CASTALIA – OMNETPP

Temos um total de 8 testes para executar.

Radio Test: Neste teste. Nós trabalhamos com 3 NÓS.

NO 1: É o NO transmissor
NO 2: É o NO Transmissor
NO: É o NO receptor

O arquivo de simulação é o: omnetpp.ini – Contém alguns parâmetros básicos quer toda simulação irá precisar.

O RadioTest específico que está sendo explicado no texto é uma configuração onde há um nó movel (nó 0) e dois nós transmissores (nós 1 e 2). O objetivo é testar a recepção de dados enquanto o nó móvel se move entre os transmissores.

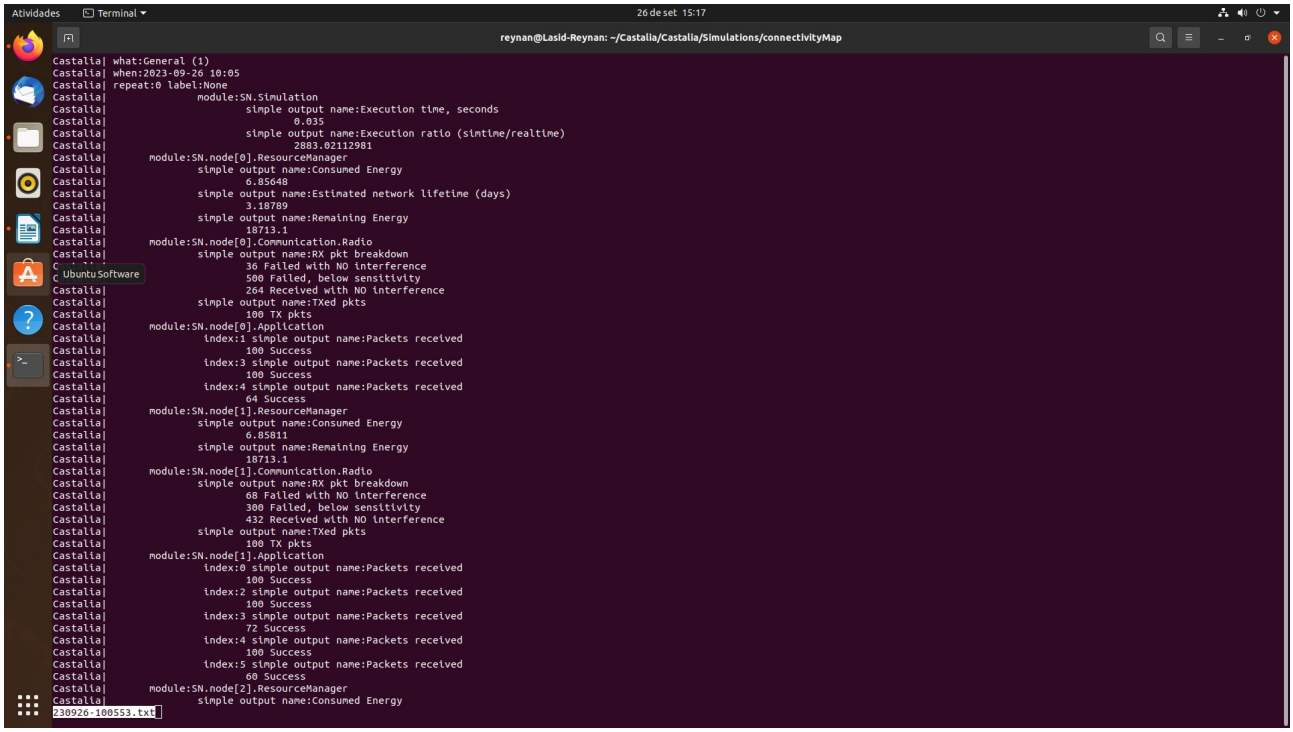
COMANDOS:

$ cd Castalia/Castalia/Simulations/radioTest/
$ ../../bin/Castalia -c General
$ less Castalia-Trace.txt

```
0.027539895218    SN.node[0].Application                Not sending packets
3.868510136702    SN.node[0].Application                Received packet #18 from node 1
4.068511499475    SN.node[0].Application                Received packet #19 from node 1
4.268512862248    SN.node[0].Application                Received packet #20 from node 1
4.468514225021    SN.node[0].Application                Received packet #21 from node 1
4.668515587794    SN.node[0].Application                Received packet #22 from node 1
4.868516950567    SN.node[0].Application                Received packet #23 from node 1
5.06851831334     SN.node[0].Application                Received packet #24 from node 1
5.268519676113    SN.node[0].Application                Received packet #25 from node 1
5.468521038886    SN.node[0].Application                Received packet #26 from node 1
5.668522401659    SN.node[0].Application                Received packet #27 from node 1
5.868523764432    SN.node[0].Application                Received packet #28 from node 1
6.068525127205    SN.node[0].Application                Received packet #29 from node 1
13.3010313342     SN.node[0].Application                Received packet #65 from node 2
13.501041575762   SN.node[0].Application                Received packet #66 from node 2
13.701051817324   SN.node[0].Application                Received packet #67 from node 2
13.901062058886   SN.node[0].Application                Received packet #68 from node 2
14.101072300448   SN.node[0].Application                Received packet #69 from node 2
14.30108254201    SN.node[0].Application                Received packet #70 from node 2
14.501092783572   SN.node[0].Application                Received packet #71 from node 2
14.701103025134   SN.node[0].Application                Received packet #72 from node 2
14.901113266696   SN.node[0].Application                Received packet #73 from node 2
15.101123508258   SN.node[0].Application                Received packet #74 from node 2
15.30113374982    SN.node[0].Application                Received packet #75 from node 2
15.501143991382   SN.node[0].Application                Received packet #76 from node 2
22.30149220449    SN.node[0].Application                Received packet #110 from node 2
22.501502446052   SN.node[0].Application                Received packet #111 from node 2
22.701512687614   SN.node[0].Application                Received packet #112 from node 2
22.901522929176   SN.node[0].Application                Received packet #113 from node 2
23.101533170738   SN.node[0].Application                Received packet #114 from node 2
23.3015434123     SN.node[0].Application                Received packet #115 from node 2
23.501553653862   SN.node[0].Application                Received packet #116 from node 2
23.701563895424   SN.node[0].Application                Received packet #117 from node 2
23.901574136986   SN.node[0].Application                Received packet #118 from node 2
24.101584378548   SN.node[0].Application                Received packet #119 from node 2
24.30159462011    SN.node[0].Application                Received packet #120 from node 2
24.501604861672   SN.node[0].Application                Received packet #121 from node 2
```

CONNECTIVYMAP: *O objetivo dele é fornecer uma representação visual da conectividade na rede de sensores sem fio. Ele é responsável por rastrear e registrar informações sobre a comuniação entre NÓ s na rede. Ele gera um mapa que mostra como os NÓ estão se comunicando umcomos outros.*

Indica os pacotes que foram recebidos por cada NÓ na rede.
Fornece informações sobre por que alguns pacotes falharam em serem recebidos (se houve falha de interferência, falha de sensibilidade...). Ou seja, forece uma informaçãon detalhada e como os NÓ's estão se comnicando e onde pode ocorrer problemas de conectiidade. É uma ferrramenta valisosa para analisar o desempenho de rede sem fio.

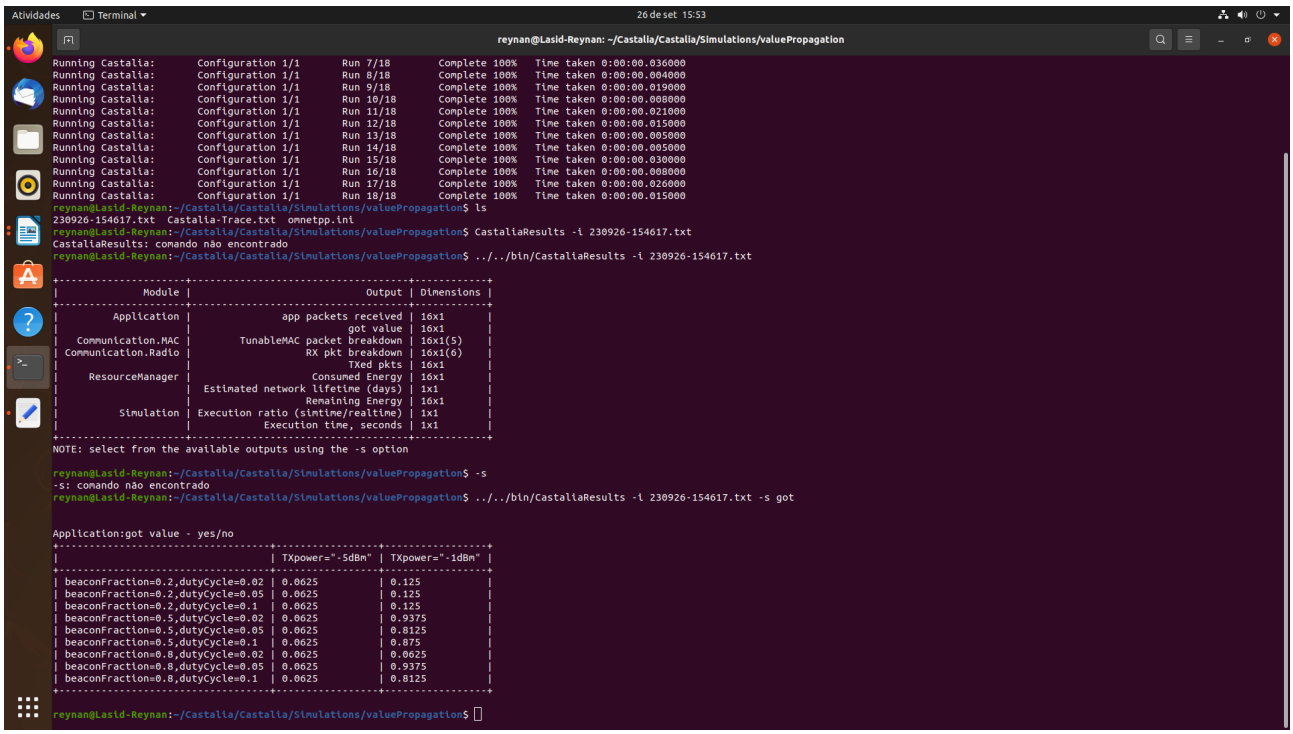


Comando:
../../bin/Castalia -c General
../../bin/CastaliaResults
../../bin/CastaliaResults

VALUEPROPAGATION:

Todos os NÓS amostram os seus sensores de temperatura periodicamente. Se o valor detetado estiver acima do limiar de 15°C, então valor precisa ser transmitido. Se um NÓ recebe esse valor de qualquer outro NÓ, ele tenta transmiti-lo e depois define uma flag indicando que fez sua parte.

Comando:
cd/Castalia/Castalia/Simulations/valuePropagation
../../bin/Castalia -c varyDutyCycle,varyBeacon,varyTxPower
../../bin/CastaliaResults -i 230926-154617.txt
../../bin/CastaliaResults -i 230926-154617.txt -s got



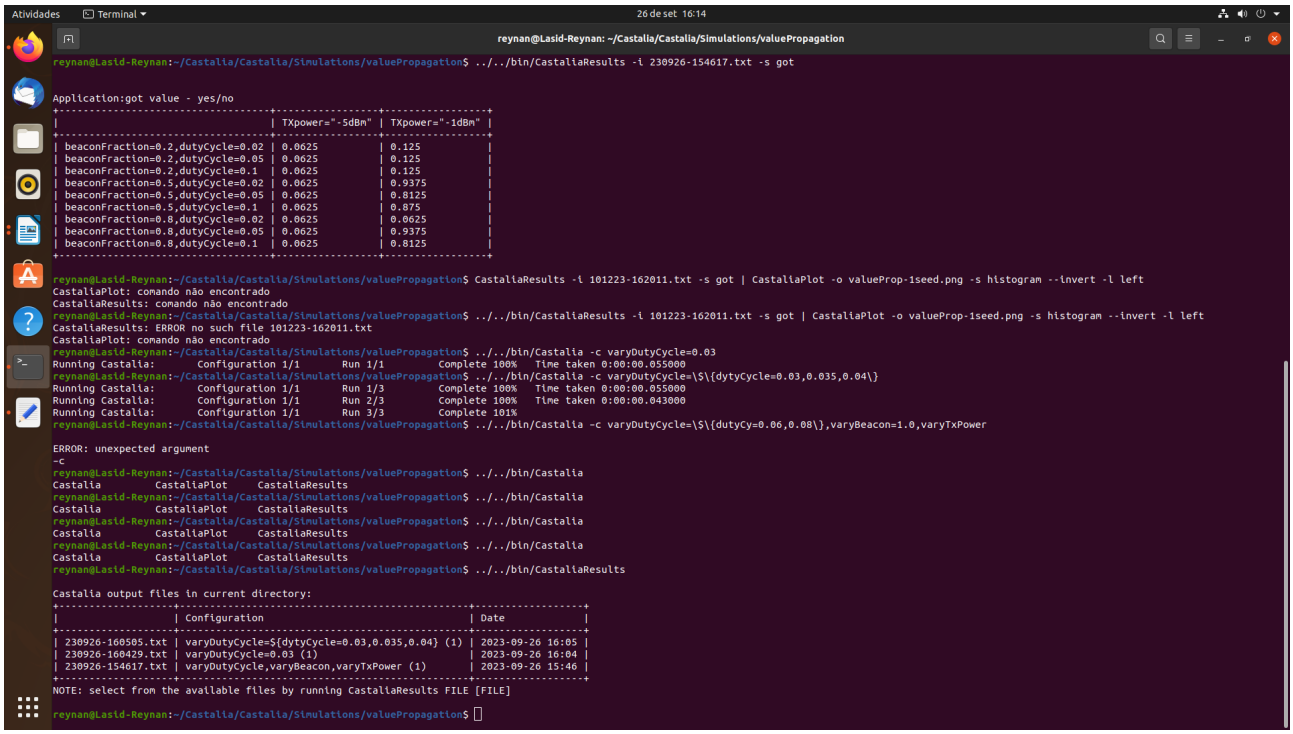

```
Running Castalia:       Configuration 1/1       Run 7/18        Complete 100%   Time taken 0:00:00.036000
Running Castalia:       Configuration 1/1       Run 8/18        Complete 100%   Time taken 0:00:00.004000
Running Castalia:       Configuration 1/1       Run 9/18        Complete 100%   Time taken 0:00:00.019000
Running Castalia:       Configuration 1/1       Run 10/18       Complete 100%   Time taken 0:00:00.008000
Running Castalia:       Configuration 1/1       Run 11/18       Complete 100%   Time taken 0:00:00.021000
Running Castalia:       Configuration 1/1       Run 12/18       Complete 100%   Time taken 0:00:00.015000
Running Castalia:       Configuration 1/1       Run 13/18       Complete 100%   Time taken 0:00:00.005000
Running Castalia:       Configuration 1/1       Run 14/18       Complete 100%   Time taken 0:00:00.005000
Running Castalia:       Configuration 1/1       Run 15/18       Complete 100%   Time taken 0:00:00.030000
Running Castalia:       Configuration 1/1       Run 16/18       Complete 100%   Time taken 0:00:00.008000
Running Castalia:       Configuration 1/1       Run 17/18       Complete 100%   Time taken 0:00:00.026000
Running Castalia:       Configuration 1/1       Run 18/18       Complete 100%   Time taken 0:00:00.015000
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ls
230926-154617.txt  Castalia-Trace.txt  omnetpp.ini
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ CastaliaResults -i 230926-154617.txt
CastaliaResults: comando não encontrado
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/CastaliaResults -i 230926-154617.txt

+---------------------+-----------------------------------+------------+
|              Module |                            Output | Dimensions |
+---------------------+-----------------------------------+------------+
|         Application |              app packets received | 16x1       |
|                     |                         got value | 16x1       |
|   Communication.MAC |       TunableMAC packet breakdown | 16x1(5)    |
| Communication.Radio |                   RX pkt breakdown | 16x1(6)    |
|                     |                         TXed pkts | 16x1       |
|     ResourceManager |                     Consumed Energy | 16x1       |
|                     | Estimated network lifetime (days) | 1x1        |
|                     |                    Remaining Energy | 16x1       |
|          Simulation | Execution ratio (simtime/realtime) | 1x1        |
|                     |             Execution time, seconds | 1x1        |
+---------------------+-----------------------------------+------------+
NOTE: select from the available outputs using the -s option

reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ -s
-s: comando não encontrado
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/CastaliaResults -i 230926-154617.txt -s got


Application:got value - yes/no
+----------------------------------+----------------+----------------+
|                                  | TXpower="-5dBm" | TXpower="-1dBm" |
+----------------------------------+----------------+----------------+
| beaconFraction=0.2,dutyCycle=0.02 | 0.0625          | 0.125          |
| beaconFraction=0.2,dutyCycle=0.05 | 0.0625          | 0.125          |
| beaconFraction=0.2,dutyCycle=0.1 | 0.0625          | 0.125          |
| beaconFraction=0.5,dutyCycle=0.02 | 0.0625          | 0.9375         |
| beaconFraction=0.5,dutyCycle=0.05 | 0.0625          | 0.8125         |
| beaconFraction=0.5,dutyCycle=0.1 | 0.0625          | 0.875          |
| beaconFraction=0.8,dutyCycle=0.02 | 0.0625          | 0.0625         |
| beaconFraction=0.8,dutyCycle=0.05 | 0.0625          | 0.9375         |
| beaconFraction=0.8,dutyCycle=0.1 | 0.0625          | 0.8125         |
+----------------------------------+----------------+----------------+

reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$
```




```
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/CastaliaResults -i 230926-154617.txt -s got


Application:got value - yes/no
+----------------------------------+----------------+----------------+
|                                  | TXpower="-5dBm" | TXpower="-1dBm" |
+----------------------------------+----------------+----------------+
| beaconFraction=0.2,dutyCycle=0.02 | 0.0625          | 0.125          |
| beaconFraction=0.2,dutyCycle=0.05 | 0.0625          | 0.125          |
| beaconFraction=0.2,dutyCycle=0.1 | 0.0625          | 0.125          |
| beaconFraction=0.5,dutyCycle=0.02 | 0.0625          | 0.9375         |
| beaconFraction=0.5,dutyCycle=0.05 | 0.0625          | 0.8125         |
| beaconFraction=0.5,dutyCycle=0.1 | 0.0625          | 0.875          |
| beaconFraction=0.8,dutyCycle=0.02 | 0.0625          | 0.0625         |
| beaconFraction=0.8,dutyCycle=0.05 | 0.0625          | 0.9375         |
| beaconFraction=0.8,dutyCycle=0.1 | 0.0625          | 0.8125         |
+----------------------------------+----------------+----------------+

reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ CastaliaResults -l 101223-162011.txt -s got | CastaliaPlot -o valueProp-1seed.png -s histogram --invert -l left
CastaliaPlot: comando não encontrado
CastaliaResults: comando não encontrado
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/CastaliaResults -i 101223-162011.txt -s got | CastaliaPlot -o valueProp-1seed.png -s histogram --invert -l left
CastaliaResults: ERROR no such file 101223-162011.txt
CastaliaPlot: comando não encontrado
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/Castalia -c varyDutyCycle=0.03
Running Castalia:       Configuration 1/1       Run 1/1         Complete 100%   Time taken 0:00:00.055000
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/Castalia -c varyDutyCycle=\$\{dytyCycle=0.03,0.035,0.04\}
Running Castalia:       Configuration 1/1       Run 1/3         Complete 100%   Time taken 0:00:00.055000
Running Castalia:       Configuration 1/1       Run 2/3         Complete 100%   Time taken 0:00:00.043000
Running Castalia:       Configuration 1/1       Run 3/3         Complete 101%
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/Castalia -c varyDutyCycle=\$\{dutyCy=0.06,0.08\},varyBeacon=1.0,varyTxPower

ERROR: unexpected argument
-c
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/Castalia
Castalia         CastaliaPlot     CastaliaResults
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/Castalia
Castalia         CastaliaPlot     CastaliaResults
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/Castalia
Castalia         CastaliaPlot     CastaliaResults
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/Castalia
Castalia         CastaliaPlot     CastaliaResults
reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$ ../../bin/CastaliaResults

Castalia output files in current directory:
+-------------------+-------------------------------------------------+------------------+
|                   | Configuration                                   | Date             |
+-------------------+-------------------------------------------------+------------------+
| 230926-160505.txt | varyDutyCycle=${dytyCycle=0.03,0.035,0.04} (1) | 2023-09-26 16:05 |
| 230926-160429.txt | varyDutyCycle=0.03 (1)                          | 2023-09-26 16:04 |
| 230926-154617.txt | varyDutyCycle,varyBeacon,varyTxPower (1)        | 2023-09-26 15:46 |
+-------------------+-------------------------------------------------+------------------+
NOTE: select from the available files by running CastallaResults FILE [FILE]

reynan@Lasid-Reynan:~/Castalia/Castalia/Simulations/valuePropagation$
```

BANtest:

- Esta simulação é provavelmente usada para avaliar o desempenho de protocolos de comunicação em BANs.

```
Todos os cenários usam a aplicação throughputTest, onde todos os nós enviam
pacotes para um nó concentrador a uma taxa constante (configurável). O
concentrador é o nó 0. Dê uma olhada no resumo das configurações. formações
sobre o consumo de energia, tempo de vida estimado da rede.
```

BridgeTest:

- Esta simulação provavelmente está relacionada à avaliação de protocolos de ponte (bridge) em redes sem fio. Pontes são dispositivos que conectam diferentes segmentos de rede e facilitam a comunicação entre eles.

simpleAggregation:

- Esta simulação pode estar relacionada à agregação de dados em redes sem fio. A agregação de dados é uma técnica que permite combinar várias mensagens de dados em uma única mensagem, reduzindo assim a sobrecarga de comunicação.

valueReporting:

- Esta simulação pode envolver o relato de valores ou informações de sensores de uma rede sem fio. É provavelmente usada para avaliar protocolos e técnicas de relatório de dados em uma rede de sensores sem fio.