Asymmetric Manifest-Based Integrity (AMBI)

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Problem statement

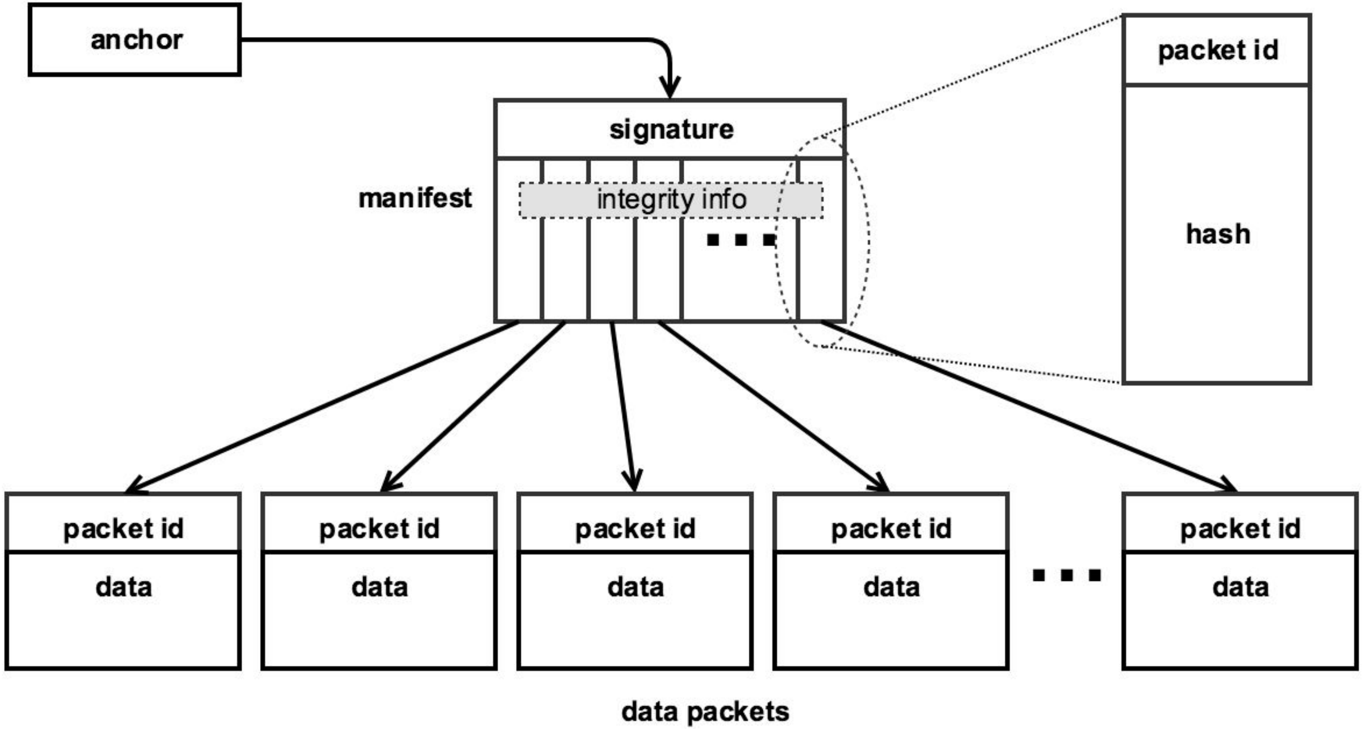
Inter-domain multicast has security issues

- Why multicast?
  - Same data to many clients
  - Loss is okay
  - Data with a deadline

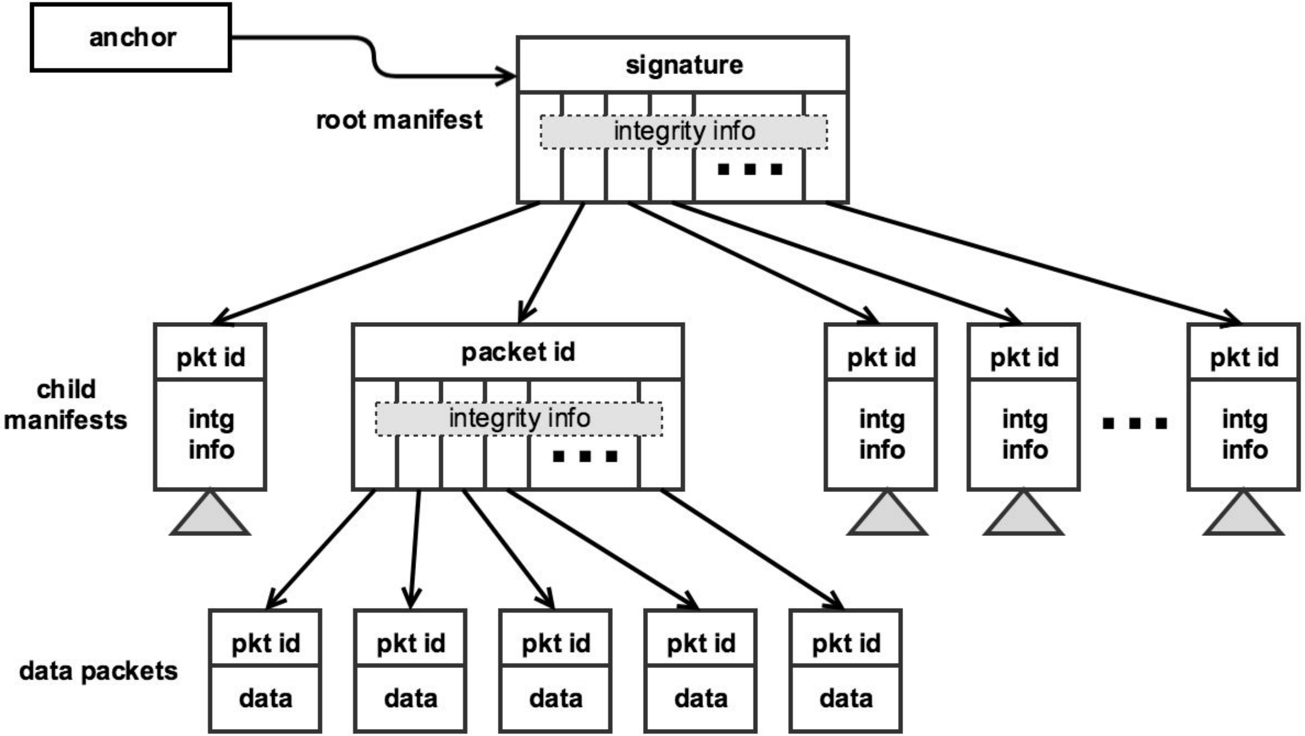
Integrity scheme requirements

- Line-rate verification
- Asymmetric crypto
- Efficient (power, CPU time)
- Loss-tolerant

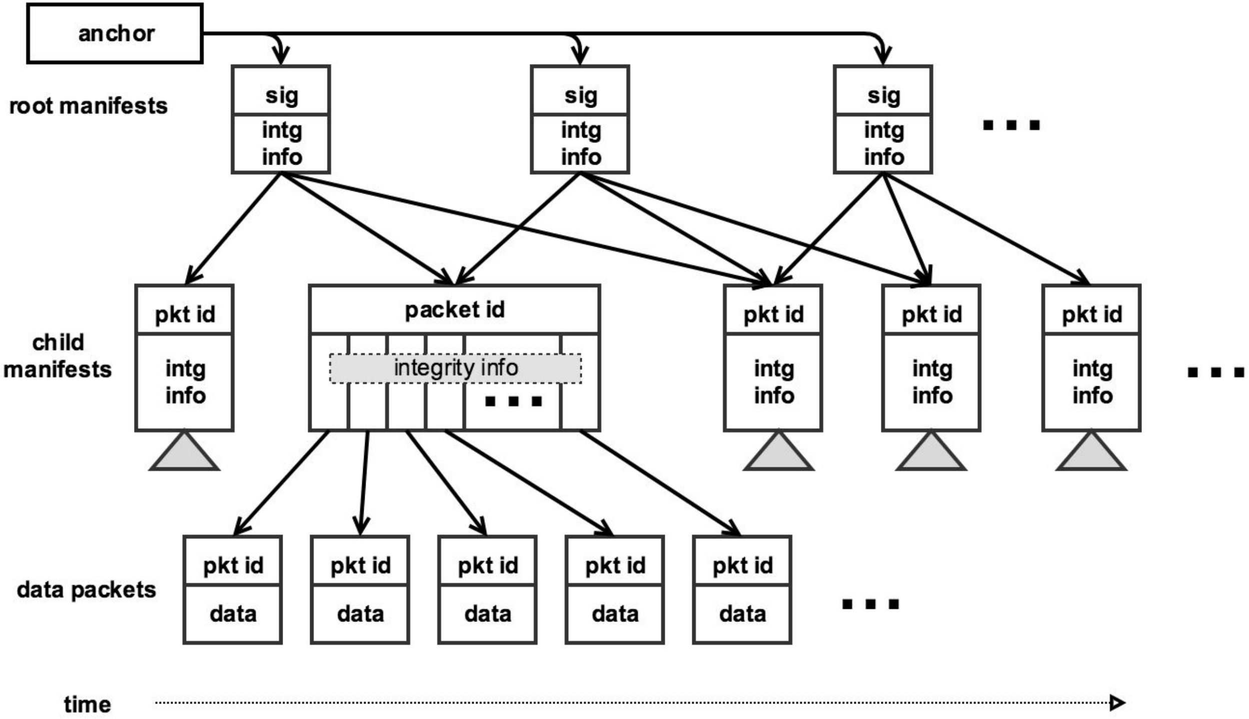
Single manifest



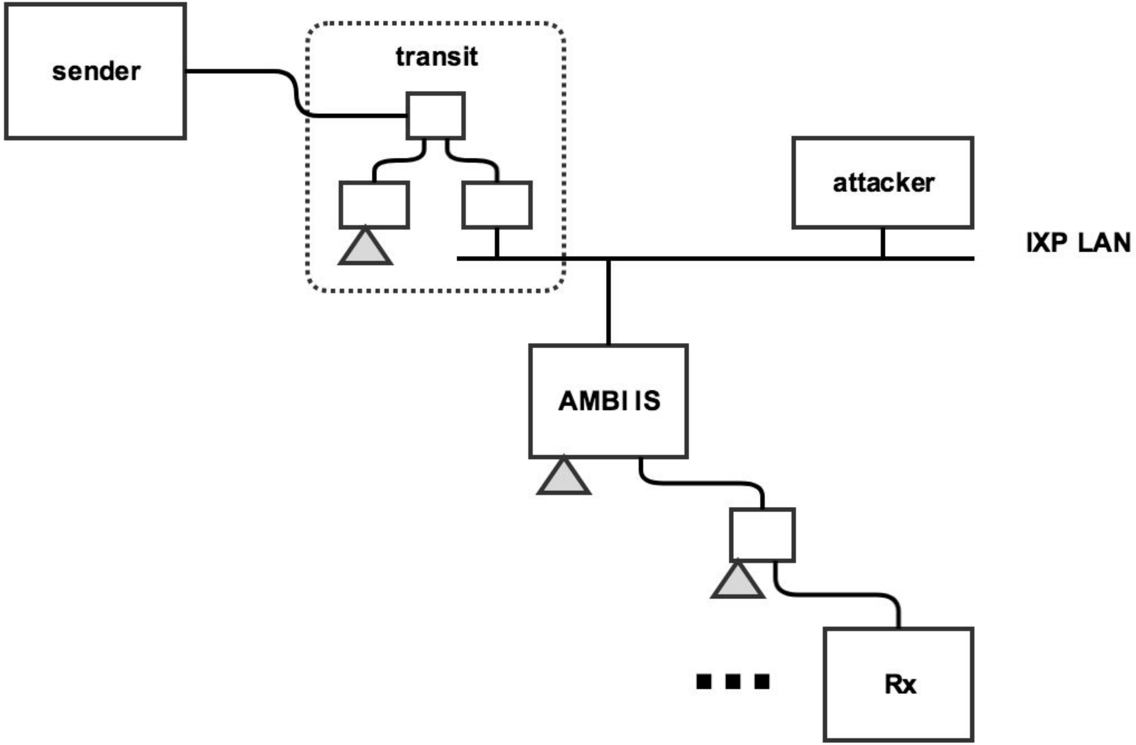
Manifest tree



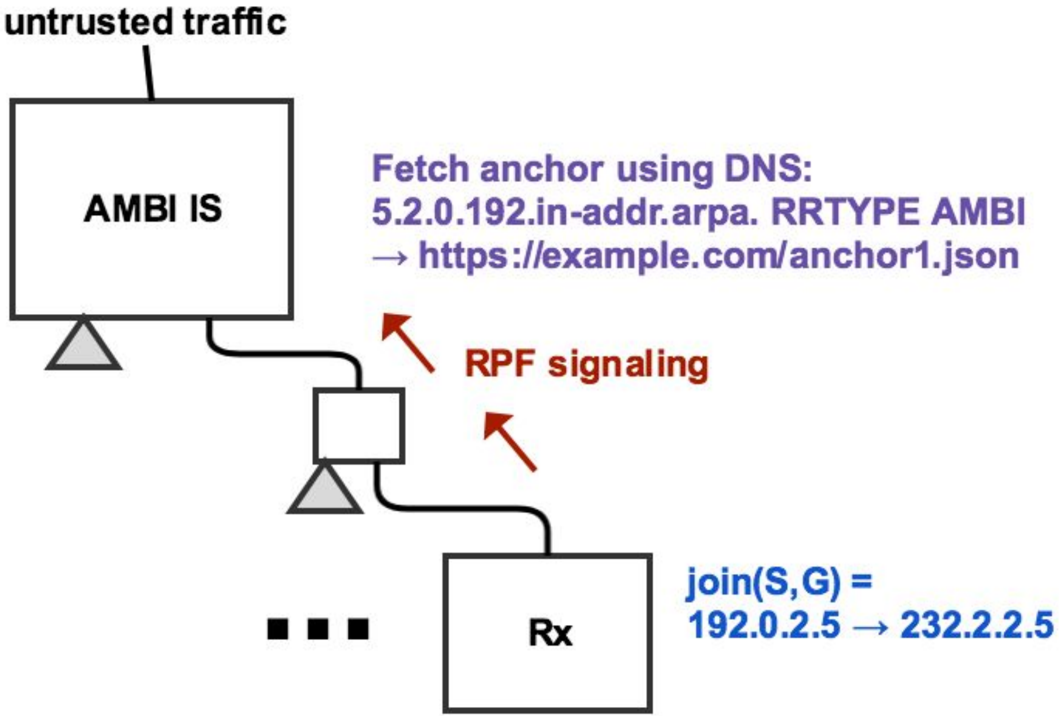
Rolling root manifest



Example threat model



Anchor discovery



untrusted traffic

AMBI IS

Fetch anchor using DNS:
5.2.0.192.in-addr.arpa. RRTYPE AMBI
→ https://example.com/anchor1.json

RPF signaling

Rx

join(S,G) =
192.0.2.5 → 232.2.2.5

Next steps?

- Analyze loss resiliency and determine optimal overlap/redundancy
- Use a Merkle tree-like structure to combine data and authentication in the same packet?

Reopen msec?

Looking for feedback

- Improvements to protocol
- Improvements to data model for anchor message
- Feedback on the DNS thing

Issues/pull requests:
https://github.com/GrumpyOldTroll/ietf-ambi