

IETF 125 DTN Working Group

RFC4838 Discussion

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(chair hat off)

Considerations around RFC4838

An updated DTN architecture would have some benefits

- Re-affirm (the many) elements of RFC4838 that remain unchanged
- Re-visit elements of RFC4838 that have:
 - Some elements have changed via RFC9171/RFC9172 and others
 - Some elements should be refreshed
 - Some element purposes have been rethought
- Produce an updated architecture from an IETF WG.

Why DTN Architecture?

The existing Internet protocols do not work well for some environments, due to some fundamental assumptions built into the Internet architecture:

- An end-to-end path exists for the duration of a communication session
- Retransmissions based on timely and stable feedback from data receivers is an effective means for repairing errors
- End-to-end loss is relatively small
- All routers and end stations support the TCP/IP protocols
- Applications need not worry about communication performance
- Endpoint-based security mechanisms are sufficient for meeting most security concerns
- Packet switching is most appropriate abstraction for interoperability and performance
- Selecting a single route between sender and receiver is sufficient for achieving acceptable communication performance

Some of these
still are true.
Some less so.

Things that remain similar as specified (opinion)

- Virtual message switching
- Store-and-forward
- Nodes, EIDs, Registrations
- URI Schemes
- Late Binding
- Convergence Layers

Things to Review (opinion)

- Priority Classes (vs labels)
- Administrative Records (guidance on when to produce)
- Delivery Options, Administrative Records (update for BPv7)
- Reliability/Custody Transfer (methods)
- Anycast / Multicast (updated mechanisms)
- Congestion / Flow Control (updated mechanisms)
- Security (update for BPsec)

Things to Add (opinion)

- Reliability concepts and signaling
- Management/Control considerations (not just data plane)
- Quality of service, quality of protection
- Traffic engineering considerations at the bundle layer
- Compositional Layering principles
- Considerations on remove buffer bloat in the CLs by using bundling layer and CLs appropriate segment-by-segment.