# User manual

The program is configured using a .txt file in a specific format. Here are the specs for the configuration file:

```
// line 0 contains the configuration flags. -numOfNodes is the only one required
// but for clarity I have defined all of the other values as well
-numOfNodes 4 -maxExchanges 10 -untilStability true -manual true -splitHorizon on -
infinity 64
// link descriptions
// linkNode1 linkNode2 linkCost
      0          1         3
      0          3         7
      1          2         6
      1          3         3
      2          3         2
// link descriptions end comment.
## links changes
// links cost changes scheduling
// linkNode1 linkNode2 changeAfterExchange newCost
       0         1               5            -1
// links cost changes scheduling end
## show best routes
// show best routes scheduling
// fromNode toNode showAfterExchange
       0      1            8
// show best routes scheduling end
## trace routing tables
// trace routing tables scheduling. The simulator will output the routing table for
// a node on every "exchange" with index between the start.. and endExchangeIndex
// node startExchangeIndex endExchangeIndex
     0            0                 5
```

This is the breakup of the first example network. All the comments (lines starting with **//**) can not be in the file and all of the lines starting with **##** must be in the file in the specified order. For example, this file will only schedule route tables tracing for node0 from the beginning to the 5th exchange:

```
-numOfNodes 3 -maxExchanges 10 -untilStability true -manual false -splitHorizon on
0 1 1
1 2 1
## links changes
## show best routes
## trace routing tables
0 0 5
```

Link descriptions - the line "0 1 1" is considered to represent the link in both directions - thus cost (1) is set to the link between node0 and node1 as well as node1 and node0. There is little input validation to check if node ids are in the range [0, numOfNodes] and if link cost is in the range [-1, inf), but nothing more. Same sort of validation is performed for all node ids. Warnings will be displayed if you try to schedule events after the program has terminated. I hope this is clear enough but if there are any problems please feel free to contact me.

## Output

The output of the simulator is divided into sections for greater readability. It has the following format

```
================= Round N ===================
simulate network exchange start
// output if something has happened during the exchange (entry timeout for example )
simulate network exchange finish

// network status - STABLE or THERE_WERE_CHANGES.
------- !!! ------ network status after all exchanges have been completed ------- !!! -------

// optional. Shown only if there are scheduled network events to happen after round N
// exchange and the result of the events
####### Scheduled network events ######

================= End Round N ===================
```

## Run instructions

You can either use the .jar file (but don't forget to give a configuration's filename as a parameter) or use maven to do whatever you like with it. The .jar file is in

```
RIPNetworkSimulator/out/artifacts/RIPNetworkSimulator_jar
```

Example:

```
$ cd project_dir/out/artifacts/RIPNetworkSimulator_jar
$ java -jar RIPNetworkSimulator.jar input2.txt
```