

LOADng

draft-clausen-IIn-loadng-05.txt

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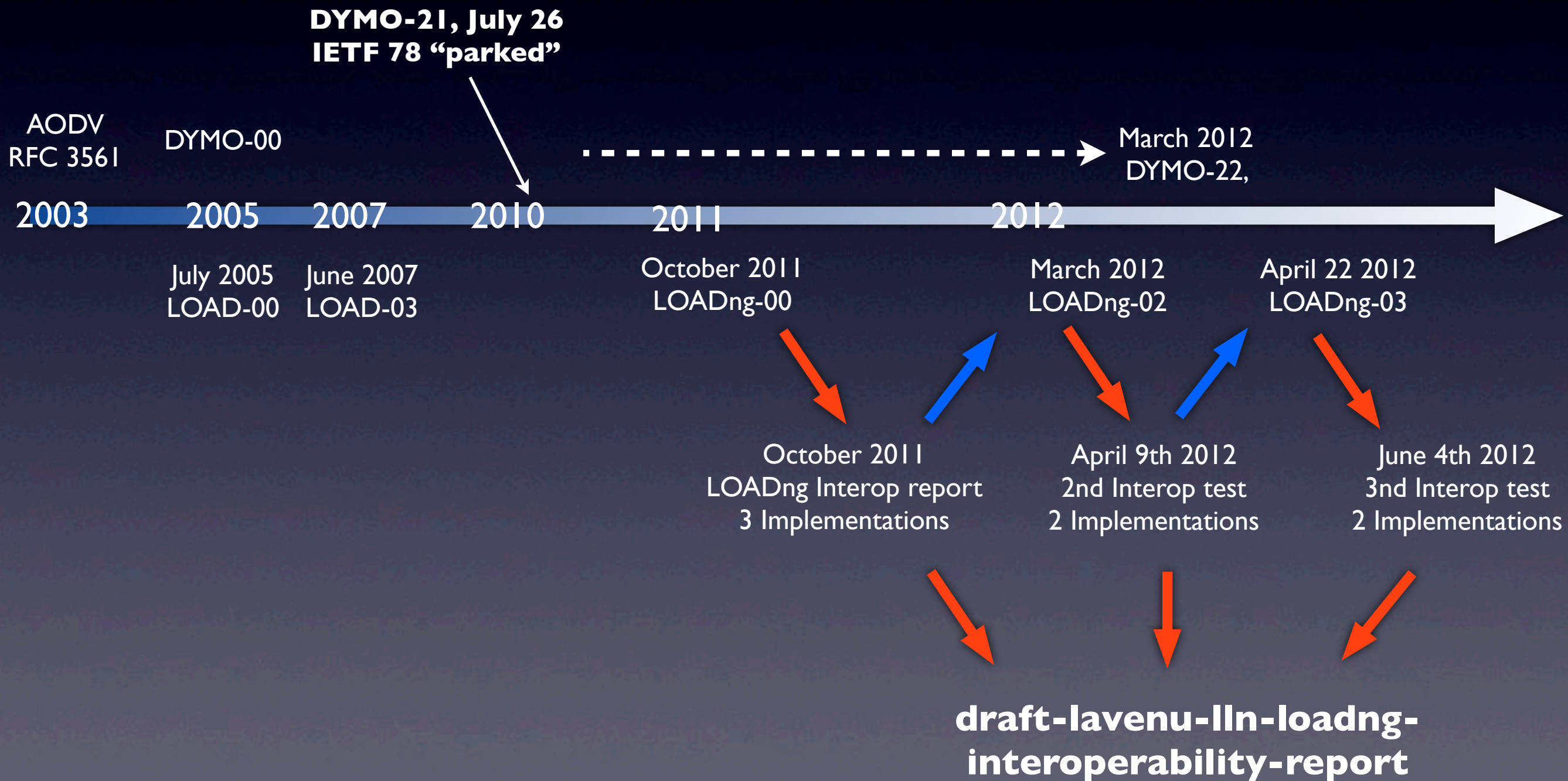
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Charles E. Perkins (Futurewei)

(The Usual) Trip Down Memory Lane...



LOADng Motivation

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- LOAD
 - (draft-daniel-6lowpan-load-adhoc-routing-03 ~2007)
 - Simplified “Ultra Light-Weight” [RFC3561]
 - Constrained Channels, Devices
 - Had some issues; not carried through standardization
 - But, issues solved (undocumented), LOAD actually deployed

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 - Simplified “Ultra Light-Weight” [RFC3561]
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 - Had some issues; not carried through standardization
 - But, issues solved (undocumented), LOAD actually deployed
- LOADng goals:
 - Document & bring that which is deployed to the IETF
 - Integrate into the [MANET] architecture, e.g.:
 - Use [RFC5444] (&[RFC5498]) for flexibility, extensibility
 - Support optional use of [RFC6130], [RFC6621], [RFC6206]

What is LOADng?

- On-demand Routing Protocol
- Using [RFC5444], [RFC5498]
- Derived from [RFC3561], simplified & extended
- Philosophy:
 - Lean, mean core specification
 - Companion documents

LOADng core spec

Derived from [RFC3561], simplified

- Only the destination responds to an RREQ
 - Reduced complexity of protocol operation, message sizes
 - Eliminates Gratuitous RREPs
- Does not mandate a precursor list
 - Few overlapping routes are in use concurrently
 - Reduced state, protocol operation

LOADng core spec

Derived from [RFC3561], extended

- Hooks for optimized RREQ flooding
 - e.g., [RFC6621], [RFC6206]
- Different address lengths supported (1-16 octets)
 - IPv6/IPv4/EUI64/MAC/[RFC4494]-short addresses
- Use of [RFC5444], [RFC5498]:
 - Protocol flexibility & extensibility
- Routing Metrics

LOADng core spec

Derived from [RFC3561], extended -- under discussion

- Unicast RREQs
 - Route Repair
 -
-
- Authors working towards determining if such go in core or companion specifications

LOADng Companion

- An idea that doesn't make it to the core spec [e.g., due to lack of operational experiences, adds complexity benefiting only few deployments, ...]:
 - Want to ensure that it can be expressed as an interoperable companion specification
- Charles Perkins has submitted a couple of such candidate companion I-Ds already

Way Forward

- Would like to request WG adoption of LOADng for publication as **Proposed Standard**.
- Would expect to be ready for WGLC relatively quickly (optimistically hoping for before IETF'85):
 - Load(ng)'s of operational experiences
 - Interoperability report available (see later)
 - MIB document available (see later)
 - Large, dynamic author group

LOADng-Interop

draft-lavenu-lin-loadng-interopability-report-02.txt

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Cedric Lavenu (EDF R&D)

*“Rough Consensus and **Running Code**”*

Philosophical Position

- We don't believe in that which we haven't implemented - at least twice
- Be that, protocols or protocol features
- Thus, even for -00, we made an interoperability test & submitted an interoperability report

Document Structure

- Defined (almost) exhaustive set of 12 scenarios
 - Topology, message exchange, sequencing
- Wireshark extension
- Conducted 3 (at the end of this week, 4) interops, each documented in its own section, stating:
 - LOADng specification-version tested
 - Scenarios tested
 - Implementations tested
 - Results & Conclusions

Interop - 1

Yokohama, Japan, October 2011

- LOADng-specification version:
 - -00
- Implementations:
 - Hitachi YRL (two independent implementations)
 - LIX
- Scenarios tested:
 - 01-12 (Inclusive)
- Conclusion:
 - It worked ;) - but we found a few bugs in both code & spec

Interop - 2

San Jose, California, March 2012

- LOADng-specification version:
 - -03
- Implementations:
 - Fujitsu Laboratories of America (FLA)
 - LIX
- Scenarios tested:
 - 01, 03, 05
- Conclusion:
 - It just worked

Interop - 3

Hilton LAX, California, March 2012

- LOADng-specification version:
 - -04
- Implementations:
 - Fujitsu Laboratories of America (FLA)
 - LIX
- Scenarios tested:
 - 01-12 (Inclusive)
- Conclusion:
 - It just worked ;)

Interop - 4

Sheraton Vancouver, Canada, August 2012

- LOADng-specification version:
 - -05 (note: new [RFC5444] frame format)
- Implementations:
 -
 -
 -
- Scenarios tested:
 - 01-12 (Inclusive)
- Conclusion:
 -

Way Forward

- Would like to request WG adoption of LOADng-Interop-report for publication as **Informational RFC**
- Would expect to be ready for WGLC on the coat-tails of [LOADng]
- Would very much welcome additional implementations [we know you're out there] to come out of the bush and into the open, and participate

LOADng-MIB

draft-herberg-lin-loadng-mib-00.txt

Ulrich Herberg (Fujitsu Laboratories of America)

Robert G. Cole (US Army CERDEC)

Thomas Clausen (LIX)

(I believe Ulrich has slides for the MIB)