HTTP Message Signatures

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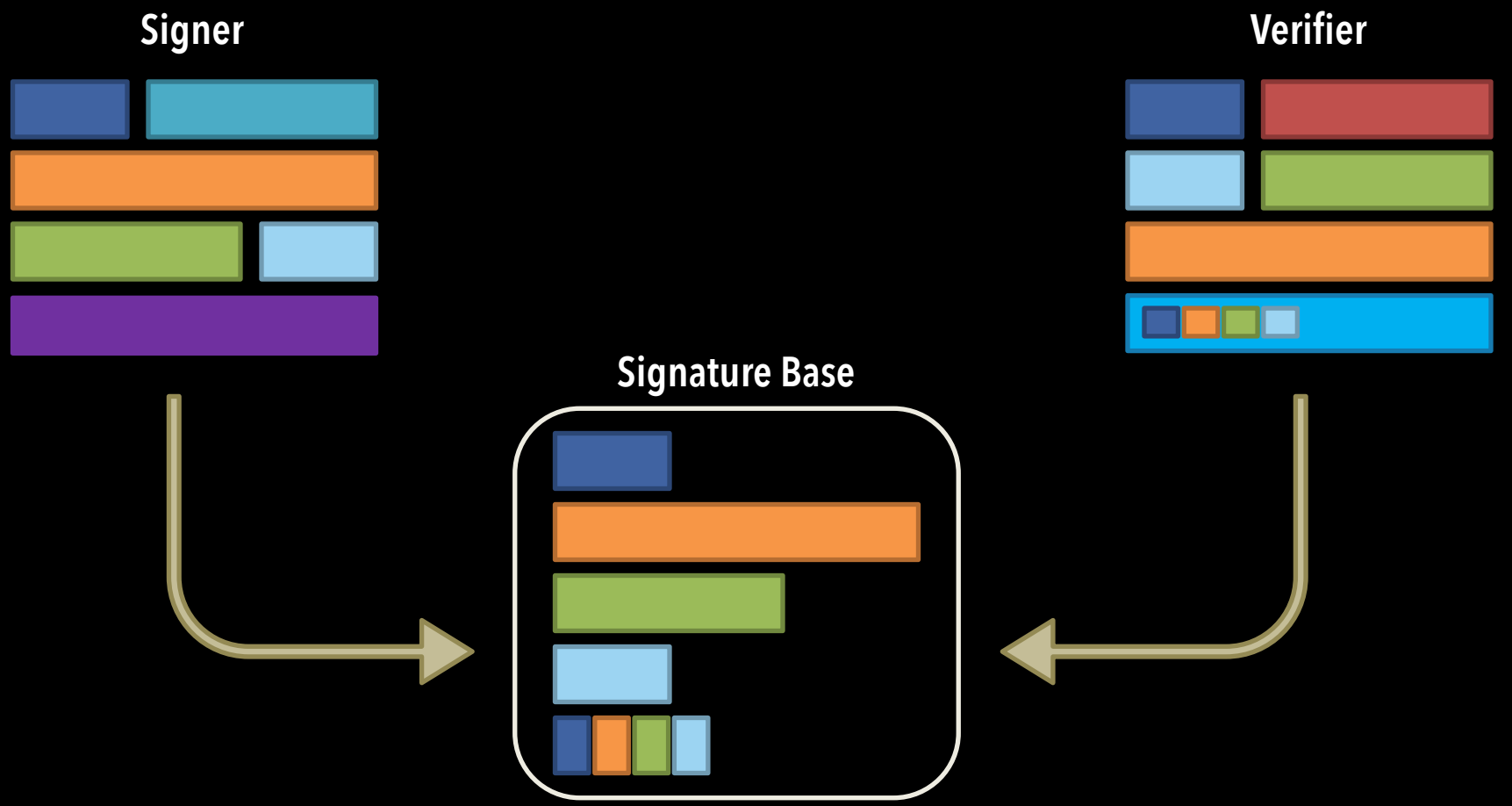
What is it?

- Detached signatures for HTTP messages
  - Requests and responses
  - Robust against common changes
- Not message encapsulation
- Just past WGLC in HTTPbis

HTTP messages change in flight



Create a common *base* to work from

Example HTTP Message

```
POST /foo?param=value&pet=dog HTTP/1.1
Host: example.com
Date: Tue, 20 Apr 2021 02:07:55 GMT
Content-Type: application/json
Content-Length: 18

{"hello": "world"}
```

Sign These Components

```
POST /foo?param=value&pet=dog HTTP/1.1
Host: example.com
Date: Tue, 20 Apr 2021 02:07:55 GMT
Content-Type: application/json
Content-Length: 18

{"hello": "world"}
```

Signature Base String

```
"@method": POST
"@target-uri": https://example.com/foo?param=value&pet=dog
"content-type": application/json
"@signature-params": ("@method" "@target-uri"
  "content-type");created=1618884475;keyid="test-key-1"
```

Signed Request

```
POST /foo?param=value&pet=dog HTTP/1.1
Host: example.com
Date: Tue, 20 Apr 2021 02:07:55 GMT
Content-Type: application/json
Content-Length: 18
Signature-Input: sig1=("@method" "@target-uri"
  "content-type");created=1618884475;keyid="test-key-1"
Signature:
sig1=:Lu2cC2Ifw3hkpXt8iC9g78qppHzEUo7hPyeFmDNqkMe4AvPzhz8cRhI1+eIBisvM7ceDh4Om0
RmKjA5CUL5TFs9NuUHC0xuZZeiy5u7THftAZZU6LgwRynMuOZgJAYXYDsGBKfxRkoGKVVEX1lSGi7RV
hYl/EgWCJzuIbJ9mLeRxzaXRr3pZXz5xRaXcsXItpsK3AnWYHoc6YAT9hP5M3oJPeb3KRHoLAn4nheC
0kFoyLzRAf6/BNb4I7JhwqVZMZBlndnI/KTBXoTK7rzYFdpX/Cbtwv+XHgli9QtHktw9hXC4Kv4lp2f
CGSPJPHKeyrZ0rhCcfe++eJe0Ykm3FIw==:

{"hello": "world"}
```

HTTP Message Signatures

This site allows you to try out HTTP Message Signatures interactively. This page works in two modes: signing and verifying, both working in four steps. To sign, add an HTTP message to the form, choose which components should be signed, choose the signing key and algorithm, and view the signed results. To verify, add a signed HTTP message to the form, choose which signature to verify, supply the verification key material, and verify the results.

Sign | Verify

Input » Parameters » Material » Output

Input

HTTP Message

Example Request | Example Response | Example Signed Request | Example Signed Response

```
POST /foo?param=value&pet=dog HTTP/1.1
Host: example.com
Date: Tue, 20 Apr 2021 02:07:55 GMT
Content-Type: application/json
Content-Digest: sha-256=:X48E9qOokqqrvdts8nOJRJN3OWDUoyWxBf7kbu9DBPE=:
Example-Dict: a=(1 2), b=3, c=4;aa=bb, d=(5 6);valid
Content-Length: 18

{"hello": "world"}
```

https://httpsig.org/

Parse

What do we need?

- Review and implementation!
  - **Especially from the security community**
- This is a hard space with weird corners
  - Are there issues we've missed?
- Who else is implementing this?