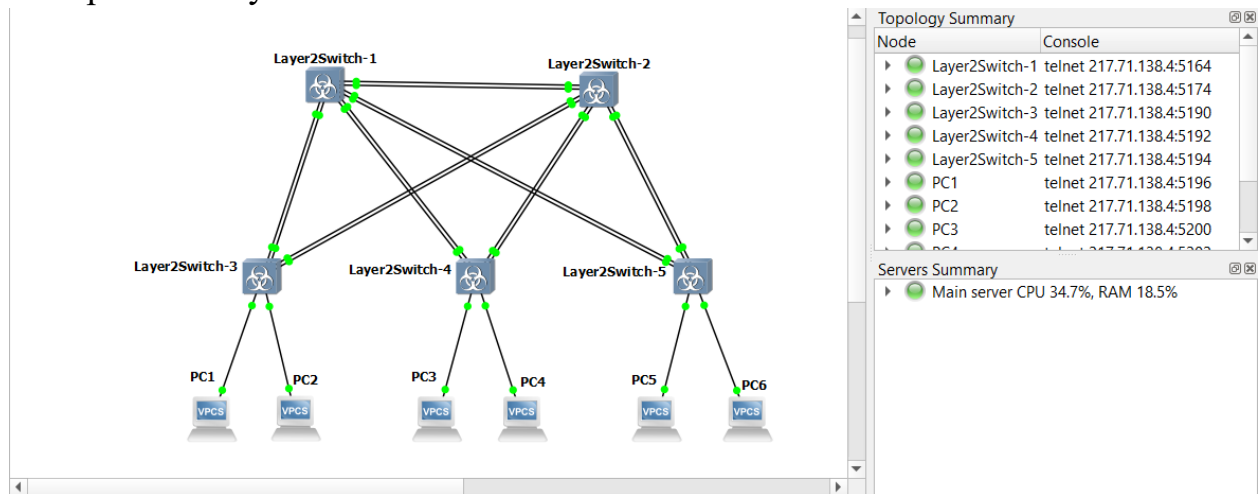


1) Построил схему



Явно назначил один из коммутаторов корневым с помощью команд:

```
vIOS-L2-01#conf ter
vIOS-L2-01(config)#spanning-tree vlan 0001 priority 0
vIOS-L2-01(config)#end
vIOS-L2-01#show spanning-tree vlan 0001
```

```
Layer2Switch-1 - PuTTY

vIOS-L2-01#show spanning-tree vlan 0001

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    1
             Address    0c58.667b.5400
             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    0c58.667b.5400
             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.

```
PC1> ping 192.168.1.2
PC1> ping 192.168.1.3
PC1> ping 192.168.1.4
PC1> ping 192.168.1.5
PC1> ping 192.168.1.6
```

```
PC1> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=1.643 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=5.861 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=3.223 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=6.845 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=7.665 ms

PC1> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=7.359 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=11.997 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=3.087 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=3.888 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=6.359 ms

PC1> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=17.383 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=13.613 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=16.644 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=13.101 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=6.465 ms

PC1> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=6.983 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=8.768 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=4.225 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=4.498 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=10.035 ms

PC1> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=10.215 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=4.189 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=9.710 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=23.081 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=7.869 ms

PC1> █
```

```
PC2> ping 192.168.1.3
PC2> ping 192.168.1.4
PC2> ping 192.168.1.5
PC2> ping 192.168.1.6
```

```
PC2> ping 192.168.1.3
```

```
84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=2.536 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=6.495 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=6.622 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=9.814 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=6.307 ms
```

```
PC2> ping 192.168.1.4
```

```
84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=11.341 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=10.215 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=5.362 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=4.890 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=2.695 ms
```

```
PC2> ping 192.168.1.5
```

```
84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=10.401 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=3.633 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=10.410 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=19.998 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=3.247 ms
```

```
PC2> ping 192.168.1.6
```

```
84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=9.932 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=3.103 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=7.263 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=10.294 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=16.055 ms
```

```
PC2> █
```

```
PC3> ping 192.168.1.4
PC3> ping 192.168.1.5
PC3> ping 192.168.1.6
```

```
PC3 - PuTTY

PC3> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=1.099 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=8.552 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=1.648 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=7.565 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=3.017 ms

PC3> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=7.596 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=9.895 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=7.899 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=8.396 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=13.534 ms

PC3> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=9.713 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=4.051 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=7.369 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=4.006 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=6.133 ms
```

```
PC4> ping 192.168.1.5
PC4> ping 192.168.1.6
```

```
PC4> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=12.531 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=7.351 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=5.898 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=7.312 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=10.492 ms

PC4> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=12.538 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=2.511 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=3.889 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=2.261 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=4.370 ms

PC4> █
```

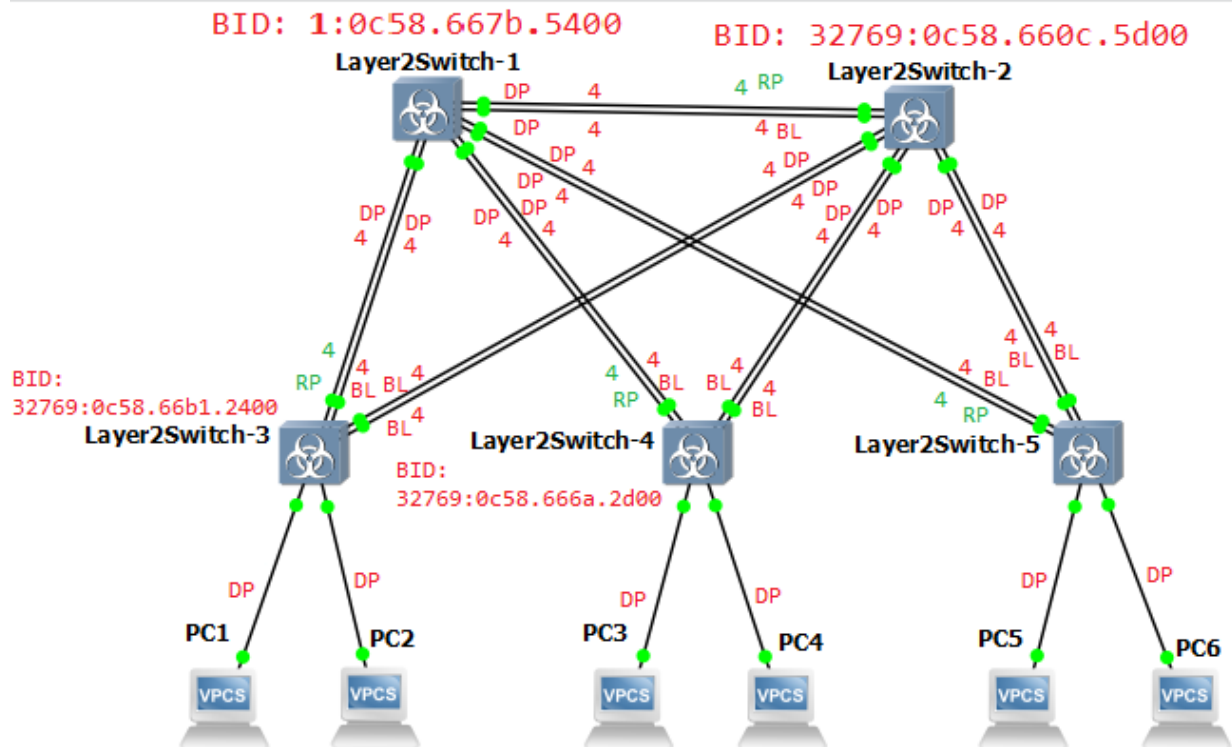
```
PC5> ping 192.168.1.6
```

```
PC5> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=1.280 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=4.681 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=0.401 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=1.117 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=1.505 ms

PC5> █
```

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, результаты включить в отчет

The Wireshark capture shows a series of STP Hello packets being transmitted from the root bridge (0c58:66:7b:54:00:00) to all other switches in the network. The packets are captured on the interface 0c58:66:7b:54:00:00.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 0/1/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8001	
2	0.881889	0c58:66:b1:24:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/100/0c58:66:b1:24:00:00 Cost = 0 Port = 0x8001	
3	0.883846	0c58:66:b1:24:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/200/0c58:66:b1:24:00:00 Cost = 0 Port = 0x8001	
4	0.889153	0c58:66:b1:24:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/300/0c58:66:b1:24:00:00 Cost = 0 Port = 0x8001	
5	1.000898	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 0/1/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	
6	1.713919	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 4096/100/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	
7	1.723912	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/200/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	
8	1.728834	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/300/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	
9	2.007705	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 0/1/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	
10	2.881559	0c58:66:b1:24:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/100/0c58:66:b1:24:00:00 Cost = 0 Port = 0x8001	
11	2.883559	0c58:66:b1:24:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/200/0c58:66:b1:24:00:00 Cost = 0 Port = 0x8001	
12	2.888765	0c58:66:b1:24:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/300/0c58:66:b1:24:00:00 Cost = 0 Port = 0x8001	
13	3.008555	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 0/1/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	
14	3.716561	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 4096/100/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	
15	3.725598	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/200/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	
16	3.730524	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/300/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	
17	4.009635	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 0/1/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	
18	4.881286	0c58:66:b1:24:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/100/0c58:66:b1:24:00:00 Cost = 0 Port = 0x8001	
19	4.883251	0c58:66:b1:24:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/200/0c58:66:b1:24:00:00 Cost = 0 Port = 0x8001	
20	4.883251	0c58:66:b1:24:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 32768/300/0c58:66:b1:24:00:00 Cost = 0 Port = 0x8001	
21	4.883251	0c58:66:b1:24:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 0/1/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	
22	5.010228	0c58:66:7b:54:00:00	Spanning-tree (for...) STP	60 Conf.	Root = 0/1/0c58:66:7b:54:00:00 Cost = 0 Port = 0x8003	

The detailed packet information for the first packet (Frame 1) is as follows:

- Frame 1: 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 (0x0000)
 - Protocol Identifier: Spanning Tree Protocol (0x0000)
 - Protocol Version Identifier: Spanning Tree (0)
 - BPDU Type: Configuration (0x00)
 - BPDU flags: 0x00
 - Root Identifier: 0 / 1 / 0c58:66:7b:54:00:00
 - Root Path Cost: 0
 - Bridge Identifier: 0 / 1 / 0c58:66:7b:54:00:00
 - Port identifier: 0x8003
 - Message Age: 0
 - Max Age: 20
 - Hello Time: 2
 - Forward Delay: 15

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
0.054075	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
0.060964	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
4.0.131807	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
5.0.375507	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0005	
6.1.157554	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 4096/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0005	
7.1.164654	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0005	
8.1.170659	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0005	
11.2.054685	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
12.2.067672	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
13.2.131663	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
14.2.376517	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0005	
15.3.160479	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 4096/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0005	
16.3.168261	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0005	
17.3.172364	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0005	
18.3.379310	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0005	
20.4.056701	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
21.4.069615	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
22.4.133718	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
23.4.380891	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0005	
24.5.155095	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 4096/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0005	

> Ethernet II, Src: 0c:58:66:6a:2d:00 (0c:58:66:6a:2d:00), Dst: Spanning-tree (for-bridges)_00 (01:80:c2:00:00:00)

> 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 100

> 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: 32768 / 100 / 0c:58:66:6a:2d:00

Root Path Cost: 0

> Bridge Identifier: 32768 / 100 / 0c:58:66:6a:2d:00

Port Identifier: 0x0001

Message Age: 0

Max Age: 20

Hello Time: 2

Forward Delay: 15

Пакеты: 277 - Отображено: 256 (92.4%) Профиль: Default

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
29.6.511360	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
30.6.714411	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 4096/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
31.6.721329	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
32.6.722384	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
33.7.019921	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
34.8.012804	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
35.8.504869	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
36.8.506837	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
37.8.510861	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
38.8.716035	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 4096/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
39.8.723018	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
40.8.729942	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
41.9.012599	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
43.10.016471	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
44.10.504797	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
45.10.506088	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
46.10.510755	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
47.10.719766	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 4096/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
48.10.720726	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
49.10.723617	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	
50.11.017395	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0007	

> Frame 1: 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:58:66:6a:2d:00

Root Path Cost: 0

> Bridge Identifier: 0 / 1 / 0c:58:66:6a:2d:00

Port Identifier: 0x0007

Message Age: 0

Max Age: 20

Hello Time: 2

Forward Delay: 15

Пакеты: 50 - Отображено: 48 (96.0%) Профиль: Default

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
24.5.292666	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
25.6.010007	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 4096/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
26.6.018066	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
27.6.025508	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
28.6.287036	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
31.7.201418	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
32.7.292286	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
33.7.294343	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
34.7.298394	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
35.8.014779	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 4096/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
36.8.022761	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
37.8.030740	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
38.8.294753	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
39.9.290958	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
40.9.297034	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
41.9.299103	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
42.9.304041	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
43.10.018470	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 4096/100/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
44.10.026448	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/200/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
45.10.034434	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 32768/300/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	
46.10.299414	0c:58:66:6a:2d:00	Spanning-tree (for-...	STP	60 Conf.	Root = 0/1/0c:58:66:6a:2d:00 Cost = 0 Port = 0x0001	

> Frame 1: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0

> Ethernet II, Src: 0c:58:66:6a:2d:00 (0c:58:66:6a:2d:00), Dst: Spanning-tree (for-bridges)_00 (01:80:c2:00:00:00)

> 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 100

> 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: 4096 / 100 / 0c:58:66:6a:2d:00

Root Path Cost: 0

> Bridge Identifier: 4096 / 100 / 0c:58:66:6a:2d:00

Port Identifier: 0x0001

Message Age: 0

Max Age: 20

Hello Time: 2

Пакеты: 46 - Отображено: 44 (95.7%) Профиль: Default

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

```
vIOS-L2-01#show spanning-tree
vIOS-L2-01#conf ter
vIOS-L2-01(config)#interface Gi0/0
vIOS-L2-01(config)#spanning-tree cost 25
vIOS-L2-01(config)#end
```

Interface	Role	Sts	Cost	Prio.	Nbr	Type
Gi0/0	Altn	BLK	25	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	Desg	FWD	4	128.5		Shr
Gi1/1	Desg	FWD	4	128.6		Shr

