

# Analyzing Network Performance in ns-3

Spoken Tutorial Project

<https://spoken-tutorial.org>

National Mission on Education through ICT

Karthik Chandrasekhar and Josiga S

Domain: Dr. R. Radha, Dr. X. Anita

& Dr. T. Subbulakshmi

VIT Chennai

29 November 2023



# Learning Objectives

In this tutorial, we will learn to



# Learning Objectives

In this tutorial, we will learn to

- ▶ Use trace sources







# Learning Objectives

In this tutorial, we will learn to

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



# System Requirements

To record this tutorial, I am using









# Pre-requisites

**To follow this tutorial,**

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





# 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

- ▶ The files used in this tutorial are provided in the Code files link
- ▶ Please download and extract the files

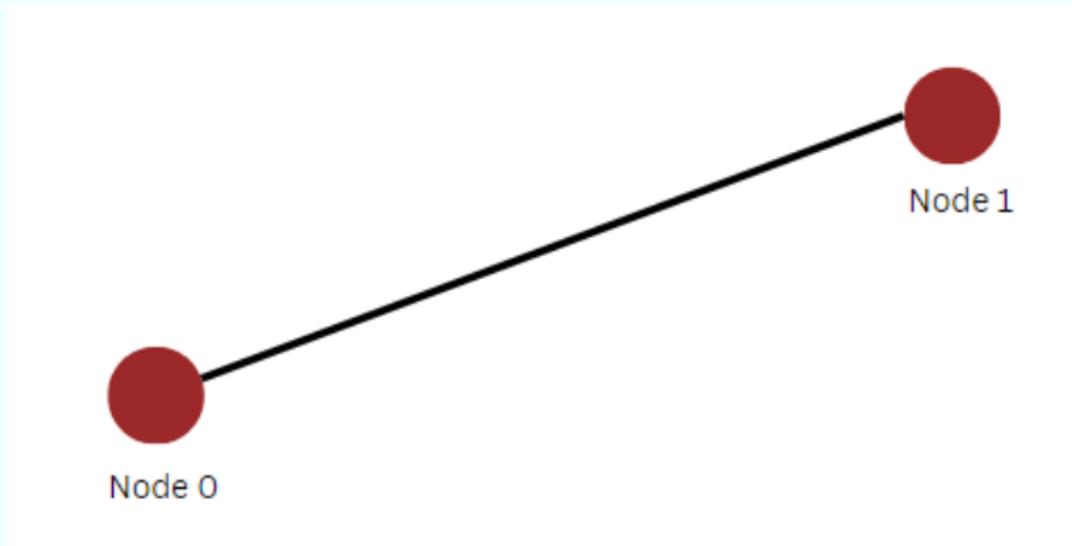


# Code Files

- ▶ 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
```





# 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](mailto: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

