

**КАФЕДРА ПРОГРАММНОЕ ОБЕСПЕЧЕНИЕ ЭВМ И ИНФОРМАЦИОННЫЕ  
ТЕХНОЛОГИИ**

Отчет по лабораторной работе № 9

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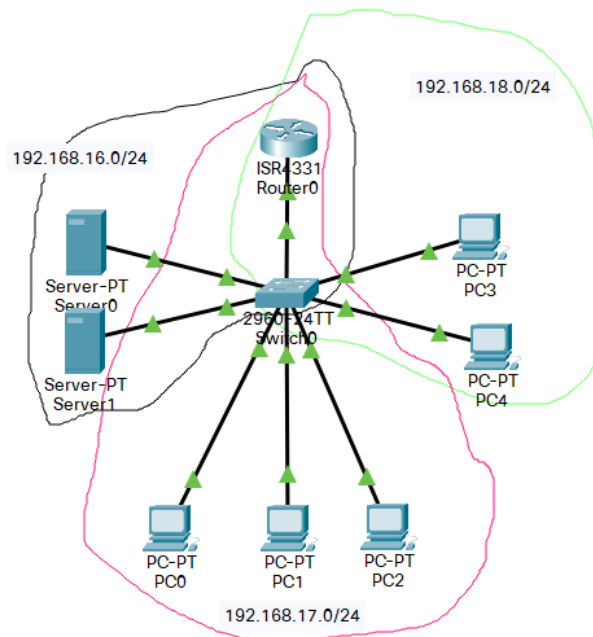
Москва, 2021

### **Задачи.**

- I. Назначить адреса подсетей:
  - a. Подсеть 1: 192.168.x.0 /24
  - b. Подсеть 2: 192.168.x+1.0 /24
  - c. Подсеть 3: 192.168.x+2.0 /24
- II. Настроить поддержку трех виртуальных локальных сетей (VLAN 10, 20, 30) на коммутаторе.
- III. Настроить маршрутизацию между виртуальными локальными сетями на маршрутизаторе.
- IV. Выделить и озаглавить на схеме каждую виртуальную локальную сеть.

## Задание I.

Деление на подсети:



## Задание II.

Настройка Vlan'ов:

Switch0

Physical Config CLI Attributes

IOS Command Line Interface

```
Switch#
Switch#vlan database
% Warning: It is recommended to configure VLAN from config mode,
as VLAN database mode is being deprecated. Please consult user
documentation for configuring VTP/VLAN in config mode.

Switch(vlan)#vlan 10
VLAN 10 added:
      Name: VLAN0010
Switch(vlan)#
%LINK-5-CHANGED: Interface Vlan10, changed state to up

Switch(vlan)#vlan 20
VLAN 20 added:
      Name: VLAN0020
Switch(vlan)#
Switch(vlan)#vlan 30
VLAN 30 added:
      Name: VLAN0030
Switch(vlan)#^Z
Switch#
Switch#
%SYS-5-CONFIG_I: Configured from console by console

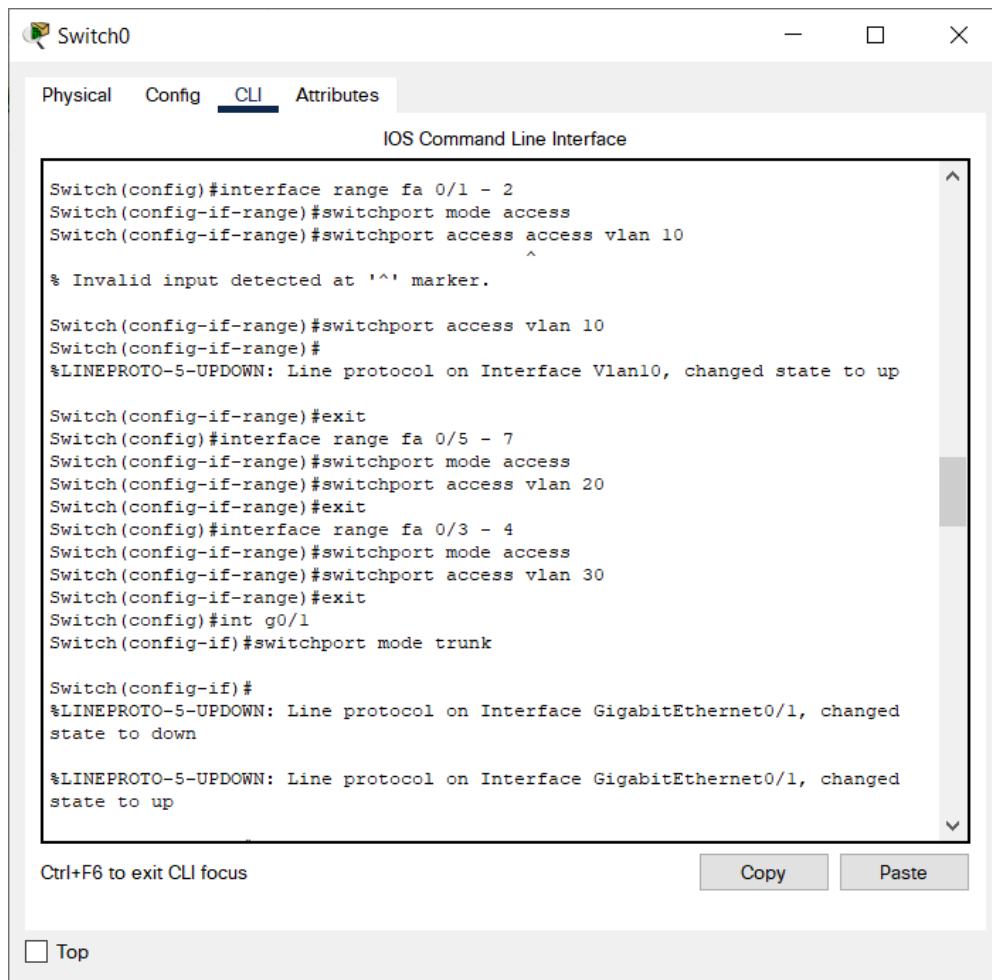
Switch#sh vlan
```

VLAN	Name	Status	Ports
1	default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8

Ctrl+F6 to exit CLI focus

Copy Paste

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Device Name: Switch0  
 Device Model: 2960-24TT  
 Hostname: Switch

Port	Link	VLAN	IP Address	MAC Address
FastEthernet0/1	Up	10	--	0030.A3B2.0501
FastEthernet0/2	Up	10	--	0030.A3B2.0502
FastEthernet0/3	Up	30	--	0030.A3B2.0503
FastEthernet0/4	Up	30	--	0030.A3B2.0504
FastEthernet0/5	Up	20	--	0030.A3B2.0505
FastEthernet0/6	Up	20	--	0030.A3B2.0506
FastEthernet0/7	Up	20	--	0030.A3B2.0507
FastEthernet0/8	Down	1	--	0030.A3B2.0508
FastEthernet0/9	Down	1	--	0030.A3B2.0509
FastEthernet0/10	Down	1	--	0030.A3B2.050A
FastEthernet0/11	Down	1	--	0030.A3B2.050B
FastEthernet0/12	Down	1	--	0030.A3B2.050C
FastEthernet0/13	Down	1	--	0030.A3B2.050D
FastEthernet0/14	Down	1	--	0030.A3B2.050E
FastEthernet0/15	Down	1	--	0030.A3B2.050F
FastEthernet0/16	Down	1	--	0030.A3B2.0510
FastEthernet0/17	Down	1	--	0030.A3B2.0511
FastEthernet0/18	Down	1	--	0030.A3B2.0512
FastEthernet0/19	Down	1	--	0030.A3B2.0513
FastEthernet0/20	Down	1	--	0030.A3B2.0514
FastEthernet0/21	Down	1	--	0030.A3B2.0515
FastEthernet0/22	Down	1	--	0030.A3B2.0516
FastEthernet0/23	Down	1	--	0030.A3B2.0517
FastEthernet0/24	Down	1	--	0030.A3B2.0518
GigabitEthernet0/1	Up	--	--	0030.A3B2.0519
GigabitEthernet0/2	Down	1	--	0030.A3B2.051A
Vlan1	Down	1	<not set>	0001.969E.2048
Vlan10	Up	10	<not set>	0001.969E.2001

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > Switch0

### Задание III.

Router0

Physical

Config

CLI

Attributes

IOS Command Line Interface

```
Router>en
Router#conf
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#int g0/0/0.1
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0.1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0.1,
changed state to up

Router(config-subif)#encapsulation dot1q 10
Router(config-subif)#ip address 192.168.16.254 255.255.255.0
Router(config-subif)#exit
Router(config)#int g0/0/0.2
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0.2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0.2,
changed state to up

Router(config-subif)#encapsulation dot1q 20
Router(config-subif)#ip address 192.168.17.254 255.255.255.0
Router(config-subif)#exit
Router(config)#int g0/0/0.3
Router(config-subif)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0/0.3, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0.3,
changed state to up

Router(config-subif)#encapsulation dot1q 30
Router(config-subif)#ip address 192.168.18.254 255.255.255.0
Router(config-subif)#exit
Router(config)#ip routing
Router(config)#
```

Ctrl+F6 to exit CLI focus

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Проверка пингов:

## Command Prompt

```
Request timed out.
Reply from 192.168.17.1: bytes=32 time<1ms TTL=127
Reply from 192.168.17.1: bytes=32 time<1ms TTL=127
Reply from 192.168.17.1: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.17.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.17.1

Pinging 192.168.17.1 with 32 bytes of data:

Reply from 192.168.17.1: bytes=32 time<1ms TTL=127
Reply from 192.168.17.1: bytes=32 time<1ms TTL=127
Reply from 192.168.17.1: bytes=32 time<1ms TTL=127
Reply from 192.168.17.1: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.17.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.17.3

Pinging 192.168.17.3 with 32 bytes of data:

Request timed out.
Reply from 192.168.17.3: bytes=32 time<1ms TTL=127
Reply from 192.168.17.3: bytes=32 time<1ms TTL=127
Reply from 192.168.17.3: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.17.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.18.1

Pinging 192.168.18.1 with 32 bytes of data:

Request timed out.
Reply from 192.168.18.1: bytes=32 time<1ms TTL=127
Reply from 192.168.18.1: bytes=32 time<1ms TTL=127
Reply from 192.168.18.1: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.18.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

PC1

Physical

Config

Desktop

Programming

Attributes

Command Prompt

X

Packet Tracer PC Command Line 1.0

C:\>ping 192.168.16.1

Pinging 192.168.16.1 with 32 bytes of data:

Reply from 192.168.16.1: bytes=32 time<1ms TTL=127

Reply from 192.168.16.1: bytes=32 time<1ms TTL=127

Reply from 192.168.16.1: bytes=32 time<1ms TTL=127

Reply from 192.168.16.1: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.16.1:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.17.1

Pinging 192.168.17.1 with 32 bytes of data:

Reply from 192.168.17.1: bytes=32 time<1ms TTL=128

Reply from 192.168.17.1: bytes=32 time<1ms TTL=128

Reply from 192.168.17.1: bytes=32 time<1ms TTL=128

Reply from 192.168.17.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.17.1:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 192.168.18.1

Pinging 192.168.18.1 with 32 bytes of data:

Reply from 192.168.18.1: bytes=32 time<1ms TTL=127

Reply from 192.168.18.1: bytes=32 time<1ms TTL=127

Reply from 192.168.18.1: bytes=32 time<1ms TTL=127

Reply from 192.168.18.1: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.18.1:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>

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 PC3

— □ ×

Physical Config **Desktop** Programming Attributes

Command Prompt X

```
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.16.1

Pinging 192.168.16.1 with 32 bytes of data:

Request timed out.
Reply from 192.168.16.1: bytes=32 time<1ms TTL=127
Reply from 192.168.16.1: bytes=32 time<1ms TTL=127
Reply from 192.168.16.1: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.16.1:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.17.1

Pinging 192.168.17.1 with 32 bytes of data:

Reply from 192.168.17.1: bytes=32 time<1ms TTL=127
Reply from 192.168.17.1: bytes=32 time<1ms TTL=127
Reply from 192.168.17.1: bytes=32 time<1ms TTL=127
Reply from 192.168.17.1: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.17.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.18.1

Pinging 192.168.18.1 with 32 bytes of data:

Reply from 192.168.18.1: bytes=32 time=5ms TTL=128
Reply from 192.168.18.1: bytes=32 time<1ms TTL=128
Reply from 192.168.18.1: bytes=32 time<1ms TTL=128
Reply from 192.168.18.1: bytes=32 time=12ms TTL=128

Ping statistics for 192.168.18.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 12ms, Average = 4ms

C:\>
```

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#### Задание IV.

