Цель: изучить протоколы маршрутизации глобальных сетей, типы областей и маршрутизаторов в протоколе OSPF, назначение автономных систем, овладеть навыками конфигурации протокола OSPF для нескольких областей, протокола BGP, перераспределение маршрутов разных протоколов маршрутизации.

Исходные данные:

Номер первой цифры шифра	IP-адреса для подсетей				
	Branch2	Branch3	Home	коммутаторов L3	коммутаторов L3 и пограничных маршрутизаторов
6	192.168.60.0/24	192.168.61.0/24	192.168.62.0/24	129.134.131.0/24	41.79.200.0/24

Номер второй цифр шифра	Номера автономных систем для подсетей			
	Branch1	Branch2	Branch3	Home
7	6	8	10	12

Ход работы:

1. Таблицы маршрутизации на Router4

```
     5.0.0.0/32 is subnetted, 1 subnets
C       5.5.5.5 is directly connected, Loopback0
     31.0.0.0/32 is subnetted, 1 subnets
C       31.200.58.66 is directly connected, Loopback1
     41.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C       41.79.200.0/30 is directly connected, FastEthernet0/1
O E2    41.79.200.8/30 [110/20] via 41.79.200.2, 00:00:53, FastEthernet0/1
O E2    41.79.200.12/30 [110/20] via 41.79.200.2, 00:00:53, FastEthernet0/1
O E2    41.79.200.16/29 [110/20] via 41.79.200.2, 00:00:43, FastEthernet0/1
     129.134.0.0/30 is subnetted, 4 subnets
O E2    129.134.131.0 [110/20] via 41.79.200.2, 00:00:53, FastEthernet0/1
O E2    129.134.131.4 [110/20] via 41.79.200.2, 00:00:53, FastEthernet0/1
O E2    129.134.131.8 [110/20] via 41.79.200.2, 00:00:53, FastEthernet0/1
O E2    129.134.131.12 [110/20] via 41.79.200.2, 00:00:53, FastEthernet0/1
     172.10.0.0/29 is subnetted, 1 subnets
C       172.10.0.168 is directly connected, FastEthernet0/0
O E2 192.168.60.0/24 [110/20] via 41.79.200.2, 00:00:53, FastEthernet0/1
O E2 192.168.61.0/24 [110/20] via 41.79.200.2, 00:00:53, FastEthernet0/1
     192.168.62.0/28 is subnetted, 1 subnets
O E2    192.168.62.16 [110/20] via 41.79.200.2, 00:00:43, FastEthernet0/1
O*E2 0.0.0.0/0 [110/1] via 41.79.200.2, 00:00:53, FastEthernet0/1
```

R3

```
     41.0.0.0/30 is subnetted, 1 subnets
C       41.79.200.4 is directly connected, GigabitEthernet0/0/0
C    192.168.60.0/24 is directly connected, FastEthernet0/0.60
S*   0.0.0.0/0 is directly connected, GigabitEthernet0/0/0
```

R5

```
     31.0.0.0/32 is subnetted, 1 subnets
D EX    31.200.58.66 [170/281856] via 41.79.200.9, 00:01:17, GigabitEthernet0/0/0
     41.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
D EX    41.79.200.0/30 [170/281856] via 41.79.200.9, 00:02:15, GigabitEthernet0/0/0
C       41.79.200.8/30 is directly connected, GigabitEthernet0/0/0
D EX    41.79.200.12/30 [170/281856] via 41.79.200.9, 00:02:16, GigabitEthernet0/0/0
D EX    41.79.200.16/29 [170/281856] via 41.79.200.9, 00:01:27, GigabitEthernet0/0/0
     129.134.0.0/30 is subnetted, 4 subnets
D EX    129.134.131.0 [170/281856] via 41.79.200.9, 00:02:16, GigabitEthernet0/0/0
D EX    129.134.131.4 [170/281856] via 41.79.200.9, 00:02:16, GigabitEthernet0/0/0
D EX    129.134.131.8 [170/281856] via 41.79.200.9, 00:02:16, GigabitEthernet0/0/0
D EX    129.134.131.12 [170/281856] via 41.79.200.9, 00:02:16, GigabitEthernet0/0/0
     172.10.0.0/29 is subnetted, 1 subnets
D EX    172.10.0.168 [170/281856] via 41.79.200.9, 00:01:17, GigabitEthernet0/0/0
D EX 192.168.60.0/24 [170/281856] via 41.79.200.9, 00:02:16, GigabitEthernet0/0/0
C    192.168.61.0/24 is directly connected, FastEthernet0/0.61
     192.168.62.0/28 is subnetted, 1 subnets
D EX    192.168.62.16 [170/281856] via 41.79.200.9, 00:01:27, GigabitEthernet0/0/0
```

R6

```
     31.0.0.0/32 is subnetted, 1 subnets
O E2    31.200.58.66 [110/20] via 41.79.200.13, 00:01:30, GigabitEthernet0/0/0
     41.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
O E2    41.79.200.0/30 [110/20] via 41.79.200.13, 00:01:45, GigabitEthernet0/0/
O E2    41.79.200.8/30 [110/20] via 41.79.200.13, 00:01:45, GigabitEthernet0/0/
C       41.79.200.12/30 is directly connected, GigabitEthernet0/0/0
C       41.79.200.16/29 is directly connected, FastEthernet0/0
     129.134.0.0/30 is subnetted, 4 subnets
O E2    129.134.131.0 [110/20] via 41.79.200.13, 00:01:45, GigabitEthernet0/0/0
O E2    129.134.131.4 [110/20] via 41.79.200.13, 00:01:45, GigabitEthernet0/0/0
O E2    129.134.131.8 [110/20] via 41.79.200.13, 00:01:45, GigabitEthernet0/0/0
O E2    129.134.131.12 [110/20] via 41.79.200.13, 00:01:45, GigabitEthernet0/0/
     172.10.0.0/29 is subnetted, 1 subnets
O E2    172.10.0.168 [110/20] via 41.79.200.13, 00:01:30, GigabitEthernet0/0/0
O E2 192.168.60.0/24 [110/20] via 41.79.200.13, 00:01:45, GigabitEthernet0/0/0
O E2 192.168.61.0/24 [110/20] via 41.79.200.13, 00:01:45, GigabitEthernet0/0/0
     192.168.62.0/28 is subnetted, 1 subnets
C       192.168.62.16 is directly connected, FastEthernet0/0.62
```

MS5

```
      31.0.0.0/32 is subnetted, 1 subnets
O IA     31.200.58.66 [110/2] via 41.79.200.1, 00:01:00, GigabitEthernet1/0/1
      41.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C        41.79.200.0/30 is directly connected, GigabitEthernet1/0/1
B        41.79.200.8/30 [20/0] via 129.134.131.13, 00:00:00
B        41.79.200.12/30 [20/0] via 129.134.131.13, 00:00:00
B        41.79.200.16/29 [20/2] via 129.134.131.13, 00:00:00
      129.134.0.0/30 is subnetted, 4 subnets
C        129.134.131.0 is directly connected, GigabitEthernet1/1/1
B        129.134.131.4 [20/0] via 129.134.131.2, 00:00:00
B        129.134.131.8 [20/0] via 129.134.131.13, 00:00:00
C        129.134.131.12 is directly connected, GigabitEthernet1/1/4
      172.10.0.0/29 is subnetted, 1 subnets
O IA     172.10.0.168 [110/2] via 41.79.200.1, 00:01:00, GigabitEthernet1/0/1
B     192.168.60.0/24 [20/0] via 129.134.131.2, 00:00:00
B     192.168.61.0/24 [20/0] via 129.134.131.13, 00:00:00
      192.168.62.0/28 is subnetted, 1 subnets
B        192.168.62.16 [20/2] via 129.134.131.13, 00:00:00
S*    0.0.0.0/0 [1/0] via 129.134.131.2
```

MS3

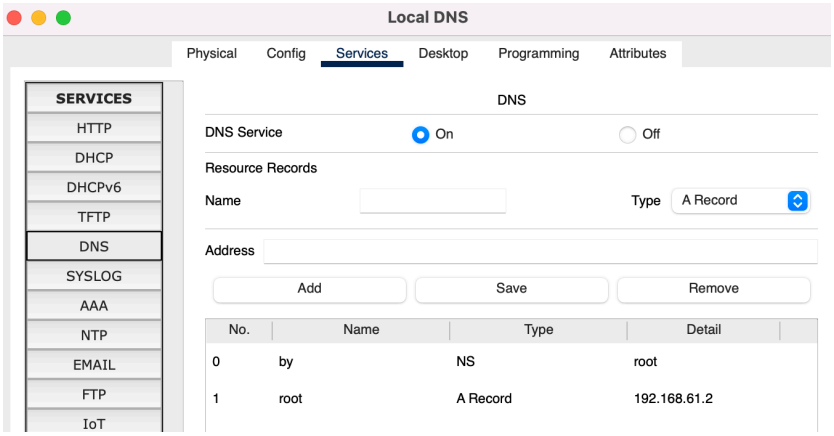
```
      31.0.0.0/32 is subnetted, 1 subnets
B        31.200.58.66 [20/2] via 129.134.131.1, 00:00:00
      41.0.0.0/8 is variably subnetted, 5 subnets, 2 masks
B        41.79.200.0/30 [20/0] via 129.134.131.1, 00:00:00
C        41.79.200.4/30 is directly connected, GigabitEthernet1/1/3
B        41.79.200.8/30 [20/0] via 129.134.131.6, 00:00:00
B        41.79.200.12/30 [20/0] via 129.134.131.1, 00:00:00
B        41.79.200.16/29 [20/0] via 129.134.131.6, 00:00:00
      129.134.0.0/30 is subnetted, 4 subnets
C        129.134.131.0 is directly connected, GigabitEthernet1/1/1
C        129.134.131.4 is directly connected, GigabitEthernet1/1/2
B        129.134.131.8 [20/0] via 129.134.131.6, 00:00:00
B        129.134.131.12 [20/0] via 129.134.131.1, 00:00:00
      172.10.0.0/29 is subnetted, 1 subnets
B        172.10.0.168 [20/2] via 129.134.131.1, 00:00:00
S     192.168.60.0/24 is directly connected, GigabitEthernet1/1/3
B     192.168.61.0/24 [20/28416] via 129.134.131.6, 00:00:00
      192.168.62.0/28 is subnetted, 1 subnets
B        192.168.62.16 [20/0] via 129.134.131.6, 00:00:00
```

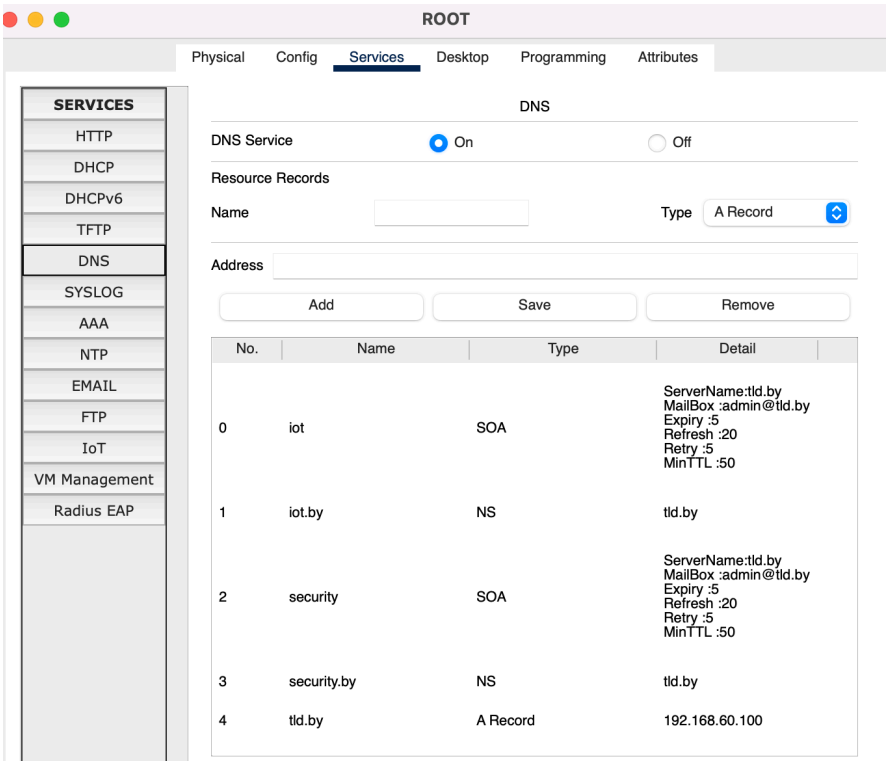
MS4

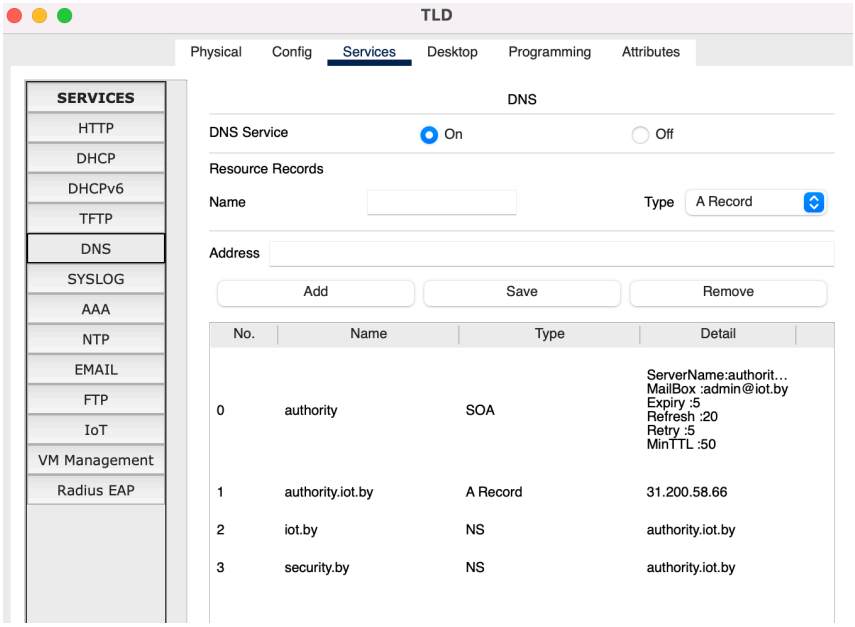
```
      31.0.0.0/32 is subnetted, 1 subnets
B        31.200.58.66 [20/0] via 129.134.131.5, 00:00:00
      41.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
B        41.79.200.0/30 [20/0] via 129.134.131.10, 00:00:00
C        41.79.200.8/30 is directly connected, GigabitEthernet1/1/4
B        41.79.200.12/30 [20/0] via 129.134.131.10, 00:00:00
B        41.79.200.16/29 [20/2] via 129.134.131.10, 00:00:00
      129.134.0.0/30 is subnetted, 4 subnets
B        129.134.131.0 [20/0] via 129.134.131.5, 00:00:00
C        129.134.131.4 is directly connected, GigabitEthernet1/1/2
C        129.134.131.8 is directly connected, GigabitEthernet1/1/3
B        129.134.131.12 [20/0] via 129.134.131.10, 00:00:00
      172.10.0.0/29 is subnetted, 1 subnets
B        172.10.0.168 [20/0] via 129.134.131.5, 00:00:00
B     192.168.60.0/24 [20/0] via 129.134.131.5, 00:00:00
D     192.168.61.0/24 [90/28416] via 41.79.200.10, 00:02:06, GigabitEthernet1/1/4
      192.168.62.0/28 is subnetted, 1 subnets
B        192.168.62.16 [20/2] via 129.134.131.10, 00:00:00
```

MS6

```
      31.0.0.0/32 is subnetted, 1 subnets
B        31.200.58.66 [20/2] via 129.134.131.14, 00:00:00
      41.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
B        41.79.200.0/30 [20/0] via 129.134.131.14, 00:00:00
B        41.79.200.8/30 [20/0] via 129.134.131.9, 00:00:00
C        41.79.200.12/30 is directly connected, GigabitEthernet1/1/1
O        41.79.200.16/29 [110/2] via 41.79.200.14, 00:01:27, GigabitEthernet1/1/1
      129.134.0.0/30 is subnetted, 4 subnets
B        129.134.131.0 [20/0] via 129.134.131.14, 00:00:00
B        129.134.131.4 [20/0] via 129.134.131.9, 00:00:00
C        129.134.131.8 is directly connected, GigabitEthernet1/1/3
C        129.134.131.12 is directly connected, GigabitEthernet1/1/4
      172.10.0.0/29 is subnetted, 1 subnets
B        172.10.0.168 [20/2] via 129.134.131.14, 00:00:00
B     192.168.60.0/24 [20/0] via 129.134.131.9, 00:00:00
B     192.168.61.0/24 [20/28416] via 129.134.131.9, 00:00:00
      192.168.62.0/28 is subnetted, 1 subnets
O        192.168.62.16 [110/2] via 41.79.200.14, 00:01:27, GigabitEthernet1/1/1
```



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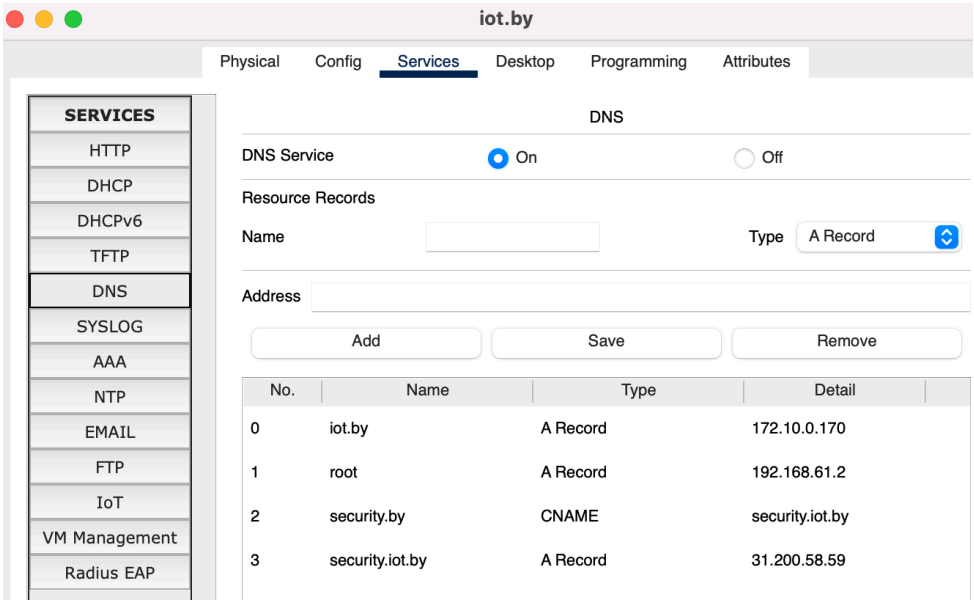
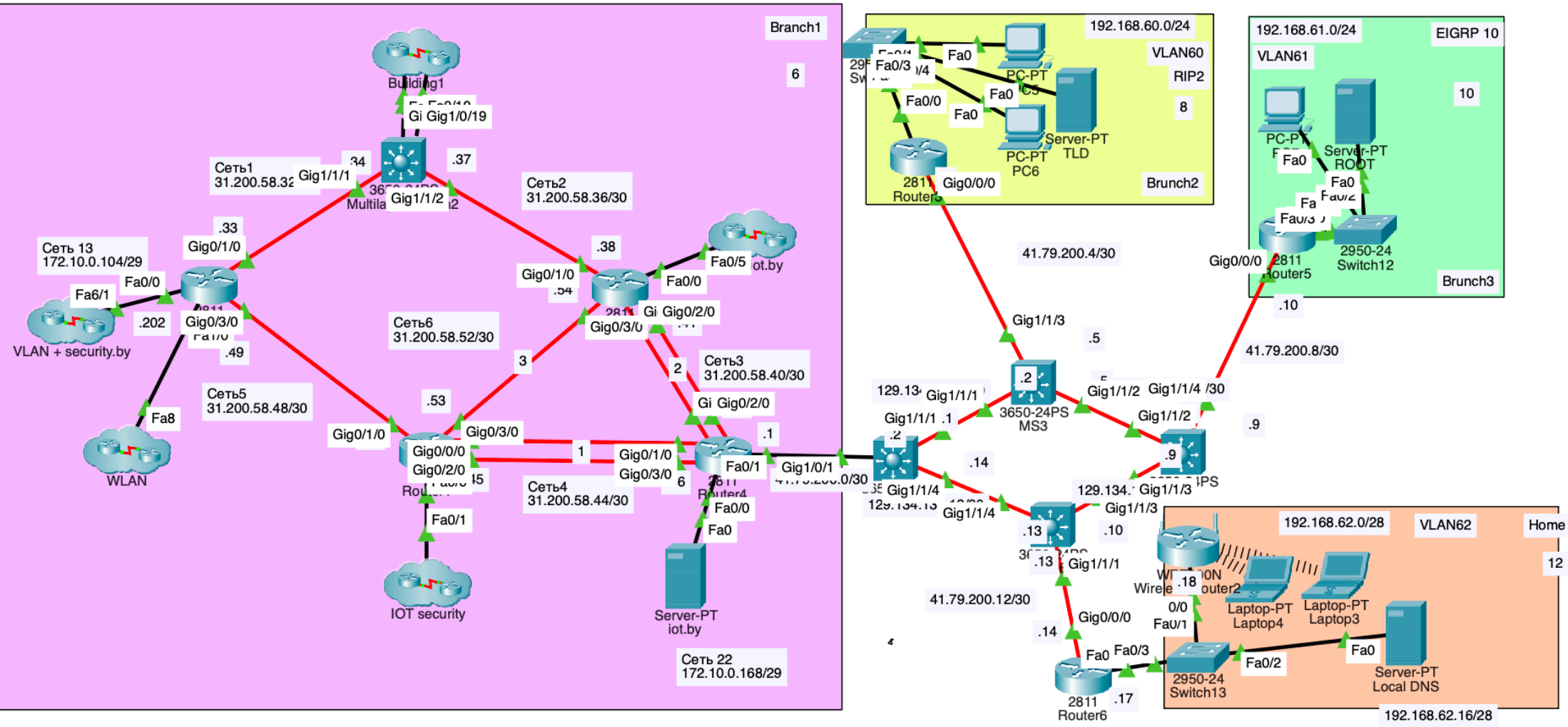
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DNS
DNS Service
On
Off
Resource Records
Name
Type
A Record
Address
Add
Save
Remove
No.
Name
Type
Detail
0
authority
SOA
ServerName:authorit…
MailBox :admin@iot.by
Expiry :5
Refresh :20
Retry :5
MinTTL :50
1
authority.iot.by
A Record
31.200.58.66
2
iot.by
NS
authority.iot.by
3
security.by
NS
authority.iot.by


iot.by
Physical
Config
Services
Desktop
Programming
Attributes
SERVICES
HTTP
DHCP
DHCPv6
TFTP
DNS
SYSLOG
AAA
NTP
EMAIL
FTP
IoT
VM Management
Radius EAP
DNS
DNS Service
On
Off
Resource Records
Name
Type
A Record
Address
Add
Save
Remove
No.
Name
Type
Detail
0
iot.by
A Record
172.10.0.170
1
root
A Record
192.168.61.2
2
security.by
CNAME
security.iot.by
3
security.iot.by
A Record
31.200.58.59


Branch1
6
Building1
Gi Gig1/0/19
Сеть1
31.200.58.32
Gig1/1/1
.34
.37
Gig1/1/2
Сеть2
31.200.58.36/30
.33
Gig0/1/0
Сеть 13
172.10.0.104/29
Fa0/0
Fa6/1
.202
Gig0/3/0
.49
VLAN + security.by
Сеть6
31.200.58.52/30
Сеть5
31.200.58.48/30
Fa8
WLAN
.53
Gig0/1/0
Gig0/3/0
Gig0/0/0
Gig0/2/0
3
1
Сеть4
31.200.58.44/30
Fa0/1
IOT security
.38
Gig0/1/0
.54
Fa0/0
Fa0/5
Gig0/3/0
Gig0/2/0
2
Сеть3
31.200.58.40/30
Gig0/2/0
.1
Fa0/1
Gig1/0/1
6
Fa0/0
Fa0
Server-PT
iot.by
Сеть 22
172.10.0.168/29
192.168.60.0/24
VLAN60
RIP2
8
Fa0
Fa0/0
PC-PT
PC6
Server-PT
TLD
Gig0/0/0
Brunch2
41.79.200.4/30
Gig1/1/3
.5
.2
3650-24PS
MS3
Gig1/1/1
Gig1/1/2
Gig1/1/4
.1
.2
.14
Gig1/1/3
.9
192.168.61.0/24
EIGRP 10
VLAN61
10
Server-PT
ROOT
Fa0
2950-24
Switch12
Gig0/0/0
.10
Brunch3
41.79.200.8/30
.13
.10
Gig1/1/1
41.79.200.12/30
Gig0/0/0
.14
Fa0
Fa0/3
2811
Router6
.17
192.168.62.0/28
VLAN62
Home
12
.18
Fa0/2
Laptop-PT
Laptop4
Laptop-PT
Laptop3
Server-PT
Local DNS
2950-24
Switch13
192.168.62.16/28