School of
Applied Computing

Network Simulation

NetSim
Exercise 9 (Optional)

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9.Study the working of spanning tree algorithm by varying the priority among the switches.

9.1 Theory:

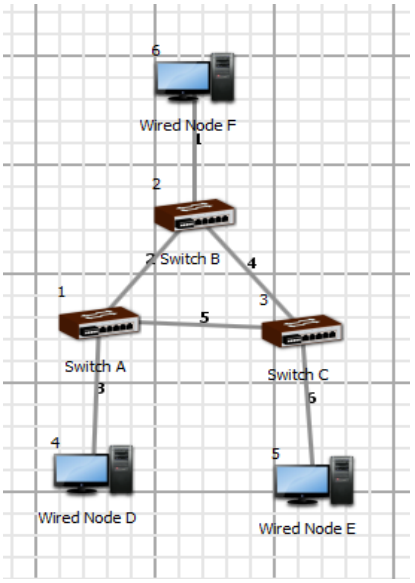
Spanning Tree Protocol (STP) is a link management protocol. Using the spanning tree algorithm, STP provides path redundancy while preventing undesirable loops in a network that are created by multiple active paths between stations. Loops occur when there are alternate routes between hosts. To establish path redundancy, STP creates a tree that spans all of the switches in an extended network, forcing redundant paths into a standby, or blocked state. STP allows only one active path at a time between any two network devices (this prevents the loops) but establishes the redundant links as a backup if the initial link should fail. Without spanning tree in place, it is possible that both connections may be simultaneously live, which could result in an endless loop of traffic on the LAN.

3.2 Procedure:

Please navigate through the below given path to,

Create Scenario: –Simulation → New → Internetworks‖

Create the scenario as shown,



(Note: Minimum three switches are needed in the simulation to study about spanning tree formation.)

Sample Inputs:

Inputs for the Sample experiments are given below,

Sample 1:

Application properties:

Traffic Type	Custom	
Source_Id	4	
Destination_Id	5	
Packet Size	**Distribution**	Constant
	Packet Size (bytes)	1460
Packet Inter Arrival Time	**Distribution**	Constant
	Packet Inter Arrival Time (µs)	20000

Wired Node D is sending data to Wired Node E. The node properties are default.

(***Note*:** Wired Node F is not generating **Traffic** to any other Wired Nodes)

Switch Properties	Switch A	Switch B	Switch C
Switch Priority	2	1	3

(***Note*:** Switch Priority has to be changed for all the interfaces of Switch.)

Simulation Time - 10 Seconds

(*Note:* *The Simulation Time can be selected only after doing the following two tasks,*

- *Set the properties of Nodes and Switches*
- *Then click on Run Simulation button***).**

Sample 2:

Set all properties as above and change properties of Switch as follows:

Switch Properties	Switch A	Switch B	Switch C
Switch Priority	1	2	3

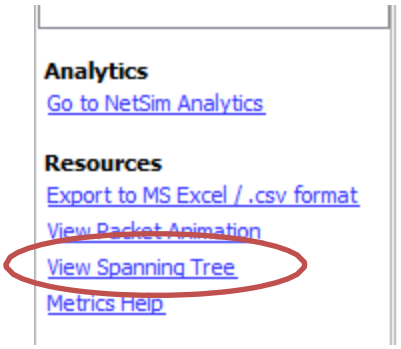
Simulation Time - 10 Seconds

(***Note:*** *The Simulation Time can be selected only after doing the following two tasks,*

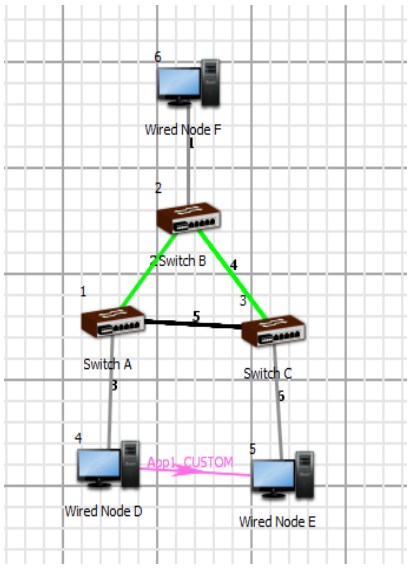
- *Set the properties of Nodes and Switches*
- *Then click on Run Simulation button*).

3.3 Output:

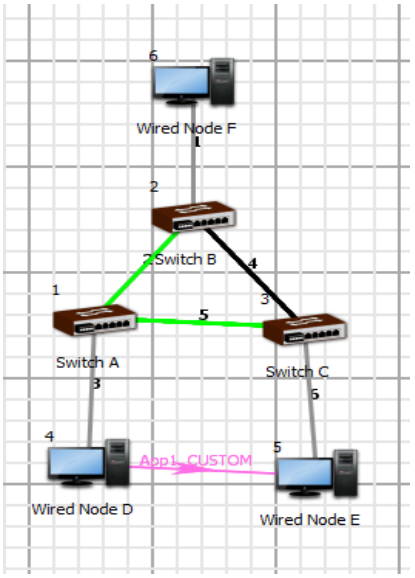
- To view the output, click the View Spanning Tree Link available on the Performance Metrics screen under Resources.



Sample 1:



Sample 2:



3.4 Inference:

In the Sample 1, Switch B was assigned least priority and was selected as a Root switch. The Green line indicates the forward path and the Black line indicates the blocked path. The frame from Wired Node D should take the path through the Switch B to reach the Wired Node E.

In the Sample 2, Switch A was assigned least priority and selected as a Root switch. In this case, the frame from Wired Node D can directly reach the destination Wired Node E.