

Delay-Tolerant Networking: What's Ahead

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Overview

- Operations on International Space Station
- Evolution of ION
- Proposed IETF Working Group
- Commercial prospects?
- Outlook

Operations on ISS

- Approved ISS Change Request to install two DTN gateway nodes (ION) on ISS Joint Station LAN in 2015.
 - Dependent on installing Ku-band uplink to ISS.
 - Will offer DTN communication services to any ISS payloads (experiments) that need them.
 - Connecting through a DTN2 gateway node at the Huntsville Operations Service Center (HOSC) to authorized nodes on Earth.

Evolution of ION

- Integrate CGR enhancements (Unibo, DUTH).
- Improve Windows port (MSFC).
- Update CFDP and DTTPC per revised specs.
- Node auto-configuration; directory service.
- Extend CGR to probabilistic contacts.
- Contact discovery, contact plan exchange, opportunistic forwarding.

Proposed IETF Working Group

- Initiative from Fred Templin of Boeing: request Birds of a Feather slot at IETF90 (July 21-25, Toronto), propose DTN WG in Transport area.
- Revisit Bundle Protocol, adding features suggested from R&D experience since 2007.
- Streamlined Bundle Security Protocol, Bundle-in-Bundle Encapsulation, discovery standards, delay-tolerant security key administration.
- Discussion on dtn@ietf.org mailing list.

Commercial Prospects?

- Boeing seems to see a possible opportunity:
 - ISS; military aeronautic and space applications?
 - Commercial aeronautic applications?
- Industry in space: need for DTN?
 - Observation and monitoring
 - Growing communications fabric
 - Solar electric power from space?
- Underwater communications

Outlook

- Still a very active research field, despite no commercial applications.
- Sometimes the standard has to be in place to encourage business to think about it.
 - World Wide Web was developed long after TCP/IP was standardized by IETF.
 - Facebook was developed long after that.
 - For DTN, maybe it's still early.