

Analyzing Network Performance in ns-3

Spoken Tutorial Project

<https://spoken-tutorial.org>

National Mission on Education through ICT

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VIT Chennai

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Learning Objectives

In this tutorial, we will learn to



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In this tutorial, we will learn to

► Use trace sources



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- ▶ Create callback functions



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- ▶ Calculate network parameters using trace sources



System Requirements

To record this tutorial, I am using



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► **Ubuntu Linux 22.04 OS**



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- ▶ **Ubuntu Linux 22.04 OS**

- ▶ **ns-3.38**



System Requirements

To record this tutorial, I am using

- ▶ **Ubuntu Linux 22.04 OS**
- ▶ **ns-3.38**
- ▶ **NetAnim visualizer tool**



Pre-requisites

To follow this tutorial,

- ▶ **You must have basic knowledge of using Linux terminal**



Pre-requisites

To follow this tutorial,

- ▶ You must have basic knowledge of using Linux terminal
- ▶ You must know how to create a point-to-point network in ns-3



Pre-requisites

- For pre-requisite Linux and ns-3 tutorials, please visit <https://www.spoken-tutorial.org/>



Code Files

- The files used in this tutorial are provided in the Code files link



Code Files

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- ▶ Please download and extract the files

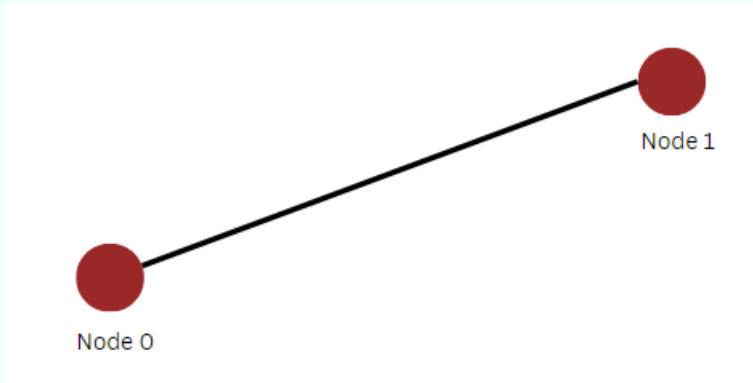


Code Files

- ▶ The files used in this tutorial are provided in the Code files link
- ▶ Please download and extract the files
- ▶ Make a copy and then use them while practicing



Topology



Summary

In this tutorial, we have learnt to

- ▶ **Use trace sources**
- ▶ **Create callback functions**
- ▶ **Connect trace sources to callback functions**
- ▶ **Calculate network parameters using trace sources**



Assignment

As an assignment, please do the following

- ▶ **Create a Point-to-Point network with 3 nodes**
- ▶ **Send packets from node 0 to node 2**



Assignment

- ▶ **Calculate throughput and transmission delay**



Assignment - Observation

```
karthik@karthik-ThinkPad:~/ns-allinone-3.38/ns-3.38$ ./ns3
[0/2] Re-checking globbed directories...
[2/2] Linking CXX executable ../build/scratch/ns3.38-tut-3
Transmission delay: 0.08432 ms
Throughput: 8.875e-05 bits/sec
karthik@karthik-ThinkPad:~/ns-allinone-3.38/ns-3.38$ S
```



About the Spoken Tutorial Project

- ▶ Watch the video available at http://spoken-tutorial.org/What_is_a_Spoken_Tutorial
- ▶ It summarises the Spoken Tutorial project
- ▶ If you do not have good bandwidth, you can download and watch it



Spoken Tutorial Workshops

The Spoken Tutorial Project Team

- ▶ Conducts workshops using spoken tutorials
- ▶ Gives certificates to those who pass an online test
- ▶ For more details, please write to contact@spoken-tutorial.org



Answers for THIS spoken tutorial

- ▶ Questions in THIS Spoken Tutorial?
- ▶ Visit <https://forums.spoken-tutorial.org>
- ▶ Choose the minute and second where you have the question
- ▶ Explain your question briefly
- ▶ The Spoken Tutorial project will ensure an answer
- ▶ You will have to register to ask questions



- ▶ For any general or technical questions on ns-3, visit the FOSSEE forum and post your question

<https://forums.fossee.in/>

Acknowledgement

- ▶ **Spoken Tutorial Project was established by the Ministry of Education, Government of India.**



Acknowledgement

- ▶ We thank Dr.Moyukh Laha from IIT Kharagpur for his domain support
- ▶ We would also like to thank Dr. R. Radha, Dr. X. Anita, and Dr. T. Subbulakshmi from VIT, Chennai for their support



Thank you

- ▶ This is Josiga, a FOSSEE Summer fellow 2023, IIT Bombay signing off

