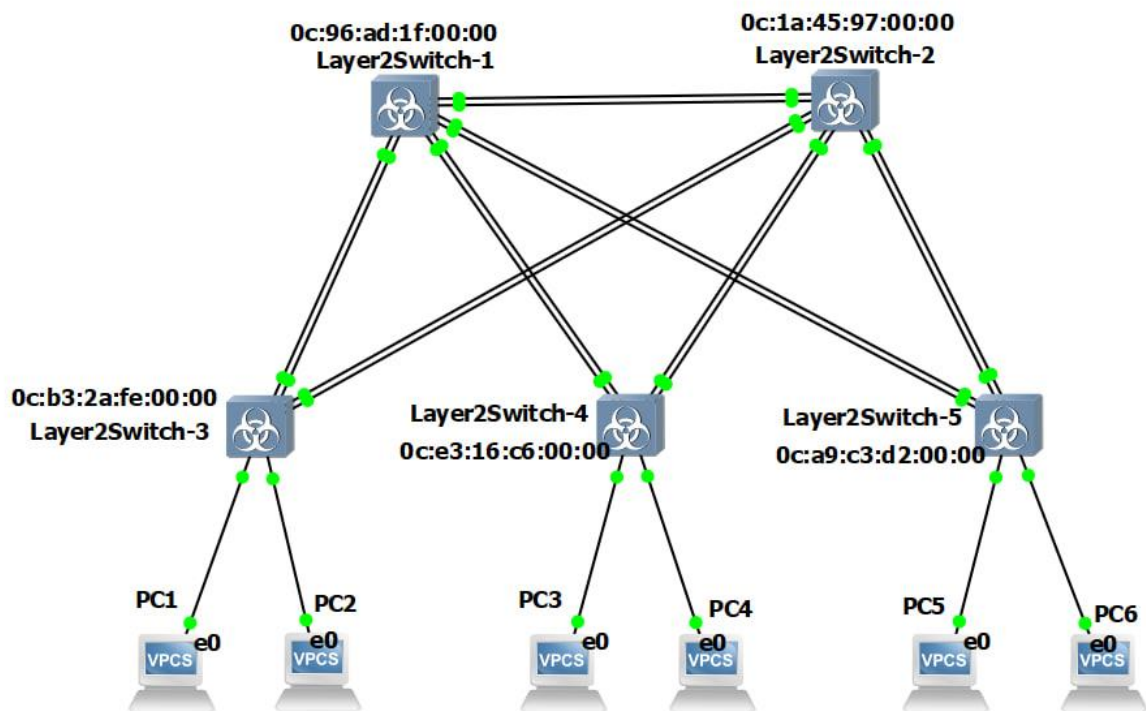


## Практика №2

### Тема: Настройка протокола STP (IEEE 802.1D)

1) Для заданной на схеме schema-lab2 сети, состоящей из управляемых коммутаторов и персональных компьютеров

Настроить протокол STP, назначив явно один из коммутаторов корневым настройкой приоритета



Корневым коммутатором выбран SW1, изменим его приоритет:

```
enable
```

```
configure terminal
```

```
spanning-tree vlan 1 priority 0
```

```
end
```

2) Проверить доступность каждого с каждым всех персональных компьютеров (VPCS), результаты запротоколировать

## Проверка доступности на PC1:

```
PC1> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=6.154 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=5.427 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=0.429 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=2.461 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=0.651 ms

PC1> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=8.708 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=3.079 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=14.140 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=9.210 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=13.813 ms

PC1> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=14.318 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=22.285 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=25.012 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=9.192 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=5.069 ms

PC1> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=6.941 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=8.533 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=7.832 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=4.317 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=5.565 ms

PC1> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=20.827 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=3.757 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=17.293 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=7.735 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=4.787 ms
```

## Проверка доступности на PC2

```
PC2> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=3.795 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=0.700 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=2.140 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=3.859 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=1.190 ms

PC2> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=6.142 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=6.805 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=10.910 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=9.461 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=9.633 ms

PC2> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=4.697 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=12.801 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=2.936 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=6.980 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=10.777 ms

PC2> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=10.119 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=15.138 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=6.481 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=3.799 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=11.033 ms

PC2> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=12.075 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=10.357 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=2.624 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=4.800 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=9.127 ms
```

## Проверка доступности на PC3:

```
PC3> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=11.352 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=10.409 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=10.481 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=6.603 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=17.262 ms

PC3> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=7.471 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=10.808 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=2.837 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=13.553 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=12.494 ms

PC3> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=3.961 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=2.996 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=0.389 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=0.963 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=5.739 ms

PC3> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=8.190 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=6.478 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=14.324 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=6.987 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=3.200 ms

PC3> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=6.493 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=16.771 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=4.989 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=5.140 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=8.341 ms
```

## Проверка доступности на PC4

```
PC4> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=11.305 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=11.485 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=7.377 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=8.801 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=10.373 ms

PC4> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=22.853 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=7.106 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=15.390 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=14.192 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=11.138 ms

PC4> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=3.660 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=7.275 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=4.234 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=5.414 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=2.283 ms

PC4> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=15.097 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=12.509 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=7.518 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=8.936 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=8.907 ms

PC4> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=7.573 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=10.746 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=6.241 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=5.250 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=4.948 ms
```



## Проверка доступности на PC5:

```
PC5> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=15.699 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=10.231 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=9.257 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=5.884 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=10.291 ms

PC5> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=16.404 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=16.638 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=7.900 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=7.124 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=11.244 ms

PC5> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=9.083 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=16.864 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=11.293 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=18.801 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=6.031 ms

PC5> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=10.294 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=11.680 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=6.681 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=13.379 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=4.953 ms

PC5> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=7.691 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=1.019 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=0.620 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=0.869 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=3.640 ms
```

## Проверка доступности на PC6

```
PC6> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=5.740 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=9.749 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=12.695 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=9.169 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=18.518 ms

PC6> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=15.547 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=10.723 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=8.371 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=9.171 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=12.100 ms

PC6> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=9.558 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=10.053 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=7.072 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=14.828 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=18.778 ms

PC6> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=7.722 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=12.136 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=4.021 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=10.825 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=4.914 ms

PC6> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=4.861 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=3.206 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=4.937 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=1.144 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=1.000 ms
```

3) На изображении схемы отметить VID каждого коммутатора и режимы работы портов (RP/DP/blocked) и стоимости маршрутов, результат сохранить в файл

show spanning-tree для SW1

```

Layer2Switch-1 - PuTTY
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID      Priority    1
              Address     0c96.ad1f.0000
              This bridge is the root
              Hello Time   2 sec    Max Age 20 sec    Forward Delay 15 sec

  Bridge ID    Priority    1          (priority 0 sys-id-ext 1)
              Address     0c96.ad1f.0000
              Hello Time   2 sec    Max Age 20 sec    Forward Delay 15 sec
              Aging Time   300 sec

Interface      Role  Sts  Cost      Prio.Nbr  Type
-----
Gi0/0          Desg FWD  4         128.1     Shr
Gi0/1          Desg FWD  4         128.2     Shr
Gi0/2          Desg FWD  4         128.3     Shr
Gi0/3          Desg FWD  4         128.4     Shr
Gi1/0          Desg FWD  4         128.5     Shr
Gi1/1          Desg FWD  4         128.6     Shr
Gi1/2          Desg FWD  4         128.7     Shr
Gi1/3          Desg FWD  4         128.8     Shr
--More--

```

show spanning-tree для SW2

```

Layer2Switch-2 - PuTTY
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    1
            Address    0c96.ad1f.0000
            Cost        4
            Port        1 (GigabitEthernet0/0)
            Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32769 (priority 32768 sys-id-ext 1)
            Address    0c1a.4597.0000
            Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
            Aging Time   300 sec

Interface      Role  Sts  Cost      Prio.Nbr  Type
-----
Gi0/0          Root  FWD  4          128.1     Shr
Gi0/1          Altn  BLK  4          128.2     Shr
Gi0/2          Desg  FWD  4          128.3     Shr
Gi0/3          Desg  FWD  4          128.4     Shr
Gi1/0          Desg  FWD  4          128.5     Shr
Gi1/1          Desg  FWD  4          128.6     Shr
Gi1/2          Desg  FWD  4          128.7     Shr
--More--

```

## show spanning-tree для SW3

```
Layer2Switch-3 - PuTTY

VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    1
           Address    0c96.ad1f.0000
           Cost        4
           Port        1 (GigabitEthernet0/0)
           Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID   Priority    32769 (priority 32768 sys-id-ext 1)
           Address    0cb3.2afe.0000
           Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time   300 sec

Interface          Role Sts Cost        Prio.Nbr Type
-----
Gi0/0              Root FWD 4          128.1 Shr
Gi0/1              Altn BLK 4          128.2 Shr
Gi0/2              Altn BLK 4          128.3 Shr
Gi0/3              Altn BLK 4          128.4 Shr
Gi1/0              Desg FWD 4          128.5 Shr
Gi1/1              Desg FWD 4          128.6 Shr

--More--
```

## show spanning-tree для SW4

```
Layer2Switch-4 - PuTTY

VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    1
           Address    0c96.ad1f.0000
           Cost        4
           Port        1 (GigabitEthernet0/0)
           Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID   Priority    32769 (priority 32768 sys-id-ext 1)
           Address    0c3e.16c6.0000
           Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time   300 sec

Interface          Role Sts Cost        Prio.Nbr Type
-----
Gi0/0              Root FWD 4          128.1 Shr
Gi0/1              Altn BLK 4          128.2 Shr
Gi0/2              Altn BLK 4          128.3 Shr
Gi0/3              Altn BLK 4          128.4 Shr
Gi1/0              Desg FWD 4          128.5 Shr
Gi1/1              Desg FWD 4          128.6 Shr

--More--
```



## show spanning-tree для SW5

```

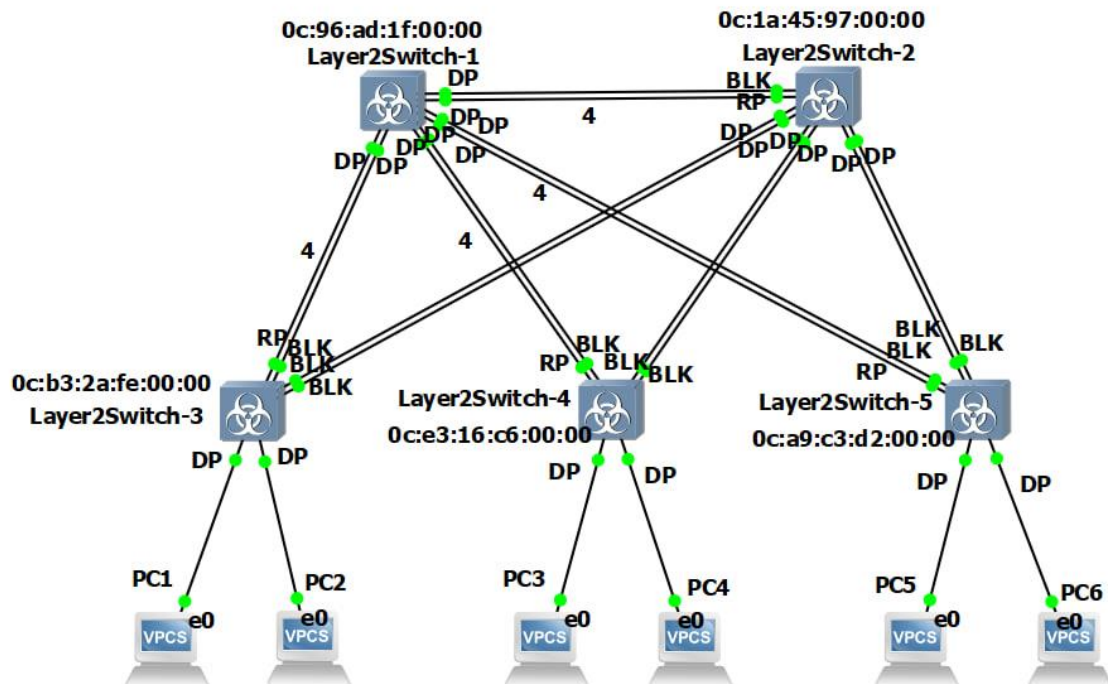
Layer2Switch-5 - PuTTY
VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    1
           Address    0c96.ad1f.0000
           Cost       4
           Port       1 (GigabitEthernet0/0)
           Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID   Priority    32769 (priority 32768 sys-id-ext 1)
           Address    0ca9.c3d2.0000
           Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time  300 sec

Interface          Role Sts Cost      Prio.Nbr Type
-----
Gi0/0              Root FWD 4         128.1  Shr
Gi0/1              Altn BLK 4         128.2  Shr
Gi0/2              Altn BLK 4         128.3  Shr
Gi0/3              Altn BLK 4         128.4  Shr
Gi1/0              Desg FWD 4         128.5  Shr
Gi1/1              Desg FWD 4         128.6  Shr

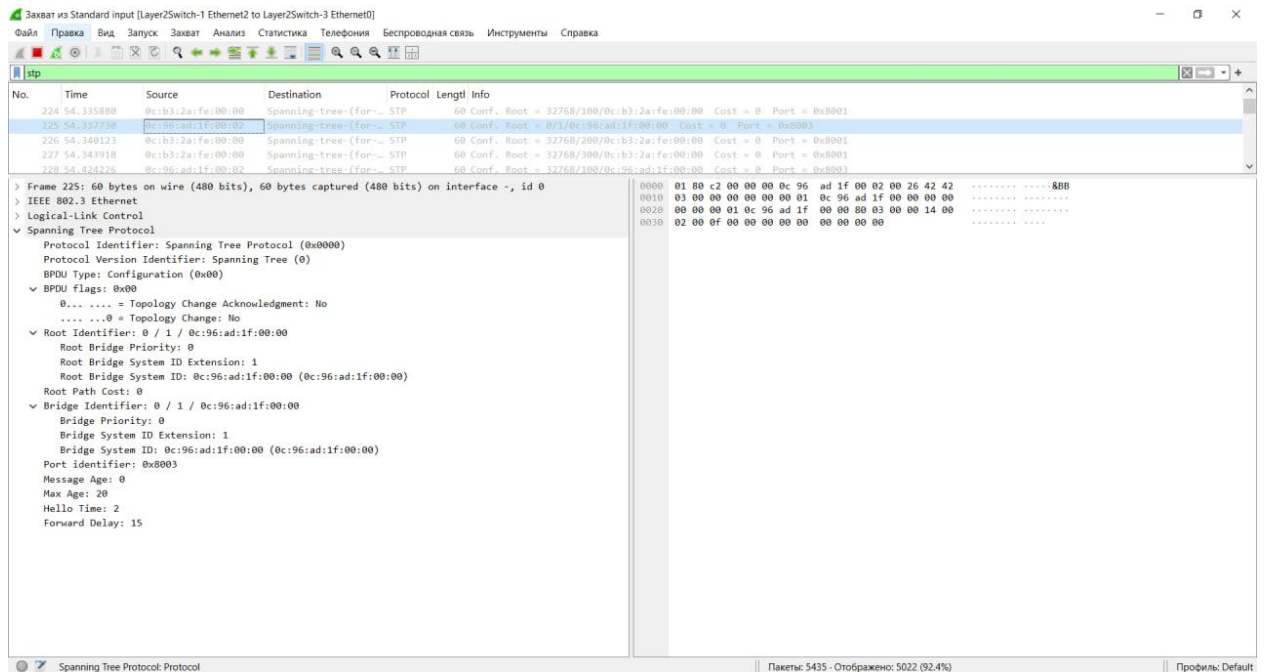
--More--

```

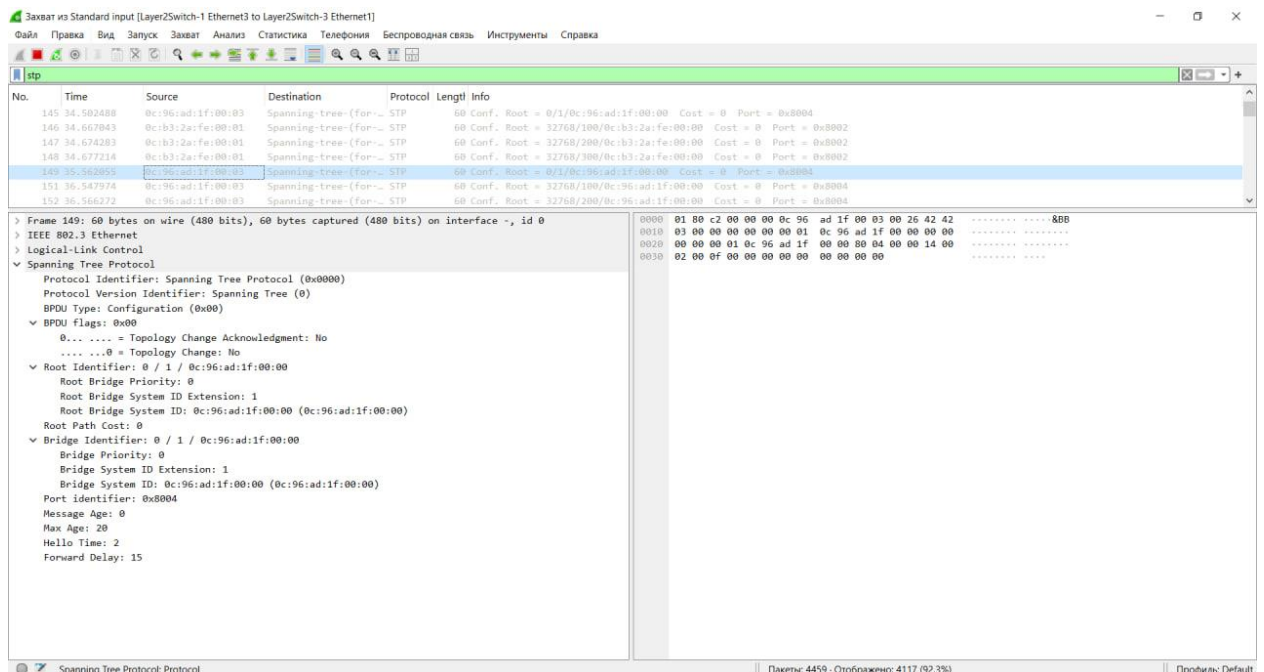


4) При помощи wireshark отследить передачу пакетов hello от корневого коммутатора на всех линках (nb!), результаты включить в отчет

SW1 (eth2) -> SW3 (eth0)



SW1 (eth3) -> SW3 (eth1)





## SW1 (eth4) -> SW4 (eth0)

Захват из Standard input [Layer2Switch-1 Ethernet4 to Layer2Switch-4 Ethernet0]

Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка

stp

No.	Time	Source	Destination	Protocol	Length	Info
98	23.027133	0c:96:ad:1f:00:04	Spanning-tree(for-... STP	60 Conf.	Root = 32768/200/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8005	
99	23.064054	0c:96:ad:1f:00:04	Spanning-tree(for-... STP	60 Conf.	Root = 32768/300/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8005	
100	23.973727	0c:96:ad:1f:00:04	Spanning-tree(for-... STP	60 Conf.	Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8005	
101	24.526266	0c:3e:16:c6:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 32768/100/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8001	
102	24.534927	0c:3e:16:c6:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 32768/200/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8001	
103	24.540579	0c:3e:16:c6:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 32768/300/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8001	
104	25.026588	0c:96:ad:1f:00:04	Spanning-tree(for-... STP	60 Conf.	Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8005	
105	25.111864	0c:96:ad:1f:00:04	Spanning-tree(for-... STP	60 Conf.	Root = 32768/100/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8005	
106	25.131539	0c:96:ad:1f:00:04	Spanning-tree(for-... STP	60 Conf.	Root = 32768/200/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8005	

> Frame 104: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0

> IEEE 802.3 Ethernet

> Logical-Link Control

> Spanning Tree Protocol

Protocol Identifier: Spanning Tree Protocol (0x0000)

Protocol Version Identifier: Spanning Tree (0)

BPDU Type: Configuration (0x00)

> BPDU flags: 0x00

0... .... = Topology Change Acknowledgment: No

.... ..0 = Topology Change: No

> Root Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Root Bridge Priority: 0

Root Bridge System ID Extension: 1

Root Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Root Path Cost: 0

> Bridge Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Bridge Priority: 0

Bridge System ID Extension: 1

Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Port Identifier: 0x8005

Message Age: 0

Max Age: 20

Hello Time: 2

Forward Delay: 15

0000 01 80 c2 00 00 00 0c 96 ad 1f 00 04 00 26 42 42 .....&BB

0010 03 00 00 00 00 00 01 0c 96 ad 1f 00 00 00 00 .....&BB

0020 00 00 00 01 0c 96 ad 1f 00 00 00 00 00 14 00 .....&BB

0030 02 00 0f 00 00 00 00 00 00 00 00 00 00 00 .....&BB

Spanning Tree Protocol: Protocol

Пакеты: 3898 - Отображено: 3605 (92.5%)

Профиль: Default

## SW1 (eth5) -> SW4 (eth1)

Захват из Standard input [Layer2Switch-1 Ethernet5 to Layer2Switch-4 Ethernet1]

Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка

stp

No.	Time	Source	Destination	Protocol	Length	Info
176	40.906625	0c:96:ad:1f:00:05	Spanning-tree(for-... STP	60 Conf.	Root = 32768/300/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8006	
177	41.888953	0c:96:ad:1f:00:05	Spanning-tree(for-... STP	60 Conf.	Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8006	
178	42.668579	0c:3e:16:c6:00:01	Spanning-tree(for-... STP	60 Conf.	Root = 32768/100/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8002	
179	42.677586	0c:3e:16:c6:00:01	Spanning-tree(for-... STP	60 Conf.	Root = 32768/200/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8002	
180	42.686432	0c:3e:16:c6:00:01	Spanning-tree(for-... STP	60 Conf.	Root = 32768/300/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8002	
181	42.923894	0c:96:ad:1f:00:05	Spanning-tree(for-... STP	60 Conf.	Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8006	
182	42.933667	0c:96:ad:1f:00:05	Spanning-tree(for-... STP	60 Conf.	Root = 32768/100/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8006	
183	42.955602	0c:96:ad:1f:00:05	Spanning-tree(for-... STP	60 Conf.	Root = 32768/200/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8006	
184	42.984124	0c:96:ad:1f:00:05	Spanning-tree(for-... STP	60 Conf.	Root = 32768/300/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8006	

> Frame 181: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0

> IEEE 802.3 Ethernet

> Logical-Link Control

> Spanning Tree Protocol

Protocol Identifier: Spanning Tree Protocol (0x0000)

Protocol Version Identifier: Spanning Tree (0)

BPDU Type: Configuration (0x00)

> BPDU flags: 0x00

0... .... = Topology Change Acknowledgment: No

.... ..0 = Topology Change: No

> Root Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Root Bridge Priority: 0

Root Bridge System ID Extension: 1

Root Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Root Path Cost: 0

> Bridge Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Bridge Priority: 0

Bridge System ID Extension: 1

Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Port Identifier: 0x8006

Message Age: 0

Max Age: 20

Hello Time: 2

Forward Delay: 15

0000 01 80 c2 00 00 00 0c 96 ad 1f 00 05 00 26 42 42 .....&BB

0010 03 00 00 00 00 00 01 0c 96 ad 1f 00 00 00 00 .....&BB

0020 00 00 00 01 0c 96 ad 1f 00 00 00 00 00 14 00 .....&BB

0030 02 00 0f 00 00 00 00 00 00 00 00 00 00 00 .....&BB

Spanning Tree Protocol: Protocol

Пакеты: 3541 - Отображено: 3272 (92.4%)

Профиль: Default

## SW1 (eth6) -> SW5 (eth0)

Захват из Standard input [Layer2Switch-1 Ethernet6 to Layer2Switch-5 Ethernet0]

Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка

stp

No.	Time	Source	Destination	Protocol	Length	Info
200	49.487332	0c:96:ad:1f:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8007	
201	49.571341	0c:96:ad:1f:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 32768/100/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8007	
202	49.589177	0c:96:ad:1f:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 32768/200/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8007	
203	49.623996	0c:96:ad:1f:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 32768/300/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8007	
204	50.508711	0c:96:ad:1f:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8007	
206	51.116482	0c:a9:c3:d2:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 32768/100/0c:a9:c3:d2:00:00 Cost = 0 Port = 0x8001	
207	51.142789	0c:a9:c3:d2:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 32768/200/0c:a9:c3:d2:00:00 Cost = 0 Port = 0x8001	
208	51.147231	0c:a9:c3:d2:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 32768/300/0c:a9:c3:d2:00:00 Cost = 0 Port = 0x8001	
209	51.572656	0c:96:ad:1f:00:00	Spanning-tree(for-... STP	60 Conf.	Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8007	

> Frame 204: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0

> IEEE 802.3 Ethernet

> Logical-Link Control

> Spanning Tree Protocol

Protocol Identifier: Spanning Tree Protocol (0x0000)

Protocol Version Identifier: Spanning Tree (0)

BPDU Type: Configuration (0x00)

> BPDU flags: 0x00

0... .... = Topology Change Acknowledgment: No

.... ...0 = Topology Change: No

> Root Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Root Bridge Priority: 0

Root Bridge System ID Extension: 1

Root Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Root Path Cost: 0

> Bridge Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Bridge Priority: 0

Bridge System ID Extension: 1

Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Port identifier: 0x8007

Message Age: 0

Max Age: 20

Hello Time: 2

Forward Delay: 15

0000 01 80 c2 00 00 00 0c 96 ad 1f 00 00 00 26 42 42 .....&BB

0010 03 00 00 00 00 00 01 0c 96 ad 1f 00 00 00 00 .....&BB

0020 00 00 00 01 0c 96 ad 1f 00 00 00 07 00 00 14 00 .....&BB

0030 02 00 0f 00 00 00 00 00 00 00 00 00 00 00 .....&BB

Spanning Tree Protocol: Protocol

Пакеты: 3649 - Отображено: 3377 (92.5%)

Профиль: Default

## SW1 (eth7) -> SW5 (eth1)

Захват из Standard input [Layer2Switch-1 Ethernet7 to Layer2Switch-5 Ethernet1]

Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка

stp

No.	Time	Source	Destination	Protocol	Length	Info
245	60.243304	0c:a9:c3:d2:00:01	Spanning-tree(for-... STP	60 Conf.	Root = 32768/100/0c:a9:c3:d2:00:00 Cost = 0 Port = 0x8002	
246	60.268488	0c:a9:c3:d2:00:01	Spanning-tree(for-... STP	60 Conf.	Root = 32768/200/0c:a9:c3:d2:00:00 Cost = 0 Port = 0x8002	
247	60.272210	0c:a9:c3:d2:00:01	Spanning-tree(for-... STP	60 Conf.	Root = 32768/300/0c:a9:c3:d2:00:00 Cost = 0 Port = 0x8002	
248	60.482900	0c:96:ad:1f:00:07	Spanning-tree(for-... STP	60 Conf.	Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8003	
249	60.577429	0c:96:ad:1f:00:07	Spanning-tree(for-... STP	60 Conf.	Root = 32768/100/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8003	
250	60.595540	0c:96:ad:1f:00:07	Spanning-tree(for-... STP	60 Conf.	Root = 32768/200/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8003	
251	60.633542	0c:96:ad:1f:00:07	Spanning-tree(for-... STP	60 Conf.	Root = 32768/300/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8003	

> Frame 248: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0

> IEEE 802.3 Ethernet

> Logical-Link Control

> Spanning Tree Protocol

Protocol Identifier: Spanning Tree Protocol (0x0000)

Protocol Version Identifier: Spanning Tree (0)

BPDU Type: Configuration (0x00)

> BPDU flags: 0x00

0... .... = Topology Change Acknowledgment: No

.... ...0 = Topology Change: No

> Root Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Root Bridge Priority: 0

Root Bridge System ID Extension: 1

Root Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Root Path Cost: 0

> Bridge Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Bridge Priority: 0

Bridge System ID Extension: 1

Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Port identifier: 0x8008

Message Age: 0

Max Age: 20

Hello Time: 2

Forward Delay: 15

0000 01 80 c2 00 00 00 0c 96 ad 1f 00 07 00 26 42 42 .....&BB

0010 03 00 00 00 00 00 01 0c 96 ad 1f 00 00 00 00 .....&BB

0020 00 00 00 01 0c 96 ad 1f 00 00 00 05 00 00 14 00 .....&BB

0030 02 00 0f 00 00 00 00 00 00 00 00 00 00 00 .....&BB

Spanning Tree Protocol: Protocol

Пакеты: 3661 - Отображено: 3387 (92.5%)

Профиль: Default

## SW1 (eth0) -> SW2 (eth0)

Захват из Standard input [Layer2Switch-1 Ethernet0 to Layer2Switch-2 Ethernet0]

Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка

stp

No.	Time	Source	Destination	Protocol	Length	Info
213	51.758492	0c:1a:45:97:00:00	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/100/0c:1a:45:97:00:00 Cost = 0 Port = 0x8001
214	51.768826	0c:96:ad:1f:00:00	Spanning-tree-(for-...	STP	60	Conf. Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8001
215	51.767398	0c:1a:45:97:00:00	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/200/0c:1a:45:97:00:00 Cost = 0 Port = 0x8001
216	51.774405	0c:1a:45:97:00:00	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/300/0c:1a:45:97:00:00 Cost = 0 Port = 0x8001
217	52.697619	0c:96:ad:1f:00:00	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/100/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8001
218	52.722901	0c:96:ad:1f:00:00	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/200/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8001
219	52.756897	0c:96:ad:1f:00:00	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/300/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8001
220	52.800854	0c:96:ad:1f:00:00	Spanning-tree-(for-...	STP	60	Conf. Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8001

> Frame 214: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0

> IEEE 802.3 Ethernet

> Logical-Link Control

> Spanning Tree Protocol

Protocol Identifier: Spanning Tree Protocol (0x0000)

Protocol Version Identifier: Spanning Tree (0)

BPDU Type: Configuration (0x00)

> BPDU flags: 0x00

0... .. = Topology Change Acknowledgment: No

.... ..0 = Topology Change: No

> Root Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Root Bridge Priority: 0

Root Bridge System ID Extension: 1

Root Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Root Path Cost: 0

> Bridge Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Bridge Priority: 0

Bridge System ID Extension: 1

Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Port Identifier: 0x8001

Message Age: 0

Max Age: 20

Hello Time: 2

Forward Delay: 15

Spanning Tree Protocol: Protocol

Пакеты: 3637 - Отображено: 3363 (92.5%)

Профиль: Default

## SW1 -> SW2 (eth1)

Захват из Standard input [Layer2Switch-1 Ethernet1 to Layer2Switch-2 Ethernet1]

Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка

stp

No.	Time	Source	Destination	Protocol	Length	Info
180	43.072664	0c:96:ad:1f:00:01	Spanning-tree-(for-...	STP	60	Conf. Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8002
181	43.073603	0c:1a:45:97:00:01	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/200/0c:1a:45:97:00:00 Cost = 0 Port = 0x8002
182	43.079371	0c:1a:45:97:00:01	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/300/0c:1a:45:97:00:00 Cost = 0 Port = 0x8002
183	43.684908	0c:96:ad:1f:00:01	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/100/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8002
184	43.709973	0c:96:ad:1f:00:01	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/200/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8002
185	43.736474	0c:96:ad:1f:00:01	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/300/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8002
186	44.124050	0c:96:ad:1f:00:01	Spanning-tree-(for-...	STP	60	Conf. Root = 0/1/0c:96:ad:1f:00:00 Cost = 0 Port = 0x8002
187	45.160103	0c:1a:45:97:00:01	Spanning-tree-(for-...	STP	60	Conf. Root = 32768/100/0c:1a:45:97:00:00 Cost = 0 Port = 0x8002

> Frame 186: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0

> IEEE 802.3 Ethernet

> Logical-Link Control

> Spanning Tree Protocol

Protocol Identifier: Spanning Tree Protocol (0x0000)

Protocol Version Identifier: Spanning Tree (0)

BPDU Type: Configuration (0x00)

> BPDU flags: 0x00

0... .. = Topology Change Acknowledgment: No

.... ..0 = Topology Change: No

> Root Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Root Bridge Priority: 0

Root Bridge System ID Extension: 1

Root Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Root Path Cost: 0

> Bridge Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Bridge Priority: 0

Bridge System ID Extension: 1

Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Port Identifier: 0x8002

Message Age: 0

Max Age: 20

Hello Time: 2

Forward Delay: 15

Spanning Tree Protocol: Protocol

Пакеты: 3511 - Отображено: 3242 (92.3%)

Профиль: Default



## SW3 (eth3) -> SW2 (eth3)

Захват из Standard input [Layer2Switch-3 Ethernet3 to Layer2Switch-2 Ethernet3]

Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка

stp

No.	Time	Source	Destination	Protocol	Length	Info
186	45.017141	0c:1a:45:97:00:03	Spanning-tree(for-...	STP	60	Conf. Root = 32768/200/0c:1a:45:97:00:00 Cost = 0 Port = 0x8004
187	45.024600	0c:1a:45:97:00:03	Spanning-tree(for-...	STP	60	Conf. Root = 32768/300/0c:1a:45:97:00:00 Cost = 0 Port = 0x8004
188	45.070990	0c:1a:45:97:00:03	Spanning-tree(for-...	STP	60	Conf. Root = 0/1/0c:96:ad:1f:00:00 Cost = 4 Port = 0x8004
189	45.245650	0c:b3:2a:fe:00:03	Spanning-tree(for-...	STP	60	Conf. Root = 32768/100/0c:b3:2a:fe:00:00 Cost = 0 Port = 0x8004

> Frame 201: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0

> IEEE 802.3 Ethernet

> Logical-Link Control

Spanning Tree Protocol

Protocol Identifier: Spanning Tree Protocol (0x0000)

Protocol Version Identifier: Spanning Tree (0)

BPDU Type: Configuration (0x00)

BPDU flags: 0x00

0... .. = Topology Change Acknowledgment: No

.... .. = Topology Change: No

Root Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Root Bridge Priority: 0

Root Bridge System ID Extension: 1

Root Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Root Path Cost: 4

Bridge Identifier: 32768 / 1 / 0c:1a:45:97:00:00

Bridge Priority: 32768

Bridge System ID Extension: 1

Bridge System ID: 0c:1a:45:97:00:00 (0c:1a:45:97:00:00)

Port identifier: 0x8004

Message Age: 1

Max Age: 20

Hello Time: 2

Forward Delay: 15

0000 01 80 c2 00 00 00 0c 1a 45 97 00 03 00 26 42 42 ..... E....&BB

0010 00 00 00 00 00 00 01 0c 96 ad 1f 00 00 00 00 .....E.....

0020 00 04 00 01 0c 1a 45 97 00 00 80 04 01 00 14 00 .....E.....

0030 02 00 0f 00 00 00 00 00 00 00 00 00 ..... .....

Spanning Tree Protocol: Protocol

Пакеты: 386 - Отображено: 355 (92.0%)

Профиль: Default

## SW3 (eth2) -> SW2 (eth2)

Захват из Standard input [Layer2Switch-3 Ethernet2 to Layer2Switch-2 Ethernet2]

Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка

stp

No.	Time	Source	Destination	Protocol	Length	Info
35	7.597000	0c:b3:2a:fe:00:02	Spanning-tree(for-...	STP	60	Conf. Root = 32768/300/0c:b3:2a:fe:00:00 Cost = 0 Port = 0x8003
37	8.298517	0c:1a:45:97:00:02	Spanning-tree(for-...	STP	60	Conf. Root = 32768/100/0c:1a:45:97:00:00 Cost = 0 Port = 0x8003
38	8.298768	0c:1a:45:97:00:02	Spanning-tree(for-...	STP	60	Conf. Root = 0/1/0c:96:ad:1f:00:00 Cost = 4 Port = 0x8003
39	8.304596	0c:1a:45:97:00:02	Spanning-tree(for-...	STP	60	Conf. Root = 32768/200/0c:1a:45:97:00:00 Cost = 0 Port = 0x8003
40	8.305990	0c:1a:45:97:00:02	Spanning-tree(for-...	STP	60	Conf. Root = 32768/300/0c:1a:45:97:00:00 Cost = 0 Port = 0x8003
41	9.343379	0c:1a:45:97:00:02	Spanning-tree(for-...	STP	60	Conf. Root = 0/1/0c:96:ad:1f:00:00 Cost = 4 Port = 0x8003
42	9.577811	0c:b3:2a:fe:00:02	Spanning-tree(for-...	STP	60	Conf. Root = 32768/100/0c:b3:2a:fe:00:00 Cost = 0 Port = 0x8003

> Frame 38: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0

> IEEE 802.3 Ethernet

> Logical-Link Control

Spanning Tree Protocol

Protocol Identifier: Spanning Tree Protocol (0x0000)

Protocol Version Identifier: Spanning Tree (0)

BPDU Type: Configuration (0x00)

BPDU flags: 0x00

0... .. = Topology Change Acknowledgment: No

.... .. = Topology Change: No

Root Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Root Bridge Priority: 0

Root Bridge System ID Extension: 1

Root Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Root Path Cost: 4

Bridge Identifier: 32768 / 1 / 0c:1a:45:97:00:00

Bridge Priority: 32768

Bridge System ID Extension: 1

Bridge System ID: 0c:1a:45:97:00:00 (0c:1a:45:97:00:00)

Port identifier: 0x8003

Message Age: 1

Max Age: 20

Hello Time: 2

Forward Delay: 15

0000 01 80 c2 00 00 00 0c 1a 45 97 00 02 00 26 42 42 ..... E....&BB

0010 03 00 00 00 00 00 01 0c 96 ad 1f 00 00 00 00 .....E.....

0020 00 04 00 01 0c 1a 45 97 00 00 80 03 01 00 14 00 .....E.....

0030 02 00 0f 00 00 00 00 00 00 00 00 00 ..... .....

Spanning Tree Protocol: Protocol

Пакеты: 125 - Отображено: 116 (92.8%)

Профиль: Default

## SW2 (eth4) -> SW4 (eth2)

Захват из Standard input [Layer2Switch-2 Ethernet4 to Layer2Switch-4 Ethernet2]

Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка

stp

No.	Time	Source	Destination	Protocol	Length	Info
43.9.575936	0c:1a:45:97:00:04	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:1a:45:97:00:00 Cost = 0 Port = 0x8005	
45.10.223183	0c:3e:16:c6:00:02	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/100/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8003	
46.10.241896	0c:3e:16:c6:00:02	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8003	
47.10.248584	0c:3e:16:c6:00:02	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8003	
48.10.595580	0c:1a:45:97:00:04	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/100/0c:1a:45:97:00:00 Cost = 0 Port = 0x8005	
50.11.645945	0c:1a:45:97:00:04	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/100/0c:1a:45:97:00:00 Cost = 0 Port = 0x8005	

> Frame 48: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0

> IEEE 802.3 Ethernet

> Logical-Link Control

Spanning Tree Protocol

Protocol Identifier: Spanning Tree Protocol (0x0000)

Protocol Version Identifier: Spanning Tree (0)

BPDU Type: Configuration (0x00)

BPDU flags: 0x00

0... .. = Topology Change Acknowledgment: No

.... ..0 = Topology Change: No

Root Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Root Bridge Priority: 0

Root Bridge System ID Extension: 1

Root Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Root Path Cost: 4

Bridge Identifier: 32768 / 1 / 0c:1a:45:97:00:00

Bridge Priority: 32768

Bridge System ID Extension: 1

Bridge System ID: 0c:1a:45:97:00:00 (0c:1a:45:97:00:00)

Port identifier: 0x8005

Message Age: 1

Max Age: 20

Hello Time: 2

Forward Delay: 15

Topology Change (stp.flags.stc), 16wrt

Пакеты: 118 · Отображено: 108 (91.5%)

Профиль: Default

## SW2 (eth5) -> SW4 (eth3)

Захват из Standard input [Layer2Switch-2 Ethernet5 to Layer2Switch-4 Ethernet3]

Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка

stp

No.	Time	Source	Destination	Protocol	Length	Info
19.4.192762	0c:1a:45:97:00:05	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:96:ad:1f:00:00 Cost = 4 Port = 0x8006	
20.4.210305	0c:1a:45:97:00:05	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:1a:45:97:00:00 Cost = 0 Port = 0x8006	
22.5.216341	0c:1a:45:97:00:05	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:96:ad:1f:00:00 Cost = 4 Port = 0x8006	
23.5.582486	0c:3e:16:c6:00:03	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/100/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8004	
24.5.604456	0c:3e:16:c6:00:03	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8004	
25.5.609671	0c:3e:16:c6:00:03	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:3e:16:c6:00:00 Cost = 0 Port = 0x8004	
27.6.274884	0c:1a:45:97:00:05	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/100/0c:1a:45:97:00:00 Cost = 0 Port = 0x8006	

> Frame 22: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0

> IEEE 802.3 Ethernet

> Logical-Link Control

Spanning Tree Protocol

Protocol Identifier: Spanning Tree Protocol (0x0000)

Protocol Version Identifier: Spanning Tree (0)

BPDU Type: Configuration (0x00)

BPDU flags: 0x00

0... .. = Topology Change Acknowledgment: No

.... ..0 = Topology Change: No

Root Identifier: 0 / 1 / 0c:96:ad:1f:00:00

Root Bridge Priority: 0

Root Bridge System ID Extension: 1

Root Bridge System ID: 0c:96:ad:1f:00:00 (0c:96:ad:1f:00:00)

Root Path Cost: 4

Bridge Identifier: 32768 / 1 / 0c:1a:45:97:00:00

Bridge Priority: 32768

Bridge System ID Extension: 1

Bridge System ID: 0c:1a:45:97:00:00 (0c:1a:45:97:00:00)

Port identifier: 0x8006

Message Age: 1

Max Age: 20

Hello Time: 2

Forward Delay: 15

Spanning Tree Protocol: Protocol

Пакеты: 85 · Отображено: 80 (94.1%)

Профиль: Default

5) Изменить стоимость маршрута для порта RP произвольного назначенного (designated) коммутатора, повторить действия из п.3, результат сохранить в отдельный файл

Выполняем команды чтобы изменить стоимость двух маршрутов на SW3 с 4 на 10 (от SW3 до SW1)

end

```

Layer2Switch-3 - PuTTY
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID      Priority    1
              Address     0c96.ad1f.0000
              Cost        8
              Port        3 (GigabitEthernet0/2)
              Hello Time   2 sec    Max Age 20 sec    Forward Delay 15 sec

  Bridge ID     Priority    32769 (priority 32768 sys-id-ext 1)
              Address     0cb3.2afe.0000
              Hello Time   2 sec    Max Age 20 sec    Forward Delay 15 sec
              Aging Time   300 sec

Interface      Role Sts Cost      Prio.Nbr Type
-----
Gi0/0          Altn BLK 10        128.1   Shr
Gi0/1          Altn BLK 10        128.2   Shr
Gi0/2          Root FWD 4         128.3   Shr
Gi0/3          Altn BLK 4         128.4   Shr
Gi1/0          Desg FWD 4         128.5   Shr
Gi1/1          Desg FWD 4         128.6   Shr

--More--

```



show spanning-tree для SW4 после изменений

```

Layer2Switch-4 - PuTTY
VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    1
           Address    0c96.ad1f.0000
           Cost       4
           Port       1 (GigabitEthernet0/0)
           Hello Time 2 sec   Max Age 20 sec   Forward Delay 15 sec

Bridge ID   Priority    32769 (priority 32768 sys-id-ext 1)
           Address    0c3e.16c6.0000
           Hello Time 2 sec   Max Age 20 sec   Forward Delay 15 sec
           Aging Time 300 sec

Interface   Role Sts Cost      Prio.Nbr  Type
-----
Gi0/0       Root FWD 4         128.1     Shr
Gi0/1       Altn BLK 4         128.2     Shr
Gi0/2       Altn BLK 4         128.3     Shr
Gi0/3       Altn BLK 4         128.4     Shr
Gi1/0       Desg FWD 4         128.5     Shr
Gi1/1       Desg FWD 4         128.6     Shr

--More--

```

show spanning-tree для SW5 после изменений

```

Layer2Switch-5 - PuTTY
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID      Priority    1
              Address     0c96.ad1f.0000
              Cost        4
              Port        1 (GigabitEthernet0/0)
              Hello Time   2 sec   Max Age 20 sec   Forward Delay 15 sec

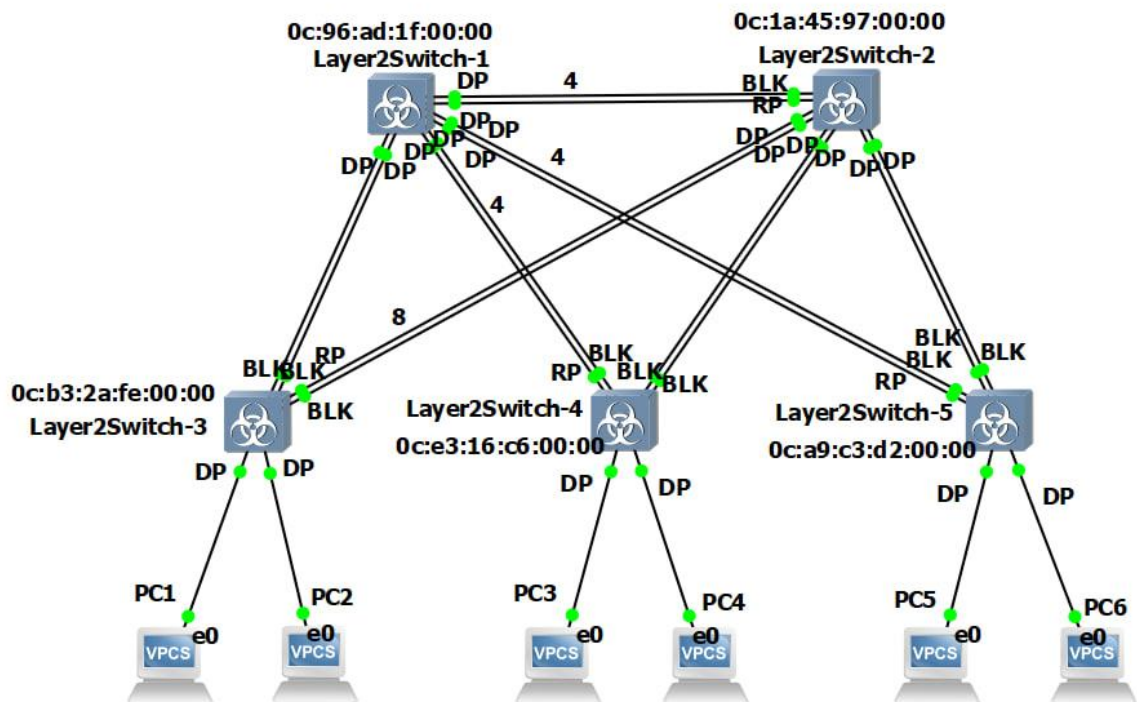
  Bridge ID    Priority    32769 (priority 32768 sys-id-ext 1)
              Address     0ca9.c3d2.0000
              Hello Time   2 sec   Max Age 20 sec   Forward Delay 15 sec
              Aging Time   300 sec

Interface      Role  Sts  Cost      Prio.Nbr  Type
-----
Gi0/0          Root  FWD  4          128.1     Shr
Gi0/1          Altn  BLK  4          128.2     Shr
Gi0/2          Altn  BLK  4          128.3     Shr
Gi0/3          Altn  BLK  4          128.4     Shr
Gi1/0          Desg  FWD  4          128.5     Shr
Gi1/1          Desg  FWD  4          128.6     Shr

--More--

```

Схема после изменения стоимости двух маршрутов:



Теперь путь к корневому коммутатору от SW3 идёт через SW2, а не напрямую, как раньше.

6) Сохранить файлы конфигураций устройств в виде набора файлов с именами, соответствующими именам устройств