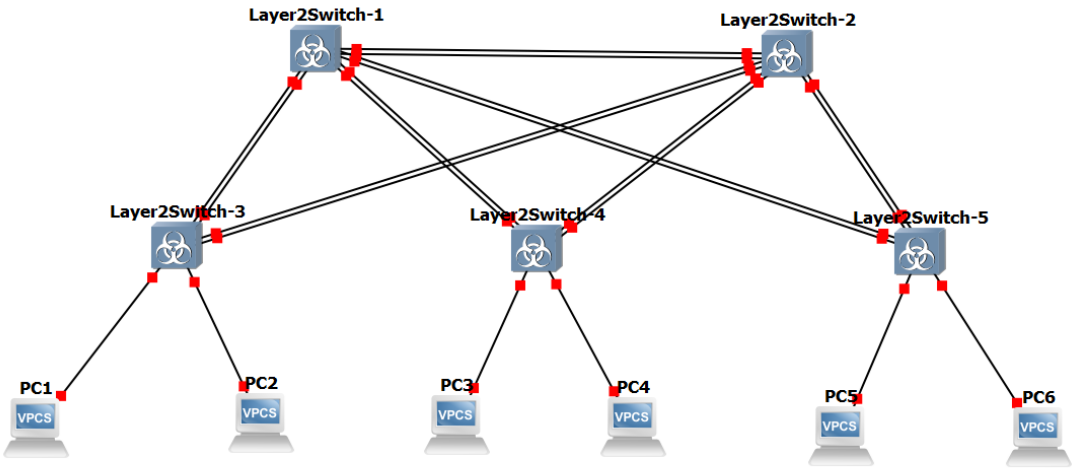
Лабораторная работа №2

«Настройка протокола STP (IEEE 802.1D)»

Перед началом работы была построена следующая схема, состоящая из управляемых коммутаторов и ПК:



Затем были настроены все управляемые коммутаторы:

Layer2Switch-1 console
enable configure terminal spanning-tree vlan 1 root primary end write memory

```
vIOS-L2-01>enable
vIOS-L2-01#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
vIOS-L2-01(config)#spanning-tree vlan 1 root primary
*Aug 14 15:18:34.005: %PLATFORM-5-SIGNATURE_VERIFIED: Image 'flash0:/vios_l2-adventerpris
ek9-m' passed code signing verification
vIOS-L2-01(config)#spanning-tree vlan 1 root primary
vIOS-L2-01(config)#end
vIOS-L2-01#wri
*Aug 14 15:18:46.483: %SYS-5-CONFIG_I: Configured from console by console
vIOS-L2-01#write memory
Building configuration...
Compressed configuration from 5278 bytes to 2019 bytes[OK]
vIOS-L2-01#
*Aug 14 15:18:58.357: %GRUB-5-CONFIG_WRITING: GRUB configuration is being updated on disk. Please wait.
*Aug 14 15:18:59.097: %GRUB-5-CONFIG_WRITTEN: GRUB configuration was written to disk successfully.
```

Layer2Switch-2 console
enable configure terminal spanning-tree mode pvst end write memory

```
vIOS-L2-01>enable
vIOS-L2-01#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
vIOS-L2-01(config)#spanning-tree mode pvst
vIOS-L2-01(config)#end
vIOS-L2-01#
*Aug 14 15:21:04.257: %SYS-5-CONFIG_I: Configured from console by console
vIOS-L2-01#write memory
Building configuration...
Compressed configuration from 5240 bytes to 1998 bytes[OK]
*Aug 14 15:21:13.585: %GRUB-5-CONFIG_WRITING: GRUB configuration is being updated on disk. Please w
ait...
*Aug 14 15:21:14.327: %GRUB-5-CONFIG_WRITTEN: GRUB configuration was written to disk successfully.
```

Layer2Switch-3 console

enable
configure terminal
spanning-tree mode pvst
end
write memory

```
vIOS-L2-01>enable
vIOS-L2-01#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
vIOS-L2-01(config)#spanning-tree mode pvst
vIOS-L2-01(config)#end
vIOS-L2-01#
*Aug 14 15:25:38.553: %SYS-5-CONFIG_I: Configured from console by console
vIOS-L2-01#write memory
Building configuration...
Compressed configuration from 5042 bytes to 1920 bytes[OK]
vIOS-L2-01#
*Aug 14 15:25:46.648: %GRUB-5-CONFIG_WRITING: GRUB configuration is being updated on disk
 Please wait...
*Aug 14 15:25:47.376: %GRUB-5-CONFIG_WRITTEN: GRUB configuration was written to disk succ
ssfully.
```

Layer2Switch-4 console

enable
configure terminal
spanning-tree mode pvst
end
write memory

```
vIOS-L2-01>enable
vIOS-L2-01#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
vIOS-L2-01(config)#spanning-tree mode pvst
vIOS-L2-01(config)#end
vIOS-L2-01#
*Aug 14 15:26:45.832: %SYS-5-CONFIG_I: Configured from console by console
vIOS-L2-01#write memory
Building configuration...
Compressed configuration from 5042 bytes to 1920 bytes[OK]
vIOS-L2-01#
*Aug 14 15:26:54.821: %GRUB-5-CONFIG_WRITING: GRUB configuration is being updat
d on disk. Please wait...
*Aug 14 15:26:55.551: %GRUB-5-CONFIG_WRITTEN: GRUB configuration was written to
disk successfully.
```

Layer2Switch-5 console

enable
configure terminal
spanning-tree mode pvst
end

write memory

```
vIOS-L2-01>enable
vIOS-L2-01#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
vIOS-L2-01(config)#spanning-tree mode pvst
vIOS-L2-01(config)#end
vIOS-L2-01#
*Aug 14 15:27:46.736: %SYS-5-CONFIG_I: Configured from console by console
vIOS-L2-01#write memory
Building configuration...
Compressed configuration from 5042 bytes to 1919 bytes[OK]
vIOS-L2-01#
*Aug 14 15:27:55.976: %GRUB-5-CONFIG_WRITING: GRUB configuration is being updated on disk. Please wai
..
*Aug 14 15:27:56.706: %GRUB-5-CONFIG_WRITTEN: GRUB configuration was written to disk successfully.
```

После настройки коммутаторов каждому из ПК был вручную назначен IP-адрес по следующему шаблону «ip 192.168.1.X/24», где вместо X подставлялся порядковый номер ПК, умноженный на 10 (например, для PC4 – 192.168.1.40/24 и т.д.).

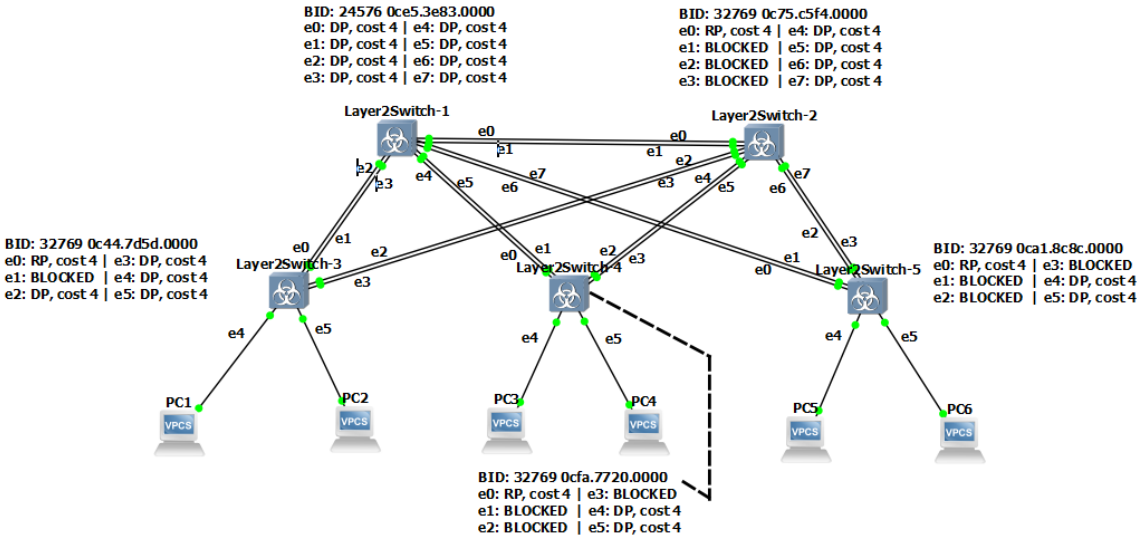
Результаты проверки доступности между каждым из ПК представлены в таблице ниже:

Пара ПК	Команда	Результат
PC1⇔PC2	ping 192.168.1.20	84 bytes from 192.168.1.20 icmp_seq=1 ttl=64 time=15.115 ms 84 bytes from 192.168.1.20 icmp_seq=2 ttl=64 time=7.126 ms 84 bytes from 192.168.1.20 icmp_seq=3 ttl=64 time=7.400 ms 84 bytes from 192.168.1.20 icmp_seq=4 ttl=64 time=6.844 ms 84 bytes from 192.168.1.20 icmp_seq=5 ttl=64 time=7.058 ms
PC1⇔PC3	ping 192.168.1.30	84 bytes from 192.168.1.30 icmp_seq=1 ttl=64 time=12.744 ms 84 bytes from 192.168.1.30 icmp_seq=2 ttl=64 time=9.315 ms 84 bytes from 192.168.1.30 icmp_seq=3 ttl=64 time=5.155 ms 84 bytes from 192.168.1.30 icmp_seq=4 ttl=64 time=7.338 ms 84 bytes from 192.168.1.30 icmp_seq=5 ttl=64 time=11.997 ms
PC1⇔PC4	ping 192.168.1.40	84 bytes from 192.168.1.40 icmp_seq=1 ttl=64 time=5.622 ms 84 bytes from 192.168.1.40 icmp_seq=2 ttl=64 time=14.985 ms 84 bytes from 192.168.1.40 icmp_seq=3 ttl=64 time=10.665 ms 84 bytes from 192.168.1.40 icmp_seq=4 ttl=64 time=5.141 ms 84 bytes from 192.168.1.40 icmp_seq=5 ttl=64 time=7.707 ms
PC1⇔PC5	ping 192.168.1.50	84 bytes from 192.168.1.50 icmp_seq=1 ttl=64 time=15.335 ms 84 bytes from 192.168.1.50 icmp_seq=2 ttl=64 time=9.701 ms 84 bytes from 192.168.1.50 icmp_seq=3 ttl=64 time=6.505 ms 84 bytes from 192.168.1.50 icmp_seq=4 ttl=64 time=7.023 ms 84 bytes from 192.168.1.50 icmp_seq=5 ttl=64 time=13.111 ms
PC1⇔PC6	ping 192.168.1.60	84 bytes from 192.168.1.60 icmp_seq=1 ttl=64 time=3.389 ms 84 bytes from 192.168.1.60 icmp_seq=2 ttl=64 time=5.636 ms 84 bytes from 192.168.1.60 icmp_seq=3 ttl=64 time=2.940 ms 84 bytes from 192.168.1.60 icmp_seq=4 ttl=64 time=1.697 ms 84 bytes from 192.168.1.60 icmp_seq=5 ttl=64 time=2.270 ms
PC2⇔PC1	ping 192.168.1.10	84 bytes from 192.168.1.10 icmp_seq=1 ttl=64 time=8.822 ms 84 bytes from 192.168.1.10 icmp_seq=2 ttl=64 time=5.096 ms 84 bytes from 192.168.1.10 icmp_seq=3 ttl=64 time=8.643 ms 84 bytes from 192.168.1.10 icmp_seq=4 ttl=64 time=6.732 ms 84 bytes from 192.168.1.10 icmp_seq=5 ttl=64 time=6.194 ms
PC2⇔PC3	ping 192.168.1.30	84 bytes from 192.168.1.30 icmp_seq=1 ttl=64 time=14.057 ms 84 bytes from 192.168.1.30 icmp_seq=2 ttl=64 time=15.347 ms 84 bytes from 192.168.1.30 icmp_seq=3 ttl=64 time=1.455 ms 84 bytes from 192.168.1.30 icmp_seq=4 ttl=64 time=4.752 ms 84 bytes from 192.168.1.30 icmp_seq=5 ttl=64 time=14.857 ms

PC2⇔PC4	ping 192.168.1.40	84 bytes from 192.168.1.40 icmp_seq=1 ttl=64 time=14.415 ms 84 bytes from 192.168.1.40 icmp_seq=2 ttl=64 time=5.567 ms 84 bytes from 192.168.1.40 icmp_seq=3 ttl=64 time=16.423 ms 84 bytes from 192.168.1.40 icmp_seq=4 ttl=64 time=1.784 ms 84 bytes from 192.168.1.40 icmp_seq=5 ttl=64 time=4.972 ms
PC2⇔PC5	ping 192.168.1.50	84 bytes from 192.168.1.50 icmp_seq=1 ttl=64 time=7.280 ms 84 bytes from 192.168.1.50 icmp_seq=2 ttl=64 time=5.949 ms 84 bytes from 192.168.1.50 icmp_seq=3 ttl=64 time=14.520 ms 84 bytes from 192.168.1.50 icmp_seq=4 ttl=64 time=3.310 ms 84 bytes from 192.168.1.50 icmp_seq=5 ttl=64 time=6.866 ms
PC2⇔PC6	ping 192.168.1.60	84 bytes from 192.168.1.60 icmp_seq=1 ttl=64 time=9.061 ms 84 bytes from 192.168.1.60 icmp_seq=2 ttl=64 time=1.835 ms 84 bytes from 192.168.1.60 icmp_seq=3 ttl=64 time=6.742 ms 84 bytes from 192.168.1.60 icmp_seq=4 ttl=64 time=3.378 ms 84 bytes from 192.168.1.60 icmp_seq=5 ttl=64 time=10.351 ms
PC3⇔PC1	ping 192.168.1.10	84 bytes from 192.168.1.10 icmp_seq=1 ttl=64 time=9.062 ms 84 bytes from 192.168.1.10 icmp_seq=2 ttl=64 time=6.974 ms 84 bytes from 192.168.1.10 icmp_seq=3 ttl=64 time=6.132 ms 84 bytes from 192.168.1.10 icmp_seq=4 ttl=64 time=8.745 ms 84 bytes from 192.168.1.10 icmp_seq=5 ttl=64 time=6.807 ms
PC3⇔PC2	ping 192.168.1.20	84 bytes from 192.168.1.20 icmp_seq=1 ttl=64 time=6.512 ms 84 bytes from 192.168.1.20 icmp_seq=2 ttl=64 time=8.066 ms 84 bytes from 192.168.1.20 icmp_seq=3 ttl=64 time=11.758 ms 84 bytes from 192.168.1.20 icmp_seq=4 ttl=64 time=7.958 ms 84 bytes from 192.168.1.20 icmp_seq=5 ttl=64 time=8.298 ms
PC3⇔PC4	ping 192.168.1.40	84 bytes from 192.168.1.40 icmp_seq=1 ttl=64 time=3.852 ms 84 bytes from 192.168.1.40 icmp_seq=2 ttl=64 time=2.240 ms 84 bytes from 192.168.1.40 icmp_seq=3 ttl=64 time=0.770 ms 84 bytes from 192.168.1.40 icmp_seq=4 ttl=64 time=2.428 ms 84 bytes from 192.168.1.40 icmp_seq=5 ttl=64 time=0.787 ms
PC3⇔PC5	ping 192.168.1.50	84 bytes from 192.168.1.50 icmp_seq=1 ttl=64 time=12.856 ms 84 bytes from 192.168.1.50 icmp_seq=2 ttl=64 time=1.541 ms 84 bytes from 192.168.1.50 icmp_seq=3 ttl=64 time=5.069 ms 84 bytes from 192.168.1.50 icmp_seq=4 ttl=64 time=9.836 ms 84 bytes from 192.168.1.50 icmp_seq=5 ttl=64 time=8.861 ms
PC3⇔PC6	ping 192.168.1.60	84 bytes from 192.168.1.60 icmp_seq=1 ttl=64 time=8.204 ms 84 bytes from 192.168.1.60 icmp_seq=2 ttl=64 time=1.791 ms 84 bytes from 192.168.1.60 icmp_seq=3 ttl=64 time=13.237 ms 84 bytes from 192.168.1.60 icmp_seq=4 ttl=64 time=1.492 ms 84 bytes from 192.168.1.60 icmp_seq=5 ttl=64 time=8.008 ms
PC4⇔PC1	ping 192.168.1.10	84 bytes from 192.168.1.10 icmp_seq=1 ttl=64 time=12.464 ms 84 bytes from 192.168.1.10 icmp_seq=2 ttl=64 time=1.367 ms 84 bytes from 192.168.1.10 icmp_seq=3 ttl=64 time=9.749 ms 84 bytes from 192.168.1.10 icmp_seq=4 ttl=64 time=6.897 ms 84 bytes from 192.168.1.10 icmp_seq=5 ttl=64 time=10.588 ms
PC4⇔PC2	ping 192.168.1.20	84 bytes from 192.168.1.20 icmp_seq=1 ttl=64 time=8.885 ms 84 bytes from 192.168.1.20 icmp_seq=2 ttl=64 time=4.394 ms 84 bytes from 192.168.1.20 icmp_seq=3 ttl=64 time=13.988 ms 84 bytes from 192.168.1.20 icmp_seq=4 ttl=64 time=5.534 ms 84 bytes from 192.168.1.20 icmp_seq=5 ttl=64 time=8.248 ms
PC4⇔PC3	ping 192.168.1.30	84 bytes from 192.168.1.30 icmp_seq=1 ttl=64 time=1.448 ms 84 bytes from 192.168.1.30 icmp_seq=2 ttl=64 time=3.122 ms 84 bytes from 192.168.1.30 icmp_seq=3 ttl=64 time=0.571 ms 84 bytes from 192.168.1.30 icmp_seq=4 ttl=64 time=0.650 ms 84 bytes from 192.168.1.30 icmp_seq=5 ttl=64 time=5.168 ms
PC4⇔PC5	ping 192.168.1.50	84 bytes from 192.168.1.50 icmp_seq=1 ttl=64 time=12.531 ms 84 bytes from 192.168.1.50 icmp_seq=2 ttl=64 time=2.638 ms 84 bytes from 192.168.1.50 icmp_seq=3 ttl=64 time=7.379 ms 84 bytes from 192.168.1.50 icmp_seq=4 ttl=64 time=10.277 ms 84 bytes from 192.168.1.50 icmp_seq=5 ttl=64 time=1.598 ms
PC4⇔PC6	ping 192.168.1.60	84 bytes from 192.168.1.60 icmp_seq=1 ttl=64 time=12.986 ms 84 bytes from 192.168.1.60 icmp_seq=2 ttl=64 time=1.582 ms

		84 bytes from 192.168.1.60 icmp_seq=3 ttl=64 time=6.807 ms 84 bytes from 192.168.1.60 icmp_seq=4 ttl=64 time=3.866 ms 84 bytes from 192.168.1.60 icmp_seq=5 ttl=64 time=7.122 ms
PC5⇔PC1	ping 192.168.1.10	84 bytes from 192.168.1.10 icmp_seq=1 ttl=64 time=5.602 ms 84 bytes from 192.168.1.10 icmp_seq=2 ttl=64 time=7.103 ms 84 bytes from 192.168.1.10 icmp_seq=3 ttl=64 time=9.147 ms 84 bytes from 192.168.1.10 icmp_seq=4 ttl=64 time=7.507 ms 84 bytes from 192.168.1.10 icmp_seq=5 ttl=64 time=7.074 ms
PC5⇔PC2	ping 192.168.1.20	84 bytes from 192.168.1.20 icmp_seq=1 ttl=64 time=18.252 ms 84 bytes from 192.168.1.20 icmp_seq=2 ttl=64 time=13.860 ms 84 bytes from 192.168.1.20 icmp_seq=3 ttl=64 time=8.366 ms 84 bytes from 192.168.1.20 icmp_seq=4 ttl=64 time=7.587 ms 84 bytes from 192.168.1.20 icmp_seq=5 ttl=64 time=9.688 ms
PC5⇔PC3	ping 192.168.1.30	84 bytes from 192.168.1.30 icmp_seq=1 ttl=64 time=7.051 ms 84 bytes from 192.168.1.30 icmp_seq=2 ttl=64 time=7.599 ms 84 bytes from 192.168.1.30 icmp_seq=3 ttl=64 time=3.479 ms 84 bytes from 192.168.1.30 icmp_seq=4 ttl=64 time=10.543 ms 84 bytes from 192.168.1.30 icmp_seq=5 ttl=64 time=7.513 ms
PC5⇔PC4	ping 192.168.1.40	84 bytes from 192.168.1.40 icmp_seq=1 ttl=64 time=5.472 ms 84 bytes from 192.168.1.40 icmp_seq=2 ttl=64 time=15.292 ms 84 bytes from 192.168.1.40 icmp_seq=3 ttl=64 time=14.871 ms 84 bytes from 192.168.1.40 icmp_seq=4 ttl=64 time=8.861 ms 84 bytes from 192.168.1.40 icmp_seq=5 ttl=64 time=5.005 ms
PC5⇔PC6	ping 192.168.1.60	84 bytes from 192.168.1.60 icmp_seq=1 ttl=64 time=4.928 ms 84 bytes from 192.168.1.60 icmp_seq=2 ttl=64 time=0.820 ms 84 bytes from 192.168.1.60 icmp_seq=3 ttl=64 time=0.721 ms 84 bytes from 192.168.1.60 icmp_seq=4 ttl=64 time=5.063 ms 84 bytes from 192.168.1.60 icmp_seq=5 ttl=64 time=1.355 ms
PC6⇔PC1	ping 192.168.1.10	84 bytes from 192.168.1.10 icmp_seq=1 ttl=64 time=9.289 ms 84 bytes from 192.168.1.10 icmp_seq=2 ttl=64 time=1.765 ms 84 bytes from 192.168.1.10 icmp_seq=3 ttl=64 time=9.879 ms 84 bytes from 192.168.1.10 icmp_seq=4 ttl=64 time=4.696 ms 84 bytes from 192.168.1.10 icmp_seq=5 ttl=64 time=6.461 ms
PC6⇔PC2	ping 192.168.1.20	84 bytes from 192.168.1.20 icmp_seq=1 ttl=64 time=10.473 ms 84 bytes from 192.168.1.20 icmp_seq=2 ttl=64 time=6.535 ms 84 bytes from 192.168.1.20 icmp_seq=3 ttl=64 time=4.874 ms 84 bytes from 192.168.1.20 icmp_seq=4 ttl=64 time=9.665 ms 84 bytes from 192.168.1.20 icmp_seq=5 ttl=64 time=7.715 ms
PC6⇔PC3	ping 192.168.1.30	84 bytes from 192.168.1.30 icmp_seq=1 ttl=64 time=1.751 ms 84 bytes from 192.168.1.30 icmp_seq=2 ttl=64 time=14.051 ms 84 bytes from 192.168.1.30 icmp_seq=3 ttl=64 time=7.615 ms 84 bytes from 192.168.1.30 icmp_seq=4 ttl=64 time=11.740 ms 84 bytes from 192.168.1.30 icmp_seq=5 ttl=64 time=17.055 ms
PC6⇔PC4	ping 192.168.1.40	84 bytes from 192.168.1.40 icmp_seq=1 ttl=64 time=17.112 ms 84 bytes from 192.168.1.40 icmp_seq=2 ttl=64 time=12.113 ms 84 bytes from 192.168.1.40 icmp_seq=3 ttl=64 time=1.801 ms 84 bytes from 192.168.1.40 icmp_seq=4 ttl=64 time=8.823 ms 84 bytes from 192.168.1.40 icmp_seq=5 ttl=64 time=7.004 ms
PC6⇔PC5	ping 192.168.1.50	84 bytes from 192.168.1.50 icmp_seq=1 ttl=64 time=6.989 ms 84 bytes from 192.168.1.50 icmp_seq=2 ttl=64 time=7.394 ms 84 bytes from 192.168.1.50 icmp_seq=3 ttl=64 time=1.284 ms 84 bytes from 192.168.1.50 icmp_seq=4 ttl=64 time=1.225 ms 84 bytes from 192.168.1.50 icmp_seq=5 ttl=64 time=2.986 ms

После этого шага для каждого из коммутаторов была выполнена команда «show spanning-tree». Основная информация была вынесена на саму схему:



С полным выводом можно ознакомиться в приложении 1 в конце отчета, сама схема также была вынесена в отдельный файл, который можно найти в том же каталоге репозитория.

Теперь можем отдельно отследить передачу пакетов hello от корневого коммутатора на всех линках, для этого использовался фильтр «stp.protocol == 0 && !vlan.id», второе условие использовалось для отображения исключительно vlan 1:

Switch1 e0 ⇔ Switch2 e0

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length Info
18870	4373.417630	0c:e5:3e:83:00:00	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8001
18874	4374.417502	0c:e5:3e:83:00:00	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8001
18878	4375.417305	0c:e5:3e:83:00:00	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8001
18882	4376.417155	0c:e5:3e:83:00:00	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8001
18886	4377.417028	0c:e5:3e:83:00:00	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8001
18890	4378.416886	0c:e5:3e:83:00:00	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8001

Switch1 e1 ⇔ Switch2 e1

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length Info
11567	2687.659051	0c:e5:3e:83:00:01	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8002
11571	2688.658881	0c:e5:3e:83:00:01	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8002
11575	2689.658759	0c:e5:3e:83:00:01	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8002
11579	2690.658923	0c:e5:3e:83:00:01	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8002
11583	2691.658450	0c:e5:3e:83:00:01	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8002
11589	2692.658278	0c:e5:3e:83:00:01	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8002
11593	2693.658129	0c:e5:3e:83:00:01	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8002

Switch1 e2 ⇔ Switch3 e0

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length Info
7676	1786.555298	0c:e5:3e:83:00:02	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8003
7680	1787.555154	0c:e5:3e:83:00:02	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8003
7684	1788.555030	0c:e5:3e:83:00:02	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8003
7688	1789.555192	0c:e5:3e:83:00:02	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8003
7692	1790.554722	0c:e5:3e:83:00:02	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8003
7697	1791.554540	0c:e5:3e:83:00:02	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8003
7701	1792.554389	0c:e5:3e:83:00:02	Spanning-tree-(for-bridges)_00	STP	60 Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8003

Switch1 e3 ⇔ Switch3 e1

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
6177	1439.087758	0c:e5:3e:83:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8004
6181	1440.088015	0c:e5:3e:83:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8004
6185	1441.087461	0c:e5:3e:83:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8004
6189	1442.087311	0c:e5:3e:83:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8004
6193	1443.087151	0c:e5:3e:83:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8004
6197	1444.087023	0c:e5:3e:83:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8004
6201	1445.087231	0c:e5:3e:83:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8004

Switch1 e4 ⇔ Switch4 e0

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
8173	1898.331979	0c:e5:3e:83:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8005
8177	1899.331914	0c:e5:3e:83:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8005
8181	1900.331732	0c:e5:3e:83:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8005
8185	1901.331602	0c:e5:3e:83:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8005
8189	1902.331332	0c:e5:3e:83:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8005
8194	1903.331215	0c:e5:3e:83:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8005
8199	1904.331176	0c:e5:3e:83:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8005
8203	1905.330884	0c:e5:3e:83:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8005
8207	1906.330755	0c:e5:3e:83:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8005

Switch1 e5 ⇔ Switch4 e1

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
16463	3814.614985	0c:e5:3e:83:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8006
16467	3815.614808	0c:e5:3e:83:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8006
16471	3816.614664	0c:e5:3e:83:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8006
16475	3817.615528	0c:e5:3e:83:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8006
16479	3818.615326	0c:e5:3e:83:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8006
16484	3819.615206	0c:e5:3e:83:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8006
16489	3820.615020	0c:e5:3e:83:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8006
16493	3821.614904	0c:e5:3e:83:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8006

Switch1 e6 ⇔ Switch5 e0

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
6003	1395.032002	0c:e5:3e:83:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8007
6007	1396.031567	0c:e5:3e:83:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8007
6011	1397.031398	0c:e5:3e:83:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8007
6015	1398.031330	0c:e5:3e:83:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8007
6019	1399.031138	0c:e5:3e:83:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8007
6023	1400.031088	0c:e5:3e:83:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8007
6027	1401.030875	0c:e5:3e:83:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8007
6031	1402.030676	0c:e5:3e:83:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8007

Switch1 e7 ⇔ Switch5 e1

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
16529	3827.311517	0c:e5:3e:83:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8008
16534	3828.311416	0c:e5:3e:83:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8008
16538	3829.311208	0c:e5:3e:83:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8008
16543	3830.311107	0c:e5:3e:83:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8008
16547	3831.310961	0c:e5:3e:83:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8008
16551	3832.310746	0c:e5:3e:83:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8008
16555	3833.310646	0c:e5:3e:83:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8008
16559	3834.310468	0c:e5:3e:83:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8008
16563	3835.310321	0c:e5:3e:83:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8008
16567	3836.310222	0c:e5:3e:83:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 0 Port = 0x8008

Switch2 e2 ⇔ Switch3 e2

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
9274	2151.503115	0c:44:7d:5d:00:02	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8003
9279	2152.502972	0c:44:7d:5d:00:02	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8003
9283	2153.502810	0c:44:7d:5d:00:02	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8003
9287	2154.502671	0c:44:7d:5d:00:02	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8003
9291	2155.502515	0c:44:7d:5d:00:02	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8003
9295	2156.502341	0c:44:7d:5d:00:02	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8003
9300	2157.502225	0c:44:7d:5d:00:02	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8003
9304	2158.502038	0c:44:7d:5d:00:02	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8003
9309	2159.501888	0c:44:7d:5d:00:02	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8003
9314	2160.501726	0c:44:7d:5d:00:02	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8003

Switch2 e3 ⇔ Switch3 e3

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
2393	560.837545	0c:44:7d:5d:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8004
2397	561.837379	0c:44:7d:5d:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8004
2402	562.837232	0c:44:7d:5d:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8004
2407	563.837057	0c:44:7d:5d:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8004
2411	564.836960	0c:44:7d:5d:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8004
2416	565.836781	0c:44:7d:5d:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8004
2421	566.836612	0c:44:7d:5d:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8004
2425	567.836457	0c:44:7d:5d:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8004
2429	568.836319	0c:44:7d:5d:00:03	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8004

Switch2 e4 ⇔ Switch4 e2

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
9563	2216.535879	0c:75:c5:f4:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
9565	2217.535432	0c:75:c5:f4:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
9571	2218.535485	0c:75:c5:f4:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
9574	2219.535145	0c:75:c5:f4:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
9580	2220.535319	0c:75:c5:f4:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
9582	2221.534826	0c:75:c5:f4:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
9589	2222.534998	0c:75:c5:f4:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
9591	2223.534539	0c:75:c5:f4:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
9597	2224.534568	0c:75:c5:f4:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
9599	2225.534208	0c:75:c5:f4:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005

Switch2 e5 ⇔ Switch4 e3

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
15856	3668.088717	0c:75:c5:f4:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
15857	3669.088560	0c:75:c5:f4:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
15864	3670.088412	0c:75:c5:f4:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
15868	3671.088569	0c:75:c5:f4:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
15875	3672.088073	0c:75:c5:f4:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
15876	3673.087896	0c:75:c5:f4:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
15884	3674.088055	0c:75:c5:f4:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
15885	3675.087656	0c:75:c5:f4:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
15892	3676.087464	0c:75:c5:f4:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
15897	3677.088376	0c:75:c5:f4:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006

Switch2 e6 ⇔ Switch5 e2

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
14880	3442.391206	0c:75:c5:f4:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8007
14888	3443.391016	0c:75:c5:f4:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8007
14889	3444.390877	0c:75:c5:f4:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8007
14896	3445.390734	0c:75:c5:f4:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8007
14897	3446.390592	0c:75:c5:f4:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8007
14904	3447.390418	0c:75:c5:f4:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8007
14905	3448.390305	0c:75:c5:f4:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8007
14913	3449.390130	0c:75:c5:f4:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8007
14914	3450.389971	0c:75:c5:f4:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8007
14921	3451.389816	0c:75:c5:f4:00:06	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8007

Switch2 e7 ⇔ Switch5 e3

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
23035	5323.768382	0c:75:c5:f4:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8008
23037	5324.768275	0c:75:c5:f4:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8008
23043	5325.768090	0c:75:c5:f4:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8008
23045	5326.767950	0c:75:c5:f4:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8008
23052	5327.767768	0c:75:c5:f4:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8008
23054	5328.767630	0c:75:c5:f4:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8008
23060	5329.767468	0c:75:c5:f4:00:07	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8008

Switch3 e4 ⇔ PC1

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
3877	3211.157566	0c:44:7d:5d:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3878	3212.157382	0c:44:7d:5d:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3879	3213.157302	0c:44:7d:5d:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3880	3214.157055	0c:44:7d:5d:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3881	3215.156902	0c:44:7d:5d:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3882	3216.156784	0c:44:7d:5d:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3884	3217.156618	0c:44:7d:5d:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3885	3218.156508	0c:44:7d:5d:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005

Switch3 e5 ⇔ PC2

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
2592	2150.998817	0c:44:7d:5d:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
2593	2151.998625	0c:44:7d:5d:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
2595	2152.998470	0c:44:7d:5d:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
2596	2153.998350	0c:44:7d:5d:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
2597	2154.998196	0c:44:7d:5d:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
2598	2155.998008	0c:44:7d:5d:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
2599	2156.997997	0c:44:7d:5d:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
2600	2157.997714	0c:44:7d:5d:00:05	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006

Switch4 e4 ⇔ PC3

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
3315	2742.094082	0c:fa:77:20:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3316	2743.093846	0c:fa:77:20:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3317	2744.093699	0c:fa:77:20:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3318	2745.093620	0c:fa:77:20:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3319	2746.093471	0c:fa:77:20:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3320	2747.093303	0c:fa:77:20:00:04	Spanning-tree-(for-bridges)_00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
3321	2748.092902	0c:fa:77:20:00:04	Spanning-tree-(for-bridges) 00	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005

Switch4 e5 ⇔ PC4

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
3117	2578.256025	0c:fa:77:20:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
3118	2579.255808	0c:fa:77:20:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
3119	2580.255657	0c:fa:77:20:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
3120	2581.255484	0c:fa:77:20:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
3121	2582.255339	0c:fa:77:20:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
3122	2583.268184	0c:fa:77:20:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
3123	2584.268264	0c:fa:77:20:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
3125	2585.267871	0c:fa:77:20:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
3126	2586.268060	0c:fa:77:20:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
3129	2587.267680	0c:fa:77:20:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006

Switch5 e4 ⇔ PC5

stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
1310	1087.911302	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1311	1088.911151	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1312	1089.910974	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1313	1090.910872	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1314	1091.910693	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1315	1092.910521	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1316	1093.910366	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1318	1094.910237	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1319	1095.910073	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1320	1096.909906	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1321	1097.909773	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1322	1098.909605	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1323	1099.909473	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005
1324	1100.909302	0c:a1:8c:8c:00:04	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8005

Switch5 e5 ⇔ PC6

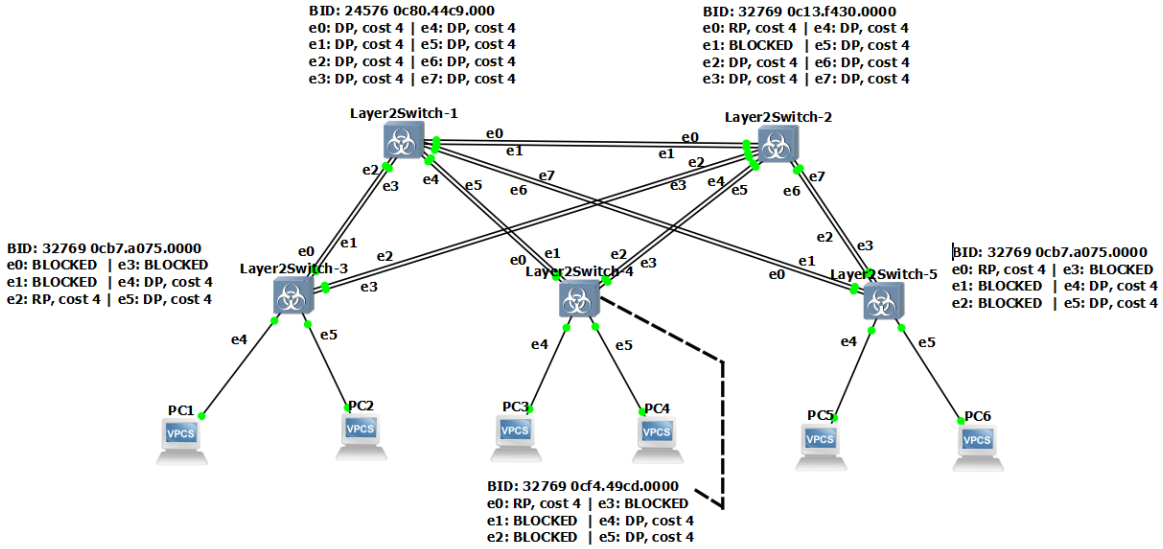
stp.protocol == 0 && !vlan.id

No.	Time	Source	Destination	Protocol	Length	Info
1788	1482.242144	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
1789	1483.241931	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
1790	1484.241821	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
1791	1485.242941	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
1792	1486.242527	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
1793	1487.242417	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
1794	1488.242220	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
1795	1489.242124	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
1797	1490.241922	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
1798	1491.241710	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
1799	1492.241585	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006
1802	1493.241414	0c:a1:8c:8c:00:05	Spanning-tree-(for-…	STP	60	Conf. Root = 24576/1/0c:e5:3e:83:00:00 Cost = 4 Port = 0x8006

По представленным скриншотам можно сделать следующие выводы. Switch1, который является корневым, только отправляет hello пакеты всем остальным устройствам через порты e0-e7. Switch2 только принимает hello пакеты от root через e0, при этом e1, e2, e3 заблокированы, но в них все равно

идет прослушка (без отправки), а через порты e4-e7 происходит отправка. Switch3 только принимает hello пакеты от root через e0, порт e1 заблокирован, но прослушка все равно идет (без отправки), через e2-e5 происходит только отправка. Switch4 только принимает hello пакеты от root через e0, порты e1, e2, e3 заблокированы, но прослушка все равно идет (без отправки), через e4-e5 происходит только отправка. Для Switch5 ситуация аналогична Switch4.

Далее были изменены стоимости на портах e0 и e1 для Switch3. Ниже отображена измененная схема. Файл с ней также находится в том же каталоге репозитория. С подробным выводом можно ознакомиться в приложении 2.



ПРИЛОЖЕНИЕ 1

Layer2Switch-1

```
vIOS-L2-01#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
             Address     0ce5.3e83.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    24577  (priority 24576 sys-id-ext 1)
             Address     0ce5.3e83.0000
             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
Gi2/0              Desg FWD 4         128.9    Shr



VLAN0100
  Spanning tree enabled protocol ieee
  Root ID    Priority    32868
             Address     0ce5.3e83.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32868  (priority 32768 sys-id-ext 100)
             Address     0ce5.3e83.0000
             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



VLAN0200
  Spanning tree enabled protocol ieee
  Root ID    Priority    32968
             Address     0ce5.3e83.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
```

```
  Bridge ID  Priority    32968  (priority 32768 sys-id-ext 200)
             Address     0ce5.3e83.0000
             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



VLAN0300
  Spanning tree enabled protocol ieee
  Root ID    Priority    33068
             Address     0ce5.3e83.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    33068  (priority 32768 sys-id-ext 300)
             Address     0ce5.3e83.0000
             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-2

```
vIOS-L2-01#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
             Address     0ce5.3e83.0000
             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     0c75.c5f4.0000
             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
Gi1/2            Desg FWD 4        128.7    Shr
Gi1/3            Desg FWD 4        128.8    Shr
Gi2/0            Desg FWD 4        128.9    Shr



VLAN0100
  Spanning tree enabled protocol ieee
  Root ID    Priority    32868
             Address     0c75.c5f4.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32868  (priority 32768 sys-id-ext 100)
             Address     0c75.c5f4.0000
             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



VLAN0200
  Spanning tree enabled protocol ieee
  Root ID    Priority    32968
             Address     0c75.c5f4.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32968  (priority 32768 sys-id-ext 200)
             Address     0c75.c5f4.0000
             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



VLAN0300
  Spanning tree enabled protocol ieee
  Root ID    Priority    33068
             Address     0c75.c5f4.0000
```

```
        This bridge is the root
        Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    33068  (priority 32768 sys-id-ext 300)
        Address     0c75.c5f4.0000
        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

```
vIOS-L2-01#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
        Address     0ce5.3e83.0000
        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     0c44.7d5d.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



VLAN0100
  Spanning tree enabled protocol ieee
  Root ID    Priority    32868
        Address     0c44.7d5d.0000
        This bridge is the root
        Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32868  (priority 32768 sys-id-ext 100)
        Address     0c44.7d5d.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



VLAN0200
  Spanning tree enabled protocol ieee
  Root ID    Priority    32968
             Address     0c44.7d5d.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32968  (priority 32768 sys-id-ext 200)
             Address     0c44.7d5d.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



VLAN0300
  Spanning tree enabled protocol ieee
  Root ID    Priority    33068
             Address     0c44.7d5d.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    33068  (priority 32768 sys-id-ext 300)
             Address     0c44.7d5d.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
```

Layer2Switch-4

```
vIOS-L2-01#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
             Address     0ce5.3e83.0000
             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     0cfa.7720.0000
             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



VLAN0100
  Spanning tree enabled protocol ieee
  Root ID    Priority    32868
             Address     0cfa.7720.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32868  (priority 32768 sys-id-ext 100)
             Address     0cfa.7720.0000
             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



VLAN0200
  Spanning tree enabled protocol ieee
  Root ID    Priority    32968
             Address     0cfa.7720.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32968  (priority 32768 sys-id-ext 200)
             Address     0cfa.7720.0000
             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



VLAN0300
  Spanning tree enabled protocol ieee
  Root ID    Priority    33068
             Address     0cfa.7720.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    33068  (priority 32768 sys-id-ext 300)
             Address     0cfa.7720.0000
             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
```

Layer2Switch-5

```
vIOS-L2-01#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
             Address     0ce5.3e83.0000
             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     0ca1.8c8c.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



VLAN0100
  Spanning tree enabled protocol ieee
  Root ID    Priority    32868
             Address     0ca1.8c8c.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32868  (priority 32768 sys-id-ext 100)
             Address     0ca1.8c8c.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



VLAN0200
  Spanning tree enabled protocol ieee
  Root ID    Priority    32968
             Address     0ca1.8c8c.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32968  (priority 32768 sys-id-ext 200)
             Address     0ca1.8c8c.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



VLAN0300
  Spanning tree enabled protocol ieee
  Root ID    Priority    33068
          Address     0ca1.8c8c.0000
          This bridge is the root
          Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    33068  (priority 32768 sys-id-ext 300)
          Address     0ca1.8c8c.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
```

ПРИЛОЖЕНИЕ 2

Layer2Switch-1

```
vIOS-L2-01#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
             Address     0c80.44c9.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    24577  (priority 24576 sys-id-ext 1)
             Address     0c80.44c9.0000
             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
Gi2/0             Desg FWD 4         128.9    Shr



VLAN0100
  Spanning tree enabled protocol ieee
  Root ID    Priority    32868
             Address     0c80.44c9.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32868  (priority 32768 sys-id-ext 100)
             Address     0c80.44c9.0000
             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



VLAN0200
  Spanning tree enabled protocol ieee
  Root ID    Priority    32968
             Address     0c80.44c9.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
```

```
  Bridge ID  Priority    32968  (priority 32768 sys-id-ext 200)
             Address     0c80.44c9.0000
             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



VLAN0300
  Spanning tree enabled protocol ieee
  Root ID    Priority    33068
             Address     0c80.44c9.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    33068  (priority 32768 sys-id-ext 300)
             Address     0c80.44c9.0000
             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-2

```
vIOS-L2-01>show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
             Address     0c80.44c9.0000
             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.f430.0000
             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
Gi1/3            Desg FWD 4        128.8    Shr
Gi2/0            Desg FWD 4        128.9    Shr



VLAN0100
  Spanning tree enabled protocol ieee
  Root ID    Priority    32868
             Address     0c13.f430.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32868  (priority 32768 sys-id-ext 100)
             Address     0c13.f430.0000
             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



VLAN0200
  Spanning tree enabled protocol ieee
  Root ID    Priority    32968
             Address     0c13.f430.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32968  (priority 32768 sys-id-ext 200)
             Address     0c13.f430.0000
             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



VLAN0300
  Spanning tree enabled protocol ieee
  Root ID    Priority    33068
             Address     0c13.f430.0000
```

```
        This bridge is the root
        Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    33068  (priority 32768 sys-id-ext 300)
        Address     0c13.f430.0000
        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

```
vIOS-L2-01#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
        Address     0c80.44c9.0000
        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     0cb7.a075.0000
        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 20        128.1    Shr
Gi0/1             Altn BLK 25        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



VLAN0100
  Spanning tree enabled protocol ieee
  Root ID    Priority    32868
        Address     0cb7.a075.0000
        This bridge is the root
        Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32868  (priority 32768 sys-id-ext 100)
        Address     0cb7.a075.0000
        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 20        128.1    Shr
Gi0/1             Desg FWD 25        128.2    Shr
Gi0/2             Desg FWD 4         128.3    Shr
```

```
Gi0/3            Desg FWD 4        128.4    Shr



VLAN0200
  Spanning tree enabled protocol ieee
  Root ID    Priority    32968
             Address     0cb7.a075.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32968  (priority 32768 sys-id-ext 200)
             Address     0cb7.a075.0000
             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 20        128.1    Shr
Gi0/1              Desg FWD 25        128.2    Shr
Gi0/2              Desg FWD 4         128.3    Shr
Gi0/3              Desg FWD 4         128.4    Shr



VLAN0300
  Spanning tree enabled protocol ieee
  Root ID    Priority    33068
             Address     0cb7.a075.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    33068  (priority 32768 sys-id-ext 300)
             Address     0cb7.a075.0000
             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 20        128.1    Shr
Gi0/1              Desg FWD 25        128.2    Shr
Gi0/2              Desg FWD 4         128.3    Shr
Gi0/3              Desg FWD 4         128.4    Shr
```

Layer2Switch-4

```
vIOS-L2-01>show spanning

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
             Address     0c80.44c9.0000
             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     0cf4.49cd.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



VLAN0100
  Spanning tree enabled protocol ieee
  Root ID    Priority    32868
             Address     0cf4.49cd.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32868  (priority 32768 sys-id-ext 100)
             Address     0cf4.49cd.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



VLAN0200
  Spanning tree enabled protocol ieee
  Root ID    Priority    32968
             Address     0cf4.49cd.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32968  (priority 32768 sys-id-ext 200)
             Address     0cf4.49cd.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



VLAN0300
  Spanning tree enabled protocol ieee
  Root ID    Priority    33068
             Address     0cf4.49cd.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    33068  (priority 32768 sys-id-ext 300)
             Address     0cf4.49cd.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
```

Layer2Switch-5

```
vIOS-L2-01>show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID    Priority    24577
             Address     0c80.44c9.0000
             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     0c7c.17ac.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



VLAN0100
  Spanning tree enabled protocol ieee
  Root ID    Priority    32868
             Address     0c7c.17ac.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32868  (priority 32768 sys-id-ext 100)
             Address     0c7c.17ac.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



VLAN0200
  Spanning tree enabled protocol ieee
  Root ID    Priority    32968
             Address     0c7c.17ac.0000
             This bridge is the root
             Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    32968  (priority 32768 sys-id-ext 200)
             Address     0c7c.17ac.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



VLAN0300
  Spanning tree enabled protocol ieee
  Root ID    Priority    33068
          Address     0c7c.17ac.0000
          This bridge is the root
          Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec

  Bridge ID  Priority    33068  (priority 32768 sys-id-ext 300)
          Address     0c7c.17ac.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
```