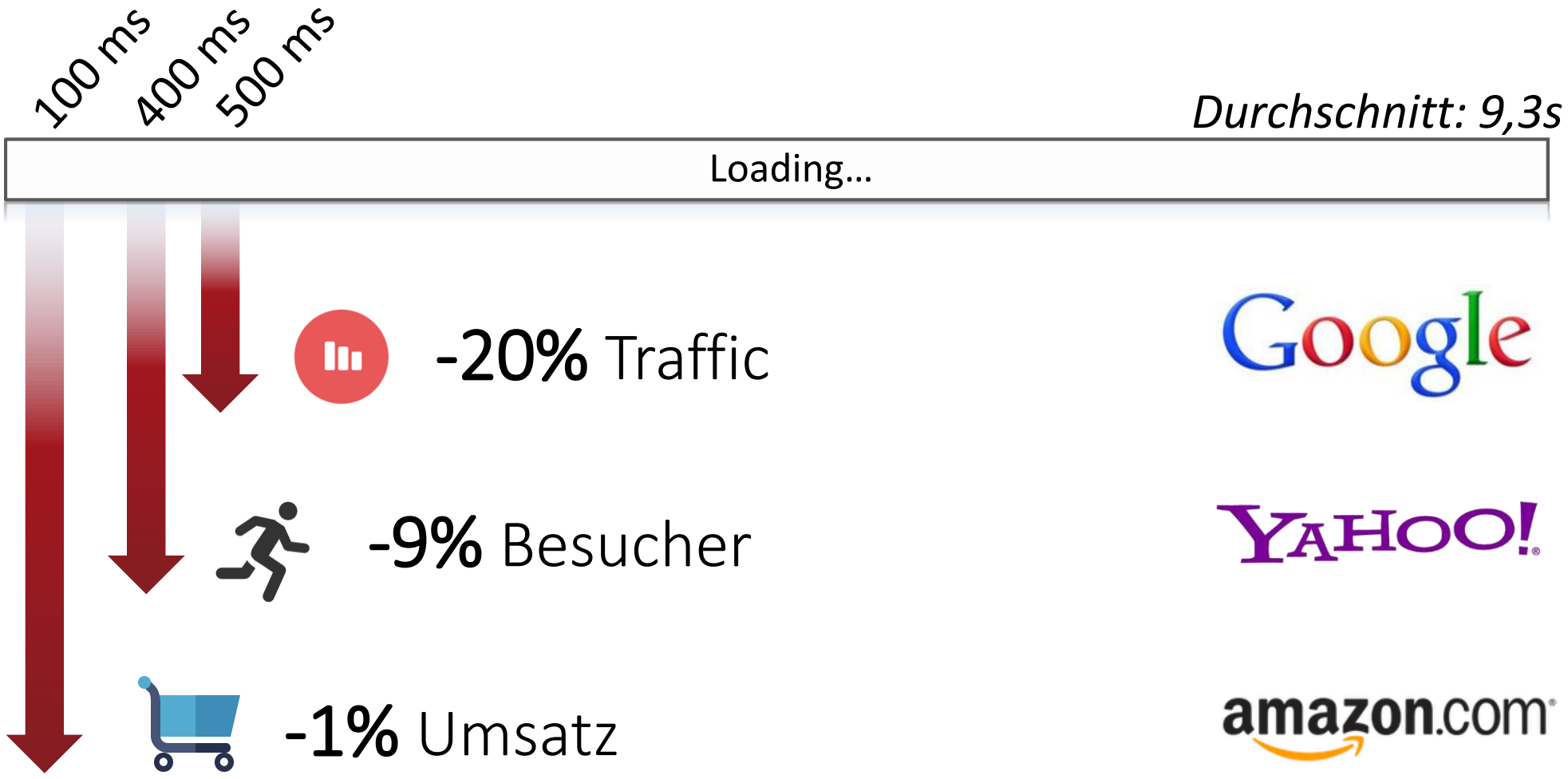
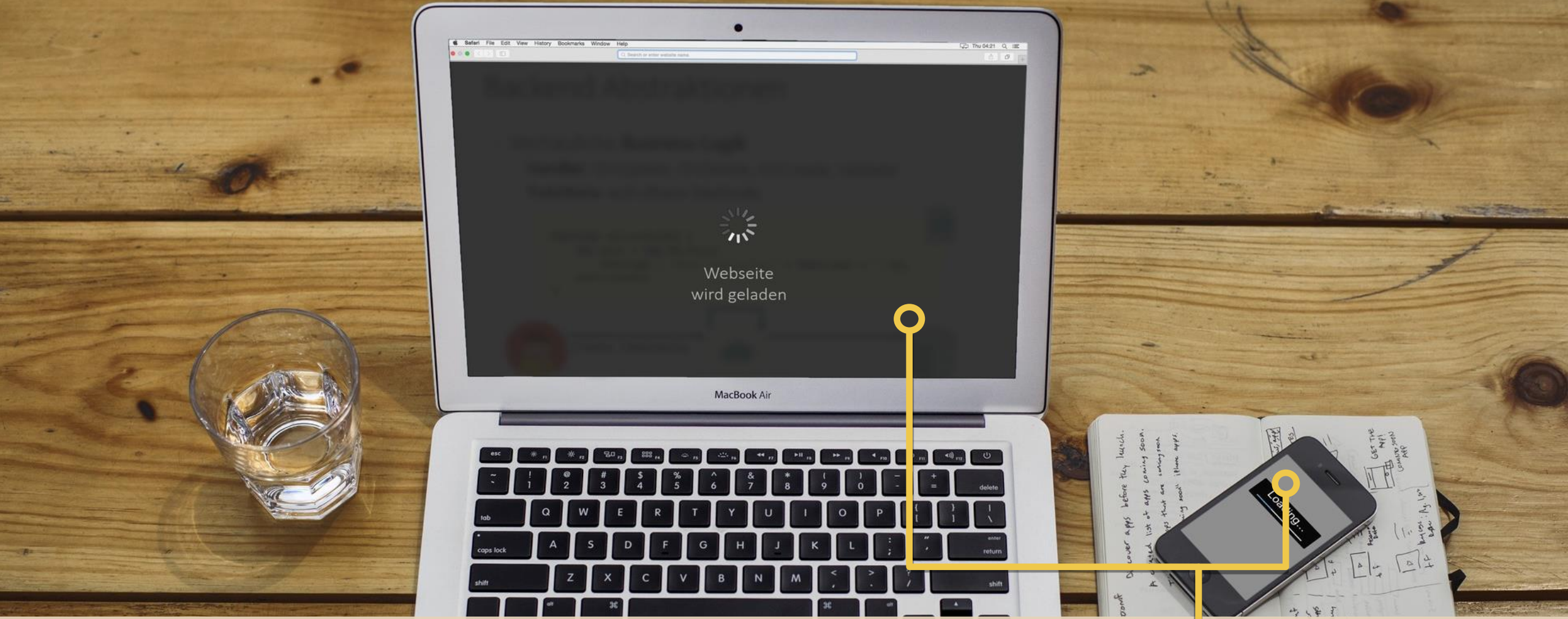
BaQend
Build faster Apps faster.

Presentation
is loading

Das Ladezeit-Problem





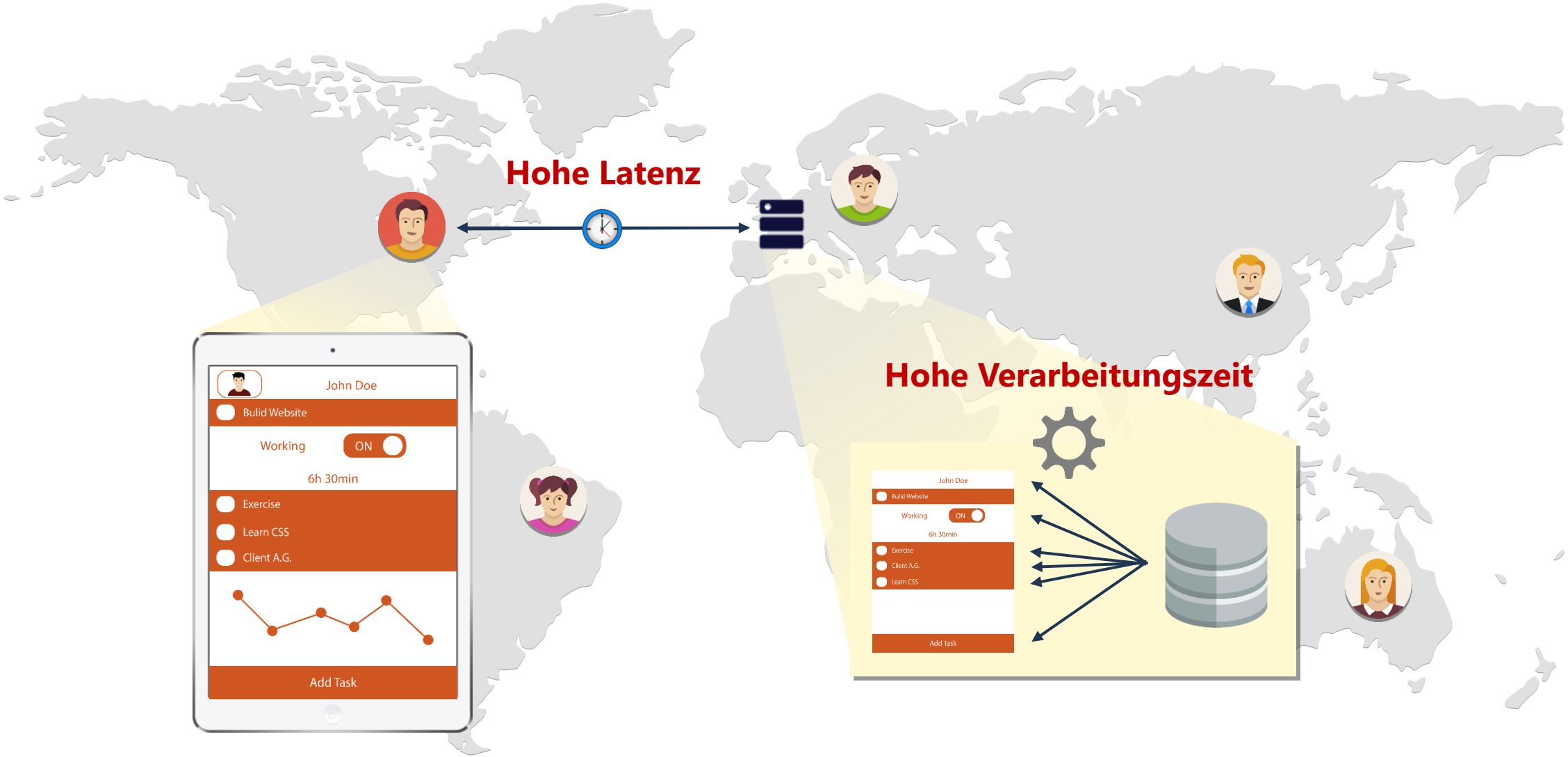
Performance hilft sehr vielen

Business KPIs

...woher kommen langsame Ladezeiten?

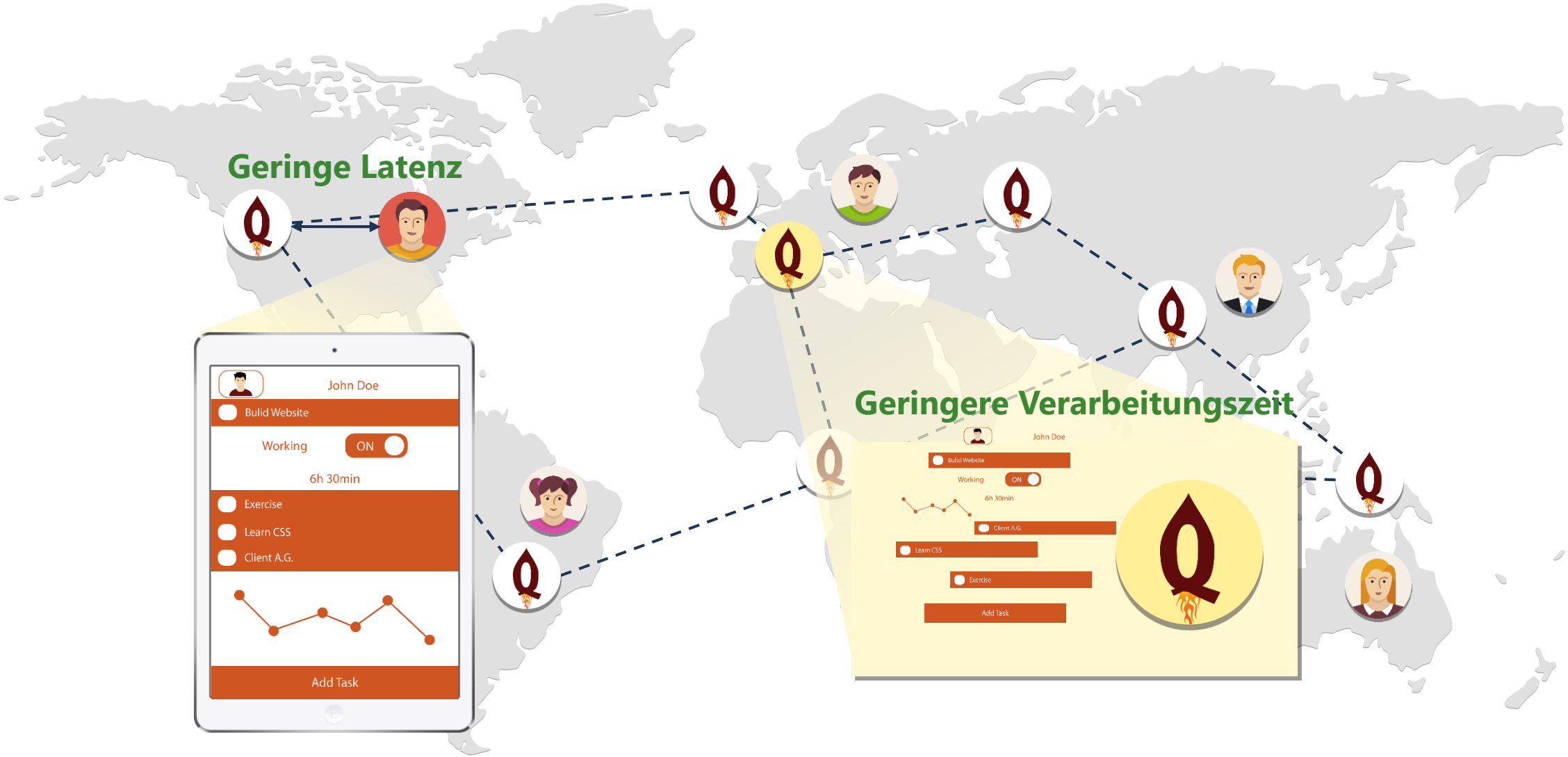
State of the Art

Zwei Bottlenecks: Latenz und Verarbeitung



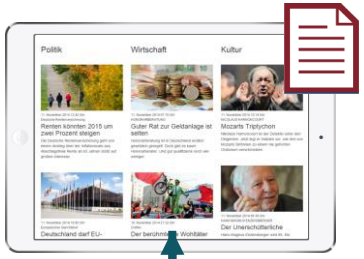
Lösung: Globales Caching

Frische Daten aus verteilten Web Caches



Wie funktioniert das?

Dynamisches Caching im Detail



Bekommt **Time-to-Live Schätzung** vom Server

False-Positive Rate: $f \approx (1 - e^{-\frac{kn}{m}})^k$

Hash-Functions: $k = \left\lceil \ln(2) \cdot (\frac{n}{m}) \right\rceil$

Bei 20.000 Einträgen und 5% False Positives: **11 Kbyte**

Konsistenz: Δ-Atomicity, Read-Your-Writes, Monotonic Reads, Monotonic Writes, Causal Consistency

`hashA(oid)` `hashB(oid)` `hashA(oid)` `hashB(oid)`

`Flat(Counting Bloomfilter)`

0	1	1	1	1

0	3	1	4	1

Neue Caching-Algorithmen

Lösen das Konsistenz-Problem

F. Gessert, F. Bücklers, und N. Ritter, „ORESTES: a Scalable Database-as-a-Service Architecture for Low Latency“, in *CloudDB 2014*, 2014.

F. Gessert und F. Bücklers, „ORESTES: e
Cloud-Datenbanken“, in Informatiktage

F. Gessert und F. Bücklers, *Performanz-
vermittels der Web-Caching-Hierarchie*

M. Schaarschmidt, F. Gessert, und N. R
Persistence“, in BTW 2015.

S. Friedrich, W. Wingerath, F. Gessert,
Survey“, in *44. Jahrestagung der Gesell*
704.

W. Wingerath, F. Gessert, S. Friedrich, N. Ritter „Real-time stream processing for Big Data“, *Big Data Analytics it - Information Technology,* 2016

F. Gessert, W. Wingerath, S. Friedrich, N. Ritter “NoSQL Database Systems: A Survey and Decision Guidance”, *Computer Science - Research and Development,* 2016

F. Gessert, S. Friedrich, W. Wingerath, M. Schaarschmidt, und N. Ritter, „Towards a Scalable and Unified REST API for Cloud Data Stores“, in *44. Jahrestagung der GI*, Bd. 232, S. 723–734.

ath, S. Friedrich, und N. Ritter, „The
Caching in the Age of Cloud Data

eb-Caching von Datenbankobjekten im

t, „Who Watches the Watchmen? On
rking“, in BTW 2015.

d-Datenbanken in Forschung und

F. Gessert, N. Ritter „Scalable Data Management: NoSQL Data Stores in Research and Practice“, *32nd IEEE International Conference on Data Engineering, ICDE,* 2016

F. Gessert, N. Ritter „Polyglot Persistence“, *Datenbank Spektrum*, 2016.

7 Jahre
Forschung &
Entwicklung

Universität Hamburg

High-Performance Backend-as

Hannes

www.baqend.com

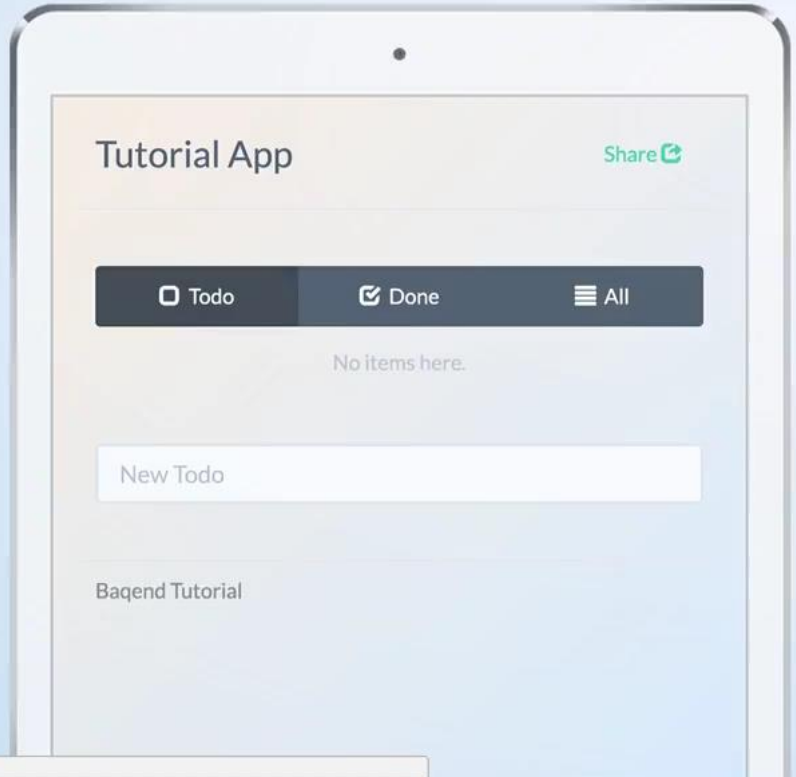
BaQend

Product Developer About us Blog Press

Log in or Sign Up Free

The World's Fastest Backend

Build websites and apps that load instantly.



THE BAQEND PLATFORM

Sky-rocket your Development

Start building now. Baqend Cloud is free and easy to get started with.

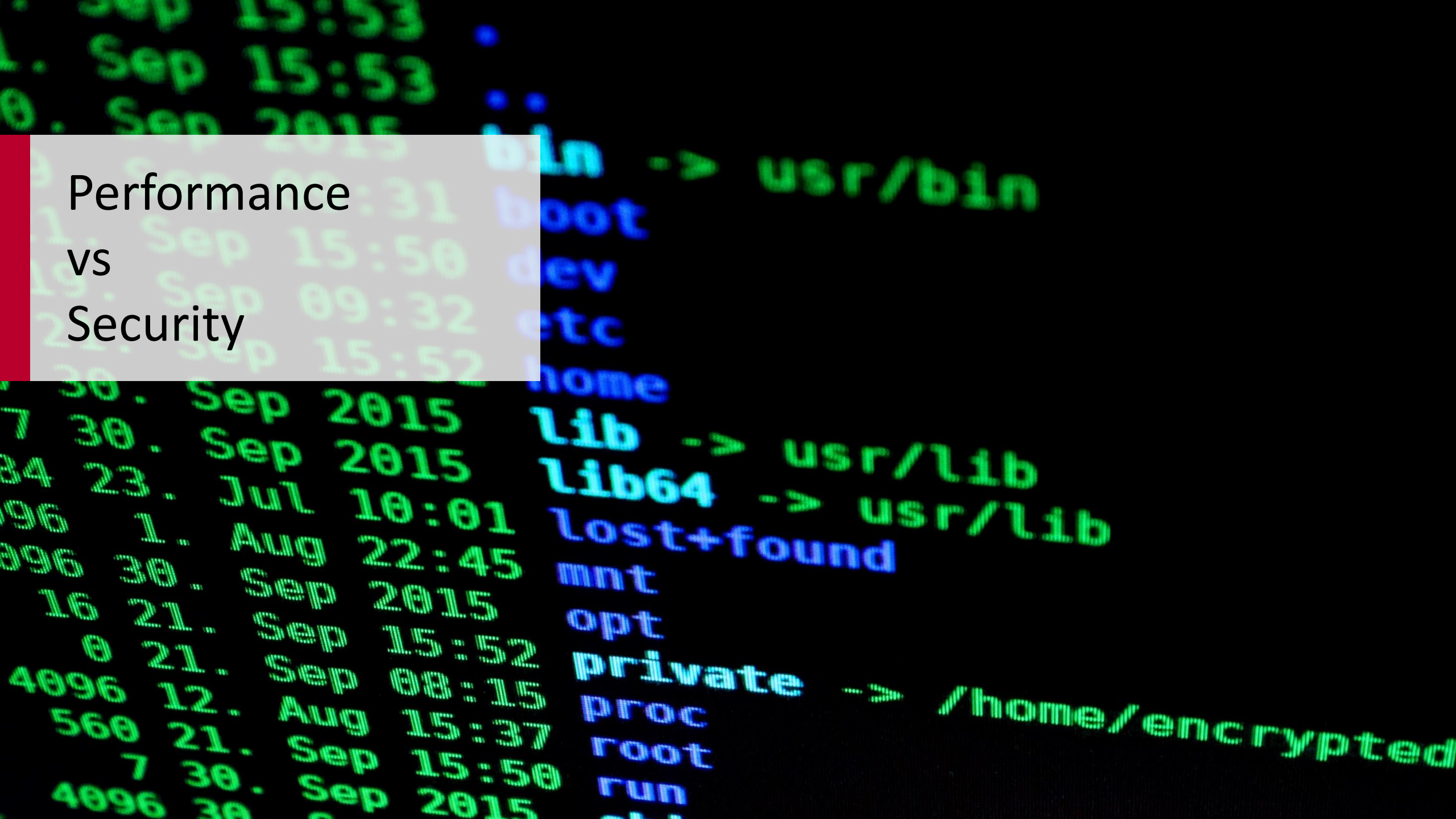
TUTORIAL TRY BAQEND

Let's chat - Online

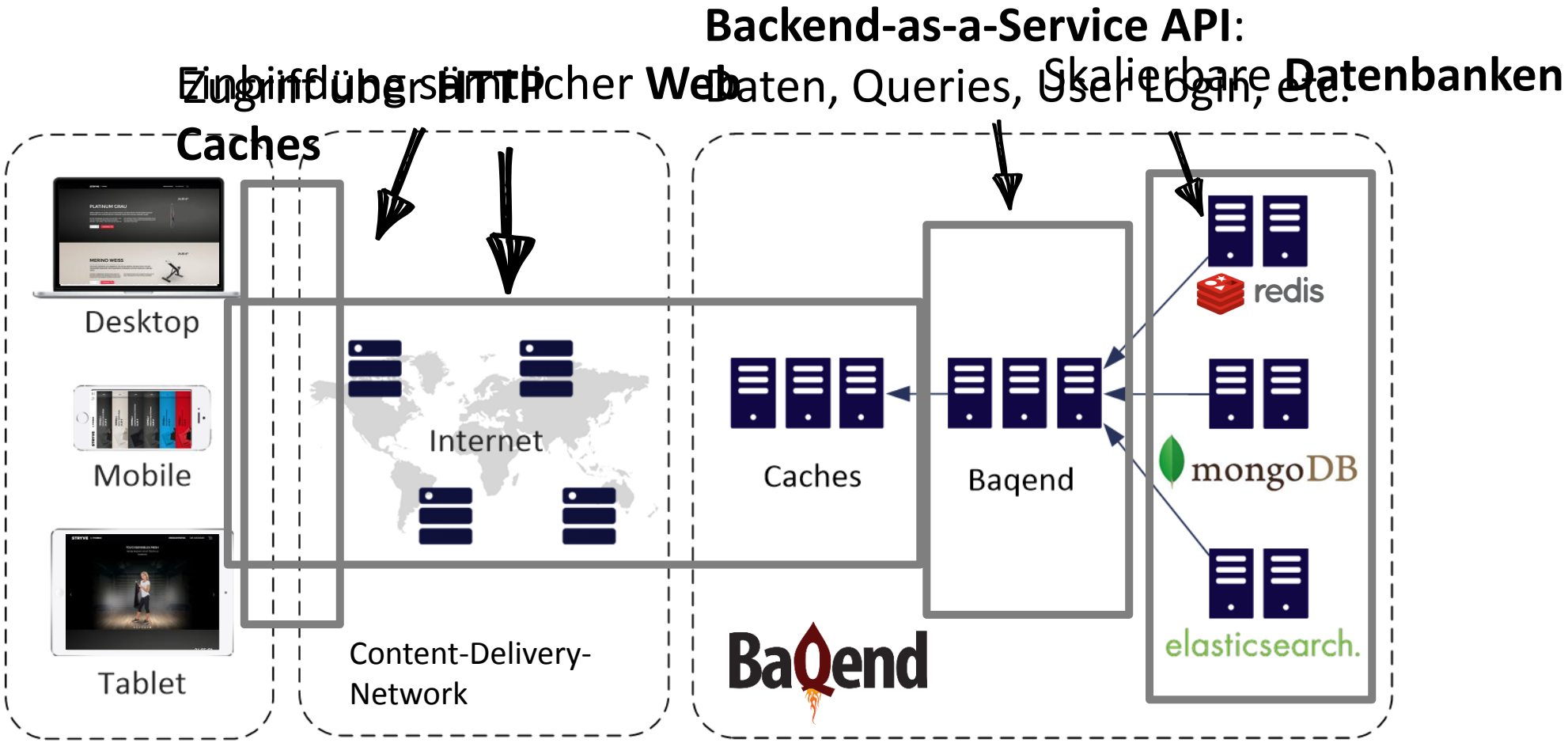
Warten auf s.codepen.io...

Parse
Baqend
Kinvey
http://newsq.parseapp.com
Abbrechen
d.com/v1/file/www/index-fast.hl
Toptreffer
a-ac3d-22fc82c0050e/index.hl
storage.googleapis.com/d0e75ee86caf4b...
2.6 s
0.3 s
3.9 s

Performance vs Security

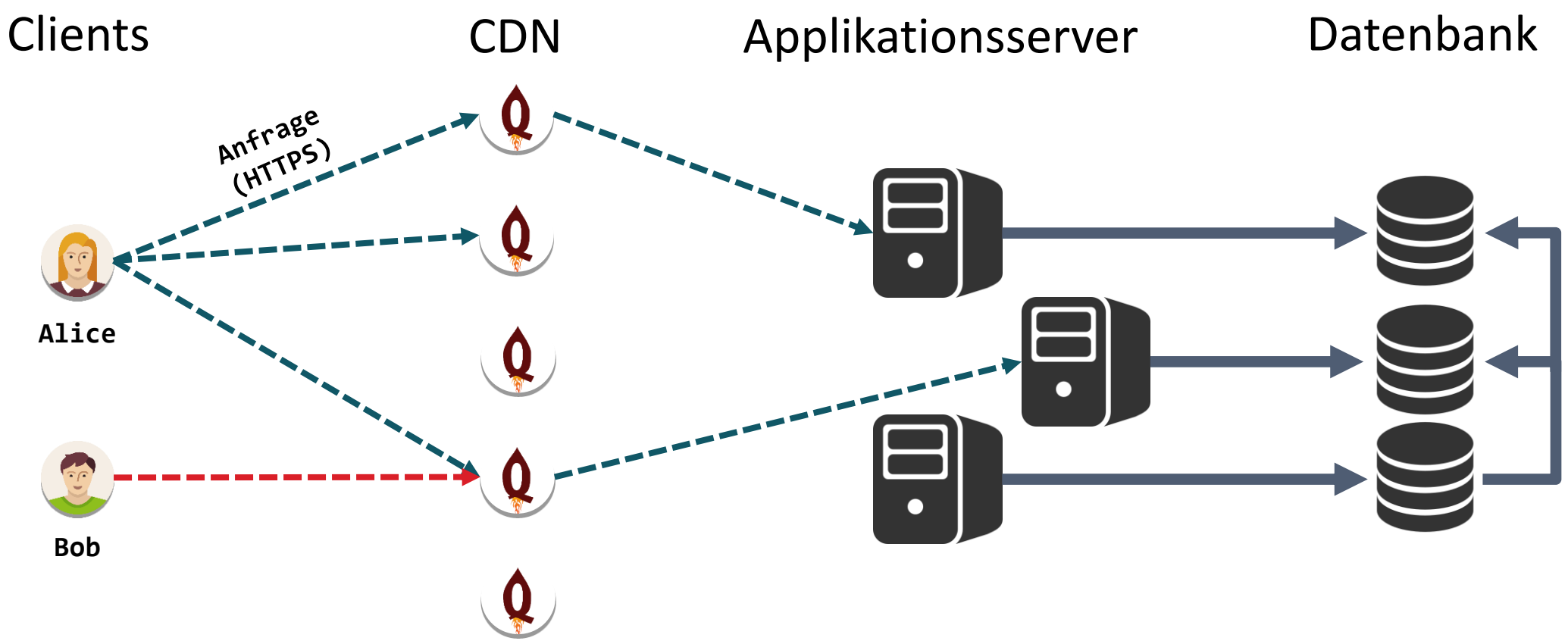


Baqend Cloud Architektur



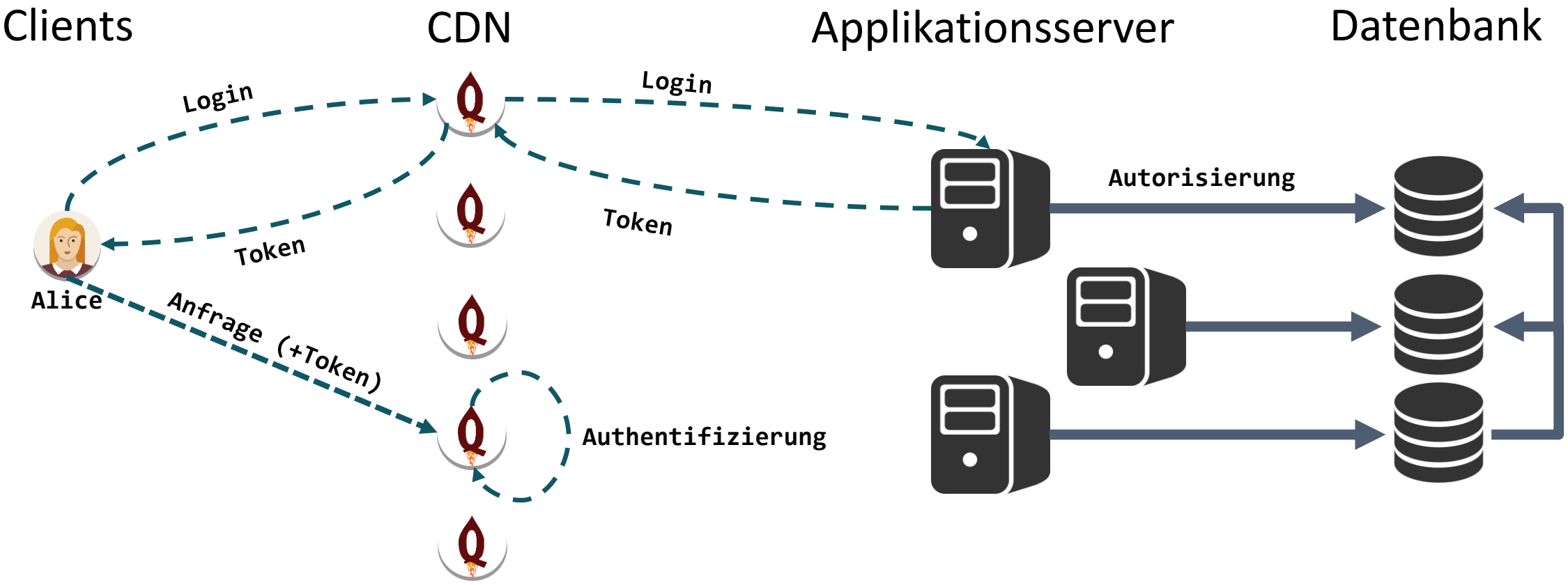
Problem: Zustandlos

Autorisierung und Authentifizierung im verteilten System



Lösung: Signierter Token

Zustandslose Session



Token im Detail

Erstellungsdatum

590c965e590c978aAAAAABgAAAABgAAAADda0f7ebbf0ba76b66c97432a886d26895ad669ee

1493997150

↓

05.05.17 17:12:30

Token im Detail

Laufzeit

590c965e590c978aAAAAABgAAAABgAAAADda0f7ebbf0ba76b66c97432a886d26895ad669ee

1493997450

↓

05.05.17 17:17:30

Token im Detail

Benutzer und Rollen

590c965e590c978aAAAAABgAAAABgAAAADda0f7ebbf0ba76b66c97432a886d26895ad669ee

User: /db/User/1

Rolle: /db/Role/1

Rolle: /db/Role/3

Token im Detail

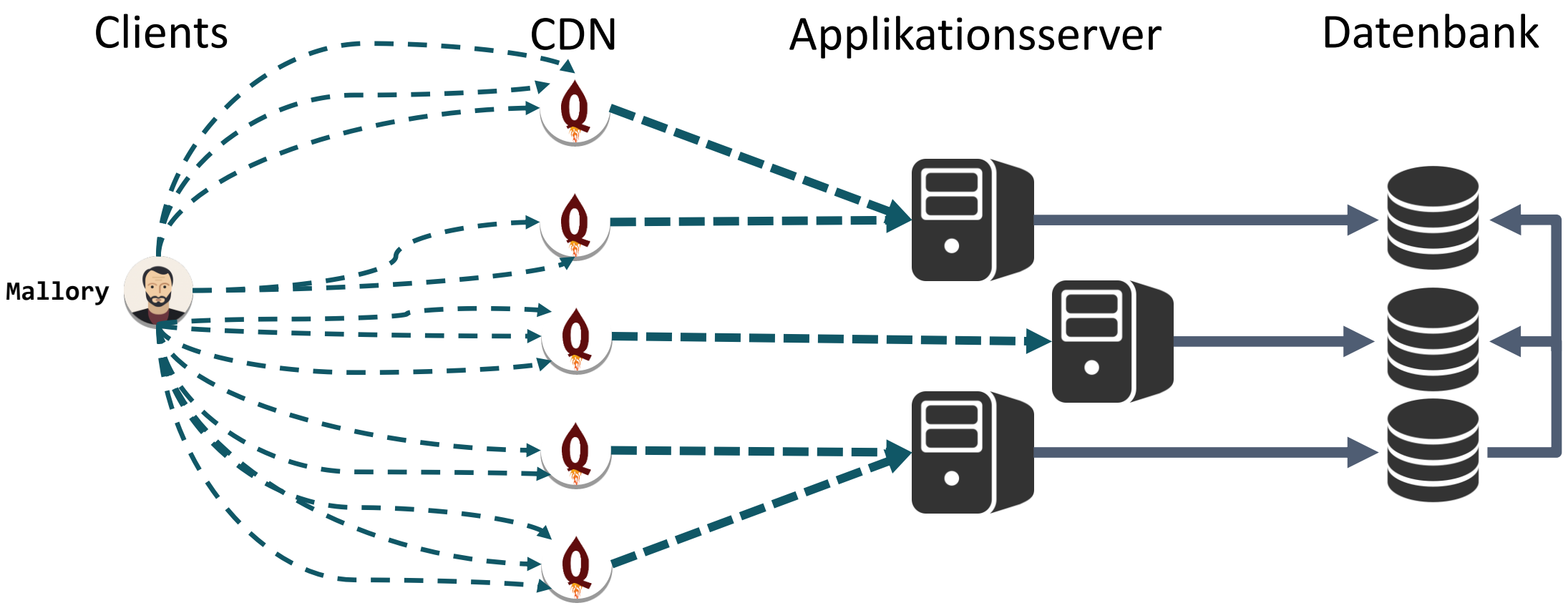
Signatur

590c965e590c978aAAAAABgAAAABgAAAAD$\underbrace{\text{da0f7ebbf0ba76b66c97432a886d26895ad669ee}}_{\text{Signatur der Daten mittels HMAC}}$

DoS Protection

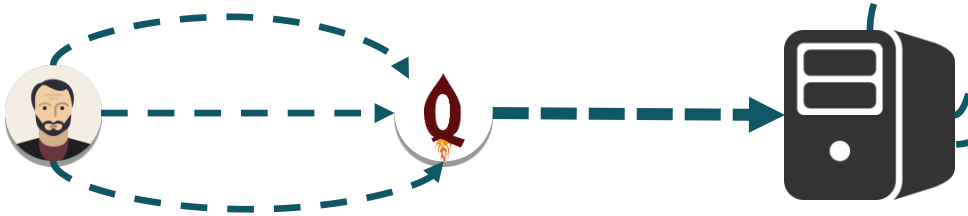
Problem: Denial of Service

Angriff durch fluten des Systems



Lösung: Bloom Filter

Rate-Limiting mittels Bloom Filter



Counting Bloom Filter	Zeitfenster
1 0 0 1 1 0 0 0	0 – 5
2 0 0 2 2 0 0 0	5 – 10
0 0 0 0 0 0 0 0	10 – 15
0 0 0 0 0 0 0 0	15 – 20
0 0 0 0 0 0 0 0	20 – 25

Sicherheit auf allen Ebenen

Building a Scalable BaaS

CDN

- **Zustandslose Sessions** mittels signiertem Token
- **Autorisierung** im Varnish
- **Blockieren** von gesperrten IPs

Network

- **HTTPS Verschlüsselung**
- **Let‘s Encrypt Automatisierung**
- **Geringe Ladezeiten** durch **HTTP2**

Backend

- Generierung der **Tokens**
- **Rate-Limiting** durch Bloom Filter
- **Failover** und **Autoscaling**

hk@baqend.com @baqendcom

Vielen Dank – Fragen?

hk@baqend.com
www.baqend.com
@Baqendcom