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.

Назначить явно один из коммутаторов корневым настройкой приоритета:

L2-SW-1(config)#spanning-tree vlan 1 priority 0

```
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    1
             Address     0c85.f133.0000
             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     0c85.f133.0000
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
             Aging Time  15  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
```

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

Для PC1:

```
PC1> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=6.518 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=3.031 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=3.530 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=5.234 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=1.422 ms

PC1> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=8.821 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=5.448 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=8.673 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=6.970 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=6.696 ms

PC1> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=13.263 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=3.080 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=7.669 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=4.620 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=16.157 ms

PC1> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=9.270 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=7.438 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=5.889 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=8.221 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=7.790 ms

PC1> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=8.836 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=7.430 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=9.463 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=7.861 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=1.953 ms
```

Для PC2:

```
PC2> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=6.848 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=2.313 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=3.764 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=10.293 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=4.380 ms

PC2> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=4.397 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=9.468 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=3.961 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=9.917 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=11.253 ms

PC2> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=10.145 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=16.890 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=7.647 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=6.558 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=7.383 ms

PC2> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=8.556 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=8.244 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=6.525 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=2.030 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=8.592 ms

PC2> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=13.486 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=1.672 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=6.072 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=7.384 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=7.640 ms
```

Для PC3:

```
PC3> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=20.968 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=1.845 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=6.850 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=14.019 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=5.177 ms

PC3> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=5.628 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=6.117 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=3.547 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=1.911 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=8.846 ms

PC3> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=2.919 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=0.636 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=10.375 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=0.959 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=6.137 ms

PC3> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=10.357 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=7.618 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=4.798 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=6.530 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=9.723 ms

PC3> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=10.204 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=2.262 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=4.201 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=7.663 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=6.764 ms
```

Для PC4:

```
PC4> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=8.242 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=7.427 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=7.635 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=5.681 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=3.098 ms

PC4> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=6.571 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=8.591 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=6.215 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=7.735 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=7.158 ms

PC4> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=2.778 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=5.565 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=3.780 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=2.474 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=5.861 ms

PC4> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=15.207 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=15.238 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=7.403 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=4.388 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=1.514 ms

PC4> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=7.161 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=6.517 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=6.518 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=7.068 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=7.681 ms
```

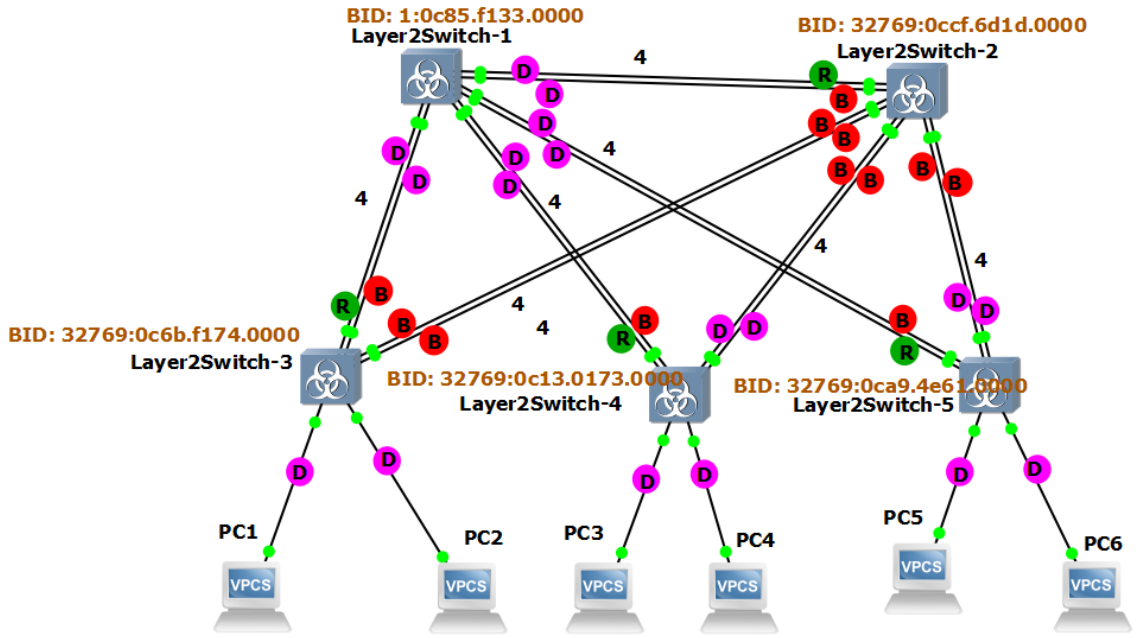
Для PC5:

```
PC5> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=4.133 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=7.810 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=7.140 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=8.205 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=9.838 ms

PC5> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=3.983 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=10.879 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=6.921 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=7.223 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=7.533 ms

PC5> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=17.040 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=13.790 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=7.464 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=8.117 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=7.662 ms

PC5> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=3.357 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=2.704 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=9.297 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=9.687 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=9.192 ms

PC5> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=1.667 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=6.320 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=7.798 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=5.186 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=1.504 ms
```

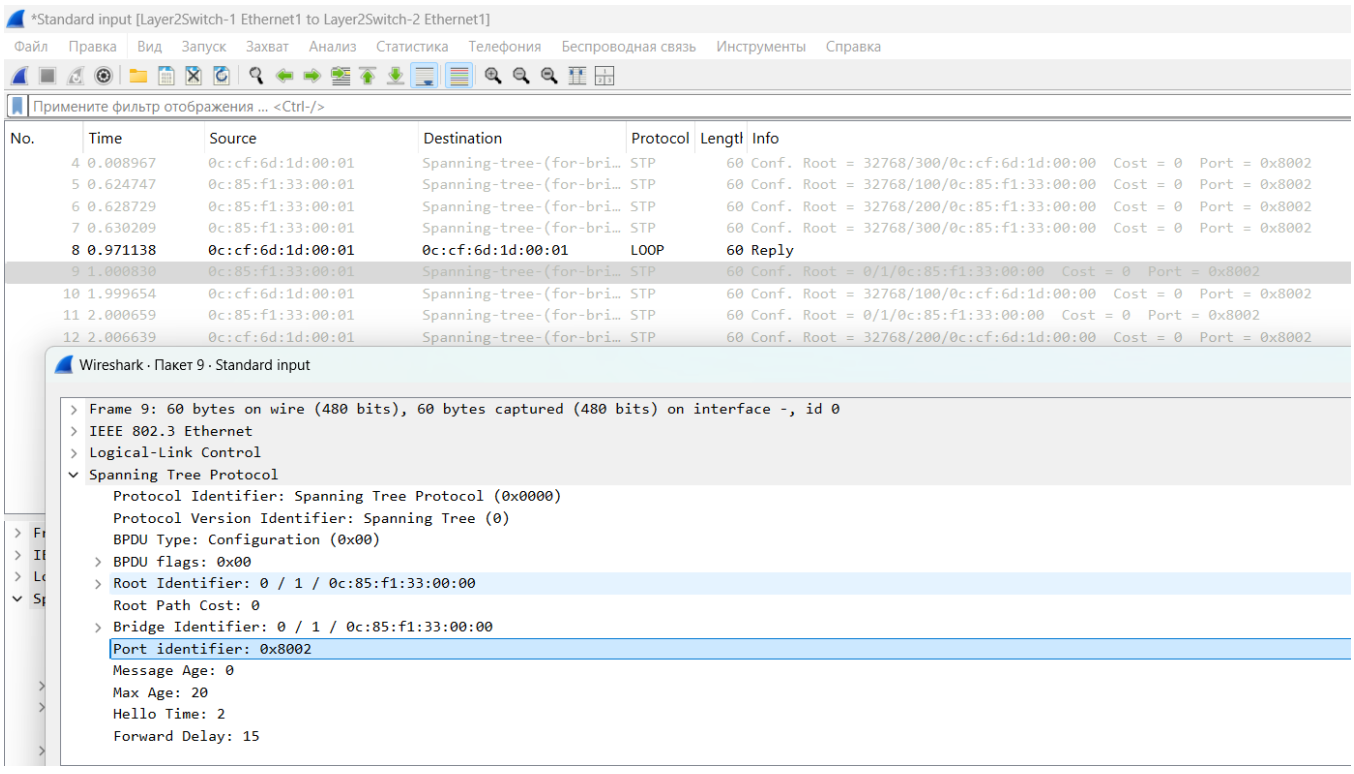
Для PC6:

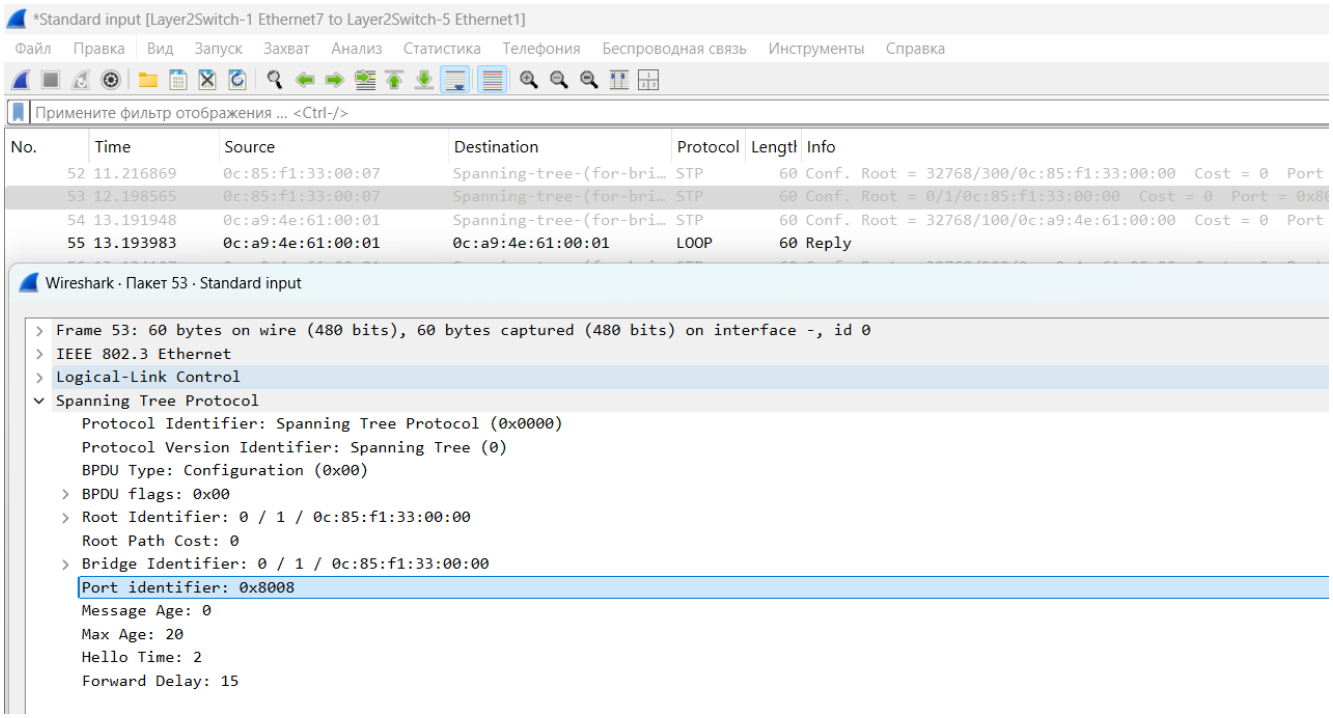
```
PC6> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=14.757 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=5.987 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=8.358 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=7.101 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=8.660 ms

PC6> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=12.222 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=2.806 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=5.855 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=15.026 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=2.724 ms

PC6> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=9.086 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=5.554 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=21.115 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=7.936 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=10.610 ms

PC6> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=7.290 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=6.753 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=8.036 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=7.196 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=7.531 ms

PC6> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=2.903 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=7.693 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=6.850 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=7.400 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=6.701 ms
```

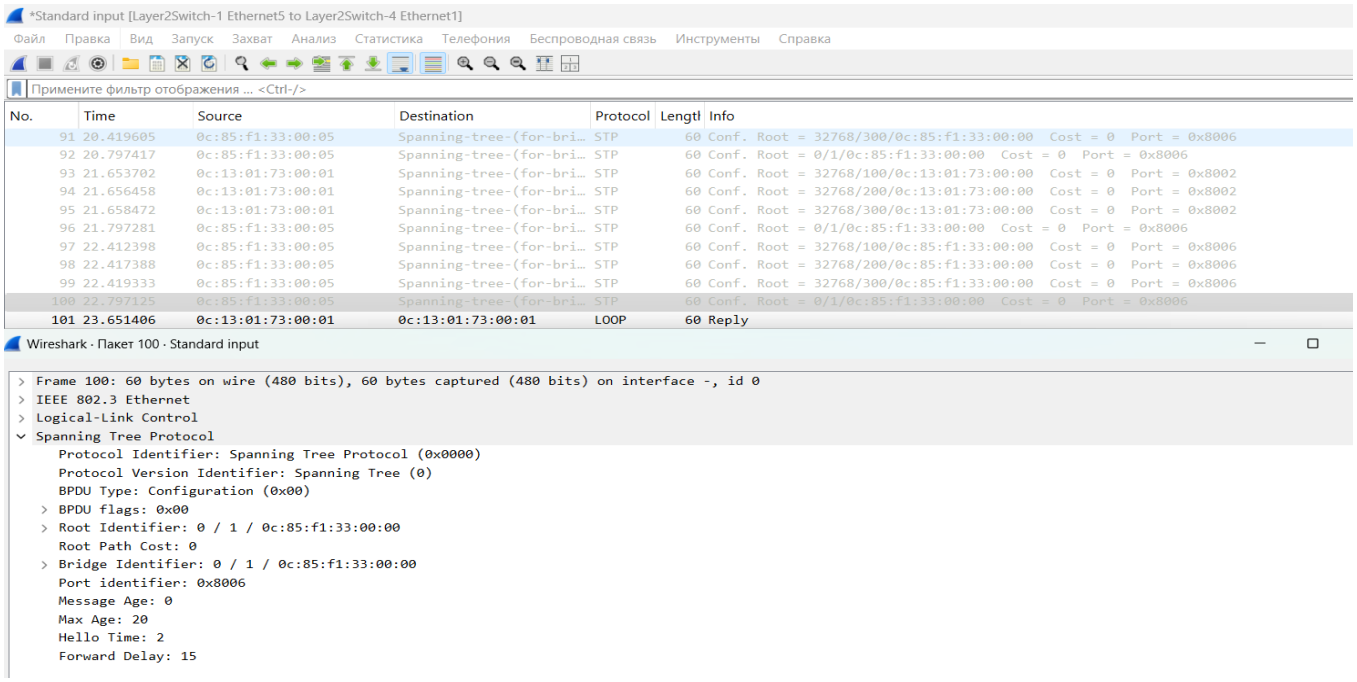
3) На изображении схемы отметить BID каждого коммутатора и режимы работы портов (RP/DP/blocked) и стоимости маршрутов, результат сохранить в файл.

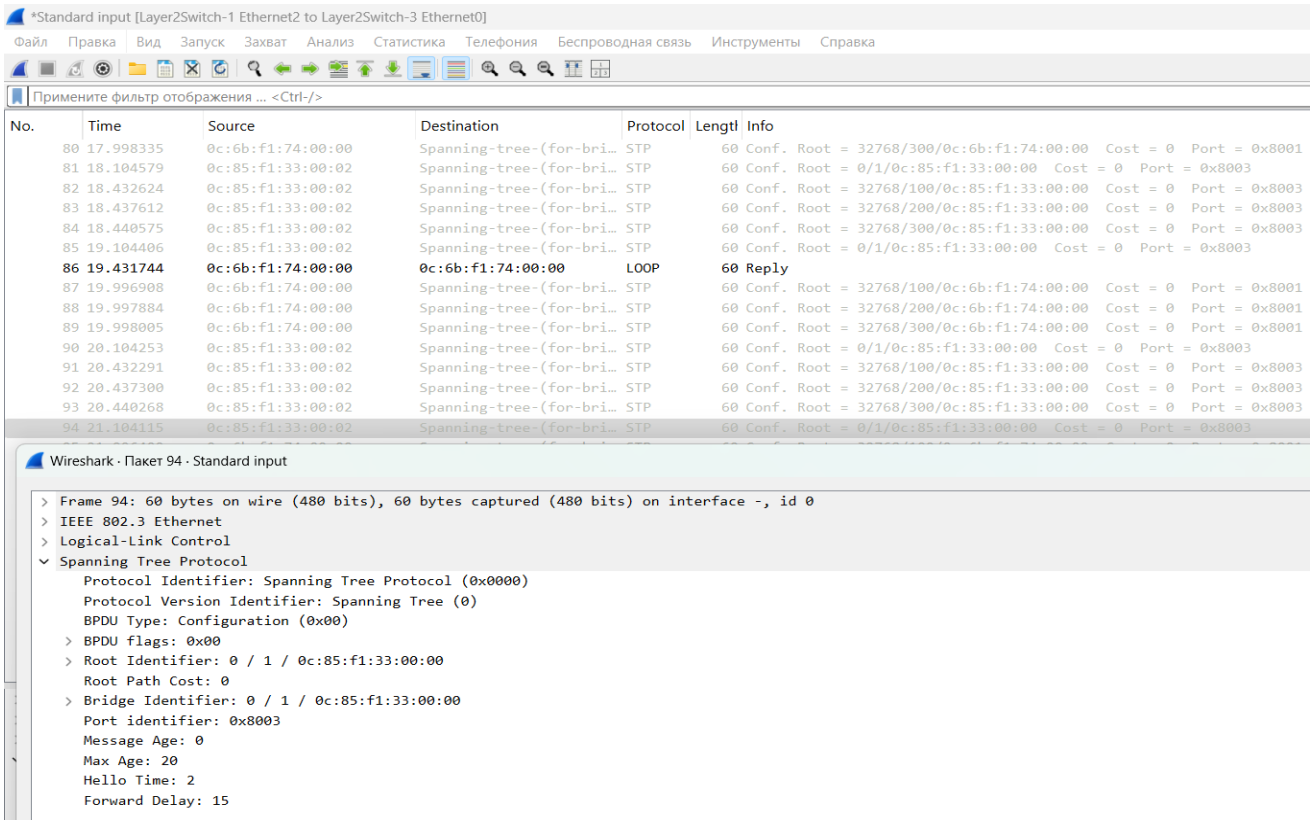


4) При помощи wireshark отследить передачу пакетов hello от корневого коммутатора на всех линках (nb!), результаты включить в отчет.




*Standard input [Layer2Switch-1 Ethernet7 to Layer2Switch-5 Ethernet1]
Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка
Примените фильтр отображения ... <Ctrl-/>
No. Time Source Destination Protocol Lengtl Info
52 11.216869 0c:85:f1:33:00:07 Spanning-tree-(for-bri… STP 60 Conf. Root = 32768/300/0c:85:f1:33:00:00 Cost = 0 Port
53 12.198565 0c:85:f1:33:00:07 Spanning-tree-(for-bri… STP 60 Conf. Root = 0/1/0c:85:f1:33:00:00 Cost = 0 Port = 0x8
54 13.191948 0c:a9:4e:61:00:01 Spanning-tree-(for-bri… STP 60 Conf. Root = 32768/100/0c:a9:4e:61:00:00 Cost = 0 Port
55 13.193983 0c:a9:4e:61:00:01 0c:a9:4e:61:00:01 LOOP 60 Reply
Wireshark · Пакет 53 · Standard input
Frame 53: 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
Root Identifier: 0 / 1 / 0c:85:f1:33:00:00
Root Path Cost: 0
Bridge Identifier: 0 / 1 / 0c:85:f1:33:00:00
Port identifier: 0x8008
Message Age: 0
Max Age: 20
Hello Time: 2
Forward Delay: 15


*Standard input [Layer2Switch-1 Ethernet5 to Layer2Switch-4 Ethernet1]
Файл Правка Вид Запуск Захват Анализ Статистика Телефония Беспроводная связь Инструменты Справка
Примените фильтр отображения ... <Ctrl-/>
No. Time Source Destination Protocol Lengtl Info
91 20.419605 0c:85:f1:33:00:05 Spanning-tree-(for-bri… STP 60 Conf. Root = 32768/300/0c:85:f1:33:00:00 Cost = 0 Port = 0x8006
92 20.797417 0c:85:f1:33:00:05 Spanning-tree-(for-bri… STP 60 Conf. Root = 0/1/0c:85:f1:33:00:00 Cost = 0 Port = 0x8006
93 21.653702 0c:13:01:73:00:01 Spanning-tree-(for-bri… STP 60 Conf. Root = 32768/100/0c:13:01:73:00:00 Cost = 0 Port = 0x8002
94 21.656458 0c:13:01:73:00:01 Spanning-tree-(for-bri… STP 60 Conf. Root = 32768/200/0c:13:01:73:00:00 Cost = 0 Port = 0x8002
95 21.658472 0c:13:01:73:00:01 Spanning-tree-(for-bri… STP 60 Conf. Root = 32768/300/0c:13:01:73:00:00 Cost = 0 Port = 0x8002
96 21.797281 0c:85:f1:33:00:05 Spanning-tree-(for-bri… STP 60 Conf. Root = 0/1/0c:85:f1:33:00:00 Cost = 0 Port = 0x8006
97 22.412398 0c:85:f1:33:00:05 Spanning-tree-(for-bri… STP 60 Conf. Root = 32768/100/0c:85:f1:33:00:00 Cost = 0 Port = 0x8006
98 22.417388 0c:85:f1:33:00:05 Spanning-tree-(for-bri… STP 60 Conf. Root = 32768/200/0c:85:f1:33:00:00 Cost = 0 Port = 0x8006
99 22.419333 0c:85:f1:33:00:05 Spanning-tree-(for-bri… STP 60 Conf. Root = 32768/300/0c:85:f1:33:00:00 Cost = 0 Port = 0x8006
100 22.797125 0c:85:f1:33:00:05 Spanning-tree-(for-bri… STP 60 Conf. Root = 0/1/0c:85:f1:33:00:00 Cost = 0 Port = 0x8006
101 23.651406 0c:13:01:73:00:01 0c:13:01:73:00:01 LOOP 60 Reply
Wireshark · Пакет 100 · Standard input
Frame 100: 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
Root Identifier: 0 / 1 / 0c:85:f1:33:00:00
Root Path Cost: 0
Bridge Identifier: 0 / 1 / 0c:85:f1:33:00:00
Port identifier: 0x8006
Message Age: 0
Max Age: 20
Hello Time: 2
Forward Delay: 15



Тут мы видим разные id портов для разных коммутаторов.

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

Изначальная схема с конфигурацией L2-SW-2:

```
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    1
              Address     0c85.f133.0000
              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     0ccf.6d1d.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               Altn BLK 4         128.5    Shr
Gi1/1               Altn BLK 4         128.6    Shr
Gi1/2               Altn BLK 4         128.7    Shr
```

Изменяю стоимость маршрута:

```
(config)#int g0/0
(config-if)#sp
(config-if)#span
(config-if)#spanning-tree vlan 1 cost 10
(config-if)#exit
```

Новая схема:

```
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    1
              Address     0c85.f133.0000
              Cost        4
              Port        2 (GigabitEthernet0/1)
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    32769  (priority 32768 sys-id-ext 1)
              Address     0ccf.6d1d.0000
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
              Aging Time  15  sec

Interface           Role Sts Cost      Prio.Nbr Type
------------------- ---- --- --------- -------- --------------------------------
Gi0/0               Altn BLK 10        128.1    Shr
Gi0/1               Root FWD 4         128.2    Shr
Gi0/2               Altn BLK 4         128.3    Shr
Gi0/3               Altn BLK 4         128.4    Shr
Gi1/0               Altn BLK 4         128.5    Shr
Gi1/1               Altn BLK 4         128.6    Shr
Gi1/2               Altn BLK 4         128.7    Shr
```

Sp tree для каждого коммутатора:

Layer2Switch-1 - PuTTY

```
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    1
              Address     0c85.f133.0000
              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     0c85.f133.0000
              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
```

Layer2Switch-3 - PuTTY

```
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    1
              Address     0c85.f133.0000
              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     0c6b.f174.0000
              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
```

Layer2Switch-4 - PuTTY

```
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    1
              Address     0c85.f133.0000
              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     0c13.0173.0000
              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
```

Layer2Switch-5 - PuTTY

```
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    1
              Address     0c85.f133.0000
              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     0ca9.4e61.0000
              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
```