Multicast to the Browser

mboned status update
interim meeting, 2020-04-21

Jake Holland, Akamai
Drafts adopted -- March 10, 2020

- **DORMS**: draft-ietf-mboned-dorms
  - "Discovery of RESTCONF Metadata for SSM"
  - Provides Discoverable Public Metadata per-\((S,G)\)
    - extended by AMBI and CBACC

- **AMBI**: draft-ietf-mboned-ambi
  - "Asymmetric Manifest-Based Integrity"
  - Provides Source-authenticated Data Integrity

- **CBACC**: draft-ietf-mboned-cbacc
  - "Circuit Breaker Assisted Congestion Control"
  - Provides Bandwidth Management

Design Presented @IETF106 mboned meeting:
- [https://www.youtube.com/watch?v=ttGJyd5is2w&t=58m45s](https://www.youtube.com/watch?v=ttGJyd5is2w&t=58m45s)
Doc Progress (text pending)

- Off-list reviews on all 3 drafts from Dino:

```
$ wc notes-dino- *
  1528  15129   84171 notes-dino-ambi.txt
   590   6480  36454 notes-dino-cbacc.txt
   164   2062  11999 notes-dino-dorms.txt
```
DORMS TBDs

● Minor clarity enhancements
  ○ "client" vs. "receiver"--consistency & definition cleanup
  ○ State (S,G) already known by other means

● Explain primary value is across management domains
  ○ App layer can learn metadata from service provider, but other layers can't without knowing app-layer protocol (possibly proprietary):
    ■ Browser (with web app in renderer process/javascript)
    ■ OS (with local app, app in browser, VM, etc.)
    ■ Network (local or further upstream)
  ○ purpose of metadata is to provide standardized info to those who need it
CBACC TBDs

● From Feedback: Major clarifications agreed in principle
  ○ Terminology overhaul: CB Ingress/Egress terminology collides with data forwarding
  ○ Add "Operational Considerations" section (*tentative)
    ■ be sure to discuss multiple CBs in same network, possibilities for interactions
      (particularly some optimizations that may be possible)

● Flesh out aggregation algorithm (Fairness & Interflow Ordering section)

● Implementation Design Considerations section TBDs

● Example network diagrams? (probably in Operational Considerations)
  ○ pick topologies to illustrate topology-relevant config settings
AMBI TBDs

- **Is it too complicated? (Fundamental question)**
  - Got this feedback from 3 people so far. Possibly a hint
  - No suggestions yet for an alternative that does the same job
  - Will update mboned if anyone tells me a simpler solution that works

- **Add section covering rejected designs that don't work**
  - this is a major component of the "too simple" feedback
  - particularly explain why shared keys are out
    - include dangers of data injection

- **Highlight better:**
  - AMBI is OPTIONAL in-network
  - contexts that need integrity (e.g. browser) can use any alternative.

- **Doc Priority: get into shape for requesting a security review**
  - after making sure we can run it ok (including fanout)
Running code: DORMS server (jetconf)

- **Off-the-shelf RESTCONF implementation**
  - YANG models integrated
    - changes in crypto-types dependency, doc update pending

- **Not yet publicly deployed**
  - but not a lab demo either
  - running on the right internal infrastructure
  - hopefully public before long
Running code: Browser work ongoing

● Dev team engaged, internal POC next month:
  ○ Play video from our LMS* product
  ○ Using Web Assembly SDK in custom chromium build

● Next steps: upstream to chromium
  ○ API cleanup begun
    ■ now based on ReadableStream API, like webtransport
  ○ Google Contributor's License Agreement approved
  ○ "Intent to Prototype" coming soon (assuming POC passes)
    ■ first steps in external engagement
  ○ Code will be BSD-licensed

● Other browsers TBD

Running code: Other Next Steps

- **libmcrx extensions**
  - Add Windows support
  - Add AMBI support
    - Maintain table of hashes, compare vs. packets
    - Loss/anomaly stats export

- **AMBI sender**
  - Cloud/CDN fanout
  - Mime type + HTTPS framing, probably
  - Starting from 106 hackathon output: [https://github.com/GrumpyOldTroll/ambi](https://github.com/GrumpyOldTroll/ambi)

- **Doc updates**
  - Probable co-author and major updates for W3C API specs
  - IETF draft cleanup

- **(maybe) AMBI auth for multicast-ingest-platform?**
Main goals for 2020

- **Significant Upstreaming of Browser API -- MulticastReceiver:** "To a first approximation, all web pages are malicious."
  - Initial proposal: https://discourse.wicg.io/t/proposal-multicastreceiver-api/3939
    - And update spec to match implementation
  - Secure data path authentication: draft-ietf-mboned-ambi
  - Bandwidth abuse prevention: draft-ietf-mboned-cbacc

- **Trials** with carriers
  - Make sure the AMT ingest architecture works for >1 carrier
  - Integrate cbacc with at least 1 bandwidth controller
  - Scale to real content with:
    - browser experimental feature on live web pages, and/or
    - content owner's app (Android STB)
Participation

Trials/POC this year?

- Interested carriers and content owners, please contact:
  - jholland@akamai.com: Jake Holland (presenter, draft author)
  - jataylor@akamai.com: James Taylor (business director, DISRUPT project)

- 1-hour Architecture walkthrough
  - questions answered
  - AS-specific achievable offload estimates (peak & typical)
    - ultimate (~3-5yr) target offloads: 50% peak, 20% typical overall traffic
      - including popular downloads, popular VOD, popular live
  - further discussions as warranted