МИНИСТЕРСТВО ОБРАЗОВАНИЯ РЕСПУБЛИКИ БЕЛАРУСЬ
УЧРЕЖДЕНИЕ ОБРАЗОВАНИЯ
«БРЕСТСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ»

Кафедра ИИТ

Отчёт
о лабораторной работе №7
по дисциплине «Компьютерные системы и сети»

Тема: «Изучение пакета Cisco Packet Tracer. Начальная конфигурация маршрутизатора Cisco»

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Цель работы: Изучение возможностей и порядка применения пакета Cisco Packet Tracer. Приобретение навыков по начальному конфигурированию маршрутизаторов

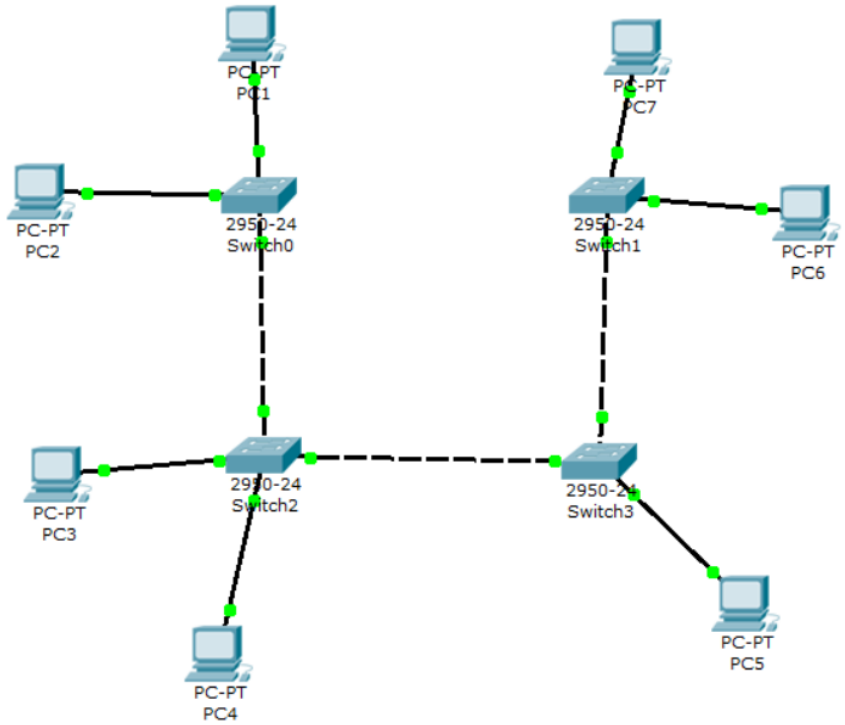
Вариант 6

Ход работы

Исходные данные

Устройство	IP ADDRESS	SUBNET MASK
PC1	6.13.19.31	255.255.255.0
PC2	6.13.19.20	255.255.255.0
PC3	6.13.19.27	255.255.255.0
PC4	6.13.19.16	255.255.255.0
PC5	6.13.19.23	255.255.255.0
PC6	6.13.19.18	255.255.255.0
PC7	6.13.19.32	255.255.255.0

Топология ЛВС:



Проверка работоспособности сети (ping):

PC1-PC7

```
PC>ping 6.13.19.32

Pinging 6.13.19.32 with 32 bytes of data:

Reply from 6.13.19.32: bytes=32 time=268ms TTL=128
Reply from 6.13.19.32: bytes=32 time=156ms TTL=128
Reply from 6.13.19.32: bytes=32 time=139ms TTL=128
Reply from 6.13.19.32: bytes=32 time=156ms TTL=128

Ping statistics for 6.13.19.32:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 139ms, Maximum = 268ms, Average = 179ms
```

PC2-PC6

```
PC>ping 6.13.19.18

Pinging 6.13.19.18 with 32 bytes of data:

Reply from 6.13.19.18: bytes=32 time=263ms TTL=128
Reply from 6.13.19.18: bytes=32 time=156ms TTL=128
Reply from 6.13.19.18: bytes=32 time=156ms TTL=128
Reply from 6.13.19.18: bytes=32 time=155ms TTL=128

Ping statistics for 6.13.19.18:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 155ms, Maximum = 263ms, Average = 182ms
```

PC3-PC5

```
PC>ping 6.13.19.23

Pinging 6.13.19.23 with 32 bytes of data:

Reply from 6.13.19.23: bytes=32 time=106ms TTL=128
Reply from 6.13.19.23: bytes=32 time=93ms TTL=128
Reply from 6.13.19.23: bytes=32 time=92ms TTL=128
Reply from 6.13.19.23: bytes=32 time=95ms TTL=128

Ping statistics for 6.13.19.23:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 92ms, Maximum = 106ms, Average = 96ms
```

Проверки сетевой конфигурации (ipconfig):

PC1

```
PC>ipconfig

IP Address......................: 6.13.19.31
Subnet Mask.....................: 255.255.255.0
Default Gateway.................: 0.0.0.0
```

PC7

```
PC>ipconfig

IP Address......................: 6.13.19.32
Subnet Mask.....................: 255.255.255.0
Default Gateway.................: 0.0.0.0
```

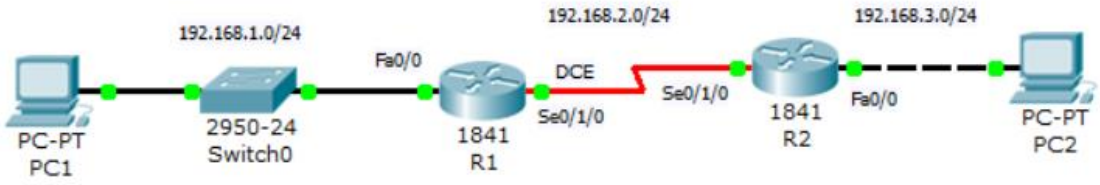
PC3

```
PC>ipconfig

IP Address......................: 6.13.19.27
Subnet Mask.....................: 255.255.255.0
Default Gateway.................: 0.0.0.0
```

По результатам выполнения команд ipconfig и ping можно удостоверится, что сеть правильно функционирует и настроена.

Таблица сетевых адресов

Device	Interface	IP Address	Mask	Default Gateway
R1	Fa0/0	192.168.1.7	255.255.255.0	N/A
	S0/1/0	192.168.2.7	255.255.255.0	N/A
R2	Fa0/0	192.168.3.7	255.255.255.0	N/A
	S0/1/0	192.168.2.8	255.255.255.0	N/A
PC1	N/A	192.168.1.16	255.255.255.0	192.168.1.7
PC2	N/A	192.168.3.16	255.255.255.0	192.168.3.7



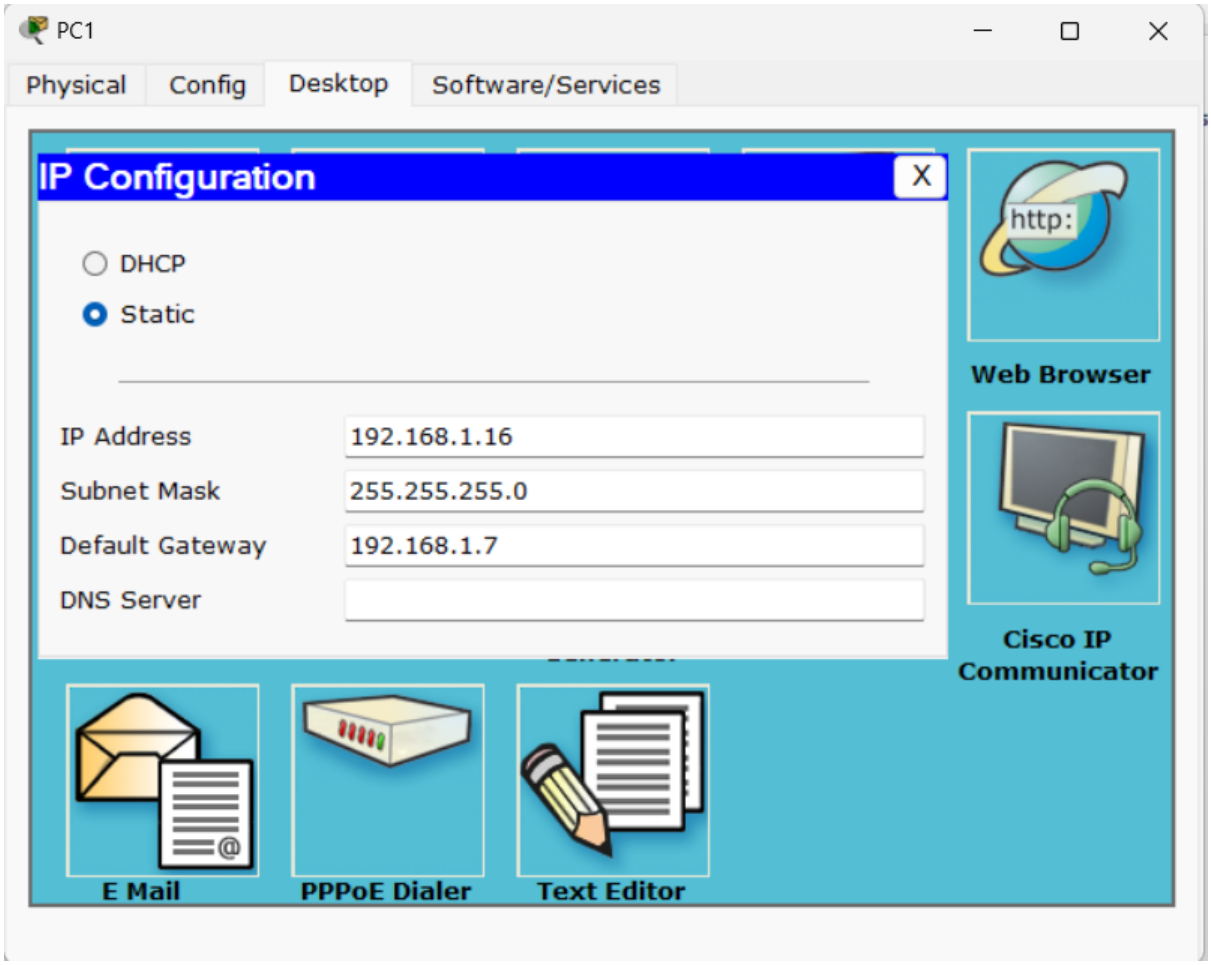
Настройка R1:

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R1
R1(config)#no ip domain-lookup
R1(config)#enable secret cisco
R1(config)#banner motd &hello&
R1(config)#line console 0
R1(config-line)#password cisco
R1(config-line)#login
R1(config-line)#exit
R1(config)#interface fastethernet 0/0
R1(config-if)#ip address 192.168.1.7 255.255.255.0
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

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

R1(config-if)#interface serial 0/1/0
R1(config-if)#ip address 192.168.2.7 255.255.255.0
R1(config-if)#clock rate 64000
R1(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to down
R1(config-if)#end R1
                ^
% Invalid input detected at '^' marker.

R1(config-if)#end
R1#
%SYS-5-CONFIG_I: Configured from console by console
copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R1#
```

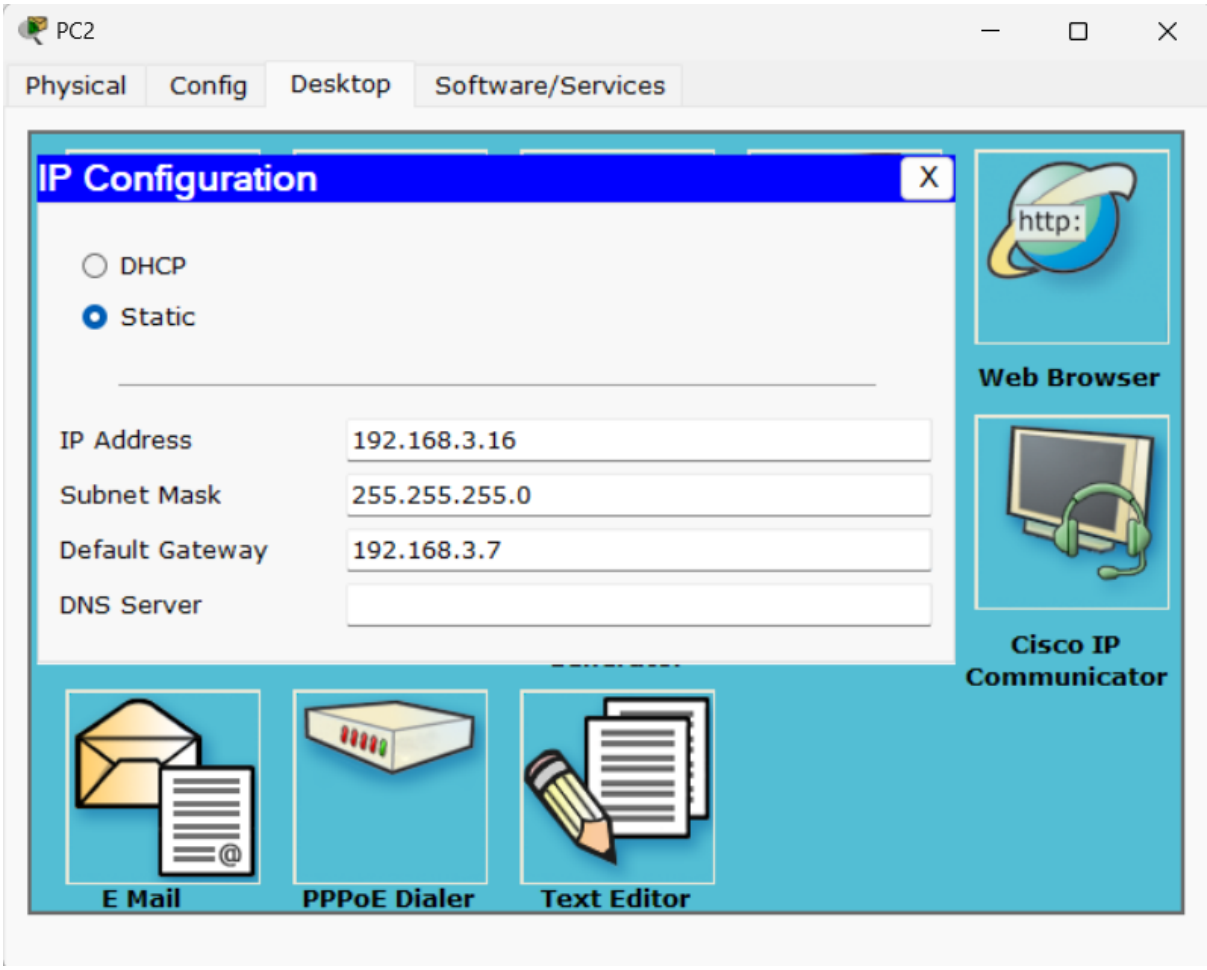
Настройка R2:

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R2
R2(config)#no ip domain-lookup
R2(config)#enable secret cisco
R2(config)#banner motd &world&
R2(config)#line console 0
R2(config-line)#password cisco
R2(config-line)#login
R2(config-line)#interface serial 0/1/0
R2(config-if)#ip address 192.168.2.8 255.255.255.0
R2(config-if)#no shutdown

%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

R2(config-if)#interface f
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state t
                ^
% Invalid input detected at '^' marker.

R2(config-if)#interface fastethernet 0/0
R2(config-if)#ip address 192.168.3.7
% Incomplete command.
R2(config-if)#ip address 192.168.3.7 255.255.255.0
R2(config-if)#no shutdown

%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

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

R2(config-if)#end
R2#
%SYS-5-CONFIG_I: Configured from console by console
copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
R2#
```

Настройка PC1:



Настройка PC2:



Тестирование:

```
R1>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    192.168.1.0/24 is directly connected, FastEthernet0/0
C    192.168.2.0/24 is directly connected, Serial0/1/0
R1>show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol


FastEthernet0/0        192.168.1.7     YES manual up                    up

FastEthernet0/1        unassigned      YES unset  administratively down down

Serial0/1/0            192.168.2.7     YES manual up                    up

Serial0/1/1            unassigned      YES unset  administratively down down

Vlan1                  unassigned      YES unset  administratively down down
R1>
```

```
R2>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

C    192.168.2.0/24 is directly connected, Serial0/1/0
C    192.168.3.0/24 is directly connected, FastEthernet0/0
R2>show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol


FastEthernet0/0        192.168.3.7     YES manual up                    up

FastEthernet0/1        unassigned      YES unset  administratively down down

Serial0/1/0            192.168.2.8     YES manual up                    up

Serial0/1/1            unassigned      YES unset  administratively down down

Vlan1                  unassigned      YES unset  administratively down down
R2>
```

1. С PC1 возможно пропинговать маршрутизатор R1? Если да, то какой из интерфейсов маршрутизатора?

Да, возможно с обоих интерфейсов.

2. С PC2 возможно пропинговать маршрутизатор R2? Если да, то какой из интерфейсов маршрутизатора?

Да, возможно с обоих интерфейсов.

3. С PC2 возможно пропинговать PC1?

Нет, невозможно.

Вывод: Изучили возможности и порядок применения пакета Cisco Packet Tracer. Приобрели навыки по начальному конфигурированию маршрутизаторов.