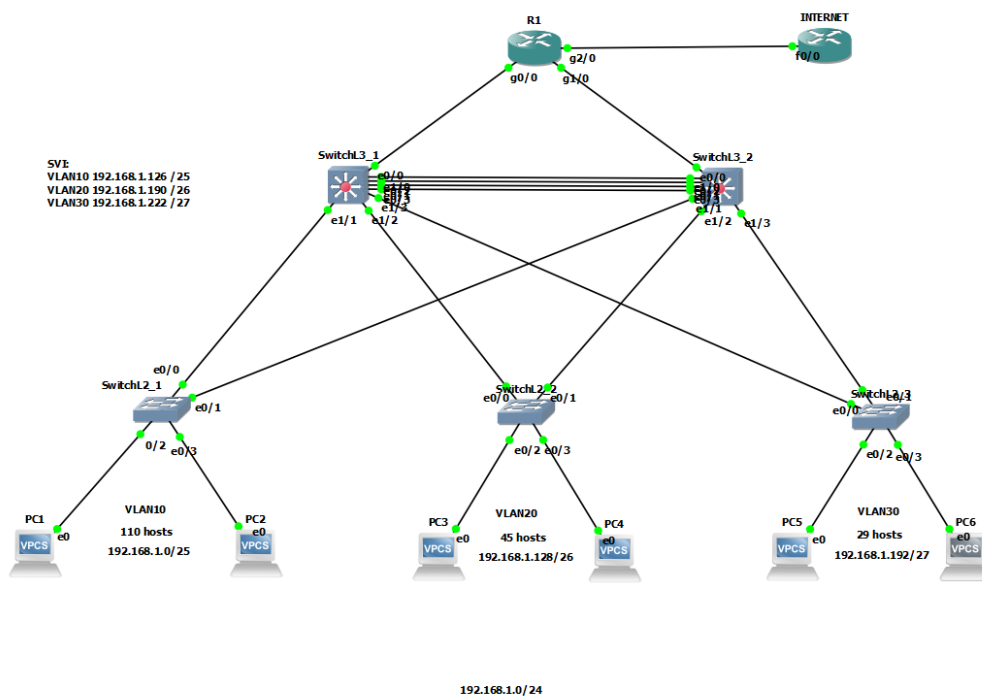


## PROJEKT



1. Konfiguracja IP hostów oraz domyślnej bramki:

```
PC1> ip 192.168.1.1/25 192.168.1.126
Checking for duplicate address...
PC1 : 192.168.1.1 255.255.255.128 gateway 192.168.1.126
PC1> 
```

```
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PC2> ip 192.168.1.2/25 192.168.1.126
Checking for duplicate address...
PC2 : 192.168.1.2 255.255.255.128 gateway 192.168.1.126
PC2> 
```

```
ip 192.168.1.129/26 192.168.1.190
Checking for duplicate address...
PC3 : 192.168.1.129 255.255.255.192 gateway 192.168.1.190
PC3> 
```

```
ip 192.168.1.130/26 192.168.1.190
Checking for duplicate address...
PC4 : 192.168.1.130 255.255.255.192 gateway 192.168.1.190
PC4> 
```

```
PC1 PC2 PC3 PC4 PC5 PC6
Welcome to Virtual PC Simulator, version 0.8.2
Dedicated to Daling.
Build time: Aug 23 2021 11:15:00
Copyright (c) 2007-2015, Paul Meng (mirnshi@gmail.com)
All rights reserved.

VPCS is free software, distributed under the terms of the "BSD" licence.
Source code and license can be found at vpcs.sf.net.
For more information, please visit wiki.freecode.com.cn.

Press '?' to get help.

Executing the startup file

PC5> ip 192.168.1.193/27 192.168.1.222
Checking for duplicate address...
PC5 : 192.168.1.193 255.255.255.224 gateway 192.168.1.222

PC5> 
```

```
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PC1 PC2 PC3 PC4 PC5 PC6
Welcome to Virtual PC Simulator, version 0.8.2
Dedicated to Daling.
Build time: Aug 23 2021 11:15:00
Copyright (c) 2007-2015, Paul Meng (mirnshi@gmail.com)
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Source code and license can be found at vpcs.sf.net.
For more information, please visit wiki.freecode.com.cn.

Press '?' to get help.

Executing the startup file

PC6> ip 192.168.1.194/27 192.168.1.222
Checking for duplicate address...
PC6 : 192.168.1.194 255.255.255.224 gateway 192.168.1.222

PC6> 
```

## 2. Konfiguracja VLANÓW na switchach L2:



```
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#en
SwitchL2_1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SwitchL2_1(config)#inter
SwitchL2_1(config)#interface rang
SwitchL2_1(config)#interface range e0/2 - 3
SwitchL2_1(config-if-range)#sw
SwitchL2_1(config-if-range)#switchport ?
    access      Set access mode characteristics of the interface
    autostate    Include or exclude this port from vlan link up calculation
    dot1q        Set interface dot1q properties
    host         Set port host
    mode         Set trunking mode of the interface
    port-security Security related command
    private-vlan Set the private VLAN configuration
    trunk        Set trunking characteristics of the interface
    voice        Voice appliance attributes
    <cr>

SwitchL2_1(config-if-range)#switchport acc
SwitchL2_1(config-if-range)#switchport access vlan 10
% Access VLAN does not exist. Creating vlan 10
SwitchL2_1(config-if-range)#
```

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```
SwitchL2_1 SwitchL2_2 SwitchL2_3
SwitchL2_2#
SwitchL2_2#
SwitchL2_2#
SwitchL2_2#
SwitchL2_2#
SwitchL2_2#
SwitchL2_2#
SwitchL2_2#
SwitchL2_2#
SwitchL2_2#
SwitchL2_2#
SwitchL2_2#
SwitchL2_2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SwitchL2_2(config)#int ra
SwitchL2_2(config)#int range e0/2 - 3
SwitchL2_2(config-if-range)#swi
SwitchL2_2(config-if-range)#switchport ?
    access      Set access mode characteristics of the interface
    autostate    Include or exclude this port from vlan link up calculation
    dot1q        Set interface dot1q properties
    host         Set port host
    mode         Set trunking mode of the interface
    port-security Security related command
    private-vlan Set the private VLAN configuration
    trunk        Set trunking characteristics of the interface
    voice        Voice appliance attributes
    <cr>

SwitchL2_2(config-if-range)#switchport acc
SwitchL2_2(config-if-range)#switchport access ?
    vlan Set VLAN when interface is in access mode

SwitchL2_2(config-if-range)#switchport access vlan 20
% Access VLAN does not exist. Creating vlan 20
SwitchL2_2(config-if-range)#
```

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```
SwitchL2_1 SwitchL2_2 SwitchL2_3
*Jul 26 19:40:12.076: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/
1, changed state to up
*Jul 26 19:40:12.092: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/
2, changed state to up
*Jul 26 19:40:12.107: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet2/
3, changed state to up
*Jul 26 19:40:12.107: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet3/
1, changed state to up
*Jul 26 19:40:12.123: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet3/
2, changed state to up
*Jul 26 19:40:12.141: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet3/
3, changed state to up
*Jul 26 19:40:12.150: %LINEPROTO-5-UPDOWN: Line protocol on Interface Ethernet3/
3, changed state to up
*Jul 26 19:40:12.700: %LINK-5-CHANGED: Interface Vlan1, changed state to admini
stratively down
SwitchL2_3#
SwitchL2_3#
SwitchL2_3#
SwitchL2_3#
SwitchL2_3#
SwitchL2_3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SwitchL2_3(config)#int ra
SwitchL2_3(config)#int range e02 - 3
    ^
% Invalid input detected at '^' marker.

SwitchL2_3(config)#int range e02-3
    ^
% Invalid input detected at '^' marker.

SwitchL2_3(config)#int range e0/2 - 3
SwitchL2_3(config-if-range)#swi
SwitchL2_3(config-if-range)#switchport access vlan 30
% Access VLAN does not exist. Creating vlan 30
SwitchL2_3(config-if-range)#
```

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#### 4. Ustawienia na switchach domeny VTPDaniel

```
SwitchL2_1 SwitchL2_2 SwitchL2_3
logging synchronous
line vty 0 4
login
!
end

SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#
SwitchL2_1#vtp do
SwitchL2_1#vtp do?
% Unrecognized command
SwitchL2_1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SwitchL2_1(config)#vtp ?
    domain      Set the name of the VTP administrative domain.
    file         Configure IFS filesystem file where VTP configuration is stored.
    interface    Configure interface as the preferred source for the VTP IP updater
                address.
    mode         Configure VTP device mode
    password     Set the password for the VTP administrative domain
    pruning      Set the administrative domain to permit pruning
    version      Set the administrative domain to VTP version

SwitchL2_1(config)#vtp dom
SwitchL2_1(config)#vtp domain VTPDaniel
Changing VTP domain name from NULL to VTPDaniel
SwitchL2_1(config)#

SwitchL2_1 SwitchL2_2 SwitchL2_3
SwitchL2_1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SwitchL2_1(config)#vtp ?
    domain      Set the name of the VTP administrative domain.
    file         Configure IFS filesystem file where VTP configuration is stored.
    interface    Configure interface as the preferred source for the VTP IP updater
                address.
    mode         Configure VTP device mode
    password     Set the password for the VTP administrative domain
    pruning      Set the administrative domain to permit pruning
    version      Set the administrative domain to VTP version

SwitchL2_1(config)#vtp dom
SwitchL2_1(config)#vtp domain VTPDaniel
Changing VTP domain name from NULL to VTPDaniel
SwitchL2_1(config)#vtp status
^
% Invalid input detected at '^' marker.

SwitchL2_1(config)#do show vtp status
VTP Version capable      : 1 to 3
VTP version running      : 1
VTP Domain Name          : VTPDaniel
VTP Pruning Mode         : Disabled
VTP Traps Generation     : Disabled
Device ID                 : aabb.cc00.0800
Configuration last modified by 0.0.0.0 at 7-26-23 20:06:28
Local updater ID is 0.0.0.0 (no valid interface found)

Feature VLAN:
-----
VTP Operating Mode       : Server
Maximum VLANs supported locally : 1005
Number of existing VLANs : 6
Configuration Revision    : 1
MD5 digest                : 0x62 0xC0 0xFB 0xEF 0x15 0xC4 0xCE 0x80
                          : 0x54 0xA1 0x26 0x73 0x2F 0x58 0xA9 0xF2

SwitchL2_1(config)#
```

Weryfikacja VLANOW na switchach

Miałem problem z synchronizacją VTP Domain. Problem rozwiązałem tworząc nieuzywany VLAN999





## Sprawdzenie na Multilayer Switchach - DZIAŁA

```
SwitchL31 x SwitchL32 SwitchL2_1 SwitchL2_2 SwitchL2_3
```

```
Maximum VLANs supported locally : 1005
Number of existing VLANs       : 7
Configuration Revision         : 2
MD5 digest                     : 0x20 0x19 0x77 0x15 0x22 0x60 0x4C 0x30
                               : 0x81 0x11 0x18 0x20 0x67 0x25 0xB5 0x14

SwitchL31#show vlan brief

VLAN Name                Status    Ports
-----
1    default              active    Et0/0, Et2/0, Et2/1, Et2/2
                               Et2/3, Et3/0, Et3/1, Et3/2
                               Et3/3, Et4/0, Et4/1, Et4/2
                               Et4/3, Et5/0, Et5/1, Et5/2
                               Et5/3
20   VLAN0020             active
999  unused               active
1002 fddi-default         act/unsup
1003 token-ring-default  act/unsup
1004 fddinet-default     act/unsup
1005 trnet-default       act/unsup
SwitchL31#show vlan brief

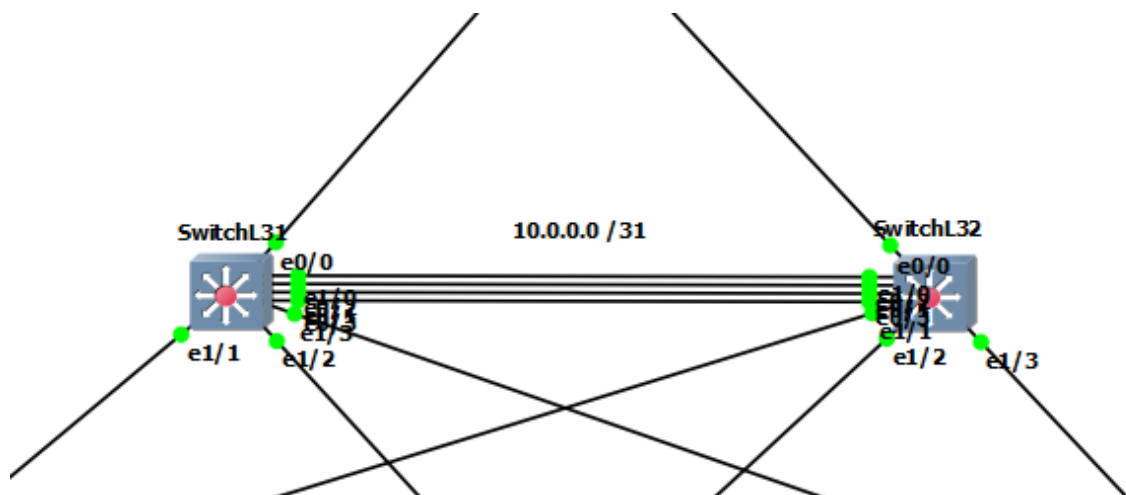
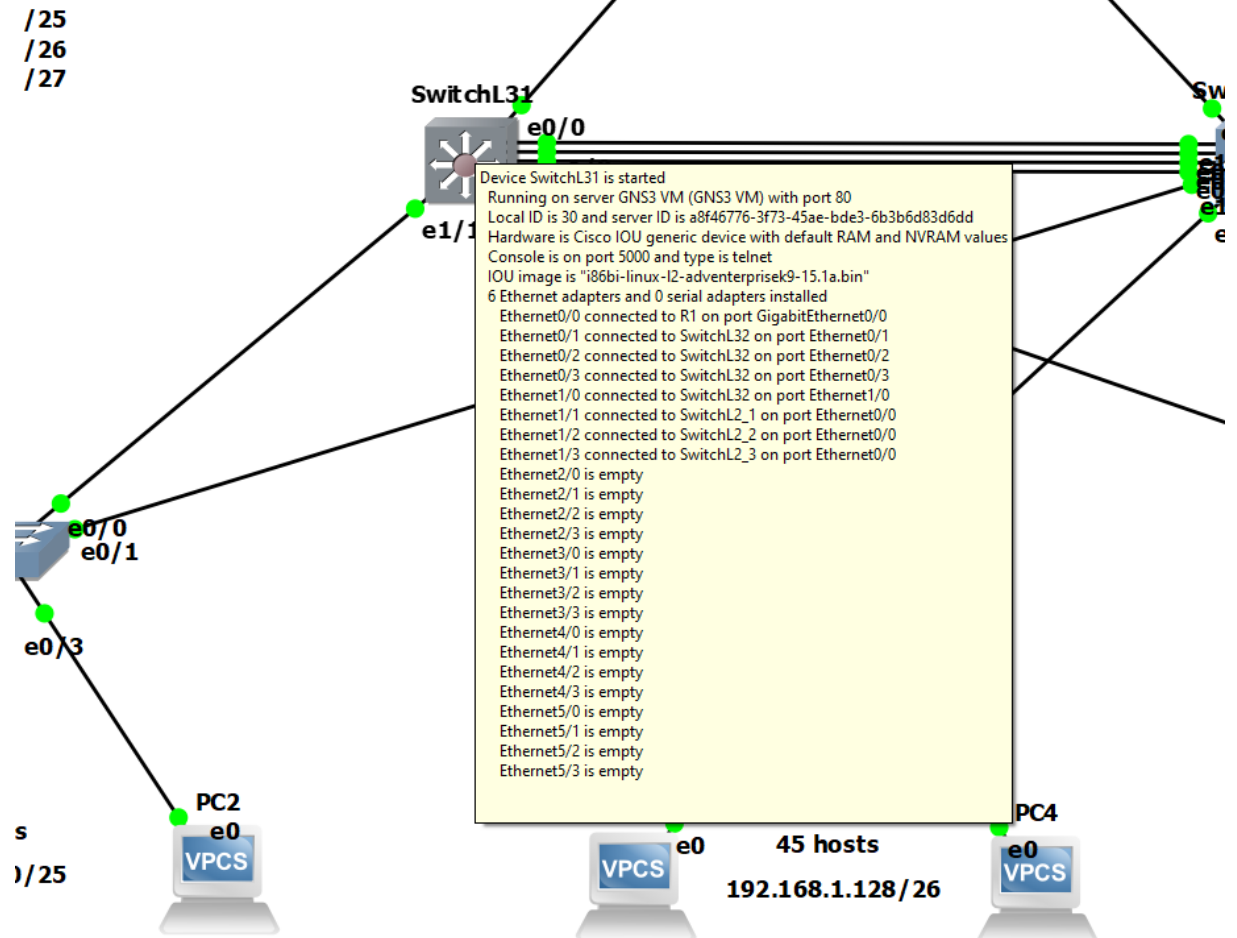
VLAN Name                Status    Ports
-----
1    default              active    Et0/0, Et2/0, Et2/1, Et2/2
                               Et2/3, Et3/0, Et3/1, Et3/2
                               Et3/3, Et4/0, Et4/1, Et4/2
                               Et4/3, Et5/0, Et5/1, Et5/2
                               Et5/3
10   VLAN0010             active
20   VLAN0020             active
30   VLAN0030             active
999  unused               active
1002 fddi-default         act/unsup
1003 token-ring-default  act/unsup
1004 fddinet-default     act/unsup
1005 trnet-default       act/unsup
SwitchL31#
```

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## 5. Teraz tworzymy Etherchannel



Użyj maski /31, ponieważ jest to połączenie **point to point**, a powiedzmy że chcemy jak najbardziej „przyszczędzić” adresy ip.



```
SwitchL x SwitchL32 SwitchL2_ SwitchL2_ SwitchL2_ SwitchL31 | + - □ ×

rgmp      Enable/disable RGMF
rip       Router Information Protocol
route-cache  Enable fast-switching cache for outgoing packets
router    IP router interface commands
rsvp     RSVP Interface Commands
rtp      RTP parameters
sap      Session Advertisement Protocol interface commands
security DDN IP Security Option
split-horizon  Perform split horizon
sticky-arp  Allow the creation of sticky ARP entries
summary-address  Perform address summarization
tcp       TCP interface commands
unnumbered  Enable IP processing without an explicit address
unreachables  Enable sending ICMP Unreachable messages
urd       Configure URL Rendezvousing
verify    Enable per packet validation
vrf       VPN Routing/Forwarding parameters on the interface
wccp     WCCP interface commands

SwitchL31(config-if)#ip
% Incomplete command.

SwitchL31(config-if)#
SwitchL31(config-if)#
SwitchL31(config-if)#
SwitchL31(config-if)#
SwitchL31(config-if)#
SwitchL31(config-if)#
SwitchL31(config-if)#
SwitchL31(config-if)#
SwitchL31(config-if)#
SwitchL31(config-if)#int po1
SwitchL31(config-if)#ip address 10.0.0.0 255.255.255.254
SwitchL31(config-if)#
```

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W drugim switch możemy dac mode passive.

```
SwitchL31 SwitchL32 SwitchL2_1 SwitchL2_2 SwitchL2_3 SwitchL31 | + -

SwitchL32
SwitchL32
SwitchL32
SwitchL32
SwitchL32
SwitchL32
SwitchL32
SwitchL32conf t
Enter configuration commands, one per line. End with CNTL/Z.
SwitchL32(config)#int range
SwitchL32(config)#int range e0/1 - 3, e1/0
SwitchL32(config-if-range)#no switchport
SwitchL32(config-if-range)#
*Jul 26 22:35:53.663: NLINK-S-UPDOWN: Interface Ethernet0/1, changed state to up
*Jul 26 22:35:53.667: NLINK-S-UPDOWN: Interface Ethernet0/2, changed state to up
*Jul 26 22:35:53.672: NLINK-S-UPDOWN: Interface Ethernet0/3, changed state to up
*Jul 26 22:35:53.675: NLINK-S-UPDOWN: Interface Ethernet0/0, changed state to up
*Jul 26 22:35:54.669: NLINK-PROTO-S-UPDOWN: Line protocol on Interface Ethernet0/1, changed state to up
*Jul 26 22:35:54.669: NLINK-PROTO-S-UPDOWN: Line protocol on Interface Ethernet0/2, changed state to up
*Jul 26 22:35:54.673: NLINK-PROTO-S-UPDOWN: Line protocol on Interface Ethernet0/3, changed state to up
*Jul 26 22:35:54.678: NLINK-PROTO-S-UPDOWN: Line protocol on Interface Ethernet0/0, changed state to up
SwitchL32(config-if-range)#cha
SwitchL32(config-if-range)#channel-group 1 mod
SwitchL32(config-if-range)#channel-group 1 mode ?
  active  Enable LACP unconditionally
  auto    Enable PAgg only if a PAgg device is detected
  desirable  Enable PAgg unconditionally
  on      Enable Etherchannel only
  passive Enable LACP only if a LACP device is detected
SwitchL32(config-if-range)#channel-group 1 mode passive
Creating a port-channel interface Port-channel 1
SwitchL32(config-if-range)#
*Jul 26 22:37:40.580: NIC-S-300HTBDL2: E10/3 suspended: LACP currently not enabled on the remote port.
*Jul 26 22:37:40.580: NIC-S-300HTBDL2: E10/2 suspended: LACP currently not enabled on the remote port.
SwitchL32(config-if-range)#
*Jul 26 22:37:11.521: NLINK-PROTO-S-UPDOWN: Line protocol on Interface Port-channel1, changed state to up
SwitchL32(config-if-range)#no shutdown
SwitchL32(config-if-range)#no shutdown
SwitchL32(config-if-range)#ip addr
SwitchL32(config-if-range)#ip address 10.0.0.1 255.255.255.254
% IP addresses may not be configured on member interfaces of L3 Etherchannels.
% Range command terminated because it failed on Ethernet0/1
SwitchL32(config-if-range)#ip address 10.0.0.1 255.255.255.254
% IP addresses may not be configured on member interfaces of L3 Etherchannels.
% Range command terminated because it failed on Ethernet0/1
SwitchL32(config-if-range)#
SwitchL32
*Jul 26 22:39:30.502: NSVS-S-CONF10_1: Configured from console by console
SwitchL32conf t
Enter configuration commands, one per line. End with CNTL/Z.
SwitchL32(config)#int po1
SwitchL32(config-if)#ip address 10.0.0.1 255.255.255.254
SwitchL32(config-if)#
```

```

SwitchL32(config-if)#ip address 10.0.0.1 255.255.255.254
SwitchL32(config-if)#do show eth
% Ambiguous command: "do show eth"
SwitchL32(config-if)#do show etherchannel summ
Flags:  D - down          P - bundled in port-channel
        I - stand-alone  s - suspended
        H - Hot-standby  (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator

        M - not in use, minimum links not met
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

```

```

Number of channel-groups in use: 1
Number of aggregators:          1

```

Group	Port-channel	Protocol	Ports
1	Po1(RU)	LACP	Et0/1(P) Et0/2(P) Et0/3(P) Et1/0(P)

```

SwitchL32(config-if)#

```

Layer 3 in use

Oba interfejsy są UP/UP, jednak nie mogę zrobić ping z SWITCHL3\_1 DO SWITCHL3\_2. Przyczyną może być błąd obrazu switchow.

Konfiguracja SVI

```
SwitchL32#
SwitchL32#
SwitchL32#
SwitchL32#
SwitchL32#
SwitchL32#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SwitchL32(config)#int vlan 10
SwitchL32(config-if)#no sh
SwitchL32(config-if)#ip add 192.168.1.126 255.255.255.128
SwitchL32(config-if)#
SwitchL32(config-if)#int vlan 20
SwitchL32(config-if)#no sh
SwitchL32(config-if)#ip add 192.168.1.190 255.255.255.192
SwitchL32(config-if)#
SwitchL32(config-if)#int vlan 30
SwitchL32(config-if)#no sh
SwitchL32(config-if)#ip add 192.168.1.222 255.255.255.224
SwitchL32(config-if)#
*Jul 26 23:03:24.955: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan10, changed state to up
*Jul 26 23:03:24.955: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan20, changed state to up
*Jul 26 23:03:24.955: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed state to up
SwitchL32(config-if)#
*Jul 26 23:03:25.956: %LINK-3-UPDOWN: Interface Vlan10, changed state to up
*Jul 26 23:03:25.956: %LINK-3-UPDOWN: Interface Vlan20, changed state to up
*Jul 26 23:03:25.956: %LINK-3-UPDOWN: Interface Vlan30, changed state to up
SwitchL32(config-if)#do show ip interface brief
Interface IP-Address OK? Method Status Protocol
Ethernet0/0 unassigned YES unset up
Ethernet0/1 unassigned YES manual up
Ethernet0/2 unassigned YES manual up
Ethernet0/3 unassigned YES manual up
Ethernet1/0 unassigned YES manual up
Ethernet1/1 unassigned YES unset up
Ethernet1/2 unassigned YES unset up
Ethernet1/3 unassigned YES unset up
Ethernet2/0 unassigned YES unset up
Ethernet2/1 unassigned YES unset up
Ethernet2/2 unassigned YES unset up
Ethernet2/3 unassigned YES unset up
Ethernet3/0 unassigned YES unset up
Ethernet3/1 unassigned YES unset up
Ethernet3/2 unassigned YES unset up
Ethernet3/3 unassigned YES unset up
Ethernet4/0 unassigned YES unset up
Ethernet4/1 unassigned YES unset up
Ethernet4/2 unassigned YES unset up
Ethernet4/3 unassigned YES unset up
Ethernet5/0 unassigned YES unset up
Ethernet5/1 unassigned YES unset up
Ethernet5/2 unassigned YES unset up
Ethernet5/3 unassigned YES unset up
Port-channel1 10.0.0.1 YES manual up
Vlan1 unassigned YES unset administratively down
Vlan10 192.168.1.126 YES manual up
Vlan20 192.168.1.190 YES manual up
Vlan30 192.168.1.222 YES manual up
SwitchL32(config-if)#
SwitchL32(config-if)#
SwitchL32(config-if)#
SwitchL32(config-if)#
SwitchL32(config-if)#
```

```
SwitchL31
SwitchL32
SwitchL2_1
SwitchL2_2
SwitchL2_3
SwitchL31

SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#int vlan 10
SwitchL31(config-if)#no sh
SwitchL31(config-if)#ip add 192.168.1.126 255.255.255.128
SwitchL31(config-if)#
SwitchL31(config-if)#int vlan 20
SwitchL31(config-if)#no sh
SwitchL31(config-if)#ip add 192.168.1.190 255.255.255.192
SwitchL31(config-if)#
SwitchL31(config-if)#int vlan 30
SwitchL31(config-if)#no sh
SwitchL31(config-if)#ip add 192.168.1.222 255.255.255.224
SwitchL31(config-if)#
*Jul 26 23:04:38.797: %IP-4-DUPADDR: Duplicate address 192.168.1.126 on Vlan10, sourced by aabb.cc00.0200
SwitchL31(config-if)#do sh
*Jul 26 23:04:39.787: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan10, changed state to up
*Jul 26 23:04:39.787: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan20, changed state to up
*Jul 26 23:04:39.787: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan30, changed state to up
SwitchL31(config-if)#do show ip
*Jul 26 23:04:40.784: %LINK-3-UPDOWN: Interface Vlan10, changed state to up
*Jul 26 23:04:40.784: %LINK-3-UPDOWN: Interface Vlan20, changed state to up
*Jul 26 23:04:40.784: %LINK-3-UPDOWN: Interface Vlan30, changed state to up
SwitchL31(config-if)#do show ip interface brief
Interface IP-Address OK? Method Status Protocol
Ethernet0/0 unassigned YES unset up
Ethernet0/1 unassigned YES manual up
Ethernet0/2 unassigned YES manual up
Ethernet0/3 unassigned YES manual up
Ethernet1/0 unassigned YES manual up
Ethernet1/1 unassigned YES unset up
Ethernet1/2 unassigned YES unset up
Ethernet1/3 unassigned YES unset up
Ethernet2/0 unassigned YES unset up
Ethernet2/1 unassigned YES unset up
Ethernet2/2 unassigned YES unset up
Ethernet2/3 unassigned YES unset up
Ethernet3/0 unassigned YES unset up
Ethernet3/1 unassigned YES unset up
Ethernet3/2 unassigned YES unset up
Ethernet3/3 unassigned YES unset up
Ethernet4/0 unassigned YES unset up
Ethernet4/1 unassigned YES unset up
Ethernet4/2 unassigned YES unset up
Ethernet4/3 unassigned YES unset up
Ethernet5/0 unassigned YES unset up
Ethernet5/1 unassigned YES unset up
Ethernet5/2 unassigned YES unset up
Ethernet5/3 unassigned YES unset up
Port-channel1 10.0.0.0 YES manual up
Vlan1 unassigned YES unset administratively down
Vlan10 192.168.1.126 YES manual up
Vlan20 192.168.1.190 YES manual up
Vlan30 192.168.1.222 YES manual up
SwitchL31(config-if)#
SwitchL31(config-if)#
SwitchL31(config-if)#
```

Jako że mamy duplikaty adresow ip – musimy zrobic to troche inaczej. Zmienilem Adresy na SwitchL31 na:



```
SwitchL31
SwitchL31(config-if)#
*Jul 26 23:04:39.797: NTP-4-DUPADDR: Duplicate address 192.168.1.126 on Vlan18, sourced by aabb.cc00.8200
SwitchL31(config-if)#do show
*Jul 26 23:04:39.787: NL2NEPROTO-5-UPDOWN: Line protocol on Interface Vlan18, changed state to up
*Jul 26 23:04:39.787: NL2NEPROTO-5-UPDOWN: Line protocol on Interface Vlan18, changed state to up
SwitchL31(config-if)#do show ip
*Jul 26 23:04:40.784: NL2NC-1-UPDOWN: Interface Vlan18, changed state to up
*Jul 26 23:04:40.784: NL2NC-1-UPDOWN: Interface Vlan18, changed state to up
*Jul 26 23:04:40.784: NL2NC-1-UPDOWN: Interface Vlan18, changed state to up
SwitchL31(config-if)#do show ip interface brief
Interface IP-Address OK? Method Status Protocol
Ethernet0/0 unassigned YES unset up
Ethernet0/1 unassigned YES manual up
Ethernet0/2 unassigned YES manual up
Ethernet0/3 unassigned YES manual up
Ethernet1/0 unassigned YES manual up
Ethernet1/1 unassigned YES unset up
Ethernet1/2 unassigned YES unset up
Ethernet1/3 unassigned YES unset up
Ethernet2/0 unassigned YES unset up
Ethernet2/1 unassigned YES unset up
Ethernet2/2 unassigned YES unset up
Ethernet2/3 unassigned YES unset up
Ethernet3/0 unassigned YES unset up
Ethernet3/1 unassigned YES unset up
Ethernet3/2 unassigned YES unset up
Ethernet3/3 unassigned YES unset up
Ethernet4/0 unassigned YES unset up
Ethernet4/1 unassigned YES unset up
Ethernet4/2 unassigned YES unset up
Ethernet4/3 unassigned YES unset up
Ethernet5/0 unassigned YES unset up
Ethernet5/1 unassigned YES unset up
Ethernet5/2 unassigned YES unset up
Ethernet5/3 unassigned YES unset up
Port-channel1 10.0.0.0 YES manual up
Vlan1 unassigned YES unset administratively down down
Vlan10 192.168.1.126 YES manual up
Vlan20 192.168.1.190 YES manual up
Vlan30 192.168.1.222 YES manual up
SwitchL31(config-if)#
SwitchL31(config-if)#
SwitchL31(config-if)#
*Jul 26 23:09:09.430: NTP-4-DUPADDR: Duplicate address 192.168.1.190 on Vlan20, sourced by aabb.cc00.8200
SwitchL31(config-if)#
*Jul 26 23:09:10.430: NTP-4-DUPADDR: Duplicate address 192.168.1.222 on Vlan30, sourced by aabb.cc00.8200
SwitchL31(config-if)#
*Jul 26 23:09:09.431: NTP-4-DUPADDR: Duplicate address 192.168.1.222 on Vlan30, sourced by aabb.cc00.8200
SwitchL31(config-if)#exit
SwitchL31(config)#int vlan 10
SwitchL31(config-if)#ip add 192.168.1.125 255.255.255.128
SwitchL31(config-if)#
SwitchL31(config-if)#int vlan 20
SwitchL31(config-if)#ip add 192.168.1.189 255.255.255.192
SwitchL31(config-if)#
SwitchL31(config-if)#int vlan 30
SwitchL31(config-if)#ip add 192.168.1.221 255.255.255.224
SwitchL31(config-if)#
```

## I stworzymy HSRP z wirtualnymi IP

```
SwitchL31
SwitchL31
SwitchL32
SwitchL2_1
SwitchL2_2
SwitchL2_3
SwitchL31
PC1
PC3
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#
SwitchL31(config)#int vlan 10
SwitchL31(config-if)#standby 10 ip 192.168.1.124
SwitchL31(config-if)#int vlan 20
SwitchL31(config-if)#standby 10 ip 192.168.1.188
SwitchL31(config-if)#int vlan 30
SwitchL31(config-if)#standby 10 ip 192.168.1.220
SwitchL31(config-if)#
SwitchL31(config-if)#
```

```
SwitchL32(config)#
SwitchL32(config)#
SwitchL32(config)#
SwitchL32(config)#
SwitchL32(config)#
SwitchL32(config)#
SwitchL32(config)#
SwitchL32(config)#
SwitchL32(config)#
SwitchL32(config)#
SwitchL32(config)#
SwitchL32(config)#int vlan 10
SwitchL32(config-if)#standby 10 ip 192.168.1.124
SwitchL32(config-if)#int vlan 20
SwitchL32(config-if)#standby 10 ip 192.168.1.188
SwitchL32(config-if)#int vlan 30
SwitchL32(config-if)#standby 10 ip 192.168.1.220
SwitchL32(config-if)#
*Jul 26 23:24:26.723: %HSRP-5-STATECHANGE: Vlan30 Grp 10 state Standby -> Active
SwitchL32(config-if)#
*Jul 26 23:24:27.815: %HSRP-5-STATECHANGE: Vlan10 Grp 10 state Standby -> Active
SwitchL32(config-if)#
*Jul 26 23:24:39.487: %HSRP-5-STATECHANGE: Vlan20 Grp 10 state Standby -> Active
SwitchL32(config-if)#
```

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## Zmieniamy bramke domyslna

```
PC1> ping 192.168.1.126

84 bytes from 192.168.1.126 icmp_seq=1 ttl=255 time=1.060 ms
84 bytes from 192.168.1.126 icmp_seq=2 ttl=255 time=0.438 ms
84 bytes from 192.168.1.126 icmp_seq=3 ttl=255 time=0.517 ms
84 bytes from 192.168.1.126 icmp_seq=4 ttl=255 time=0.638 ms
84 bytes from 192.168.1.126 icmp_seq=5 ttl=255 time=0.612 ms

PC1> ping 192.168.1.129

192.168.1.129 icmp_seq=1 timeout
192.168.1.129 icmp_seq=2 timeout
192.168.1.129 icmp_seq=3 timeout
192.168.1.129 icmp_seq=4 timeout
192.168.1.129 icmp_seq=5 timeout

PC1> ip 192.168.1.1/25 192.168.1.124
Checking for duplicate address...
PC1 : 192.168.1.1 255.255.255.128 gateway 192.168.1.124

PC1>
```

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```
ip 192.168.1.129/26 192.168.1.188
Checking for duplicate address...
PC3 : 192.168.1.129 255.255.255.192 gateway 192.168.1.188
PC3> 
```

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```
ip 192.168.1.193/27 192.168.1.220
Checking for duplicate address...
PC5 : 192.168.1.193 255.255.255.224 gateway 192.168.1.220
PC5> 
```

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6. Sprawdzenie pingów:

```
SwitchL32 SwitchL31 PC1
address [gateway] [mask]
    Set the VPC's ip, default gateway ip and network mask
    Default IPv4 mask is /24, IPv6 is /64. Example:
    ip 10.1.1.70/26 10.1.1.65 set the VPC's ip to 10.1.1.70,
    the gateway to 10.1.1.65, the netmask to 255.255.255.192.
    In tap mode, the ip of the tapx is the maximum host ID
    of the subnet. In the example above the tapx ip would be
    10.1.1.126
    mask may be written as /26, 26 or 255.255.255.192
auto Attempt to obtain IPv6 address, mask and gateway using SLAAC
dhcp [OPTION] Attempt to obtain IPv4 address, mask, gateway, DNS via DHCP
    -d Show DHCP packet decode
    -r Renew DHCP lease
    -x Release DHCP lease
dns ip Set DNS server ip, delete if ip is '0'
dns6 ipv6 Set DNS server ipv6, delete if ipv6 is '0'
domain NAME Set local domain name to NAME

PC1> ip address 192.168.1.1/25 192.168.1.124
Invalid address

PC1> ip 192.168.1.1/25 192.168.1.124
Checking for duplicate address...
PC1 : 192.168.1.1 255.255.255.128 gateway 192.168.1.124

PC1> ping 192.168.1.124

192.168.1.124 icmp_seq=1 timeout
192.168.1.124 icmp_seq=2 timeout
192.168.1.124 icmp_seq=3 timeout
192.168.1.124 icmp_seq=4 timeout
192.168.1.124 icmp_seq=5 timeout

PC1> ping 192.168.1.126

host (192.168.1.126) not reachable

PC1> █
```

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Unreachable

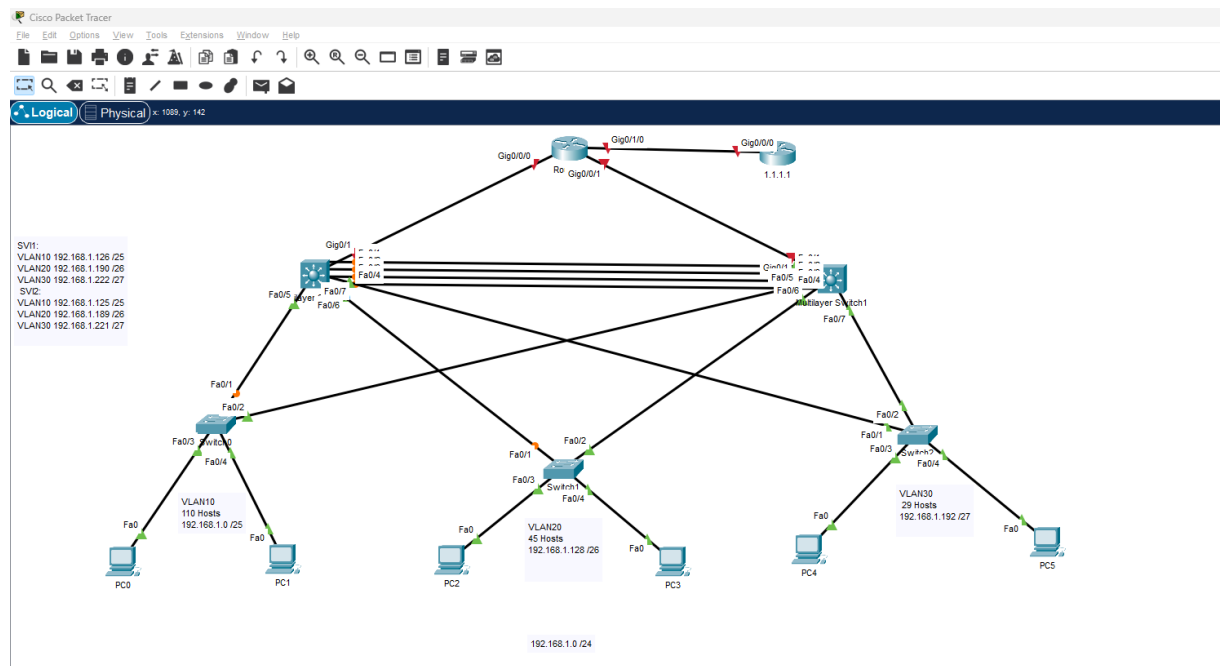
Problem może leżeć w tym, że oba routery nie komunikują się ze sobą i OBA są w stanie Active.

```
SwitchL32
Vlan30 - Group 10
  State is Active
    2 state changes, last state change 00:21:42
  Virtual IP address is 192.168.1.220
  Active virtual MAC address is 0000.0c07.ac0a (MAC In Use)
    Local virtual MAC address is 0000.0c07.ac0a (v1 default)
  Hello time 3 sec, hold time 10 sec
  Next hello sent in 0.272 secs
  Preemption disabled
  Active router is local
  Standby router is unknown
  Priority 100 (default 100)
  Group name is "hsrp-V130-10" (default)
SwitchL32#
SwitchL32#
SwitchL32#
SwitchL32#
SwitchL32#
SwitchL32#
SwitchL32#
SwitchL32#
SwitchL32#
SwitchL32#
SwitchL32#show standby
Vlan10 - Group 10
  State is Active
    2 state changes, last state change 00:26:19
  Virtual IP address is 192.168.1.124
  Active virtual MAC address is 0000.0c07.ac0a (MAC In Use)
    Local virtual MAC address is 0000.0c07.ac0a (v1 default)
  Hello time 3 sec, hold time 10 sec
  Next hello sent in 0.160 secs
  Preemption disabled
  Active router is local
  Standby router is unknown
  Priority 100 (default 100)
  Group name is "hsrp-V110-10" (default)
Vlan20 - Group 10
  State is Active
    2 state changes, last state change 00:26:21
  Virtual IP address is 192.168.1.188
  Active virtual MAC address is 0000.0c07.ac0a (MAC In Use)
    Local virtual MAC address is 0000.0c07.ac0a (v1 default)
  Hello time 3 sec, hold time 10 sec
  Next hello sent in 1.824 secs
  Preemption disabled
  Active router is local
  Standby router is unknown
  Priority 100 (default 100)
  Group name is "hsrp-V120-10" (default)
Vlan30 - Group 10
  State is Active
    2 state changes, last state change 00:26:08
  Virtual IP address is 192.168.1.220
  Active virtual MAC address is 0000.0c07.ac0a (MAC In Use)
    Local virtual MAC address is 0000.0c07.ac0a (v1 default)
  Hello time 3 sec, hold time 10 sec
  Next hello sent in 1.072 secs
  Preemption disabled
--More--
```

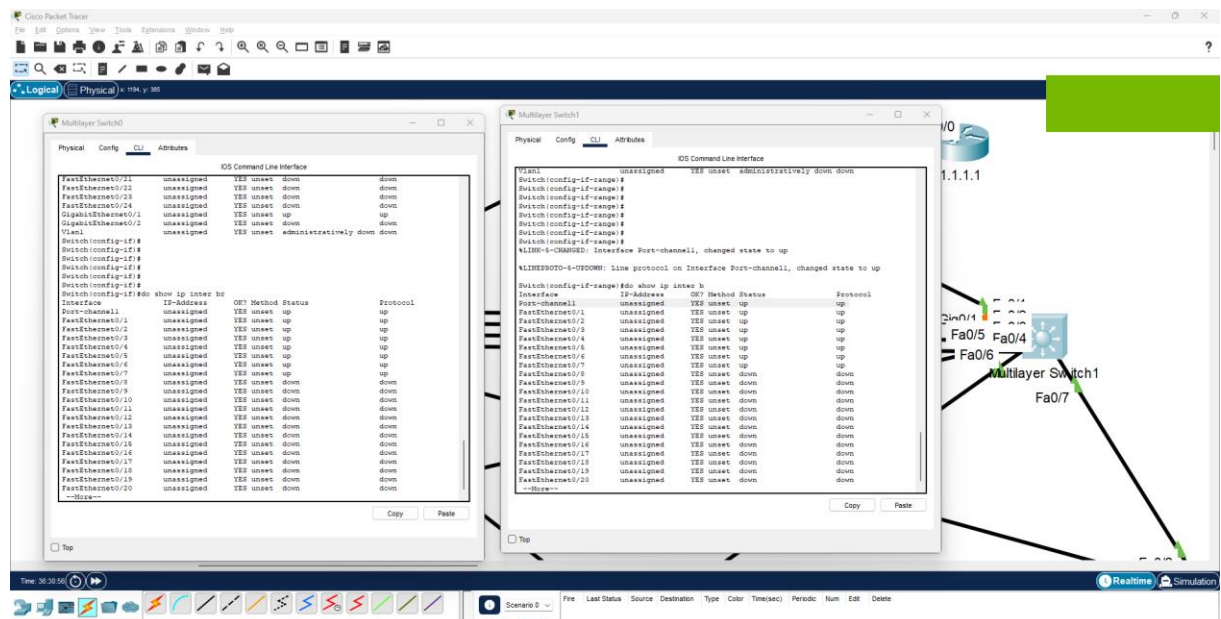
```
SwitchL32
Active virtual MAC address is 0000.0c07.ac0a (MAC In Use)
  Local virtual MAC address is 0000.0c07.ac0a (v1 default)
Hello time 3 sec, hold time 10 sec
Next hello sent in 0.128 secs
Preemption disabled
Active router is local
Standby router is unknown
Priority 100 (default 100)
Group name is "hsrp-V120-10" (default)
Vlan30 - Group 10
  State is Active
    2 state changes, last state change 00:21:47
  Virtual IP address is 192.168.1.220
  Active virtual MAC address is 0000.0c07.ac0a (MAC In Use)
    Local virtual MAC address is 0000.0c07.ac0a (v1 default)
  Hello time 3 sec, hold time 10 sec
  Next hello sent in 1.392 secs
  Preemption disabled
  Active router is local
  Standby router is unknown
  Priority 100 (default 100)
  Group name is "hsrp-V130-10" (default)
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#
SwitchL31#show standby
Vlan10 - Group 10
  State is Active
    2 state changes, last state change 00:26:22
  Virtual IP address is 192.168.1.124
  Active virtual MAC address is 0000.0c07.ac0a (MAC In Use)
    Local virtual MAC address is 0000.0c07.ac0a (v1 default)
  Hello time 3 sec, hold time 10 sec
  Next hello sent in 1.168 secs
  Preemption disabled
  Active router is local
  Standby router is unknown
  Priority 100 (default 100)
  Group name is "hsrp-V110-10" (default)
Vlan20 - Group 10
  State is Active
    2 state changes, last state change 00:26:23
  Virtual IP address is 192.168.1.188
  Active virtual MAC address is 0000.0c07.ac0a (MAC In Use)
    Local virtual MAC address is 0000.0c07.ac0a (v1 default)
  Hello time 3 sec, hold time 10 sec
  Next hello sent in 2.320 secs
  Preemption disabled
  Active router is local
--More--
```

Tutaj wyszukałem, że znowu to może być wina obrazów i stwierdziłem, że zrobię to w packet tracerze.

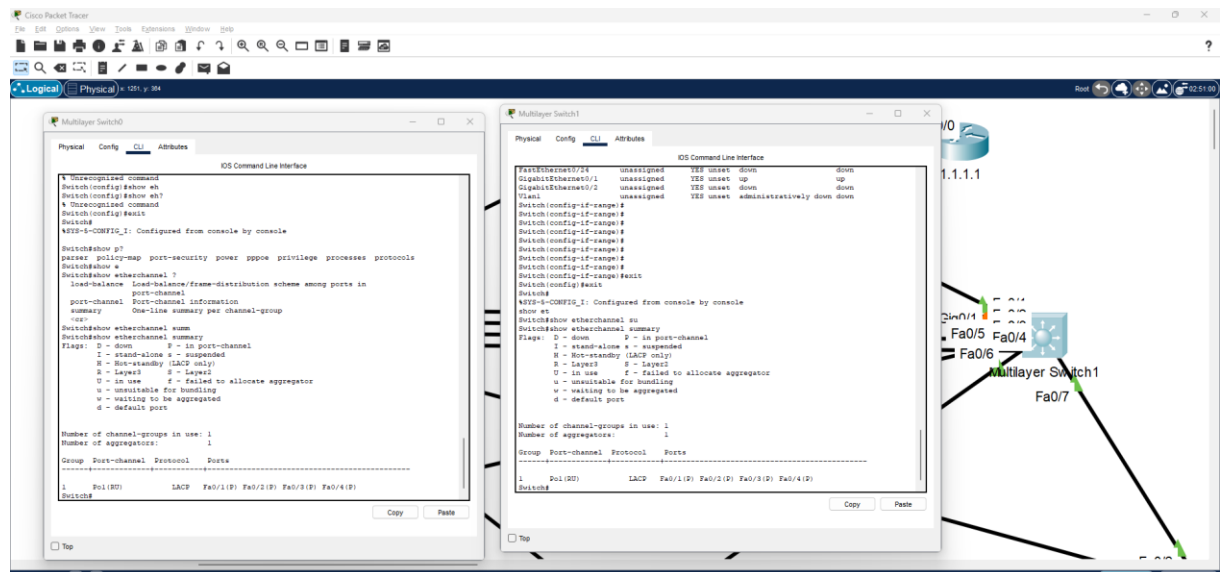
Konfiguracje zachowałem taką samą, oprócz innych portów przełączników oraz routerów, dlatego będę kontynuował od tego co zacząłem w gns3



Tak wgl, niektóre porty świecą się na pomarańczowo. Jest to spowodowane tym, że automatycznie stworzyło się STP (spanning tree protocol). A, że pomiędzy dwoma layer 3 switch nie ma jeszcze skonfigurowanego Etherchannel, to liczy to jako 4 porty, a nie jeden i je zablokowało, aby nie tworzyły się broadcast stormy.

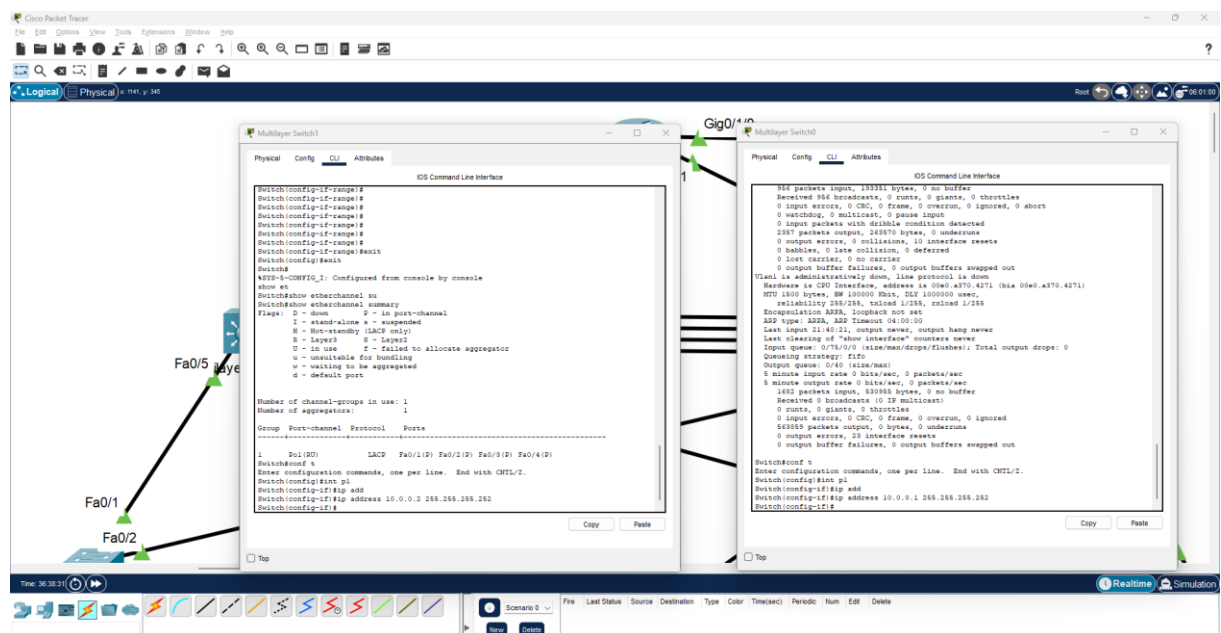


Portchannel1 UP/UP



Layer 3 in use

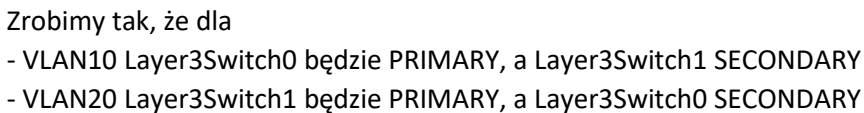
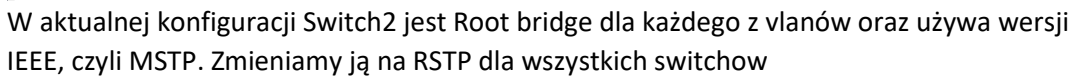
Packet tracer nie lubi maski /31, wiec zmieniam na /30











- VLAN30 SWITCH1, będzie PRIMARY, a Layer3Switch0 SECONDARY

The screenshot displays three overlapping windows from a network simulation environment, showing the configuration of three switches.

**Multilayer Switch0:** The CLI shows the configuration of VLAN 10 as the root primary for a spanning tree instance. The command is: `Switch(config)#spanning-tree vlan 10 root primary`.

**Multilayer Switch1:** The CLI shows the configuration of VLAN 30 as the root primary for a spanning tree instance. The command is: `Switch(config)#spanning-tree vlan 30 root primary`.

**Switch0:** The CLI shows the output of the `show spanning-tree` command for VLANs 10, 20, and 30. The output indicates that VLAN 10 is the root primary, VLAN 20 is the root secondary, and VLAN 30 is the root primary.

**Switch0 Output:**

```
Switch0
Physical Config CLI Attributes
IOS Command Line Interface

Fa0/2 Root FWD 19 128.2 P2p

VLAN0010
Spanning tree enabled protocol rstp
Root ID Priority 24506
Address 00E0.A370.4271
Cost 15
Port 1(FastEthernet0/1)
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32778 (priority 32768 sys-id-ext 10)
Address 0006.2A58.7EC4
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 30

Interface Role Sts Cost Prio.Nbr Type
-----
Fa0/1 Root FWD 19 128.1 P2p
Fa0/2 Desg FWD 19 128.2 P2p
Fa0/3 Desg FWD 19 128.3 P2p
Fa0/4 Desg FWD 19 128.4 P2p

VLAN0020
Spanning tree enabled protocol rstp
Root ID Priority 24506
Address 0060.4720.C38C
Cost 57
Port 1(FastEthernet0/1)
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32788 (priority 32768 sys-id-ext 20)
Address 0006.2A58.7EC4
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 20

Interface Role Sts Cost Prio.Nbr Type
-----
Fa0/1 Root FWD 19 128.1 P2p
Fa0/2 Desg FWD 19 128.2 P2p

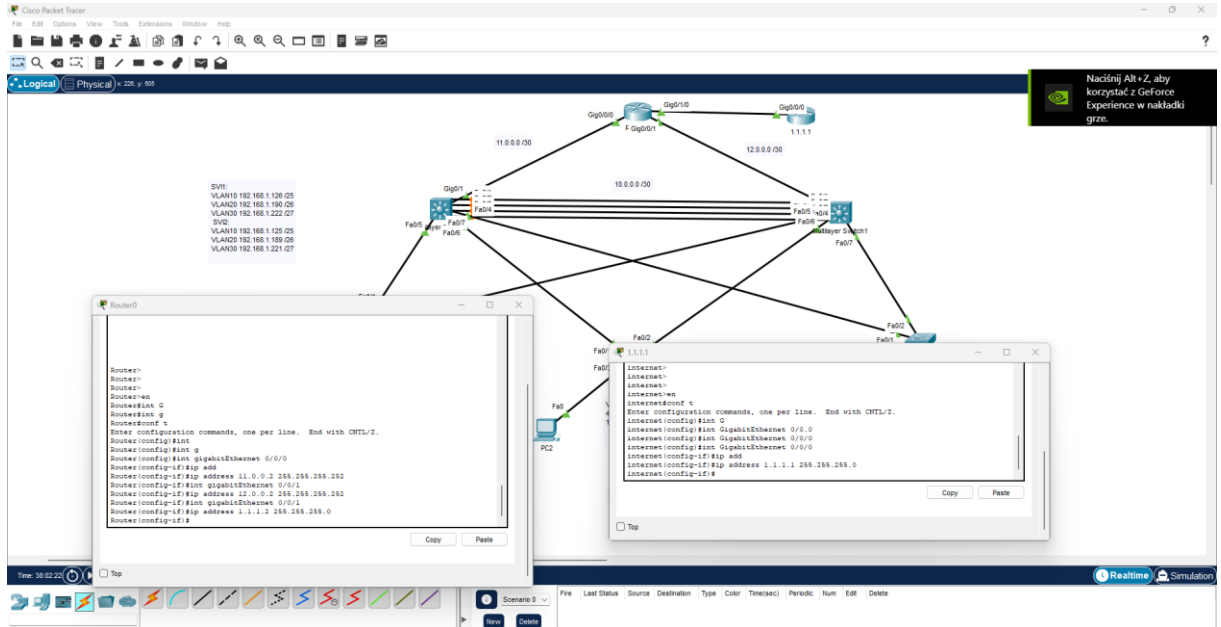
VLAN0030
Spanning tree enabled protocol rstp
Root ID Priority 24506
Address 0006.2AE6.B53A
Cost 38
Port 2(FastEthernet0/2)
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Bridge ID Priority 32798 (priority 32768 sys-id-ext 30)
Address 0006.2A58.7EC4
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec
Aging Time 20

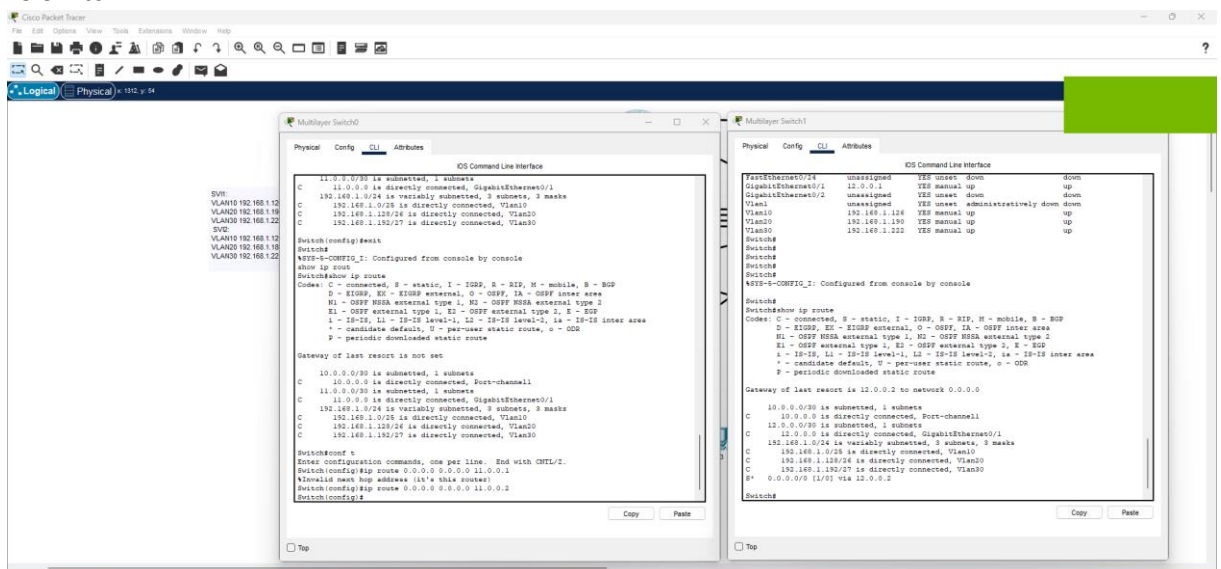
Interface Role Sts Cost Prio.Nbr Type
-----
Fa0/1 Desg FWD 19 128.1 P2p
Fa0/2 Root FWD 19 128.2 P2p

Switch(config)#
Switch(config)#
```

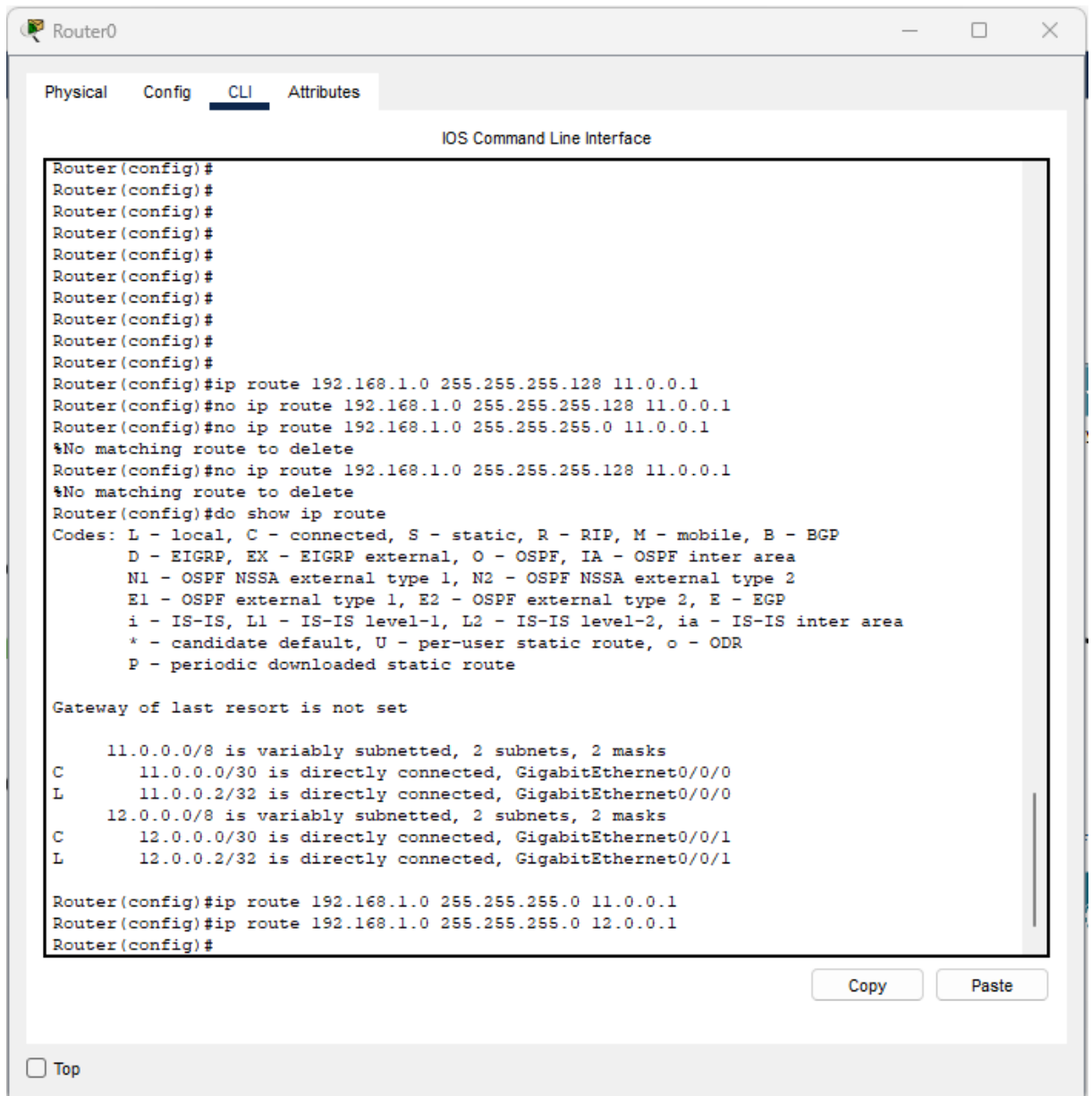
## 10. Konfiguracja Routera0 i 1.1.1.1



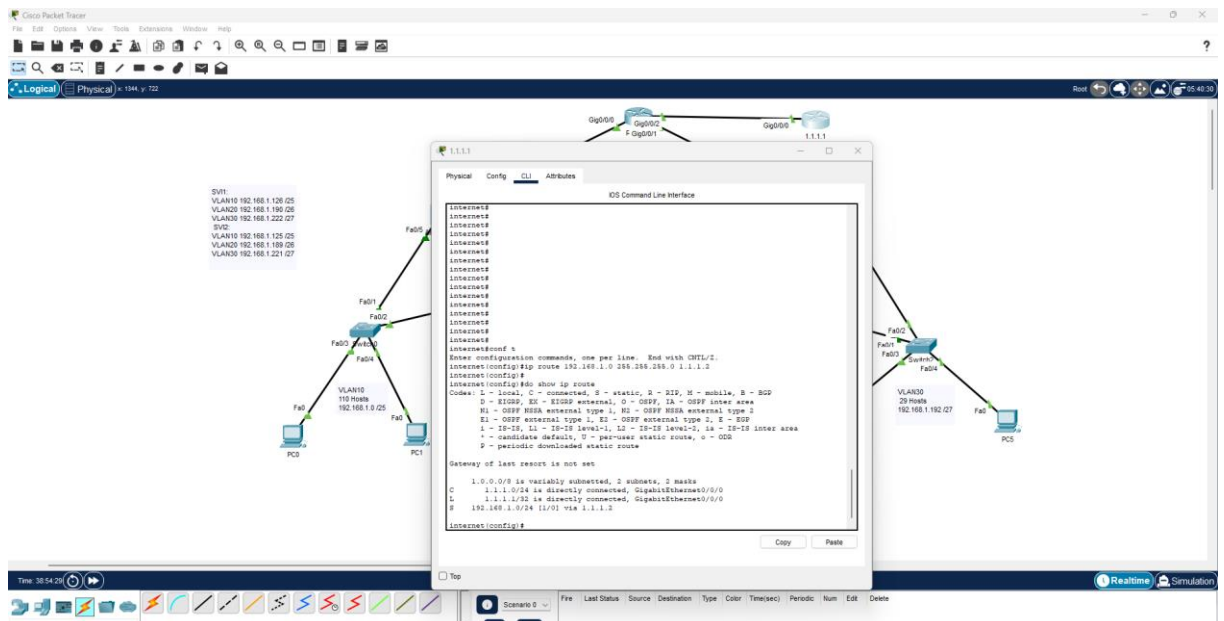
11. Teraz skonfigurujemy statycznie routing table, tak aby był dostęp do 1.1.1.1  
L3 Switch



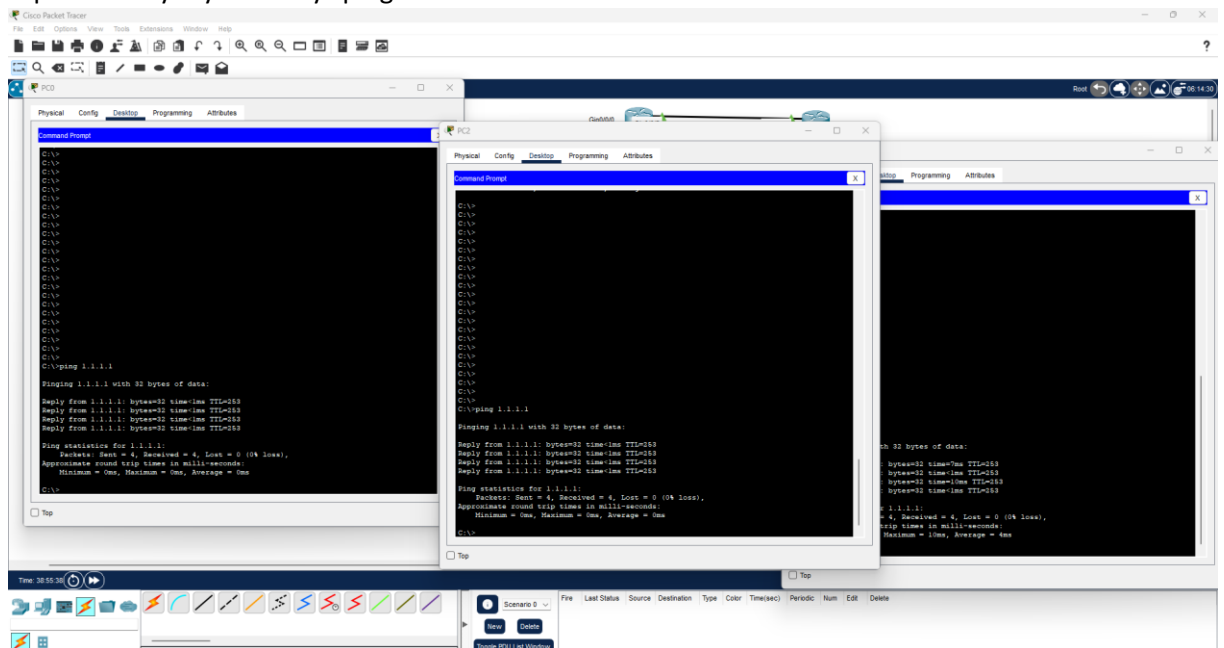
Router



1.1.1.1



I sprawdzamy czy możemy zpingowac 1.1.1.1



Działa wszystko poprawnie

