Лабораторная работа 2 - STP

1.Для заданной на схеме schema-lab2 сети, состоящей из управляемых коммутаторов и персональных компьютеров настроить протокол STP, назначив явно один из коммутаторов корневым настройкой приоритета

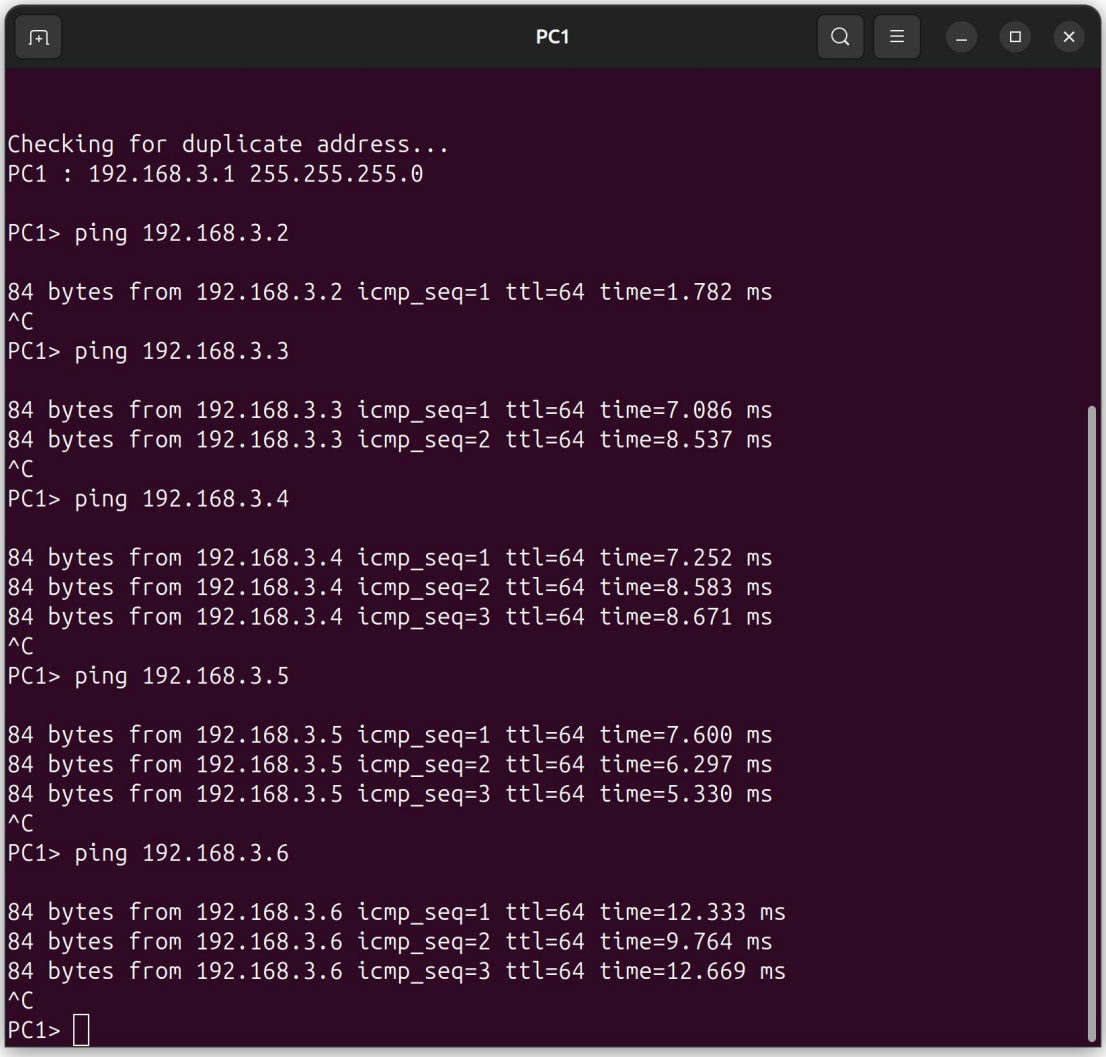
Корневой коммутатор:

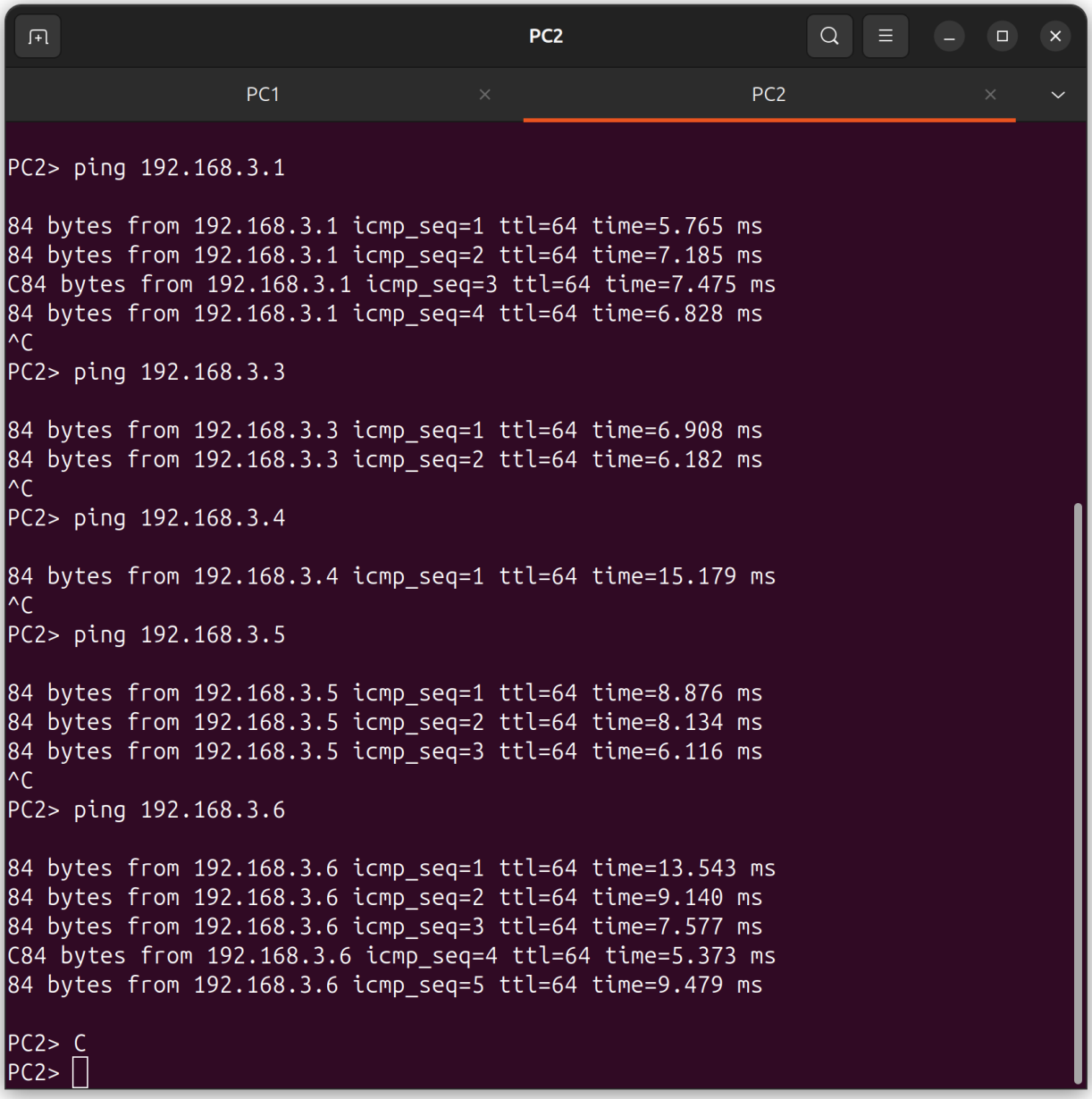
enable
conf t
spanning-tree vlan 1 priority 4096
end
copy running-config startup-config

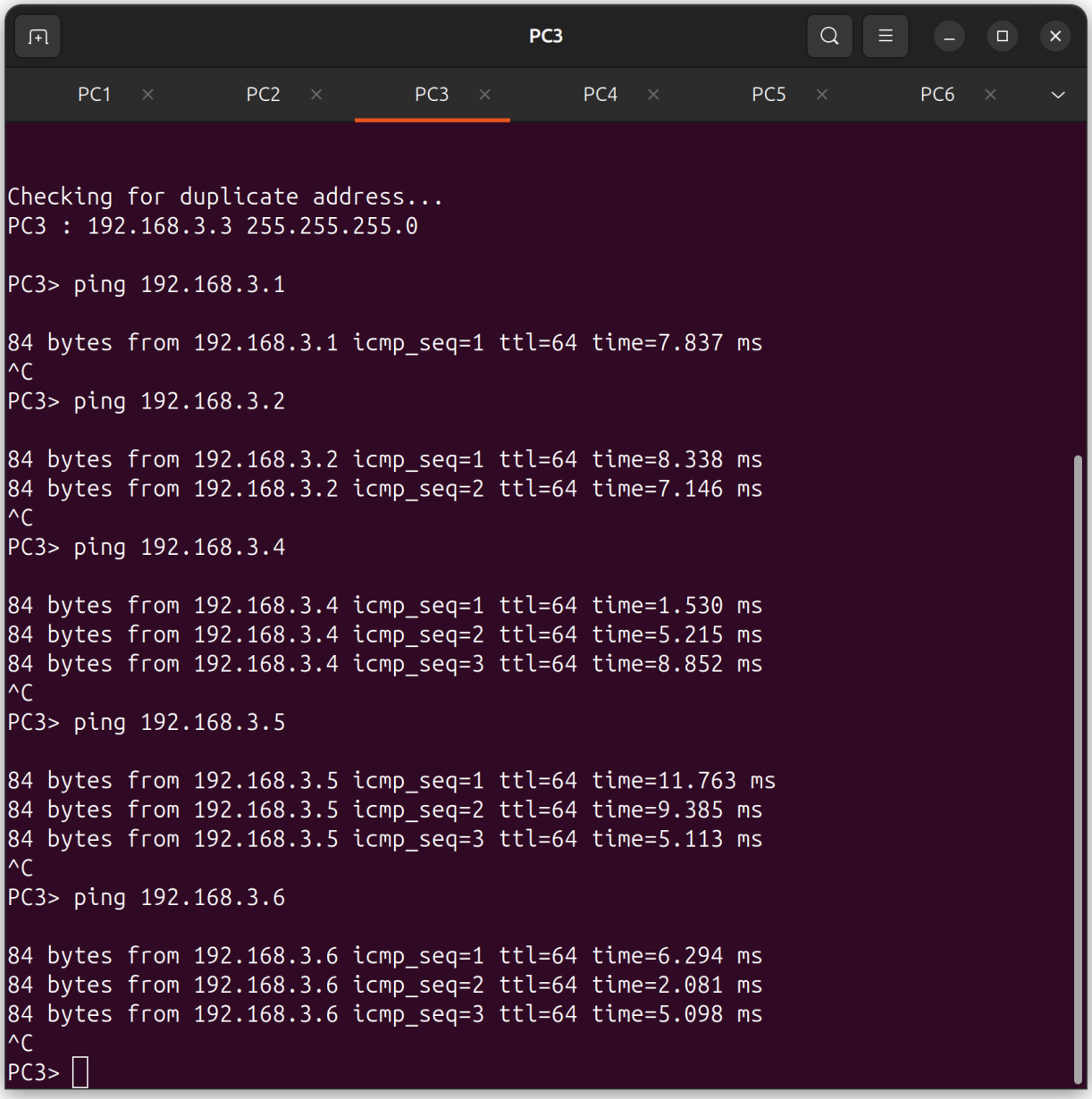
На остальных коммутаторах
spanning-tree vlan 1 priority 32768

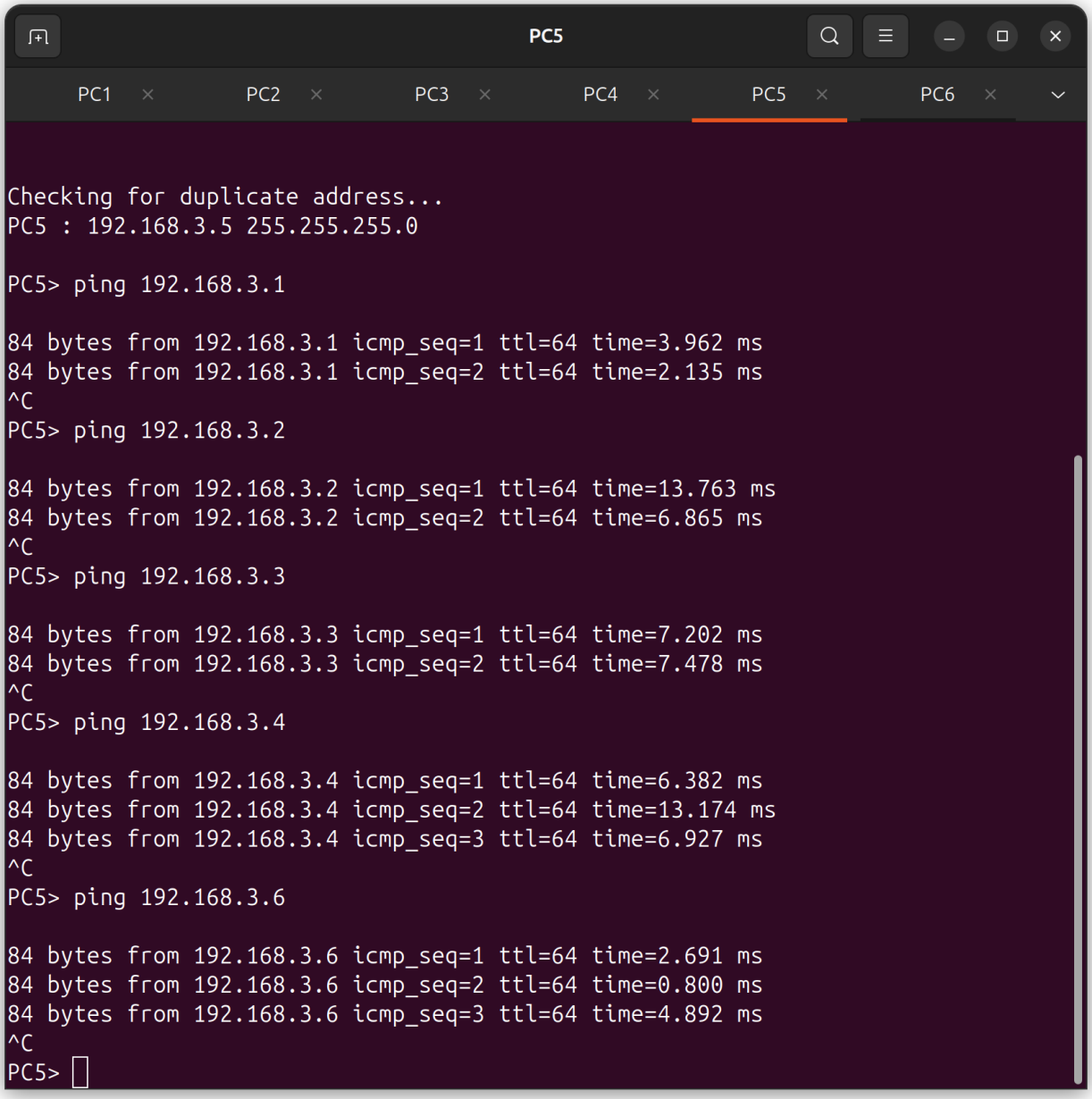
2.Проверить доступность каждого с каждым всех персональных компьютеров

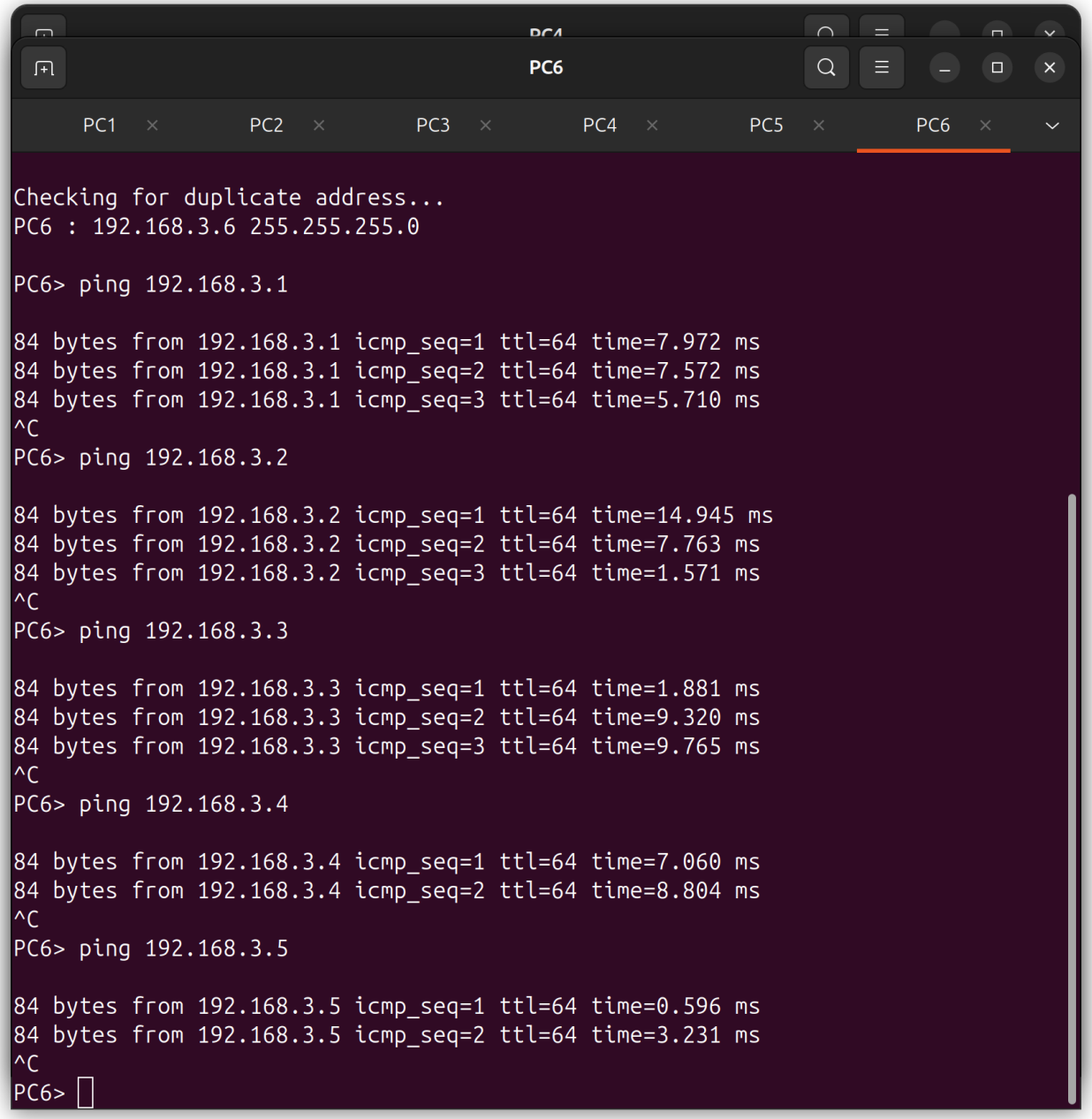
На хостах установлены ip:
192.168.3.1 — 192.168.3.6
Делаем ping:


PC1
Checking for duplicate address...
PC1 : 192.168.3.1 255.255.255.0
PC1> ping 192.168.3.2
84 bytes from 192.168.3.2 icmp_seq=1 ttl=64 time=1.782 ms
^C
PC1> ping 192.168.3.3
84 bytes from 192.168.3.3 icmp_seq=1 ttl=64 time=7.086 ms
84 bytes from 192.168.3.3 icmp_seq=2 ttl=64 time=8.537 ms
^C
PC1> ping 192.168.3.4
84 bytes from 192.168.3.4 icmp_seq=1 ttl=64 time=7.252 ms
84 bytes from 192.168.3.4 icmp_seq=2 ttl=64 time=8.583 ms
84 bytes from 192.168.3.4 icmp_seq=3 ttl=64 time=8.671 ms
^C
PC1> ping 192.168.3.5
84 bytes from 192.168.3.5 icmp_seq=1 ttl=64 time=7.600 ms
84 bytes from 192.168.3.5 icmp_seq=2 ttl=64 time=6.297 ms
84 bytes from 192.168.3.5 icmp_seq=3 ttl=64 time=5.330 ms
^C
PC1> ping 192.168.3.6
84 bytes from 192.168.3.6 icmp_seq=1 ttl=64 time=12.333 ms
84 bytes from 192.168.3.6 icmp_seq=2 ttl=64 time=9.764 ms
84 bytes from 192.168.3.6 icmp_seq=3 ttl=64 time=12.669 ms
^C
PC1>

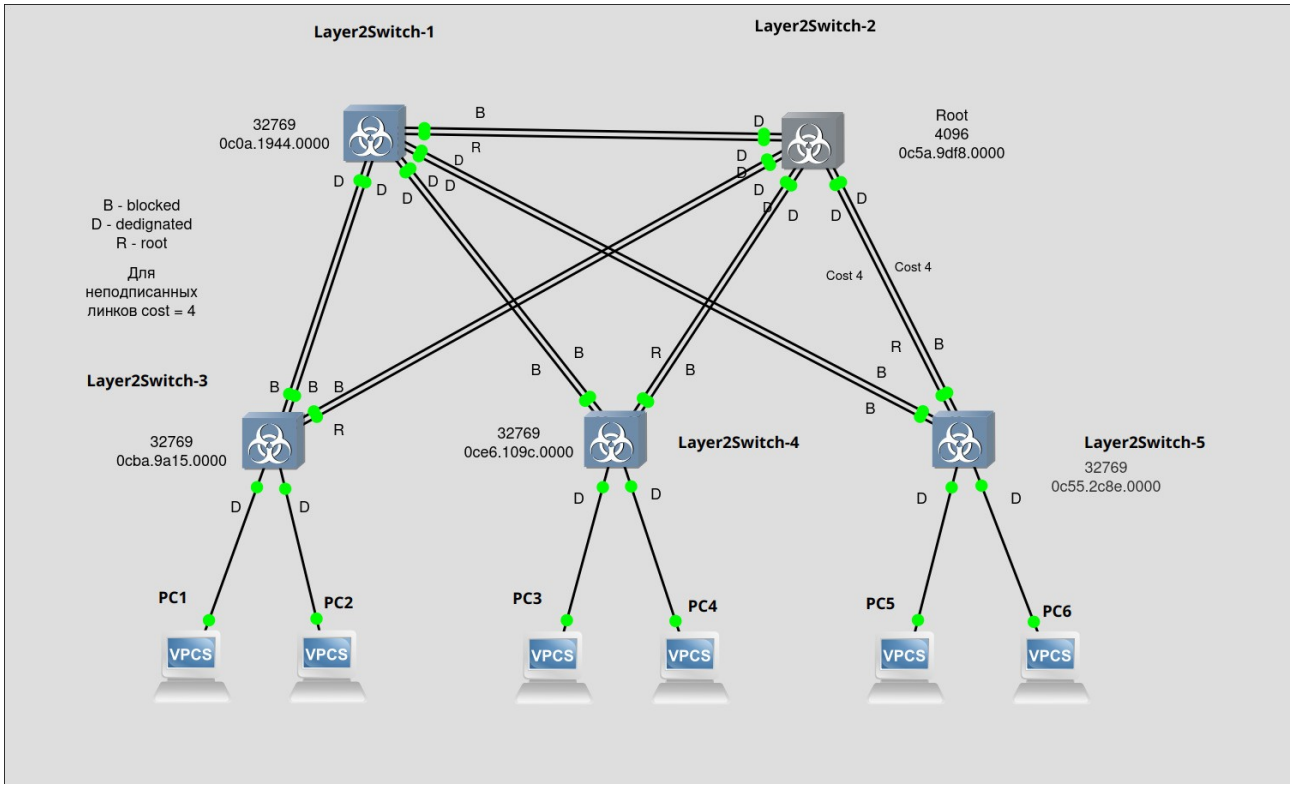

PC2
PC1
PC2
PC2> ping 192.168.3.1
84 bytes from 192.168.3.1 icmp_seq=1 ttl=64 time=5.765 ms
84 bytes from 192.168.3.1 icmp_seq=2 ttl=64 time=7.185 ms
C84 bytes from 192.168.3.1 icmp_seq=3 ttl=64 time=7.475 ms
84 bytes from 192.168.3.1 icmp_seq=4 ttl=64 time=6.828 ms
^C
PC2> ping 192.168.3.3
84 bytes from 192.168.3.3 icmp_seq=1 ttl=64 time=6.908 ms
84 bytes from 192.168.3.3 icmp_seq=2 ttl=64 time=6.182 ms
^C
PC2> ping 192.168.3.4
84 bytes from 192.168.3.4 icmp_seq=1 ttl=64 time=15.179 ms
^C
PC2> ping 192.168.3.5
84 bytes from 192.168.3.5 icmp_seq=1 ttl=64 time=8.876 ms
84 bytes from 192.168.3.5 icmp_seq=2 ttl=64 time=8.134 ms
84 bytes from 192.168.3.5 icmp_seq=3 ttl=64 time=6.116 ms
^C
PC2> ping 192.168.3.6
84 bytes from 192.168.3.6 icmp_seq=1 ttl=64 time=13.543 ms
84 bytes from 192.168.3.6 icmp_seq=2 ttl=64 time=9.140 ms
84 bytes from 192.168.3.6 icmp_seq=3 ttl=64 time=7.577 ms
C84 bytes from 192.168.3.6 icmp_seq=4 ttl=64 time=5.373 ms
84 bytes from 192.168.3.6 icmp_seq=5 ttl=64 time=9.479 ms
PC2> C
PC2>


PC3
PC1
PC2
PC3
PC4
PC5
PC6
Checking for duplicate address...
PC3 : 192.168.3.3 255.255.255.0
PC3> ping 192.168.3.1
84 bytes from 192.168.3.1 icmp_seq=1 ttl=64 time=7.837 ms
^C
PC3> ping 192.168.3.2
84 bytes from 192.168.3.2 icmp_seq=1 ttl=64 time=8.338 ms
84 bytes from 192.168.3.2 icmp_seq=2 ttl=64 time=7.146 ms
^C
PC3> ping 192.168.3.4
84 bytes from 192.168.3.4 icmp_seq=1 ttl=64 time=1.530 ms
84 bytes from 192.168.3.4 icmp_seq=2 ttl=64 time=5.215 ms
84 bytes from 192.168.3.4 icmp_seq=3 ttl=64 time=8.852 ms
^C
PC3> ping 192.168.3.5
84 bytes from 192.168.3.5 icmp_seq=1 ttl=64 time=11.763 ms
84 bytes from 192.168.3.5 icmp_seq=2 ttl=64 time=9.385 ms
84 bytes from 192.168.3.5 icmp_seq=3 ttl=64 time=5.113 ms
^C
PC3> ping 192.168.3.6
84 bytes from 192.168.3.6 icmp_seq=1 ttl=64 time=6.294 ms
84 bytes from 192.168.3.6 icmp_seq=2 ttl=64 time=2.081 ms
84 bytes from 192.168.3.6 icmp_seq=3 ttl=64 time=5.098 ms
^C
PC3>


PC5
PC1
PC2
PC3
PC4
PC5
PC6
Checking for duplicate address...
PC5 : 192.168.3.5 255.255.255.0
PC5> ping 192.168.3.1
84 bytes from 192.168.3.1 icmp_seq=1 ttl=64 time=3.962 ms
84 bytes from 192.168.3.1 icmp_seq=2 ttl=64 time=2.135 ms
^C
PC5> ping 192.168.3.2
84 bytes from 192.168.3.2 icmp_seq=1 ttl=64 time=13.763 ms
84 bytes from 192.168.3.2 icmp_seq=2 ttl=64 time=6.865 ms
^C
PC5> ping 192.168.3.3
84 bytes from 192.168.3.3 icmp_seq=1 ttl=64 time=7.202 ms
84 bytes from 192.168.3.3 icmp_seq=2 ttl=64 time=7.478 ms
^C
PC5> ping 192.168.3.4
84 bytes from 192.168.3.4 icmp_seq=1 ttl=64 time=6.382 ms
84 bytes from 192.168.3.4 icmp_seq=2 ttl=64 time=13.174 ms
84 bytes from 192.168.3.4 icmp_seq=3 ttl=64 time=6.927 ms
^C
PC5> ping 192.168.3.6
84 bytes from 192.168.3.6 icmp_seq=1 ttl=64 time=2.691 ms
84 bytes from 192.168.3.6 icmp_seq=2 ttl=64 time=0.800 ms
84 bytes from 192.168.3.6 icmp_seq=3 ttl=64 time=4.892 ms
^C
PC5>

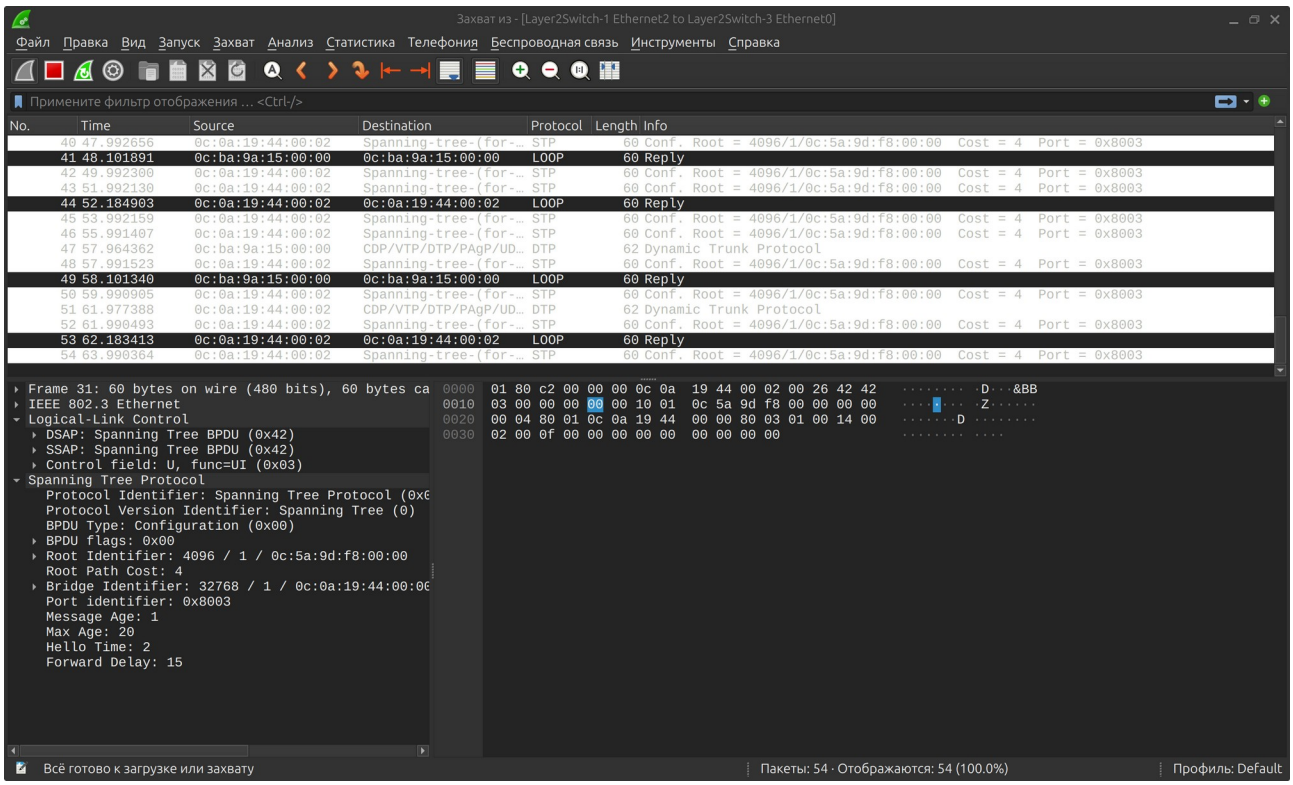

PC6
PC1
PC2
PC3
PC4
PC5
PC6
Checking for duplicate address...
PC6 : 192.168.3.6 255.255.255.0
PC6> ping 192.168.3.1
84 bytes from 192.168.3.1 icmp_seq=1 ttl=64 time=7.972 ms
84 bytes from 192.168.3.1 icmp_seq=2 ttl=64 time=7.572 ms
84 bytes from 192.168.3.1 icmp_seq=3 ttl=64 time=5.710 ms
^C
PC6> ping 192.168.3.2
84 bytes from 192.168.3.2 icmp_seq=1 ttl=64 time=14.945 ms
84 bytes from 192.168.3.2 icmp_seq=2 ttl=64 time=7.763 ms
84 bytes from 192.168.3.2 icmp_seq=3 ttl=64 time=1.571 ms
^C
PC6> ping 192.168.3.3
84 bytes from 192.168.3.3 icmp_seq=1 ttl=64 time=1.881 ms
84 bytes from 192.168.3.3 icmp_seq=2 ttl=64 time=9.320 ms
84 bytes from 192.168.3.3 icmp_seq=3 ttl=64 time=9.765 ms
^C
PC6> ping 192.168.3.4
84 bytes from 192.168.3.4 icmp_seq=1 ttl=64 time=7.060 ms
84 bytes from 192.168.3.4 icmp_seq=2 ttl=64 time=8.804 ms
^C
PC6> ping 192.168.3.5
84 bytes from 192.168.3.5 icmp_seq=1 ttl=64 time=0.596 ms
84 bytes from 192.168.3.5 icmp_seq=2 ttl=64 time=3.231 ms
^C
PC6>

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

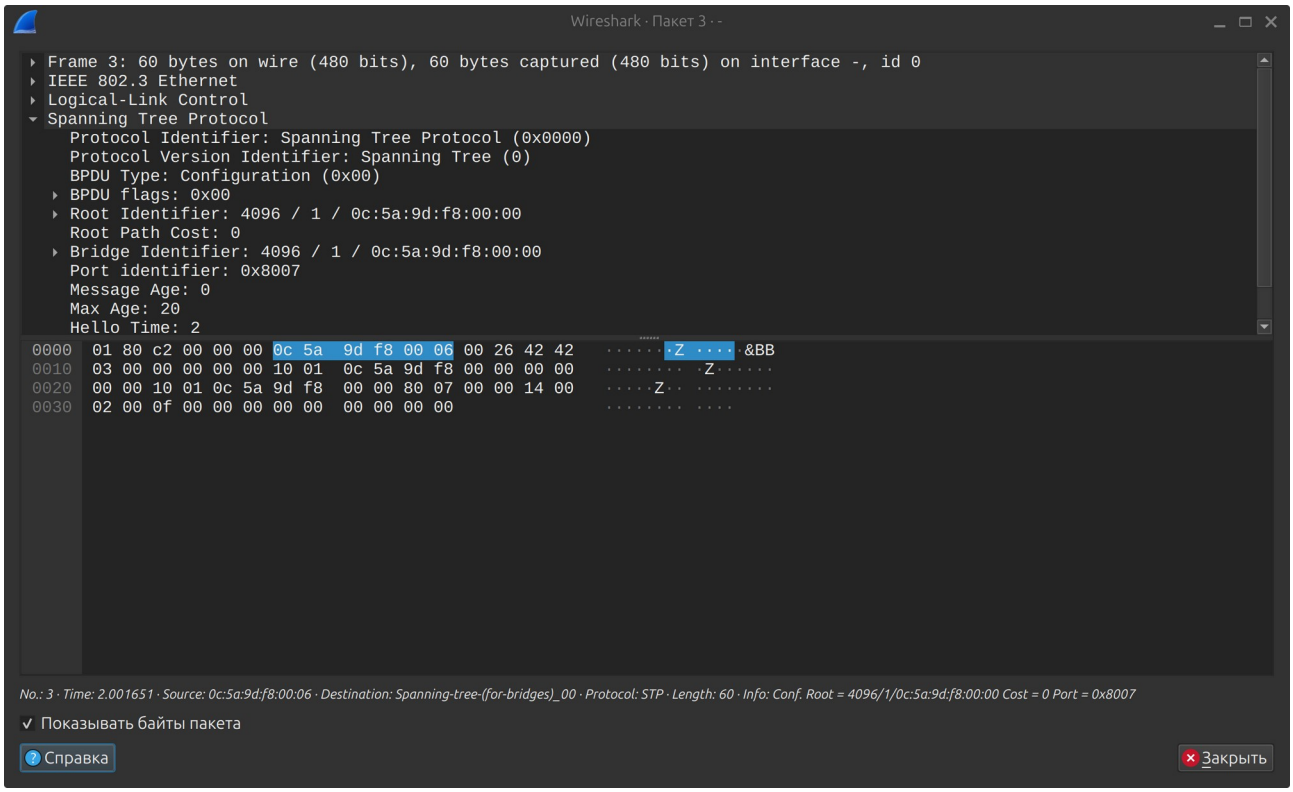


4. При помощи wireshark отследить передачу пакетов hello от корневого коммутатора на всех линках (nb!), результаты включить в отчет

Пакет который коммутатор switch-1 переслал, поэтому Bridge ID != Root Id и Root Path cost = 4:



BDPU сразу от корня. Bridge ID = Root Id и Root Path cost = 0:

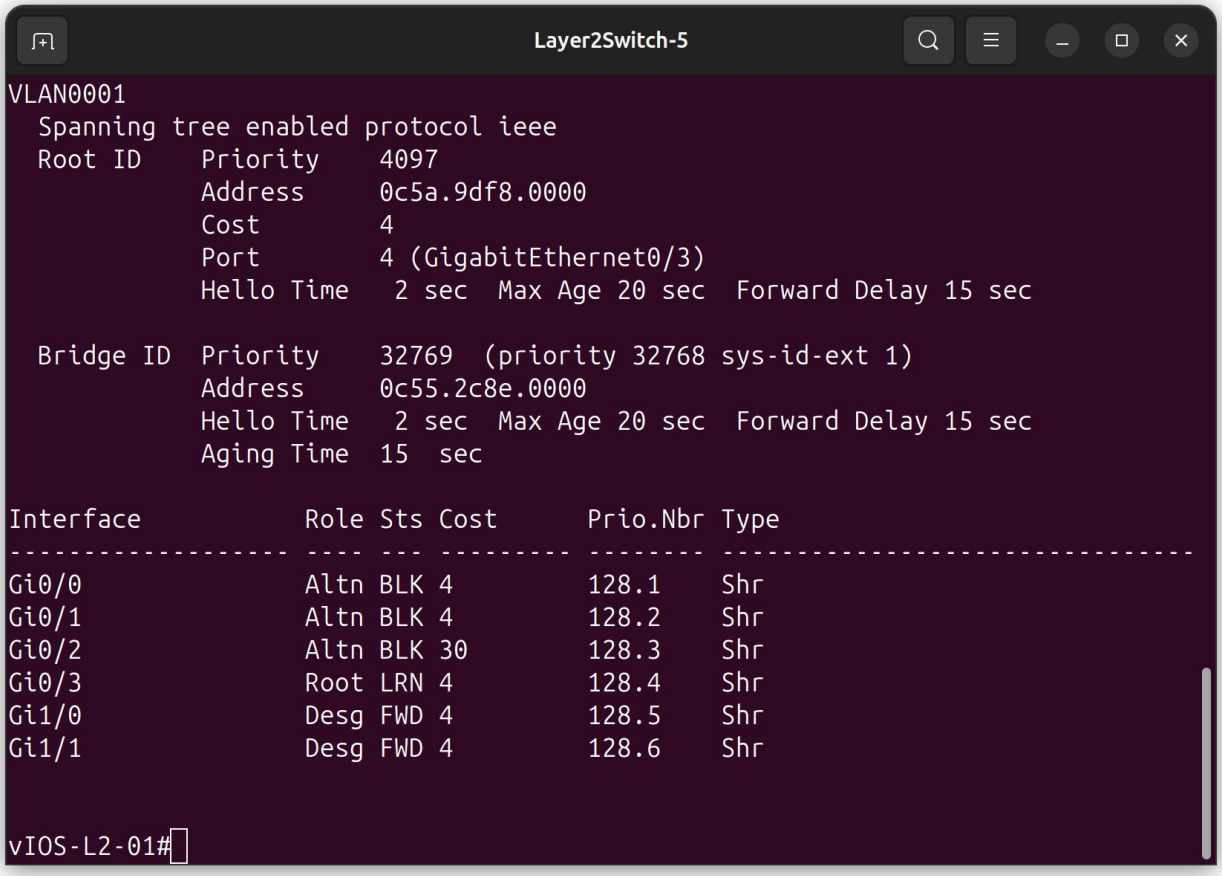


На всех остальных линках точно такие же пакеты.

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

На switch-5 для порта (Gi 0/2) ставим cost = 30. Видим что порт Gi 0/2 стал в состояние blocked, а альтернативный порт (Gi 0/3) стал root портом.

#interface gigabitEthernet 0/2
vIOS-L2-01(config-if)#spanning-tree cost 30
vIOS-L2-01(config-if)#end



Новая схема сети: