

SPTF Scheduling Project

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Used Parameters

$1/\lambda$ [s]

0.8

L

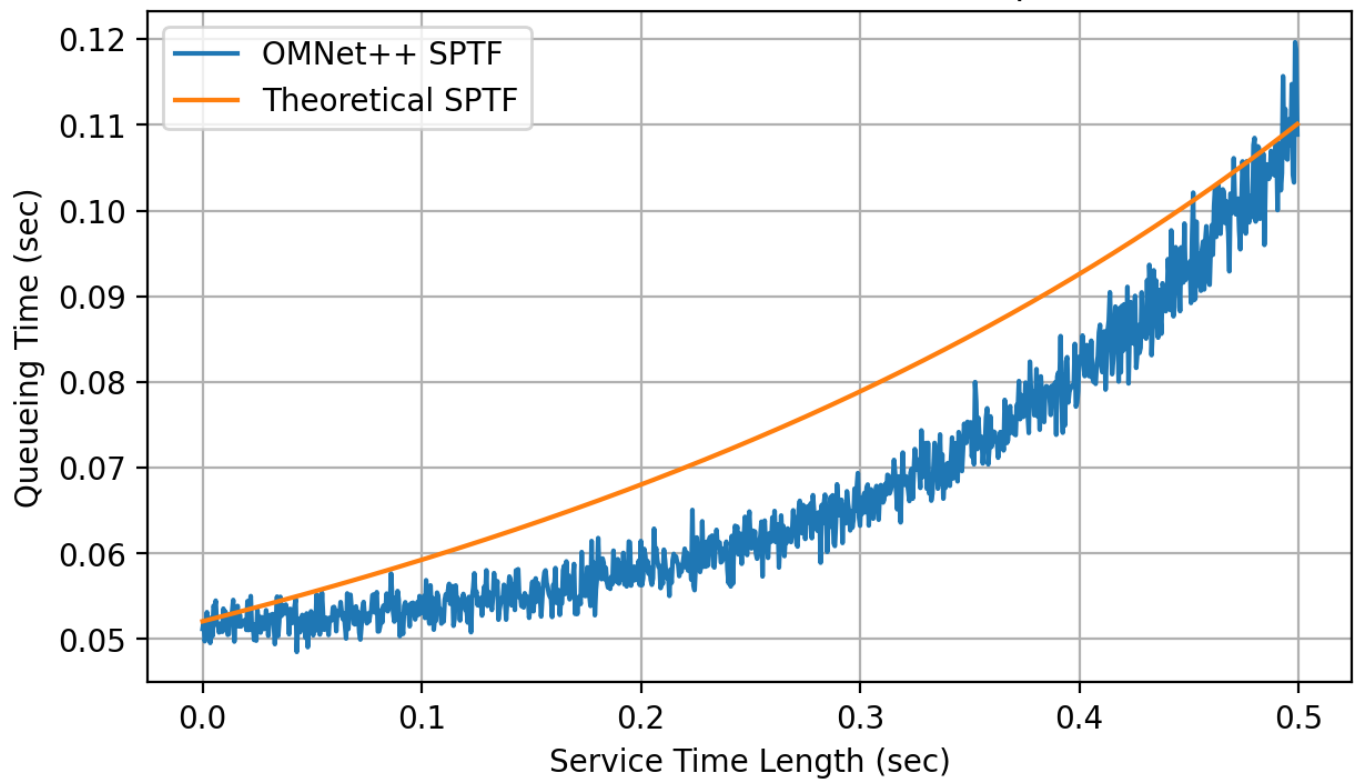
0.5

$nbIntervals$

1000

Conditional Queuing Time

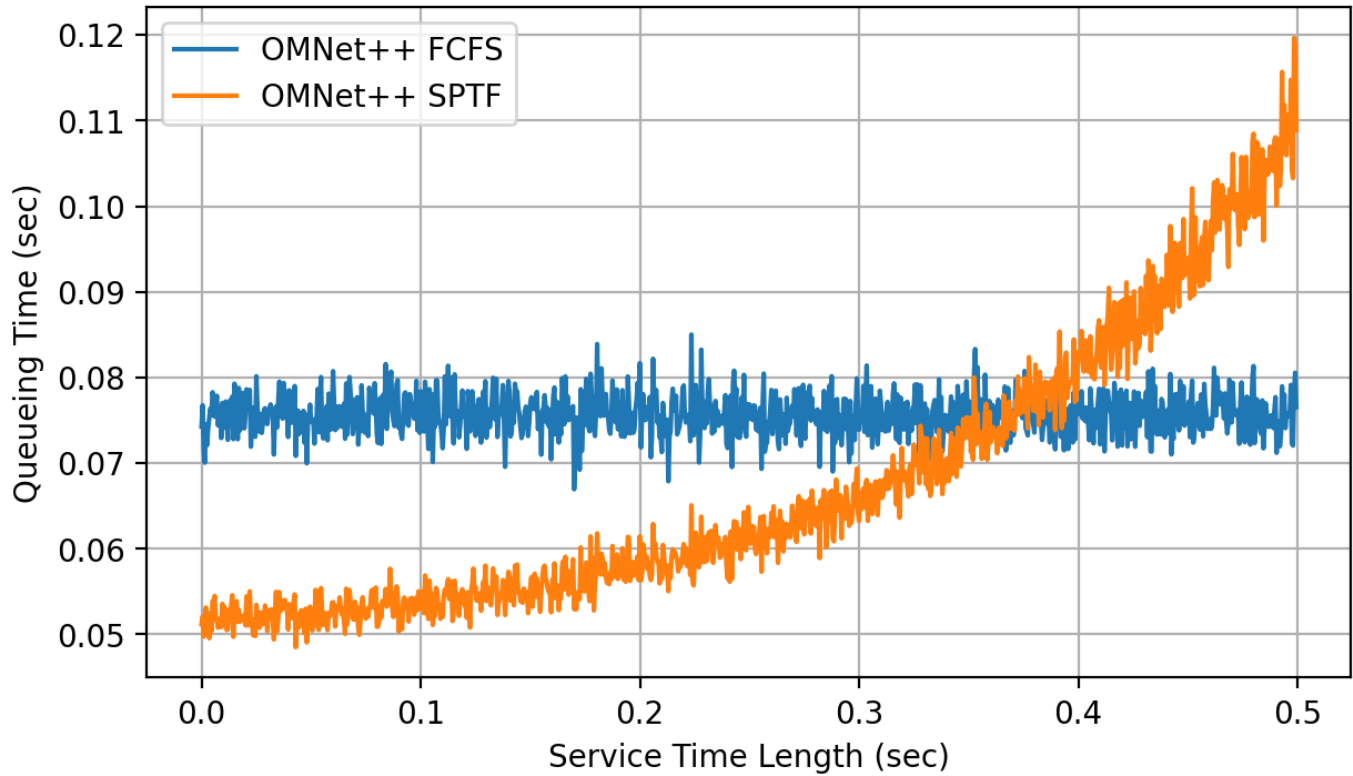
SPTF: Theoretical vs OMNet++ Comparison



MSE_{SPTF}

9.215010407196824e-05

FCFS vs SPTF Comparison (OMNet++)



General Queueing Time (from OMNet++)

SPTF

$$W_q^{SPTF}$$

0.067272024453848

FCFS

$$W_q^{FCFS}$$

0.075703430027185

Utilization factor

Theoretical

$$\rho_{SPTF} = \lambda E[S]$$

0.3125

OMNet++

$$\rho_{SPTF}$$

0.31258713738215

ρ_{FCFS}

0.31258713738215

Average response Time

OMNet++

W_{SPTF}

0.31732520810456

W_{FCFS}

0.32575661555146

Theoretical

$$W_{SPTF} = W^q + E[S] = \frac{\lambda E[S^2]}{2} + \frac{L}{2}$$

0.3020833333333333

Results

Theoretical and OMNet++ Waiting in queue curves slightly differ and this could be due to the limited amount of samples recorded during the simulation. But as expected, the W_q , and W consequently, is minimized using the SPTF Scheduling. In particular, using the above parameters, with respect to the Queuing System using the FCFS Scheduling the improvement is of 11.7942%.

The statistics used in this comparison can be found in the delivered material as '*Net1FCFS.csv*' and '*Net1SPTF.csv*'. Using the IPython Notebook file called '*SPTF Scheduling Comparison.ipynb*' it is possible to analyze statistics with other parameters by changing the .csv files.