DKIM Key Update

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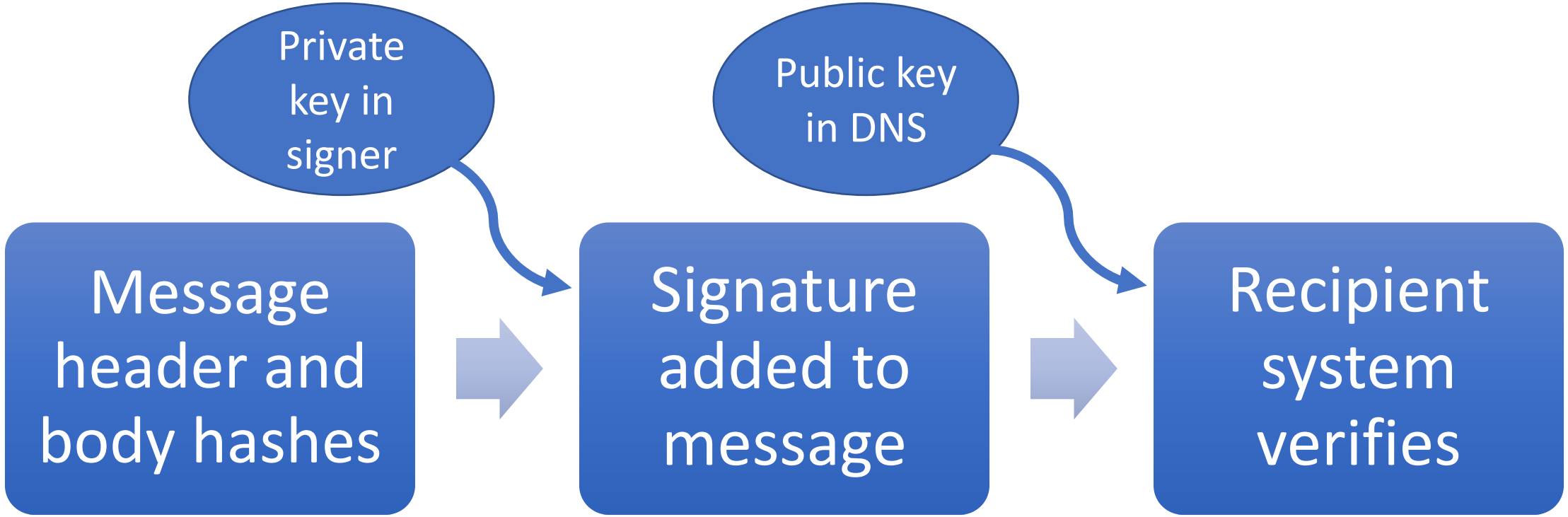
IETF 98
March 2017

What does DKIM do?



Current algorithms

- Hash algorithms
  - SHA-1 (deprecated, little used)
  - SHA-256
- Signature algorithm
  - RSA
- Algorithm choice
  - Signature says what hash and sig algorithms
  - Key says what sig and allowed hash algorithms

Signing problems

- Signers must use at least 1K keys
- Verifiers must support 512 to 2K signing keys
- Key stored in DNS TXT record
  - 1K key is almost 256 characters
  - TXT records store text in <256 chunks
  - Provisioning crudware often doesn’t handle multiple chunks
  - Yes, this is a stupid problem, but it’s not going to change

Better signatures through crudware

- Add new algorithm
  - Probably ed25519
  - Keys are small
  - Not in OpenSSL yet, will be soon
- Publish key hashes
  - Put the public key in the signature
  - Put a fixed size key hash in the DNS
- Could do either or both

Transition issues

- Sign with old and new until everyone handles new
  - For some version of everyone
- RFC says only one key record per selector
  - Could relax to one per key type
- Verifiers ignore signatures they don’t understand
  - But how reliably do they do that?
  - Probably a lot of poorly tested code there
- ARC is coming
  - Similar to DKIM, would be nice to do it right up front