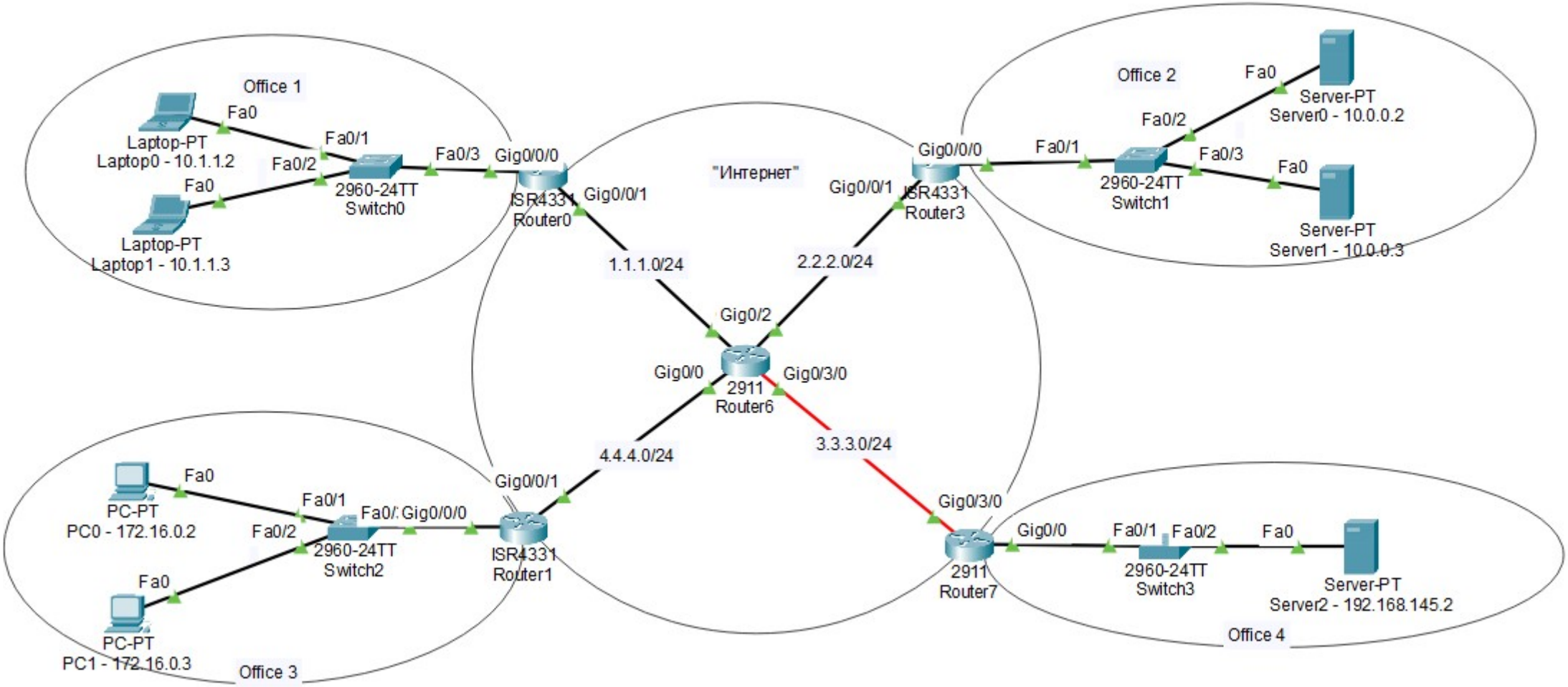
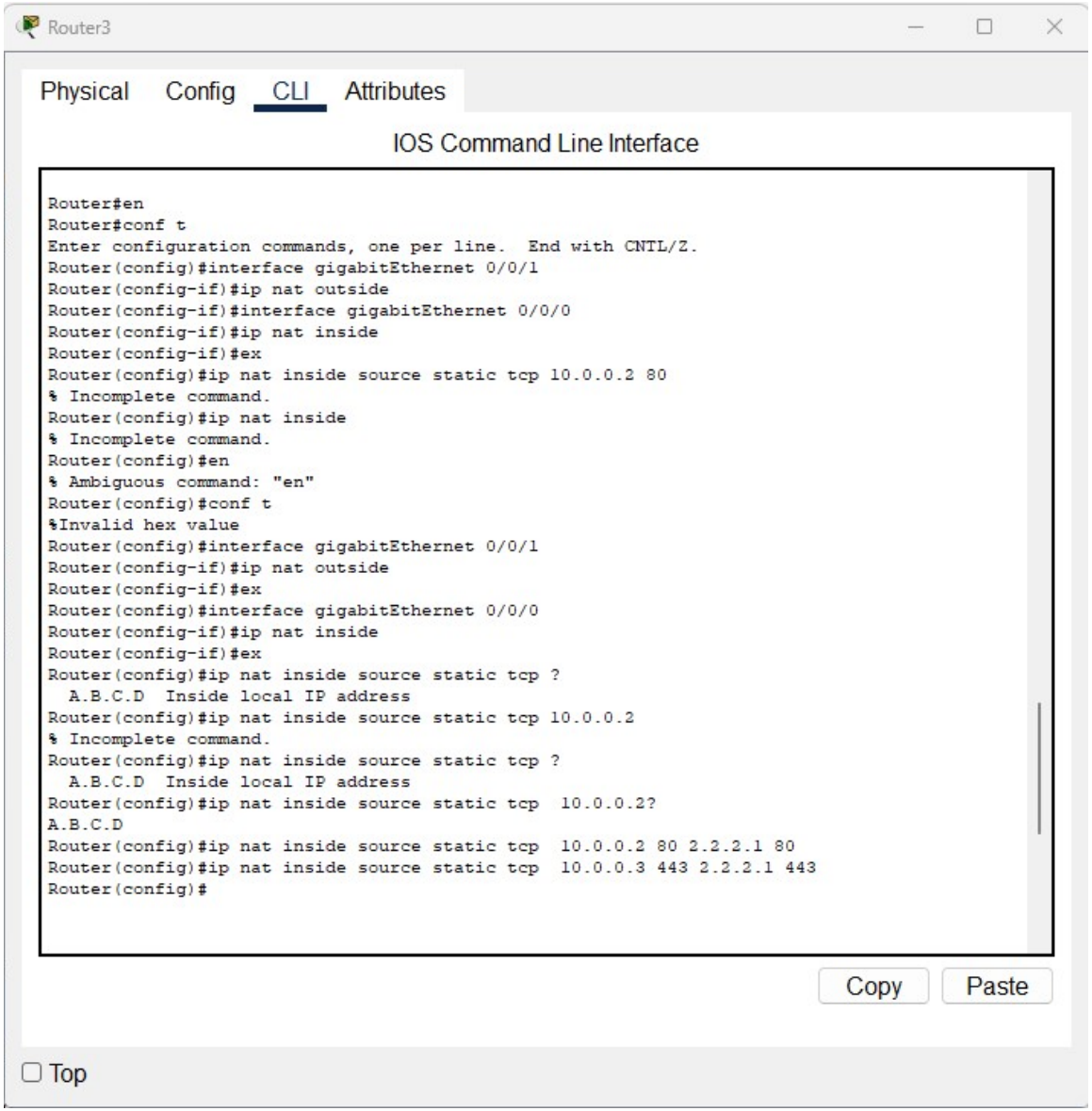
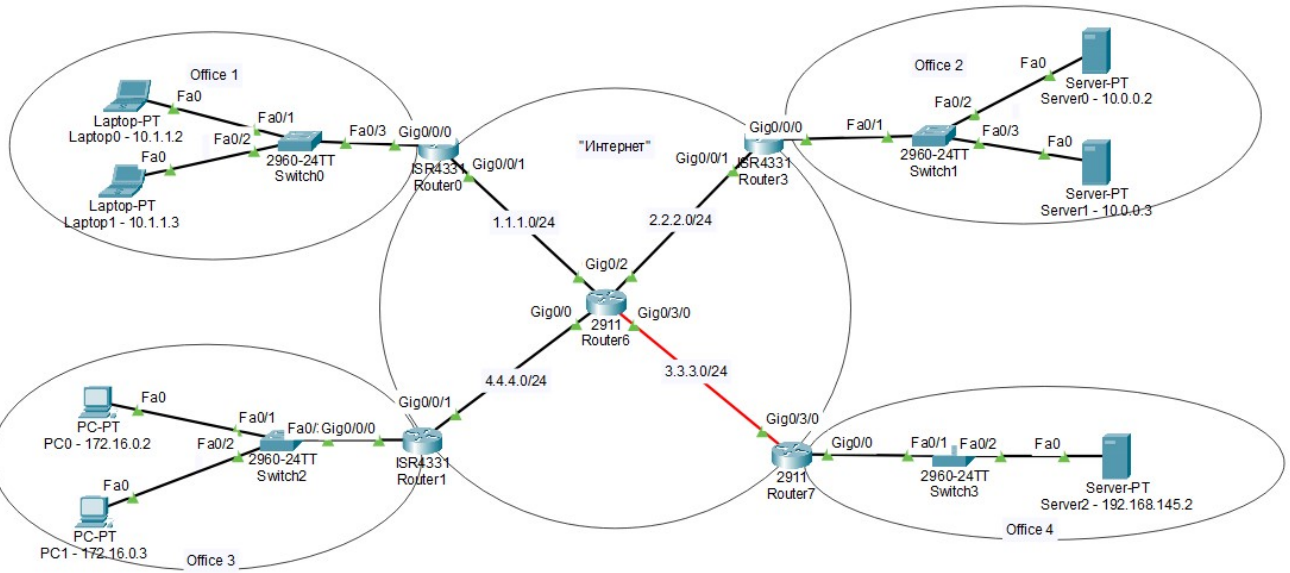
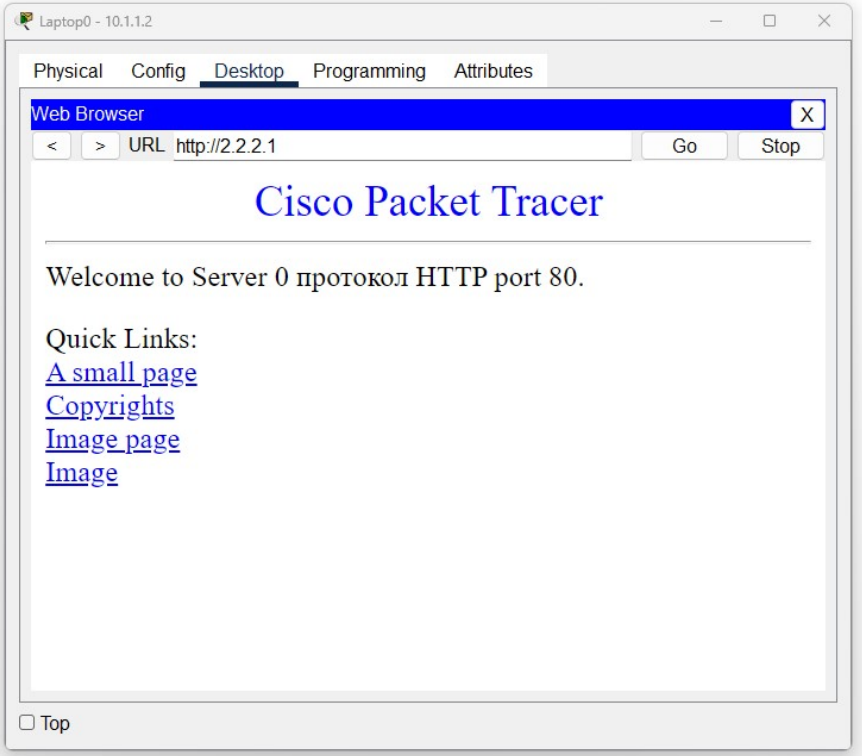
1. Настроить сеть согласно схеме в файле
https://disk.yandex.ru/d/hegGC7woXSjz0g где:
Office 1 - сеть 10.1.1.0/24
Office 2 - сеть 10.0.0.0/16
Office 3 - сеть 172.16.0.0/16
Office 4 - сеть 192.168.145.0/24
Где “Интернет” - там имитация Интернета с помощью OSPF, выберите сами публичные сети между роутерами.



Задача 1. Настроить на Port Forwarding на сервера в Office 2. Server0 должен предоставлять HTTP по 80му порту, а Server1 должен предоставлять HTTPS по 443 порту. Странички должны быть разные.




Office 1
Laptop-PT
Laptop0 - 10.1.1.2
Laptop-PT
Laptop1 - 10.1.1.3
Fa0
Fa0/1
Fa0/2
2960-24TT
Switch0
Fa0/3
Gig0/0/0
ISR4331
Router0
Gig0/0/1
1.1.1.0/24
"Интернет"
Gig0/2
Gig0/0
2911
Router6
Gig0/3/0
3.3.3.0/24
4.4.4.0/24
Gig0/0/1
ISR4331
Router1
Fa0/.Gig0/0/0
2960-24TT
Switch2
PC-PT
PC0 - 172.16.0.2
PC-PT
PC1 - 172.16.0.3
Office 3
Gig0/0/1
ISR4331
Router3
Gig0/0/0
2.2.2.0/24
Office 2
Fa0/1
Fa0/2
Fa0/3
2960-24TT
Switch1
Server-PT
Server0 - 10.0.0.2
Server-PT
Server1 - 10.0.0.3
Gig0/3/0
2911
Router7
Gig0/0
Fa0/1
Fa0/2
2960-24TT
Switch3
Server-PT
Server2 - 192.168.145.2
Office 4


Laptop0 - 10.1.1.2
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
http://2.2.2.1
Go
Stop
Cisco Packet Tracer
Welcome to Server 0 протокол HTTP port 80.
Quick Links:
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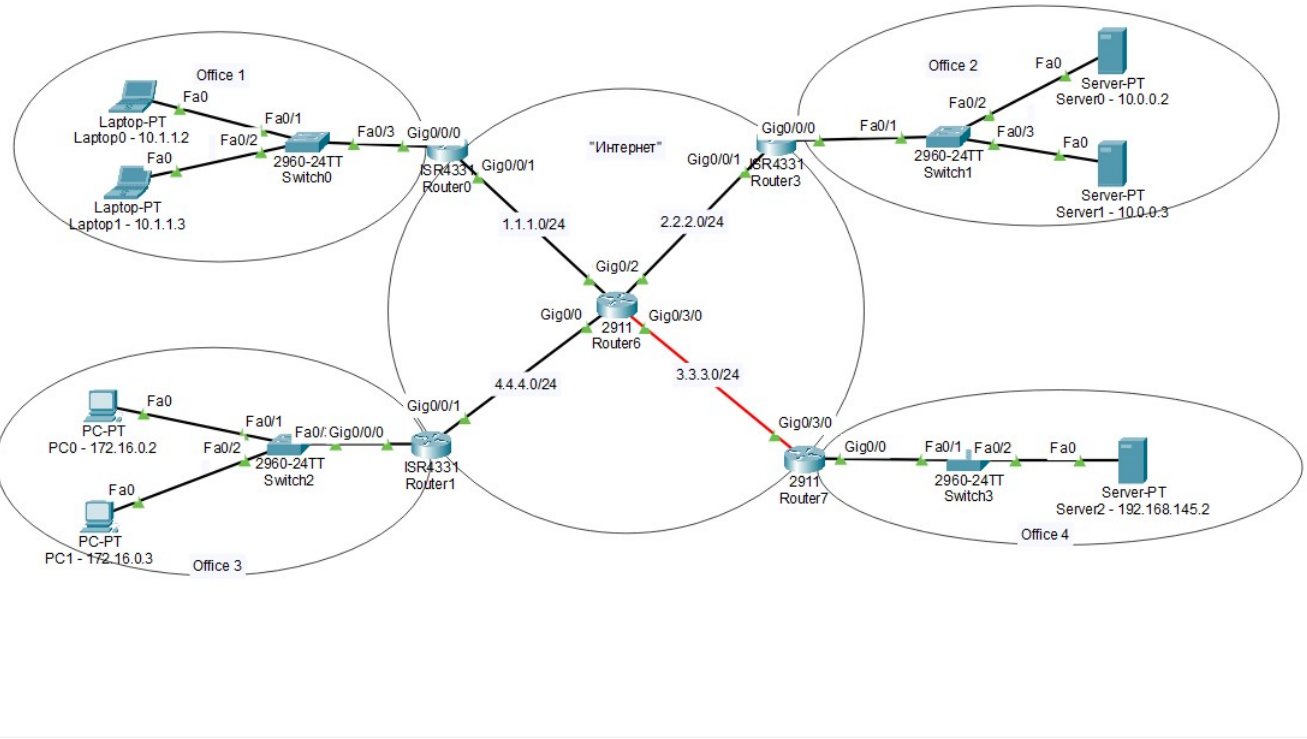
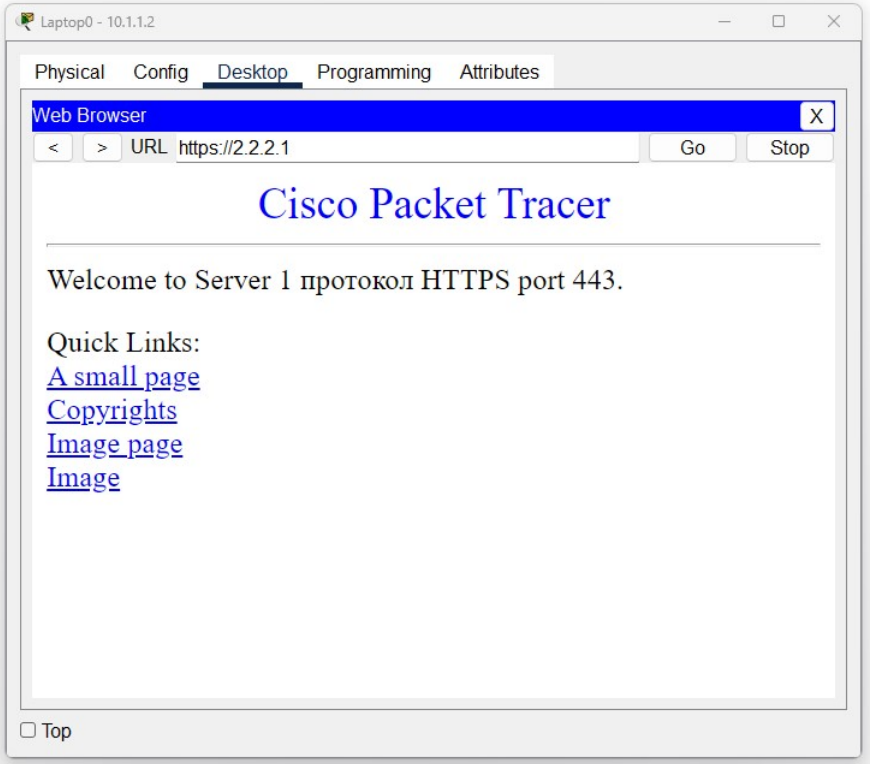

Office 1
Laptop-PT
Laptop0 - 10.1.1.2
Laptop-PT
Laptop1 - 10.1.1.3
Fa0
Fa0/1
Fa0/2
Fa0/3
2960-24TT
Switch0
Gig0/0/0
ISR4331
Router0
Gig0/0/1
"Интернет"
1.1.1.0/24
Gig0/0/1
ISR4331
Router3
Gig0/0/0
2.2.2.0/24
Office 2
Fa0
Server-PT
Server0 - 10.0.0.2
Fa0/2
Fa0/1
2960-24TT
Switch1
Fa0/3
Fa0
Server-PT
Server1 - 10.0.0.3
Gig0/2
Gig0/0
2911
Router6
Gig0/3/0
3.3.3.0/24
4.4.4.0/24
Gig0/0/1
PC-PT
PC0 - 172.16.0.2
Fa0
Fa0/1
Fa0/2
Fa0/3
Gig0/0/0
2960-24TT
Switch2
ISR4331
Router1
Fa0
PC-PT
PC1 - 172.16.0.3
Office 3
Gig0/3/0
2911
Router7
Gig0/0
Fa0/1
Fa0/2
Fa0
2960-24TT
Switch3
Server-PT
Server2 - 192.168.145.2
Office 4


Laptop0 - 10.1.1.2
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
https://2.2.2.1
Go
Stop
Cisco Packet Tracer
Welcome to Server 1 протокол HTTPS port 443.
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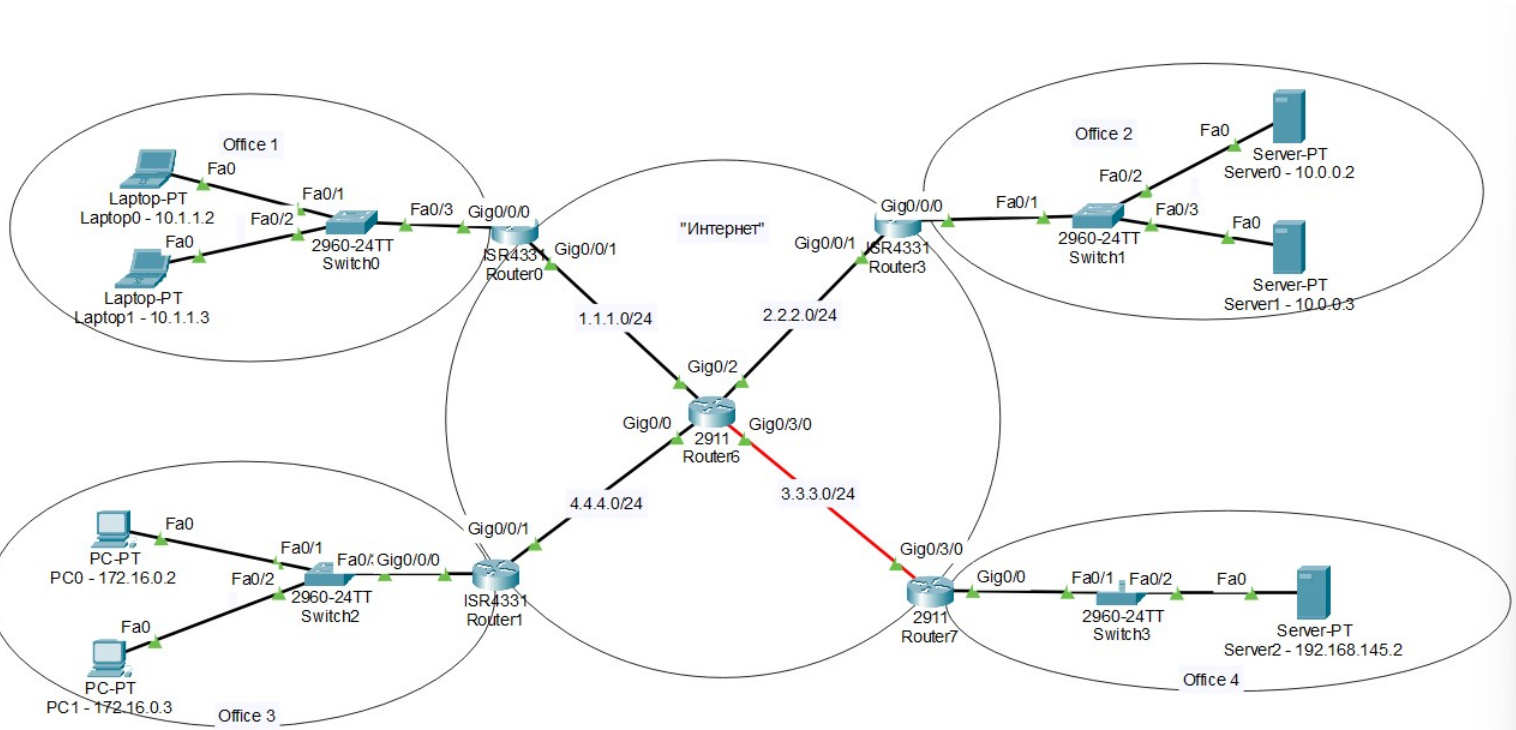
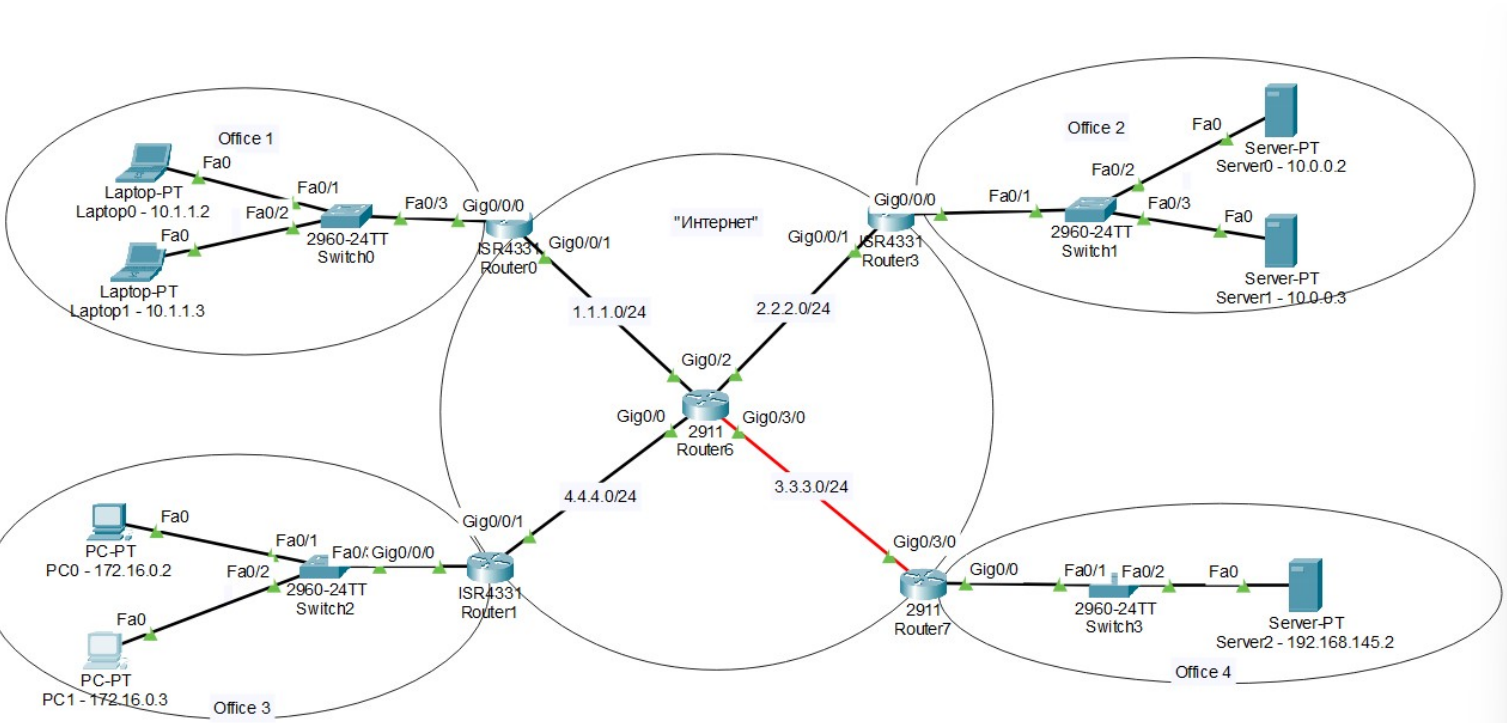
Задача 2. Настроить PAT в Office 3 для компьютеров, чтобы они выходили в интернет под одним публичным IP адресом на Router1.




Office 1
Laptop-PT
Laptop0 - 10.1.1.2
Laptop-PT
Laptop1 - 10.1.1.3
Fa0
Fa0/1
Fa0/2
Fa0/3
2960-24TT
Switch0
Gig0/0/0
ISR4331
Router0
Gig0/0/1
"Интернет"
1.1.1.0/24
Gig0/2
Gig0/0
2911
Router6
Gig0/3/0
4.4.4.0/24
3.3.3.0/24
Gig0/0/1
ISR4331
Router1
Fa0/4
Gig0/0/0
2960-24TT
Switch2
PC-PT
PC0 - 172.16.0.2
PC-PT
PC1 - 172.16.0.3
Office 3
2.2.2.0/24
Gig0/0/1
ISR4331
Router3
Gig0/0/0
Fa0/1
2960-24TT
Switch1
Office 2
Server-PT
Server0 - 10.0.0.2
Server-PT
Server1 - 10.0.0.3
Gig0/3/0
2911
Router7
Gig0/0
Fa0/1
Fa0/2
2960-24TT
Switch3
Server-PT
Server2 - 192.168.145.2
Office 4

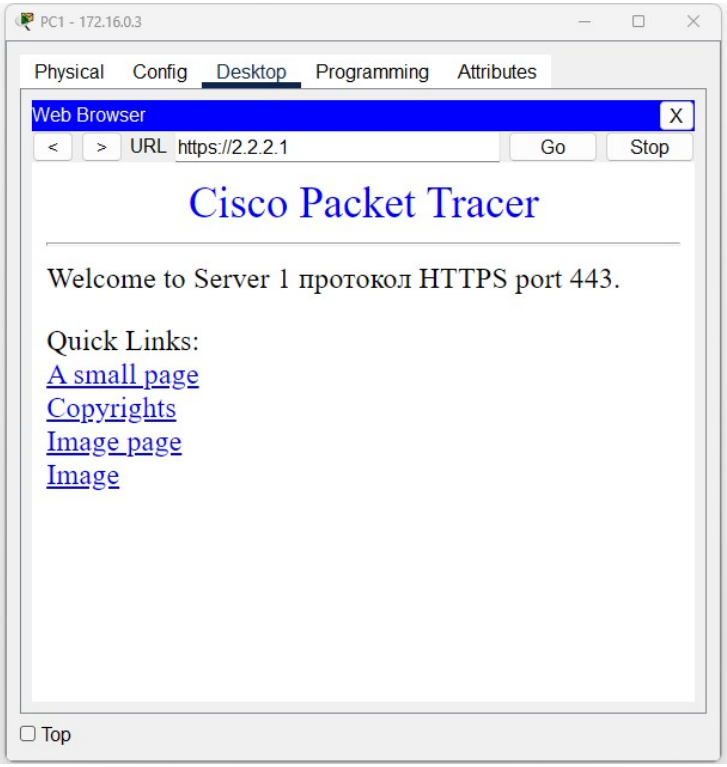

PC1 - 172.16.0.3
Physical
Config
Desktop
Programming
Attributes
Web Browser
X
<
>
URL
https://2.2.2.1
Go
Stop
Cisco Packet Tracer
Welcome to Server 1 протокол HTTPS port 443.
Quick Links:
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Image
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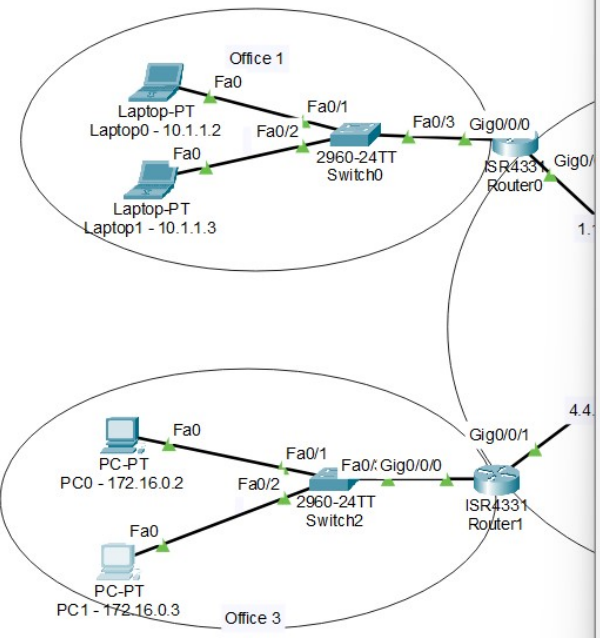

Time: 06:03:21

Router1

Physical Config CLI Attributes

IOS Command Line Interface

```
Router#sh ip nat translations
Pro  Inside global     Inside local       Outside local      Outside global
tcp 4.4.4.1:1028       172.16.0.3:1028    2.2.2.1:443        2.2.2.1:443
tcp 4.4.4.1:1029       172.16.0.3:1029    2.2.2.1:443        2.2.2.1:443
tcp 4.4.4.1:1030       172.16.0.3:1030    2.2.2.1:443        2.2.2.1:443
tcp 4.4.4.1:1031       172.16.0.3:1031    2.2.2.1:443        2.2.2.1:443
tcp 4.4.4.1:1032       172.16.0.3:1032    2.2.2.1:80         2.2.2.1:80
tcp 4.4.4.1:1033       172.16.0.3:1033    2.2.2.1:80         2.2.2.1:80
tcp 4.4.4.1:1034       172.16.0.3:1034    2.2.2.1:80         2.2.2.1:80
tcp 4.4.4.1:1035       172.16.0.3:1035    2.2.2.1:80         2.2.2.1:80
tcp 4.4.4.1:1036       172.16.0.3:1036    2.2.2.1:80         2.2.2.1:80
tcp 4.4.4.1:1037       172.16.0.3:1037    2.2.2.1:80         2.2.2.1:80
tcp 4.4.4.1:1038       172.16.0.3:1038    2.2.2.1:80         2.2.2.1:80
tcp 4.4.4.1:1039       172.16.0.3:1039    2.2.2.1:80         2.2.2.1:80
tcp 4.4.4.1:1040       172.16.0.3:1040    2.2.2.1:80         2.2.2.1:80
tcp 4.4.4.1:1041       172.16.0.3:1041    2.2.2.1:80         2.2.2.1:80
tcp 4.4.4.1:1042       172.16.0.3:1042    2.2.2.1:80         2.2.2.1:80
tcp 4.4.4.1:1043       172.16.0.3:1043    2.2.2.1:443        2.2.2.1:443
tcp 4.4.4.1:1044       172.16.0.3:1044    2.2.2.1:443        2.2.2.1:443
tcp 4.4.4.1:1045       172.16.0.3:1045    2.2.2.1:443        2.2.2.1:443
tcp 4.4.4.1:1046       172.16.0.3:1046    2.2.2.1:443        2.2.2.1:443
tcp 4.4.4.1:1047       172.16.0.3:1047    2.2.2.1:443        2.2.2.1:443
tcp 4.4.4.1:1048       172.16.0.3:1048    2.2.2.1:443        2.2.2.1:443
tcp 4.4.4.1:1049       172.16.0.3:1049    2.2.2.1:443        2.2.2.1:443
tcp 4.4.4.1:1050       172.16.0.3:1050    2.2.2.1:443        2.2.2.1:443

Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
Router#
```

Copy Paste

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PC1 - 172.16.0.3

Physical Config Desktop Programming Attributes

Web Browser X

< > URL https://2.2.2.1 Go Stop

Cisco Packet Tracer

Welcome to Server 1 протокол HTTPS port 443.

Quick Links:

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Image page

Image

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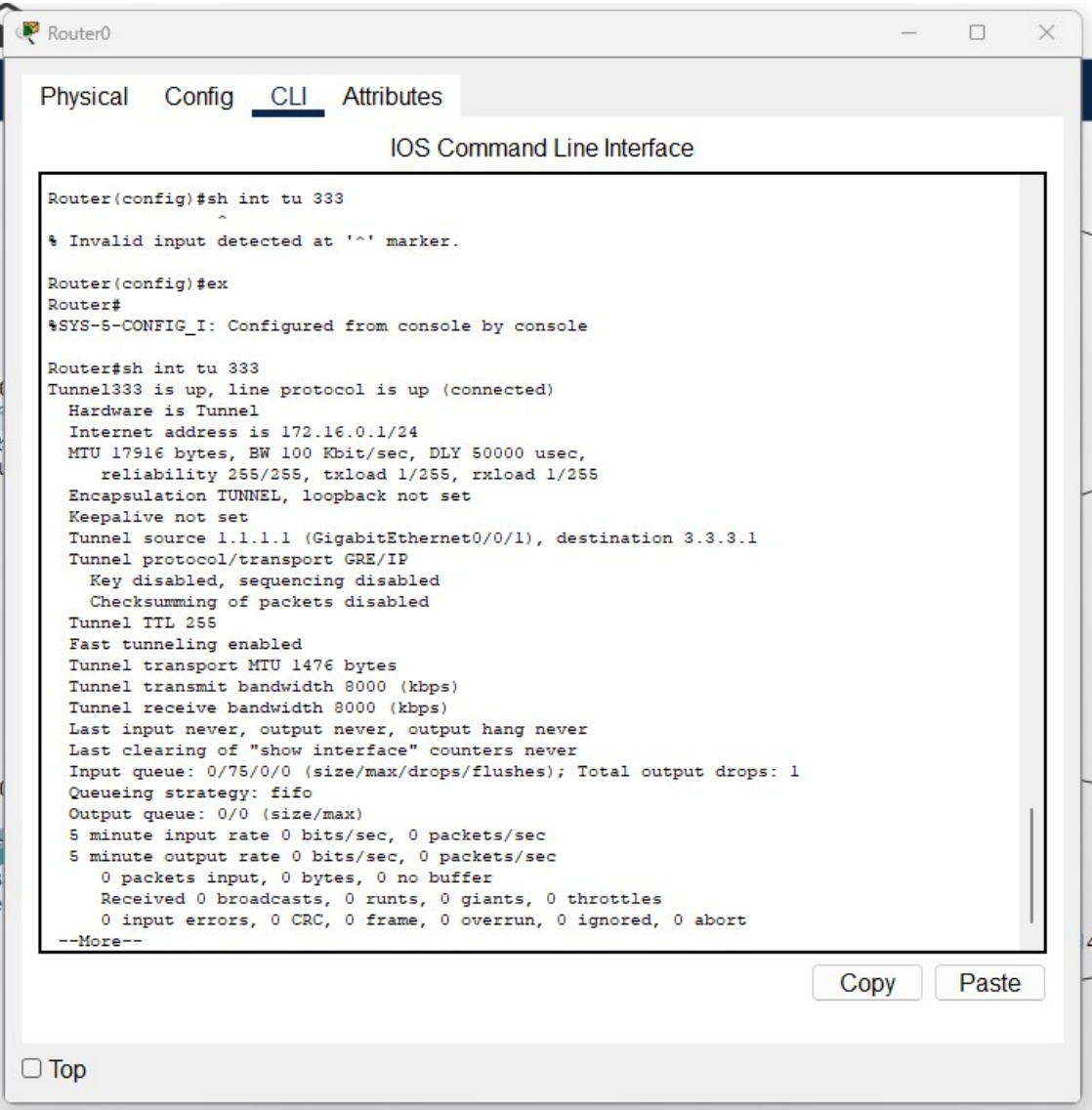
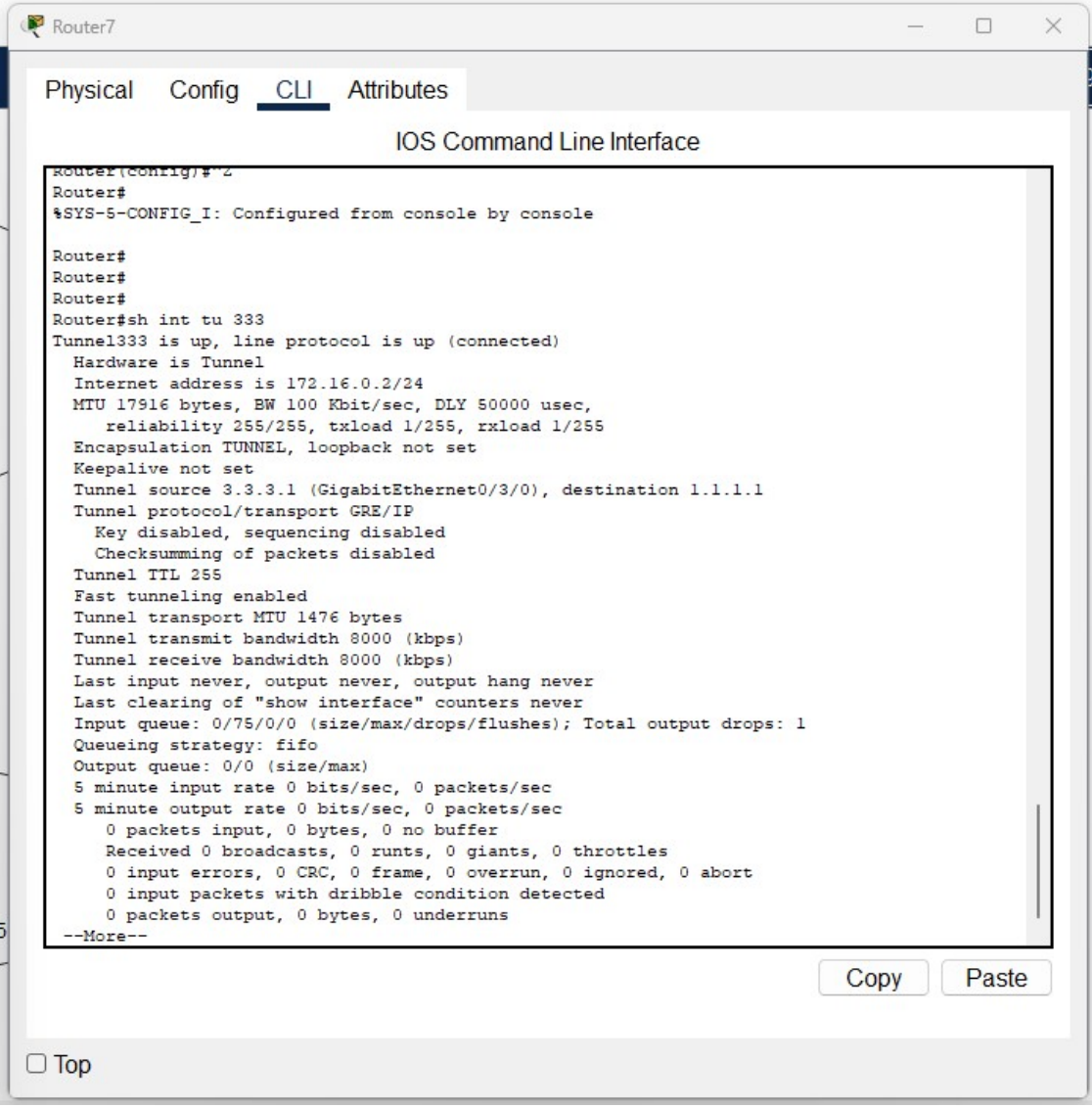
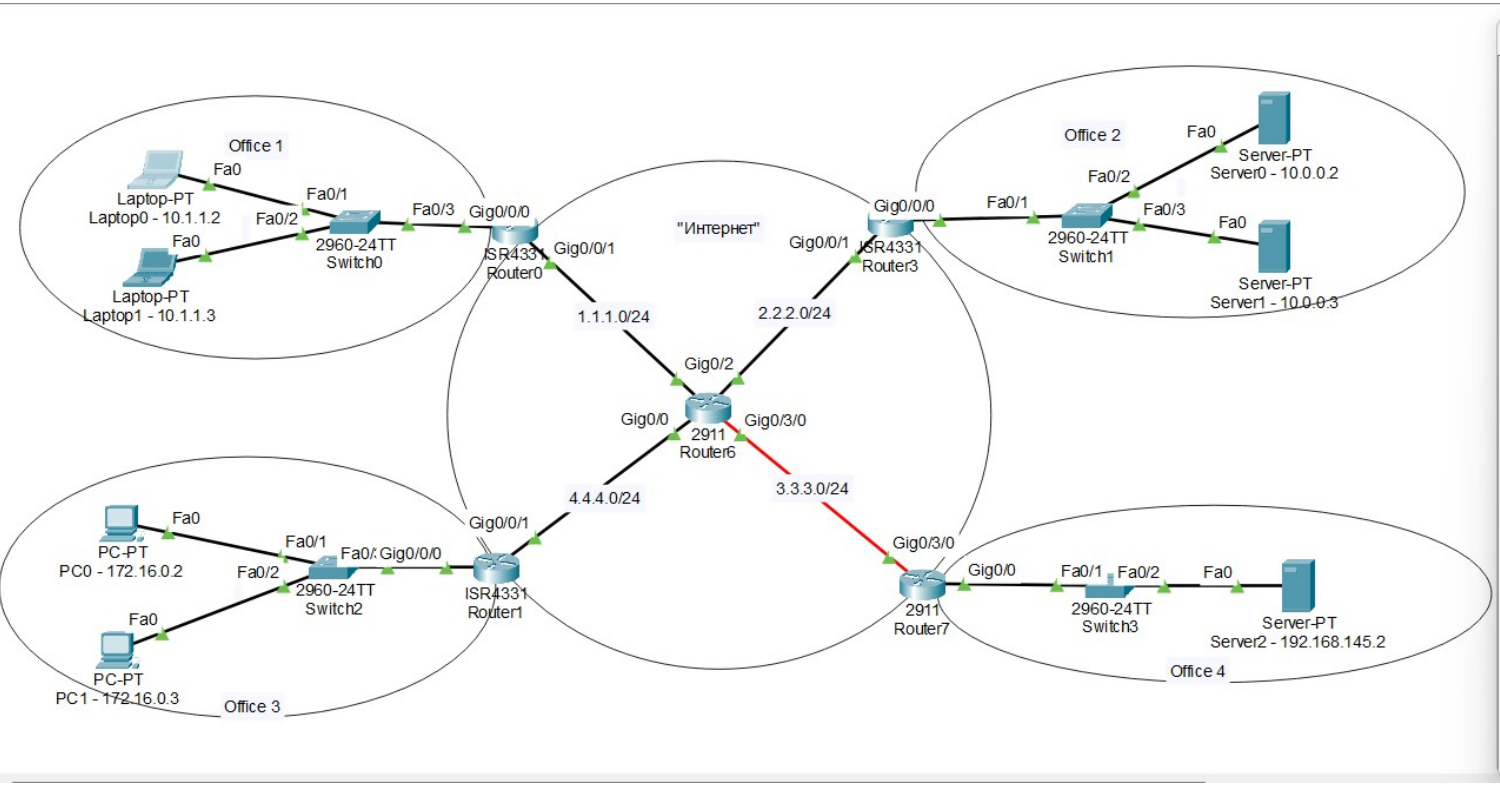
Задача 3. Связать сети Office 1 и Office 4 с помощью GRE. Предоставит трейс с Laptop0 до Server2.







Laptop0 - 10.1.1.2

Physical | Config | Desktop | Programming | Attributes

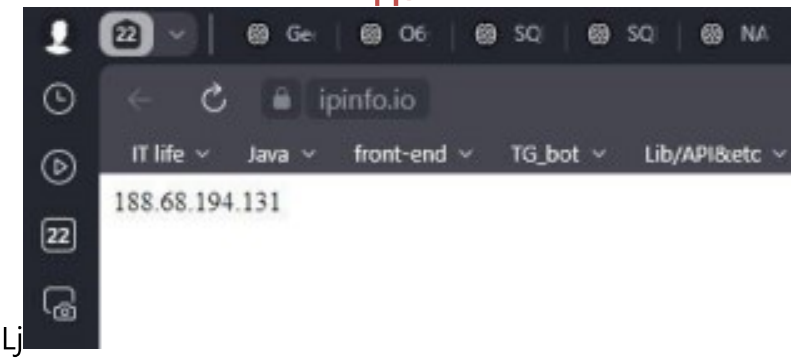
Command Prompt

```
Tracing route to 192.168.145.2 over a maximum of 30 hops:

  1   0 ms      1 ms      0 ms      10.1.1.1
  2   1 ms      0 ms      0 ms      172.16.0.2
  3   0 ms      0 ms      0 ms      192.168.145.2

Trace complete.

C:\>tracert 192.168.145.2

Tracing route to 192.168.145.2 over a maximum of 30 hops:

  1   0 ms      0 ms      0 ms      10.1.1.1
  2   0 ms      0 ms      0 ms      172.16.0.2
  3   0 ms      0 ms      0 ms      192.168.145.2

Trace complete.

C:\>ping 192.168.145.2

Pinging 192.168.145.2 with 32 bytes of data:

Reply from 192.168.145.2: bytes=32 time<1ms TTL=126
Reply from 192.168.145.2: bytes=32 time<1ms TTL=126
Reply from 192.168.145.2: bytes=32 time<1ms TTL=126
Reply from 192.168.145.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.145.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

Top

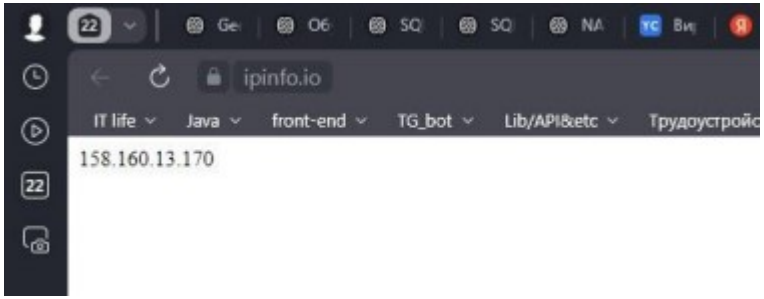
Задача 4. Доделать OpenVPN (или Wireguard) если не успели. Предоставит скриншот публичного IP до и после подключения через VPN + скриншот вывода команды ip addr.

До



Lj

После




root@vm-cloud: /home/fedotoff144
Scanning processes...
Scanning candidates...
Scanning linux images...
Restarting services...
Service restarts being deferred:
systemctl restart packagekit.service
systemctl restart unattended-upgrades.service
No containers need to be restarted.
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
root@vm-cloud:/home/fedotoff144#
root@vm-cloud:/home/fedotoff144#
root@vm-cloud:/home/fedotoff144#
root@vm-cloud:/home/fedotoff144# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default q
len 1000
link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
inet 127.0.0.1/8 scope host lo
valid_lft forever preferred_lft forever
inet6 ::1/128 scope host
valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default
qlen 1000
link/ether d0:0d:19:8e:7d:c6 brd ff:ff:ff:ff:ff:ff
altname enp138s0
altname ens8
inet 10.129.0.6/24 metric 100 brd 10.129.0.255 scope global eth0
valid_lft forever preferred_lft forever
inet6 fe80::d20d:19ff:fe8e:7dc6/64 scope link
valid_lft forever preferred_lft forever
3: as0t0: <POINTOPOINT,MULTICAST,NOARP,UP,LOWER_UP> mtu 1500 qdisc fq_codel state U
NKNOWN group default qlen 200
link/none
inet 172.27.224.1/22 scope global as0t0
valid_lft forever preferred_lft forever
inet6 fe80::860a:ad5b:28e3:6efd/64 scope link stable-privacy
valid_lft forever preferred_lft forever
4: as0t1: <POINTOPOINT,MULTICAST,NOARP,UP,LOWER_UP> mtu 1500 qdisc fq_codel state U
NKNOWN group default qlen 200
link/none
inet 172.27.228.1/22 scope global as0t1
valid_lft forever preferred_lft forever
inet6 fe80::790d:3d08:2e31:b28d/64 scope link stable-privacy
valid_lft forever preferred_lft forever
5: as0t2: <POINTOPOINT,MULTICAST,NOARP,UP,LOWER_UP> mtu 1500 qdisc fq_codel state U
NKNOWN group default qlen 200
link/none
inet 172.27.232.1/22 scope global as0t2
valid_lft forever preferred_lft forever
inet6 fe80::34c9:9639:1257:88d6/64 scope link stable-privacy
valid_lft forever preferred_lft forever
6: as0t3: <POINTOPOINT,MULTICAST,NOARP,UP,LOWER_UP> mtu 1500 qdisc fq_codel state U
NKNOWN group default qlen 200
link/none
inet 172.27.236.1/22 scope global as0t3
valid_lft forever preferred_lft forever
inet6 fe80::9dc1:875a:5f3f:c205/64 scope link stable-privacy
valid_lft forever preferred_lft forever
root@vm-cloud:/home/fedotoff144#