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# B-DTN7: Browser-based Disruption-tolerant Networking via Bundle Protocol 7

*Lars Baumgärtner, Jonas Höchst, Tobias Meuser*

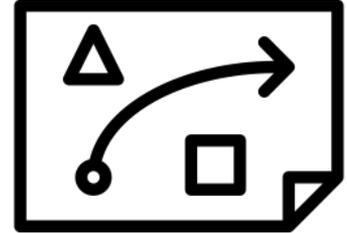


THE 6TH INTERNATIONAL CONFERENCE ON  
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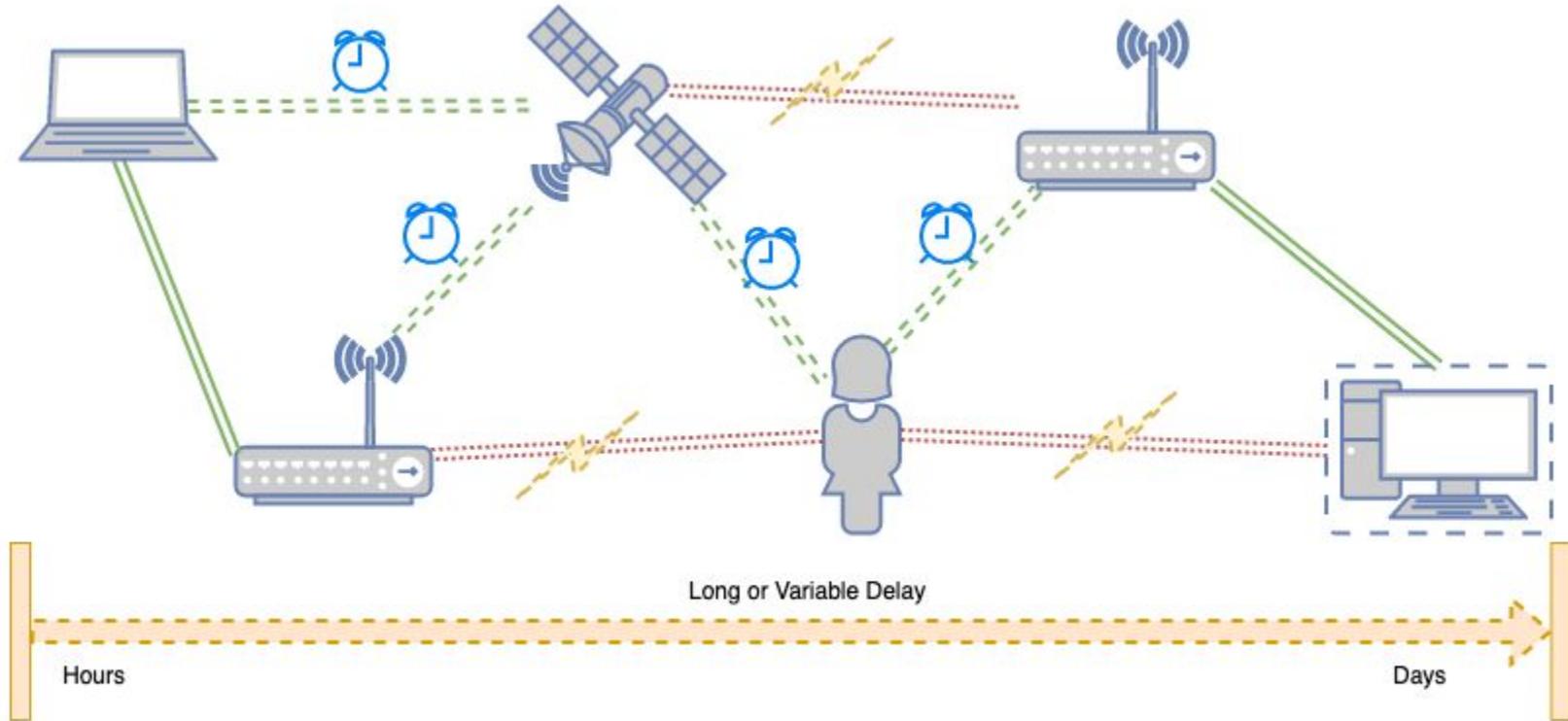




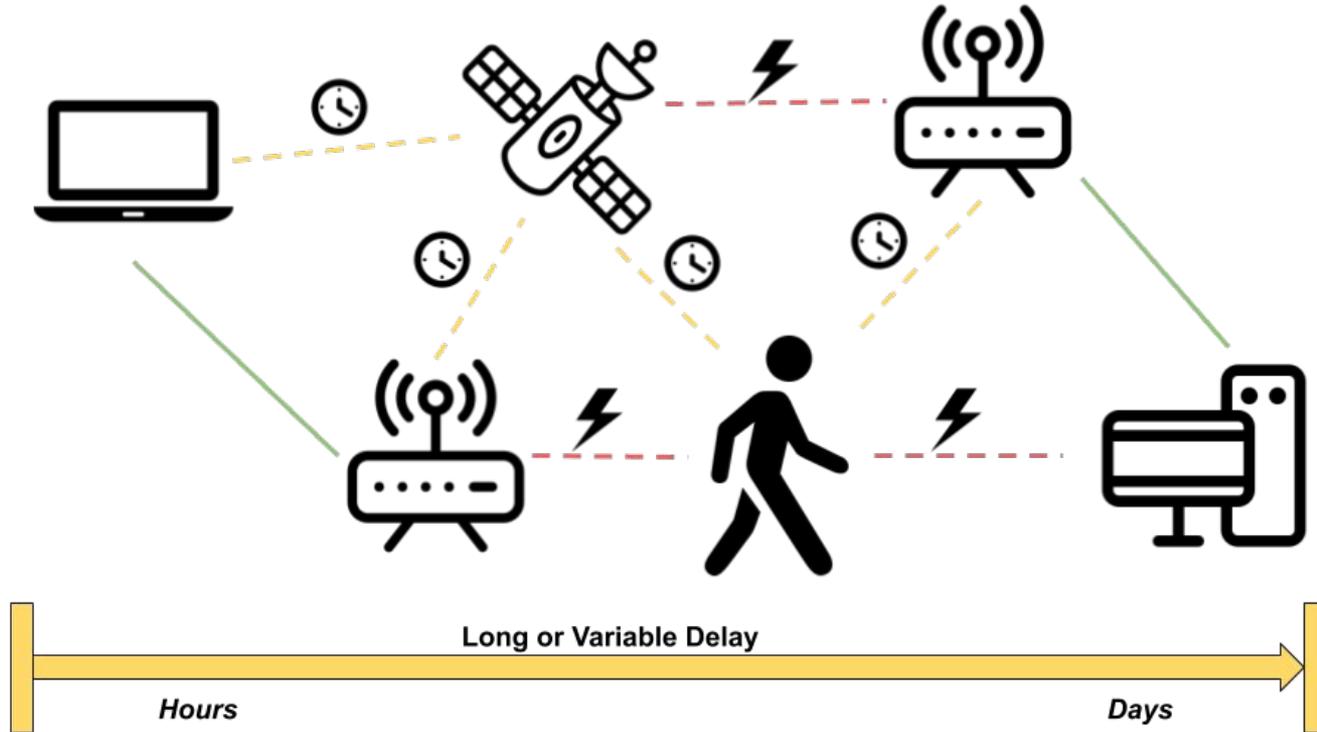
# Introduction



# What is Disruption-Tolerant Networking?



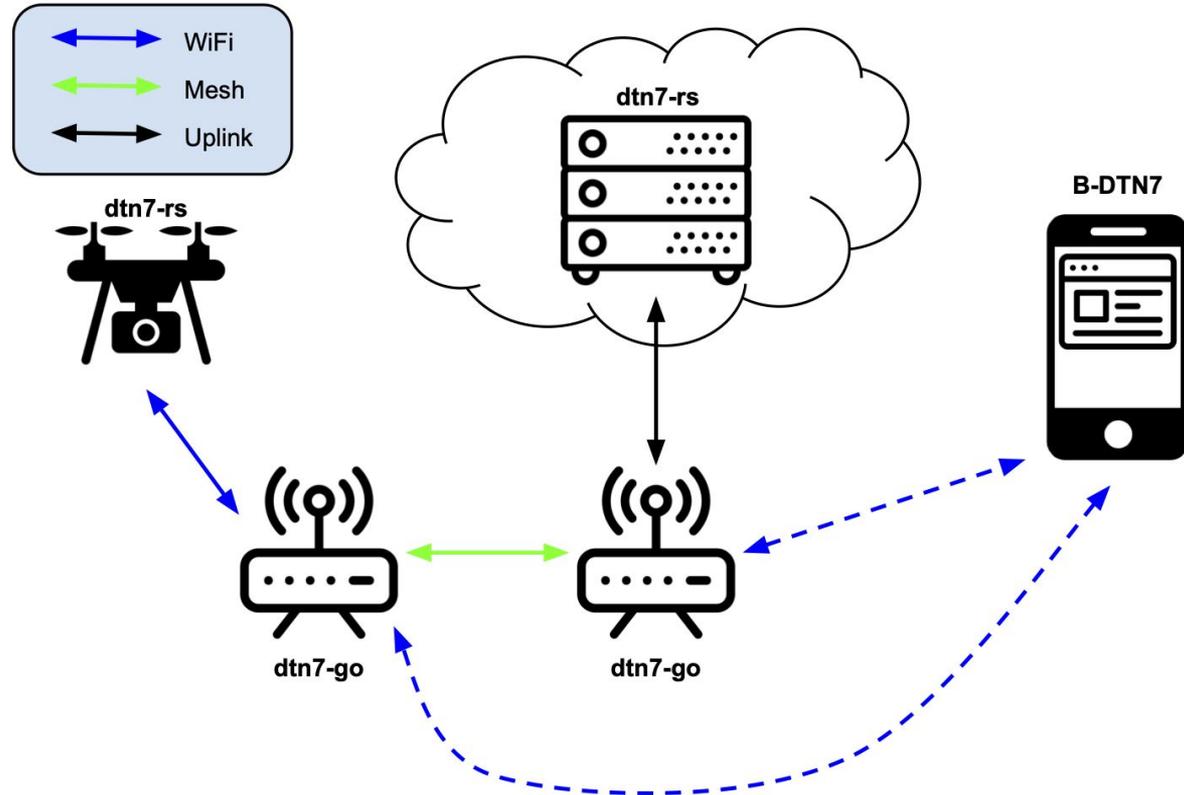
# What is Disruption-Tolerant Networking?



# Requirements for Emergency Communication

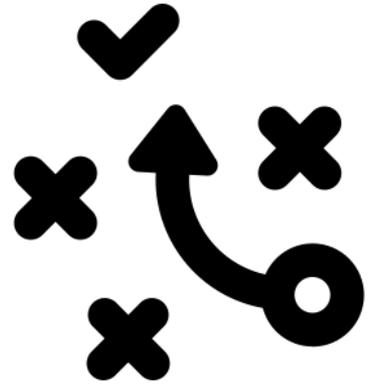
- Infrastructure independence
- Reliability
  - Non-realtime
  - Disruption-tolerant
- Energy efficient
- Zero-installation
- Multi-platform

# Solution: Browser-Based DTN





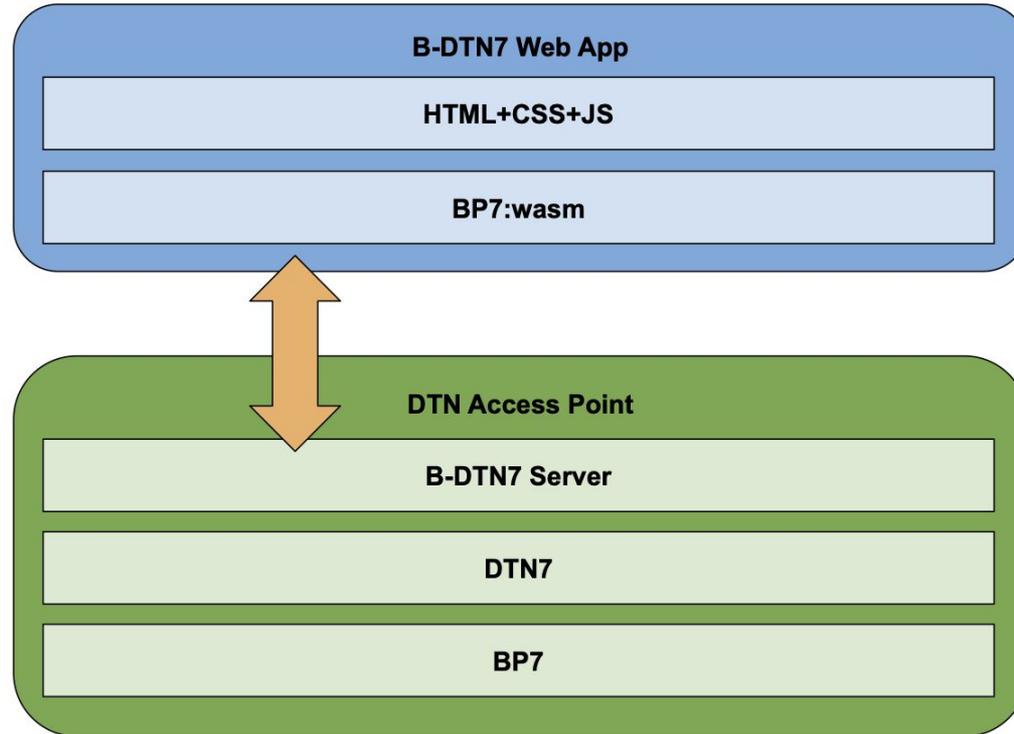
Approach



# DTN7 Foundation

- Bundle Protocol Version 7 Draft
  - Moving target
  - More modern and flexible compared to RFC 5050
  - Only few reference implementations exist
    - Often outdated
- Modularized Implementation
  - Written in Rust for security, efficiency and portability
  - Split into separate modules
    - BP7
      - Pure bundle de-/encoding
      - Easily embeddable
    - DTN7
      - Daemon with routing, neighbourhood discovery and convergence layers
  - Dual open source license: MIT / Apache

# B-DTN7 Architecture



# B-DTN7 Features

- Zero-Installation
  - Browser-based Web App
- Local Bundle Storage
- Offline Functionality
- Device-to-Device Communication
  - QR Codes
  - Audio Transmissions

**B-DTN7**

Local EID: *dtm://w-dtn7-2aiokv7b*

Bundles in store: 6

COMPOSE MESSAGE

Sender:

Receiver:  This is a required field.

Message:  This is a required field.

STORE CONTENTS

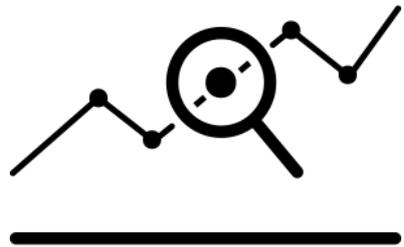
- [dtm://node3/inbox-620914288-0-dtm://node2/inbox](#)
- [187-0-dtm://node3/inbox](#)
- [189-0-dtm://node2/inbox](#)
- [01-0-dtm://node1/inbox](#)
- [44-0-dtm://node2/inbox](#)
- [201408-0-dtm://node1/incoming](#)

QR EXPORT

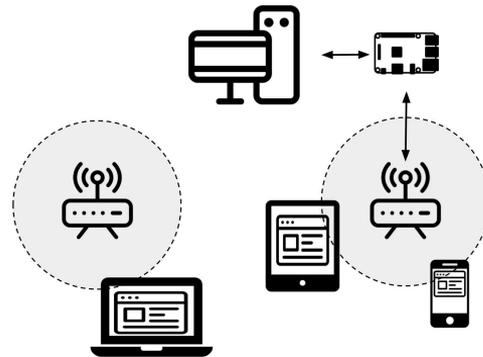
Exported: ***dtm://node1/inbox-620999244-0-dtm://node2/inbox***



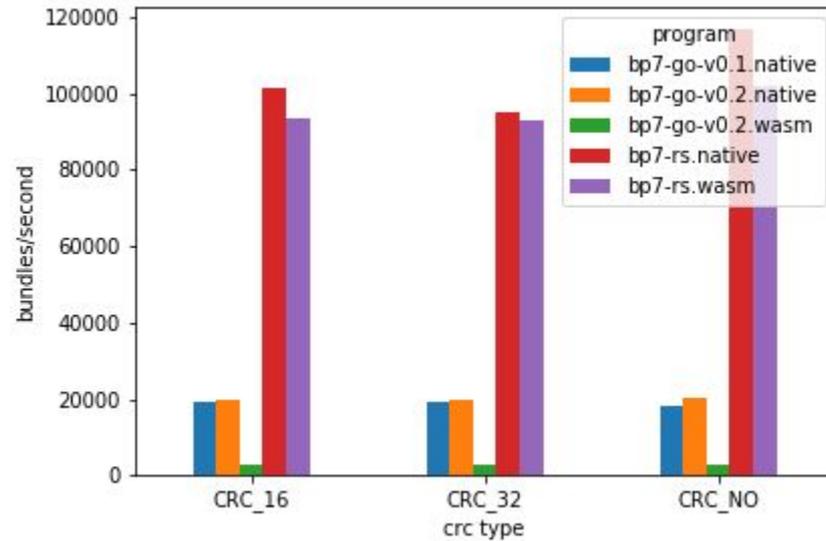
SETTINGS



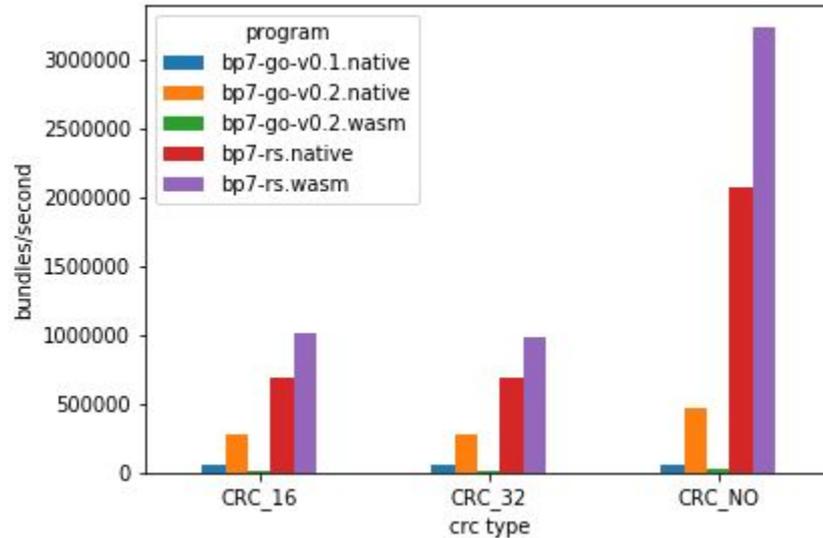
# Evaluation



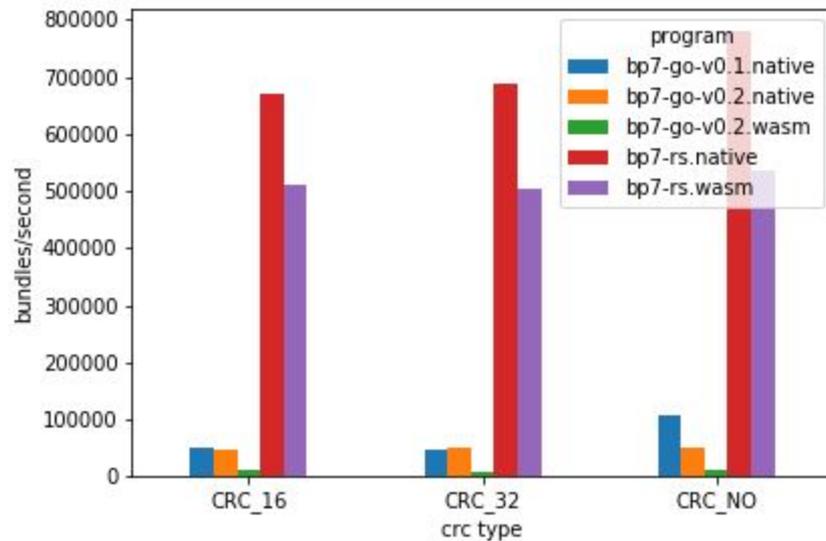
# Bundle Creation



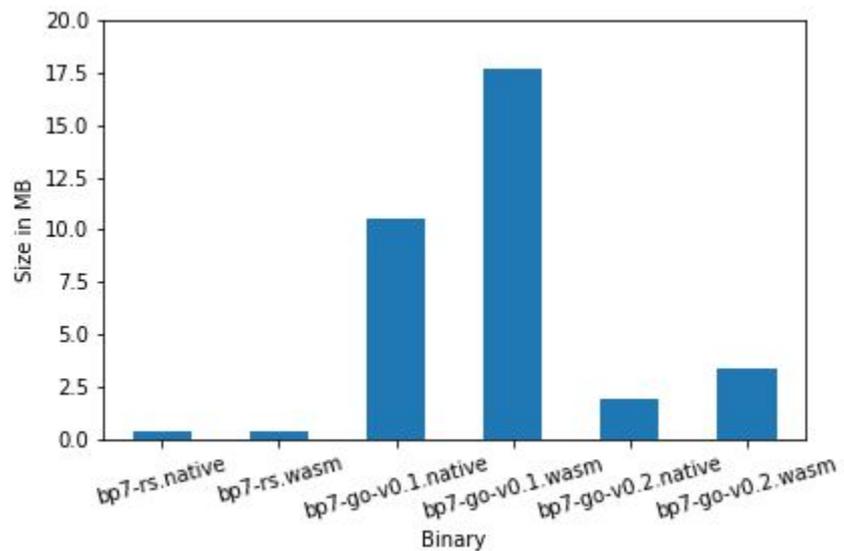
# Bundle Encoding



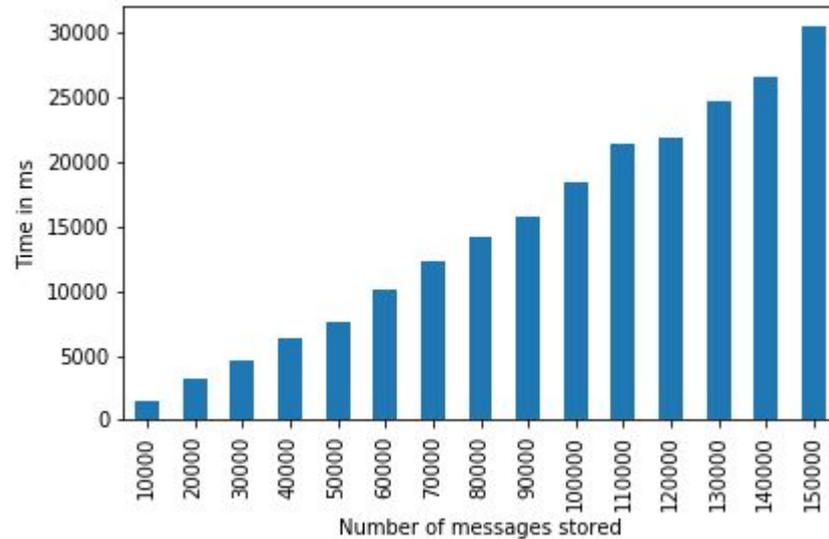
# Bundle Loading



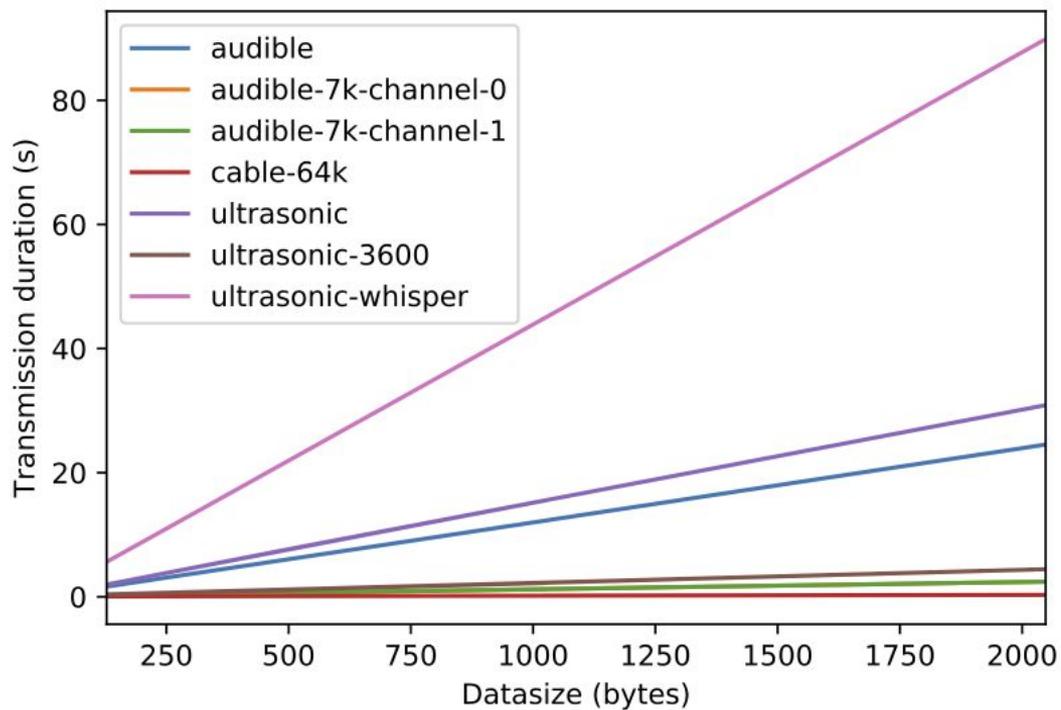
# Binary Sizes



# HTML5 Compressed Storage



# Audio Transmissions





# Conclusion

# Recap

- Efficient DTN7 Draft implementation
- Embeddable DTN7 core
  
- Browser-based DTN communication platform
  - Bridging backend DTN with mobile devices
  - Zero-installation & multi-platform from single code base
  - Various infrastructureless device-to-device communication mechanisms

# Links

Free and Open Source Implementation:

- BP7-rs: <https://crates.io/crates/bp7>
- DTN7-rs: <https://crates.io/crates/dtn7>

Evaluation Setup and Results:

- Evaluation setup: <https://github.com/stg-tud/bp7eval>
- Raw evaluation results: <dat://bdt7raw.hashbase.io>

