KubeCon | CloudNativeCon
Europe 2022

Autoscaling Elasticsearch for Logs on Kubernetes

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Ciprian Hacman, polypoly

Hello world!

Radu Gheorghe, Sematext Group

Elasticsearch and Solr
⇒ Consultant
⇒ Trainer

Engineering for Sematext Cloud
⇒ Observability SaaS
⇒ Logs and metrics from Elasticsearch, Solr, Kubernetes, etc

Ciprian Hacman, polypoly Enterprise

Kubernetes and Automation
⇒ Consultant
⇒ Software Engineer
⇒ Open Source Maintainer

Agenda

Why? Use-case

Agenda

Why? Use-case

How? What should happen on scale up/down

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How? What should happen on scale up/down

What? Available options

Agenda

Why? Use-case

How? What should happen on scale up/down

What? Available options

Demo of (enhanced) es-operator

Why?

Small cluster → zero maintenance

Why?

Small cluster → zero maintenance

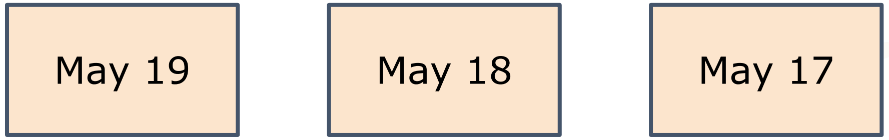
Big problems, big knowledge, big team

Easier to manage access

Big/multi-tenant cluster → N small clusters

How?

Use time-based indices



How?

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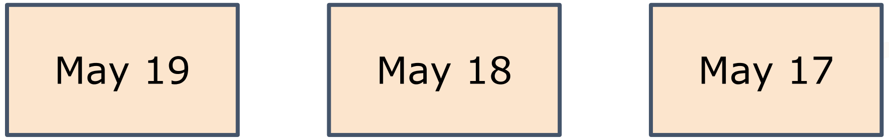

May 19

May 18

May 17

Rotate indices by size (and time)

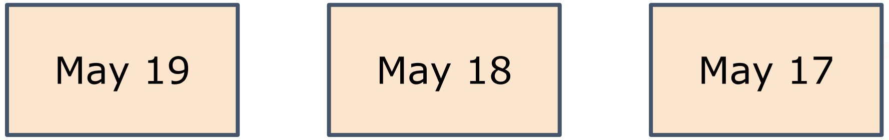
10GB

10GB

10GB

How?

Use time-based indices



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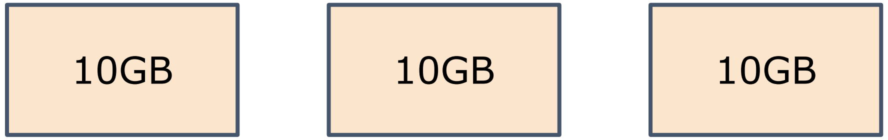
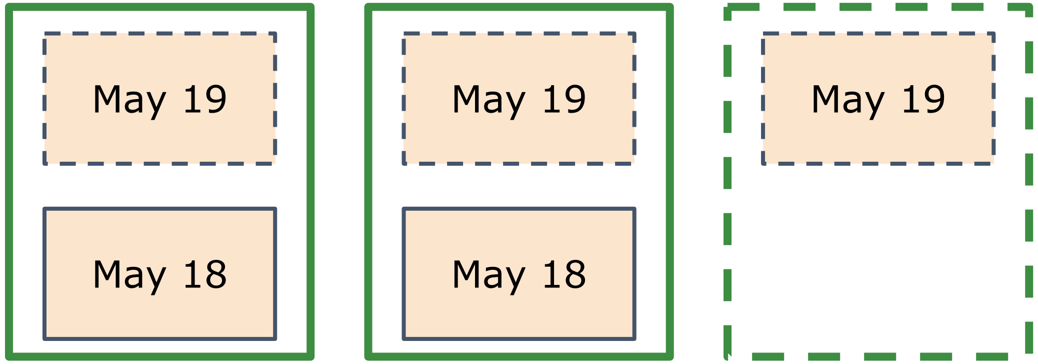
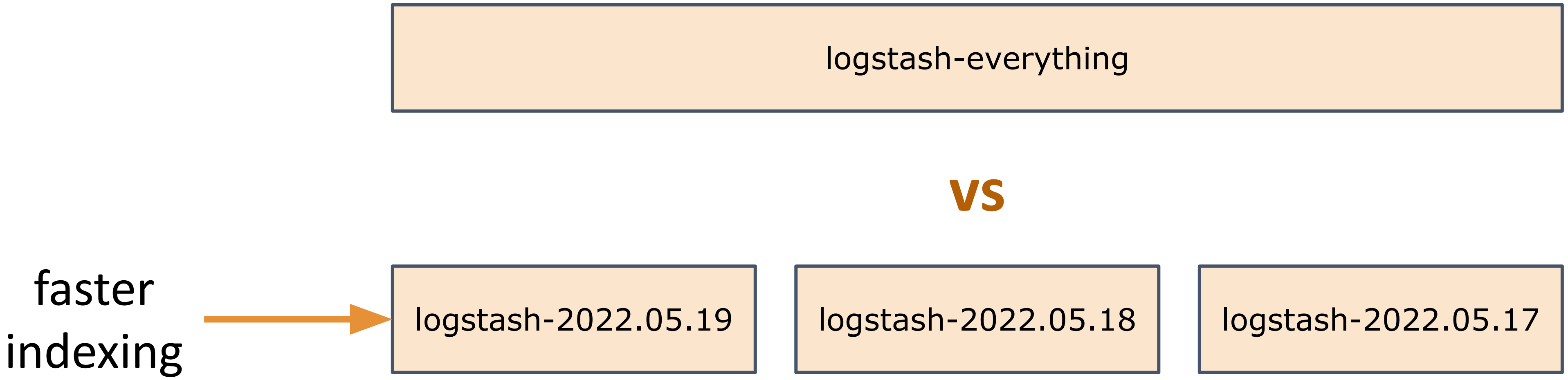


Update number of shards as you scale



How? Time-based indices



logstash-everything

vs

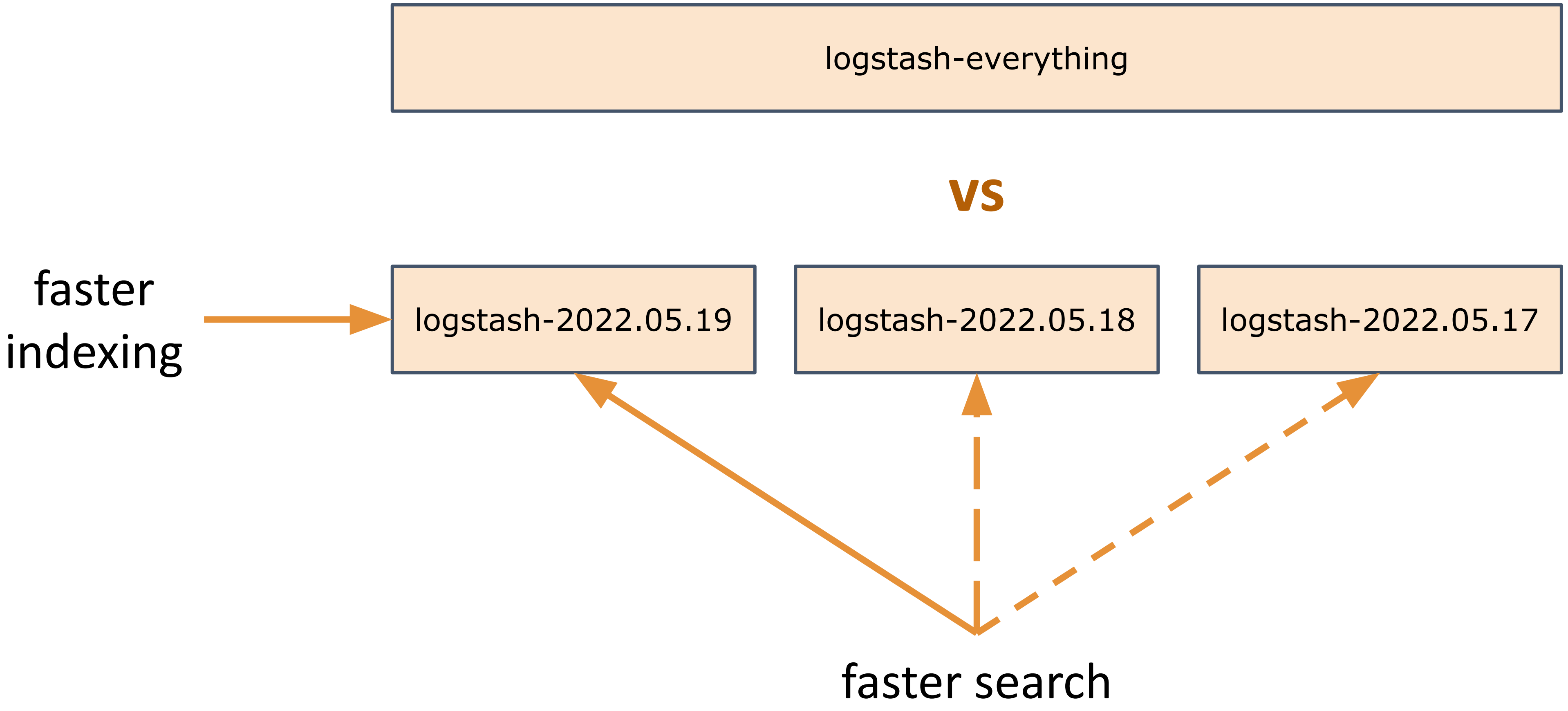
faster indexing

logstash-2022.05.19

logstash-2022.05.18

logstash-2022.05.17

How? Time-based indices



logstash-everything

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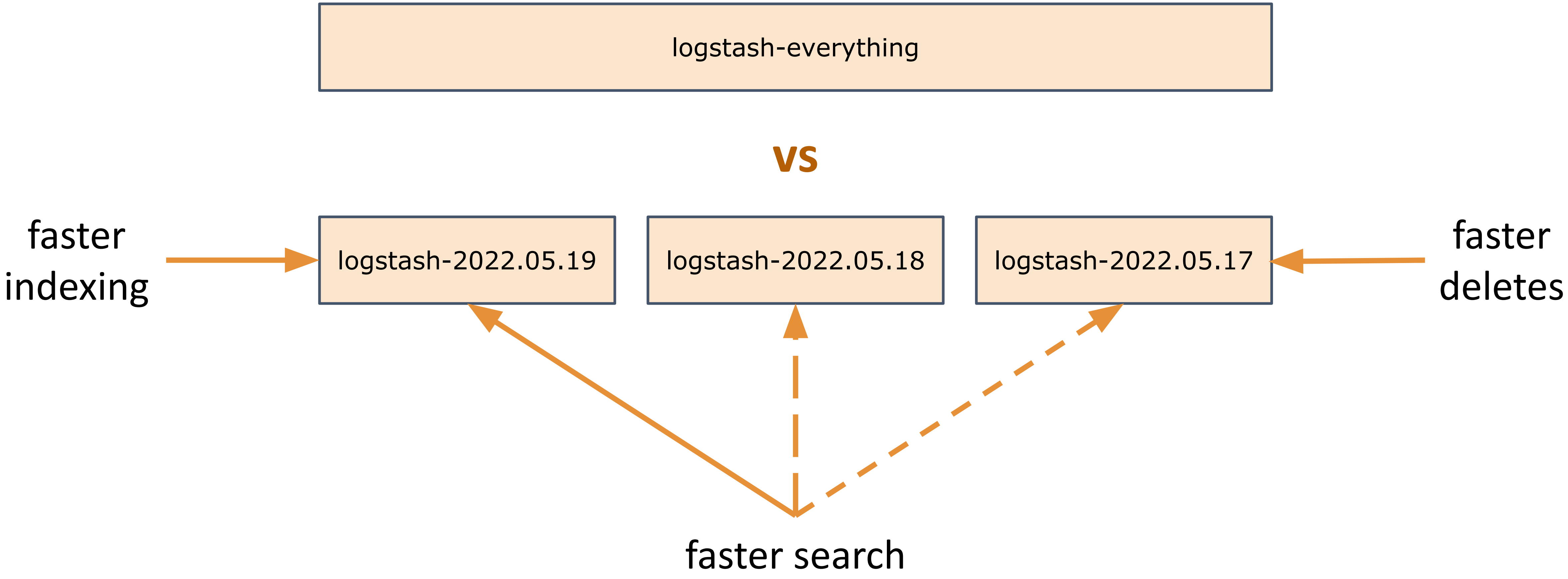
faster search

How? Time-based indices



logstash-everything

vs

faster indexing

logstash-2022.05.19

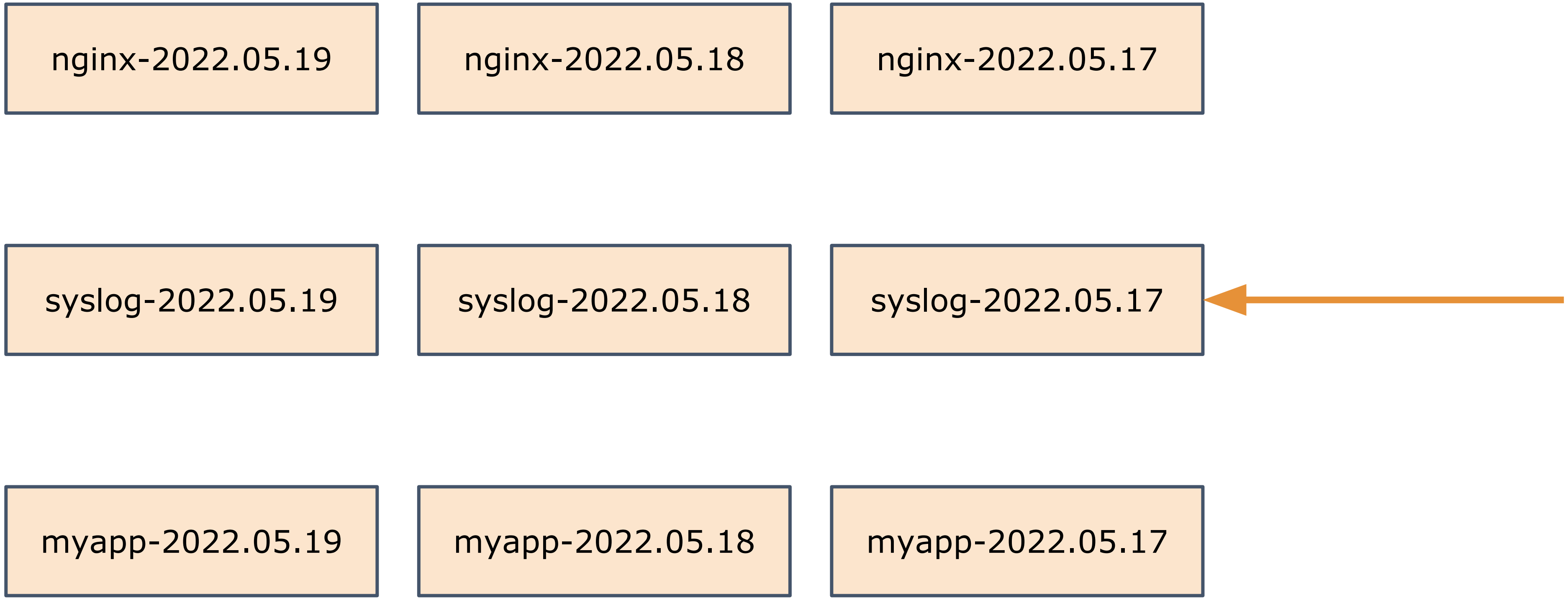
logstash-2022.05.18

logstash-2022.05.17

faster deletes

faster search

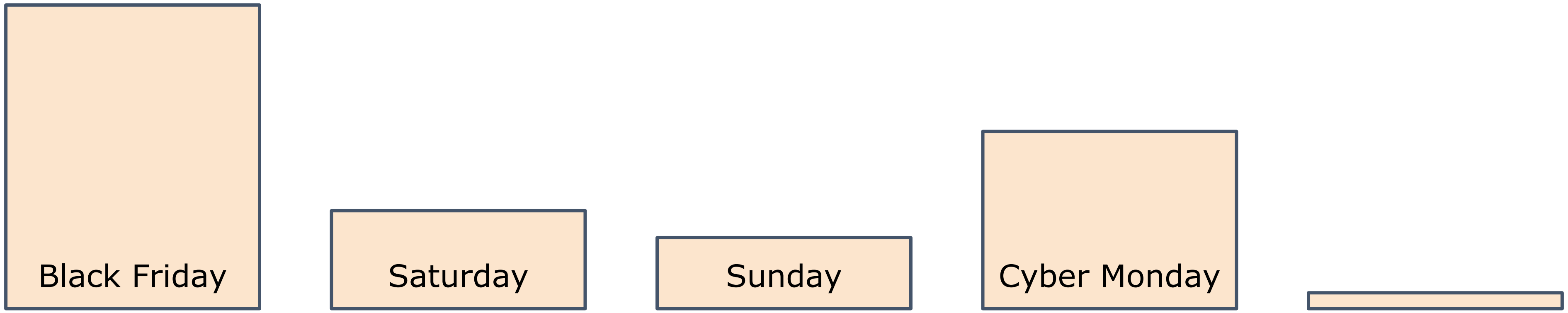
How? Time-based indices per use-case



nginx-2022.05.19	nginx-2022.05.18	nginx-2022.05.17
syslog-2022.05.19	syslog-2022.05.18	syslog-2022.05.17
myapp-2022.05.19	myapp-2022.05.18	myapp-2022.05.17

Often searched separately

How? Rotate indices by size (typically via ISM/ILM)



Black Friday

Saturday

Sunday

Cyber Monday

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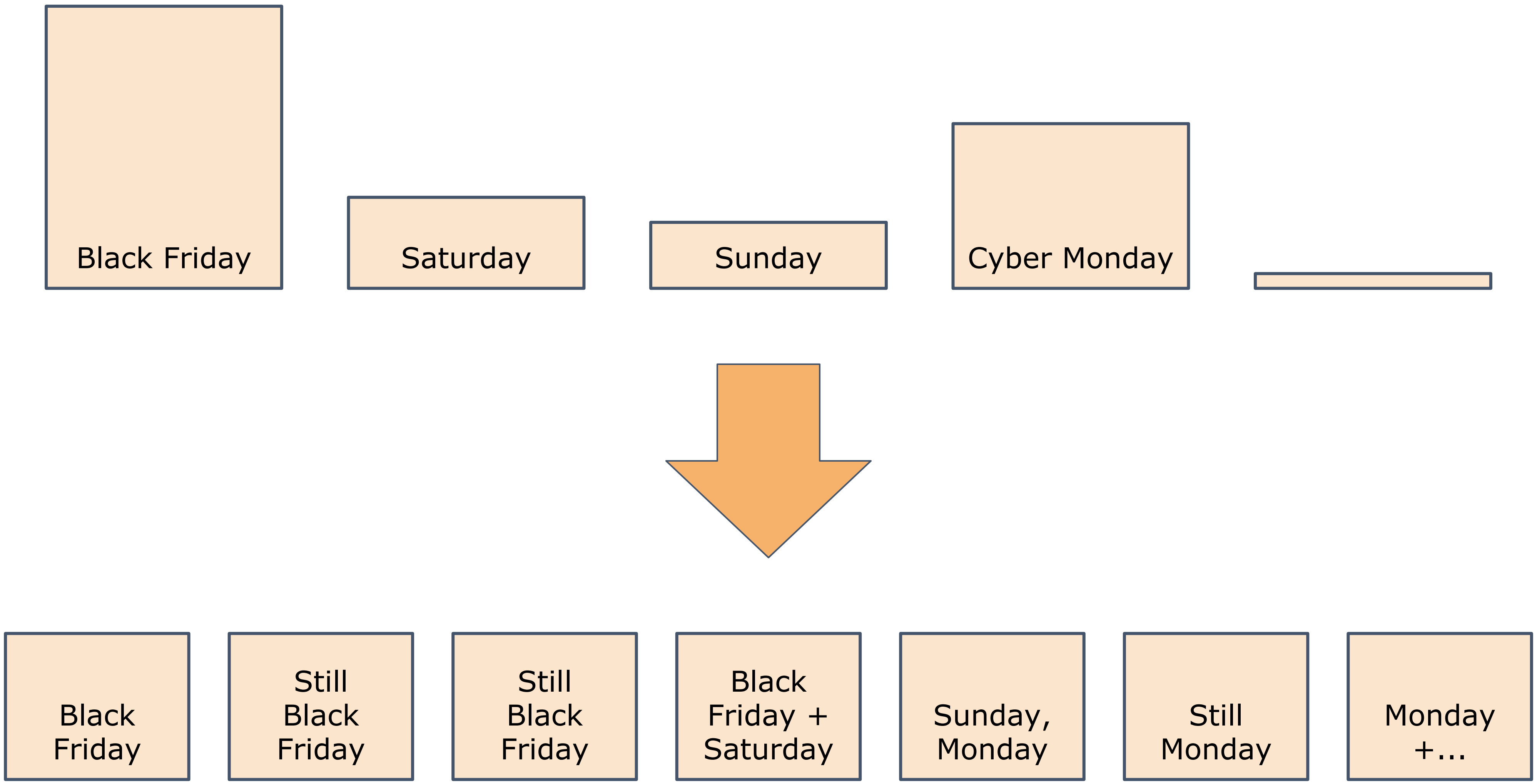

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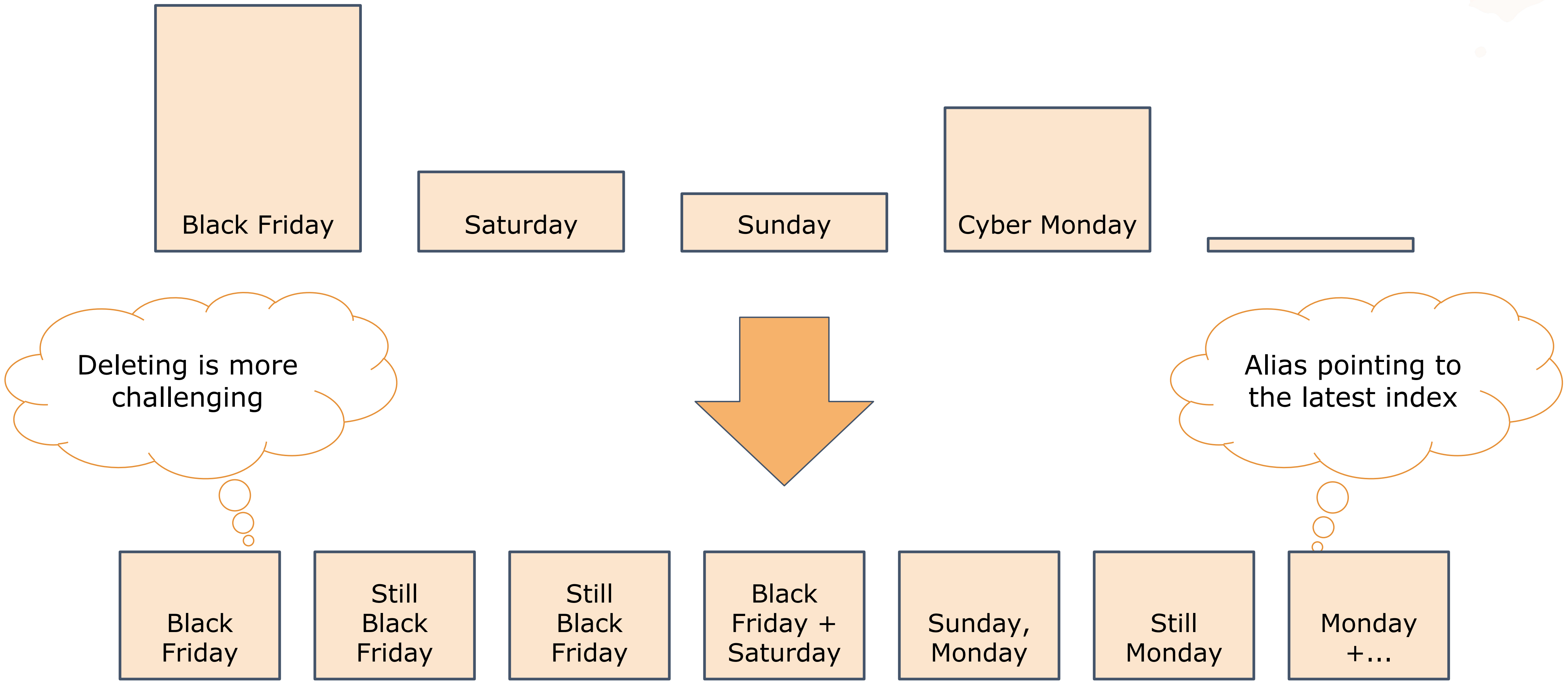

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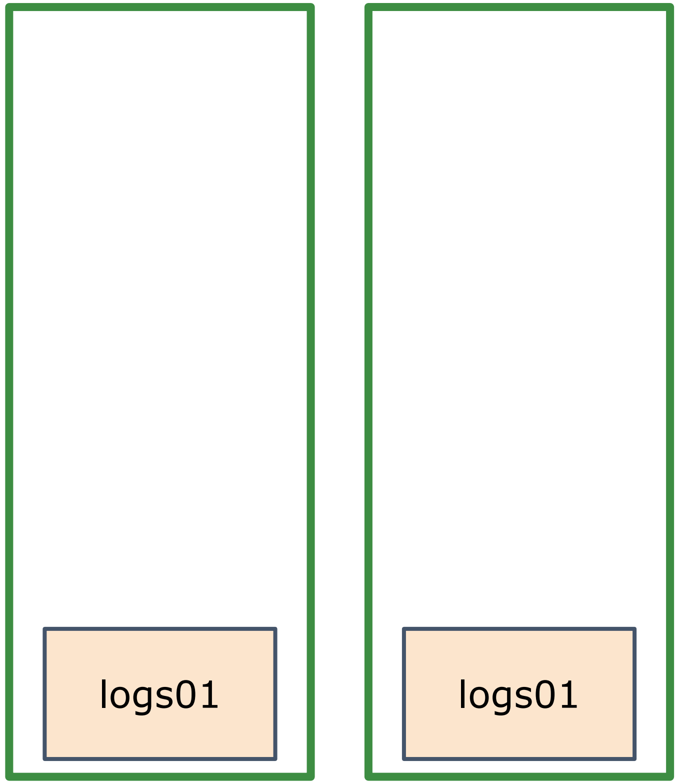

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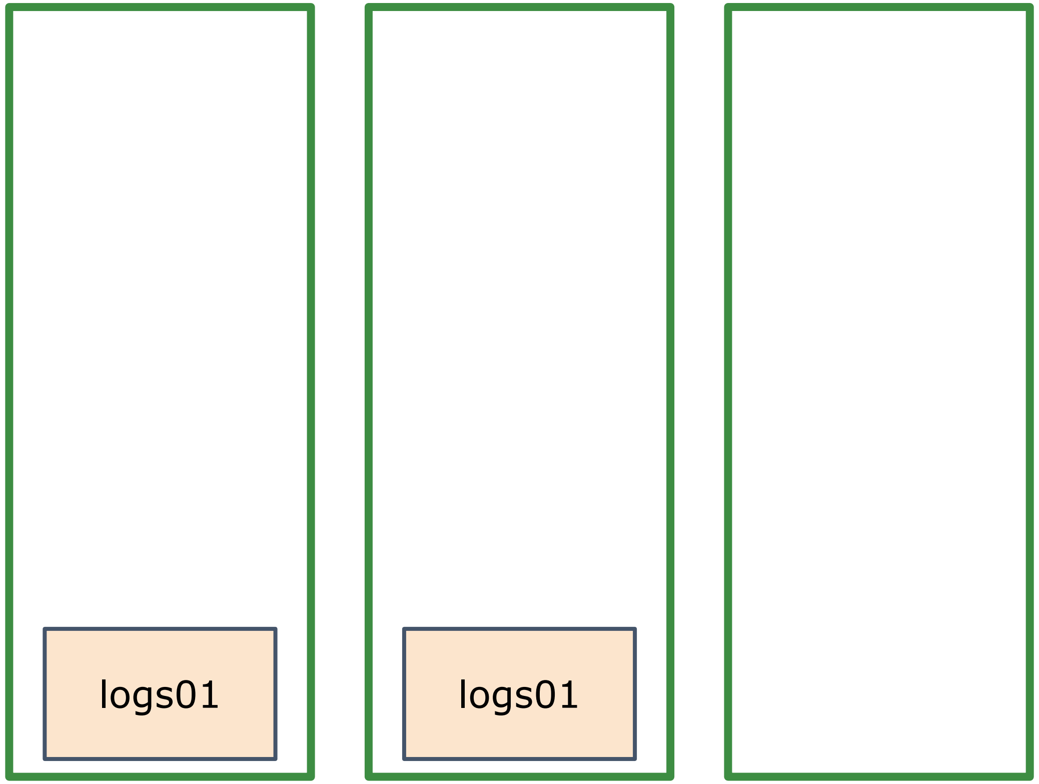

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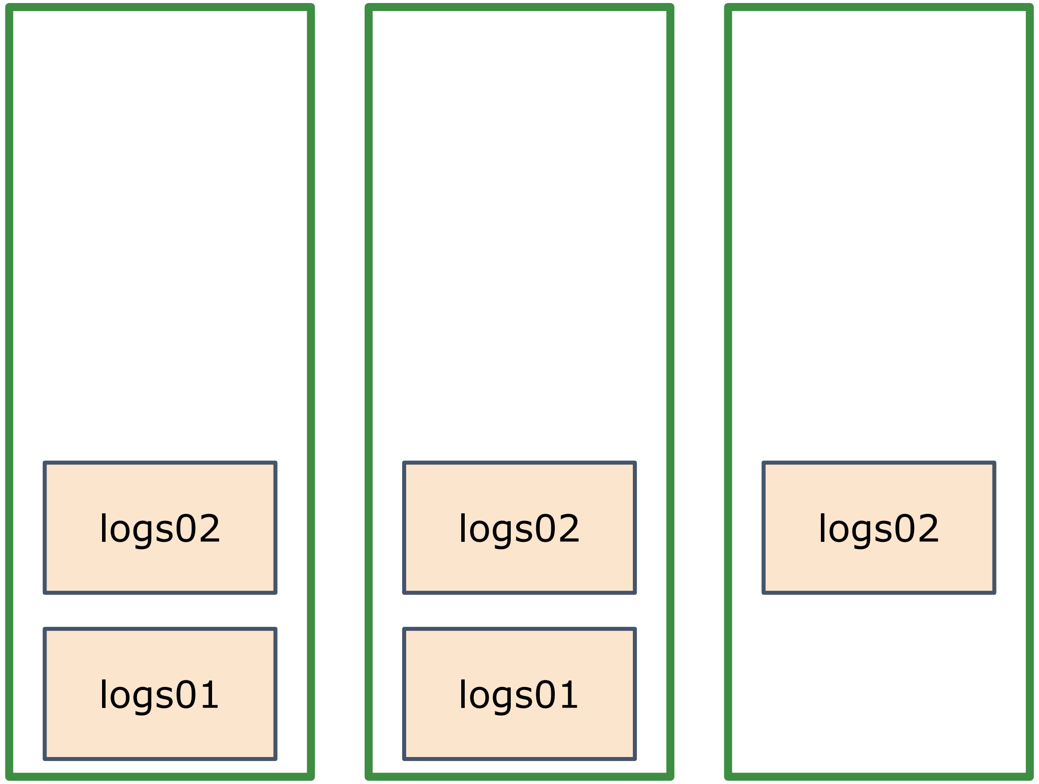

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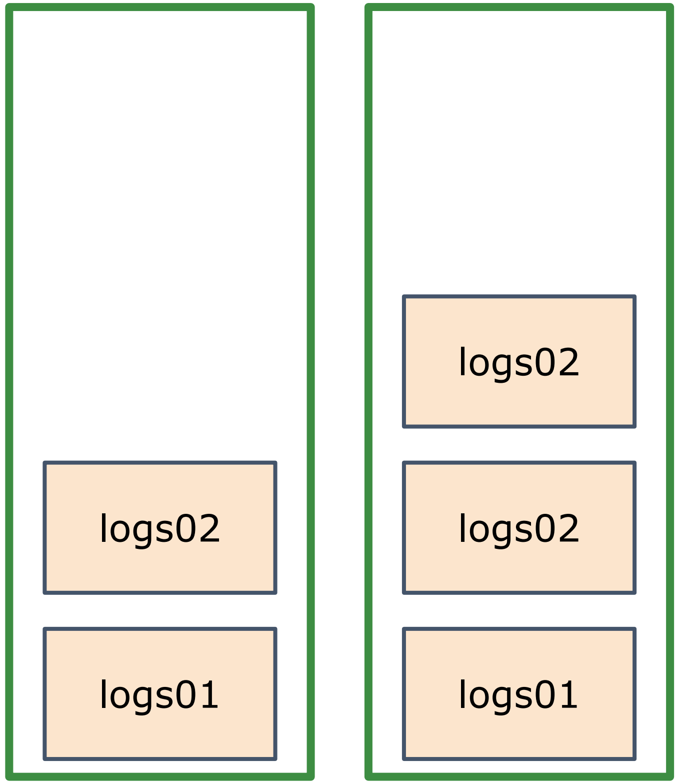

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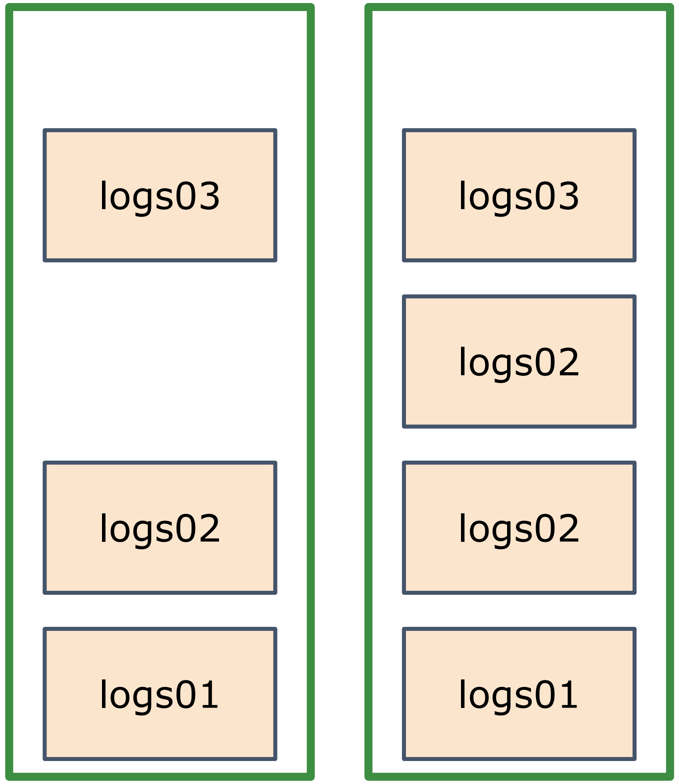

How? Local storage and other optimizations

Indexing takes more CPU, but search latency dictates capacity

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Searches do lots of random IO

⇒ local SSDs give good latency

=> use replicas and backups

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Tiered setup (e.g. hot-cold) rarely helps

What?

Elastic Cloud on Kubernetes

- ❏ Elastic license
- ❏ Autoscaling requires Enterprise license

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Elastic Cloud on Kubernetes

- ❑ Elastic license
- ❑ Autoscaling requires Enterprise license

es-operator: https://github.com/zalando-incubator/es-operator/

- ❑ Apache2/MIT license
- ❑ Autoscaling that drains pods, adjusts replicas. See their KubeCon+CloudNativeCon EU 2019 presentation

⇒ works for independent indices (e.g. E-commerce)

⇒ let’s make it work for logs :)

Demo

https://en.wikipedia.org/wiki/Twelve_Grapes

Thank you!

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