

# Introduction to Network Simulator

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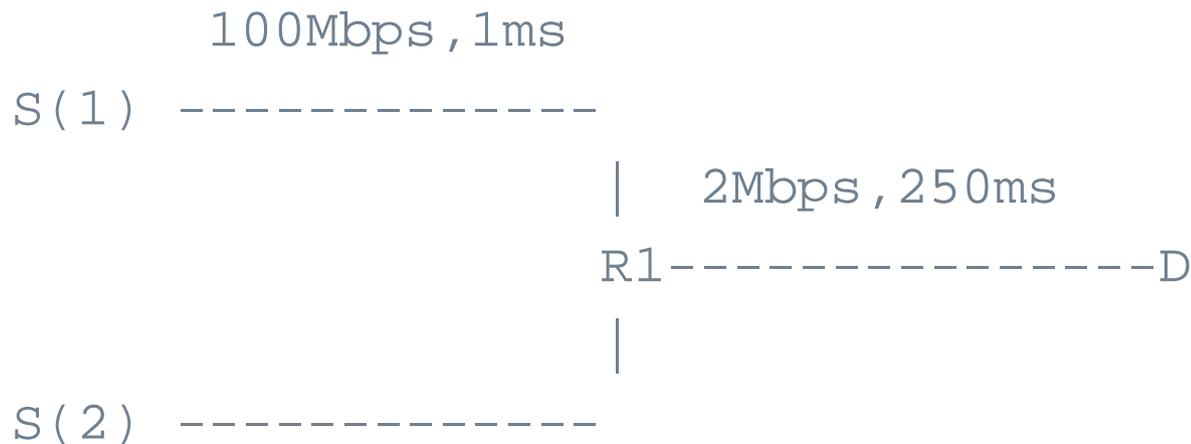
`www-sop.inria.fr/maestro/personnel/Giovanni.Neglia/ns\_course/ns\_course.htm`

Maestro team

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# Assignment

Consider the following network scenario:



- Develop a script to simulate the effect of Poisson arrival of TCP sessions with source at S(1) or S(2) and destination at D during the time interval [0s,20s]. The arrival rate at each node is 10 sessions per second. During each session a file is transferred to D. File sizes are i.i.d. distributed as Pareto random variable with mean 11000 kBytes and shape parameter 2.5.

# Assignment

- Use different generators for session time arrival and for file size and a different substream for a given generator at each run.
- Monitor the number of active sessions, the aggregate throughput and the queue size at the link R1->D.
- Discuss the way you have implemented Poisson arrivals.
- Evaluate confidence interval on the basis of 10 runs for the average throughput in the time interval [1s,3s] and [3s,5s]. Are they different? Why? (Hint: plot queue and throughput evolution for a given run).
- Run a simulation doubling session arrival rate. Comment results.

# Useful tcl commands/variables

- Execute specific commands at the end of a TCP connection

```
Agent/TCP instproc done {} {  
    commands...  
}
```

- Queue monitoring

```
set qfile [$ns monitor-queue $R $D [open  
queue.tr w] 0.05], log queue size every 0.05s in file queue.tr  
$qfile instvar parrivals_ pdepartures_ bdrops_  
bdepartures_ pdrops_ , packet arrived at the queue...
```