RIFT: Routing in Fat Trees

draft-ietf-rift-rift-20

IETF 119
Brisbane

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Jordan Head (presenting)
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Well, we passed IETF last call

• A huge “thank you” to our ADs, past and present:
  • Alvaro Retana
  • Jim Guichard
  • John Scudder
  • Andrew Alston

• And also, to our reviewers:
  • Donald Eastlake
  • Daniam Henriques
What’s new in version 20?

• **Structural and Editorial**
  • The “Overview” immediate sub-sections are now a top-level sections
  • Additions and edits in the “Terminology” section
  • Lots of formatting consistency fixes:
    • Backticks
    • **Bold vs. italics**
    • System ID vs. system ID
    • etc.

• Even more phrasing improvements
What’s new in version 20?

• **Figures and Illustrations**
  • New ASCII version of Figure 1
  • Replaced “via” with “@” in Figure 1
  • Removed SVG version of Figure 33
  • Edited Figure 8’s title to use “90 degrees” instead of “90o”
  • Fixed Figure 8 so E (East) and W (West) weren’t reversed
  • More IETF tooling challenges
    • Upload tool’s PDF rendering breaks SVGs

• **Clarified “Northern View” vs. “Southern View”**
  • **Northern View**: From the ToF down.
  • **Southern View**: From the leaf up.
What’s new in version 20?

• **Normative Clarifications**
  • **TIDE Generation**
    • In the previous version, the language describing the algorithm could potentially allow an implementation to not send all of the TIDEs.
      • HEADERS = At most TIRDEs_PER_PKT headers in TIEDB starting at NEXT_TIDE_ID or higher that SHOULD be filtered by is_tide_entry_filtered and MUST either have a lifetime left > 0 or have no content
    • The “at most” language could make it legal for an implementation to do the following:
      • Let’s say the database contains TIDEs 1, 2, 3, 4, 5 and TIRDEs_PER_PKT is set to 5.
        • NEXT_TIDE_ID = 1
        • HEADERS = 1, 2 (i.e., not all 5)
        • START = 1 (“else” case)
        • END = MAX_TIEID (“then” case)
        • Send 1, 2 as TIDE with range of 1, MAX_TIEID
        • NEXT_TIDE_ID = MAX_TIEID
What’s new in version 20?

• Normative Clarifications
  • TIDE Generation (continued)
    • FILTERED_TIE_DB: A filtered view of TIE_DB, which retains for consideration only those headers permitted by is_tide_entry_filtered and which either have a lifetime left > 0 or have no content.
      • This is NOT a new construct; this is purely conceptual. Preceding text in the draft indicates this.
    • HEADERS = Exactly TIRDEs_PER_PKT headers from FILTERED_TIE_DB starting at NEXT_TIDE_ID, unless fewer than TIRDEs_PER_PKT remain, in which case all remaining headers.
      • “The algorithm will intentionally enter the loop once and send a single TIDE even when the database is empty, otherwise no TIDEs would be sent for in case of empty database and break intended synchronization.”
What’s new in version 20?

• Normative Clarifications
  • Attaching Prefixes
    • “The rule of inheritance **MUST** also be maintained when a new prefix of intermediate length is inserted...”

  • “… As the aggregating prefix changes, all the negative routes **MUST** be recomputed, and then again the process may recurse in case of nested negative prefix aggregations.”
What’s new in version 20?

• Normative Clarifications
  • TIE Processing
    • “LSDB is also expected to periodically re-originate the node's own TIEs. Originating at an interval significantly shorter than default_lifetime is RECOMMENDED to prevent TIE expiration by other nodes in the network which can lead to instabilities.”

• RAIN: RIFT Adjacency Inrush Notification
  • Previously “ECN” (Explicit Congestion Notification)
  • “A node MAY set in its LIEs the corresponding you_are_sending_too_quickly flag to indicate to the neighbor that it SHOULD flood Node TIEs with normal speed and significantly slow down the flooding of any other TIEs.”
What’s new in version 20?

• Normative Clarifications
  • Level Determination Procedure (ZTP)
    • Old: “A node that lost all adjacencies with HAL value MUST hold down computation of new DERIVED_LEVEL for a short period of time...”
    • New: “A node that lost all adjacencies with HAL value MUST hold down computation of new DERIVED_LEVEL for at least one second...”
What’s new in version 20?

• Further Clarification
  • Balancing Bandwidth (BAD Computation)
    • Context:
      • “On a node, L, use Node TIEs to compute from each non-overloaded northbound neighbor N to compute 3 values:”

• Old
  • $L_N_u$: as sum of the bandwidth available to N
  • $N_u$: as sum of the uplink bandwidth available on N
  • $T_N_u$: as sum of $L_N_u \times \text{OVERSUBSCRIPTION_CONSTANT} + N_u$

• New
  • $L_N_u$: sum of the bandwidth available from L to N (to account for parallel links)
  • $N_u$: sum of the uplink bandwidth available on N
  • $T_N_u$: $L_N_u \times \text{OVERSUBSCRIPTION_CONSTANT} + N_u$
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What’s new in version 20?

- Removed the Level Association Model from the Security Model
What’s new in version 20?

• **References**
  • Moved the Applicability draft reference to informative
  • Removed references to RFC6830 (LISP) in favor of RFCs 9300 and 9301
  • Added the DayOne book to the informative references
  • Added a reference RFC4086 (Random Number Generation)
  • Replaced valley-free routing (VFR) reference with an IEEE reference
  • And more
What’s new in version 20?

• IANA Considerations
  • Tony had lots of discussion with IANA and clarified some language to conform to their procedures.
  • Schema Versions bumped from 7.0 to 8.0
  • Added Expert Review criteria
What’s next?

• -21 will be published once the upload tool is open again, it addresses:
  • Comments from IANA on last review.
  • Re-adding Alankar Sharma as co-author.

• That’s it. Next stop IESG.
Questions?