

OppNets Forwarder with Erasure/Fountain Codes

Prerequisites:	Network Simulation course (OMNeT++)
Recommended background:	Opportunistic networking basics
Level:	This topic is appropriate for Master Students
Language:	German or English

INTRODUCTION

Opportunistic Networks (OppNets) are a type of network used to effectively communicate when traditional infrastructure based networks fail or are overloaded. Nodes in OppNets communicate directly with other nodes when nodes come into the communication range of other nodes. Since OppNets use every opportunity to disseminate data when meeting other nodes, a key component is the forwarding mechanism adopted by OppNets nodes. There exist many forwarding mechanisms that consider a variety of algorithms and inputs to decide the optimum way to forward data.

PROJECT DESCRIPTION

Erasure coding is a data encoding and decoding mechanism that helps in reliable data delivery. It is used to split and encode data into uniform-length packets which are, when received at a destination, is used to recreate the original data. At the destination, only a part of the encoded packets are necessary to recreate the original data. Fountain codes are a type of erasure coding mechanism that has a specific configuration. The purpose of this project is to develop and evaluate the performance of a forwarding mechanism that employs erasure/fountain codes to reliably disseminate data. The developed mechanism will be programmed and evaluated in a OMNeT++ based OppNets network simulation environment called OPS.

PROJECT TASKS

- Survey of relevant state-of-the-art related to erasure coding mechanisms
- Understanding the OMNeT++ simulator
- Understanding the OPS model framework (architecture and operation)
- Design and development of the erasure coding based forwarder
- Performance evaluation of the new forwarder with existing forwarding protocols
- Documentation and presentation of work

CONTACT

If you are interested in this work, please contact us via mail: projects@comnets.uni-bremen.de