

Not drowning in the stream of events


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**Not drowning
in the stream
of events**



Not drowning

**in the stream of
events**

Needs

WHY

Business needs

Challenges

WHAT

For developers

Tools

HOW

Tools & practices

in the stream of
events

drowning

Not

Tools

Challenges

Needs

WHY

Business needs

**in the stream of
events**



Needs

Challenges

Tools

Web page vs Web system

In old days: to be in the Internet meant: Have contacts page about physical shop, company or organization

Web page vs Web system

Being genius

(example of recommendations)

Needs

Challenges

Tools

Data driven company

Needs

Challenges

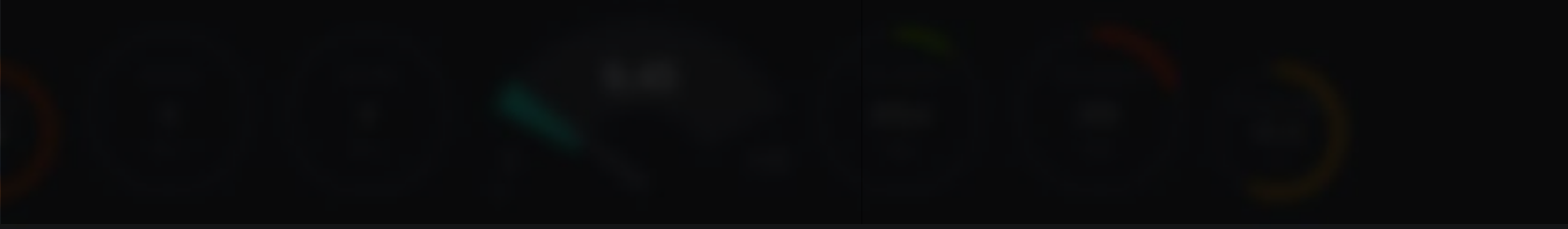
Tools

Historical data

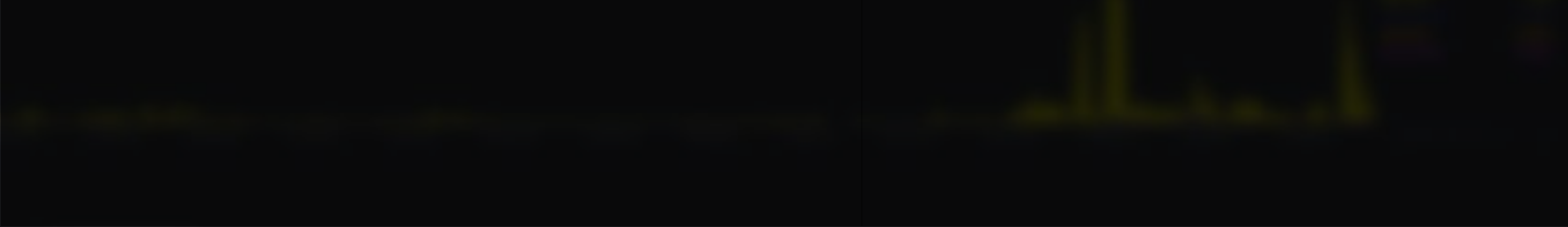
for developers are

Event streams

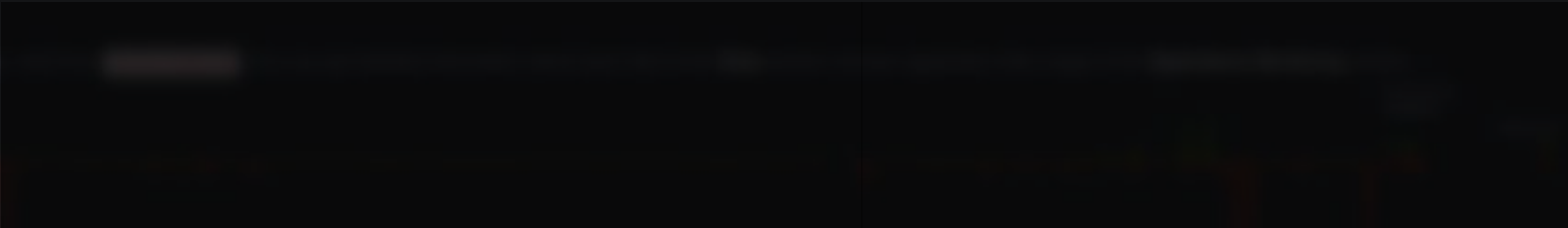
Needs



Challenges



Tools



Needs



Tracking

What users were doing

Challenges



Logs

What system was doing

Tools



History

User interface:
Yes/No→Undo

Needs

WHY

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Challenges

**Being genius
by using
data driven solutions
in company like
Web systems**

stream of events

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```
package com.sugrta.website.analytics

import spray.http.FormData

case class PageView(id: Int, cid: String, tid: String, ds: String, t: String, ua: String)
def formData: FormData = {
  val version = v.toString
  val customerId = cid
  val trackingId = tid
  val dataSource = ds
  val `type` = t
  val userAgent = ua
  val referrer = r
  val userLanguage = l
  val url = u
}
```

8

3

5

Current state

(E.g. basket size=5)

0

2

9

```
val version = v.toString
val customerId = cid
val trackingId = tid
val dataSource = ds
val `type` = t
val userAgent = ua
val referrer = r
val userLanguage = l
val url = u
```

+1 +1 +4 +1 +1 8

+5 -2 3 -3

+2 +6 -4 +1 5

Event stream

(E.g. basket size = +2 +6 -4 +1)

+2 -1 -1 0 +1 +3

+2 +1 -1 +1 -1 2 +1

+9 9

Needs

Challenges

Tools

A dark night scene with a grassy field in the foreground and trees in the background. Several bright, colorful light trails (blue, green, and purple) are visible, suggesting a long-exposure photograph of a light source moving through the air. The trails are somewhat circular and elongated, creating a sense of motion and energy.

More traffic

(TV advertisement, hacker)

Needs



RAM

Challenges



Storage

Tools



Network

Needs



RAM



Challenges



Storage

Tools



Network

Needs

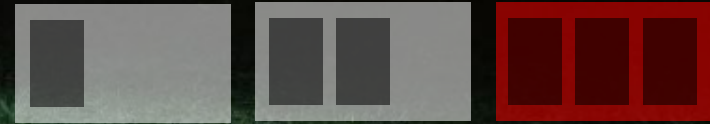


RAM

Challenges



Storage



Tools



Network

Needs

◎ **RAM**

Challenges

◎ **Storage**

Tools

◎ **Network**



Needs



RAM



Challenges



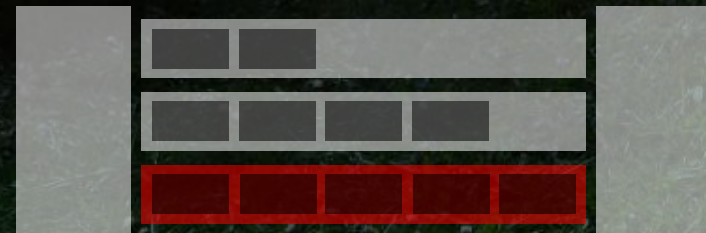
Storage



Tools



Network



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**Growing amount of events
generates undesired load for
memory, storage and network**

in the stream of
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Needs

Challenges

Tools

Common solutions

Needs



Limit

Active connections
Connection / second

Challenges

Tools



Remove

Log rotation
TTL / record

Needs



Limit

Active connections
Connection / second

Challenges

Apache

`mpm_prefork_module`

Nginx

`ngx_http_limit_conn_module`

Tools

Needs

Challenges

Tools

Linux

Logrotate*

Databases

ElasticSearch, MongoDB, Cassandra



Remove

**Log rotation
TTL / record**

* - usually people forgot, that logrotate can be configured to act by size, not only by time limit

Needs



Limit

Active connections
Connection / second

Challenges

**Does not adapt
(need to define before)**

Tools



Remove

Log rotation
TTL / record



Limit

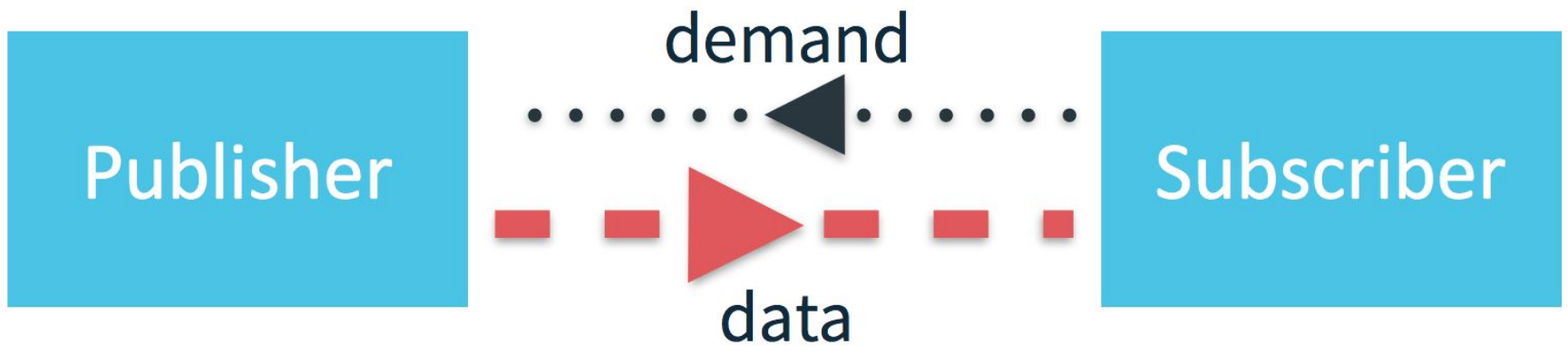
Back pressure

Auto adaptive
(but more exotic solutions)



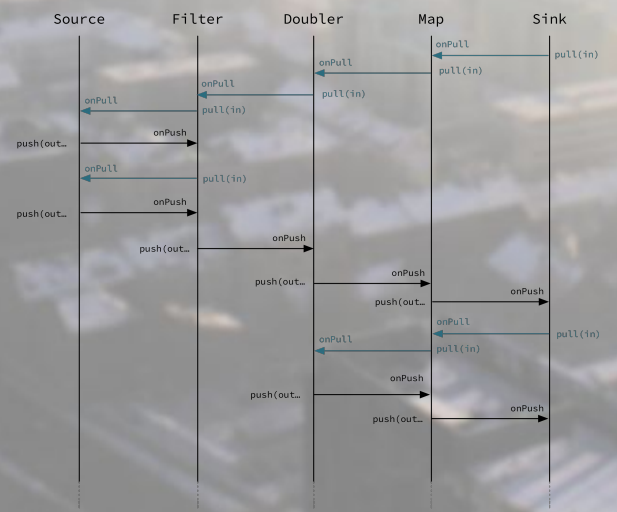
Remove

**Capacity
constraint**



Back pressure

(flood only when agreed)



- ◎ Akka streams

Back pressure

(examples)

- ◎ TCP Window field



Limit

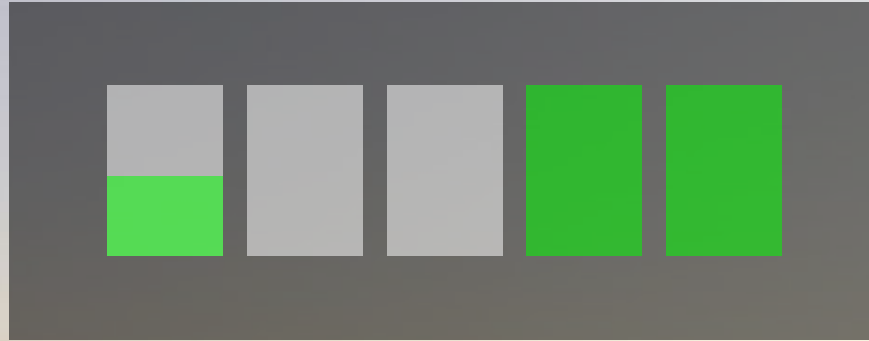
Back pressure

Auto adaptive
(but more exotic solutions)



Remove

**Capacity
constraint**



Capacity constraint

(rewrite oldest)

- ◎ **ArangoDB Cap constraint**

Capacity constraint

(examples)

- ◎ **CircularFifoQueue**

Tools

Challenges

Needs

Start with easy solutions:

- **Connection limit**
- **Log rotation/TTL**

End with exotic ones:

- **Back pressure**
- **Capacity constraint**

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A winter landscape featuring snow-covered hills and trees in the background. The foreground is dominated by a large field of broken ice, likely from a frozen body of water. The sky is bright, suggesting a sunny day. The word "Summary" is overlaid in the center of the image.

Summary



Self-adapt

**Simple, but useful
principles**

Priority

References

- <http://spray.io/vienna>
- <http://doc.akka.io/docs/akka/2.4.2/general/stream/stream-design.html>
- <https://www.youtube.com/watch?v=N-n1n6WKmRs>
- <https://docs.arangodb.com/IndexHandling/Cap.html>
- <https://www.oreilly.com/ideas/bla-bla-microservices-bla-bla>
- <https://github.com/pkinsky/akka-streams-example>
- <http://doc.akka.io/docs/akka/2.4.3/scala/stream/stream-customize.html>
- https://en.wikipedia.org/wiki/Comet_%28programming%29
- <http://www.html5rocks.com/en/tutorials/eventsource/basics/>
- https://en.wikipedia.org/wiki/Kernel_same-page_merging
- <https://github.com/Auginte/scarango/>
- <https://youtu.be/TZ4aSx7T3r8?t=37m51s>
- <http://spray.io/msug/>
- <http://stackoverflow.com/questions/20162176/centos-linux-setting-logrotate-to-maximum-file-size-for-all-logs>
- <http://jmeter.apache.org/>
- <https://github.com/firehol/netdata>
- <http://blog.lancearlaus.com/akka/streams/scala/2015/05/27/Akka-Streams-Balancing-Buffer/>
- <http://slides.com/lancearlaus/akka-streams-http-intro>

Demo

- See <https://gist.github.com/aurelijusb/6052754236e90b9d70854b5c42c2120c>
- <https://www.youtube.com/watch?v=FUpSLAQ2d2o>

A winter landscape featuring a frozen river or stream. The foreground is filled with numerous chunks of broken ice, some reflecting the low sun. The middle ground shows a smooth, snow-covered bank on the left and a dark, narrow channel of water in the distance. The background consists of a line of bare trees and a few houses with snow on their roofs, all under a hazy, golden sky from a low sun.

Questions?