RateLimit Headers

Communicate service status

HTTPAPI-WG @ IETF-109

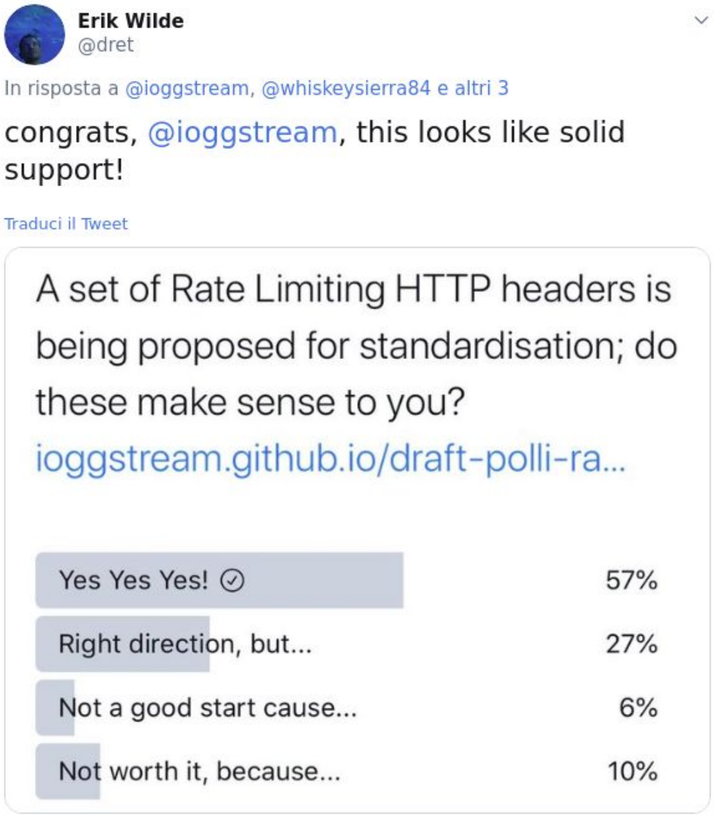
draft-rpolli-ratelimit-headers

[see the specifications]

RateLimit HTTP Fields - Goals

- communicate service limits, so clients can stop before being throttled out
- align all the *already existing* ratelimit headers and stop headers proliferation
- express multiple RateLimit policies

Who wants it & Implementers



Erik Wilde
@dret

In risposta a @ioggstream, @whiskeysierra84 e altri 3

congrats, @ioggstream, this looks like solid support!

Traduci il Tweet

A set of Rate Limiting HTTP headers is being proposed for standardisation; do these make sense to you? ioggstream.github.io/draft-polli-ra...

Yes Yes Yes! ✓	57%
Right direction, but...	27%
Not a good start cause...	6%
Not worth it, because...	10%

Configurable in:

- Red Hat 3scale
- Kong
- Envoy
- Azure API Gateway

Supported by:

- Italy
- The Netherlands

STOP headers proliferation

X-RateLimit-UserLimit: 1231513

X-RateLimit-UserRemaining

X-Rate-Limit-Limit: name=rate-limit-1,1000

x-custom-retry-after-ms

x-ratelimit-minute: 100

x-rate-limit-hour: 1000

X-RateLimit-Remaining-month

X-RateLimit-Retry-After: 11529485261

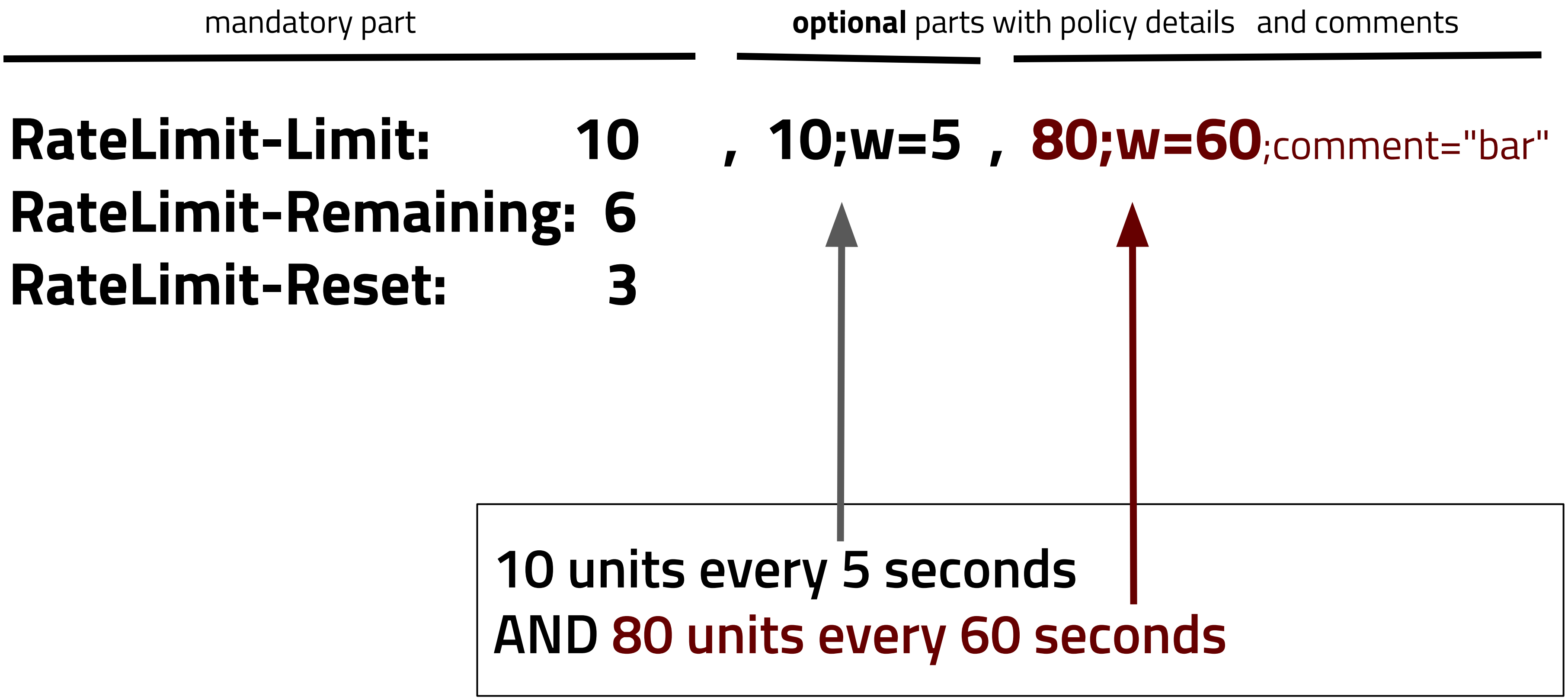
X-Rate-Limit-Reset: Wed, 21 Oct 2015 07:28:00 GMT

BANNED

RateLimit-Limit:	**#quota-units**
RateLimit-Remaining:	**#quota-units**
RateLimit-Reset:	**#delta-seconds**

... and many more!

Example with multiple quotas



mandatory part

optional parts with policy details and comments

```
RateLimit-Limit:         10  , 10;w=5 , 80;w=60;comment="bar"
RateLimit-Remaining:  6
RateLimit-Reset:          3
```

10 units every 5 seconds
AND 80 units every 60 seconds

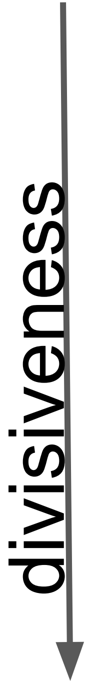
Technical choices

- #60 support **only delta-seconds** (no ntp skew & adjustment issues) like Retry-After
- #49 quota expressed in **units, may or may not be requests** support multiple quota policies and comments
- flexible semantics to express dynamic policies, sliding windows and concurrency limits
- don't mention infrastructural concepts like connections

https://github.com/ioggstream/draft-polli-ratelimit-headers/pulls?q=is%3Apr+is%3Aclosed

Open Issues Needing Input

- #86 Refine normative language WRT intermediaries
- #35 Use Structured-Headers
- #84 Define a throttling scope, related to Retry-After
- #42 Define header dependencies ?
- #41 Upper bound for RateLimit-Reset ?



divisiveness

https://github.com/ioggstream/draft-polli-ratelimit-headers/issues

FAQ

Q: Are we inventing a new service management model?

A: No. We just standardize headers semantic for the many who *already* use this pattern.

Q: Why don't use timestamps for RateLimit-Reset?

A: Timestamps *require* NTP on both sides. NTP in the real world is hard (skew, adjust, IoT, ...). We like Retry-After too ;)

Thanks!

Roberto Polli - robipolli@gmail.com

Alex Martinez - amr@redhat.com

Backup slides

Example...after 40 seconds

mandatory part

optional comment parts with policy details

```
RateLimit-Limit:      80 , 10;w=5 , 80;w=60;foo="bar"
RateLimit-Remaining:  0               ^--- now use this
RateLimit-Reset:      20
```

After 40 seconds, client consumed 80 units.
The enforced quota is the second one.

Why proliferation is bad?

Currently every API gateway implements custom ratelimit headers

Clients consuming APIs behind different gateways have to support different ratelimit headers.

The reality is that they ignore them