



Microservice Technologien

Kubernetes

OIO Hauskonferenz 2016

Orientation in Objects GmbH

Weinheimer Str. 68
68309 Mannheim

www.oio.de
info@oio.de

Tobias Polley

Trainer, Berater, Entwickler

Schwerpunkte

Integration

Microservices

Infrastructure Automation



Letzte Fassung dieser Unterlagen:

<https://github.com/rarayst/oio-hauskonferenz-2016>

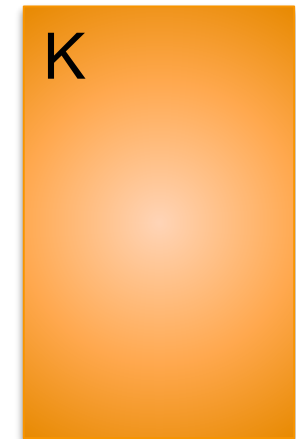
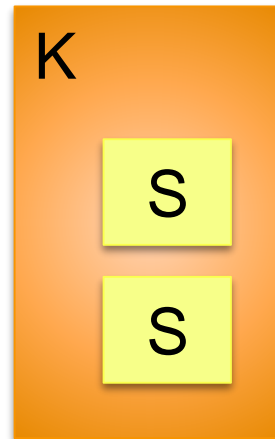
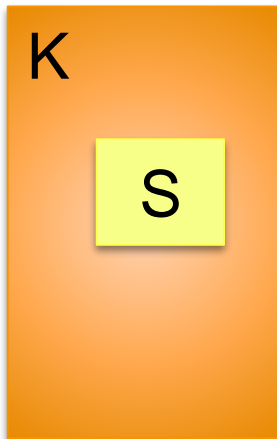
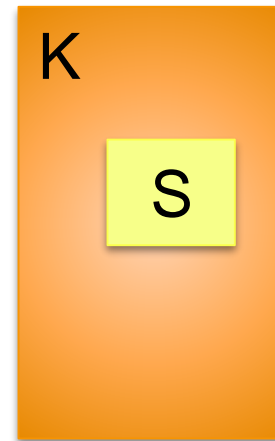
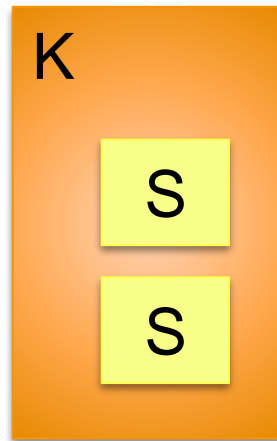
K

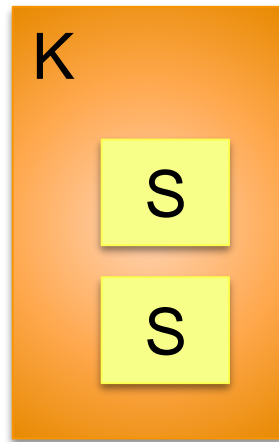
K

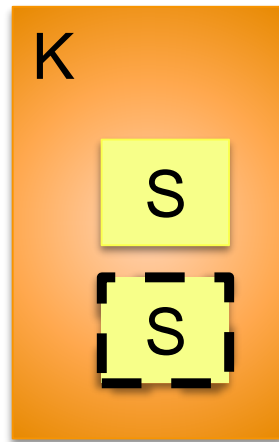
K

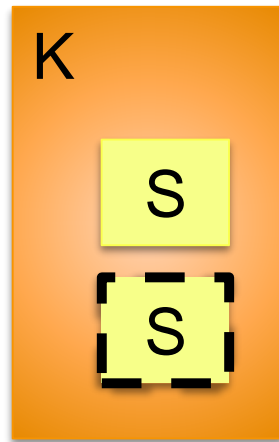
K

K

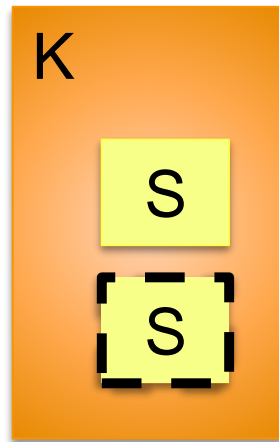






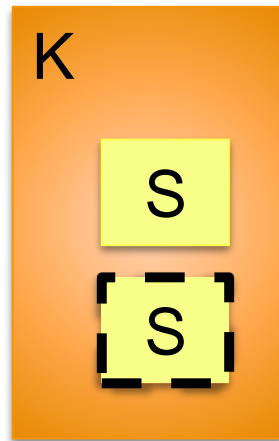


VMs?



~~VMs?~~

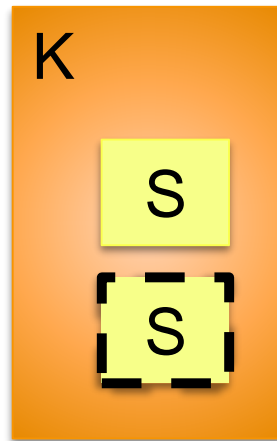
Container



~~VMs?~~

Container

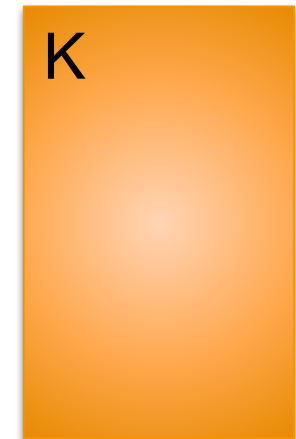
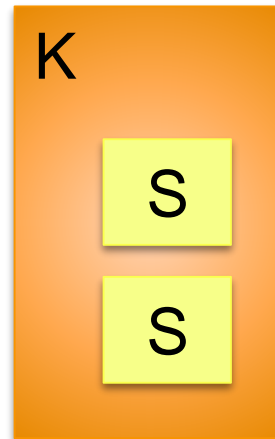
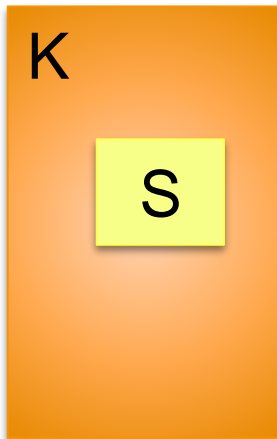
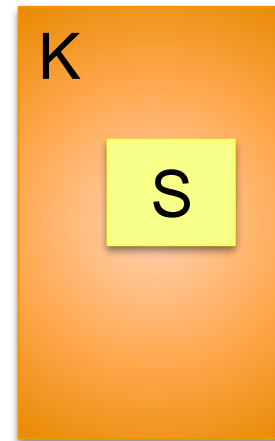
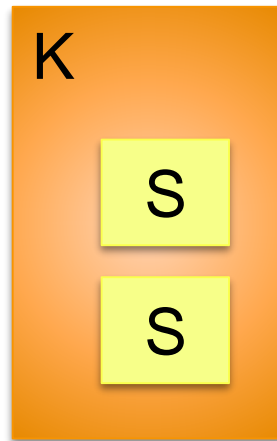
- Docker
- runc
- rkt



~~VMs?~~

Container

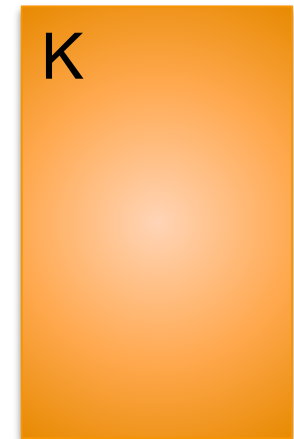
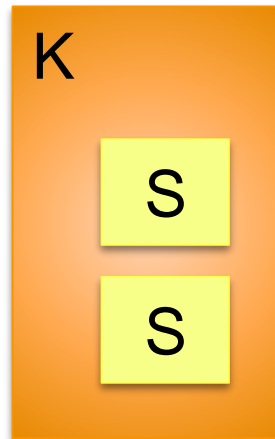
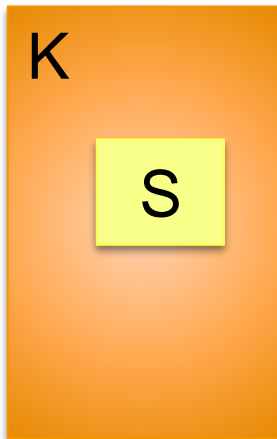
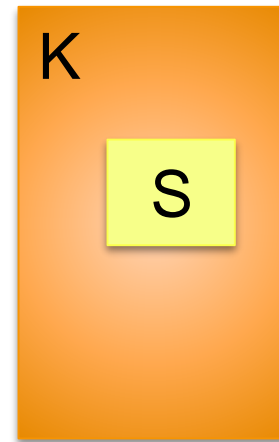
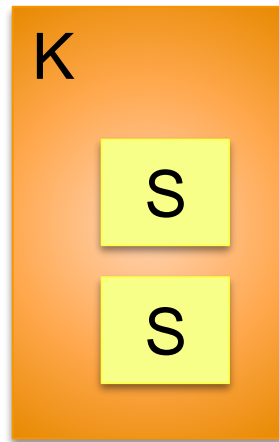
- Docker ← heute
- runc
- rkt



ORCHESTRATION

ORCHESTRATION

- Kubernetes ← heute
- Apache Mesos
- Docker Swarm



1 DIE PLATFORM

Hardware

1

Hardware

2

Hardware

3

Hardware
with Linux

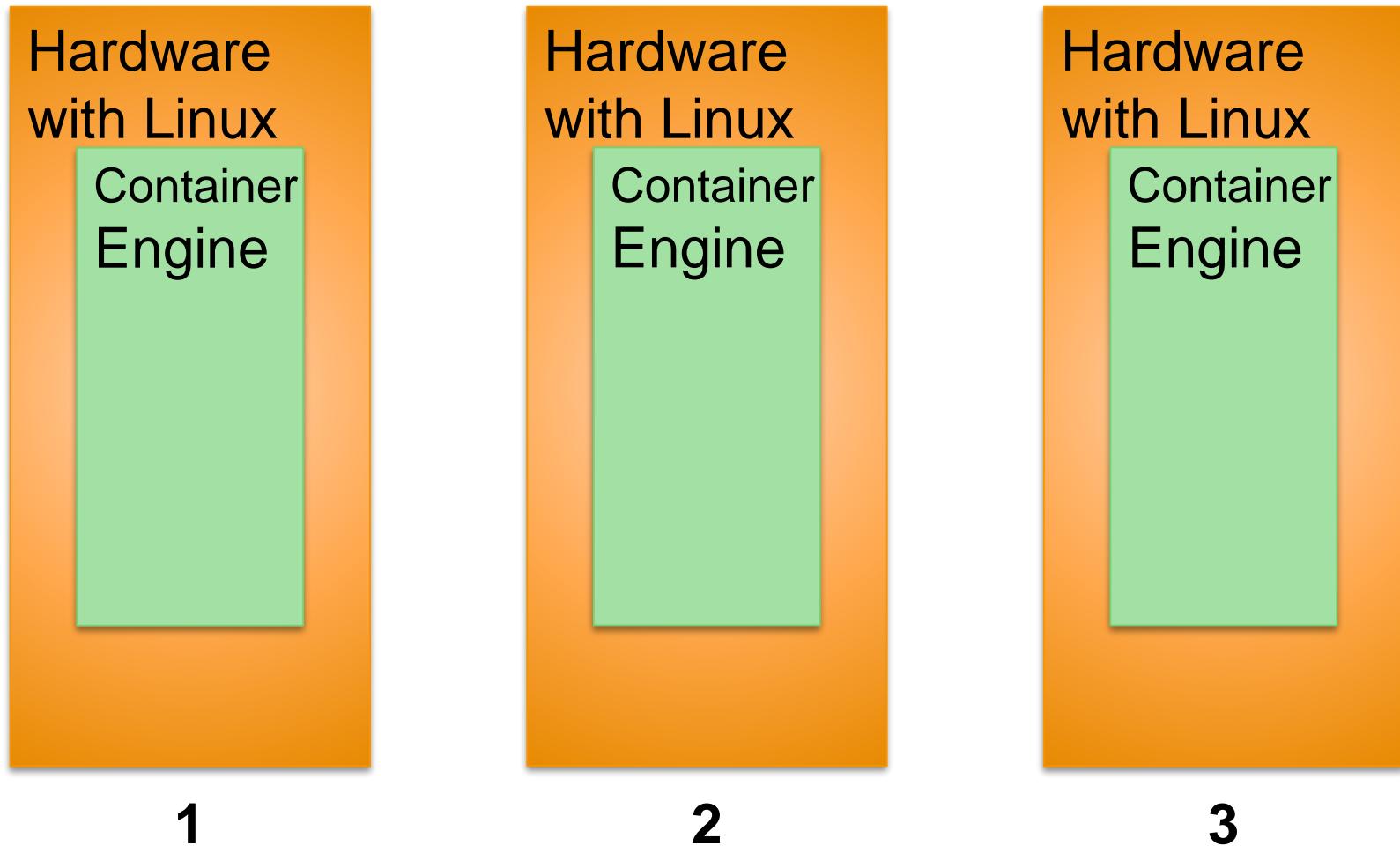
1

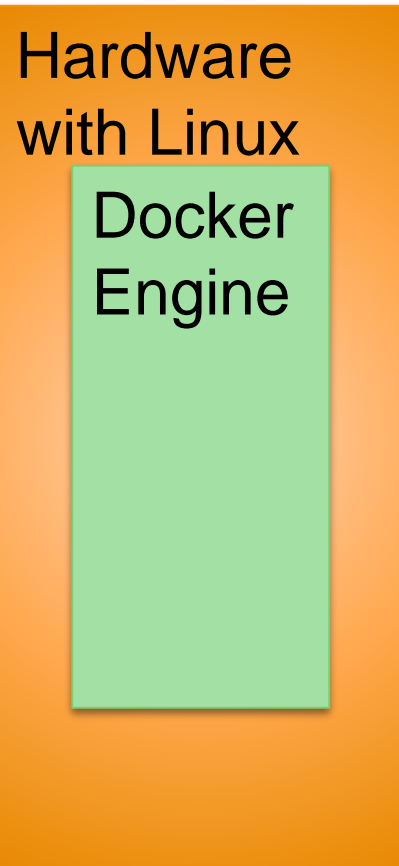
Hardware
with Linux

2

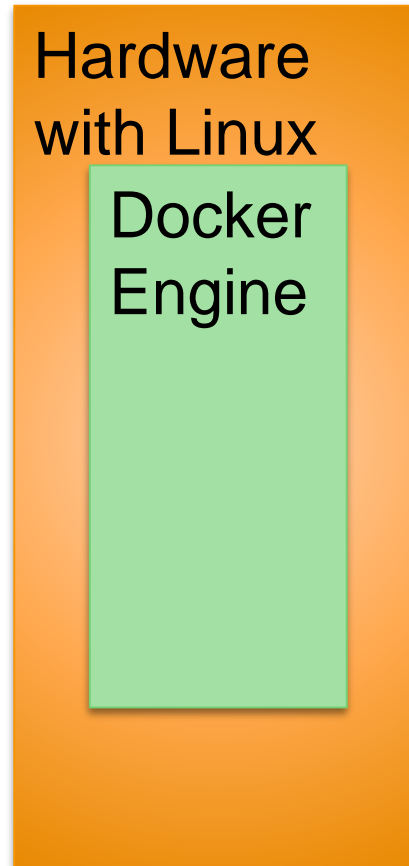
Hardware
with Linux

3

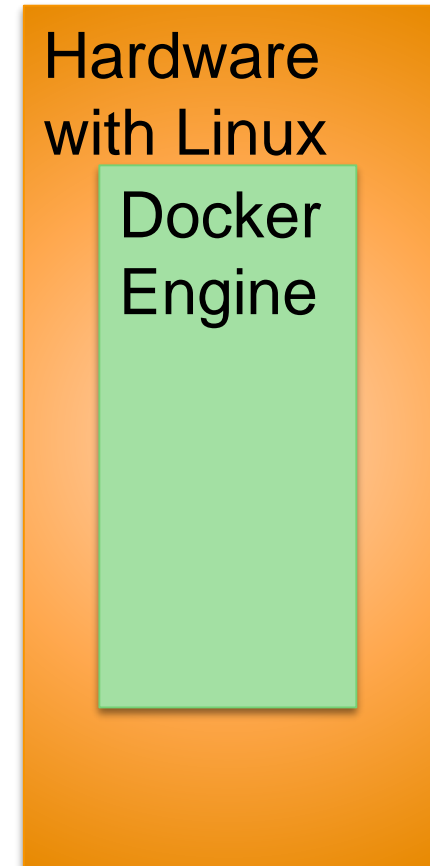




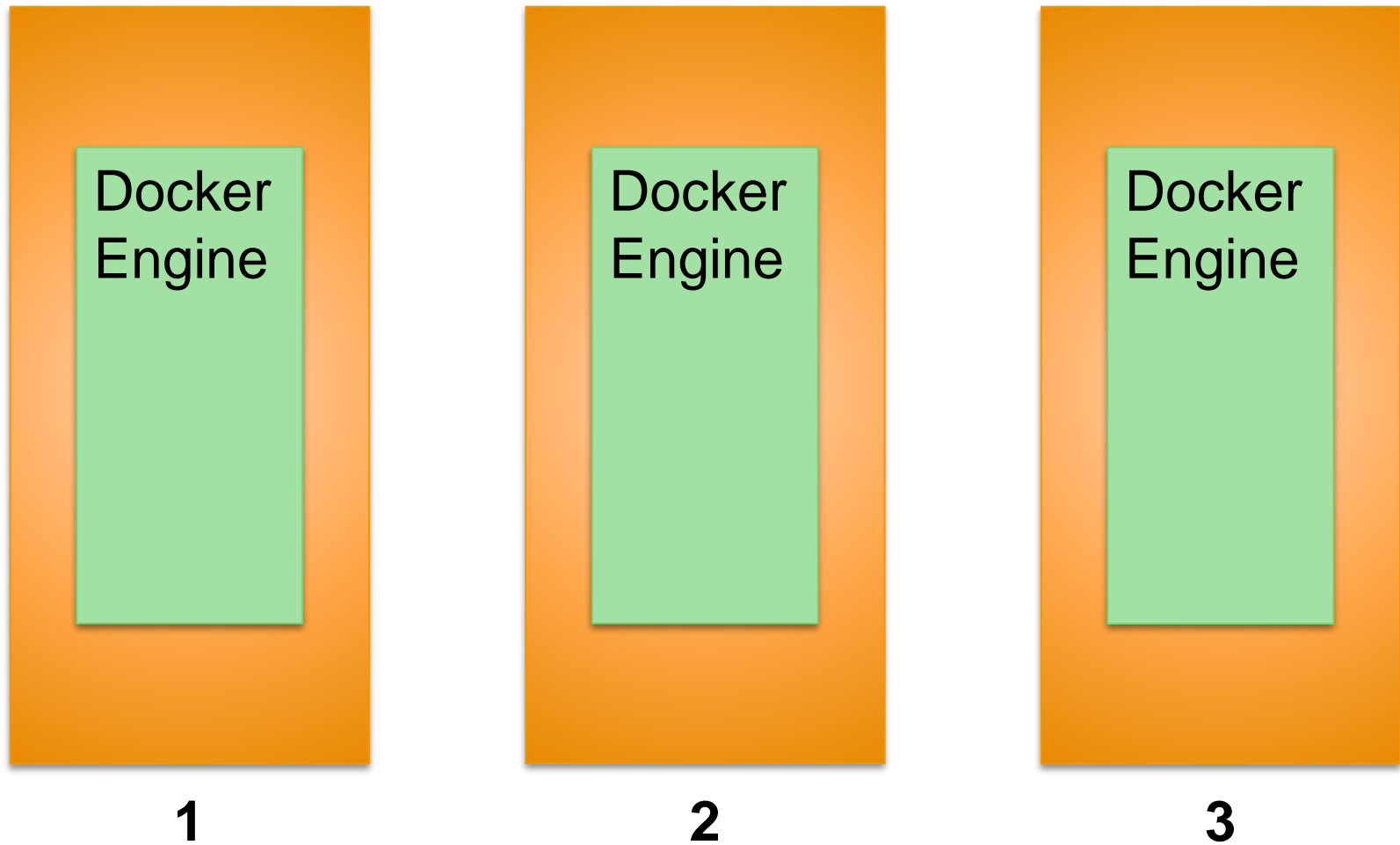
1



2



3



Docker
Engine

1

Docker
Engine


2

Docker
Engine

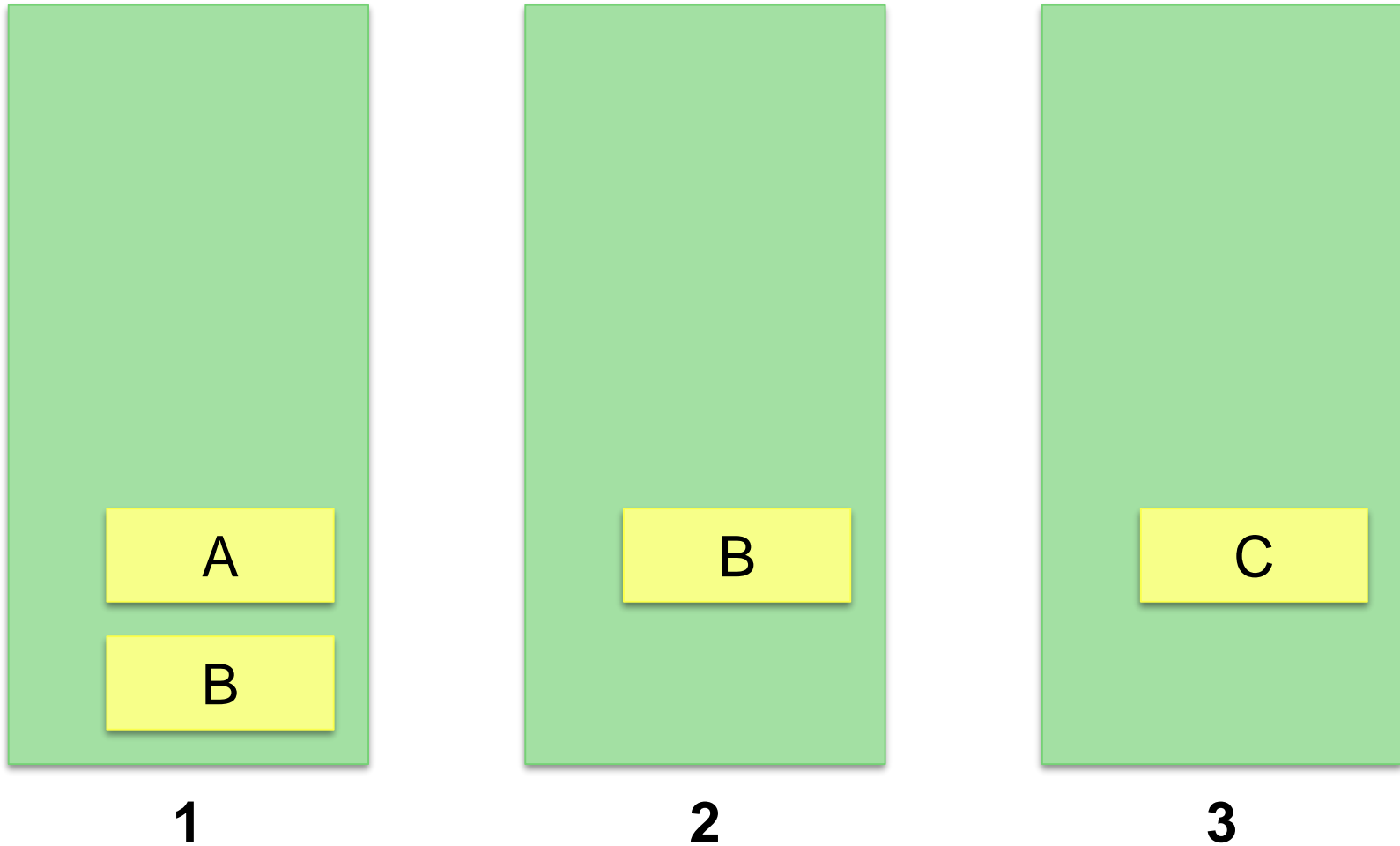
3

2 DIE AUSFÜHRUNG

etcd



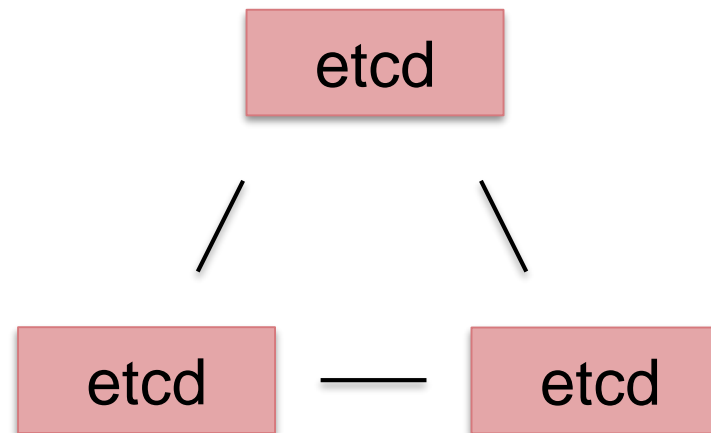
“Auf Knoten 1 soll Software A und B laufen,
auf Knoten 2 soll Software A laufen,
auf Knoten 3 soll Software C laufen.”

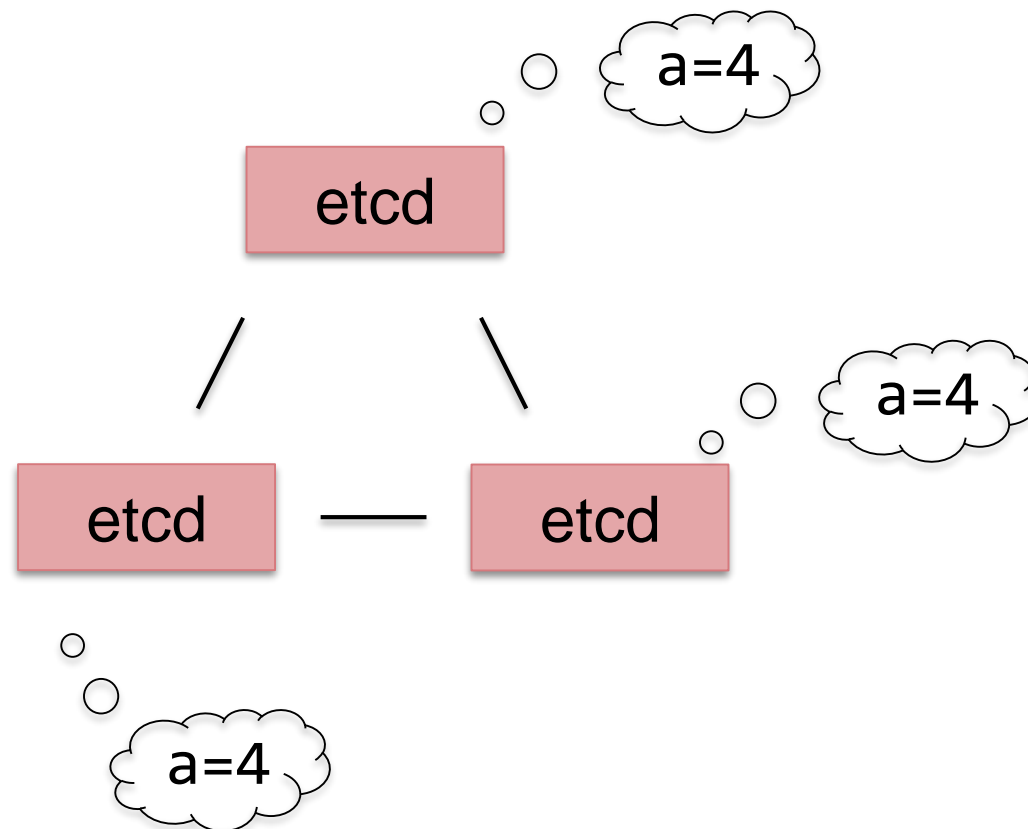


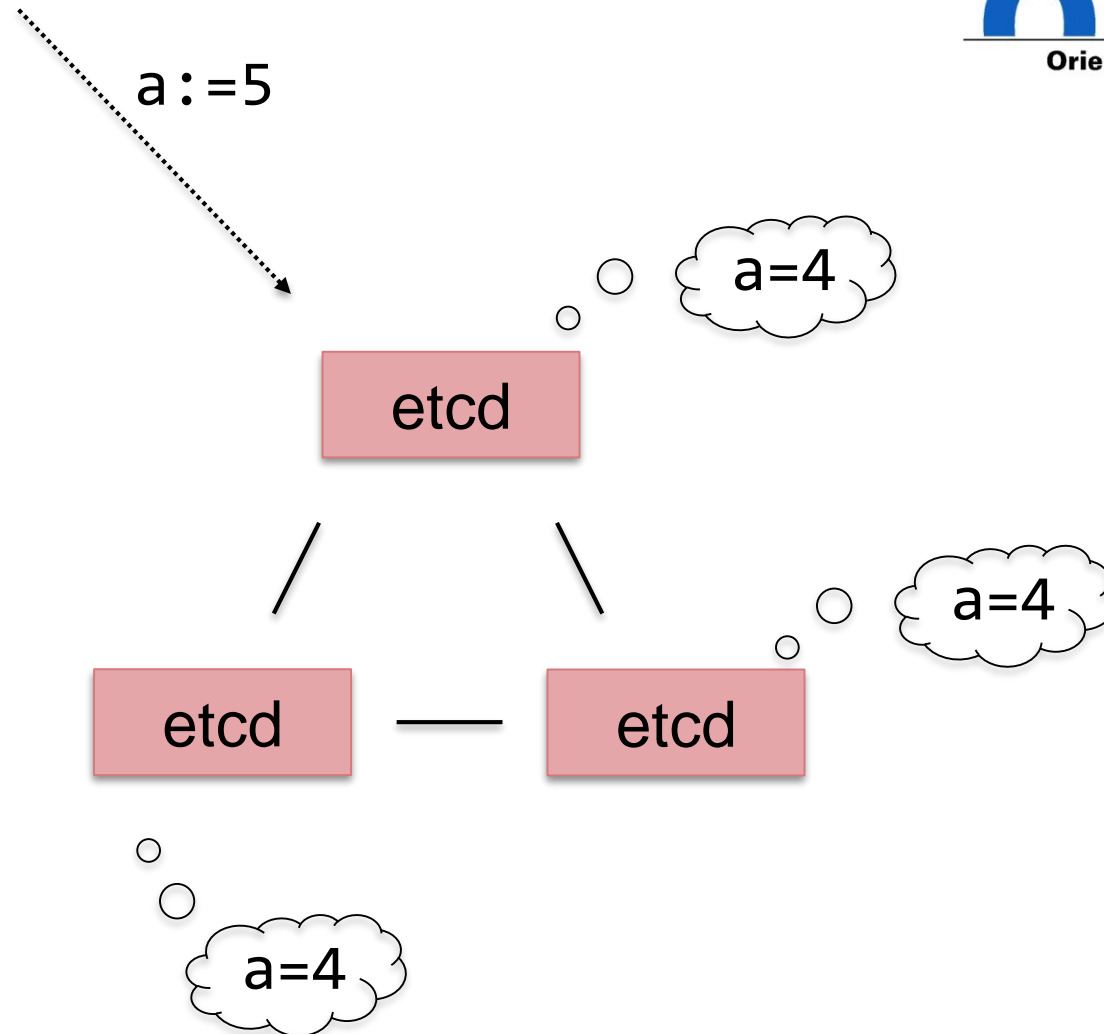
etcd

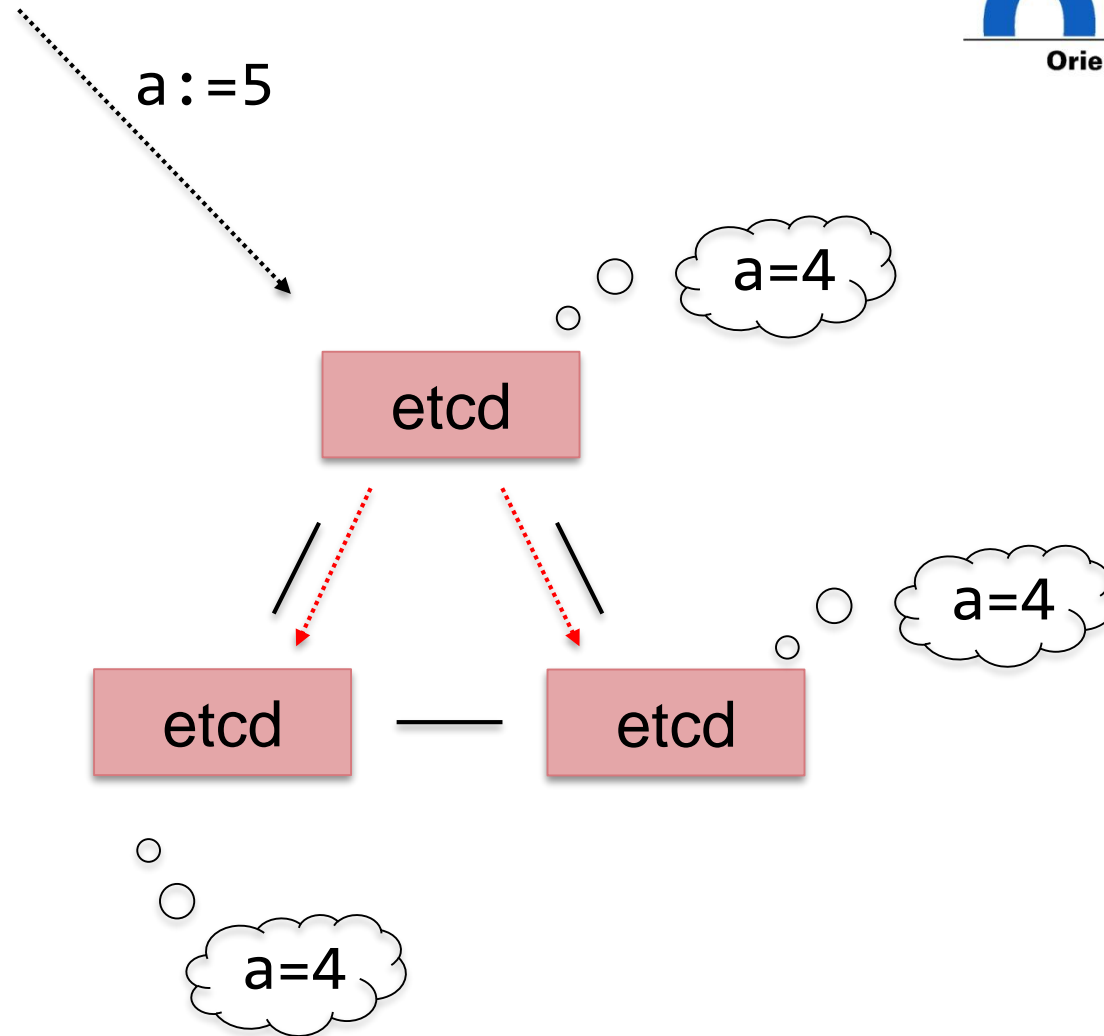
“Auf Knoten 1 soll Software A und B laufen,
auf Knoten 2 soll Software A laufen,
auf Knoten 3 soll Software C laufen.”

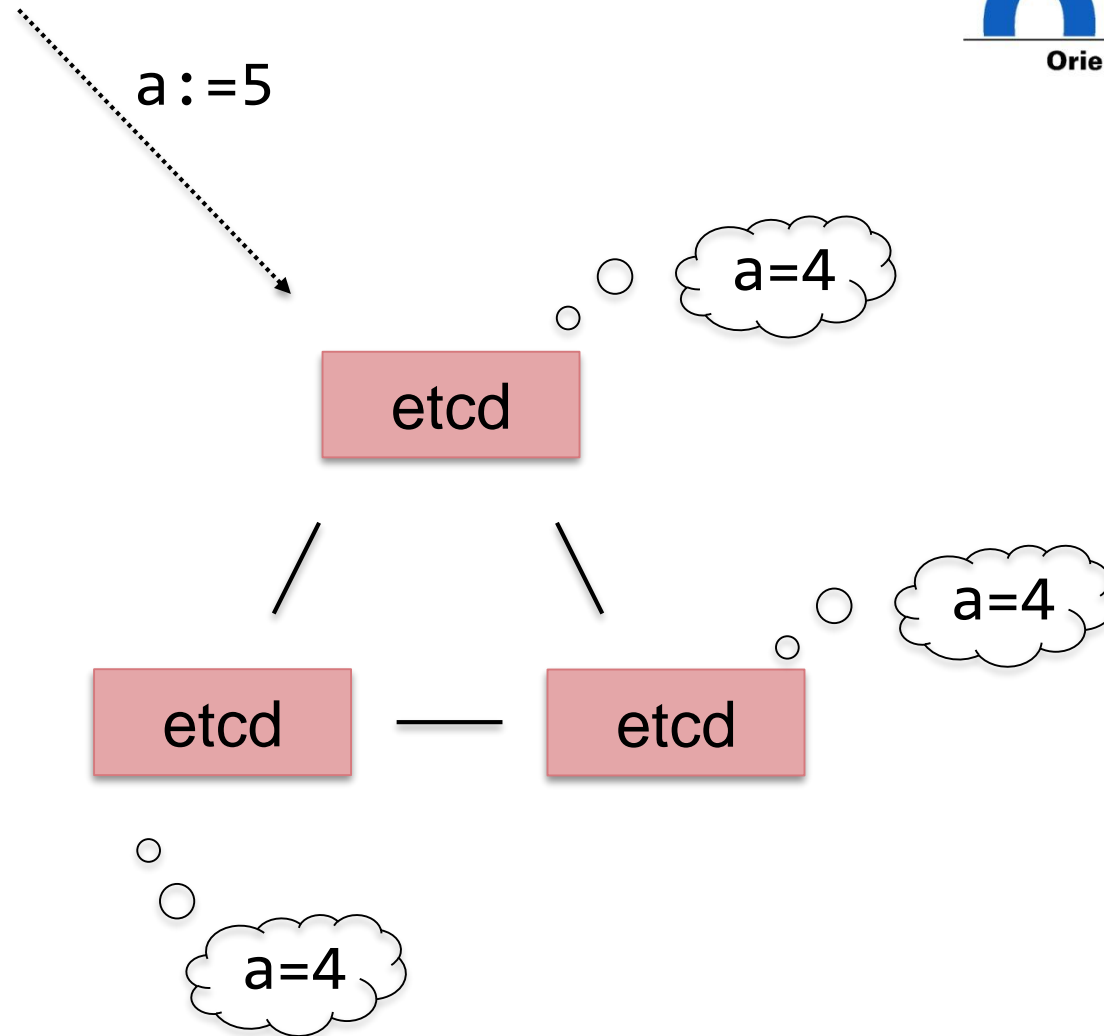
etcd

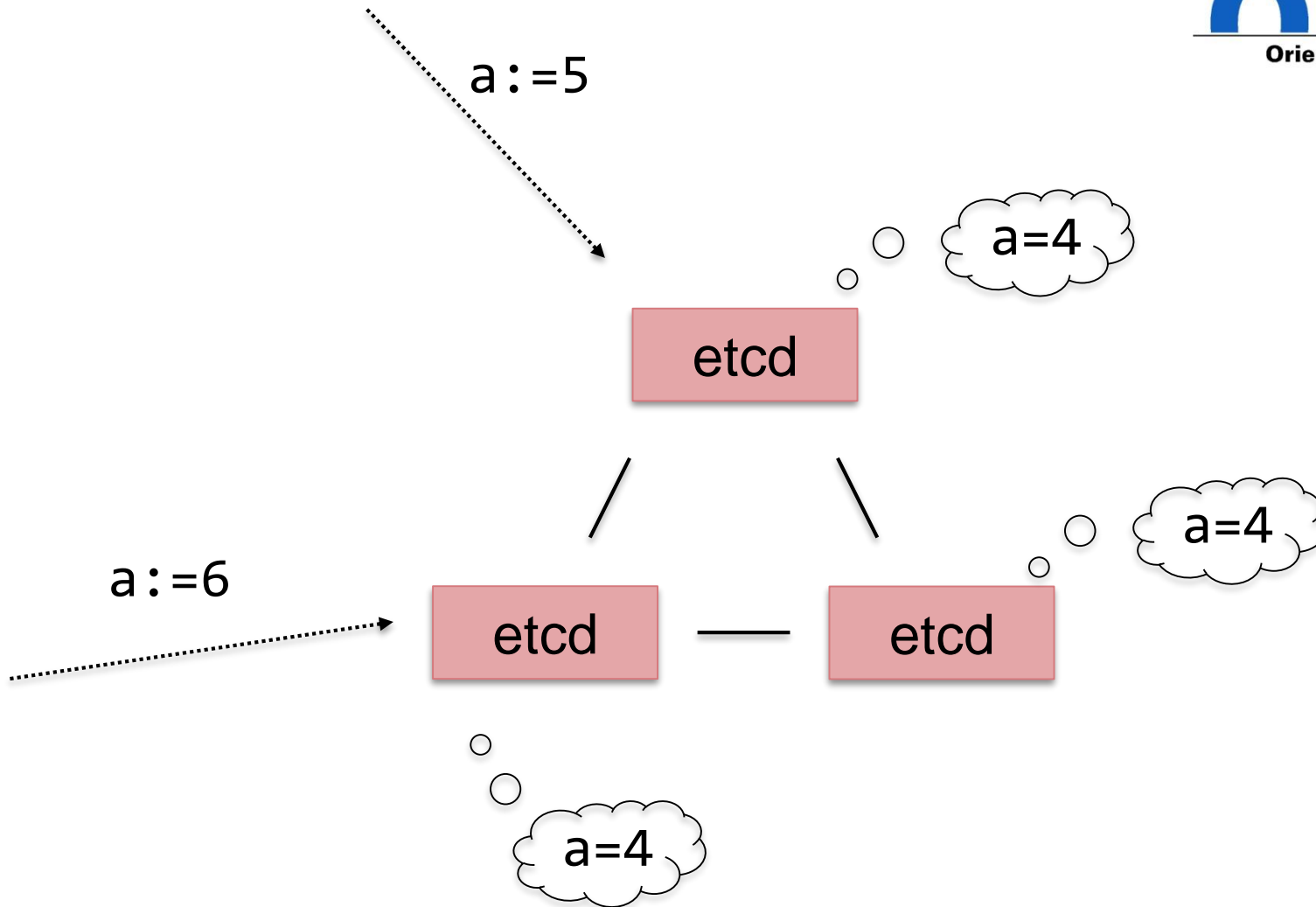


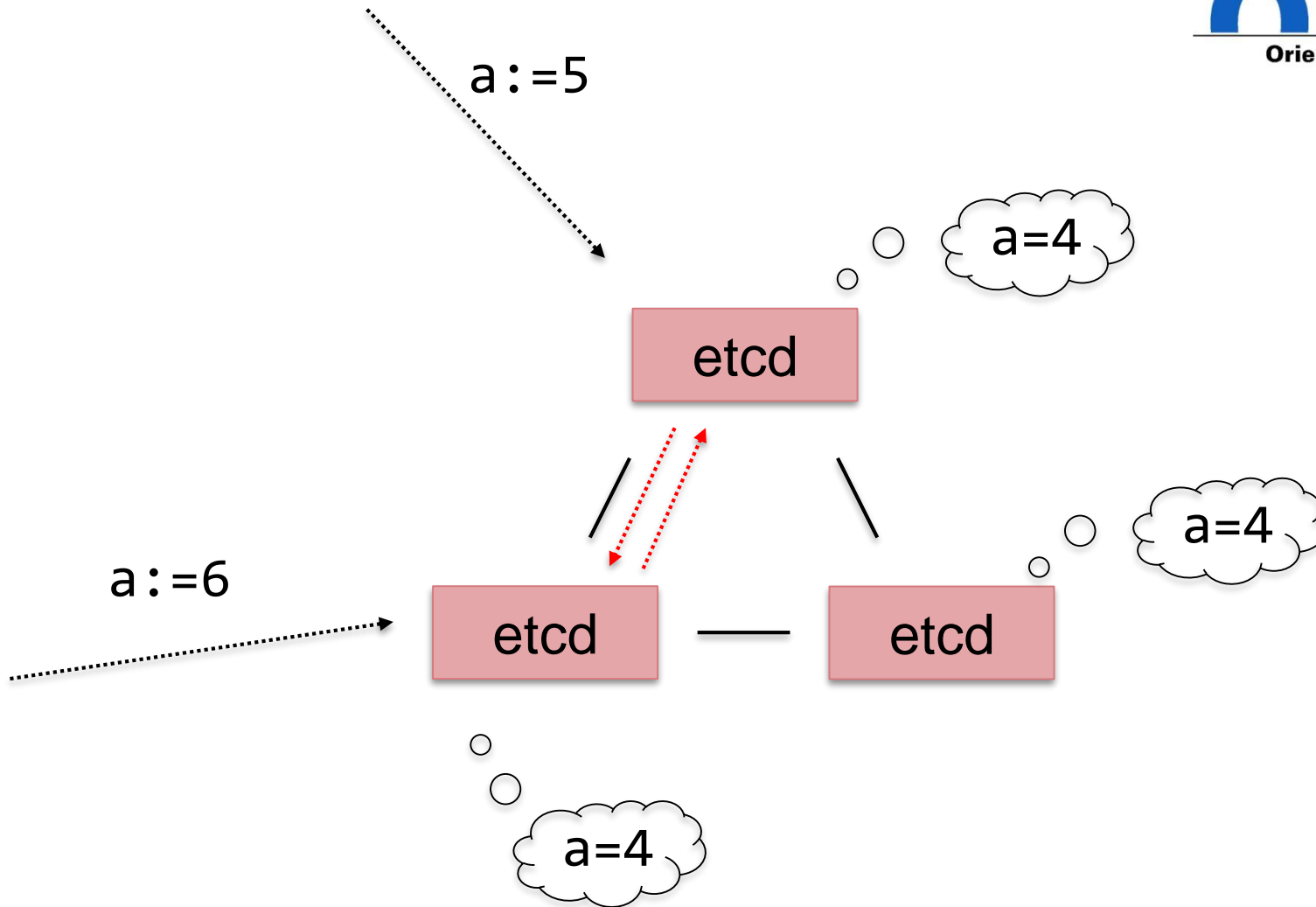


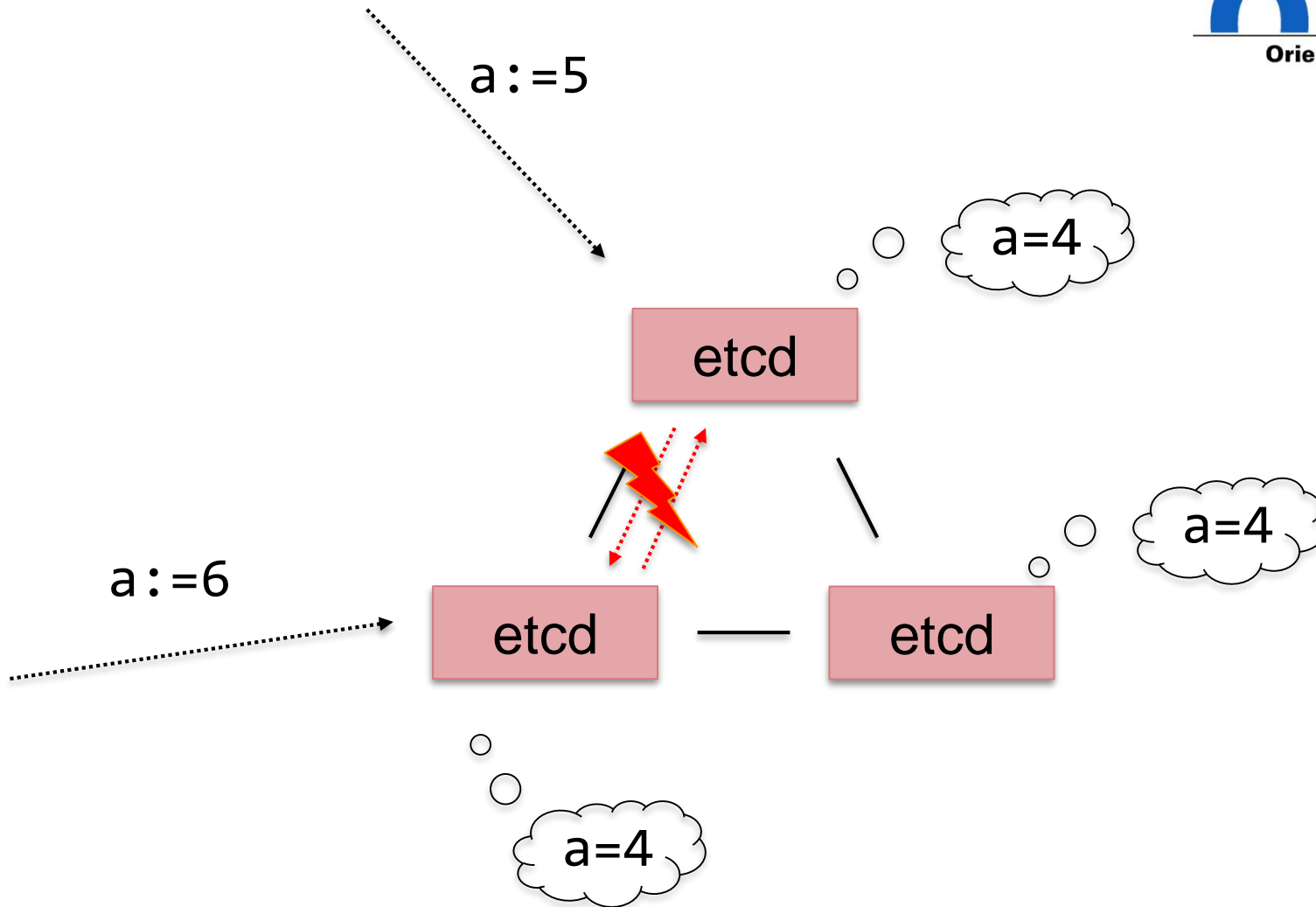




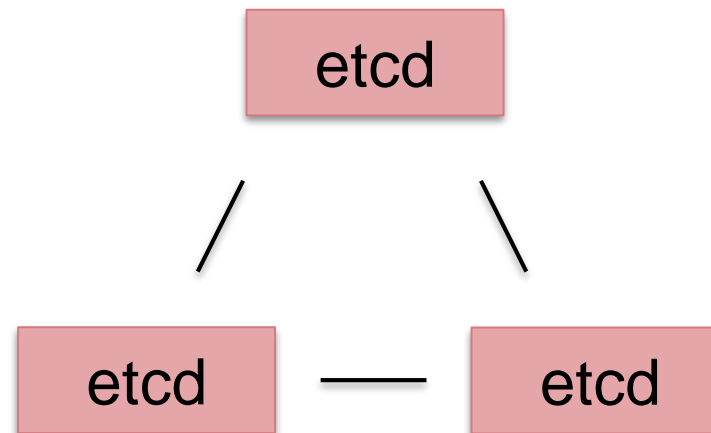


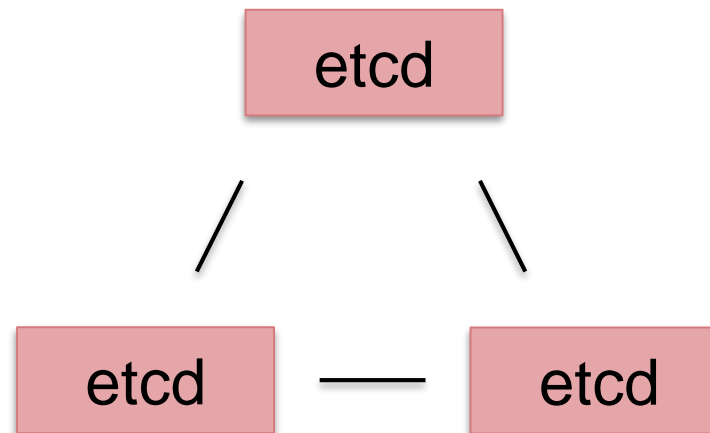




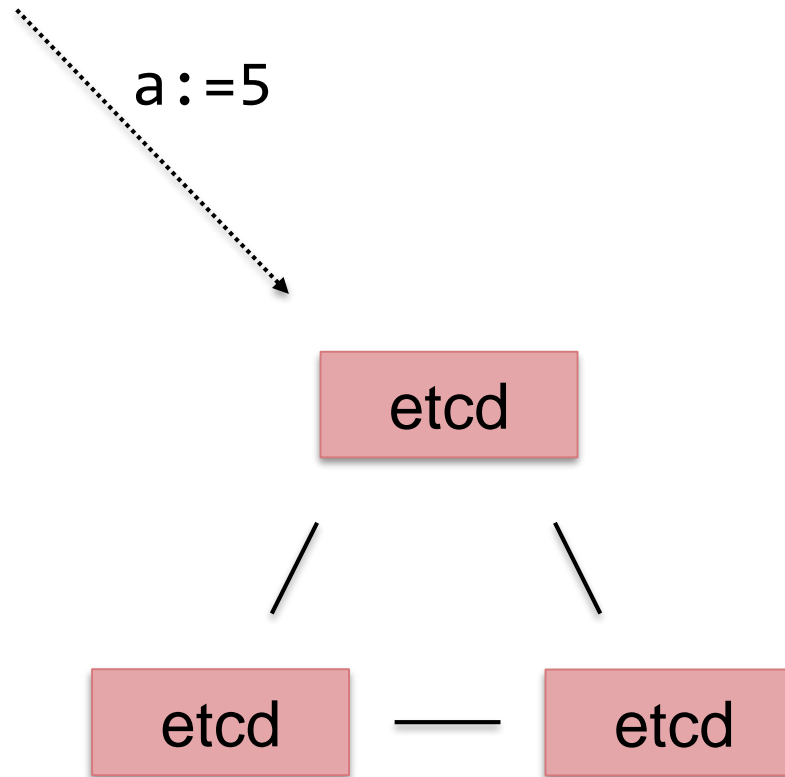


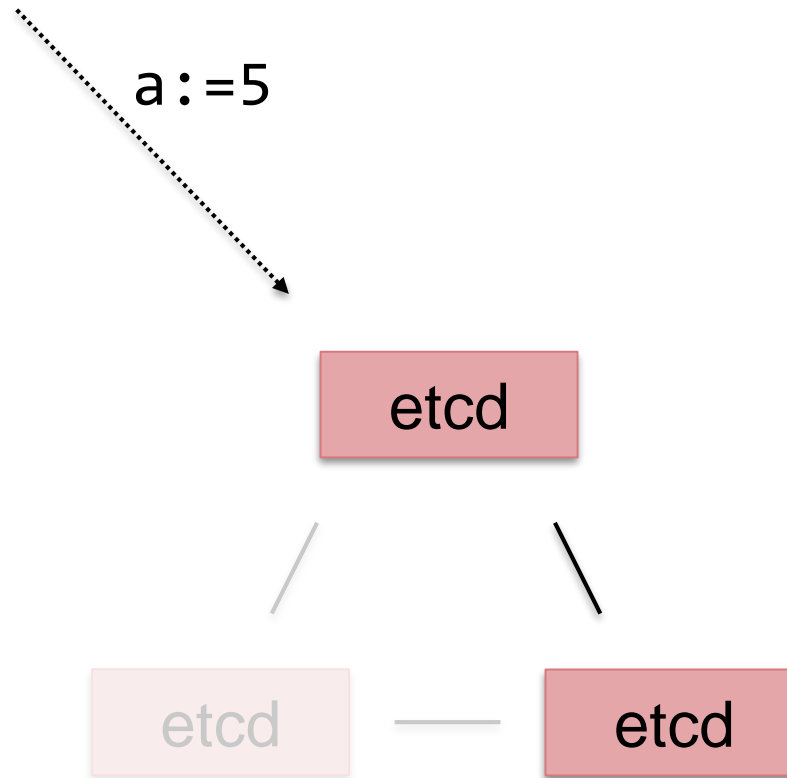
Split Brain Problem

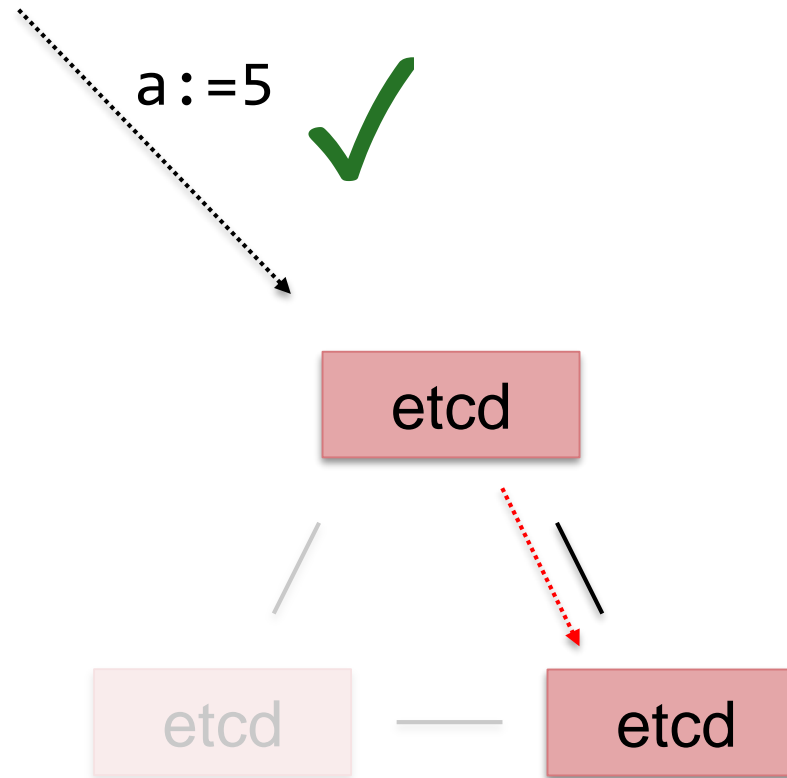


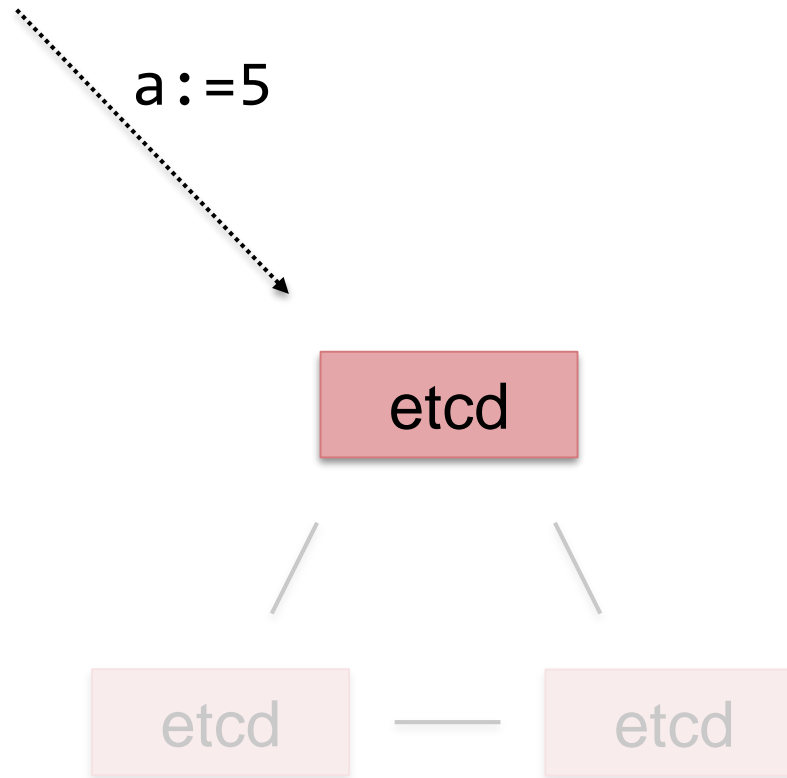


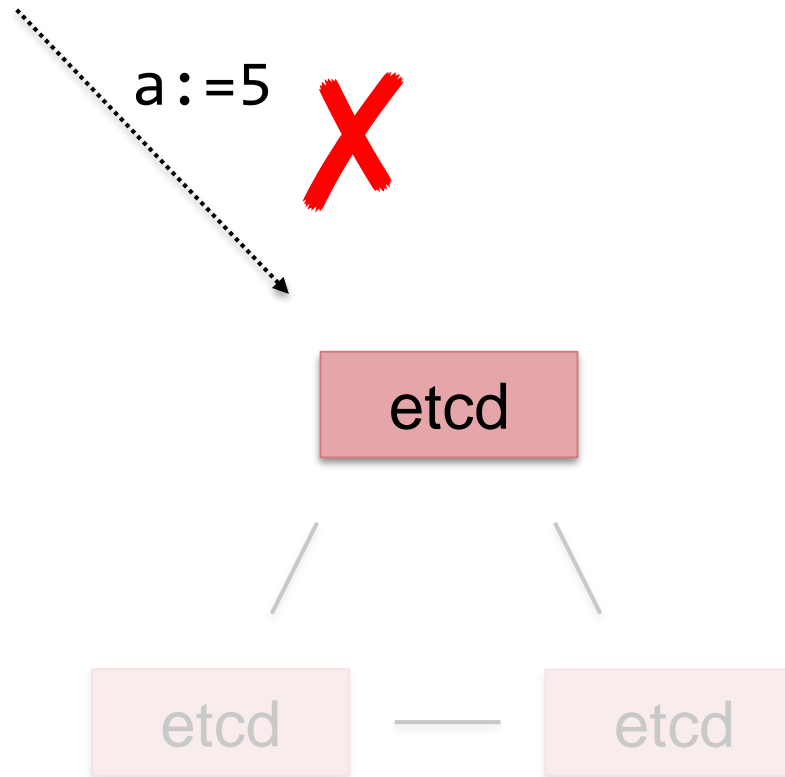
Lösung: Eine Änderung wird akzeptiert, wenn sie von mehr als 50% der Cluster-Knoten akzeptiert wird.

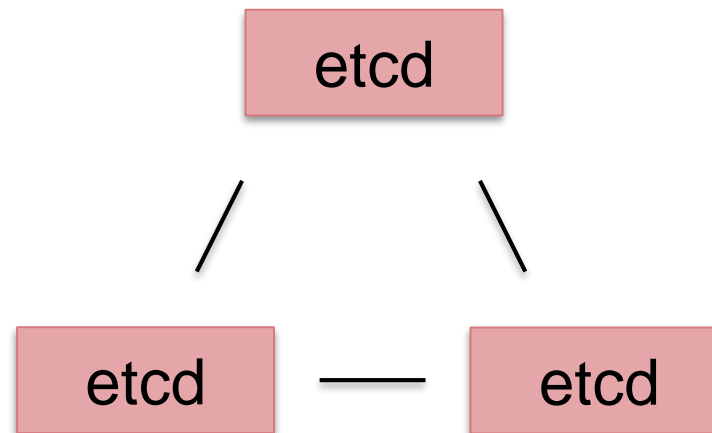












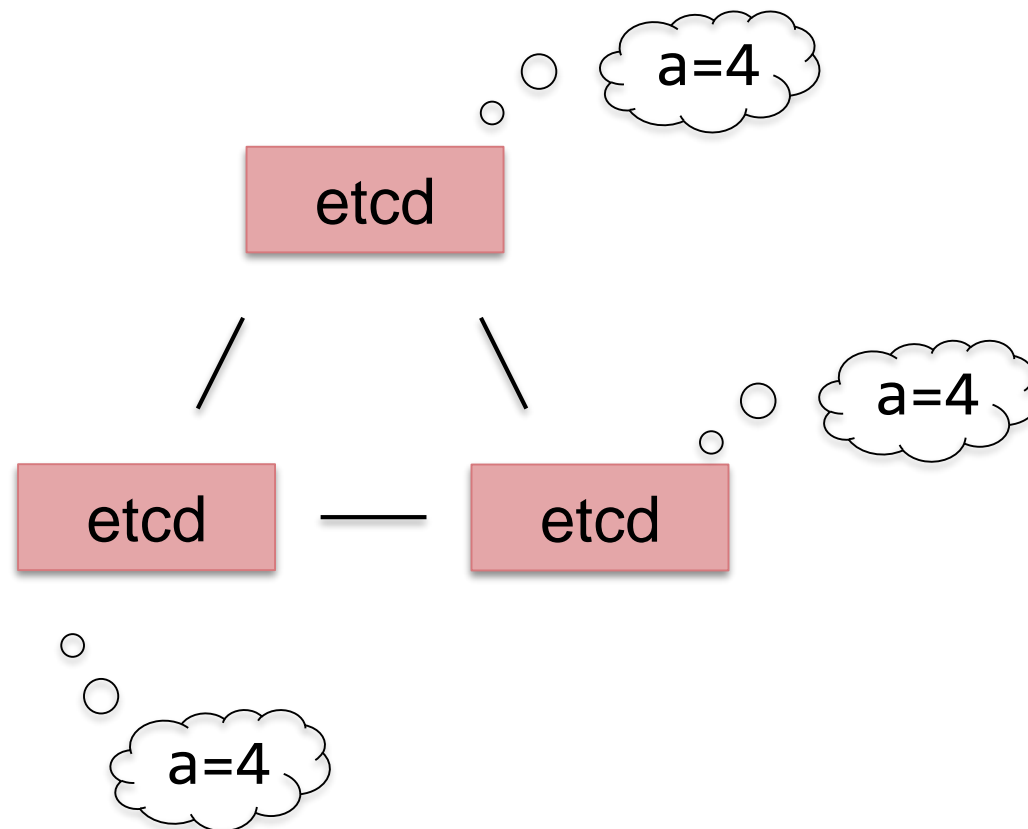
etcd

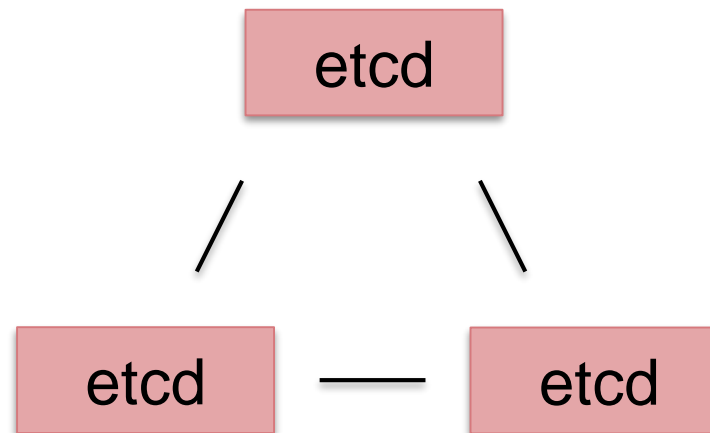
Eureka

etcd

ZooKeeper

Consul





Lösung: Eine Änderung wird akzeptiert, wenn sie von mehr als 50% der Cluster-Knoten akzeptiert wird.

etcd

etcd

etcd

“Auf Knoten 1 soll Software A und B laufen,
auf Knoten 2 soll Software A laufen,
auf Knoten 3 soll Software C laufen.”

etcd

Docker
Engine

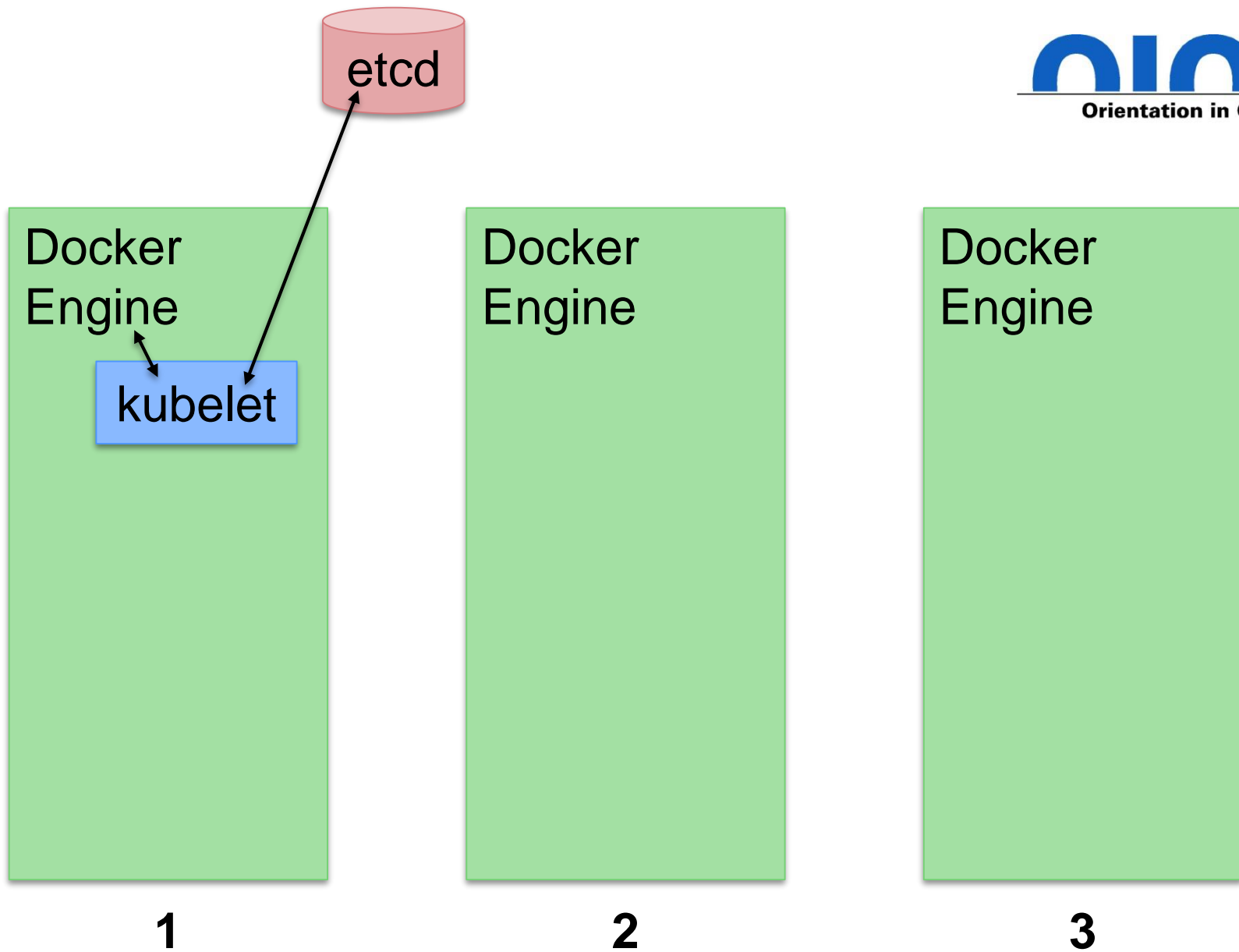
1

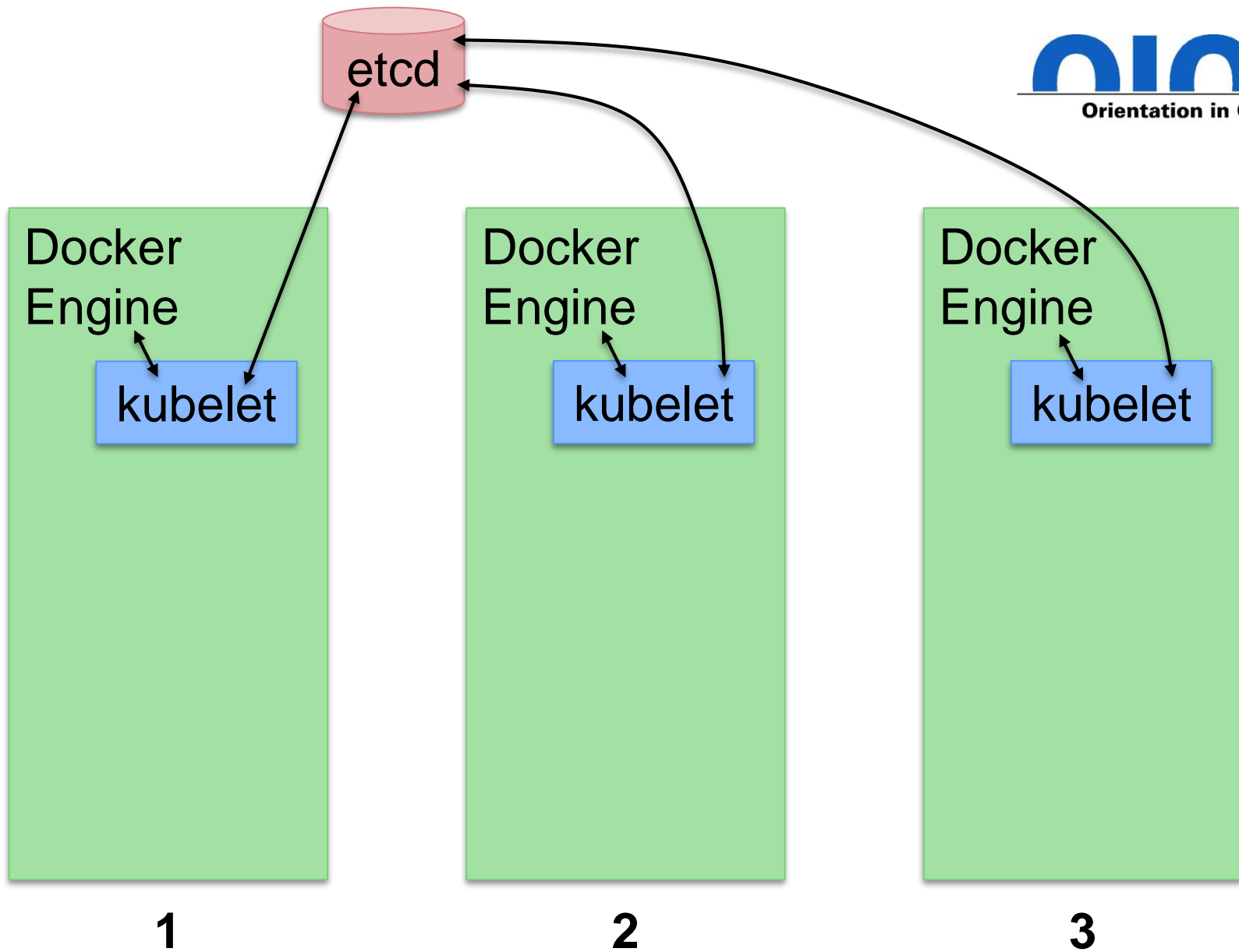
Docker
Engine

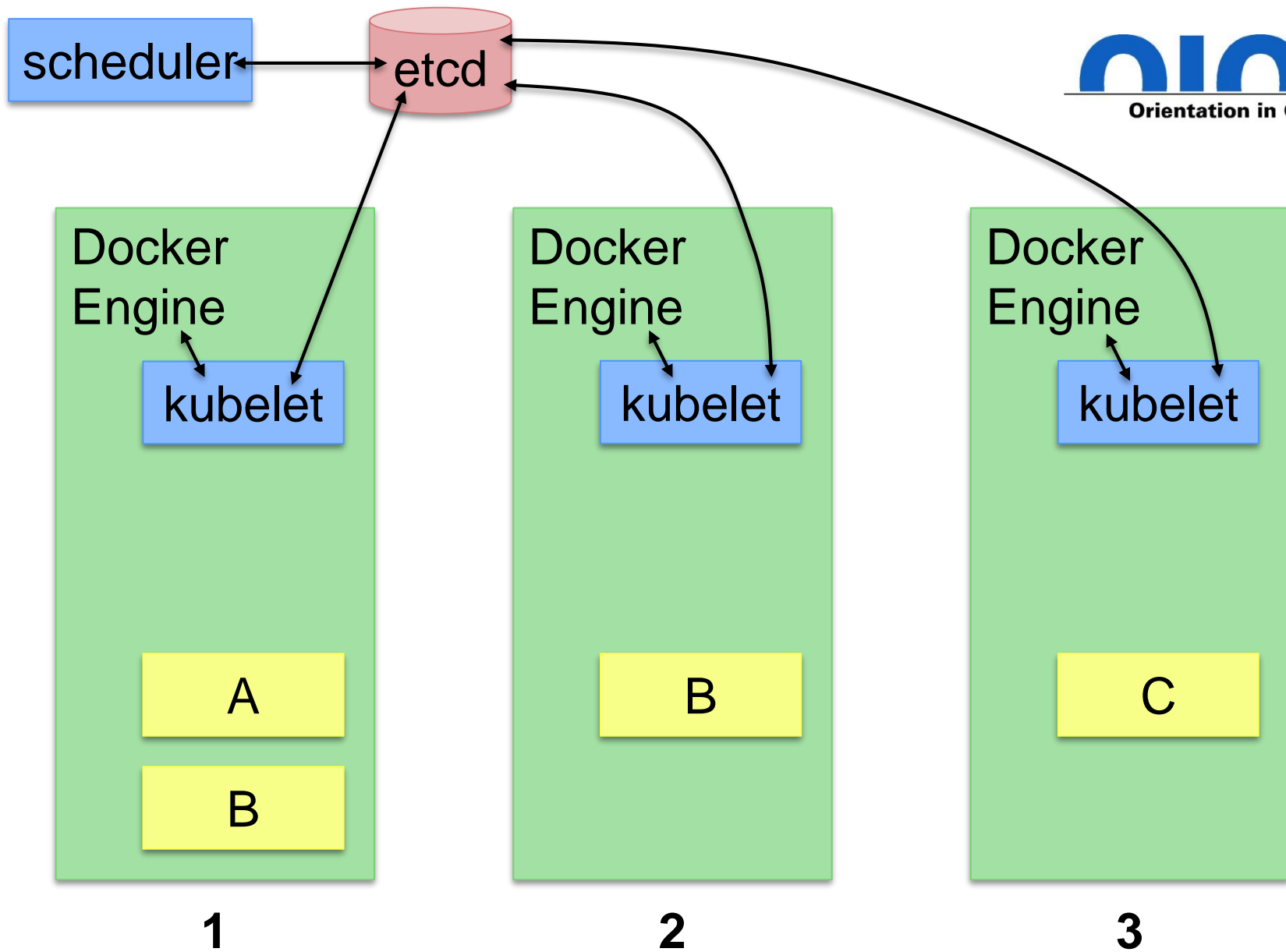
2

Docker
Engine

3







etcd

“Auf Knoten 1 soll Software A,
auf Knoten 2 soll Software A laufen”

scheduler

“Im Cluster soll Software A 2x laufen.”

ReplicaSet

etcd

“Auf Knoten 1 soll Software A,
auf Knoten 2 soll Software A laufen”

scheduler

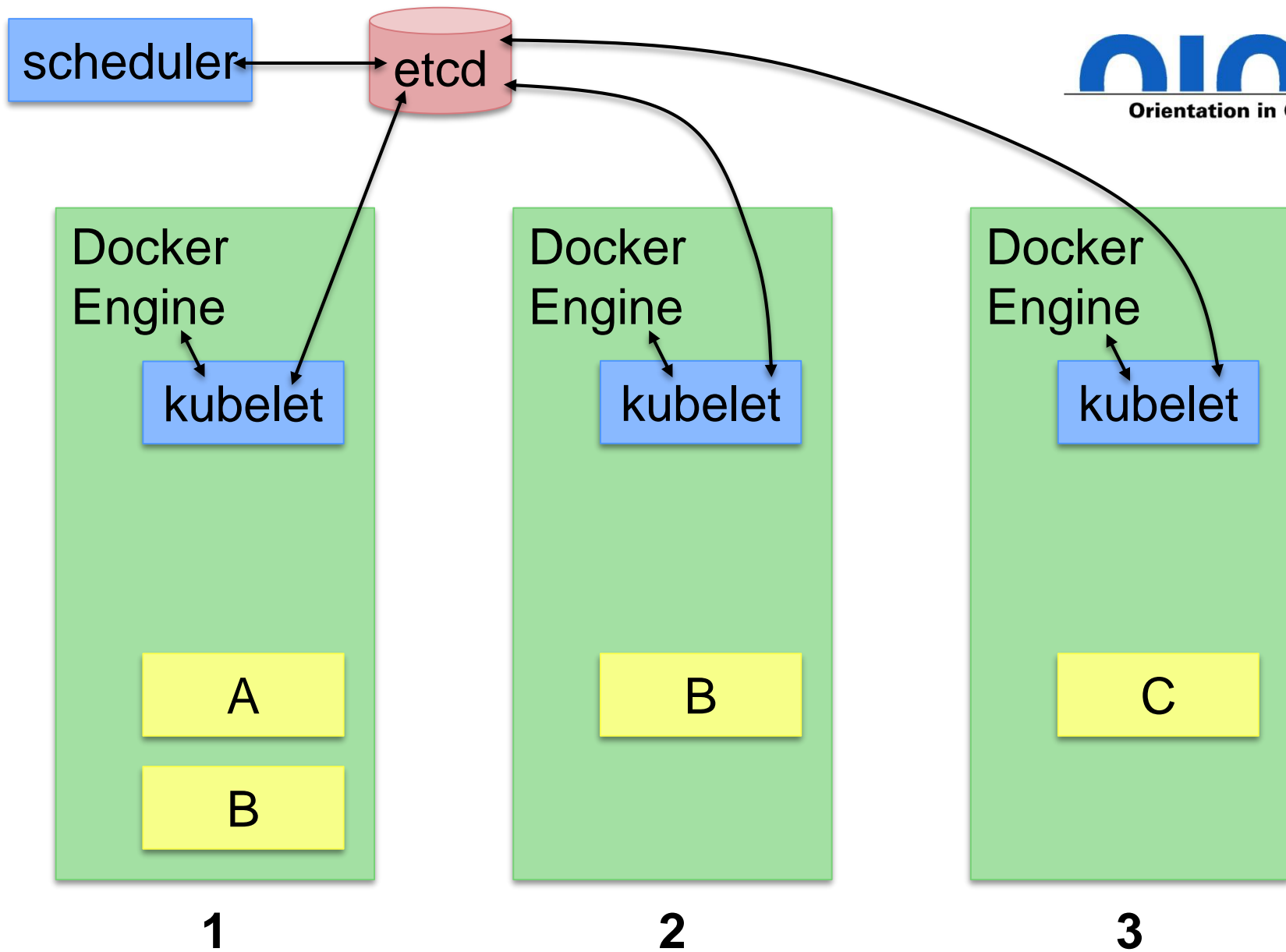
“Im Cluster soll Software A 2x laufen.”

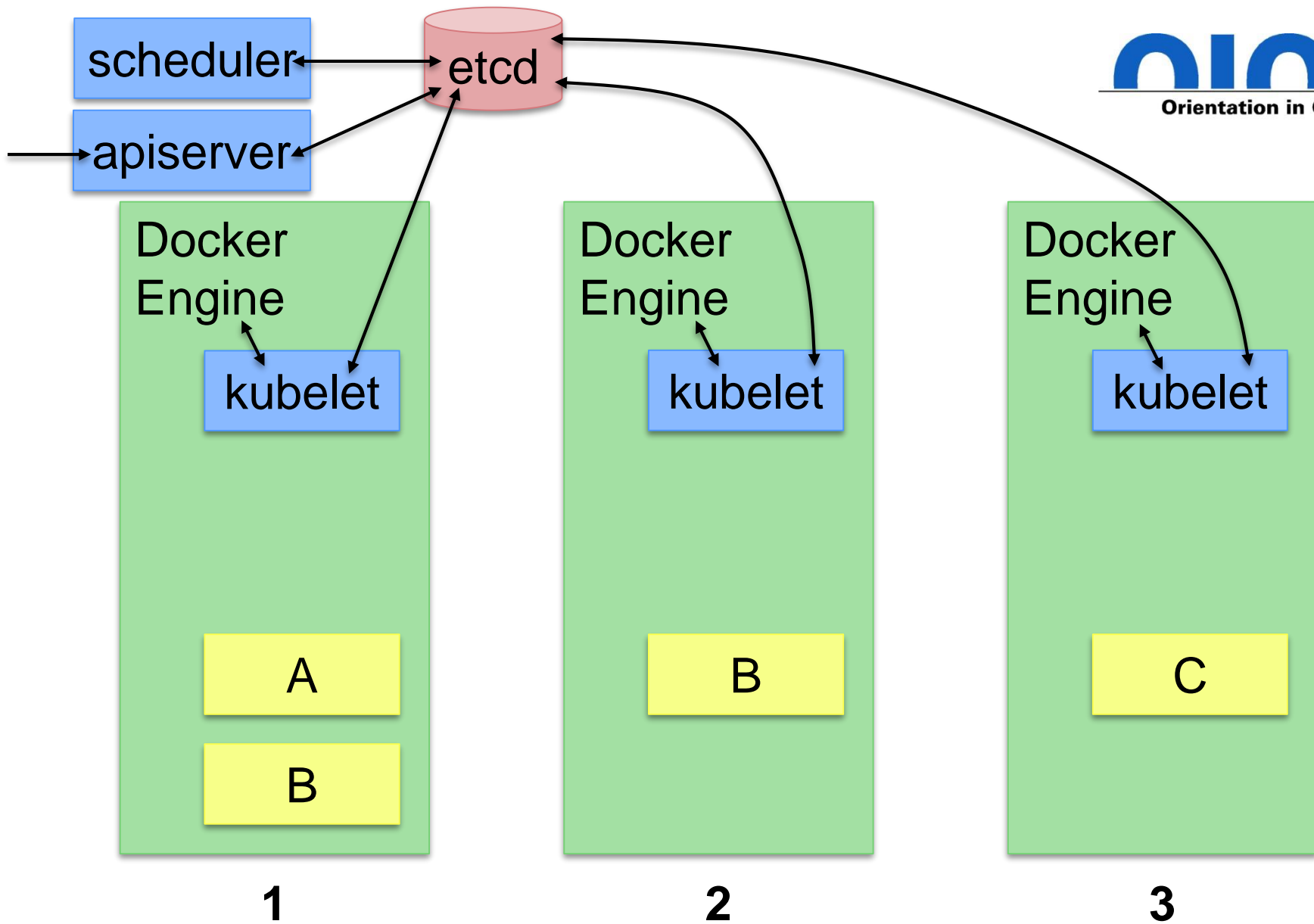
ReplicaSet

“Im Cluster soll Software A 2x laufen.”

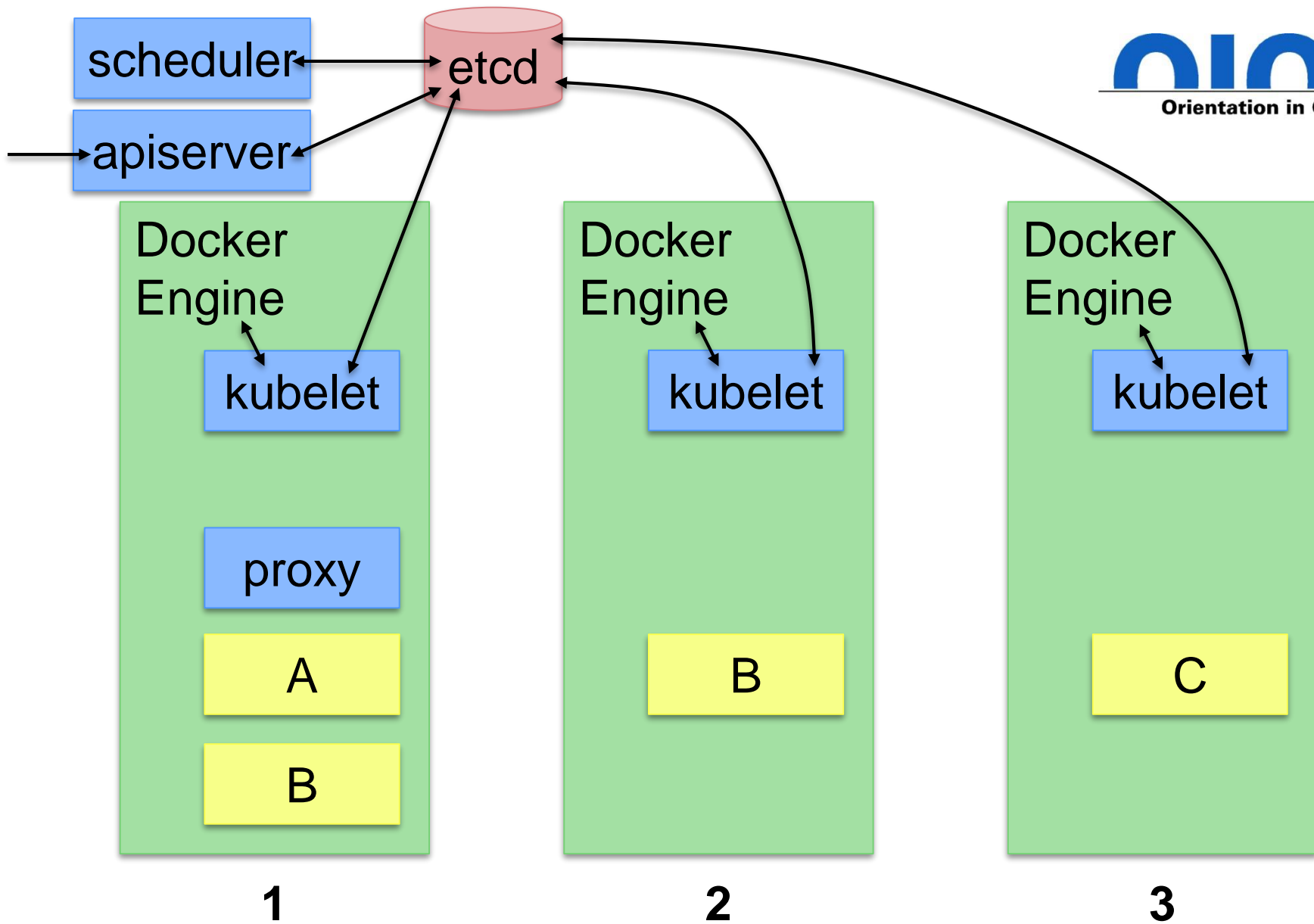
Deployment

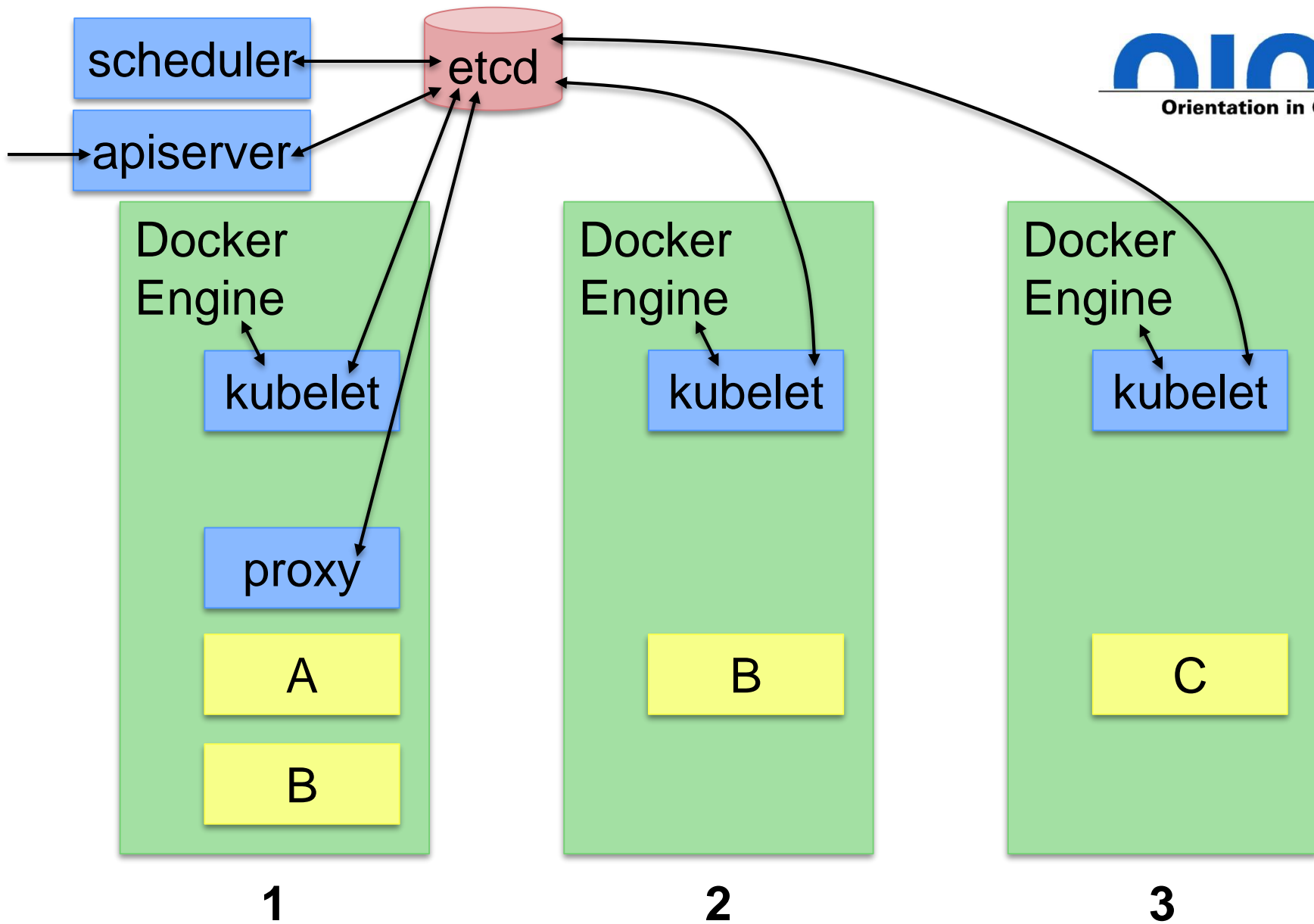
4 API

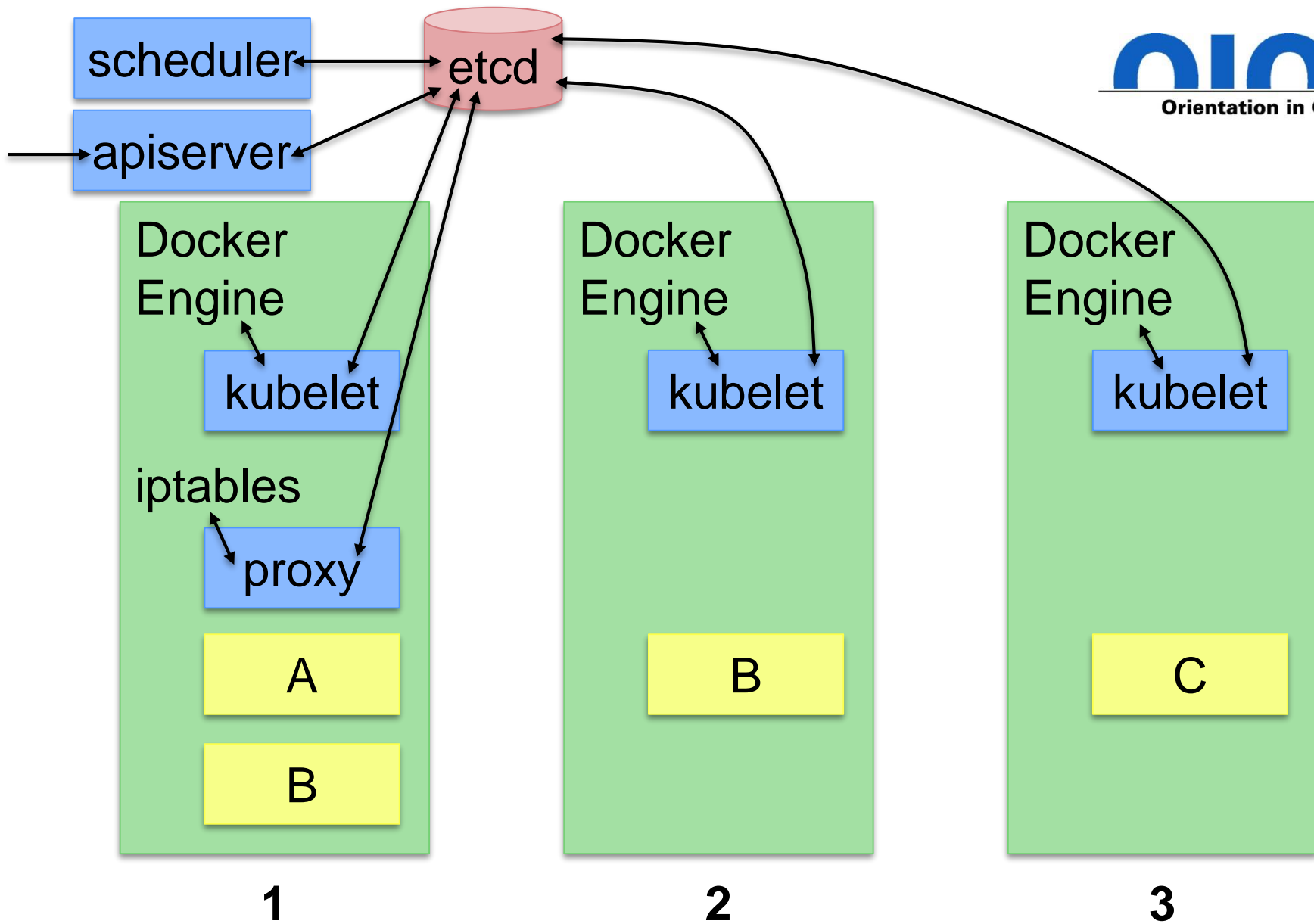


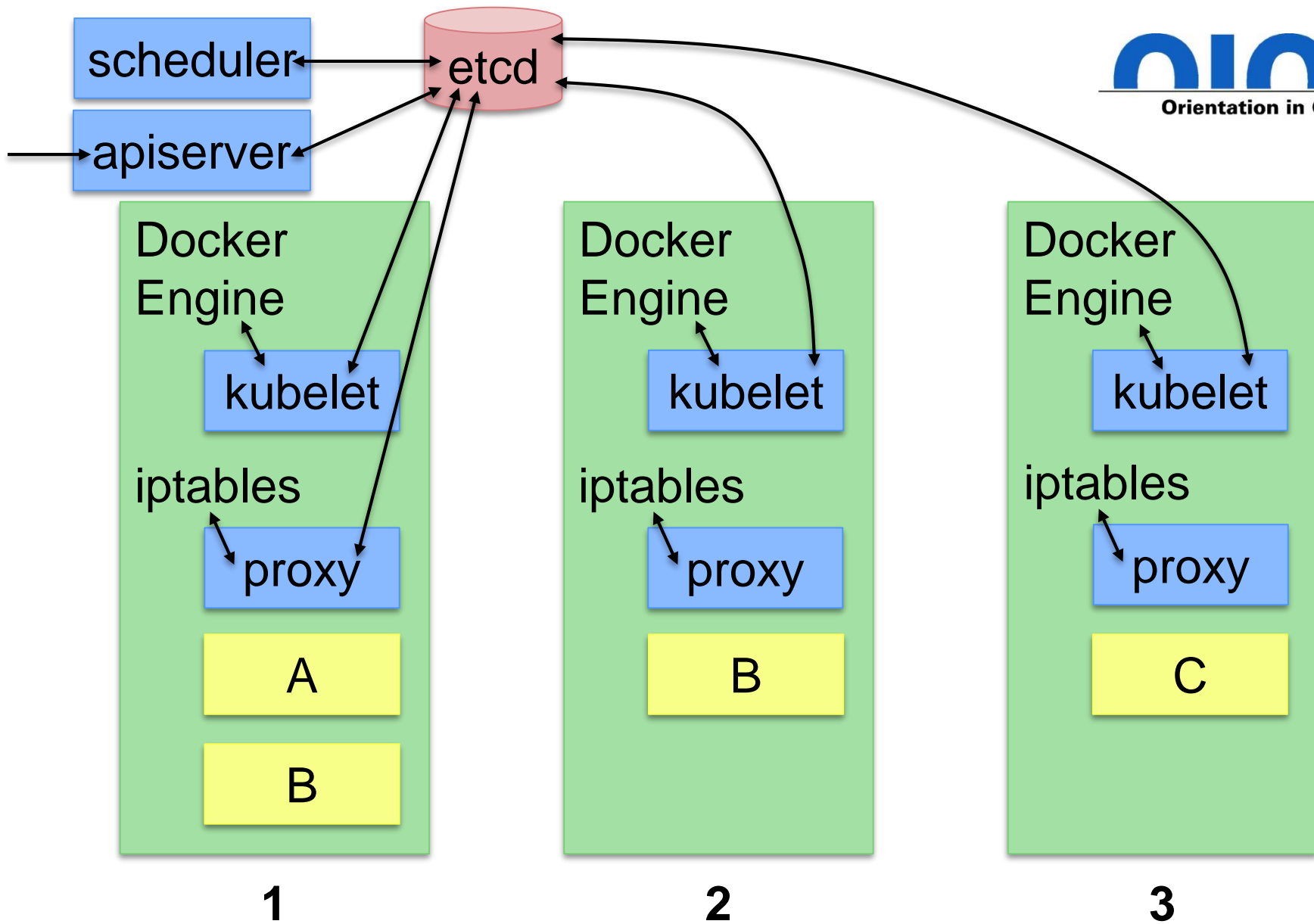


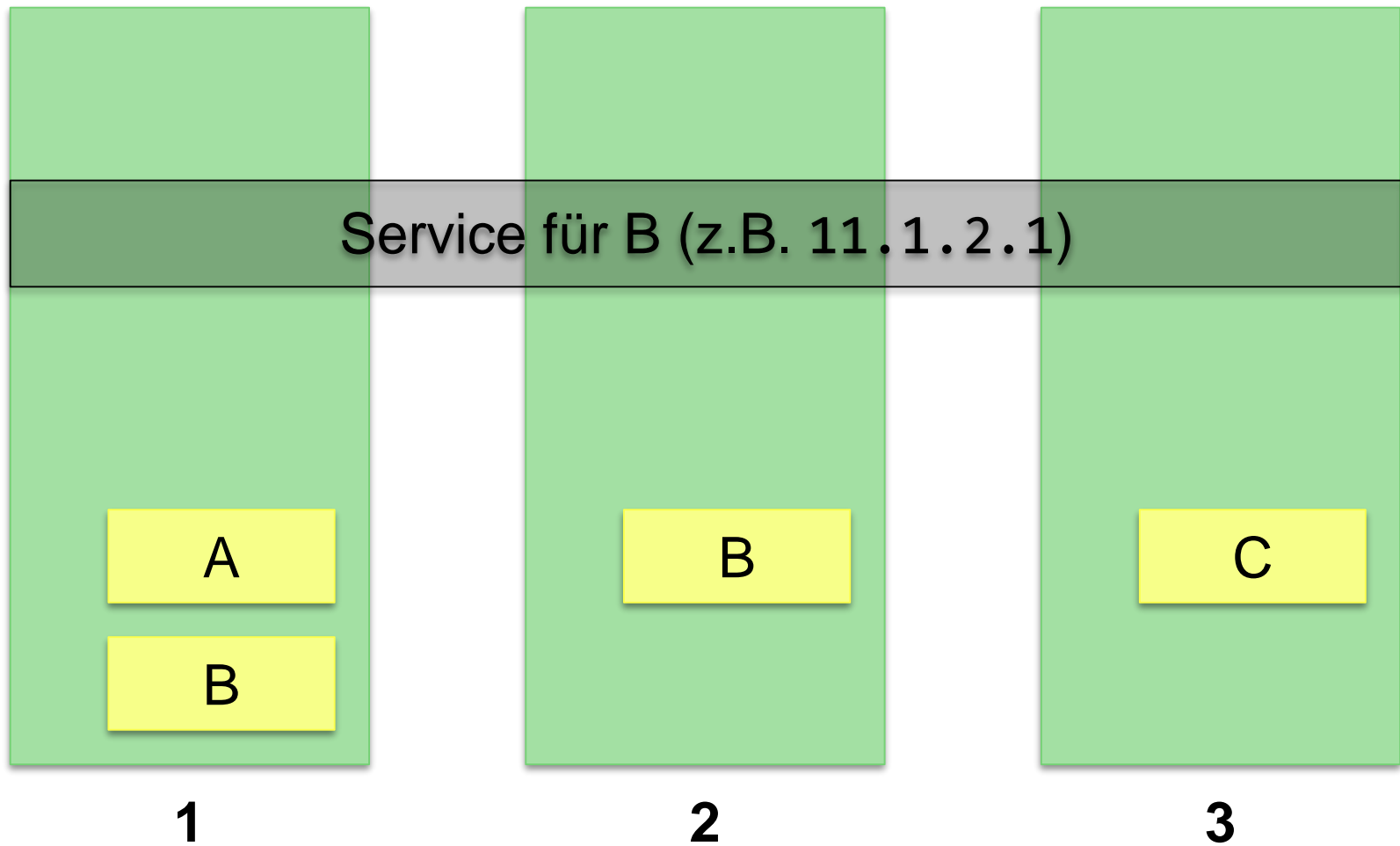
3 LOAD BALANCING

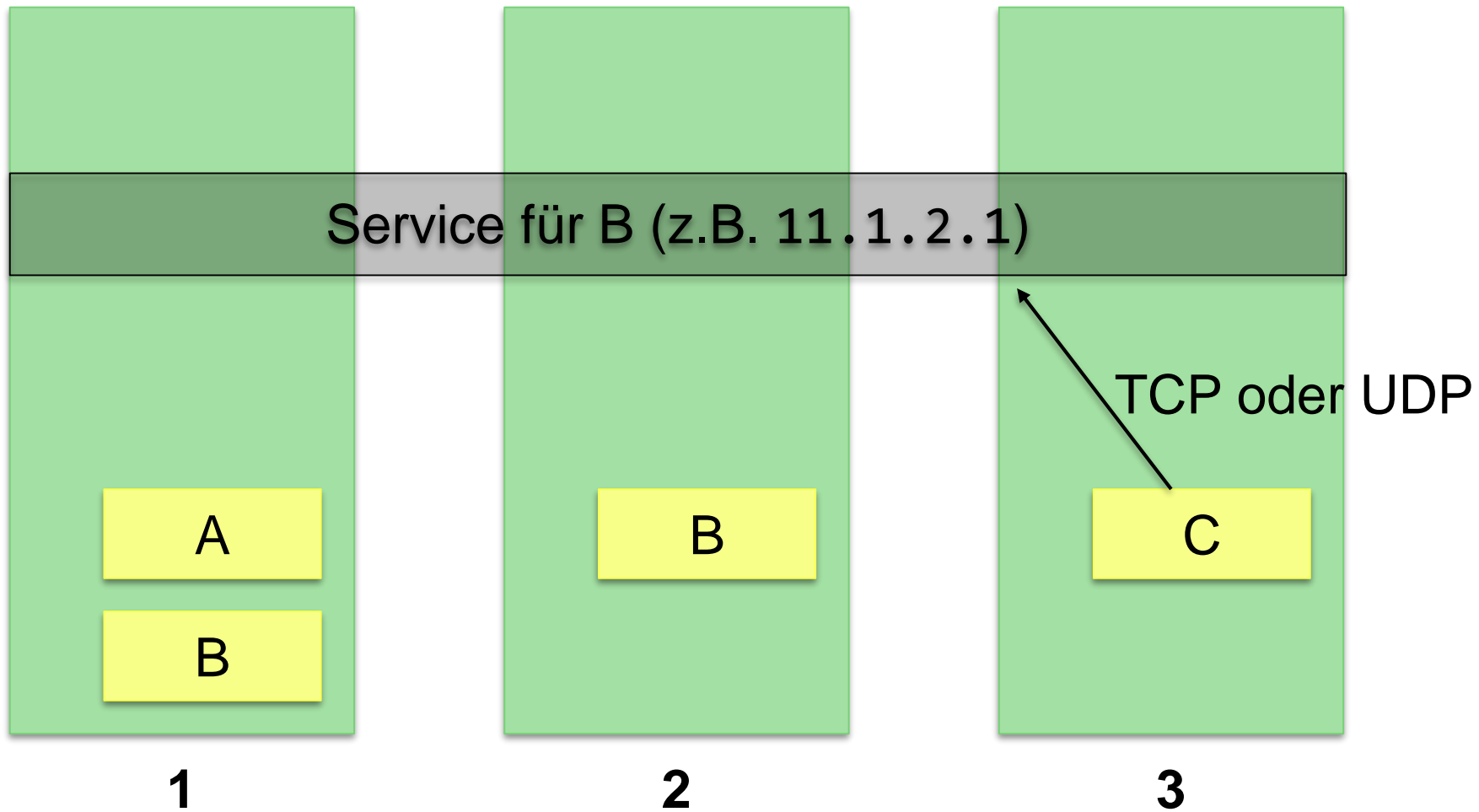


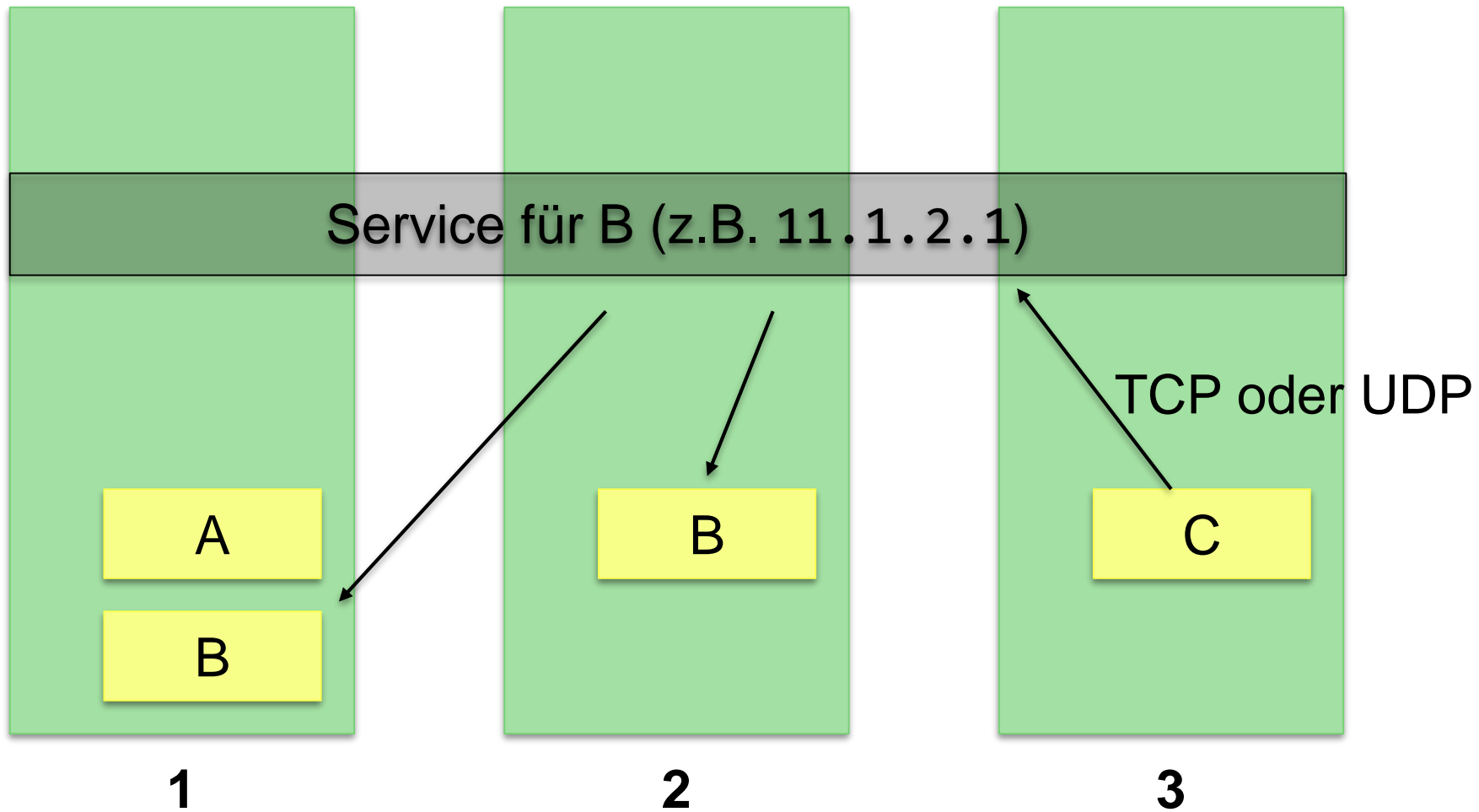


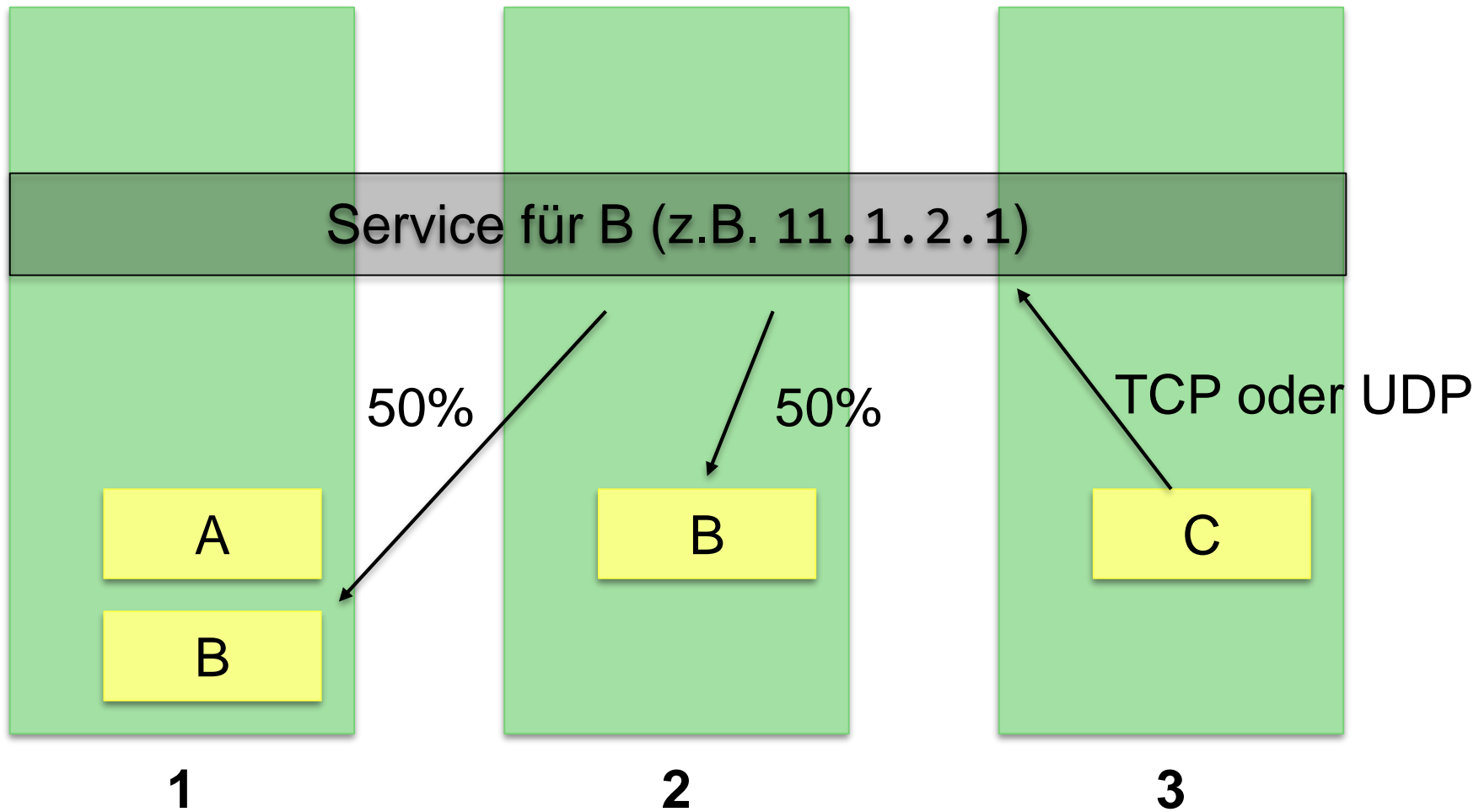


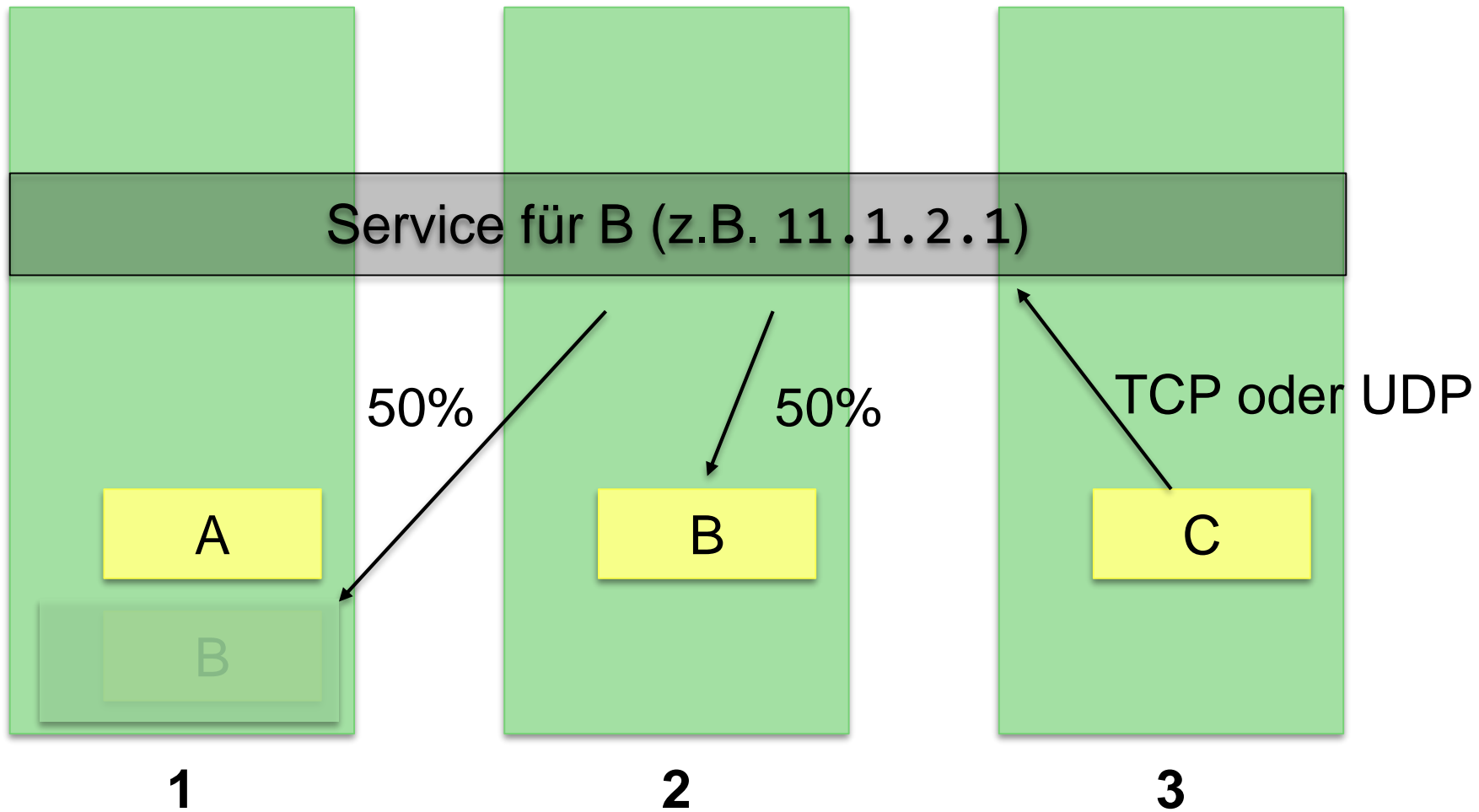




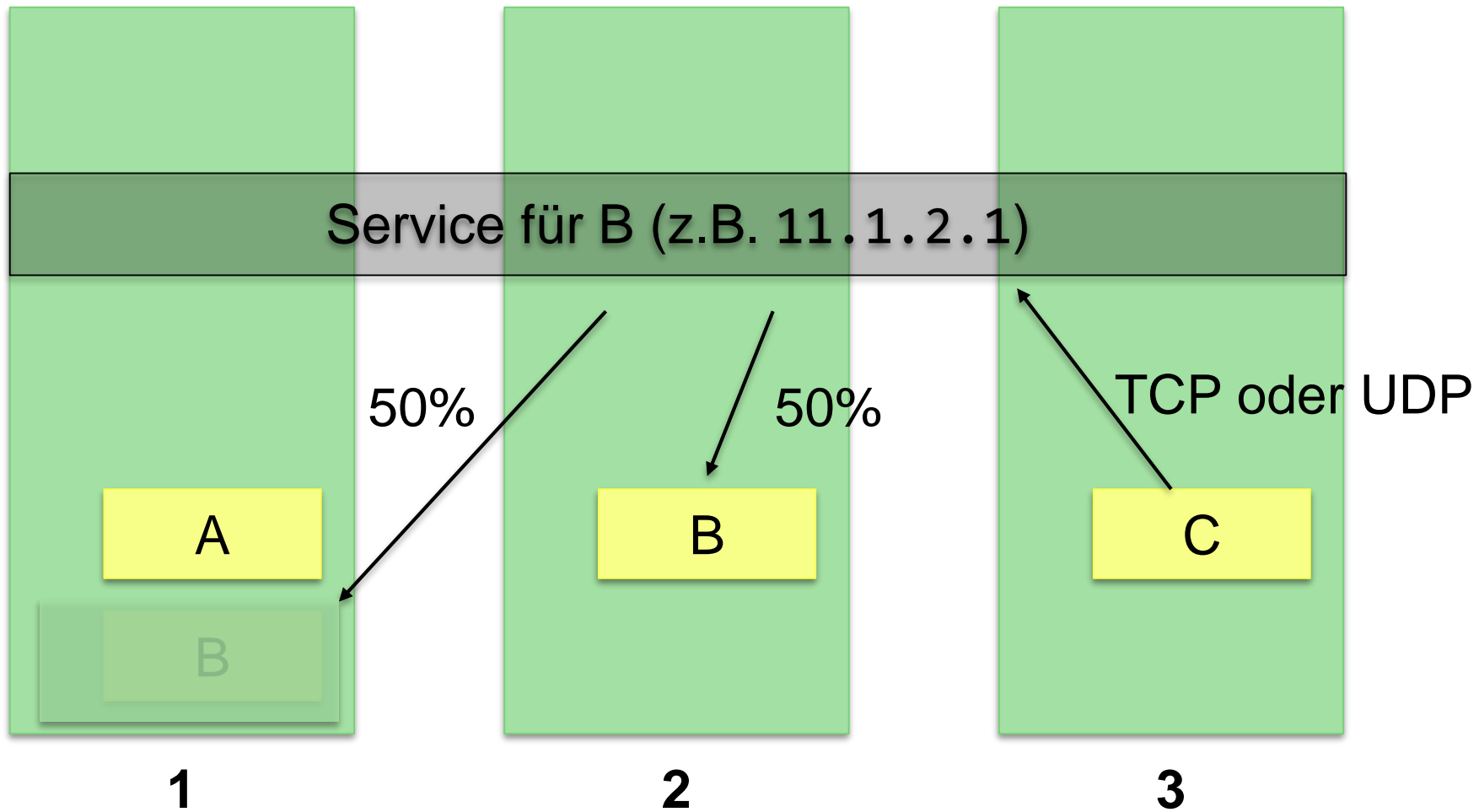


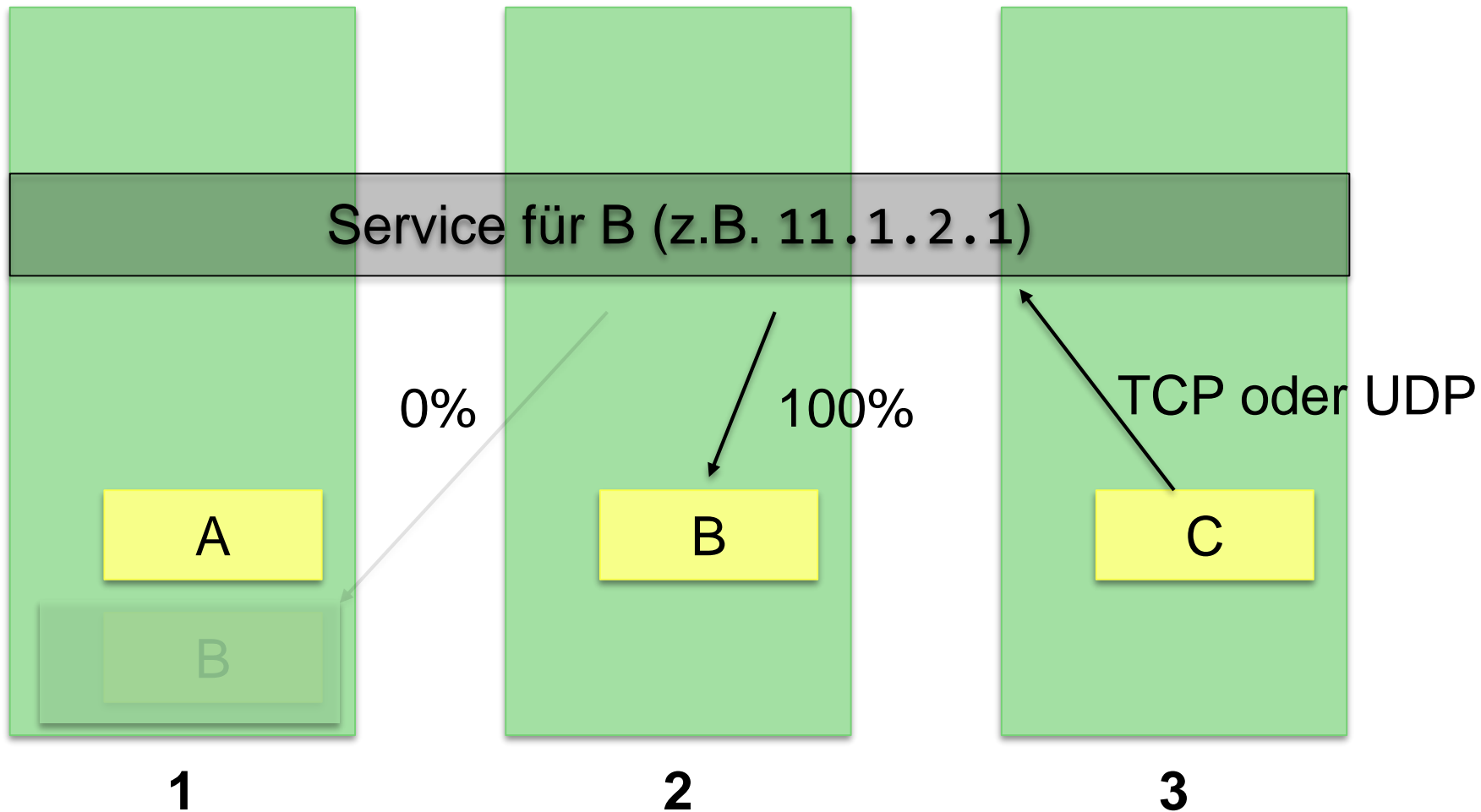






PROBES





4 UPGRADES

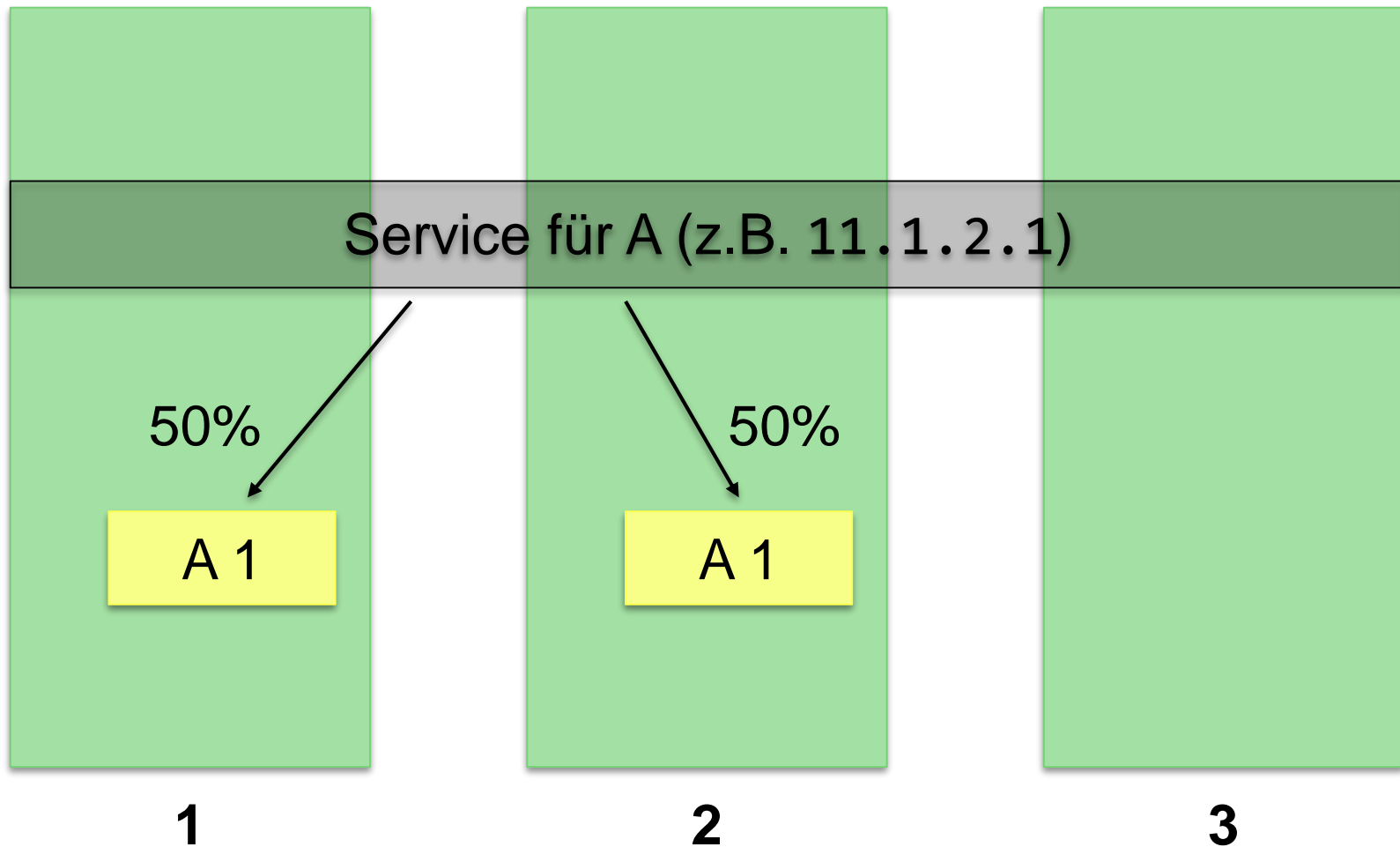
etcd

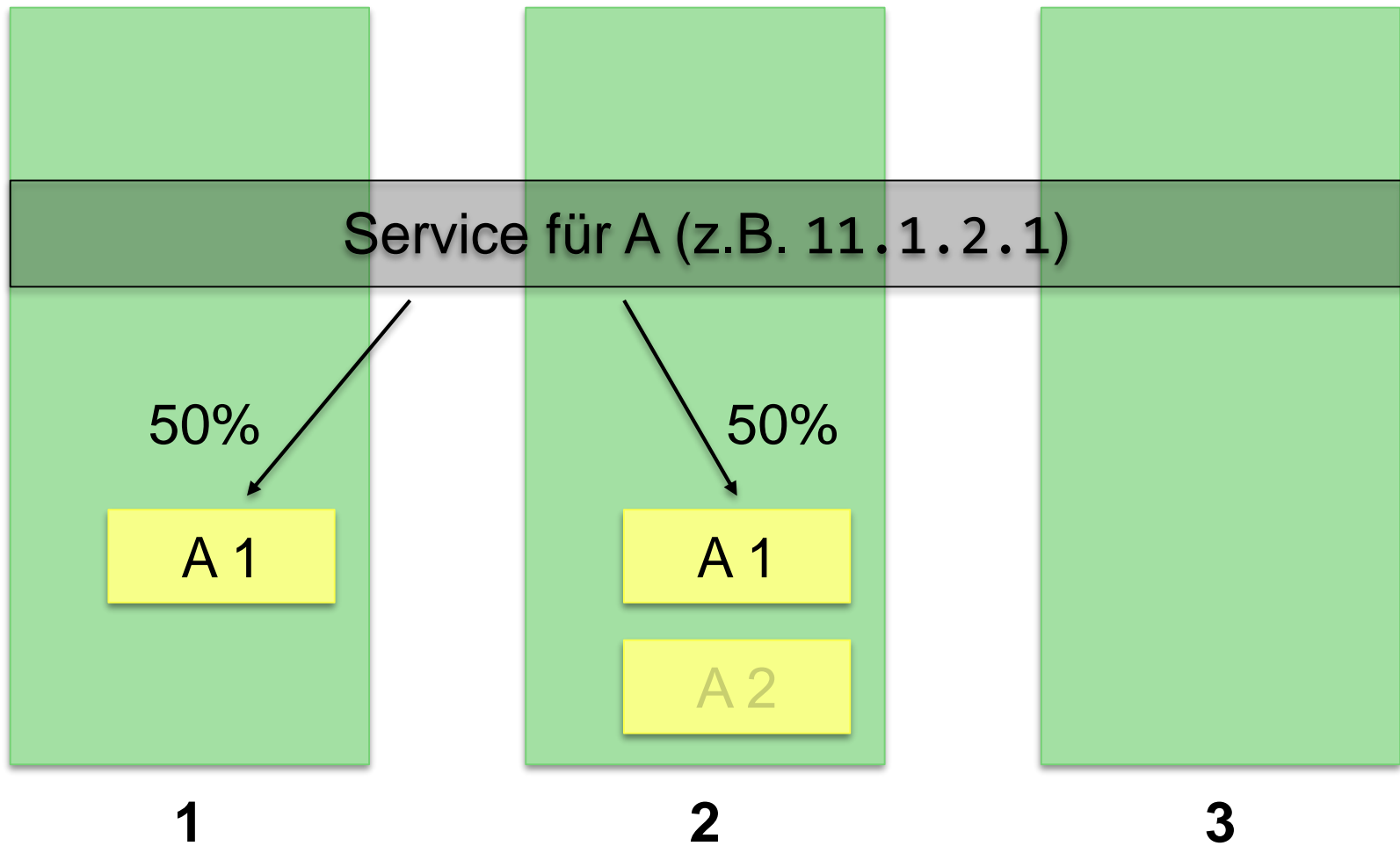
“Auf Knoten 1 soll Software A_1 laufen,
auf Knoten 2 soll Software A_2 laufen,”

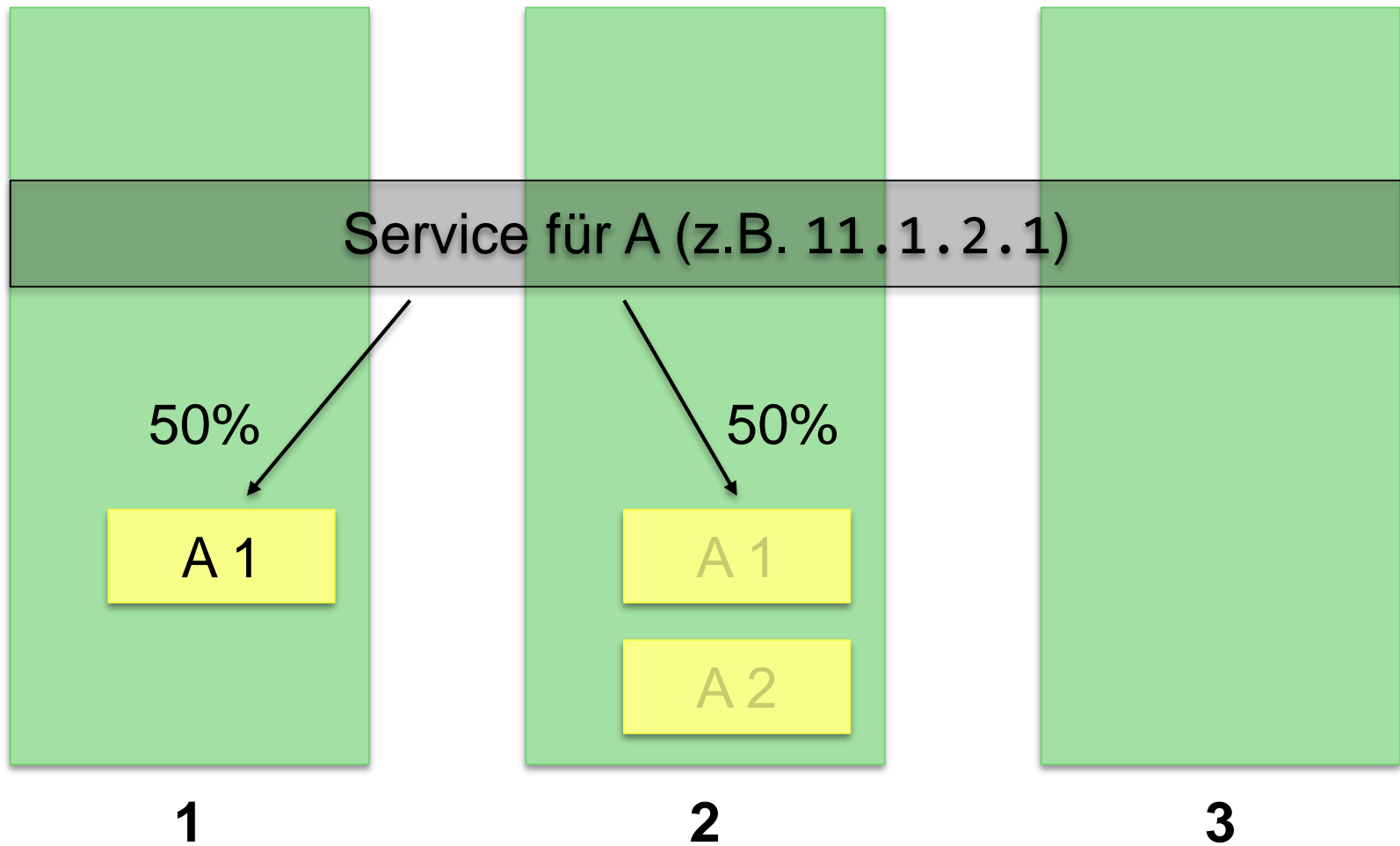
scheduler

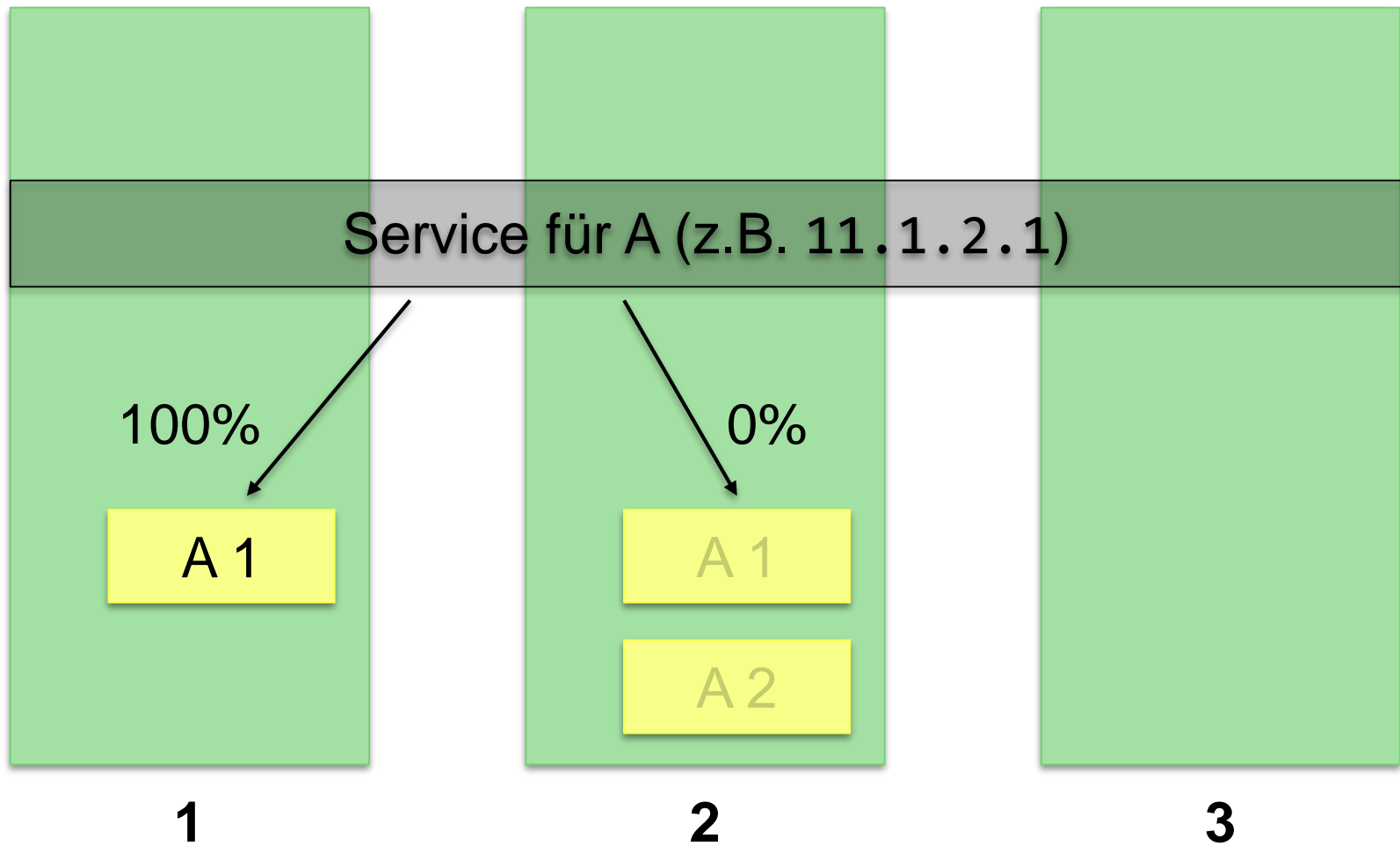
“Im Cluster soll Software A_1 1x laufen,
im Cluster soll Software A_2 1x laufen.”

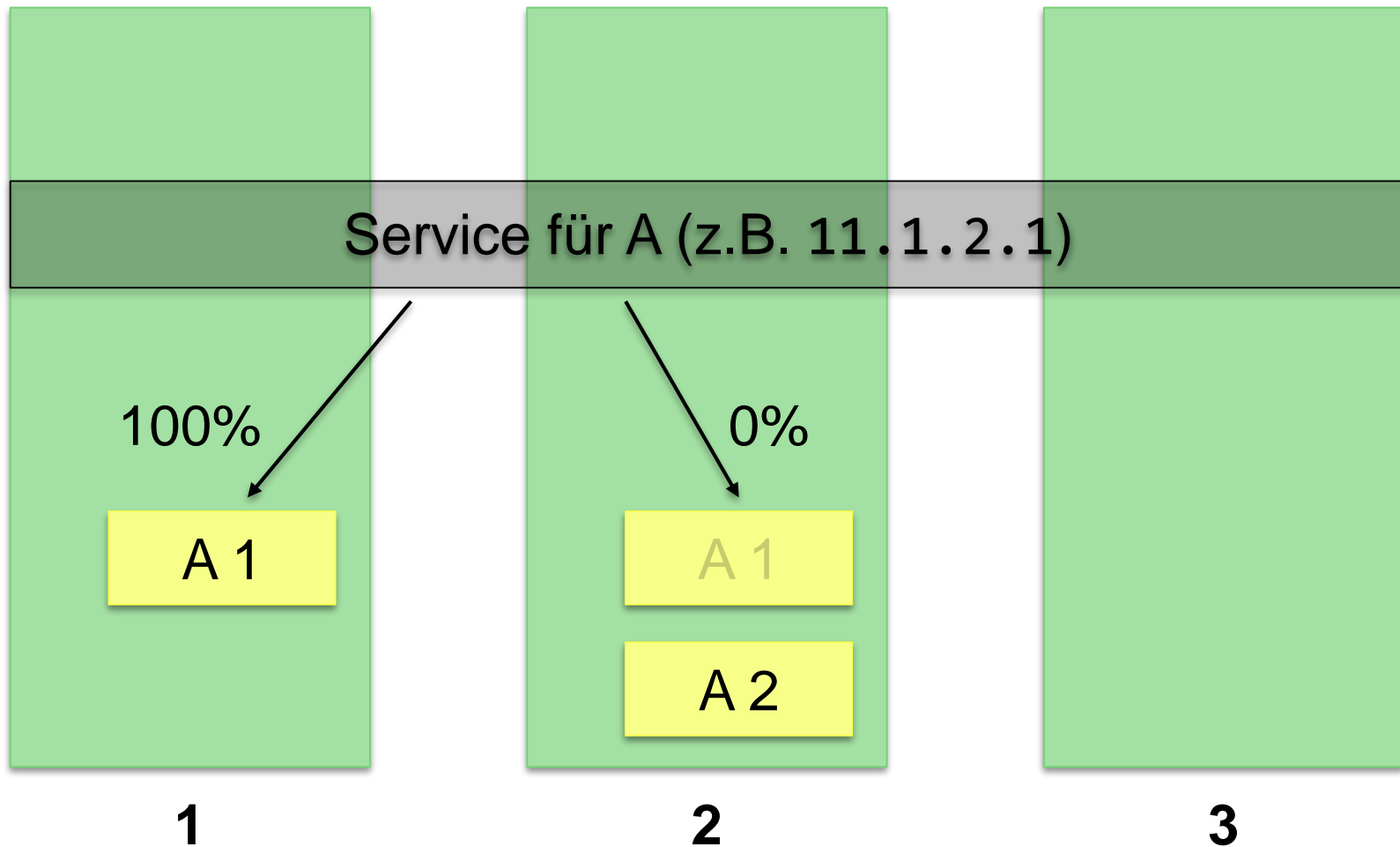
“Im Cluster soll Software A 2x laufen und
von A_1 auf A_2 geupgraded werden.”

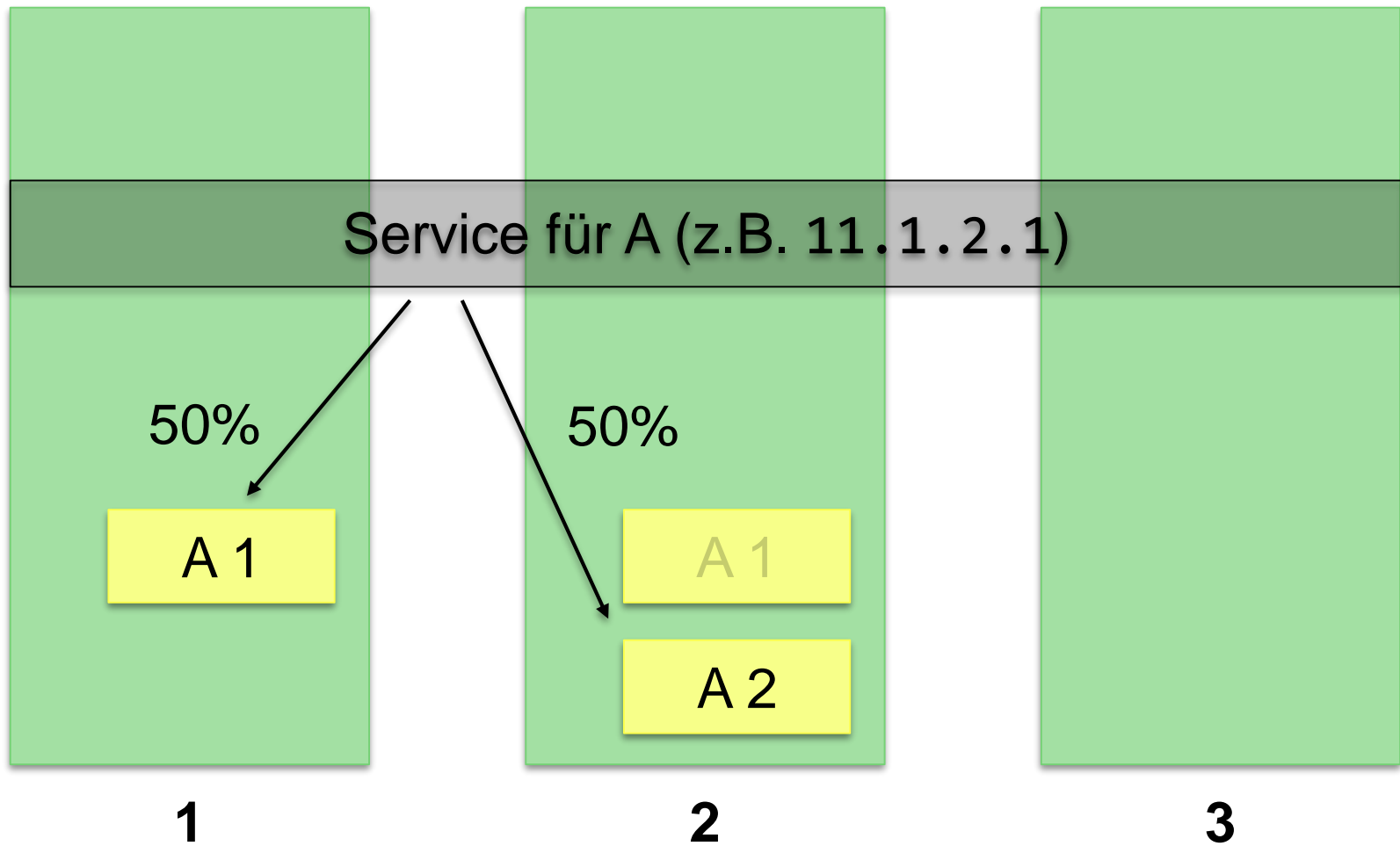


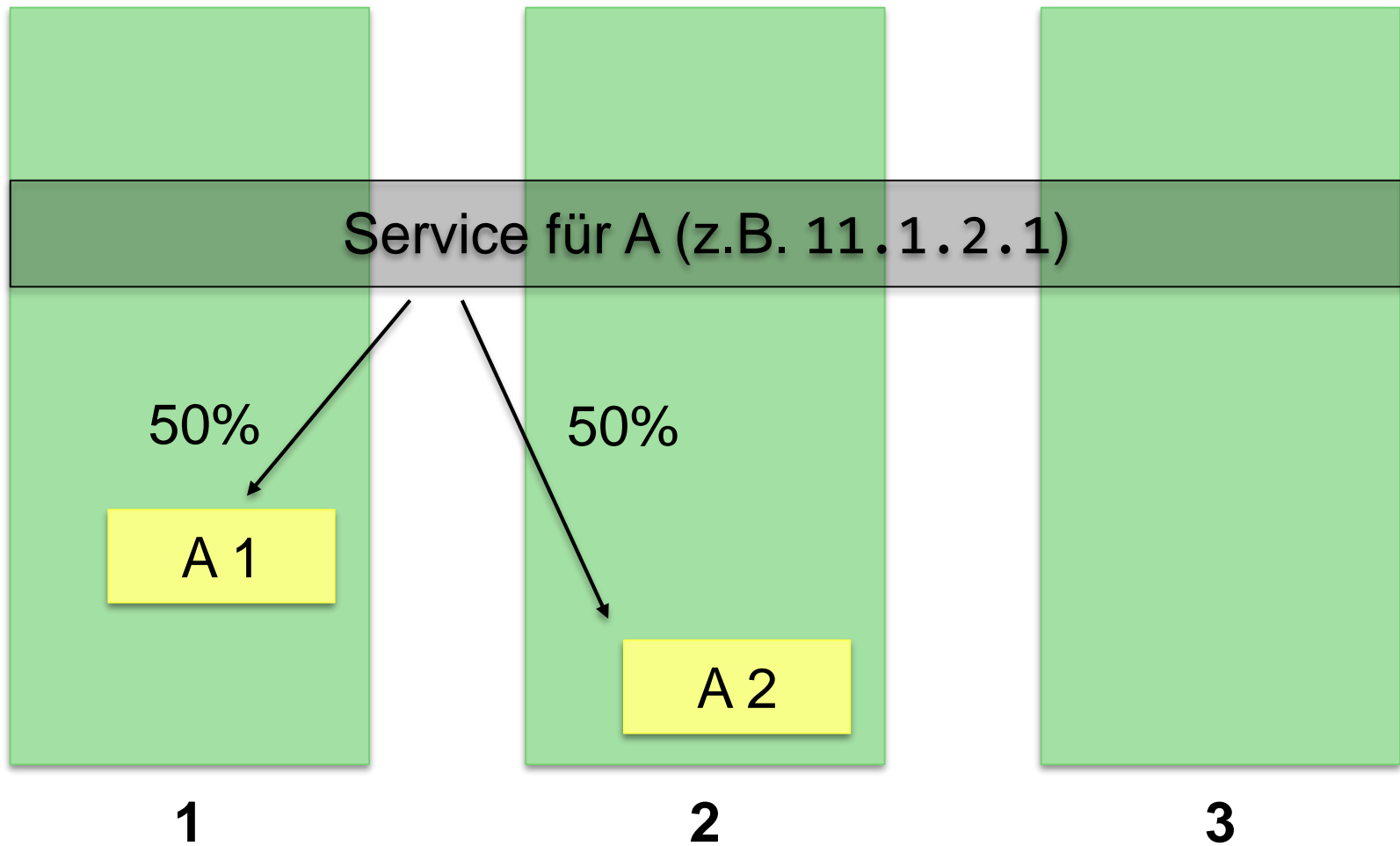


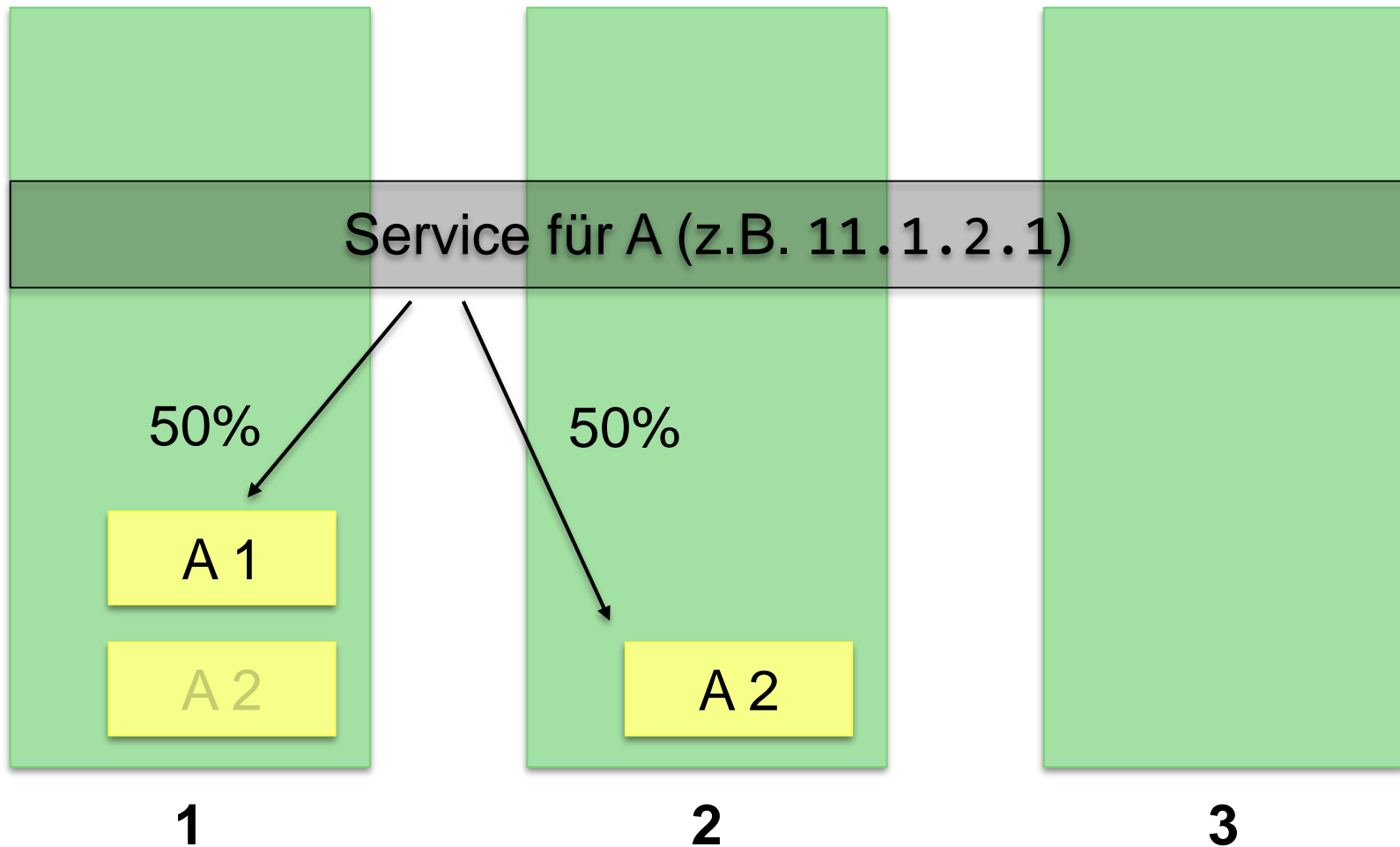


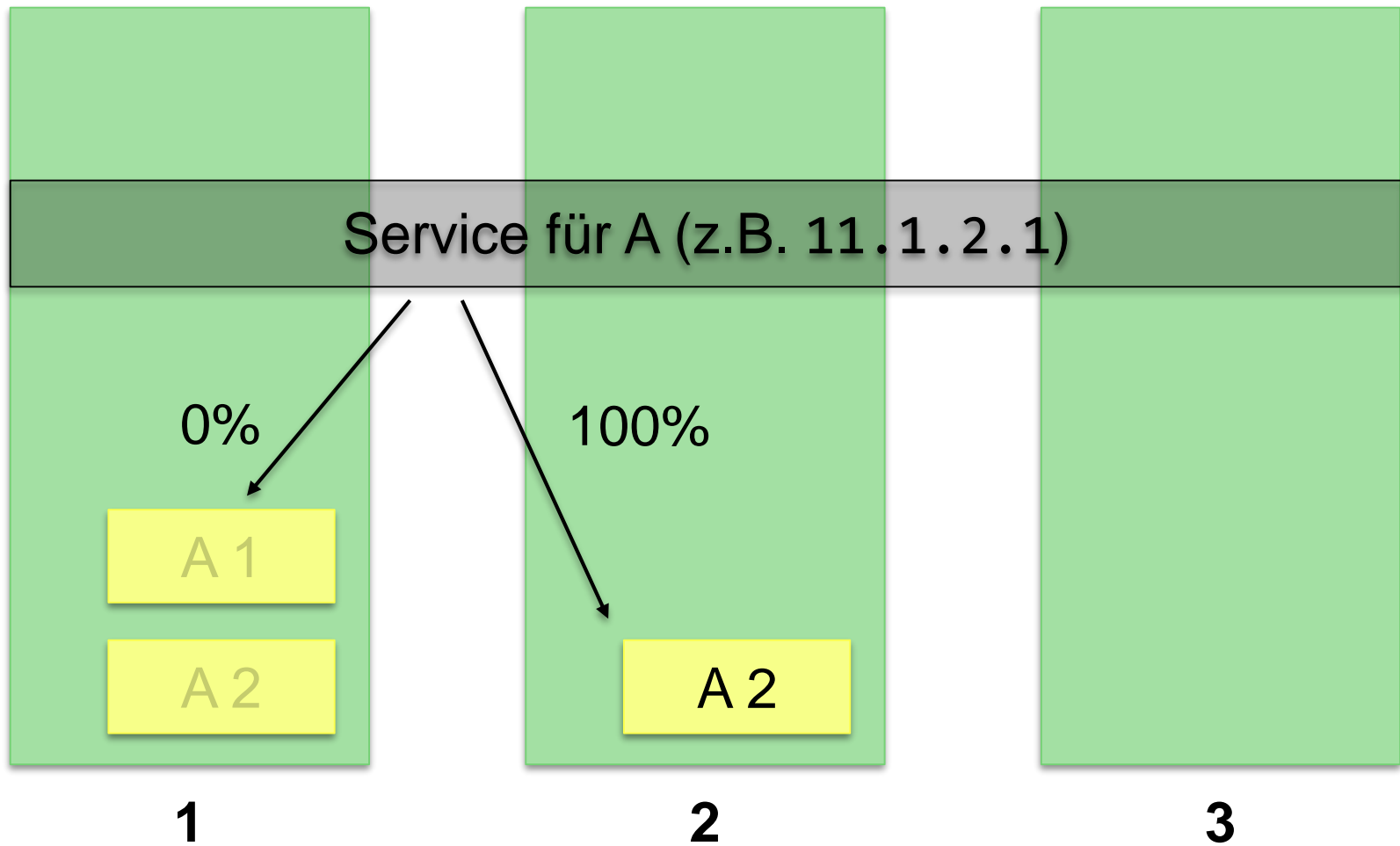


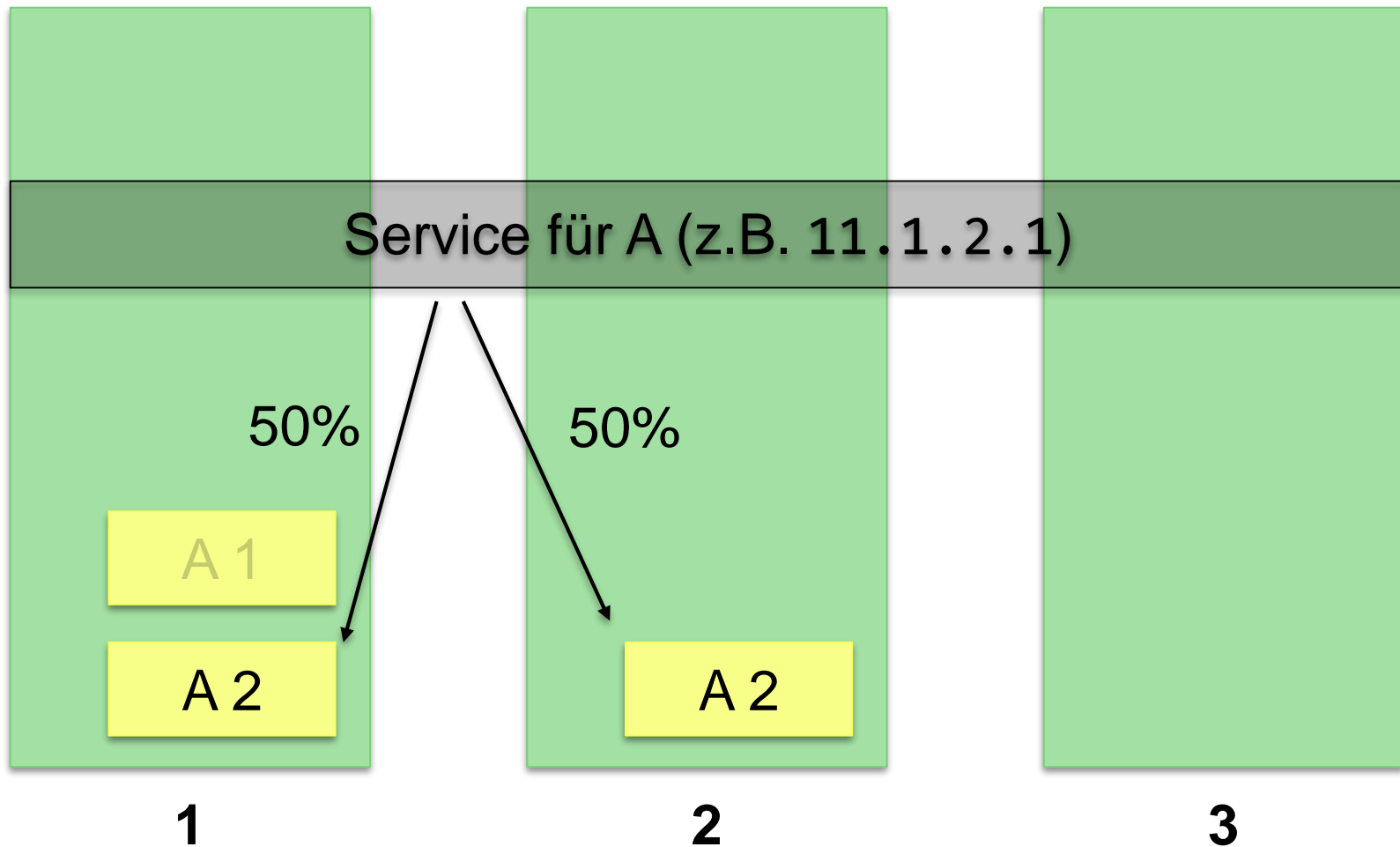


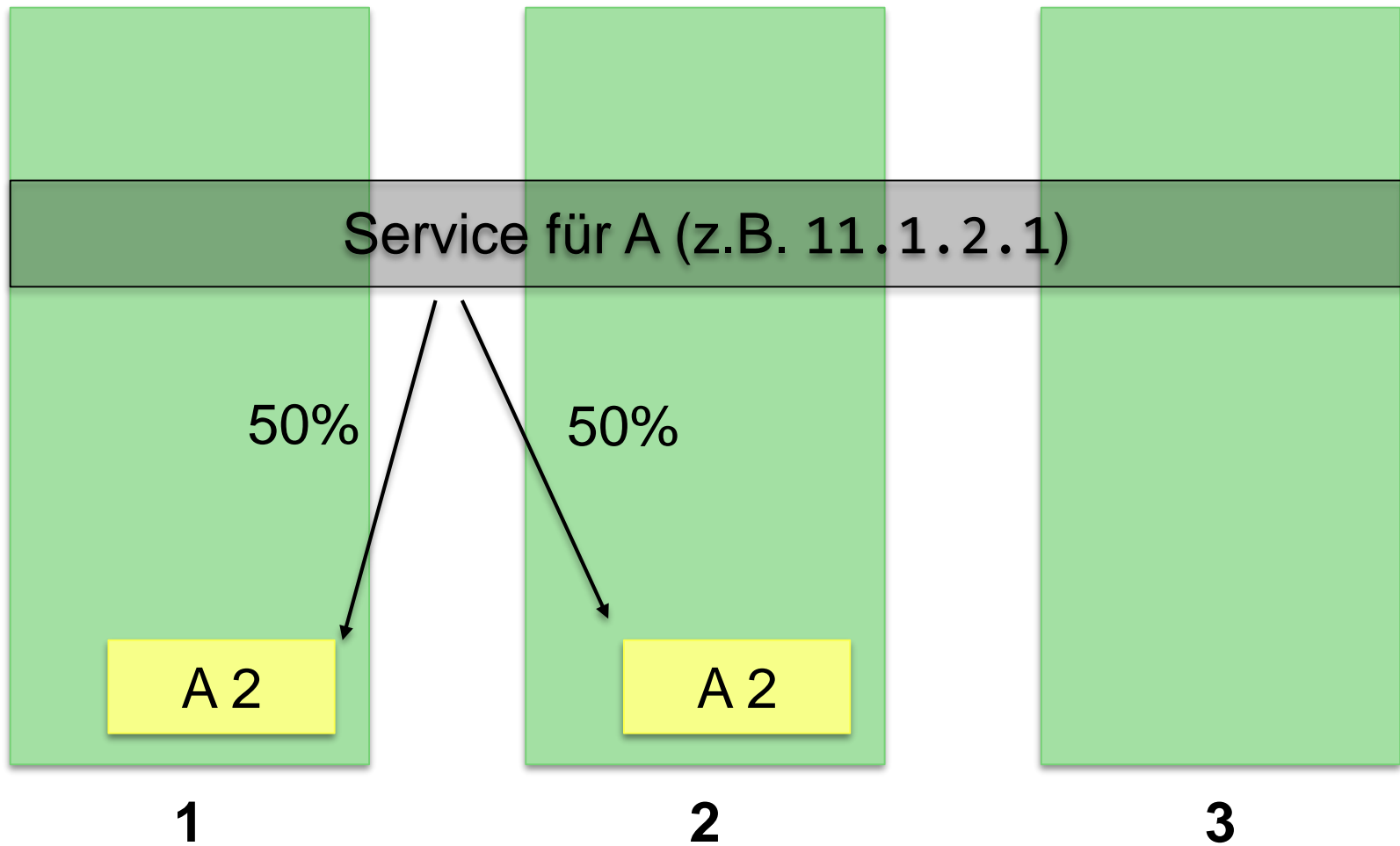




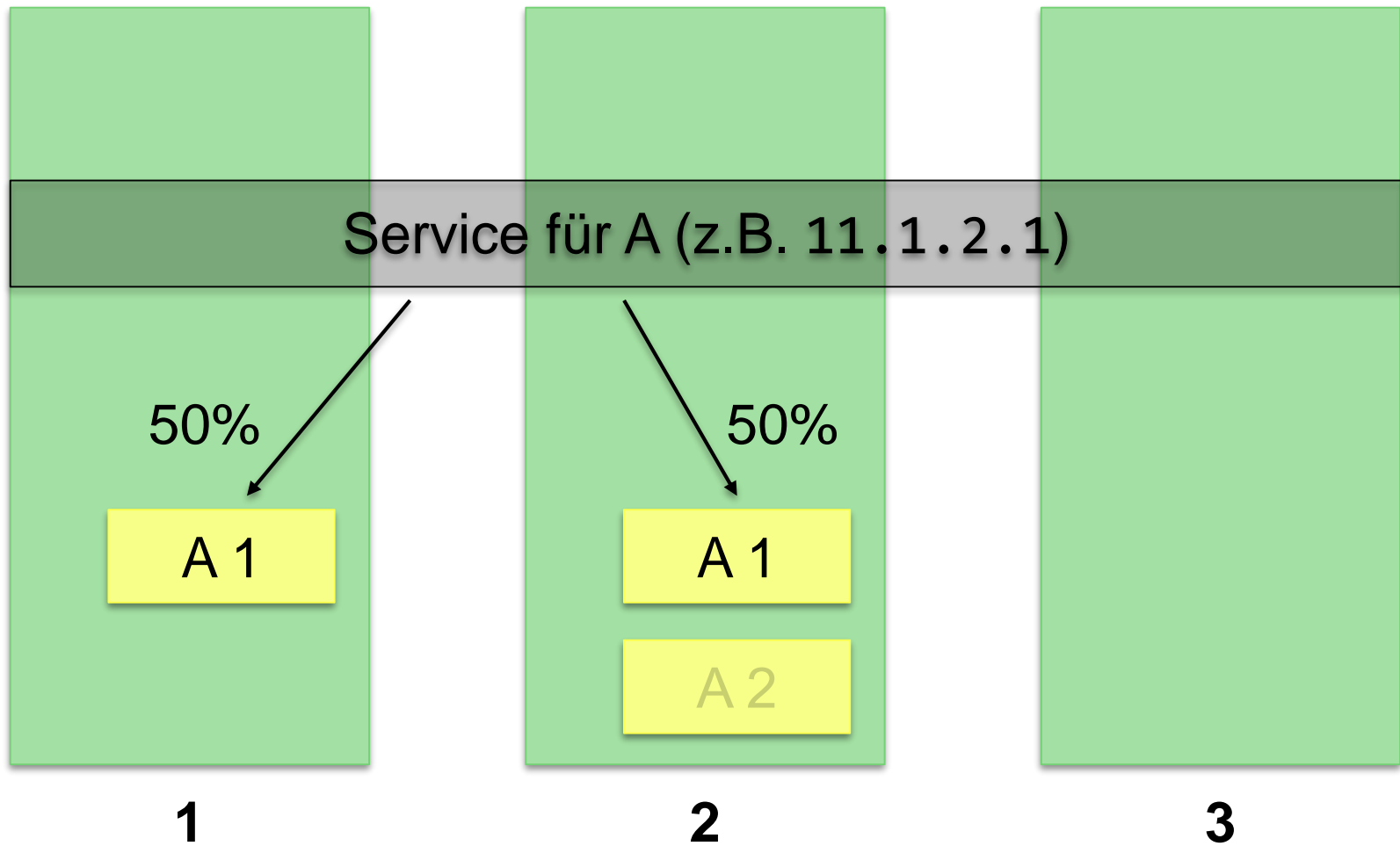


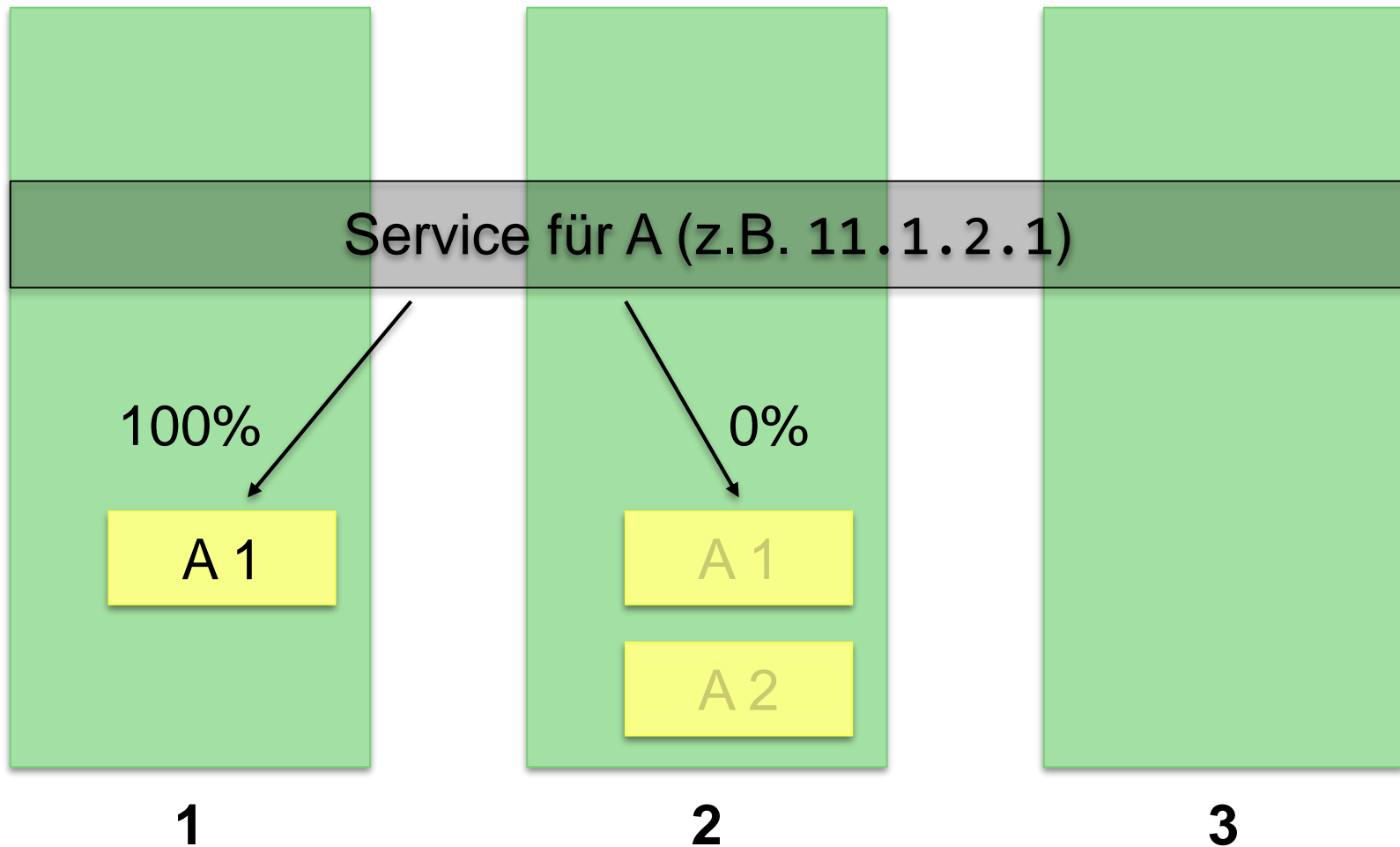


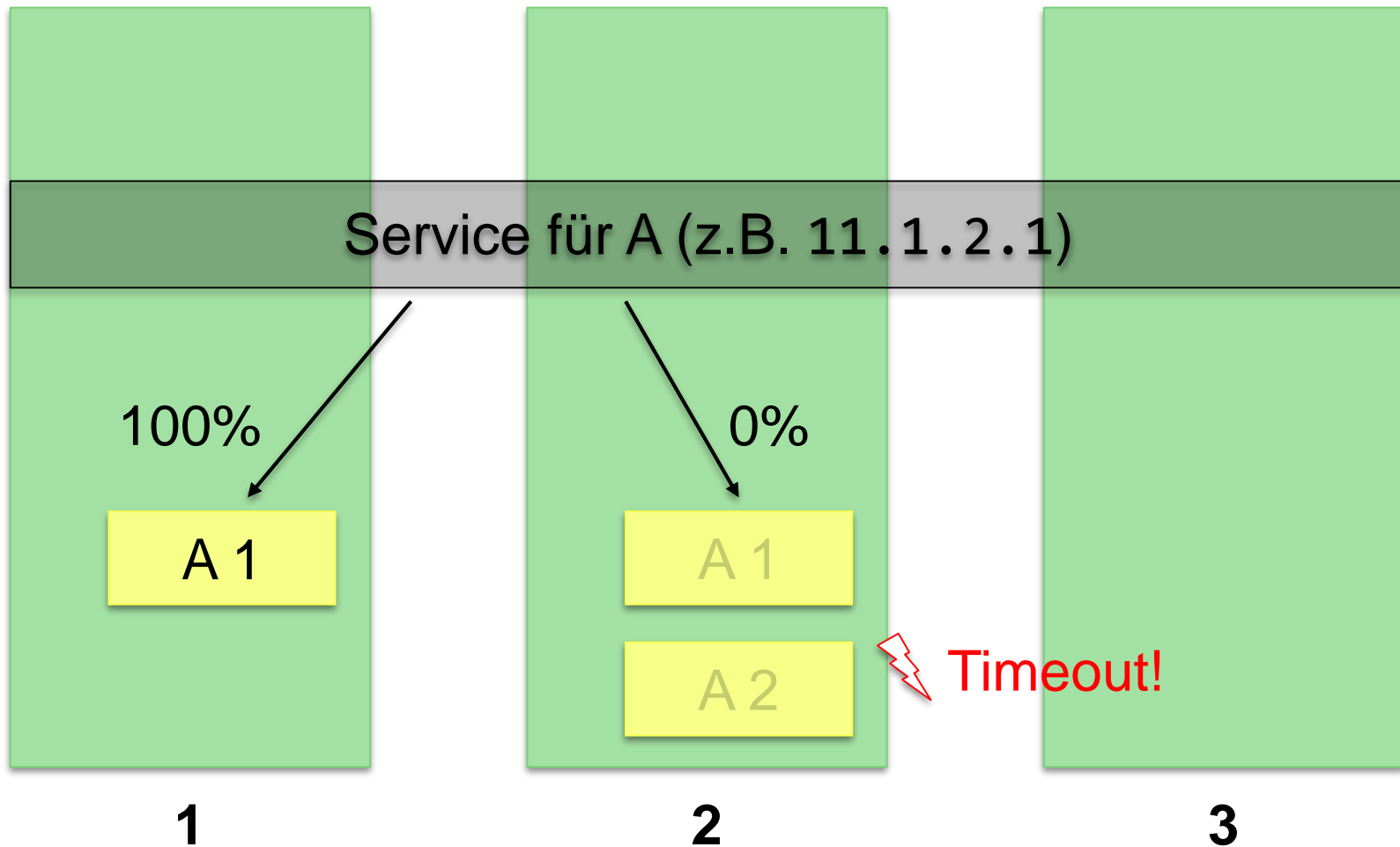


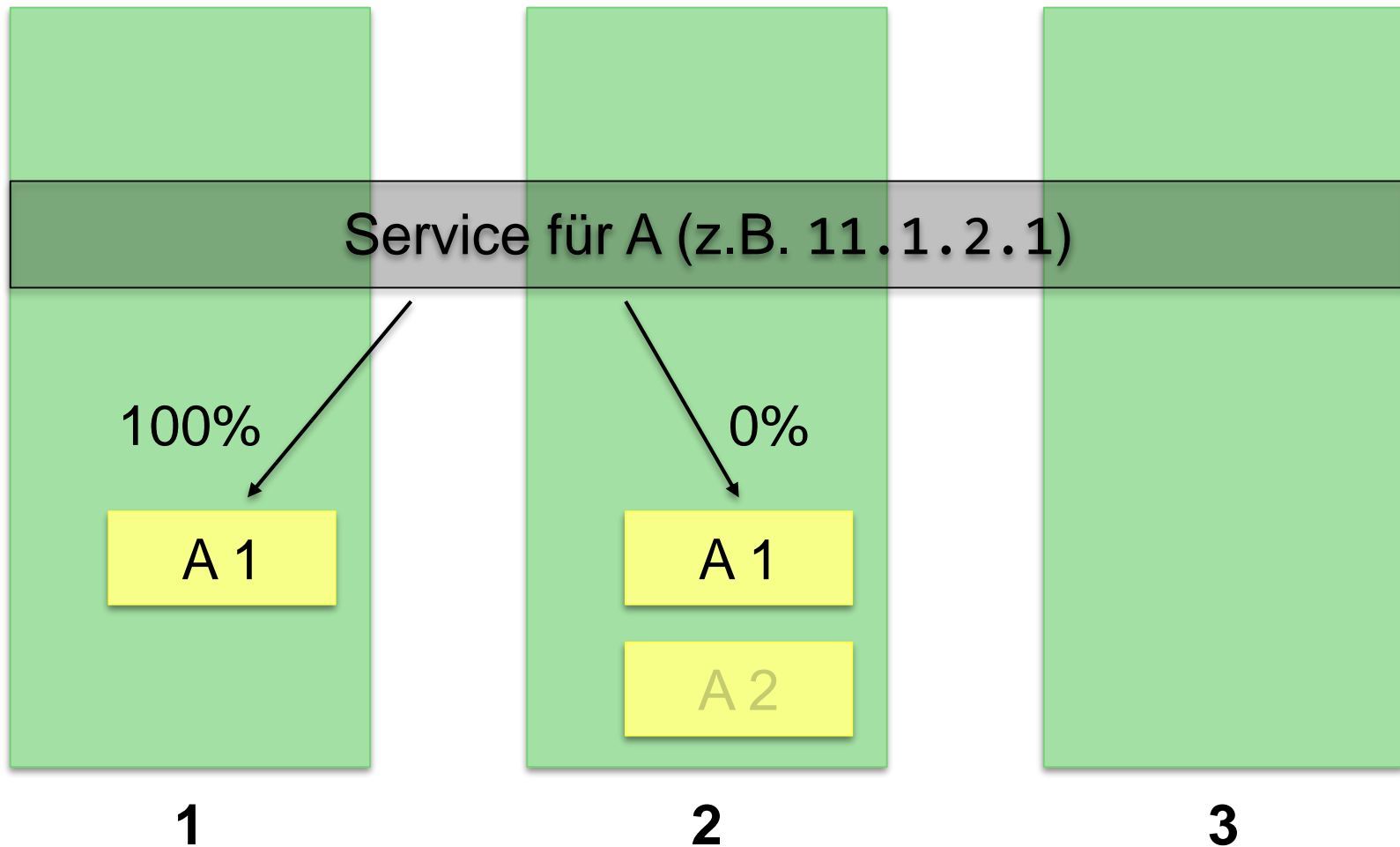


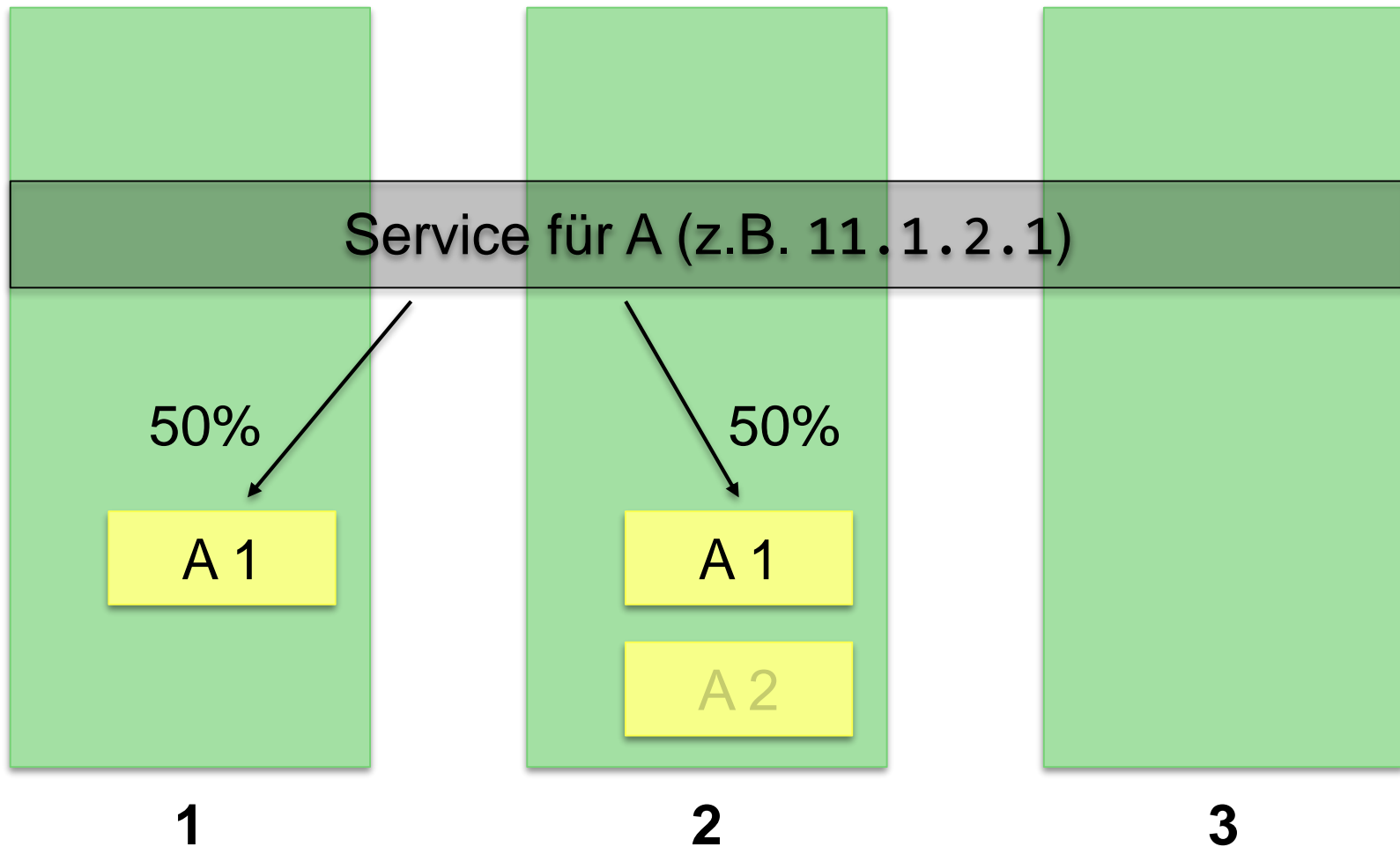
nochmal...

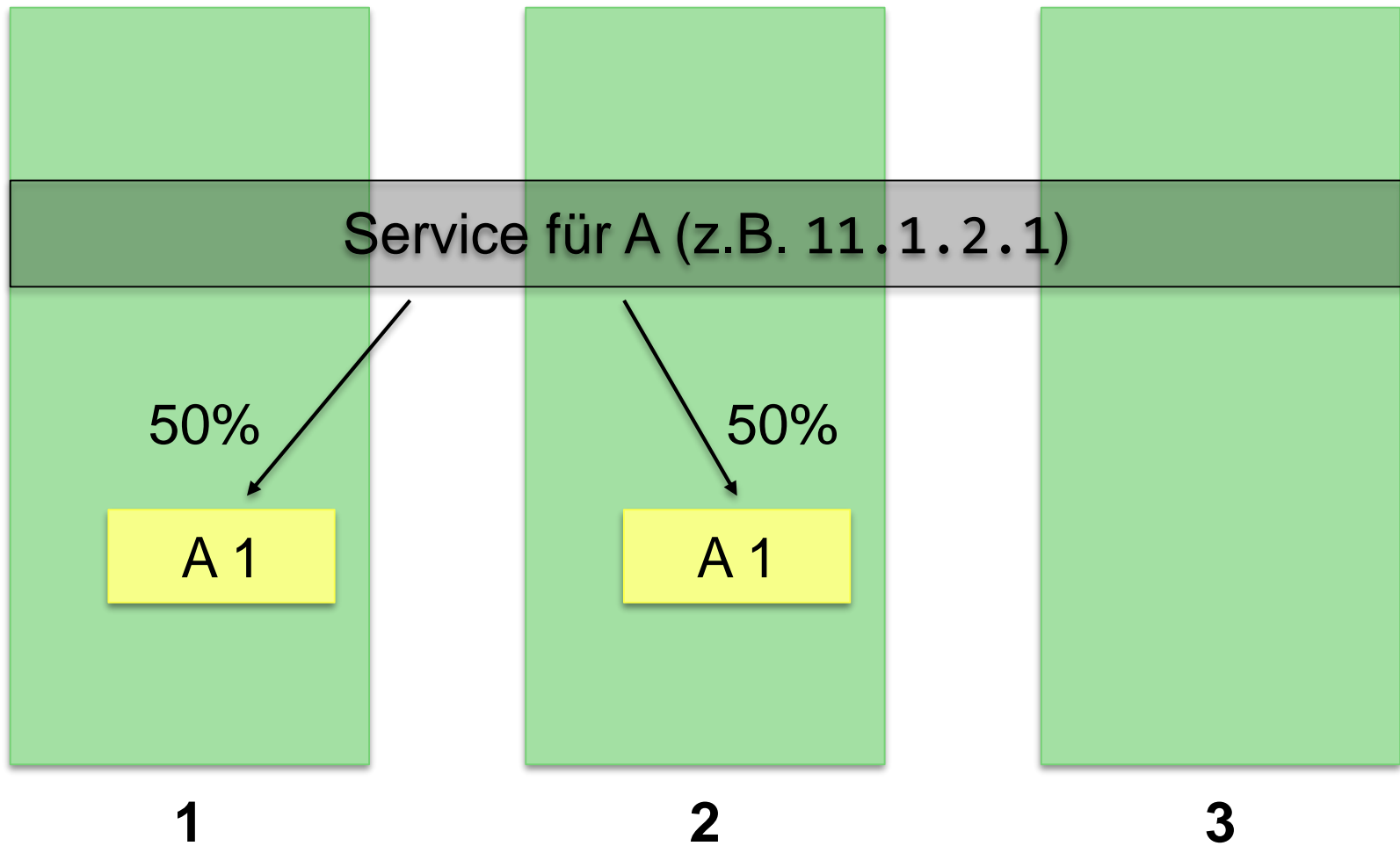




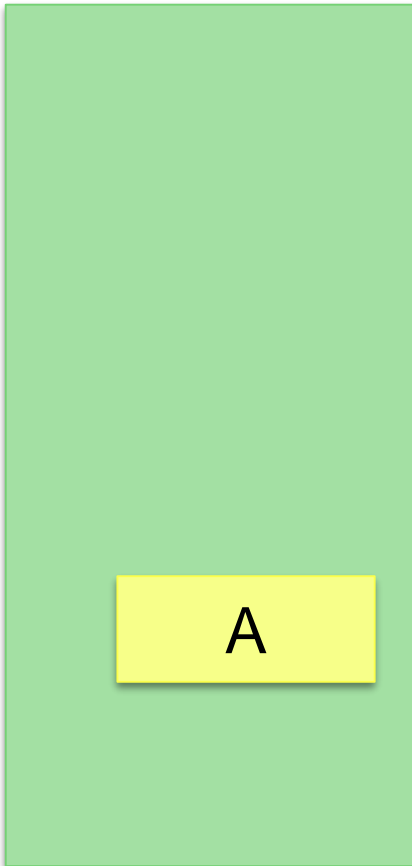








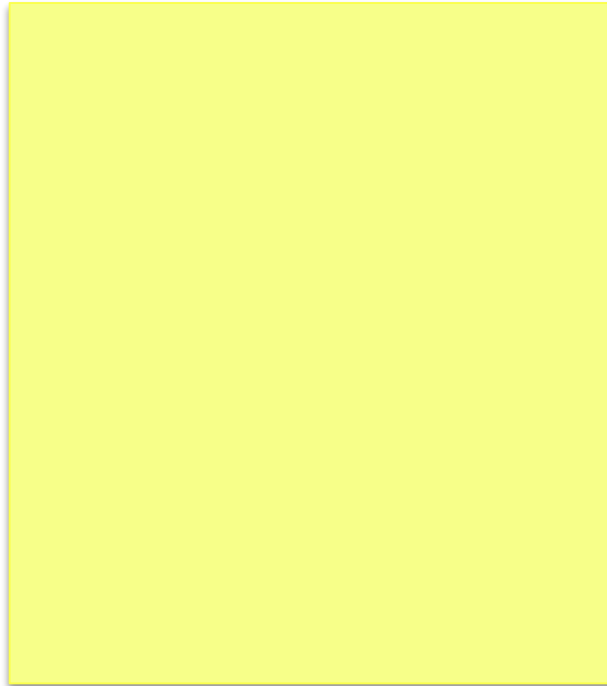
6 PODS

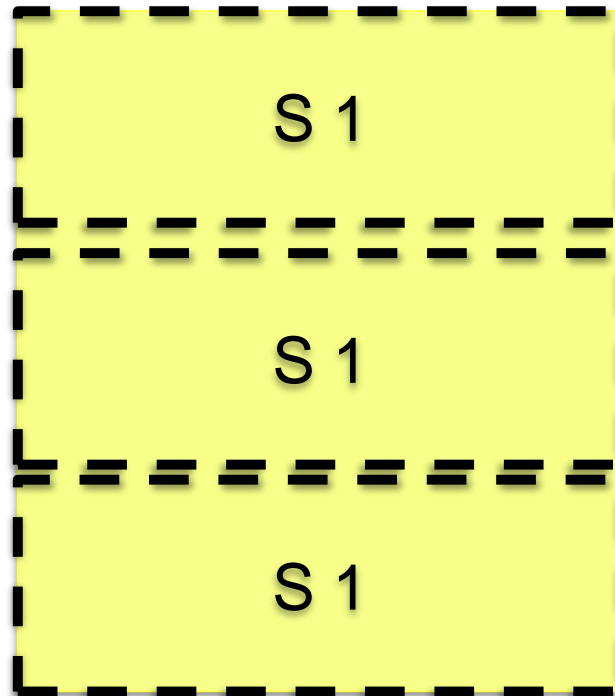


A



A





Pod

lokale Gruppe von Containern

Deployment

Anweisung, daß Software A auf insgesamt x Pods im Cluster laufen soll (und A ist updatebar)

ReplicaSet (früher ReplicationController)

Anweisung, daß Software A auf insgesamt x Pods

Service

TCP- oder UDP-basierter Load Balancer oder eingehende Verbindung in den Cluster



Orientation in Objects



Fragen ?

Orientation in Objects GmbH

Weinheimer Str. 68
68309 Mannheim

www.oio.de
info@oio.de



Vielen Dank für Ihre Aufmerksamkeit !

Orientation in Objects GmbH

Weinheimer Str. 68
68309 Mannheim

www.oio.de
info@oio.de