PES UNIVERSITY

Department of Computer Science and Engineering

Advanced Computer Networks

UE16CS346

Lab Assignment: RSTP

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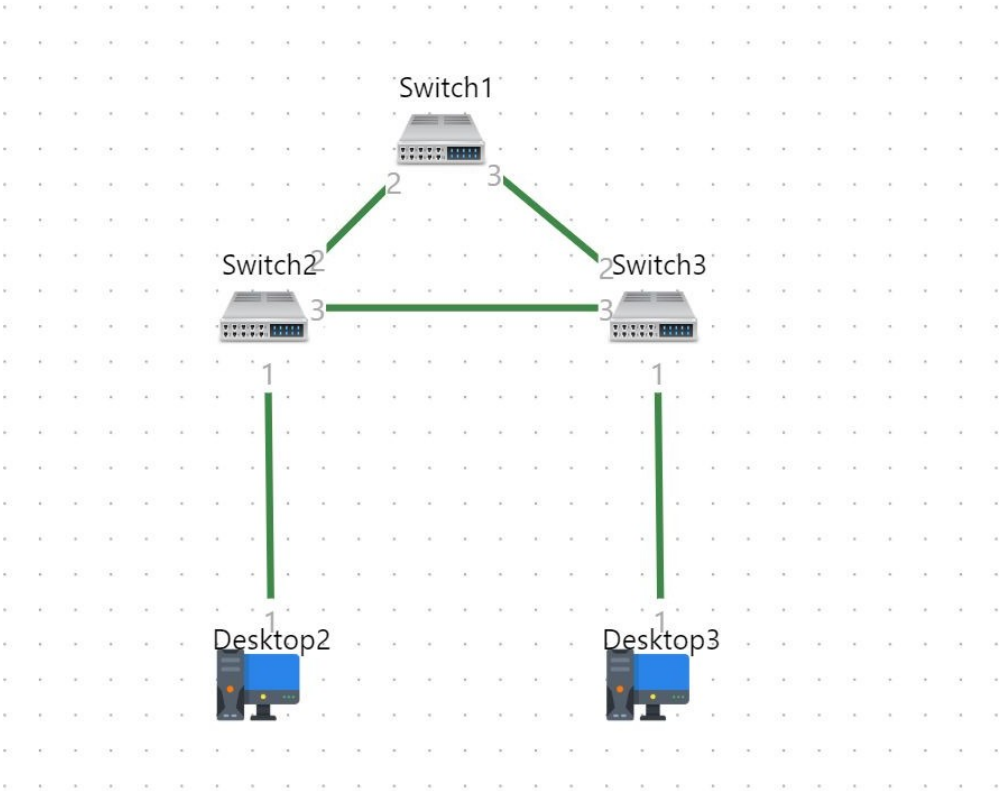
Introduction

Nowadays we see more and more routing in our networks. Routing protocols like OSPF and EIGRP are much faster than spanning-tree when they have to deal with changes in the network. To keep up with the speed of these routing protocols another flavor of spanning-tree was created rapid spanning-tree. Rapid spanning-tree is not a revolution of the original spanning-tree but an evolution. Behind the scenes some things have been changed to speed up the process, configuration-wise it's the same as what you have seen so far.

RSTP is a network protocol that ensures a loop-free topology for Ethernet networks. RSTP defines three port states: discarding, learning, and forwarding and five port roles: root, designated, alternate, backup, and disabled.

- **Topology**



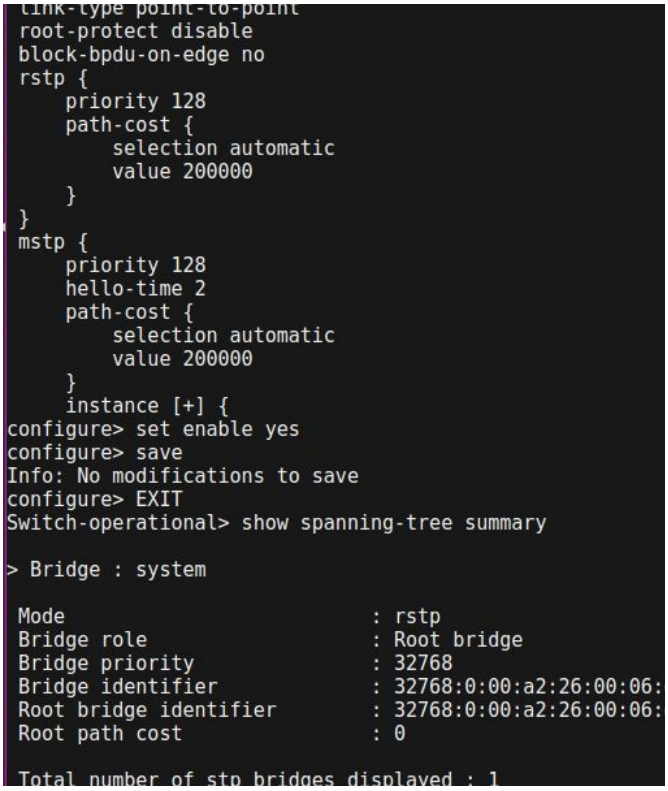
Procedure

Enable RSTP

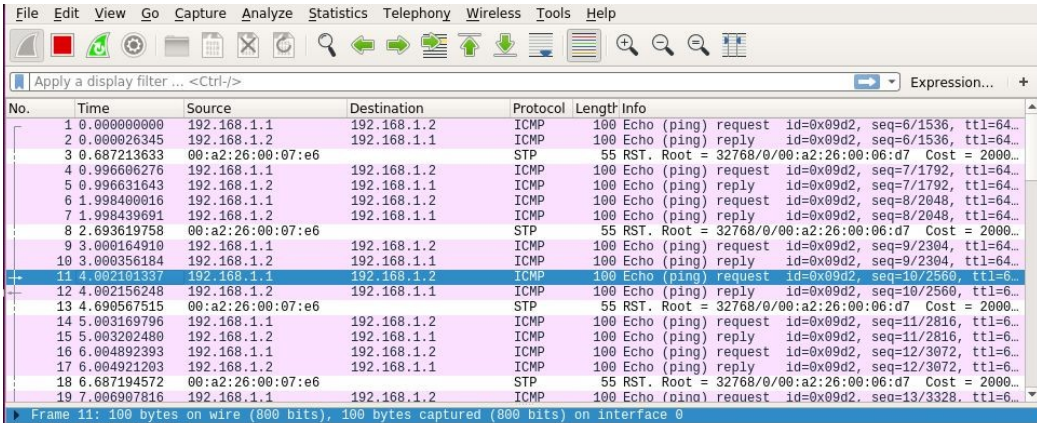
```
> modify parameter-group bridge system
> set spanning-tree enable yes
> set spanning-tree mode rstp
> save
```

```
> modify parameter- group fast-
ethernet{ shelf- 1{ active-controller base-slot}
port-1 }
> enter spanning-tree
> modify parameter- group fast-
ethernet{ shelf- 1{ active-controller base-slot}
port-2 }
> set enable yes> show draft -e
```

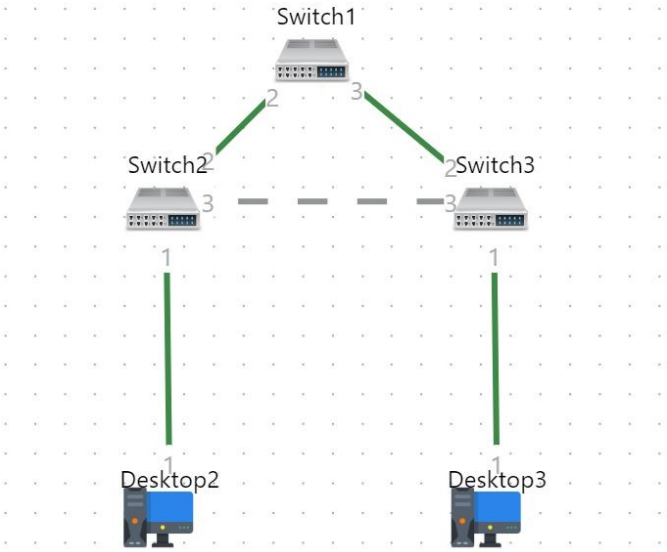
Enable RSTP on all active ports of switches.



Wireshark Output

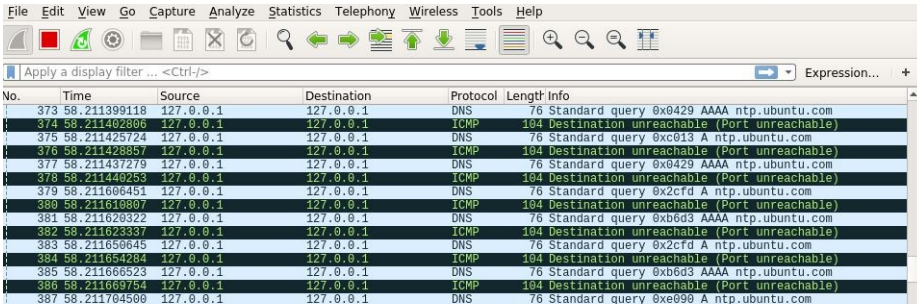


Cut one of the links.

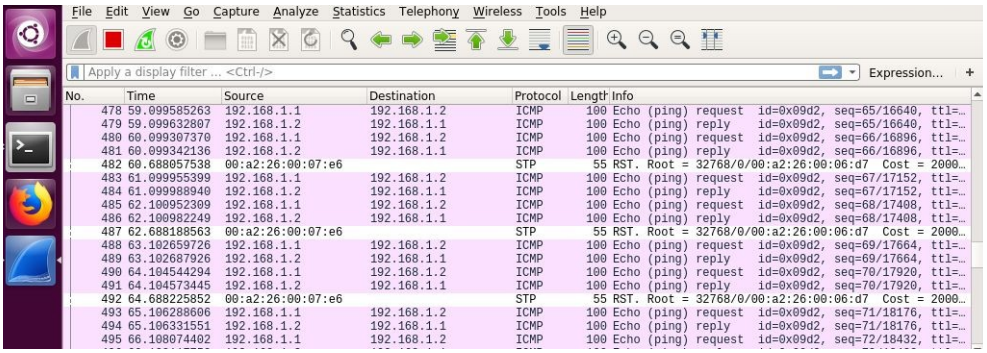


Wireshark Output

We can see that the packets are dropped since one of the links are cut.



Reconfigure STP



Update Root Bridge to a new value

```
> modify parameter-group bridge system
> set spanning-tree rstp priority 4096
> save
```

Root bridge before and after update

```
Switch-operational> show spanning-tree summary

> Bridge : system

 Mode                          : rstp
 Bridge role                   : Non-root bridge
 Bridge priority               : 32768
 Bridge identifier             : 32768:0:00:a2:26:00:09:e7
 Root bridge identifier        : 32768:0:00:a2:26:00:06:f5
 Root path cost                : 2000000
 Root port type                : fast-ethernet
 Root port location            : { shelf-1 { active-controller base-slot } port-2 }

 Total number of stp bridges displayed : 1
```

```
Switch-operational> show spanning-tree summary

> Bridge : system

 Mode                          : rstp
 Bridge role                   : Root bridge
 Bridge priority               : 4096
 Bridge identifier             : 4096:0:00:a2:26:00:09:e7
 Root bridge identifier        : 4096:0:00:a2:26:00:09:e7
 Root path cost                : 0

 Total number of stp bridges displayed : 1

Switch-operational> show spanning-tree member summary system

> Bridge : system

>> Port-type : fast-ethernet

 Location                                                    State       Role
 ------------------------------------------------------------------------------
 { shelf-1 { active-controller base-slot } port-1 }      forwarding  designated
 { shelf-1 { active-controller base-slot } port-2 }      forwarding  designated

 Number of STP member(s) displayed : 2

 Total number of STP member(s) displayed : 2
```