POLITECHNIKA LUBELSKA
WYDZIAŁ ELEKTROTECHNIKI I INFORMATYKI

LABORATORIUM SIECI ROZPROSZONYCH

Ćw 1: Podstawy pracy w routerami firmy CISCO

prowadzący:
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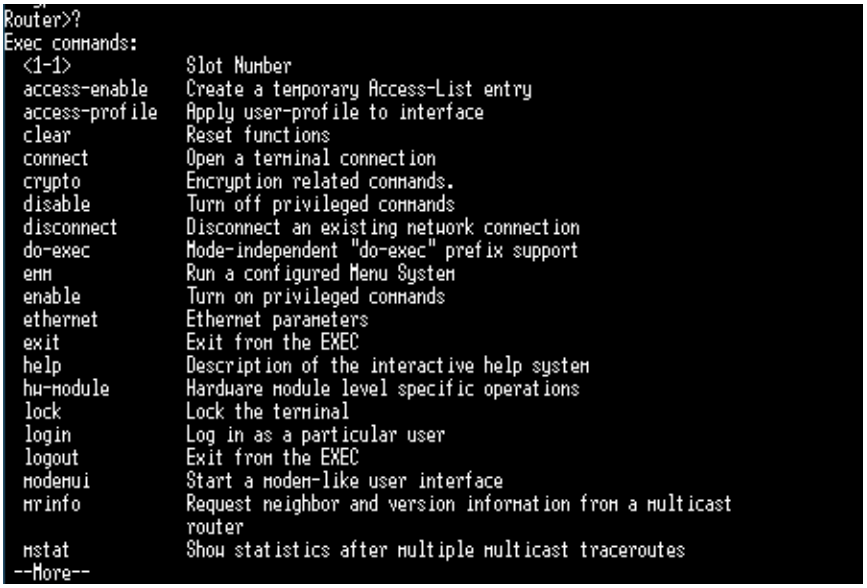
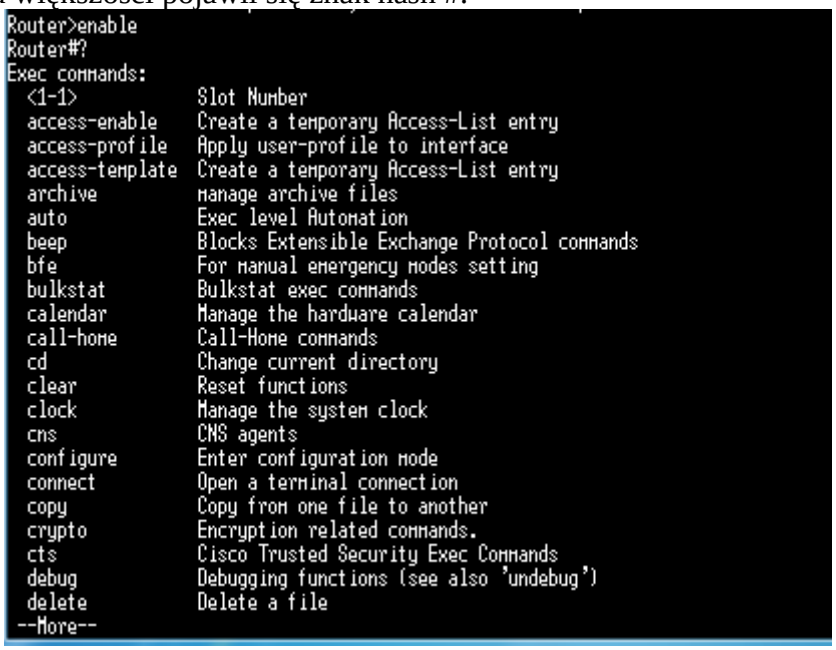
1d: znakiem zachęty w trybie user mode jest znak większości.
1e: w trybie użytkownika.



2b: clear, connect, login, disable, help, exit, logout, disconnect

3b: zamiast znaku większości pojawił się znak hash #.



4b: archive, beep, clear, configure, copy, debug, delete, calendar, cts, bfe. W trybie uprzywilejowanym użytkownik ma dostęp do większej ilości poleceń.

```
Router#disable
Router>show ?
  aaa               Show AAA values
  adjacency         Adjacent nodes
  arp               ARP table
  auto              Show Automation Template
  autoupgrade       Show autoupgrade related information
  backup            Backup status
  bcm560x           BCM560x HW Table
  bgp               BGP information
  cache             Shows Device-Sensor Cache Informations
  calendar          Display the hardware calendar
  call              Show call
  call-home         Show command for call home
  caller            Display information about dialup connections
  capability        Capability Information
  cca               CCA information
  cdapi             CDAPI information
  class-map         Show CPL Class Map
  clock             Display the system clock
  cns               CNS agents
  compress          Show compression statistics
  connection        Show Connection
  context           Show context information about recent crash(s)
--More--
```

```
Router#show ?
  aaa                     Show AAA values
  access-expression       List access expression
  access-lists            List access lists
  adjacency               Adjacent nodes
  aliases                 Display alias commands
  alignment               Show alignment information
  application             Application Routing
  archive                 Archive functions
  arp                     ARP table
  async                   Information on terminal lines used as router
                          interfaces
  authentication          Shows Auth Manager registrations or sessions
  auto                    Show Automation Template
  autoupgrade             Show autoupgrade related information
  backhaul-session-manager  Backhaul Session Manager information
  backup                  Backup status
  bcm560x                 BCM560x HW Table
  beep                    Show BEEP information
  bgp                     BGP information
  bridge                  Bridge Forwarding/Filtering Database [verbose]
  buffers                 Buffer pool statistics
  bulkstat                Bulkstat show commands
--More--
```

6c: w trybie uprzywilejowanym użytkownik ma dostęp do większej ilości poleceń.

```
Router>enable
Router#show version
Cisco IOS Software, C2900 Software (C2900-UNIVERSALK9-M), Version 15.3(3)M5, RELEASE SOFTWARE (fc3)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2015 by Cisco Systems, Inc.
Compiled Wed 04-Feb-15 09:02 by prod_rel_team

ROM: System Bootstrap, Version 15.0(1r)M16, RELEASE SOFTWARE (fc1)

Router uptime is 34 minutes
System returned to ROM by power-on
System image file is "flash0:c2900-universalk9-mz.SPA.153-3.M5.bin"
Last reload type: Normal Reload
Last reload reason: power-on



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use. Delivery of Cisco cryptographic products does not imply
third-party authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product you
agree to comply with applicable laws and regulations. If you are unable
 --More--
```
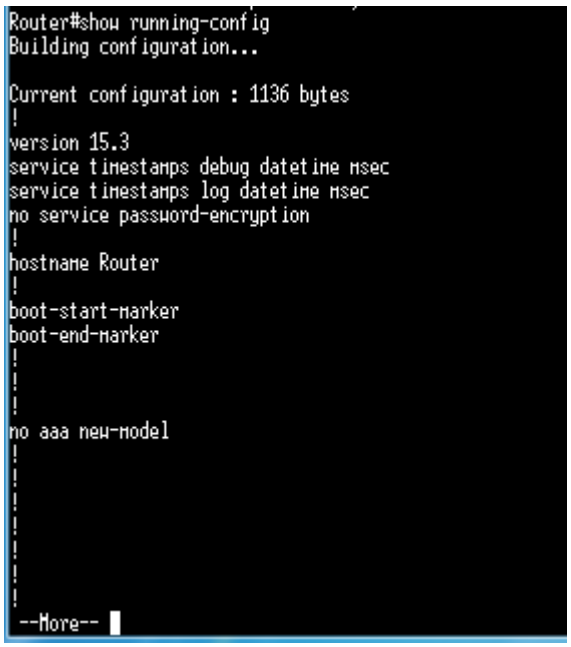
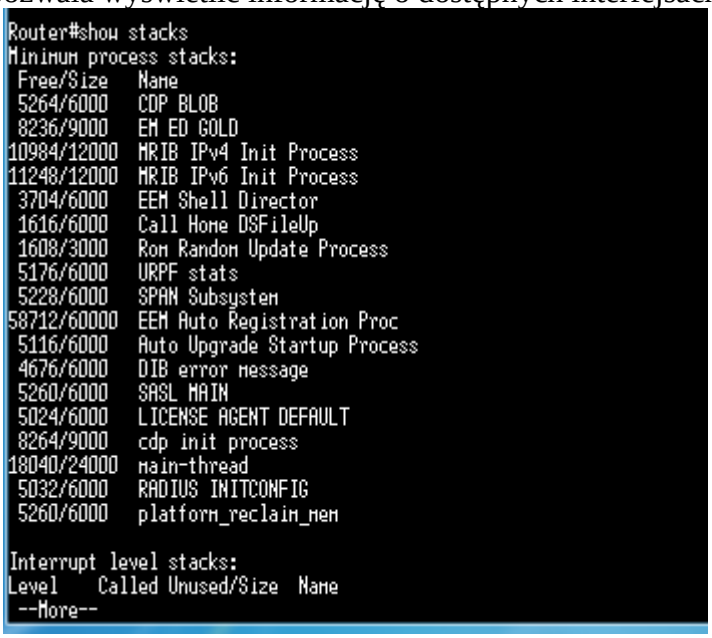

show version pokazuje informacje o hardware i software systemu.



show running-config pozwala wyświetlić informację o dostępnych interfejsach.



show stacks służy do monitorowania procesów i procedur przerwania.

```
Router#show startup-config
Using 1330 out of 262136 bytes
!
! Last configuration change at 11:20:54 UTC Mon Apr 10 2017
version 15.3
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname Router
!
boot-start-marker
boot-end-marker
!
!
!
no aaa new-model
!
!
!
!
!
!
!
 --More--
```

show startup-config wyświetla konfigurację startową.

```
Router#show buffers
Buffer elements:
     1660 in free list
     598 hits, 0 misses, 1242 created

Public buffer pools:
Small buffers, 104 bytes (total 62, permanent 50, peak 62 @ 00:30:14):
     60 in free list (20 min, 150 max allowed)
     45 hits, 4 misses, 0 trims, 12 created
     0 failures (0 no memory)
Middle buffers, 600 bytes (total 40, permanent 25, peak 40 @ 00:30:14):
     40 in free list (10 min, 150 max allowed)
     46 hits, 5 misses, 0 trims, 15 created
     0 failures (0 no memory)
Big buffers, 1536 bytes (total 51, permanent 50, peak 51 @ 00:41:15):
     51 in free list (5 min, 150 max allowed)
     29 hits, 0 misses, 0 trims, 1 created
     0 failures (0 no memory)
VeryBig buffers, 4520 bytes (total 11, permanent 10, peak 11 @ 00:41:15):
     11 in free list (0 min, 100 max allowed)
     0 hits, 0 misses, 0 trims, 1 created
     0 failures (0 no memory)
Large buffers, 5024 bytes (total 1, permanent 0, peak 1 @ 00:41:38):
     1 in free list (0 min, 10 max allowed)

Router#!B
```

show buffers wyświetla informacje o buforach.

```
Router#show memory
               Head    Total(b)     Used(b)     Free(b)   Lowest(b)  Largest(b)


          I/O memory

 Address      Bytes     Prev     Next Ref     PrevF    NextF Alloc PC  what
0D800000 0000040944 00000000 0D80A020 000  3BB87714 0        332AD5B0  (fragment)
0D80A020 0000000128 0D800000 0D80A0D0 001  -------- -------- 30331DE0  *Init*
0D80A0D0 0000010448 0D80A020 0D80C900 001  -------- -------- 332B36C8  *Init*
0D80C900 0000524368 0D80A0D0 0D88CA50 001  -------- -------- 3033738D  WQE Buffer Pool
0D88CA50 0000524368 0D80C900 0D90CAD0 001  -------- -------- 303373CC  CF DMA pool
0D90CAD0 0000065616 0D88CA50 0D91CB50 001  -------- -------- 303371FC  Command Buffer Pool
0D91CB50 0000786512 0D90CAD0 0D9DCBD0 001  -------- -------- 30337078  Gather List Buffer Pool
0D9DCBD0 0000008272 0D91CB50 0D9DEC50 001  -------- -------- 30331DA8  *Init*
0D9DEC50 0000000080 0D9DCBD0 0D9DECD0 001  -------- -------- 30331DFC  *Init*
0D9DECD0 0000008272 0D9DEC50 0D9E0D50 001  -------- -------- 30331DA8  *Init*
0D9E0D50 0000000080 0D9DECD0 0D9E0DD0 001  -------- -------- 30331DE0  *Init*
0D9E0DD0 0000000080 0D9E0D50 0D9E0E50 001  -------- -------- 30331DFC  *Init*
0D9E0E50 0000008272 0D9E0DD0 0D9E2ED0 001  -------- -------- 30331DA8  *Init*

Router#B
```

show memory wyświetla szczegółowe informacje o pamięci.

```
Router#shou protocols
Global values:
  Internet Protocol routing is enabled
Embedded-Service-Engine0/0 is administratively down, line protocol is down
GigabitEthernet0/0 is administratively down, line protocol is down
GigabitEthernet0/1 is administratively down, line protocol is down
GigabitEthernet0/2 is administratively down, line protocol is down
Serial0/0/0 is administratively down, line protocol is down
Serial0/0/1 is administratively down, line protocol is down
Router#
```

show protocols wyświetla skonfigurowane protokoły.

```
Router#shou flash
-#- --length-- -----date/time------ path
 --More--
```

Show flash wyświetla układ (layout) pamięci flash systemu.

6e:
wersja systemu: 15.3(3)M5
nazwa pliku z obrazem systemu: flash0:c2900-universalk9-mz.SPA.153-3.M5.bin (o ile nie popełniłem literówki)

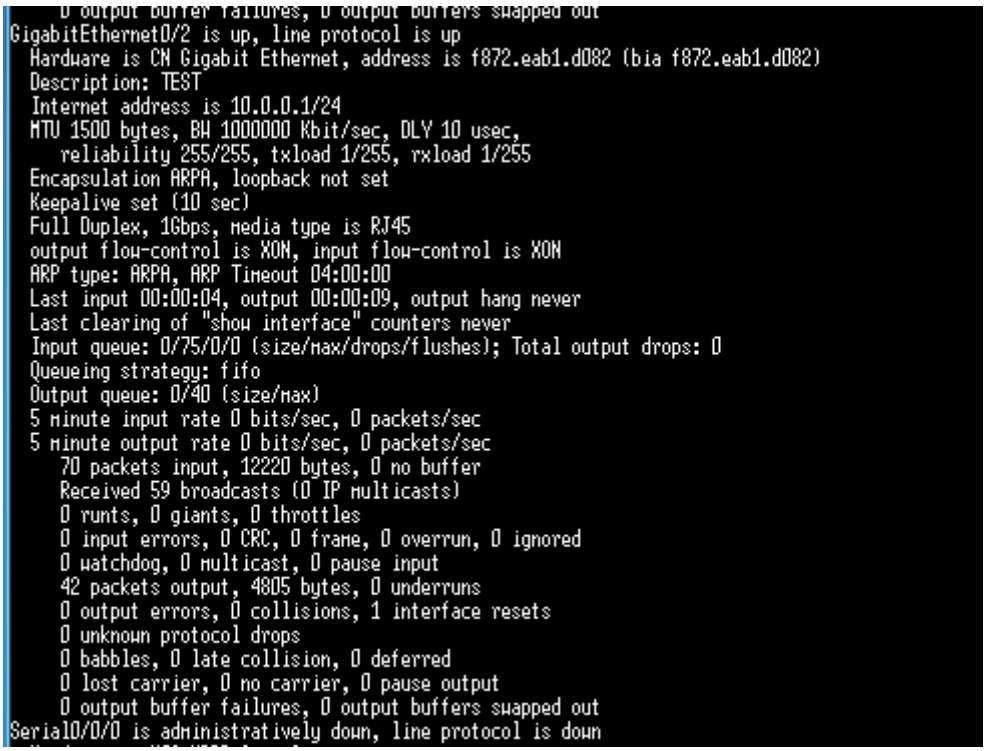
```
Router#shou interfaces
Embedded-Service-Engine0/0 is administratively down, line protocol is down
  Hardware is Embedded Service Engine, address is 0000.0000.0000 (bia 0000.0000.0000)
  MTU 1500 bytes, BW 10000 Kbit/sec, DLY 1000 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/64/0/0 (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
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts (0 IP multicasts)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 input packets with dribble condition detected
     0 packets output, 0 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 unknown protocol drops
```

7a: MTU(m… …yć dany interfejs bez…

7b: zastosow…

7c: wpisując…

```
Router#shou interfaces
Embedded-Service-Engine0/0 is administratively down, line protocol is down
  Hardware is Embedded Service Engine, address is 0000.0000.0000 (bia 0000.0000.0000)
  MTU 1500 bytes, BW 10000 Kbit/sec, DLY 1000 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  ARP type: ARPA, ARP Timeout 04:00:00
% Unknown command or computer name, or unable to find computer address
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface GigabitEthernet0/2
Router(config-if)#ip address 10.0.0.1 255.255.255.0
Router(config-if)#description TEST
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#^Z
Router#
*Oct 10 18:22:54.131: %SYS-5-CONFIG_I: Configured from console by console
     0 input packets with dribble condition detected
     0 packets output, 0 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 unknown protocol drops
     0 babbles, 0 late collision, 0 deferred
     0 lost carrier, 0 no carrier
     0 output buffer failures, 0 output buffers swapped out
```



9 a: **interface gigabitethernet** x/y, gdzie przed ukośnikiem podajemy numer slotu, a po ukośniku numer portu dla interfejsu Gigabit Ethernet

9b:
Data Communications Equipment (DCE) – urządzenie komunikacyjne, które przesyła dane przez pętlę lokalną i umożliwia urządzeniom DTE dostęp do łączy telekomunikacyjnych, np. modem.

Data Terminal Equipment (DTE) – urządzenie końcowe klienta stanowiące źródło lub miejsce przeznaczenia danych.