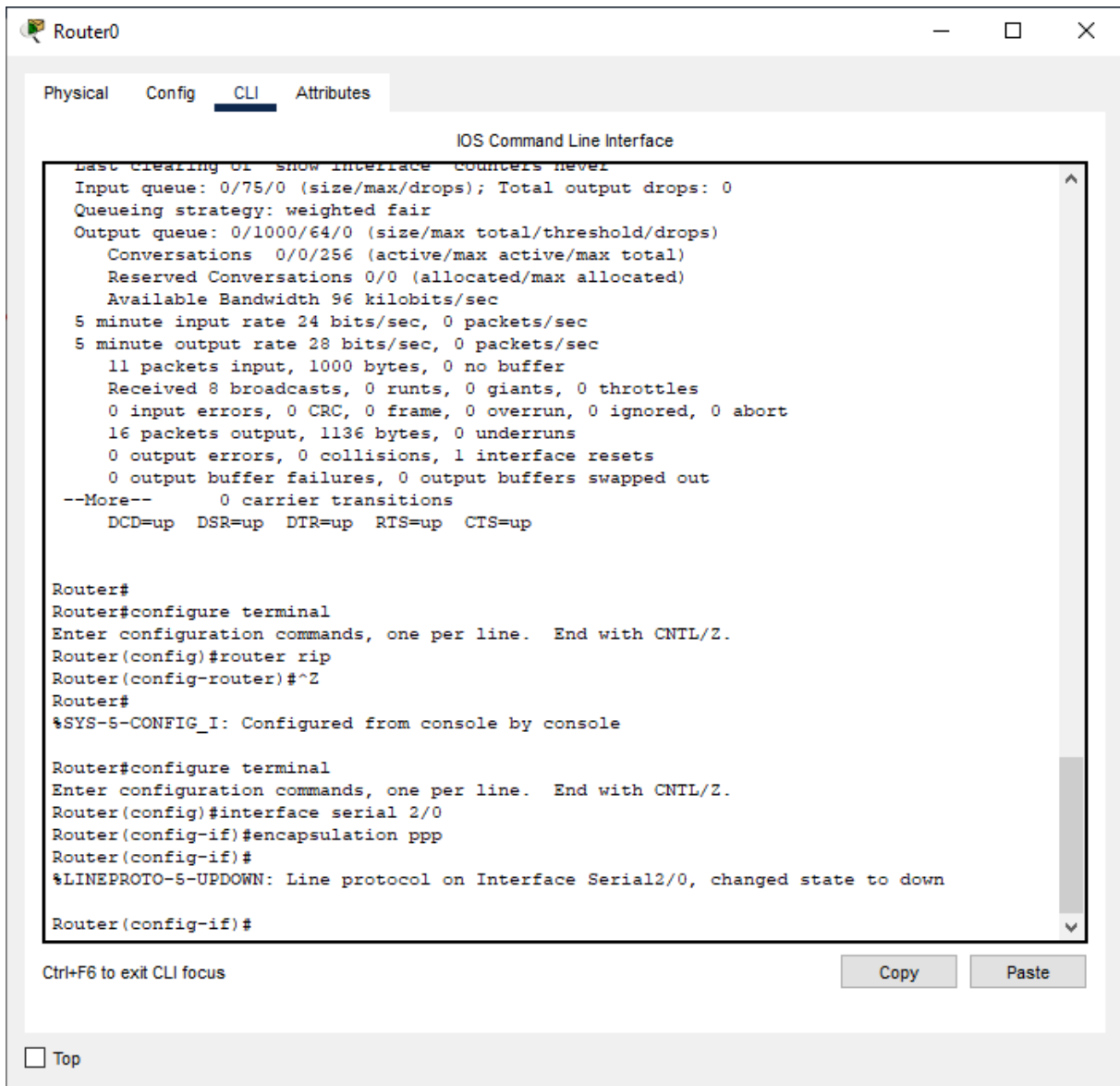
The screenshot shows a window titled "Router0" with a tabbed interface. The "CLI" tab is active, displaying the "IOS Command Line Interface". The terminal text shows the configuration of the Serial2/0 interface and the output of the "show interface serial 2/0" command.

```
Enter configuration commands, one per line. End with CTRL/Z.
Router(config)#interface Serial2/0
Router(config-if)#
%SYS-5-CONFIG_I: Configured from console by console
ip address 10.10.1.1 255.255.255.252
Router(config-if)#
Router(config-if)#exit
Router(config)#exit
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#show interface serial 2/0
Serial2/0 is up, line protocol is up (connected)
  Hardware is HD64570
  Internet address is 10.10.1.1/30
  MTU 1500 bytes, BW 128 Kbit, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation HDLC, loopback not set, keepalive set (10 sec)
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0 (size/max/drops); Total output drops: 0
  Queueing strategy: weighted fair
  Output queue: 0/1000/64/0 (size/max total/threshold/drops)
    Conversations 0/0/256 (active/max active/max total)
    Reserved Conversations 0/0 (allocated/max allocated)
    Available Bandwidth 96 kilobits/sec
  5 minute input rate 24 bits/sec, 0 packets/sec
  5 minute output rate 28 bits/sec, 0 packets/sec
    11 packets input, 1000 bytes, 0 no buffer
    Received 8 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    16 packets output, 1136 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 output buffer failures, 0 output buffers swapped out
  --More-- |
```

Below the terminal window, there is a "Ctrl+F6 to exit CLI focus" label and two buttons: "Copy" and "Paste". At the bottom left, there is a "Top" button.

6.



The screenshot shows a window titled "Router0" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The terminal output shows the following:

```
Last clearing of show interface counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
  Conversations 0/0/256 (active/max active/max total)
  Reserved Conversations 0/0 (allocated/max allocated)
  Available Bandwidth 96 kilobits/sec
5 minute input rate 24 bits/sec, 0 packets/sec
5 minute output rate 28 bits/sec, 0 packets/sec
  11 packets input, 1000 bytes, 0 no buffer
  Received 8 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  16 packets output, 1136 bytes, 0 underruns
  0 output errors, 0 collisions, 1 interface resets
  0 output buffer failures, 0 output buffers swapped out
--More--      0 carrier transitions
  DCD=up  DSR=up  DTR=up  RTS=up  CTS=up

Router#
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router rip
Router(config-router)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface serial 2/0
Router(config-if)#encapsulation ppp
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down

Router(config-if)#
```

At the bottom of the window, there is a "Ctrl+F6 to exit CLI focus" label, "Copy" and "Paste" buttons, and a "Top" button with a checkbox.

The screenshot shows a Cisco Router CLI window titled "Router1". The window has tabs for "Physical", "Config", "CLI", and "Attributes", with "CLI" selected. The main area is titled "IOS Command Line Interface" and contains the following text:

```
Router(config-router)#
Router(config-router)#end
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#
%SYS-5-CONFIG_I: Configured from console by console

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down

Router(config-router)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

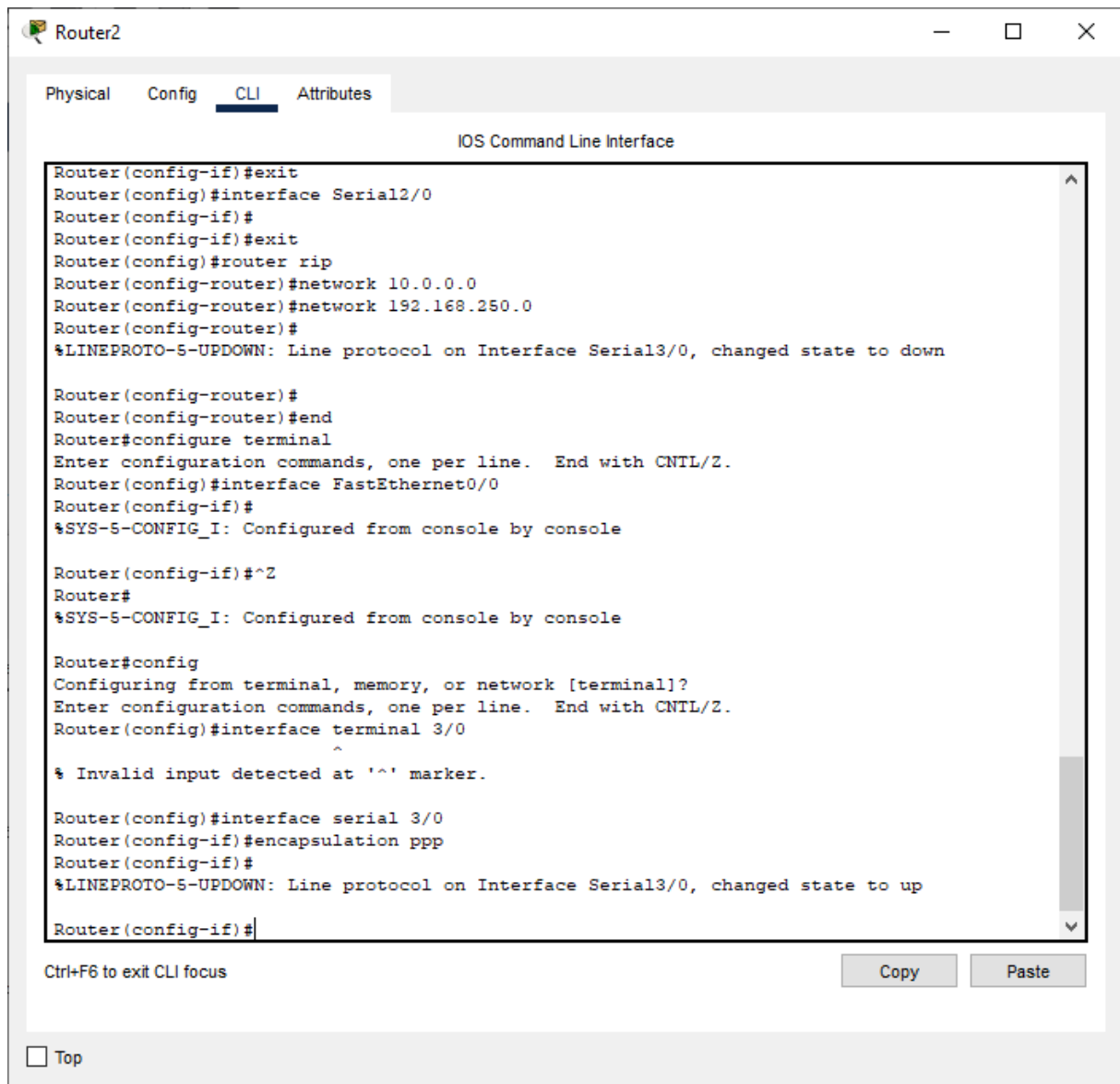
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface serial 2/0
Router(config-if)#encapsulation ppp
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

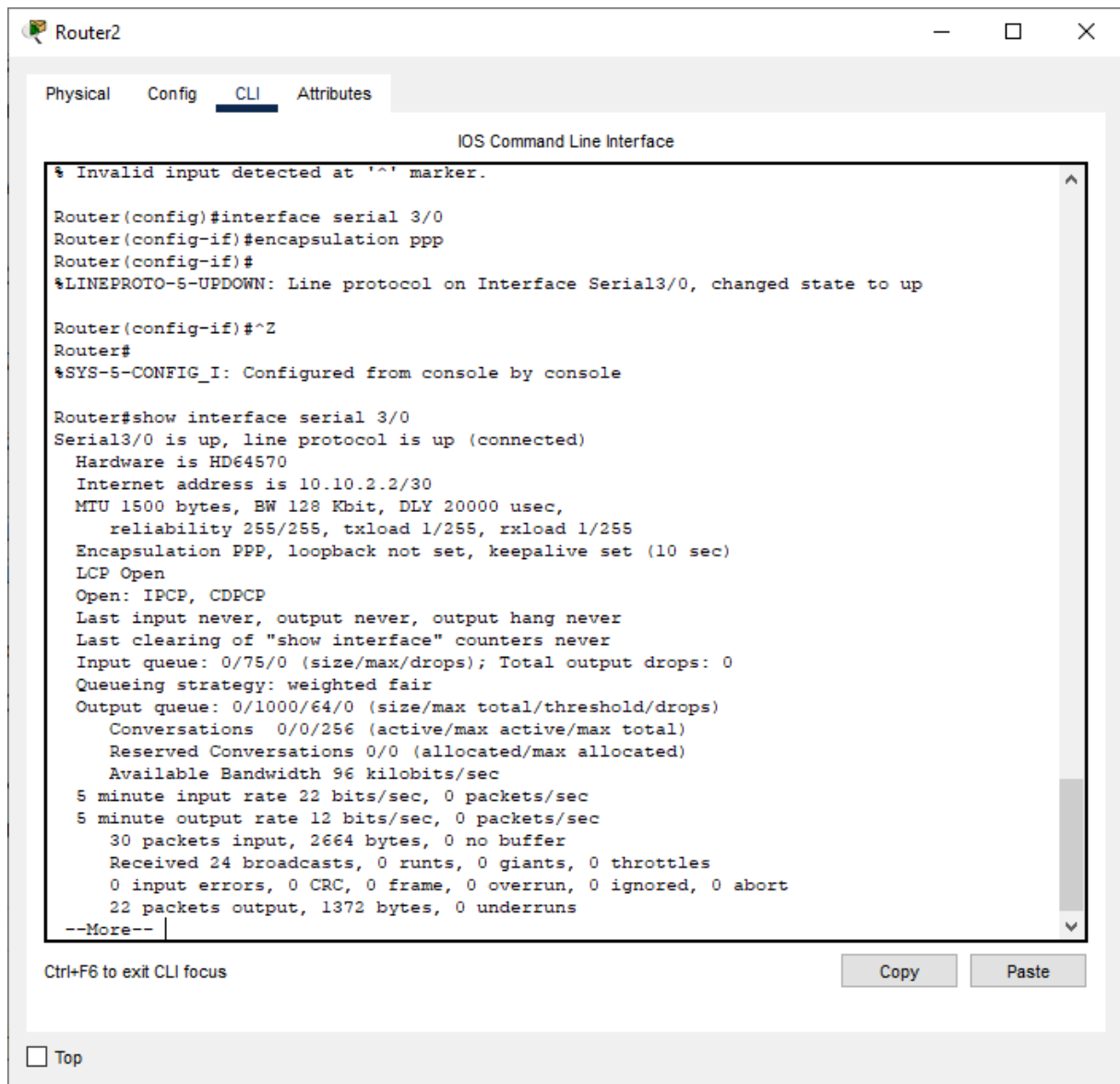
Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface serial 3/0
Router(config-if)#encapsulation ppp
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to down

Router(config-if)#
```

Below the terminal window, there is a prompt "Ctrl+F6 to exit CLI focus" and two buttons: "Copy" and "Paste". At the bottom left of the window, there is a checkbox labeled "Top".



7.



The screenshot shows a window titled "Router2" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The terminal output shows the following sequence of commands and responses:

```
% Invalid input detected at '^' marker.  
Router(config)#interface serial 3/0  
Router(config-if)#encapsulation ppp  
Router(config-if)#  
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up  
  
Router(config-if)#^Z  
Router#  
%SYS-5-CONFIG_I: Configured from console by console  
  
Router#show interface serial 3/0  
Serial3/0 is up, line protocol is up (connected)  
  Hardware is HD64570  
  Internet address is 10.10.2.2/30  
  MTU 1500 bytes, BW 128 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 never, output never, output hang never  
  Last clearing of "show interface" counters never  
  Input queue: 0/75/0 (size/max/drops); Total output drops: 0  
  Queueing strategy: weighted fair  
  Output queue: 0/1000/64/0 (size/max total/threshold/drops)  
    Conversations  0/0/256 (active/max active/max total)  
    Reserved Conversations 0/0 (allocated/max allocated)  
    Available Bandwidth 96 kilobits/sec  
  5 minute input rate 22 bits/sec, 0 packets/sec  
  5 minute output rate 12 bits/sec, 0 packets/sec  
    30 packets input, 2664 bytes, 0 no buffer  
    Received 24 broadcasts, 0 runts, 0 giants, 0 throttles  
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort  
    22 packets output, 1372 bytes, 0 underruns  
  --More--
```

Below the terminal window, there is a "Ctrl+F6 to exit CLI focus" message and two buttons: "Copy" and "Paste". At the bottom left of the window, there is a checkbox labeled "Top".

8.

The screenshot shows a window titled "Router1" with tabs for "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is active, displaying the "IOS Command Line Interface". The terminal output shows the following sequence of commands and responses:

```
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to up

Router(config-if)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface serial 3/0
Router(config-if)#encapsulation ppp
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to down

Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up

Router(config-if)#^Z
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#config
Translating "cconfig"...domain server (255.255.255.255)
% Unknown command or computer name, or unable to find computer address

Router#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface serial 2/0
Router(config-if)#encapsulation hdlc
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial2/0, changed state to down

Router(config-if)#
```

At the bottom of the CLI window, there is a "Ctrl+F6 to exit CLI focus" message and "Copy" and "Paste" buttons. Below the window, there is a "Top" button.

