LOADng

draft-clausen-l1n-loadng-05.txt

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(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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• 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-lln-loadng-interoperability-report-02.txt

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“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
• 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
• LOADng-specification version:
  • -03
• Implementations:
  • Fujitsu Laboratories of America (FLA)
  • LIX
• Scenarios tested:
  • 01, 03, 05
• Conclusion:
  • It just worked
• LOADng-specification version:
  • -04
• Implementations:
  • Fujitsu Laboratories of America (FLA)
  • LIX
• Scenarios tested:
  • 01-12 (Inclusive)
• Conclusion:
  • It just worked ;)

Interop - 3
Hilton LAX, California, March 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-lln-loadng-mib-00.txt

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Robert G. Cole (US Army CERDEC)
Thomas Clausen (LIX)

(I believe Ulrich has slides for the MIB)