

# Practical Comparison of DTN Implementations

---

<b>Prerequisites:</b>	- Good programming skills with at least Python and C++ - Experience with git, code documentation and open source projects - Experience with programming for Linux
<b>Reccomended background:</b>	- Experience with OMNeT++ is recommended (as from the course Network
<b>Level:</b>	This topic is appropriate for Master Students
<b>Language:</b>	German or English

---

## WORK DESCRIPTION

Delay or disruption tolerant networking (DTN) is a popular networking concept to exchange information in a localised way. This means that only nodes close to each other and having a direct communication link to each other (e.g. through WiFi or Bluetooth) can exchange information. Many implementations exist, mostly based on the Bundle protocol[1], for example IBR-DTN[2], Serval<sup>1</sup>, Forban<sup>2</sup>. A hood introduction and relevant references are available in [1]. This project targets a comparison of the available DTN implementations in terms of the data forwarding strategies they adopt, the wireless technologies they support and the transport protocols they adopt. A small testbed needs to be setup and all implementations tested with a sample user case.

## WORK PACKAGES

More concretely the following tasks need to be conducted:

- Literature review (including available open source implementations) of available DTN implementations.
- Compare the found DTN implementations in terms of their code availability, wireless technologies supported, transport protocols adopted, programming language, and forwarding mechanisms.
- Compare in theory the identified DTN implementations with the Epidemic implementation in OMNeT++/OPS.
- Identify a set of 2-3 relevant DTN implementations (together with supervisors).
- Definition of a small testbed and use case scenario with at least 3 hops DTN.
- Test the defined scenario in the testbed with all previously identified DTN implementations.
- Document and present the work.

This project is suited as master thesis or mini project and master thesis.

---

<sup>1</sup><http://developer.servalproject.org/dokuwiki/doku.php?id=content:tech:rhizome>

<sup>2</sup><https://github.com/adulau/Forban>

## REFERENCES

- [1] Alvar Penning, Lars Baumgärtner, Jonas Höchst, Artur Sterz, Mira Mezini, and Bernd Freisleben. DTN7: An Open-Source Disruption-tolerant Networking Implementation of Bundle Protocol 7. *arXiv:1908.10237 [cs]*, 11803:196–209, 2019. ZSCC: 0000005 arXiv: 1908.10237.
- [2] Sebastian Schildt, Johannes Morgenroth, Wolf-Bastian Pöttner, and Lars Wolf. IBR-DTN: A lightweight, modular and highly portable Bundle Protocol implementation. *Electronic Communications of the EASST*, 37(0), February 2011. ZSCC: 0000130 Number: 0.