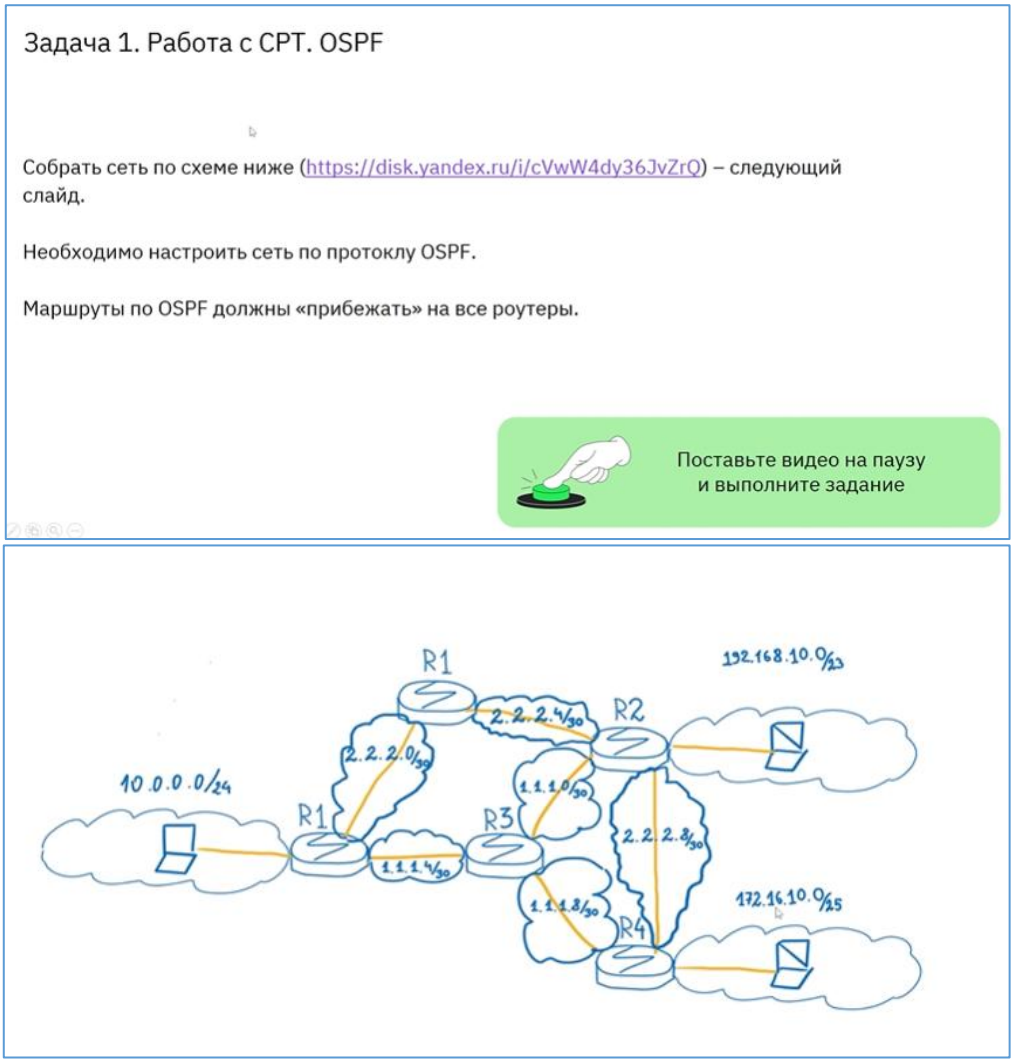
Компьютерные сети. Обучение в записи

Урок 7. Семинар. Основы компьютерных сетей. Сетевой уровень. Протоколы маршрутизации. VLAN

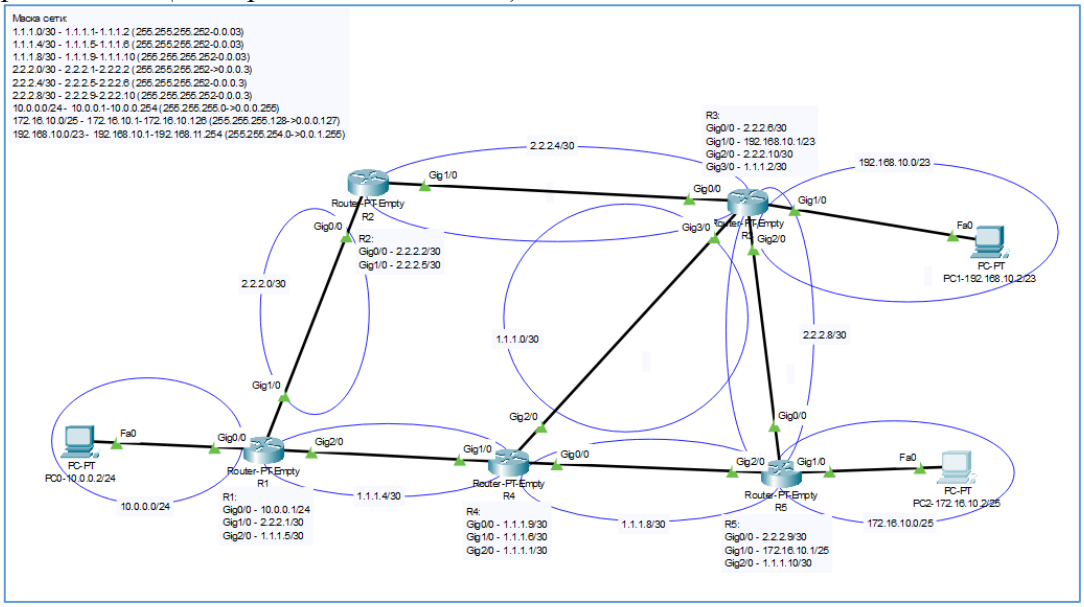
Оглавление

Задача 1. Работа с CPT. OSPF



Ход выполнения задания 1:

Настройка сети (IP-адресов и маски сети)



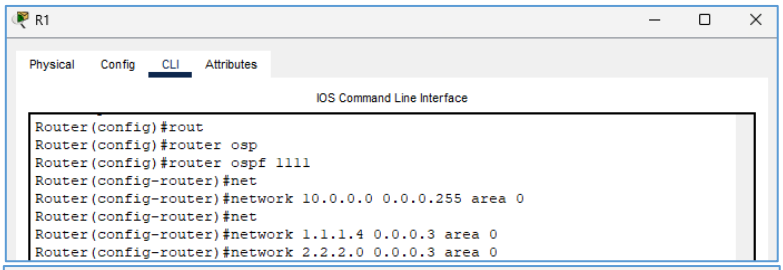
Настройка сети по протоколу OSPF

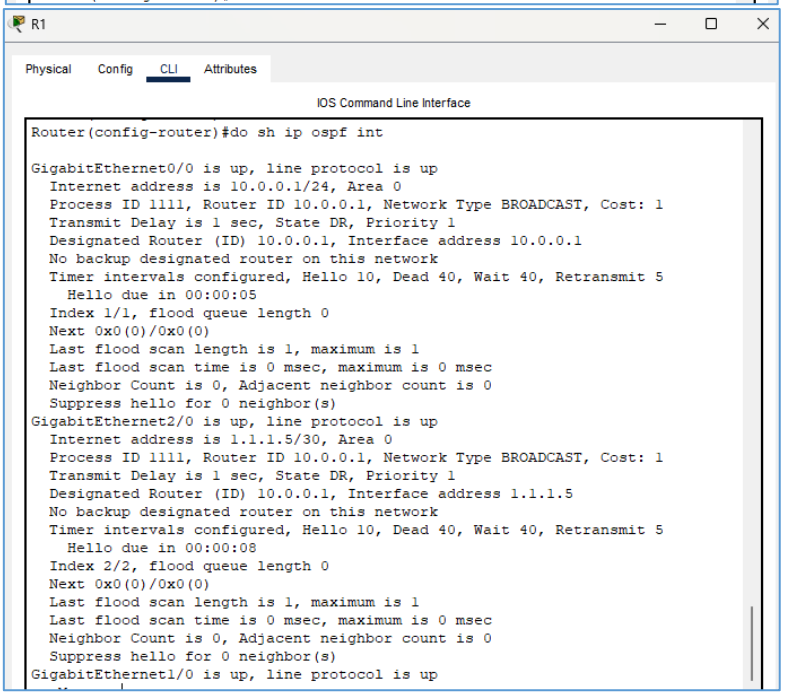
Роутер (R1)

router ospf 1111 - включение OSPF процесса на роутере

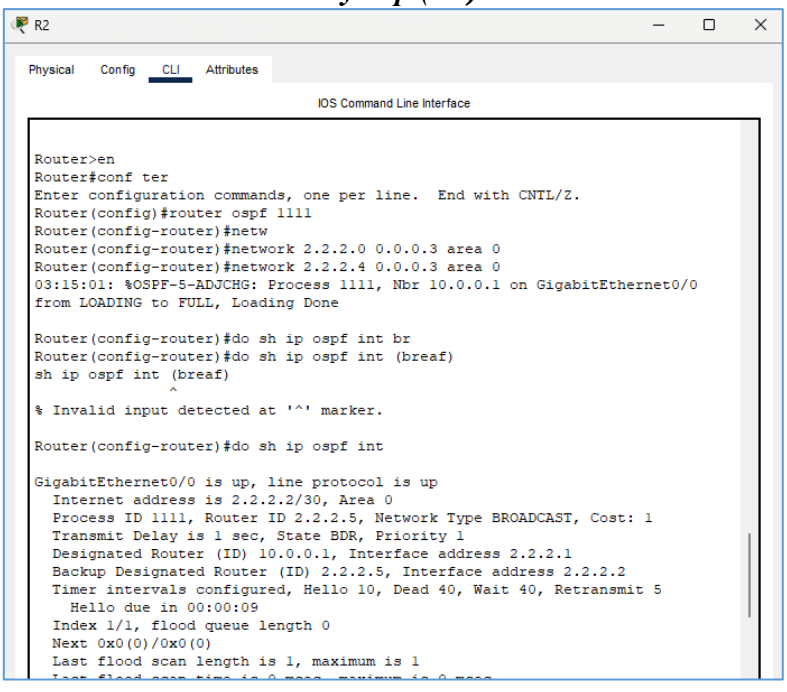
network 10.0.0.0 0.0.0.255 area 0 - включение сети 10.0.0.0/24 в OSPF процесс в area 0 (соответственно и интерфейс из этой сети включается в процесс OSPF)

router-id 12.12.12.12 - назначение Router-ID на роутере

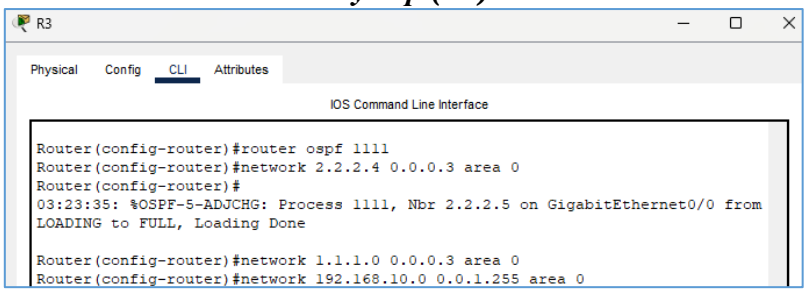




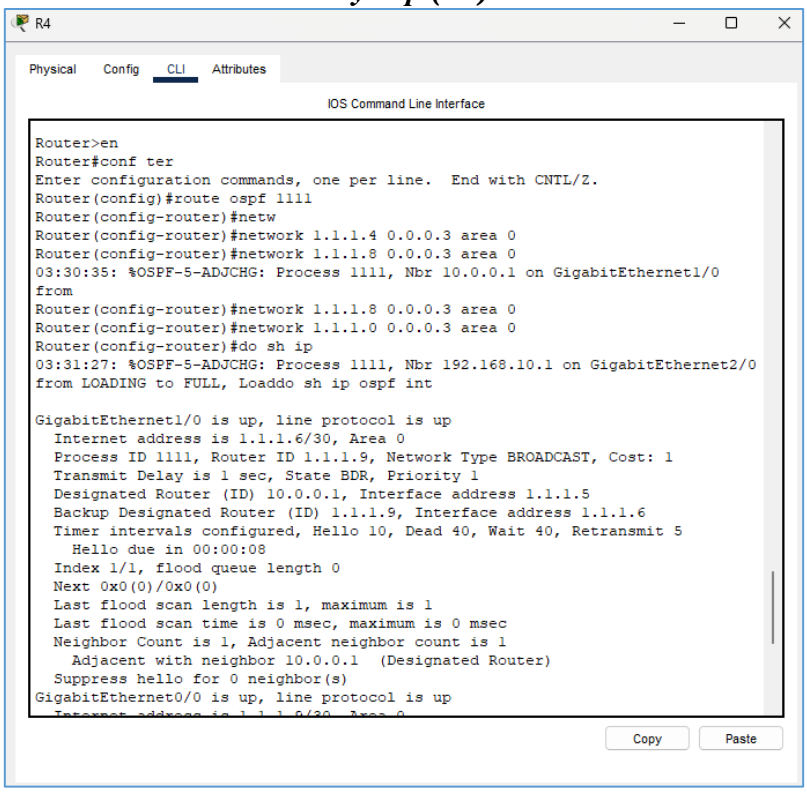
Роутер (R2)



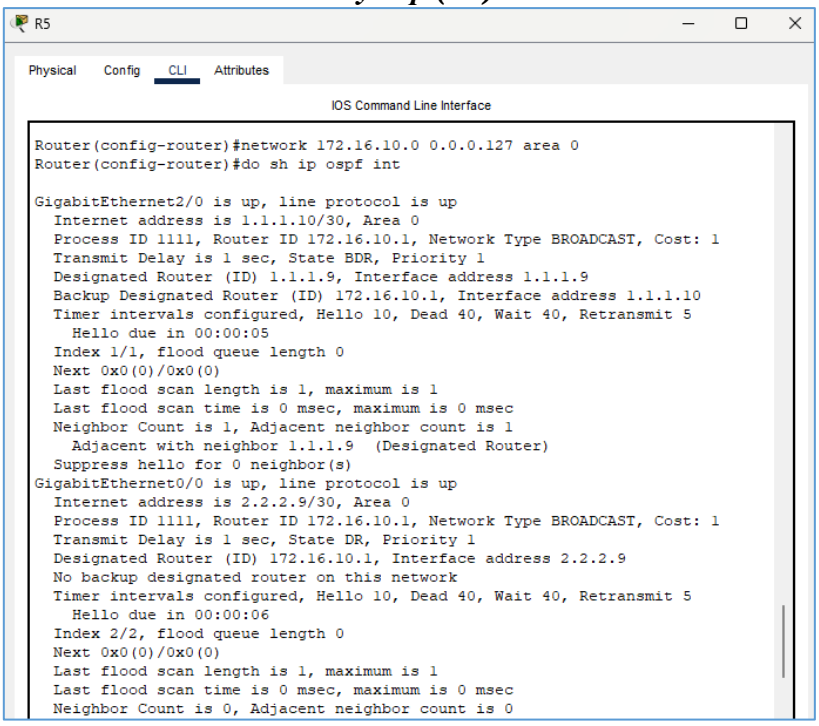
Роутер (R3)



Роутер (R4)



Роутер (R5)



Проверка 1:

Роутер (R1)

R1

Physical Config CLI Attributes

IOS Command Line Interface

```
Router#sh ip route ospf
     1.0.0.0/30 is subnetted, 3 subnets
O       1.1.1.0 [110/2] via 1.1.1.6, 00:18:31, GigabitEthernet2/0
O       1.1.1.8 [110/2] via 1.1.1.6, 00:19:08, GigabitEthernet2/0
     2.0.0.0/30 is subnetted, 3 subnets
O       2.2.2.4 [110/2] via 2.2.2.2, 00:35:09, GigabitEthernet1/0
O       2.2.2.8 [110/3] via 1.1.1.6, 00:09:29, GigabitEthernet2/0
                [110/3] via 2.2.2.2, 00:09:29, GigabitEthernet1/0
     172.16.0.0/25 is subnetted, 1 subnets
O       172.16.10.0 [110/3] via 1.1.1.6, 00:13:04, GigabitEthernet2/0
O    192.168.10.0 [110/3] via 1.1.1.6, 00:18:31, GigabitEthernet2/0
                  [110/3] via 2.2.2.2, 00:18:31, GigabitEthernet1/0
```

Роутер (R2)

R2

Physical Config CLI Attributes

IOS Command Line Interface

```
Router#sh ip route ospf
     1.0.0.0/30 is subnetted, 3 subnets
O       1.1.1.0 [110/2] via 2.2.2.6, 00:17:53, GigabitEthernet1/0
O       1.1.1.4 [110/2] via 2.2.2.1, 00:18:45, GigabitEthernet0/0
O       1.1.1.8 [110/3] via 2.2.2.1, 00:17:53, GigabitEthernet0/0
                [110/3] via 2.2.2.6, 00:17:53, GigabitEthernet1/0
     2.0.0.0/30 is subnetted, 3 subnets
O       2.2.2.8 [110/2] via 2.2.2.6, 00:08:51, GigabitEthernet1/0
     10.0.0.0/24 is subnetted, 1 subnets
O       10.0.0.0 [110/2] via 2.2.2.1, 00:34:30, GigabitEthernet0/0
     172.16.0.0/25 is subnetted, 1 subnets
O       172.16.10.0 [110/3] via 2.2.2.6, 00:08:51, GigabitEthernet1/0
O    192.168.10.0 [110/2] via 2.2.2.6, 00:17:53, GigabitEthernet1/0
```

Роутер (R3)

R3

Physical Config CLI Attributes

IOS Command Line Interface

```
Router#sh ip route ospf
     1.0.0.0/30 is subnetted, 3 subnets
O       1.1.1.4 [110/2] via 1.1.1.1, 00:21:44, GigabitEthernet3/0
O       1.1.1.8 [110/2] via 1.1.1.1, 00:12:41, GigabitEthernet3/0
                [110/2] via 2.2.2.9, 00:12:41, GigabitEthernet2/0
     2.0.0.0/30 is subnetted, 3 subnets
O       2.2.2.0 [110/2] via 2.2.2.5, 00:21:44, GigabitEthernet0/0
     10.0.0.0/24 is subnetted, 1 subnets
O       10.0.0.0 [110/3] via 2.2.2.5, 00:21:44, GigabitEthernet0/0
                 [110/3] via 1.1.1.1, 00:21:44, GigabitEthernet3/0
     172.16.0.0/25 is subnetted, 1 subnets
O       172.16.10.0 [110/2] via 2.2.2.9, 00:12:41, GigabitEthernet2/0
```

Роутер (R4)

R4

Physical Config CLI Attributes

IOS Command Line Interface

```
Router#sh ip route ospf
     2.0.0.0/30 is subnetted, 3 subnets
O       2.2.2.0 [110/2] via 1.1.1.5, 00:24:38, GigabitEthernet1/0
O       2.2.2.4 [110/2] via 1.1.1.2, 00:23:49, GigabitEthernet2/0
O       2.2.2.8 [110/2] via 1.1.1.10, 00:14:46, GigabitEthernet0/0
                [110/2] via 1.1.1.2, 00:14:46, GigabitEthernet2/0
     10.0.0.0/24 is subnetted, 1 subnets
O       10.0.0.0 [110/2] via 1.1.1.5, 00:24:38, GigabitEthernet1/0
     172.16.0.0/25 is subnetted, 1 subnets
O       172.16.10.0 [110/2] via 1.1.1.10, 00:18:21, GigabitEthernet0/0
O    192.168.10.0 [110/2] via 1.1.1.2, 00:23:49, GigabitEthernet2/0
```

Роутер (R5)

R5

Physical Config CLI Attributes

IOS Command Line Interface

```
Router#sh ip route ospf
     1.0.0.0/30 is subnetted, 3 subnets
O       1.1.1.0 [110/2] via 1.1.1.9, 00:18:36, GigabitEthernet2/0
                [110/2] via 2.2.2.10, 00:18:36, GigabitEthernet0/0
O       1.1.1.4 [110/2] via 1.1.1.9, 00:23:40, GigabitEthernet2/0
     2.0.0.0/30 is subnetted, 3 subnets
O       2.2.2.0 [110/3] via 1.1.1.9, 00:18:36, GigabitEthernet2/0
                [110/3] via 2.2.2.10, 00:18:36, GigabitEthernet0/0
O       2.2.2.4 [110/2] via 2.2.2.10, 00:18:36, GigabitEthernet0/0
     10.0.0.0/24 is subnetted, 1 subnets
O       10.0.0.0 [110/3] via 1.1.1.9, 00:23:40, GigabitEthernet2/0
O    192.168.10.0 [110/2] via 2.2.2.10, 00:18:36, GigabitEthernet0/0
```

Проверка 2:

Роутер (R1)

R1

Physical Config CLI Attributes

IOS Command Li

```
!
interface GigabitEthernet0/0
 ip address 10.0.0.1 255.255.255.0
 duplex auto
 speed auto
!
interface GigabitEthernet1/0
 ip address 2.2.2.1 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet2/0
 ip address 1.1.1.5 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet3/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
router ospf 1111
 log-adjacency-changes
 network 10.0.0.0 0.0.0.255 area 0
 network 1.1.1.4 0.0.0.3 area 0
 network 2.2.2.0 0.0.0.3 area 0
```

Роутер (R2)

R2

Physical Config CLI Attributes

IOS Command Line

```
!
interface GigabitEthernet0/0
 ip address 2.2.2.2 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet1/0
 ip address 2.2.2.5 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet2/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface GigabitEthernet3/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
router ospf 1111
 log-adjacency-changes
 network 2.2.2.0 0.0.0.3 area 0
 network 2.2.2.4 0.0.0.3 area 0
!
```

Poymep (R3)

R3

Physical Config CLI Attributes

IOS Command Line

```
interface GigabitEthernet0/0
 ip address 2.2.2.6 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet1/0
 ip address 192.168.10.1 255.255.254.0
 duplex auto
 speed auto
!
interface GigabitEthernet2/0
 ip address 2.2.2.10 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet3/0
 ip address 1.1.1.2 255.255.255.252
 duplex auto
 speed auto
!
router ospf 1111
 log-adjacency-changes
 network 2.2.2.4 0.0.0.3 area 0
 network 1.1.1.0 0.0.0.3 area 0
 network 192.168.10.0 0.0.1.255 area 0
 network 2.2.2.8 0.0.0.3 area 0
```

Poymep (R4)

R4

Physical Config CLI Attributes

IOS Command Line Int

```
interface GigabitEthernet0/0
 ip address 1.1.1.9 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet1/0
 ip address 1.1.1.6 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet2/0
 ip address 1.1.1.1 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet3/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
router ospf 1111
 log-adjacency-changes
 network 1.1.1.4 0.0.0.3 area 0
 network 1.1.1.8 0.0.0.3 area 0
 network 1.1.1.0 0.0.0.3 area 0
!
```

Poymep (R5)

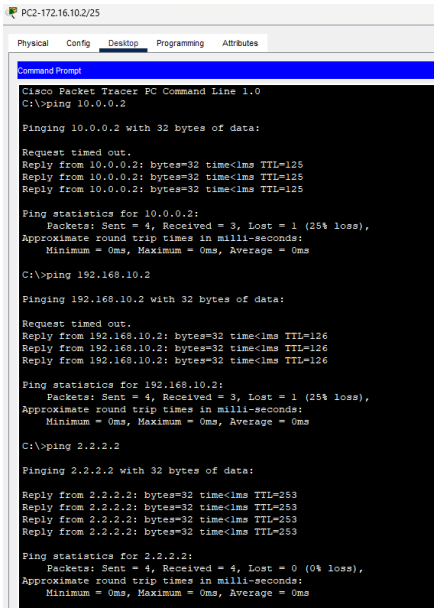
R5

Physical Config CLI Attributes

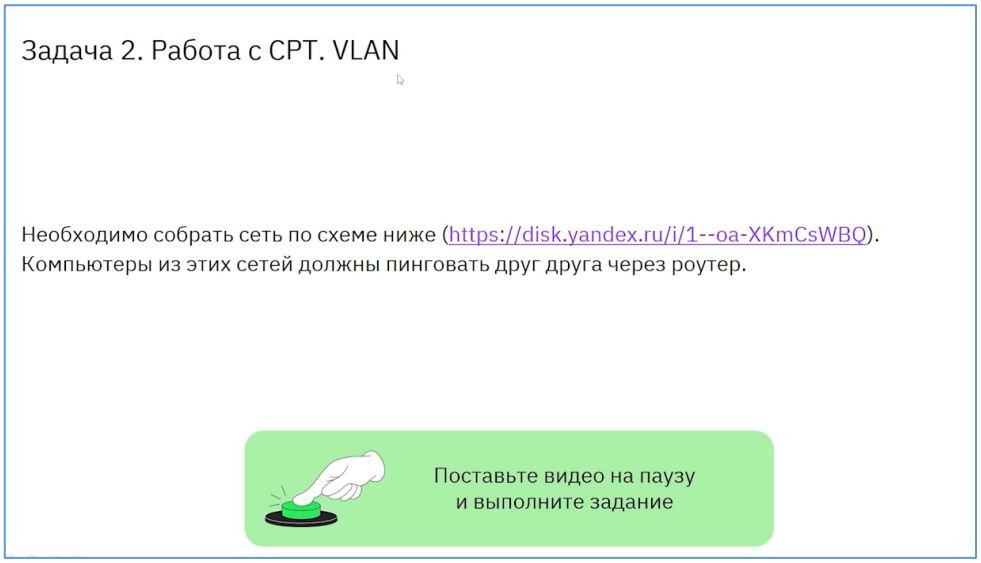
IOS Command Line Interface

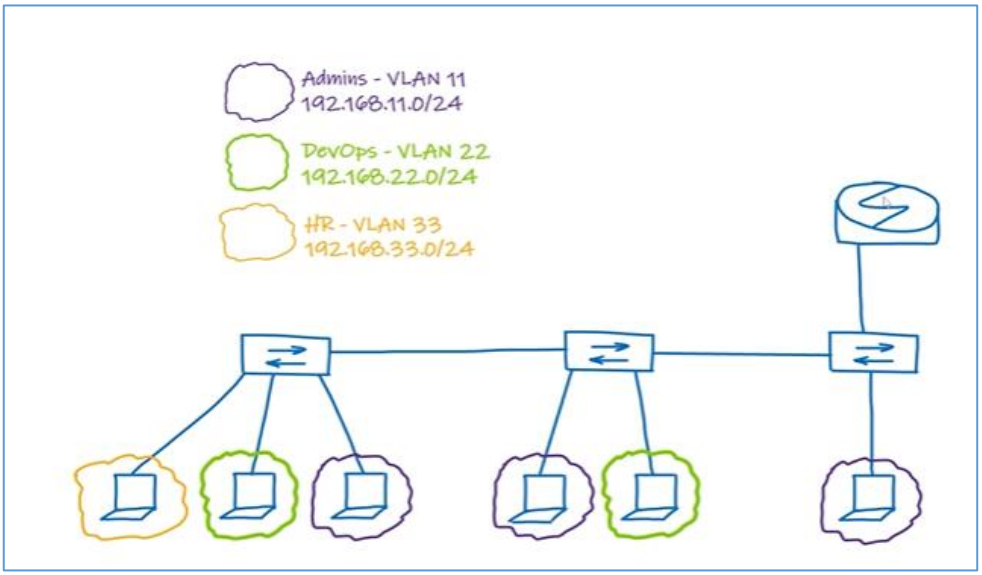
```
!
!
!
interface GigabitEthernet0/0
 ip address 2.2.2.9 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet1/0
 ip address 172.16.10.1 255.255.255.128
 duplex auto
 speed auto
!
interface GigabitEthernet2/0
 ip address 1.1.1.10 255.255.255.252
 duplex auto
 speed auto
!
interface GigabitEthernet3/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
router ospf 1111
 log-adjacency-changes
 network 1.1.1.8 0.0.0.3 area 0
 network 2.2.2.8 0.0.0.3 area 0
 network 172.16.10.0 0.0.0.127 area 0
!
```

PC2-172.16.10.2/25

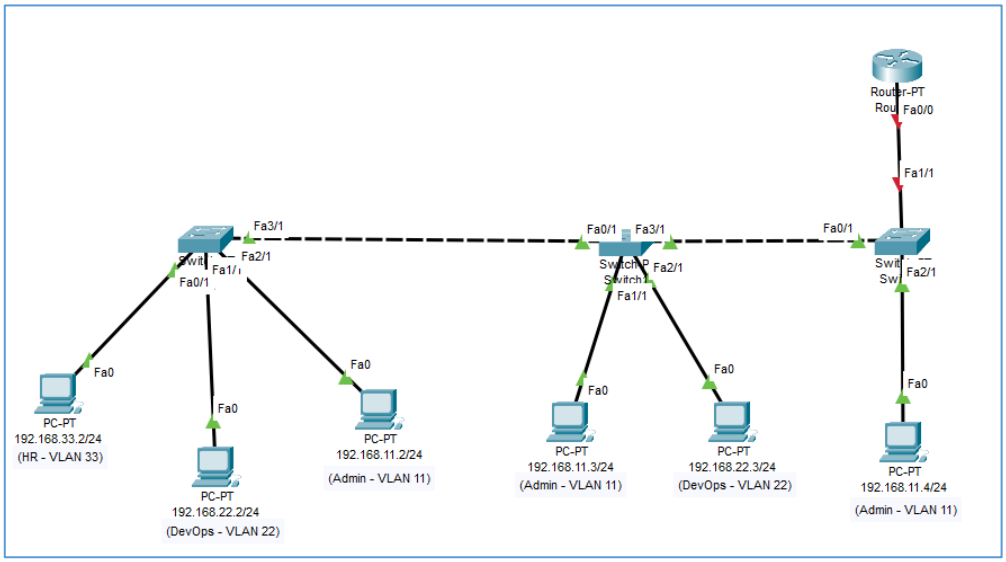


Задача 2. Работа с CPT. VLAN



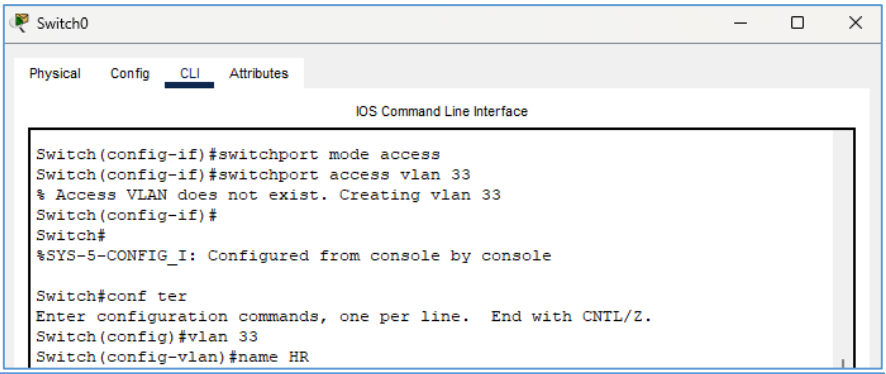


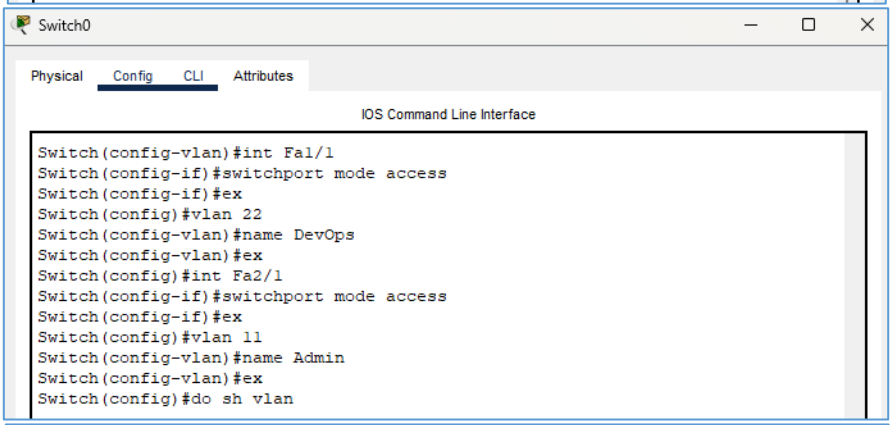
Ход выполнения задания 2:

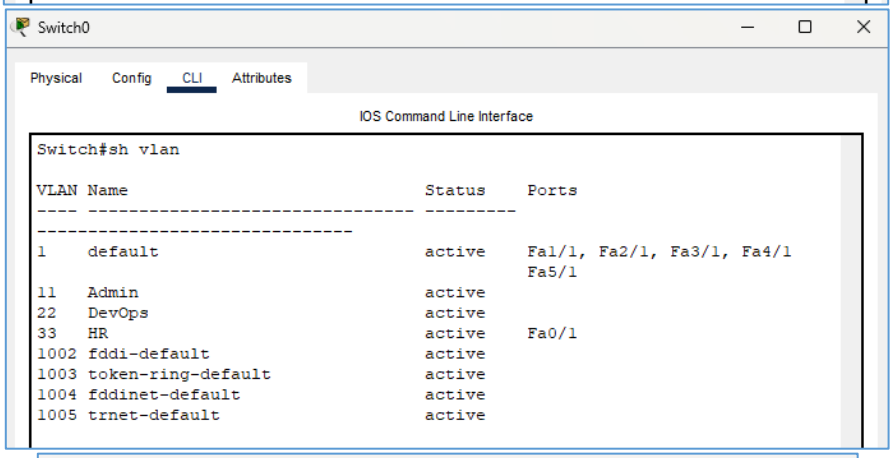


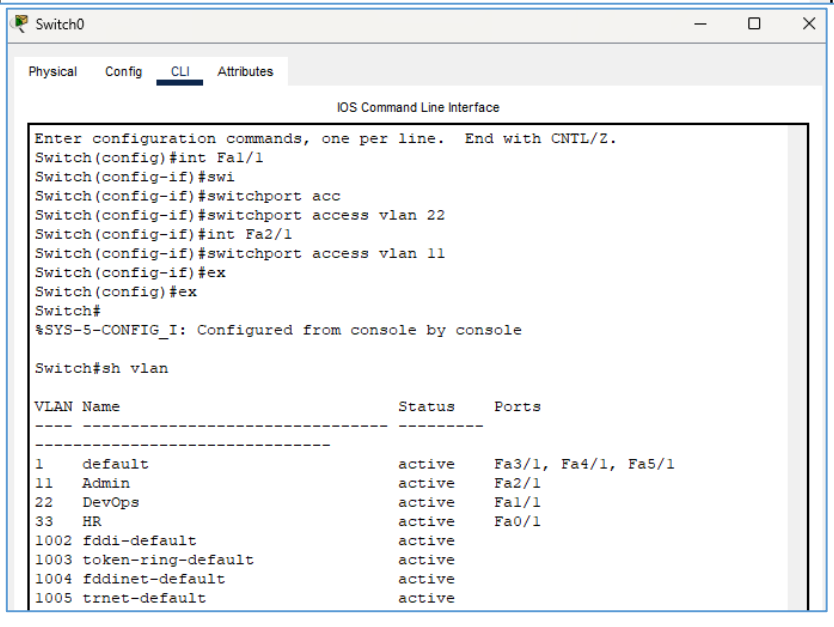
Создание и настройка vlan (настройка портов в режиме Access)

Switch0

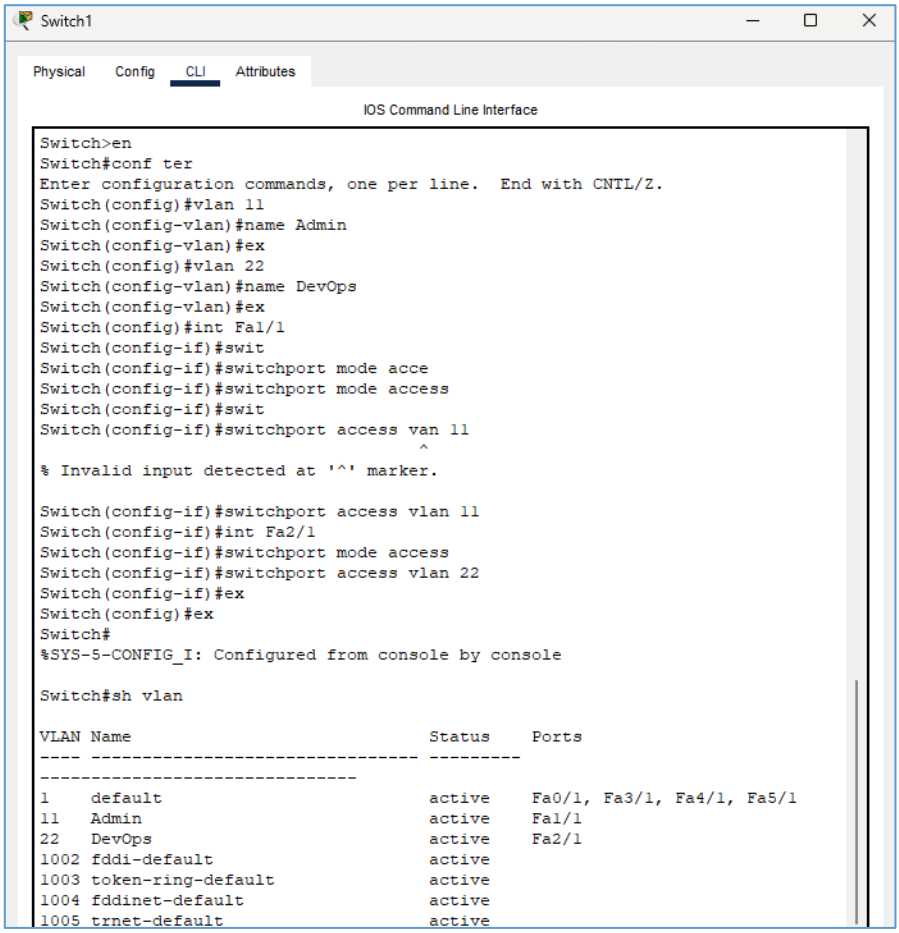


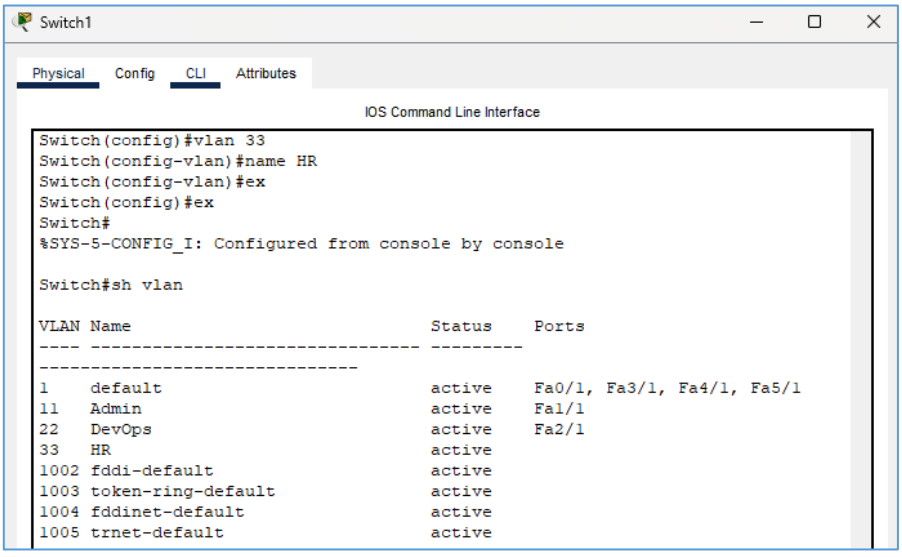




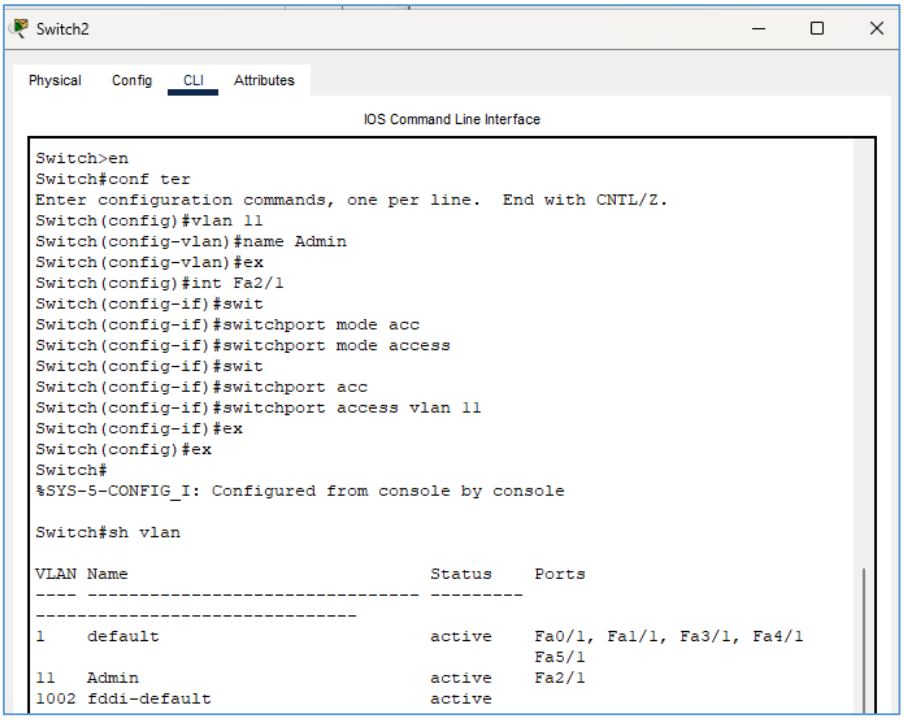


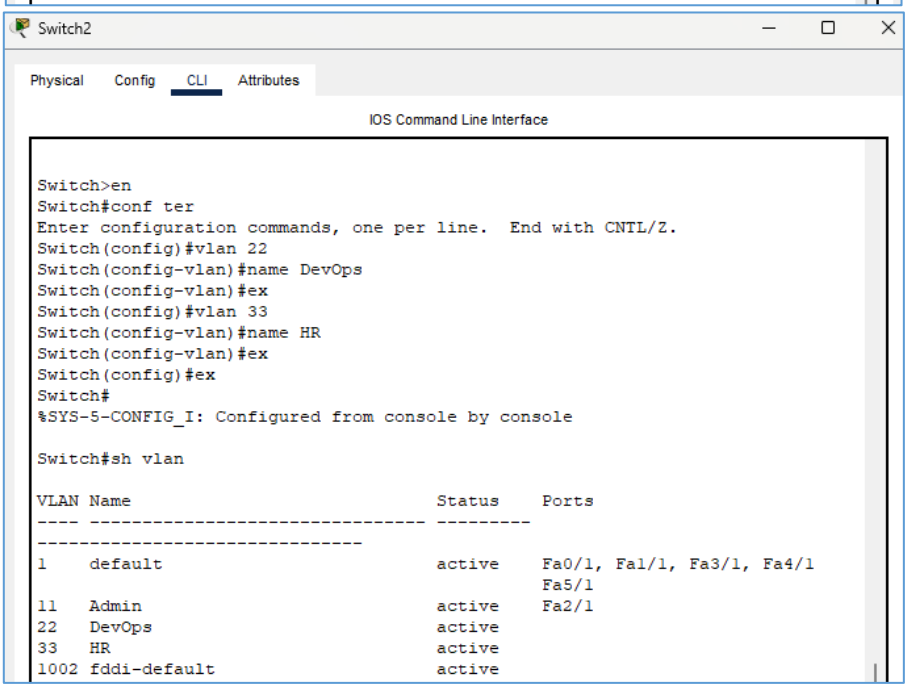
Switch1


Switch1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Switch>en
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 11
Switch(config-vlan)#name Admin
Switch(config-vlan)#ex
Switch(config)#vlan 22
Switch(config-vlan)#name DevOps
Switch(config-vlan)#ex
Switch(config)#int Fa1/1
Switch(config-if)#swit
Switch(config-if)#switchport mode acce
Switch(config-if)#switchport mode access
Switch(config-if)#swit
Switch(config-if)#switchport access van 11
% Invalid input detected at '^' marker.
Switch(config-if)#switchport access vlan 11
Switch(config-if)#int Fa2/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 22
Switch(config-if)#ex
Switch(config)#ex
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#sh vlan
VLAN Name Status Ports
1 default active Fa0/1, Fa3/1, Fa4/1, Fa5/1
11 Admin active Fa1/1
22 DevOps active Fa2/1
1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active


Switch1
Physical
Config
CLI
Attributes
IOS Command Line Interface
Switch(config)#vlan 33
Switch(config-vlan)#name HR
Switch(config-vlan)#ex
Switch(config)#ex
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#sh vlan
VLAN Name Status Ports
1 default active Fa0/1, Fa3/1, Fa4/1, Fa5/1
11 Admin active Fa1/1
22 DevOps active Fa2/1
33 HR active
1002 fddi-default active
1003 token-ring-default active
1004 fddinet-default active
1005 trnet-default active

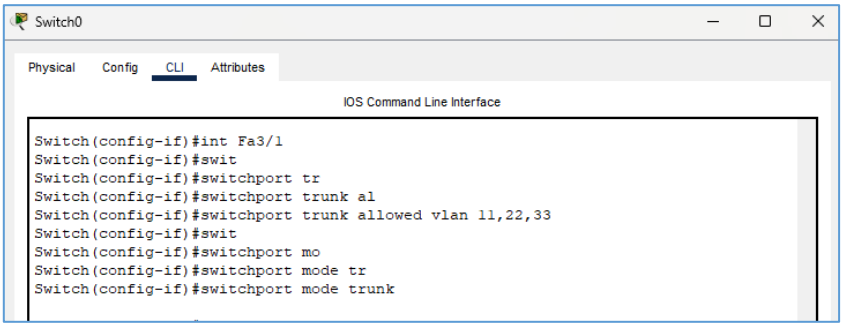
Switch2

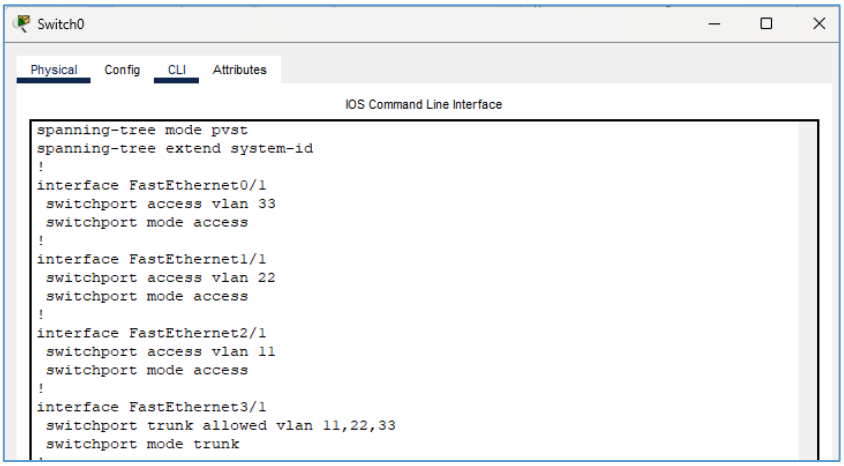

Switch2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Switch>en
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 11
Switch(config-vlan)#name Admin
Switch(config-vlan)#ex
Switch(config)#int Fa2/1
Switch(config-if)#swit
Switch(config-if)#switchport mode acc
Switch(config-if)#switchport mode access
Switch(config-if)#swit
Switch(config-if)#switchport acc
Switch(config-if)#switchport access vlan 11
Switch(config-if)#ex
Switch(config)#ex
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#sh vlan
VLAN Name Status Ports
1 default active Fa0/1, Fa1/1, Fa3/1, Fa4/1
Fa5/1
11 Admin active Fa2/1
1002 fddi-default active


Switch2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Switch>en
Switch#conf ter
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 22
Switch(config-vlan)#name DevOps
Switch(config-vlan)#ex
Switch(config)#vlan 33
Switch(config-vlan)#name HR
Switch(config-vlan)#ex
Switch(config)#ex
Switch#
%SYS-5-CONFIG_I: Configured from console by console
Switch#sh vlan
VLAN Name Status Ports
1 default active Fa0/1, Fa1/1, Fa3/1, Fa4/1
Fa5/1
11 Admin active Fa2/1
22 DevOps active
33 HR active
1002 fddi-default active

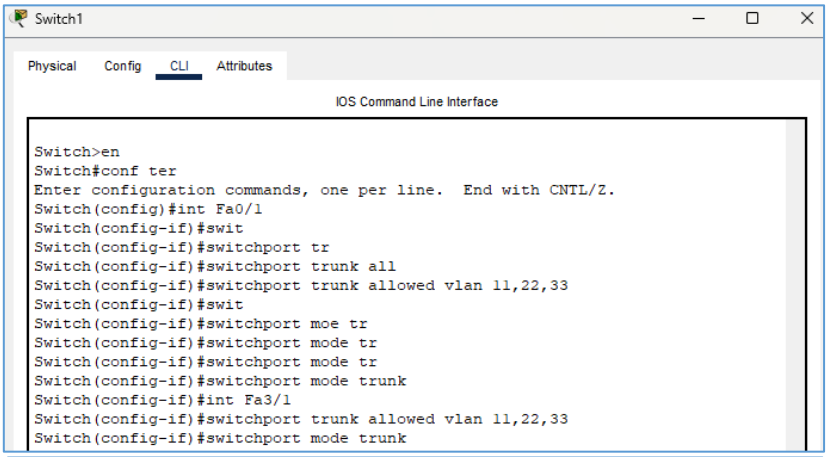
Настройка vlan (настройка портов в режиме Trunk)

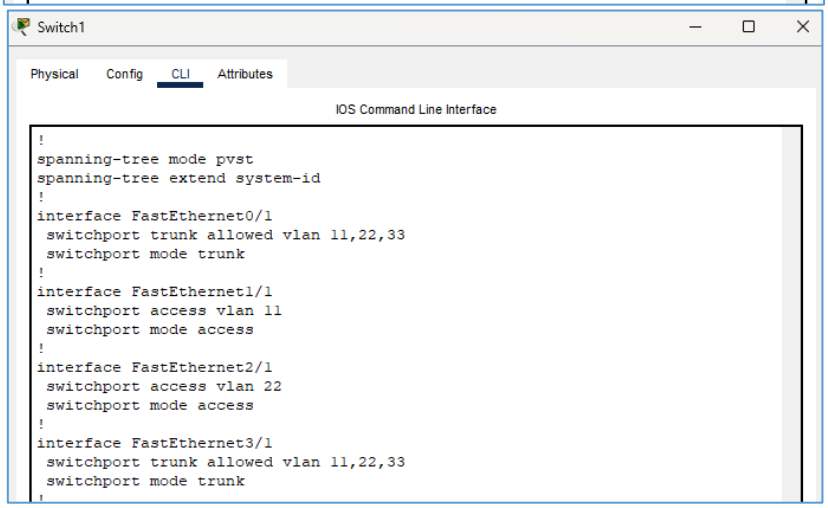
Switch0



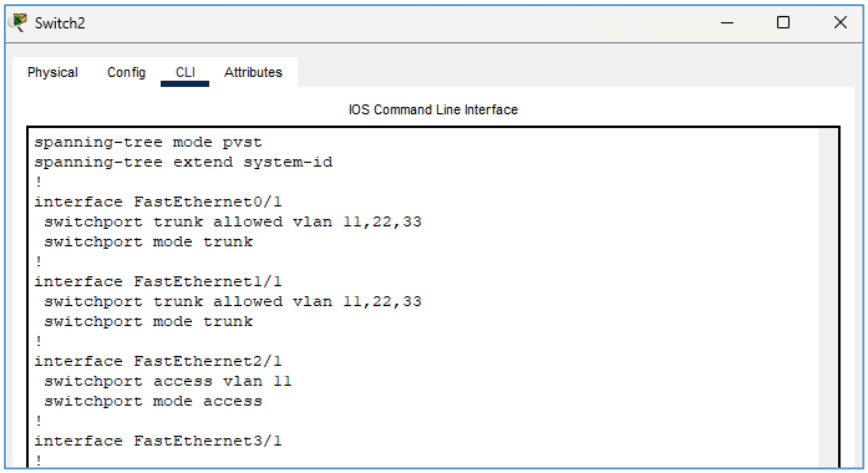


Switch1

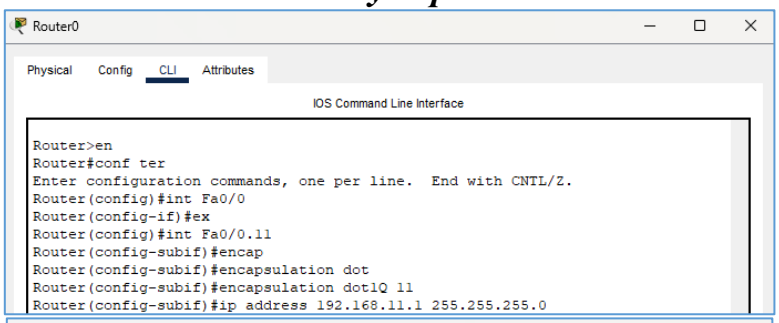


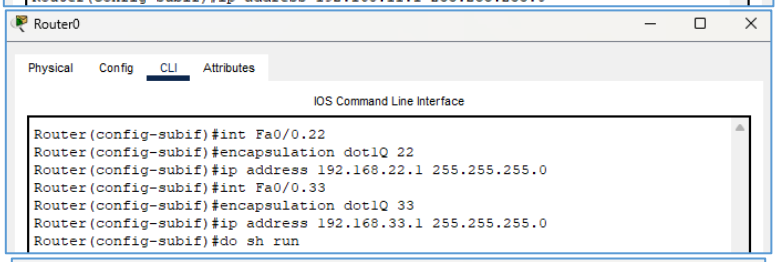


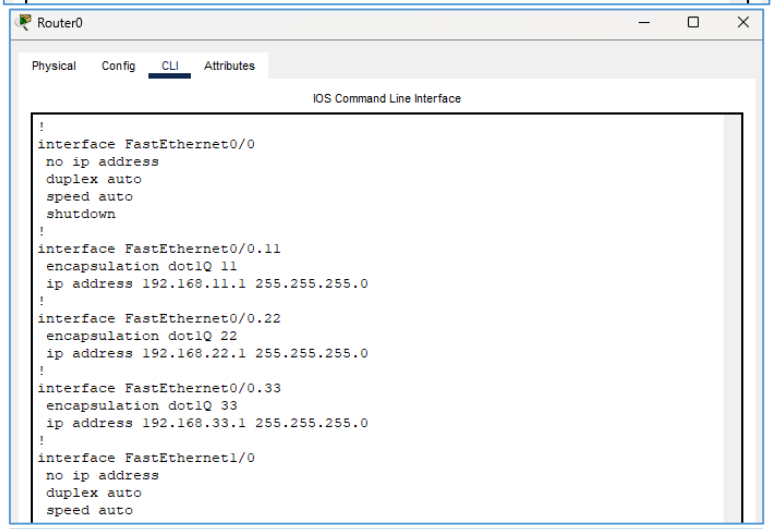
Switch2

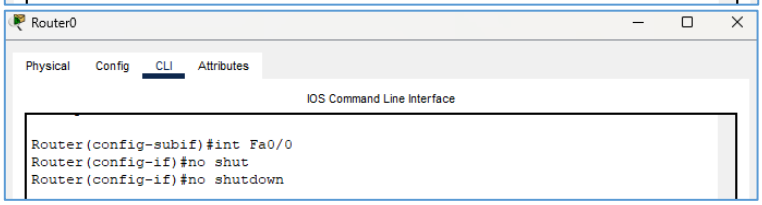


Роутер

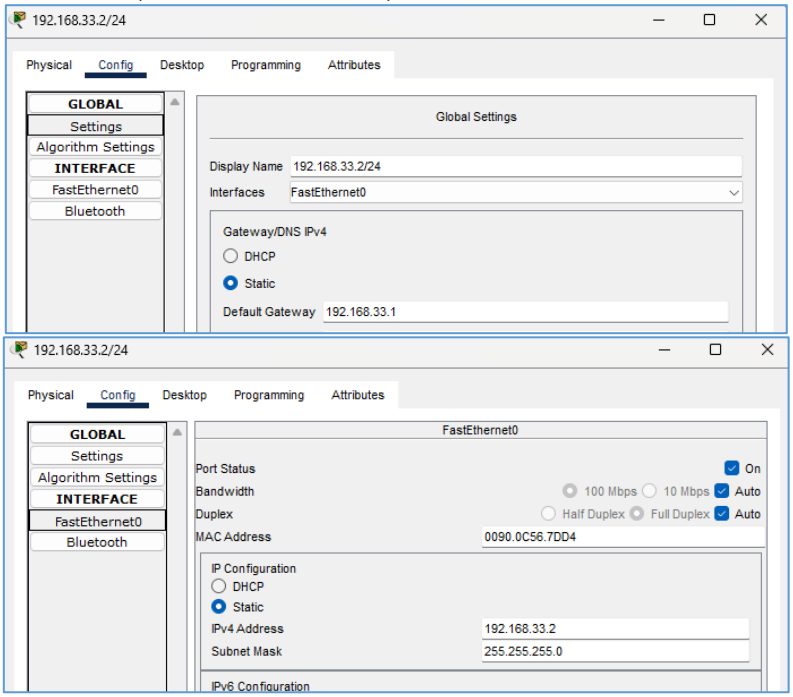






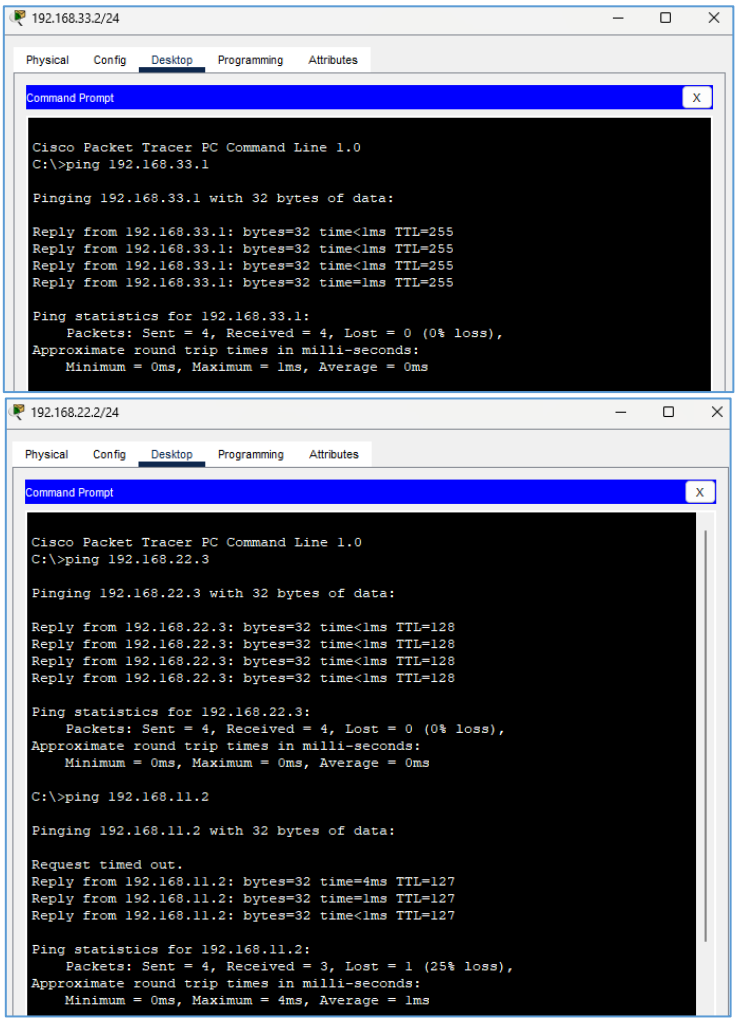


Настройка сети для PC (192.168.33.2/24)



и т.д. для других PC

Ping

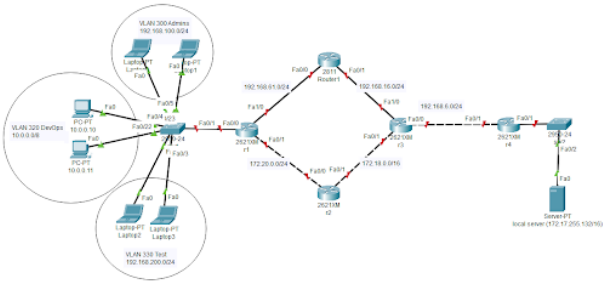


и т.д.

Домашнее задание

Урок 7. Семинар. Основы компьютерных сетей. Сетевой уровень. Протоколы маршрутизации. VLAN

1. Настроить сеть согласно схеме в файле с помощью OSPF и VLAN. Починить неработающие линки.



2. Убедиться что трафик от компов до сервера ходит через два маршрута с помощью ECMP.

3. Скинуть скриншот с таблицей маршрутизации с r1. Должны быть сети Connected для VLAN'ов.

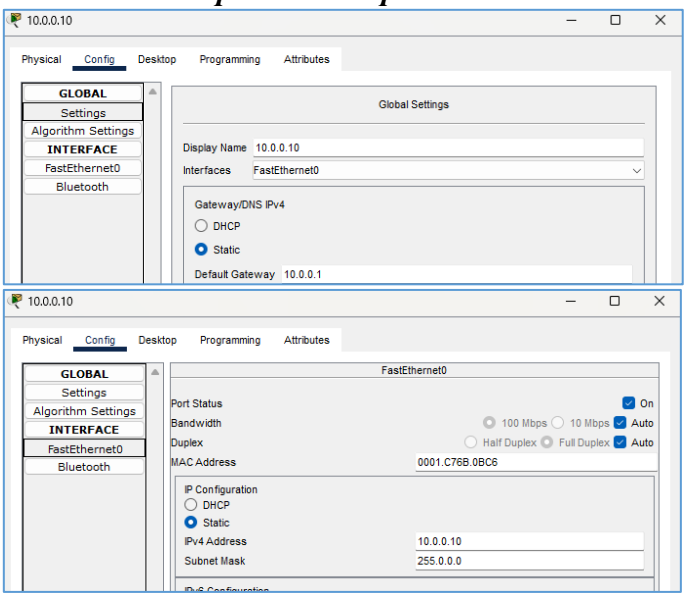
4. Поймать трейс на любом компе, когда он пойдет через r5. Удалить один из линков на r5. Снова сделать трейс, убедиться что трафик пошел по резервному пути. Скинуть скриншот с разными трейсами.

Скинуть еще один скриншот с изменившейся таблицей маршрутизации с r1.

Ход выполнения домашнего задания:

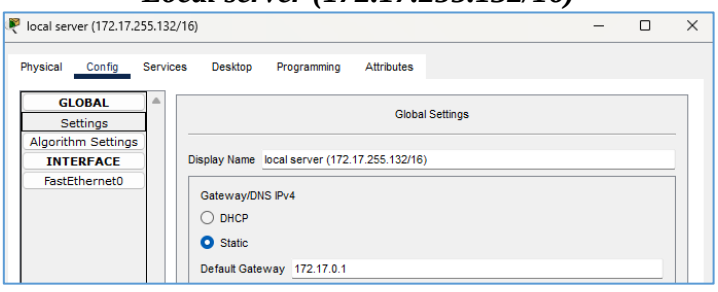
Задание 1: Настроить сеть согласно схеме с помощью OSPF и VLAN. Починить неработающие линки.

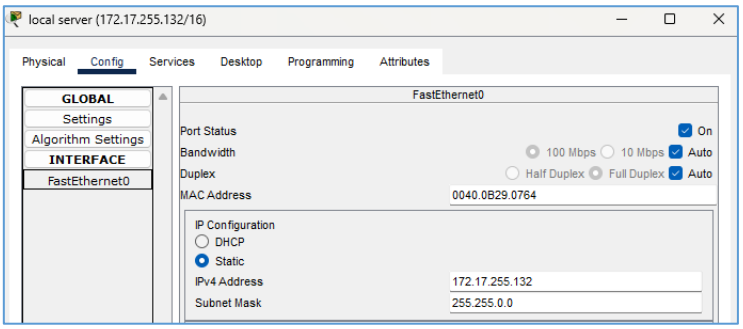
Настройка IP-адресов на PC



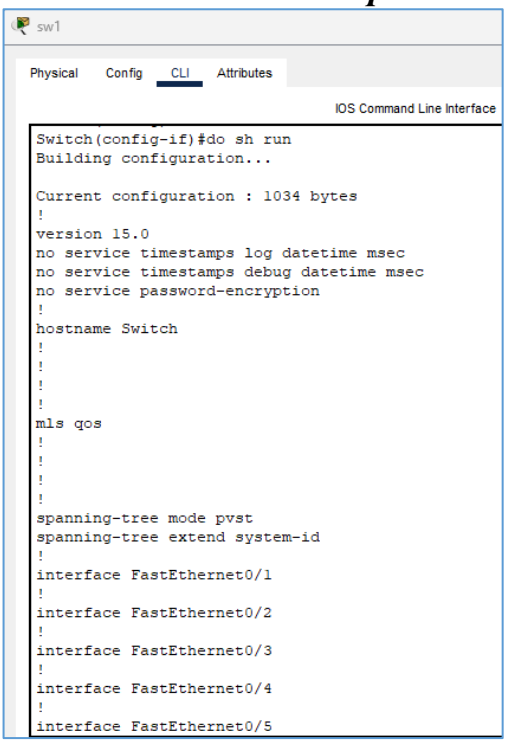
и т.д.

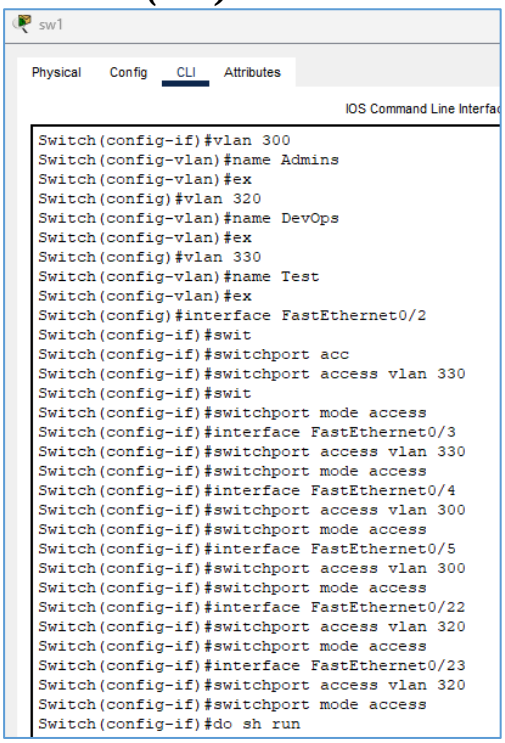
Local server (172.17.255.132/16)

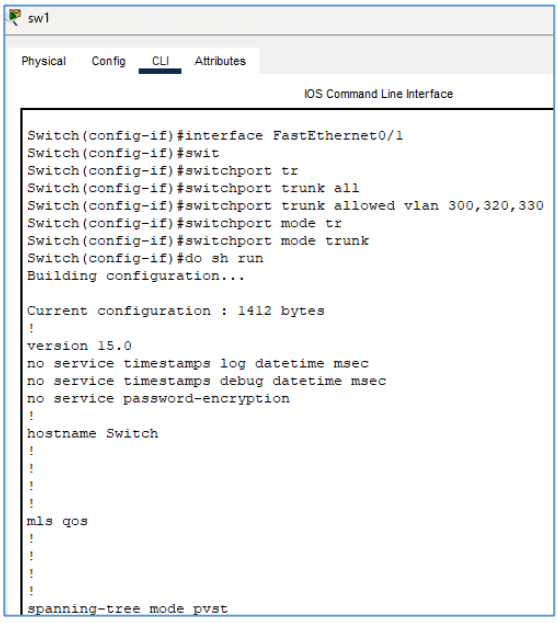


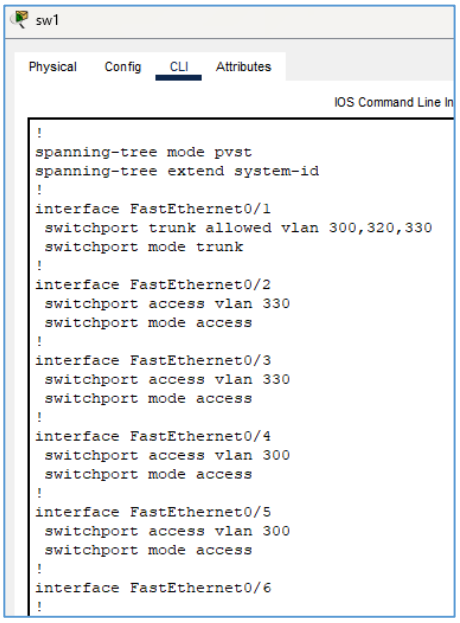


Настройка vlan на Switch (sw1)









sw1

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch>en
Switch#sh vlan

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/6, Fa0/7, Fa0/8, Fa0/9
                                                 Fa0/10, Fa0/11, Fa0/12, Fa0/13
                                                 Fa0/14, Fa0/15, Fa0/16, Fa0/17
                                                 Fa0/18, Fa0/19, Fa0/20, Fa0/21
                                                 Fa0/24
300  Admins                            active    Fa0/4, Fa0/5
320  DevOps                            active    Fa0/22, Fa0/23
330  Test                              active    Fa0/2, Fa0/3
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
```

Настройка роутеров

Роутер (r1) – настройка IP-адресов, vlan, OSPF

r1

Physical Config CLI Attributes

IOS Command Line Interface

```
Router#conf ter
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet0/1
Router(config-if)#ip add
Router(config-if)#ip address 172.20.0.1 255.255.255.0
Router(config-if)#no sh
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

Router(config-if)#interface FastEthernet1/0
Router(config-if)#ip address 192.168.61.1 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet1/0, changed state to up

Router(config-if)#interface FastEthernet0/0
Router(config-if)#interface FastEthernet0/0.300
Router(config-subif)#enca
Router(config-subif)#encapsulation dot
Router(config-subif)#encapsulation dot1Q 300
Router(config-subif)#ip address 192.168.100.1 255.255.255.0
Router(config-subif)#interface FastEthernet0/0.320
Router(config-subif)#encapsulation dot1Q 320
Router(config-subif)#ip address 10.0.0.1 255.0.0.0
Router(config-subif)#interface FastEthernet0/0.330
Router(config-subif)#encapsulation dot1Q 330

Router(config-subif)#ip address 192.168.200.1 255.255.255.0
Router(config-subif)#ex
Router(config)#do sh run
Building configuration...
```

r1

Physical Config CLI Attributes

IOS Command Line Interface

```
!
interface FastEthernet0/0
 no ip address
 duplex auto
 speed auto
 shutdown
!
interface FastEthernet0/0.300
 encapsulation dot1Q 300
 ip address 192.168.100.1 255.255.255.0
!
interface FastEthernet0/0.320
 encapsulation dot1Q 320
 ip address 10.0.0.1 255.0.0.0
!
interface FastEthernet0/0.330
 encapsulation dot1Q 330
 ip address 192.168.200.1 255.255.255.0
!
interface FastEthernet0/1
 ip address 172.20.0.1 255.255.255.0
 duplex auto
 speed auto
!

Router(config)#interface FastEthernet0/0.300
Router(config-subif)#no shu
Router(config-subif)#no shutdown
Router(config-subif)#interface FastEthernet0/0.320
Router(config-subif)#no shutdown
Router(config-subif)#interface FastEthernet0/0.330
Router(config-subif)#no shutdown
Router(config-subif)#interface FastEthernet0/0
Router(config-if)#no shutdown
```

r1

Physical Config CLI Attributes

IOS Command Line Interface

```
Router#conf ter
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router ospf 1111
Router(config-router)#networ
Router(config-router)#network 192.168.100.0 0.0.0.255 area 0
Router(config-router)#network 192.168.200.0 0.0.0.255 area 0
Router(config-router)#network 10.0.0.0 0.255.255.255 area 0
Router(config-router)#do sh ip ospf int
```

r1

Physical Config CLI Attributes

IOS Command Line Interface

```
!
!
interface FastEthernet0/0
 no ip address
 duplex auto
 speed auto
!
interface FastEthernet0/0.300
 encapsulation dot1Q 300
 ip address 192.168.100.1 255.255.255.0
!
interface FastEthernet0/0.320
 encapsulation dot1Q 320
 ip address 10.0.0.1 255.0.0.0
!
interface FastEthernet0/0.330
 encapsulation dot1Q 330
 ip address 192.168.200.1 255.255.255.0
!
interface FastEthernet0/1
 ip address 172.20.0.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet1/0
 ip address 192.168.61.1 255.255.255.0
 duplex auto
 speed auto
!
router ospf 1111
 log-adjacency-changes
 network 192.168.100.0 0.0.0.255 area 0
 network 192.168.200.0 0.0.0.255 area 0
 network 10.0.0.0 0.255.255.255 area 0
 network 172.20.0.0 0.0.0.255 area 0
 network 192.168.61.0 0.0.0.255 area 0
!
```

```
Router#sh ip route ospf
O    172.17.0.0 [110/4] via 172.20.0.2, 00:04:49, FastEthernet0/1
                [110/4] via 192.168.61.2, 00:04:49, FastEthernet1/0
O    172.18.0.0 [110/2] via 172.20.0.2, 00:15:39, FastEthernet0/1
O    192.168.6.0 [110/3] via 172.20.0.2, 00:11:34, FastEthernet0/1
                 [110/3] via 192.168.61.2, 00:11:34, FastEthernet1/0
O    192.168.16.0 [110/2] via 192.168.61.2, 00:15:12, FastEthernet1/0
```

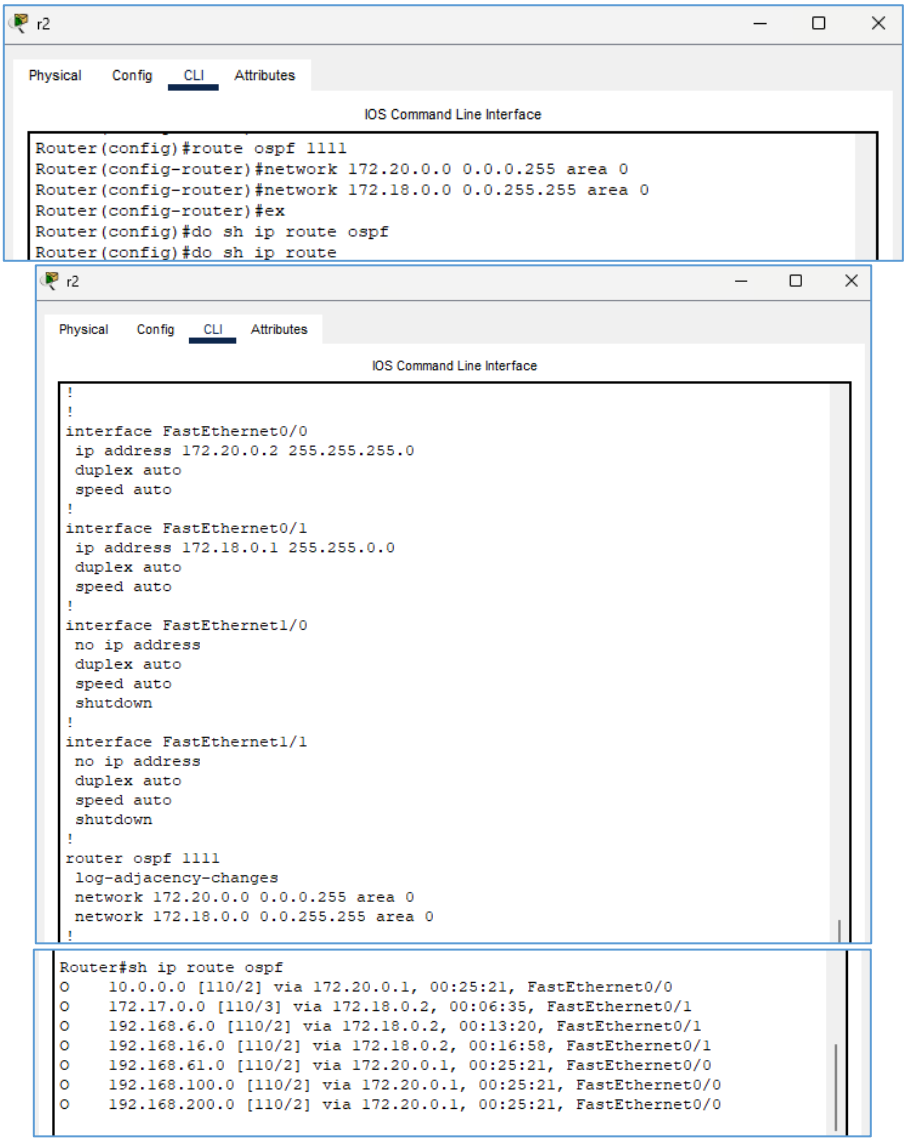
Роутер (r2) – настройка IP-адресов, OSPF

r2

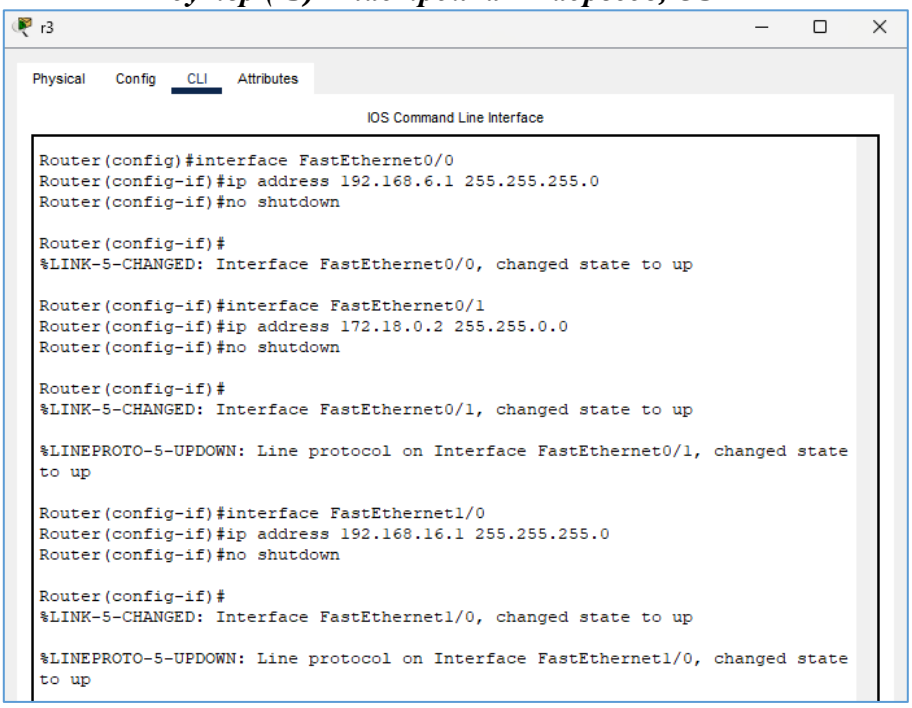
Physical Config CLI Attributes

IOS Command Line Interface

```
Router#conf ter
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.20.0.2 255.255.255.0
Router(config-if)#no sh
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state
to up

Router(config-if)#interface FastEthernet0/1
Router(config-if)#ip address 172.18.0.1 255.255.0.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

Router(config-if)#ex
```



Роутер (r3) – настройка IP-адресов, OSPF



r3

Physical Config CLI Attributes

IOS Command Line Interface

```
Router(config-router)#ex
Router(config)#router ospf 1111
Router(config-router)#network 172.18.0.0 0.0.255.255 area 0
Router(config-router)#
02:28:03: %OSPF-5-ADJCHG: Process 1111, Nbr 172.20.0.2 on FastEthernet0/1 from
LOADING to FULL, Loading Done

Router(config-router)#network 192.168.16.0 0.0.0.255 area 0
Router(config-router)#network 192.168.6.0 0.0.0.255 area 0
```

r3

Physical Config CLI Attributes

IOS Command Line Interface

```
!
!
interface FastEthernet0/0
 ip address 192.168.6.1 255.255.255.0
 duplex auto
 speed auto
!
interface FastEthernet0/1
 ip address 172.18.0.2 255.255.0.0
 duplex auto
 speed auto
!
interface FastEthernet1/0
 ip address 192.168.16.1 255.255.255.0
 duplex auto
 speed auto
!
router ospf 1111
 log-adjacency-changes
 network 172.18.0.0 0.0.255.255 area 0
 network 192.168.16.0 0.0.0.255 area 0
 network 192.168.6.0 0.0.0.255 area 0
```

```
Router#sh ip route ospf
O    10.0.0.0 [110/3] via 172.18.0.1, 00:18:08, FastEthernet0/1
              [110/3] via 192.168.16.2, 00:18:08, FastEthernet1/0
O    172.17.0.0 [110/2] via 192.168.6.2, 00:07:45, FastEthernet0/0
     172.20.0.0/24 is subnetted, 1 subnets
O       172.20.0.0 [110/2] via 172.18.0.1, 00:18:08, FastEthernet0/1
O    192.168.61.0 [110/2] via 192.168.16.2, 00:18:08, FastEthernet1/0
O    192.168.100.0 [110/3] via 172.18.0.1, 00:18:08, FastEthernet0/1
                   [110/3] via 192.168.16.2, 00:18:08, FastEthernet1/0
O    192.168.200.0 [110/3] via 172.18.0.1, 00:18:08, FastEthernet0/1
                   [110/3] via 192.168.16.2, 00:18:08, FastEthernet1/0
```

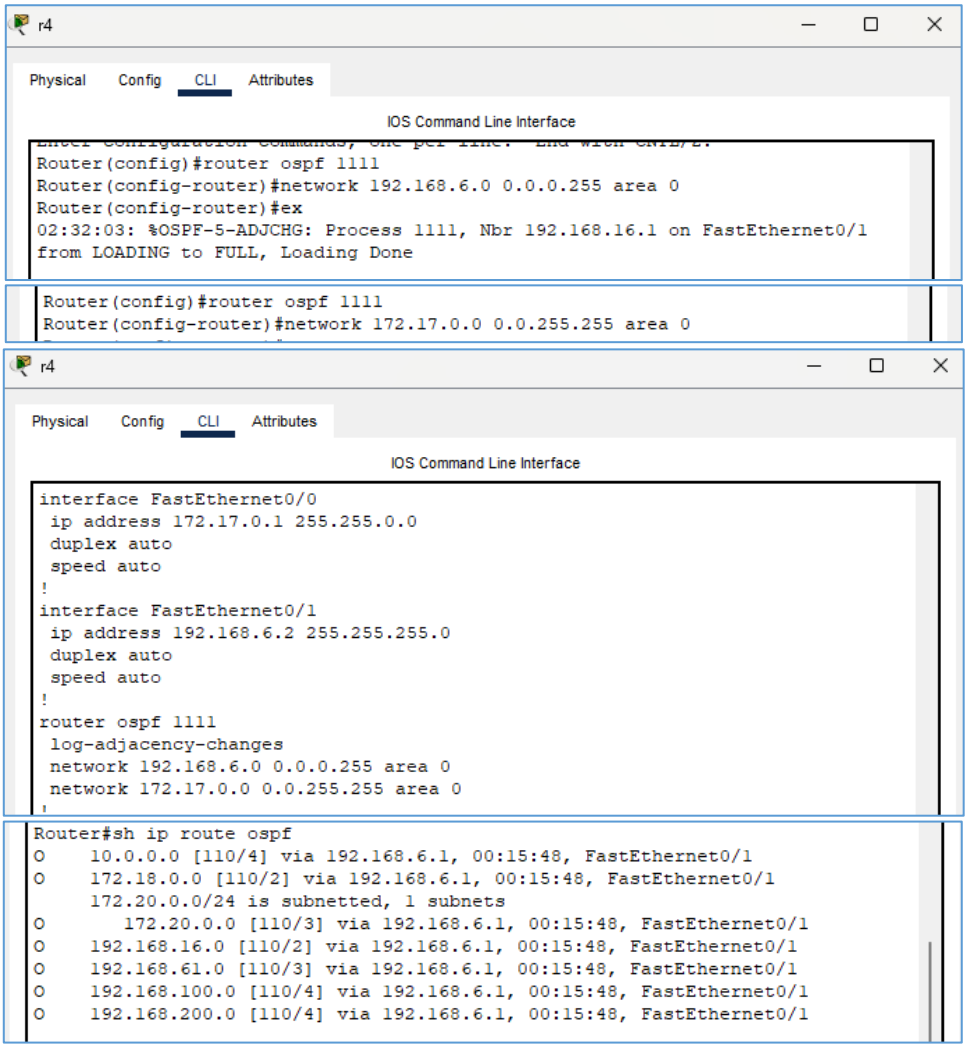
Роутер (r4) – настройка IP-адресов, OSPF

r4

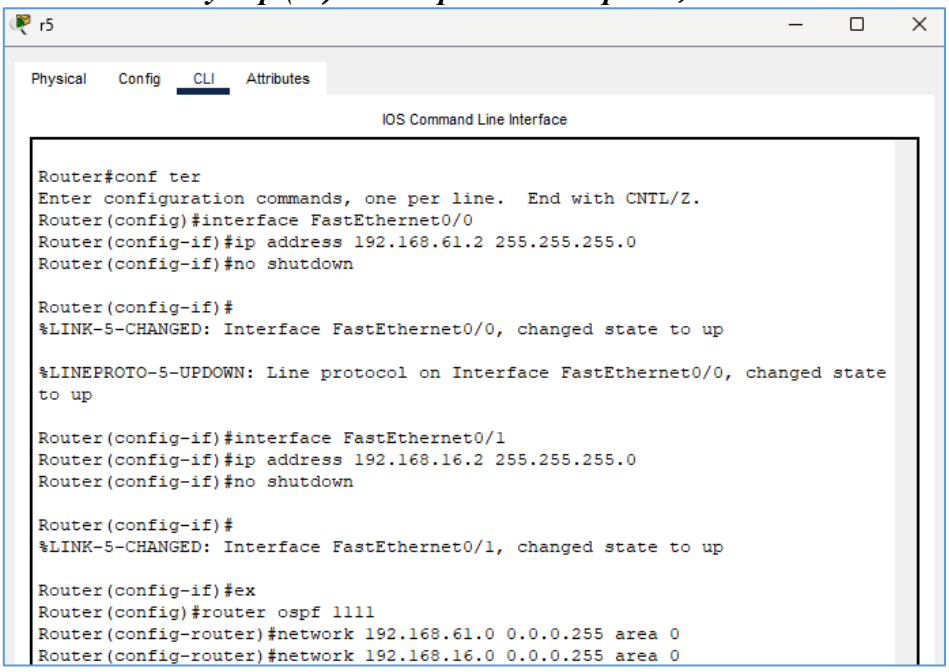
Physical Config CLI Attributes

IOS Command Line Interface

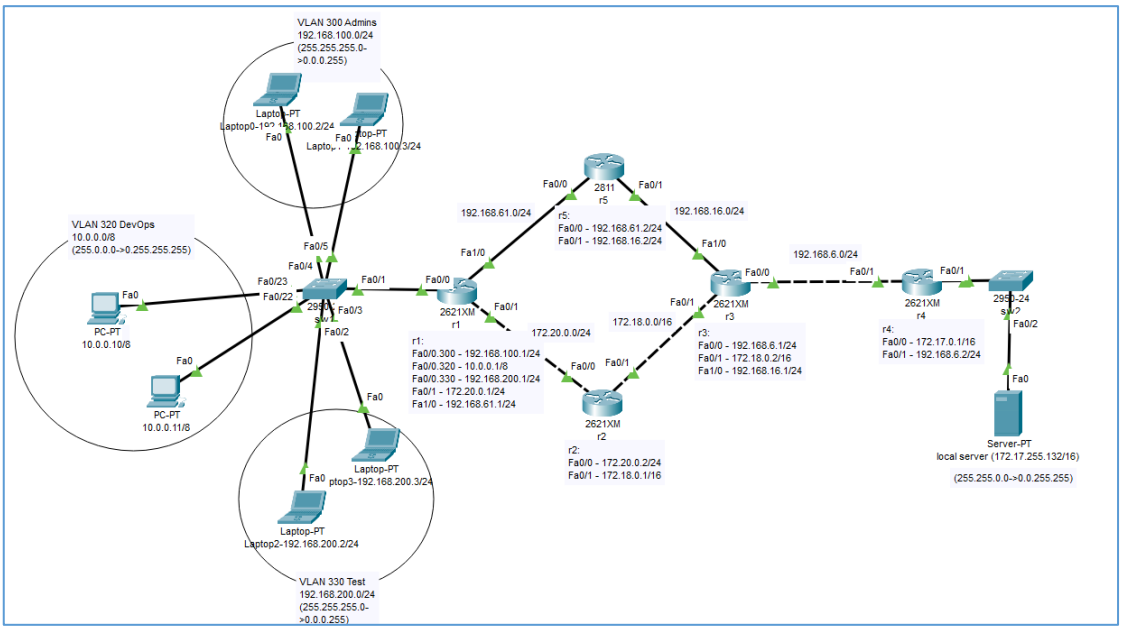
```
Router#conf ter
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 172.17.0.1 255.255.0.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state
to up

Router(config-if)#interface FastEthernet0/1
Router(config-if)#ip address 192.168.6.2 255.255.255.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state
to up
```



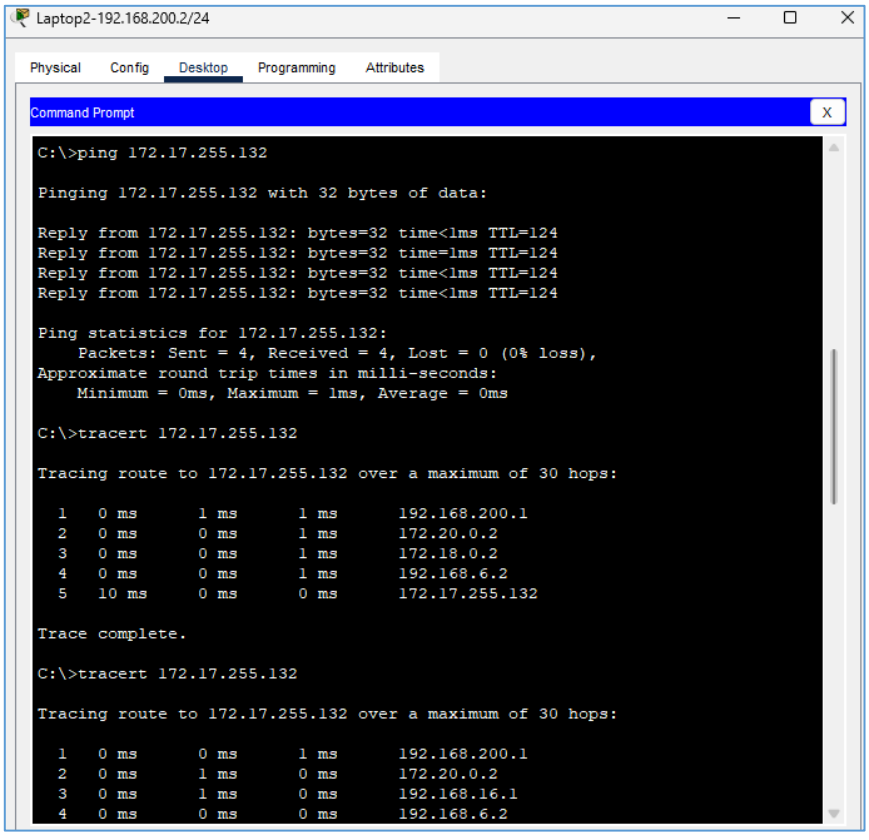
Роутер (r5) – настройка IP-адресов, OSPF



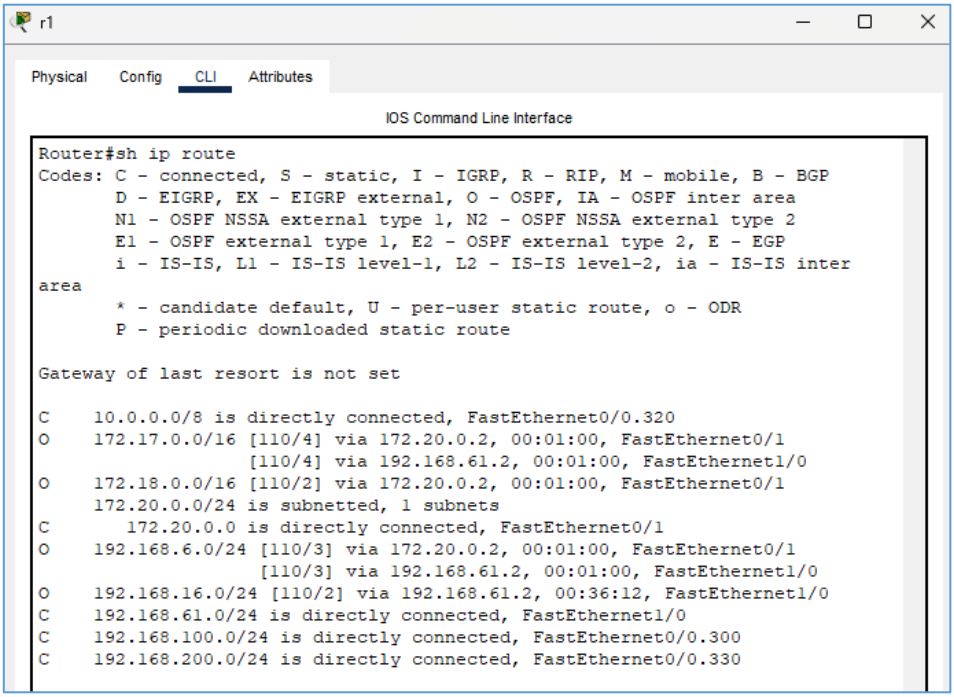
```
Router#sh ip route ospf
O    10.0.0.0 [110/2] via 192.168.61.1, 00:21:31, FastEthernet0/0
O    172.18.0.0 [110/2] via 192.168.16.1, 00:10:08, FastEthernet0/1
     172.20.0.0/24 is subnetted, 1 subnets
O       172.20.0.0 [110/2] via 192.168.61.1, 00:18:31, FastEthernet0/0
O    192.168.6.0 [110/2] via 192.168.16.1, 00:06:35, FastEthernet0/1
O    192.168.100.0 [110/2] via 192.168.61.1, 00:21:31, FastEthernet0/0
O    192.168.200.0 [110/2] via 192.168.61.1, 00:21:31, FastEthernet0/0
```



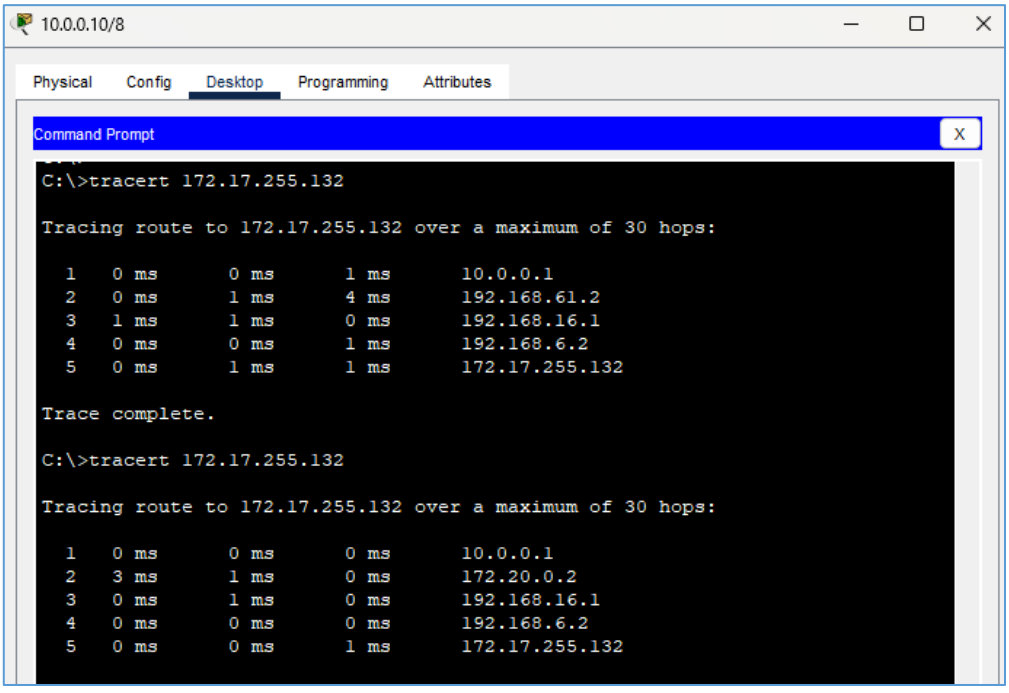
Задание 2: Убедиться, что трафик от комп-ов до сервера ходит через два маршрута с помощью ECMP.



Задание 3: Скинуть скриншот с таблицей маршрутизации с r1. Должны быть сети Connected для VLAN'ов.



Задание 4: Поймать трейс на любом комп-е, когда он пойдет через r5. Удалить один из линков на r5. Снова сделать трейс, убедиться, что трафик пошел по резервному пути. Скинуть скриншот с разными трейсами.



Ссылка на репозиторий:
https://github.com/olgashenkel/GeekBrains-specialization-ELECTIVES/tree/main/08.%20Computer%20networks