



Рисунок 1 – Топология сети

IP-адреса ПК:

PC1 – 192.168.1.1

PC2 – 192.168.1.2

PC3 – 192.168.1.3

PC4 – 192.168.1.4

PC5 – 192.168.1.5

PC6 – 192.168.1.6

Для корректного функционирования STP необходимо использовать следующую команду в режиме конфигурации:

`spanning-tree mode pvst`

Для установления приоритета используется команда:

`spanning-tree vlan 1 priority x`

Приоритеты расставлены следующим образом:

SW1 – 4096, SW2 – 8192, SW3-SW5 - 32768

```
PC1> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=4.270 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=5.059 ms
^C
PC1> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=10.107 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=12.453 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=11.414 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=16.567 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=7.482 ms

PC1> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=12.686 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=6.810 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=3.085 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=9.750 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=6.296 ms

PC1> ping 192.168.1.5

84 bytes from 192.168.1.5 icmp_seq=1 ttl=64 time=7.345 ms
84 bytes from 192.168.1.5 icmp_seq=2 ttl=64 time=6.926 ms
84 bytes from 192.168.1.5 icmp_seq=3 ttl=64 time=10.692 ms
84 bytes from 192.168.1.5 icmp_seq=4 ttl=64 time=4.981 ms
84 bytes from 192.168.1.5 icmp_seq=5 ttl=64 time=11.980 ms

PC1> ping 192.168.1.6

84 bytes from 192.168.1.6 icmp_seq=1 ttl=64 time=19.066 ms
84 bytes from 192.168.1.6 icmp_seq=2 ttl=64 time=6.612 ms
84 bytes from 192.168.1.6 icmp_seq=3 ttl=64 time=10.425 ms
84 bytes from 192.168.1.6 icmp_seq=4 ttl=64 time=6.540 ms
84 bytes from 192.168.1.6 icmp_seq=5 ttl=64 time=9.632 ms
```

Рисунок 2 – Проверка достижимости других устройств для PC1

```
Layer2Switch-1 - PuTTY

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    4097
             Address    0cb2.5e73.0000
             This bridge is the root
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    4097  (priority 4096 sys-id-ext 1)
             Address    0cb2.5e73.0000
             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--
```

Рисунок 3 – Результат show spanning-tree для SW1

```
Layer2Switch-2 - PuTTY

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    4097
             Address    0cb2.5e73.0000
             Cost        4
             Port        1 (GigabitEthernet0/0)
             Hello Time  2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    8193  (priority 8192 sys-id-ext 1)
             Address    0ca7.6e7a.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--
```

Рисунок 4 – Результат show spanning-tree для SW2

```
Layer2Switch-3 - PuTTY

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    4097
             Address    0cb2.5e73.0000
             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    0c9c.e188.0000
             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--
```

Рисунок 5 – Результат show spanning-tree для SW3

```
Layer2Switch-4 - PuTTY

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    4097
             Address    0cb2.5e73.0000
             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    0ca0.59be.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
```

Рисунок 6 – Результат show spanning-tree для SW4

```

Layer2Switch-5 - PuTTY
VLAN0001
  Spanning tree enabled protocol ieee
  Root ID      Priority    4097
              Address     0cb2.5e73.0000
              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     0c64.cale.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
Gil/0          Desg FWD 4        128.5   Shr
Gil/1          Desg FWD 4        128.6   Shr

--More--

```

Рисунок 7 – Результат show spanning-tree для SW5

Захват за Standard input [LayerSwitch-1 Ethernet1 to LayerSwitch-2 Ethernet1]

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

Примените фильтр отображения ... <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
351	85.929631	0c:b2:5e:73:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/300/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8002
352	86.632081	0c:a7:6e:7a:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 8192/100/0c:a7:6e:7a:00:00 Cost = 0 Port = 0x8002
353	86.640429	0c:a7:6e:7a:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 8192/200/0c:a7:6e:7a:00:00 Cost = 0 Port = 0x8002
354	86.673447	0c:a7:6e:7a:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 8192/300/0c:a7:6e:7a:00:00 Cost = 0 Port = 0x8002
355	86.970775	0c:b2:5e:73:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8002
356	88.069654	0c:b2:5e:73:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8002
357	88.130134	0c:b2:5e:73:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/100/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8002
358	88.131075	0c:b2:5e:73:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/200/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8002
359	88.141673	0c:b2:5e:73:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/300/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8002
360	88.813056	0c:a7:6e:7a:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 8192/100/0c:a7:6e:7a:00:00 Cost = 0 Port = 0x8002
361	88.819704	0c:a7:6e:7a:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 8192/200/0c:a7:6e:7a:00:00 Cost = 0 Port = 0x8002
362	88.851835	0c:a7:6e:7a:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 8192/300/0c:a7:6e:7a:00:00 Cost = 0 Port = 0x8002
363	89.110066	0c:b2:5e:73:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8002
364	90.169164	0c:b2:5e:73:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8002
365	90.230434	0c:b2:5e:73:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/100/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8002
366	90.234211	0c:b2:5e:73:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/200/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8002
367	90.249215	0c:b2:5e:73:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/300/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8002
368	90.645819	0c:a7:6e:7a:00:01	0c:a7:6e:7a:00:01	LOOP	60	Reply

[Frame is marked: False]
 [Frame is ignored: False]
 [Protocols in frame: eth:ethertype:vlan:llc:stp]
 Character encoding: ASCII (0)
 [Coloring Rule Name: Broadcast]
 [Coloring Rule String: eth[0] & 1]

> Ethernet II, Src: 0c:b2:5e:73:00:01 (0c:b2:5e:73:00:01), Dst: Nearest-Custo
 > 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:b2:5e:73:00:00
 Root Path Cost: 0
 > Bridge Identifier: 4096 / 100 / 0c:b2:5e:73:00:00
 Port identifier: 0x8002
 Message Age: 0
 Max Age: 20
 Hello Time: 2
 Forward Delay: 15

0000 01 80 c2 00 00 0c b2 5e 73 00 01 81 00 00 64 ^s.....d
 0010 00 26 42 42 03 00 00 00 10 64 0c b2 5e 738BB.....^s
 0020 00 00 00 00 00 10 64 0c b2 5e 73 00 00 00 02d.....^s
 0030 00 00 14 00 02 00 0f 00 00 00 00 00 00 00

Рисунок 8 – Hello-кадры между SW1 и SW2

No.	Time	Source	Destination	Protocol	Length	Info
522	128.305856	0c:b2:5e:73:00:02	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8003
523	128.517742	0c:b2:5e:73:00:02	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/100/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8003
524	128.520330	0c:b2:5e:73:00:02	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/200/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8003
525	128.527955	0c:b2:5e:73:00:02	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/300/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8003
526	129.472641	0c:b2:5e:73:00:02	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8003
527	129.678388	0c:9c:e1:88:00:00	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/100/0c:9c:e1:88:00:00 Cost = 0 Port = 0x8001
528	129.680441	0c:9c:e1:88:00:00	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/200/0c:9c:e1:88:00:00 Cost = 0 Port = 0x8001
529	129.684883	0c:9c:e1:88:00:00	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/300/0c:9c:e1:88:00:00 Cost = 0 Port = 0x8001
530	130.608821	0c:b2:5e:73:00:02	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8003
531	130.746447	0c:9c:e1:88:00:00	CDP/VTP/DTP/PagP/UD...	DTP	62	Dynamic Trunk Protocol
532	130.831601	0c:b2:5e:73:00:02	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/100/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8003
533	130.832535	0c:b2:5e:73:00:02	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/200/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8003
534	130.838651	0c:b2:5e:73:00:02	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/300/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8003


```

> Frame 524: Packet, 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on 0
> Ethernet II, Src: 0c:b2:5e:73:00:02 (0c:b2:5e:73:00:02), Dst: Nearest-Customer-Br...
> 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 200
> 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 / 200 / 0c:b2:5e:73:00:00
    Root Path Cost: 0
    > Bridge Identifier: 4096 / 200 / 0c:b2:5e:73:00:00
    Port identifier: 0x8003
    Message Age: 0
    Max Age: 20
    Hello Time: 2
    Forward Delay: 15
  
```

Рисунок 9 – Hello-кадры между SW1 и SW3

No.	Time	Source	Destination	Protocol	Length	Info
674	165.215997	0c:a0:59:be:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/100/0c:a0:59:be:00:00 Cost = 0 Port = 0x8002
675	165.217718	0c:a0:59:be:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/200/0c:a0:59:be:00:00 Cost = 0 Port = 0x8002
676	165.221592	0c:a0:59:be:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/300/0c:a0:59:be:00:00 Cost = 0 Port = 0x8002
677	165.225682	0c:b2:5e:73:00:05	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8006
678	165.344077	0c:b2:5e:73:00:05	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/100/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8006
679	165.352155	0c:b2:5e:73:00:05	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/200/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8006
680	165.353752	0c:b2:5e:73:00:05	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/300/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8006
681	166.229430	0c:b2:5e:73:00:05	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8006
682	167.216305	0c:a0:59:be:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/100/0c:a0:59:be:00:00 Cost = 0 Port = 0x8002
683	167.218293	0c:a0:59:be:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/200/0c:a0:59:be:00:00 Cost = 0 Port = 0x8002
684	167.222290	0c:a0:59:be:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/300/0c:a0:59:be:00:00 Cost = 0 Port = 0x8002
685	167.232373	0c:b2:5e:73:00:05	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8006
686	167.349403	0c:b2:5e:73:00:05	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/100/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8006
687	167.357536	0c:b2:5e:73:00:05	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/200/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8006
688	167.359506	0c:b2:5e:73:00:05	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/300/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8006
689	168.234103	0c:b2:5e:73:00:05	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8006


```

> Frame 677: Packet, 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on 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: 4096 / 1 / 0c:b2:5e:73:00:00
    Root Path Cost: 0
    > Bridge Identifier: 4096 / 1 / 0c:b2:5e:73:00:00
    Port identifier: 0x8006
    Message Age: 0
    Max Age: 20
    Hello Time: 2
    Forward Delay: 15
  
```

Рисунок 10 – Hello-кадры между SW1 и SW4

Захват с 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	Length	Info
883	212.953518	0c:b2:5e:73:00:07	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/200/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8008
884	212.955536	0c:b2:5e:73:00:07	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/300/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8008
885	213.280626	0c:b2:5e:73:00:07	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8008
886	213.421403	0c:64:ca:1e:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/100/0c:64:ca:1e:00:00 Cost = 0 Port = 0x8002
887	213.428547	0c:64:ca:1e:00:01	0c:64:ca:1e:00:01	LOOP	60	Reply
888	213.475316	0c:64:ca:1e:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/200/0c:64:ca:1e:00:00 Cost = 0 Port = 0x8002
889	213.483443	0c:64:ca:1e:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/300/0c:64:ca:1e:00:00 Cost = 0 Port = 0x8002
890	214.281182	0c:b2:5e:73:00:07	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8008
891	214.947469	0c:b2:5e:73:00:07	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/100/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8008
892	214.955797	0c:b2:5e:73:00:07	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/200/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8008
893	214.958972	0c:b2:5e:73:00:07	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/300/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8008
894	215.283026	0c:b2:5e:73:00:07	Nearest-Customer-Br...	STP	60	Conf. Root = 4096/1/0c:b2:5e:73:00:00 Cost = 0 Port = 0x8008
895	215.422277	0c:64:ca:1e:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/100/0c:64:ca:1e:00:00 Cost = 0 Port = 0x8002
896	215.476057	0c:64:ca:1e:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/200/0c:64:ca:1e:00:00 Cost = 0 Port = 0x8002
897	215.484013	0c:64:ca:1e:00:01	Nearest-Customer-Br...	STP	60	Conf. Root = 32768/300/0c:64:ca:1e:00:00 Cost = 0 Port = 0x8002

> Frame 876: Packet, 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on 0

> Ethernet II, Src: 0c:b2:5e:73:00:07 (0c:b2:5e:73:00:07), Dst: Nearest-Customer-Br...

> 802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 300

> 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 / 300 / 0c:b2:5e:73:00:00

Root Path Cost: 0

> Bridge Identifier: 4096 / 300 / 0c:b2:5e:73:00:00

Port identifier: 0x8008

Message Age: 0

Max Age: 20

Hello Time: 2

Forward Delay: 15

0000 01 80 c2 00 00 00 0c b2 5e 73 00 07 81 00 01 2c ^s....

0010 00 26 42 42 03 00 00 00 00 00 11 2c 0c b2 5e 73 ..&BB..... ^s

0020 00 00 00 00 00 00 11 2c 0c b2 5e 73 00 00 80 08 ^s....

0030 00 00 14 00 02 00 0f 00 00 00 00 00

Рисунок 11 – Hello-кадры между SW1 и SW5

Layer2Switch-2 - PuTTY

```

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    4097
             Address     0cb2.5e73.0000
             Cost        4
             Port        2 (GigabitEthernet0/1)
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID   Priority    8193  (priority 8192 sys-id-ext 1)
             Address     0ca7.6e7a.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  20         128.1     Shr
Gi0/1          Root  LRN  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--

Рисунок 12 – Стоимость маршрута SW1-SW2