Multicast to the Browser

mboned status update
interim meeting, 2020-04-21

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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

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
  - https://jetconf.readthedocs.io/en/latest/
  - 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

* Akamai's Aura/LMS: https://www.akamai.com/us/en/products/network-operator/licensed-multicast-solution.jsp

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
- 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