

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

Кафедра ИИТ

Отчёт
о лабораторной работе №9
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Тема: «Настройка динамической маршрутизации с помощью протокола
RIP на устройствах Cisco»

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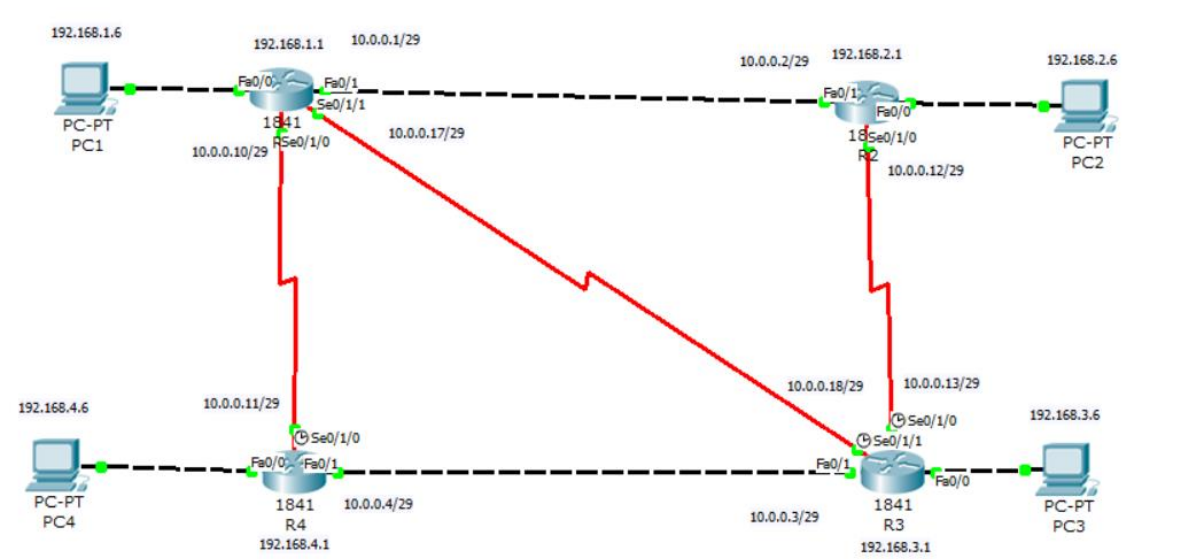
Проверил: Савицкий Ю.В.

Цель работы: Настроить динамическую маршрутизацию с помощью протокола RIP на устройствах R1, R2, R3, R4; обеспечить возможность взаимодействия конечных устройств PC1, PC2, PC3, PC4 между собой.

Вариант 6

Ход работы

Топология сети:



Device	Interface	IP Address	Mask	Default Gateway
R1	Fa0/0	192.168.1.1	255.255.255.0	N/A
	Fa0/1	10.0.0.1	255.255.255.248	N/A
	S0/1/0	10.0.0.10	255.255.255.248	N/A
	S0/1/1	10.0.0.17	255.255.255.248	N/A
R2	Fa0/0	192.168.2.1	255.255.255.0	N/A
	Fa0/1	10.0.0.2	255.255.255.248	N/A
	S0/1/0	10.0.0.12	255.255.255.248	N/A
R3	Fa0/0	192.168.3.1	255.255.255.0	N/A
	Fa0/1	10.0.0.3	255.255.255.248	N/A
	S0/1/0	10.0.0.13	255.255.255.248	N/A
	S0/1/1	10.0.0.18	255.255.255.248	N/A
R4	Fa0/0	192.168.4.1	255.255.255.0	N/A
	Fa0/1	10.0.0.4	255.255.255.248	N/A
	S0/1/0	10.0.0.11	255.255.255.248	N/A
PC1	N/A	192.168.1.6	255.255.255.0	192.168.1.1
PC2	N/A	192.168.2.6	255.255.255.0	192.168.2.1
PC3	N/A	192.168.3.6	255.255.255.0	192.168.3.1
PC4	N/A	192.168.4.6	255.255.255.0	192.168.4.1

Маршрутизатор 1:

```
R1#show ip interface brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	192.168.1.1	YES	manual	up	up
FastEthernet0/1	10.0.0.1	YES	manual	up	up
FastEthernet0/0/0	unassigned	YES	unset	administratively down	down
FastEthernet0/0/1	unassigned	YES	unset	administratively down	down
FastEthernet0/0/2	unassigned	YES	unset	administratively down	down
FastEthernet0/0/3	unassigned	YES	unset	administratively down	down
Serial0/1/0	10.0.0.10	YES	manual	up	up
Serial0/1/1	10.0.0.17	YES	manual	up	up
Vlan1	unassigned	YES	unset	administratively down	down

```
R1#
```

```
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
```

```
10.0.0.0/29 is subnetted, 3 subnets
```

```
C 10.0.0.0 is directly connected, FastEthernet0/1
```

```
C 10.0.0.8 is directly connected, Serial0/1/0
```

```
C 10.0.0.16 is directly connected, Serial0/1/1
```

```
C 192.168.1.0/24 is directly connected, FastEthernet0/0
```

Маршрутизатор 2:

```

R2#
%SYS-5-CONFIG_I: Configured from console by console
show ip interface brief

```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	192.168.2.1	YES	manual	up	up
FastEthernet0/1	10.0.0.2	YES	manual	up	up
FastEthernet0/0/0	unassigned	YES	unset	administratively down	down
FastEthernet0/0/1	unassigned	YES	unset	administratively down	down
FastEthernet0/0/2	unassigned	YES	unset	administratively down	down
FastEthernet0/0/3	unassigned	YES	unset	administratively down	down
Serial0/1/0	10.0.0.12	YES	manual	up	up
Serial0/1/1	unassigned	YES	unset	administratively down	down
Vlan1	unassigned	YES	unset	administratively down	down

```

R2#
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

    10.0.0.0/29 is subnetted, 2 subnets
C      10.0.0.0 is directly connected, FastEthernet0/1
C      10.0.0.8 is directly connected, Serial0/1/0
C     192.168.2.0/24 is directly connected, FastEthernet0/0

```

Маршрутизатор 3:

```
show ip interface brief
```

Interface	IP-Address	OK?	Method	Status	Protocol
FastEthernet0/0	192.168.3.1	YES	manual	up	up
FastEthernet0/1	10.0.0.3	YES	manual	up	up
FastEthernet0/0/0	unassigned	YES	unset	administratively down	down
FastEthernet0/0/1	unassigned	YES	unset	administratively down	down
FastEthernet0/0/2	unassigned	YES	unset	administratively down	down
FastEthernet0/0/3	unassigned	YES	unset	administratively down	down
Serial0/1/0	10.0.0.13	YES	manual	up	up
Serial0/1/1	10.0.0.18	YES	manual	up	up
Vlan1	unassigned	YES	unset	administratively down	down

```
R3#
```

```
R3#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
```

```
10.0.0.0/29 is subnetted, 3 subnets
C    10.0.0.0 is directly connected, FastEthernet0/1
C    10.0.0.8 is directly connected, Serial0/1/0
C    10.0.0.16 is directly connected, Serial0/1/1
C    192.168.3.0/24 is directly connected, FastEthernet0/0
R3#
```

Маршрутизатор 4:

FastEthernet0/0	192.168.4.1	YES manual up	up
FastEthernet0/1	10.0.0.4	YES manual up	up
FastEthernet0/0/0	unassigned	YES unset administratively down	down
FastEthernet0/0/1	unassigned	YES unset administratively down	down
FastEthernet0/0/2	unassigned	YES unset administratively down	down
FastEthernet0/0/3	unassigned	YES unset administratively down	down
Serial0/1/0	10.0.0.11	YES manual up	up
Serial0/1/1	unassigned	YES unset administratively down	down
Vlan1	unassigned	YES unset administratively down	down

R4#

R4#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

```

      10.0.0.0/29 is subnetted, 2 subnets
C       10.0.0.0 is directly connected, FastEthernet0/1
C       10.0.0.8 is directly connected, Serial0/1/0
C       192.168.4.0/24 is directly connected, FastEthernet0/0
R4#
```

Настройка маршрута по протоколу RIP:

Маршрутизатор 1:

```

R1(config-router)#network 10.0.0.0
R1(config-router)#network 192.168.1.0
R1(config-router)#network 192.168.2.0
R1(config-router)#network 192.168.4.0
```

Маршрутизатор 2:

```

R2(config-router)#network 10.0.0.0
R2(config-router)#network 192.168.1.0
R2(config-router)#network 192.168.2.0
R2(config-router)#network 192.168.3.0
```

Маршрутизатор 3:


```
R3(config-router)#network 10.0.0.0
R3(config-router)#network 192.168.2.0
R3(config-router)#network 192.168.3.0
R3(config-router)#network 192.168.4.0
```

Маршрутизатор 4:

```
R4(config-router)#network 10.0.0.0
R4(config-router)#network 192.168.1.0
R4(config-router)#network 192.168.3.0
R4(config-router)#network 192.168.4.0
```

Проверка правильности работы протокола RIP:

Маршрутизатор 1:

```
10.0.0.0/29 is subnetted, 3 subnets
C    10.0.0.0 is directly connected, FastEthernet0/1
C    10.0.0.8 is directly connected, Serial0/1/0
C    10.0.0.16 is directly connected, Serial0/1/1
C    192.168.1.0/24 is directly connected, FastEthernet0/0
R    192.168.2.0/24 [120/1] via 10.0.0.2, 00:00:00, FastEthernet0/1
R    192.168.3.0/24 [120/1] via 10.0.0.18, 00:00:16, Serial0/1/1
R    192.168.4.0/24 [120/1] via 10.0.0.11, 00:00:25, Serial0/1/0
R1#
```

Маршрутизатор 2:

```
Gateway of last resort is not set

10.0.0.0/29 is subnetted, 3 subnets
C    10.0.0.0 is directly connected, FastEthernet0/1
C    10.0.0.8 is directly connected, Serial0/1/0
R    10.0.0.16 [120/1] via 10.0.0.1, 00:00:10, FastEthernet0/1
        [120/1] via 10.0.0.13, 00:00:26, Serial0/1/0
R    192.168.1.0/24 [120/1] via 10.0.0.1, 00:00:10, FastEthernet0/1
C    192.168.2.0/24 is directly connected, FastEthernet0/0
R    192.168.3.0/24 [120/1] via 10.0.0.13, 00:00:26, Serial0/1/0
R    192.168.4.0/24 [120/2] via 10.0.0.13, 00:00:26, Serial0/1/0
        [120/2] via 10.0.0.1, 00:00:10, FastEthernet0/1
R2#
```

Маршрутизатор 3:

```
Gateway of last resort is not set
```

```
10.0.0.0/29 is subnetted, 3 subnets
C    10.0.0.0 is directly connected, FastEthernet0/1
C    10.0.0.8 is directly connected, Serial0/1/0
C    10.0.0.16 is directly connected, Serial0/1/1
R    192.168.1.0/24 [120/1] via 10.0.0.17, 00:00:22, Serial0/1/1
R    192.168.2.0/24 [120/1] via 10.0.0.12, 00:00:23, Serial0/1/0
C    192.168.3.0/24 is directly connected, FastEthernet0/0
R    192.168.4.0/24 [120/1] via 10.0.0.4, 00:00:20, FastEthernet0/1
R3#
```

Маршрутизатор 4:

```
Gateway of last resort is not set
```

```
10.0.0.0/29 is subnetted, 3 subnets
C    10.0.0.0 is directly connected, FastEthernet0/1
C    10.0.0.8 is directly connected, Serial0/1/0
R    10.0.0.16 [120/1] via 10.0.0.10, 00:00:24, Serial0/1/0
        [120/1] via 10.0.0.3, 00:00:15, FastEthernet0/1
R    192.168.1.0/24 [120/1] via 10.0.0.10, 00:00:24, Serial0/1/0
R    192.168.2.0/24 [120/2] via 10.0.0.10, 00:00:24, Serial0/1/0
        [120/2] via 10.0.0.3, 00:00:15, FastEthernet0/1
R    192.168.3.0/24 [120/1] via 10.0.0.3, 00:00:15, FastEthernet0/1
C    192.168.4.0/24 is directly connected, FastEthernet0/0
R4#
```

Вывод: : Настроили динамическую маршрутизацию с помощью протокола RIP на устройствах R1, R2, R3, R4; обеспечили возможность взаимодействия конечных устройств PC1, PC2, PC3, PC4 между собой.