1) Собрал схему

2) Применил скрипт для каждого роутера.

3) Задал IP, маску и шлюз каждому PC.

4) Тестировал разные варианты настройки сети с подсетями, выявил интересные закономерности.

5) Создал виртуальный интерфейс на 1 роутере и задал пароль на доступ.

6) Удалённо подключился к роутеру с PC через виртуальный интерфейс, предварительно настроив на 2 роутере маршрут.

```
en
conf t
int f0/0
ip address 172.16.1.2 255.255.255.0
no shutdown
int s2/0
ip address 172.16.61.1 255.255.255.0
clock rate 1200
no shutdown
int s3/0
ip address 172.16.12.1 255.255.255.0
clock rate 1200
no shutdown
end
```

```
number = 6

target1 = str('{0}{1}.{1}'.format(number, (number) % 6 + 1))
target2 = str('{1}{0}.{1}'.format(number, (number - 2) % 6 + 1))
print('en\nconf t')

print(
f"int f0/0\n\
ip address 172.16.{number}.2 255.255.255.0\n\
no shutdown\n\
int s2/0\n\
ip address 172.16.{target1.split('.')[0]}.{number} 255.255.255.0\n\
clock rate 1200\n\
no shutdown\n\
int s3/0\n\
ip address 172.16.{target2.split('.')[0]}.{number} 255.255.255.0\n\
clock rate 1200\n\
no shutdown\n\
end\n\
"
)
print('en\nconf t')


arr = [x for x in range(1, 7)]


counter = 0
pos = number
while arr[(pos + 1) % 6] != number:
    if counter >= 2:
        print(f'ip route 172.16.{arr[pos % 6]}{arr[(pos + 1) % 6]}.0 255.255.255.0 172.16.{arr[(number - 2) %
6]}{arr[(number - 1) % 6]}.{arr[(number - 2) % 6]}')
    else:
        print(f'ip route 172.16.{arr[pos % 6]}{arr[(pos + 1) % 6]}.0 255.255.255.0 172.16.{arr[(number - 1) %
6]}{arr[(number) % 6]}.{arr[(number) % 6]}')
    pos += 1
    counter += 1


pos = number - 1
counter = 1
while counter <= 3:
    print(f'ip route 172.16.{arr[(pos - counter) % 6]}.0 255.255.255.0 172.16.{arr[(number - 2) % 6]}{arr[(number
- 1) % 6]}.{arr[(number - 2) % 6]}')
    print(f'ip route 172.16.{arr[(pos + counter) % 6]}.0 255.255.255.0 172.16.{arr[(number - 1) %
6]}{arr[(number) % 6]}.{arr[(number) % 6]}')
    counter += 1
```

```
en
conf t
int loopback 0
ip address 172.16.100.1 255.255.255.0
end
```

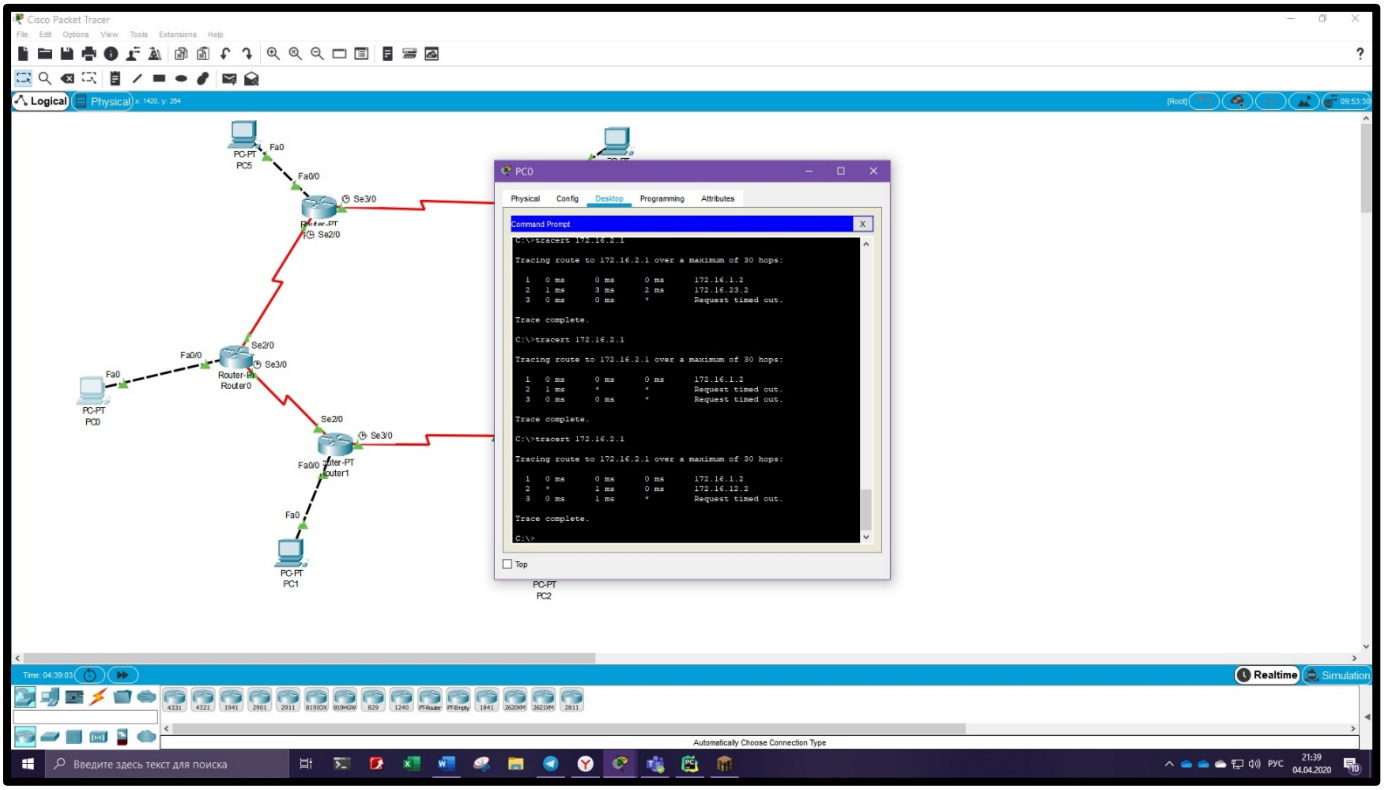
```
en
conf t
line vty 0 15
password 123
end
```

```
en
conf t
ip route 172.16.100.0 255.255.255.0 172.16.12.1
end
```

Приложение

```
     172.16.0.0/24 is subnetted, 12 subnets
C       172.16.1.0 is directly connected, FastEthernet0/0
S       172.16.2.0 [1/0] via 172.16.12.2
                   [1/0] via 172.16.61.6
S       172.16.3.0 [1/0] via 172.16.12.2
                   [1/0] via 172.16.61.6
S       172.16.4.0 [1/0] via 172.16.12.2
                   [1/0] via 172.16.61.6
S       172.16.5.0 [1/0] via 172.16.12.2
                   [1/0] via 172.16.61.6
S       172.16.6.0 [1/0] via 172.16.12.2
                   [1/0] via 172.16.61.6
C       172.16.12.0 is directly connected, Serial3/0
S       172.16.23.0 [1/0] via 172.16.12.2
                    [1/0] via 172.16.61.6
S       172.16.34.0 [1/0] via 172.16.12.2
                    [1/0] via 172.16.61.6
S       172.16.45.0 [1/0] via 172.16.12.2
                    [1/0] via 172.16.61.6
S       172.16.56.0 [1/0] via 172.16.12.2
                    [1/0] via 172.16.61.6
C       172.16.61.0 is directly connected, Serial2/0

Router#
```



```
     172.16.0.0/24 is subnetted, 12 subnets
C       172.16.1.0 is directly connected, FastEthernet0/0
S       172.16.2.0 [1/0] via 172.16.12.2
S       172.16.3.0 [1/0] via 172.16.12.2
S       172.16.4.0 [1/0] via 172.16.12.2
                   [1/0] via 172.16.61.6
S       172.16.5.0 [1/0] via 172.16.61.6
S       172.16.6.0 [1/0] via 172.16.61.6
C       172.16.12.0 is directly connected, Serial3/0
S       172.16.23.0 [1/0] via 172.16.12.2
S       172.16.34.0 [1/0] via 172.16.12.2
S       172.16.45.0 [1/0] via 172.16.61.6
S       172.16.56.0 [1/0] via 172.16.61.6
C       172.16.61.0 is directly connected, Serial2/0

Router#
```

```
Router#ping 172.16.3.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.3.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 3/7/10 ms

Router#ping 172.16.4.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.4.1, timeout is 2 seconds:
.....
Success rate is 0 percent (0/5)

Router#
```

```
C:\>telnet 172.16.100.1
Trying 172.16.100.1 ...Open


User Access Verification

Password:
Router>sh ip int br
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        172.16.1.2      YES manual up                    up
FastEthernet1/0        unassigned      YES NVRAM  administratively down down
Serial2/0              172.16.61.1     YES NVRAM  up                    up
Serial3/0              172.16.12.1     YES NVRAM  up                    up
FastEthernet4/0        unassigned      YES NVRAM  administratively down down
FastEthernet5/0        unassigned      YES NVRAM  administratively down down
Loopback0              172.16.100.1    YES manual up                    up
Router>
```