

TD – laboratoria 0

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1 Konfiguracja ipv4

1.1 Konfiguracja routera R1

1.2 Konfiguracja routera R2

Po połączeniu z routerem R2, ipv4 address routera nie jest ustawiony.

Output

```
88 R2#show interface
89 Ethernet0/0 is administratively down, line protocol is down
90   Hardware is AmdP2, address is cc03.1a35.0000 (bia cc03.1a35.0000)
91   MTU 1500 bytes, BW 10000 Kbit/sec, DLY 1000 usec,
92     reliability 255/255, txload 1/255, rxload 1/255
93   Encapsulation ARPA, loopback not set
94   Keepalive set (10 sec)
95   ARP type: ARPA, ARP Timeout 04:00:00
96   Last input never, output never, output hang never
97   Last clearing of "show interface" counters never
98   Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
99   Queueing strategy: fifo
100  Output queue: 0/40 (size/max)
101  5 minute input rate 0 bits/sec, 0 packets/sec
102  5 minute output rate 0 bits/sec, 0 packets/sec
103    0 packets input, 0 bytes, 0 no buffer
104    Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
105    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
106    0 input packets with dribble condition detected
```

```

107      0 packets output, 0 bytes, 0 underruns
108      0 output errors, 0 collisions, 0 interface resets
109      0 unknown protocol drops
110      0 babbles, 0 late collision, 0 deferred
111      0 lost carrier, 0 no carrier

```

By ustawić ipv4 wchodzimy w tryb konfiguracji i ustawiamy ipv4 adres.

```

----- Output -----
113 R2#conf t
114 Enter configuration commands, one per line. End with CNTL/Z.
115 R2(config)#interface Ethernet 0/0
116 R2(config-if)#ip address 192.168.0.2 255.255.255.0
117 R2(config-if)#exit
118 R2(config)#^Z
119 R2#
120 *Mar  1 00:05:08.023: %SYS-5-CONFIG_I: Configured from console by
    ↪ console

```

Adres ipv4 routera R2 zostaje ustawiony na 192.168.0.2 z maską 255.255.255.0.

```

----- Output -----
121 R2#show interfaces
122 Ethernet0/0 is administratively down, line protocol is down
123   Hardware is AmdP2, address is cc03.1a35.0000 (bia cc03.1a35.0000)
124   Internet address is 192.168.0.2/24
125   MTU 1500 bytes, BW 10000 Kbit/sec, DLY 1000 usec,
126     reliability 255/255, txload 1/255, rxload 1/255
127   Encapsulation ARPA, loopback not set
128   Keepalive set (10 sec)
129   ARP type: ARPA, ARP Timeout 04:00:00
130   Last input never, output never, output hang never
131   Last clearing of "show interface" counters never
132   Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
133   Queueing strategy: fifo
134   Output queue: 0/40 (size/max)
135   5 minute input rate 0 bits/sec, 0 packets/sec
136   5 minute output rate 0 bits/sec, 0 packets/sec
137     0 packets input, 0 bytes, 0 no buffer

```

```

138      Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
139      0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
140      0 input packets with dribble condition detected
141      0 packets output, 0 bytes, 0 underruns
142      0 output errors, 0 collisions, 0 interface resets
143      0 unknown protocol drops
144      0 babbles, 0 late collision, 0 deferred

```

Pozostaje nam jeszcze ustawić *line protocol* na *up* przy pomocy *no shutdown*. W tym celu ponownie otwieramy tryb konfiguracji.

Output

```

147 R2#conf t
148 Enter configuration commands, one per line. End with CNTL/Z.
149 R2(config)#interface Ethernet 0/0
150 R2(config-if)#no shutdown
151 R2(config-if)#
152 *Mar  1 00:06:10.539: %LINK-3-UPDOWN: Interface Ethernet0/0, changed
    ↪ state to up
153 *Mar  1 00:06:11.539: %LINEPROTO-5-UPDOWN: Line protocol on Interface
    ↪ Ethernet0/0, changed state to up
154 R2(config-if)#exit
155 R2(config)#^Z
156 R2#
157 *Mar  1 00:06:19.503: %SYS-5-CONFIG_I: Configured from console by
    ↪ console

```

R2 jest gotowy do łączenia z R1 przez Ethernet 0/0.

Output

```

162 R2#show interface Ethernet 0/0
163 Ethernet0/0 is up, line protocol is up
164   Hardware is AmdP2, address is cc03.1a35.0000 (bia cc03.1a35.0000)
165   Internet address is 192.168.0.2/24
166   MTU 1500 bytes, BW 10000 Kbit/sec, DLY 1000 usec,
167       reliability 255/255, txload 1/255, rxload 1/255
168   Encapsulation ARPA, loopback not set
169   Keepalive set (10 sec)
170   ARP type: ARPA, ARP Timeout 04:00:00

```

```

171 Last input never, output 00:00:01, output hang never
172 Last clearing of "show interface" counters never
173 Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
174 Queueing strategy: fifo
175 Output queue: 0/40 (size/max)
176 5 minute input rate 0 bits/sec, 0 packets/sec
177 5 minute output rate 0 bits/sec, 0 packets/sec
178   0 packets input, 0 bytes, 0 no buffer
179   Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
180   0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
181   0 input packets with dribble condition detected
182   9 packets output, 1365 bytes, 0 underruns
183   0 output errors, 0 collisions, 1 interface resets
184   0 unknown protocol drops
185   0 babbles, 0 late collision, 0 deferred

```

1.3 Połączenie między routerami

Powyższa konfiguracja pozwala nam z powodzeniem kontakować się między R1 i R2.

```

                                Output
193 R2#ping 192.168.0.1
194
195 Type escape sequence to abort.
196 Sending 5, 100-byte ICMP Echos to 192.168.0.1, timeout is 2 seconds:
197 .!!!!
198 Success rate is 80 percent (4/5), round-trip min/avg/max = 24/35/60 ms
199 R2#ping 192.168.0.1
200
201 Type escape sequence to abort.
202 Sending 5, 100-byte ICMP Echos to 192.168.0.1, timeout is 2 seconds:
203 !!!!!
204 Success rate is 100 percent (5/5), round-trip min/avg/max = 12/23/28 ms
205 R2#ping 192.168.0.1
206
207 Type escape sequence to abort.

```

```

208 Sending 5, 100-byte ICMP Echos to 192.168.0.1, timeout is 2 seconds:
209 !!!!!
210 Success rate is 100 percent (5/5), round-trip min/avg/max = 12/23/28 ms
211 R2#ping 192.168.0.1
212
213 Type escape sequence to abort.
214 Sending 5, 100-byte ICMP Echos to 192.168.0.1, timeout is 2 seconds:
215 !!!!!
216 Success rate is 100 percent (5/5), round-trip min/avg/max = 20/24/28 ms

```

2 Konfiguracja ipv6

2.1 Konfiguracja routera R1

2.2 Konfiguracja routera R2

By skonfigurować R2 pod użycie ipv6 wchodzimy w tryb konfiguracji i ustawiamy ipv6 adres.

```

                                     Output
272 R2#conf t
273 Enter configuration commands, one per line. End with CNTL/Z.
274 R2(config)#interface Ethernet 0/0
275 R2(config-if)#ipv6 address
276 % Incomplete command.
277
278 R2(config-if)#ipv6 address 2001:DB8:0:1::1/64
279 R2(config-if)#ipv6 enable
280 R2(config-if)#exit
281 R2(config)#^Z
282 R2#
283 *Mar  1 00:13:15.983: %SYS-5-CONFIG_I: Configured from console by
    ↪ console

```

R2 znajduje się pod adresem 2001:DB8:0:1::1.

Output

```
309 R2#show ipv6 interface
310 Ethernet0/0 is up, line protocol is up
311     IPv6 is enabled, link-local address is FE80::CE03:1AFF:FE35:0
312     Global unicast address(es):
313         2001:DB8:0:1::1, subnet is 2001:DB8:0:1::/64
314     Joined group address(es):
315         FF02::1
316         FF02::2
317         FF02::1:FF00:1
318         FF02::1:FF35:0
319     MTU is 1500 bytes
320     ICMP error messages limited to one every 100 milliseconds
321     ICMP redirects are enabled
322     ND DAD is enabled, number of DAD attempts: 1
323     ND reachable time is 30000 milliseconds
```

Usuwamy ustawiony wcześniej ipv4 adres, dodajemy unicast routing.

Output

```
324 R2#conf t
325 Enter configuration commands, one per line. End with CNTL/Z.
326 R2(config)#interface Ethernet 0/0
327 R2(config-if)#no ip address
328 R2(config-if)#exit
329 R2(config)#^Z
```

Output

```
376 R2#conf t
377 Enter configuration commands, one per line. End with CNTL/Z.
378 R2(config)#interface Ethernet 0/0
379 R2(config-if)#ipv6 unicast-routing
380 R2(config)#exit
381 R2#
382 *Mar  1 00:17:24.611: %SYS-5-CONFIG_I: Configured from console by
    ↵ console
```

R2 jest gotowy do łączenia przez Ethernet 0/0 korzystając z ipv6.

Output

```
383 R2#show ipv6 interface
384 Ethernet0/0 is up, line protocol is up
385   IPv6 is enabled, link-local address is FE80::CE03:1AFF:FE35:0
386   Global unicast address(es):
387     2001:DB8:0:1::1, subnet is 2001:DB8:0:1::/64
388   Joined group address(es):
389     FF02::1
390     FF02::2
391     FF02::1:FF00:1
392     FF02::1:FF35:0
393   MTU is 1500 bytes
394   ICMP error messages limited to one every 100 milliseconds
395   ICMP redirects are enabled
396   ND DAD is enabled, number of DAD attempts: 1
397   ND reachable time is 30000 milliseconds
398   ND advertised reachable time is 0 milliseconds
399   ND advertised retransmit interval is 0 milliseconds
400   ND router advertisements are sent every 200 seconds
401   ND router advertisements live for 1800 seconds
402   Hosts use stateless autoconfig for addresses.
```

2.3 Połączenie między routerami

Powyższa konfiguracja pozwala nam z powodzeniem kontakować się między R1 i R2.

Output

```
416 R2#ping ipv6 2001:DB8:0:1::2
417
418 Type escape sequence to abort.
419 Sending 5, 100-byte ICMP Echos to 2001:DB8:0:1::2, timeout is 2
    ↪ seconds:
420 !!!!!
421 Success rate is 100 percent (5/5), round-trip min/avg/max = 12/20/28 ms
422 R2#ping ipv6 2001:DB8:0:1::2
423
424 Type escape sequence to abort.
```

```
425 Sending 5, 100-byte ICMP Echos to 2001:DB8:0:1::2, timeout is 2
    ↪ seconds:
426 !!!!!
427 Success rate is 100 percent (5/5), round-trip min/avg/max = 24/27/32 ms
```