LINBIT updates for CloudStackers

Philipp Reisner, CEO LINBIT

Cloud Storage from physical Drives

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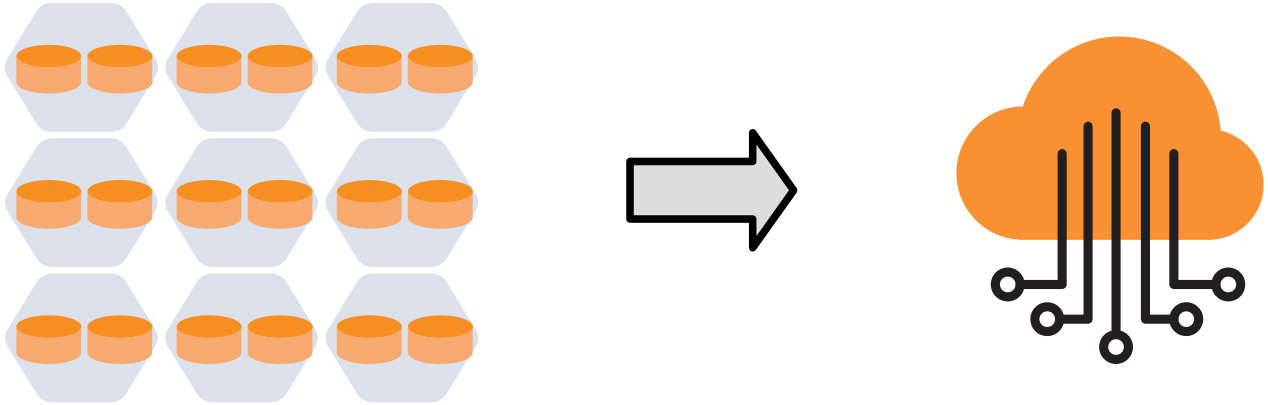

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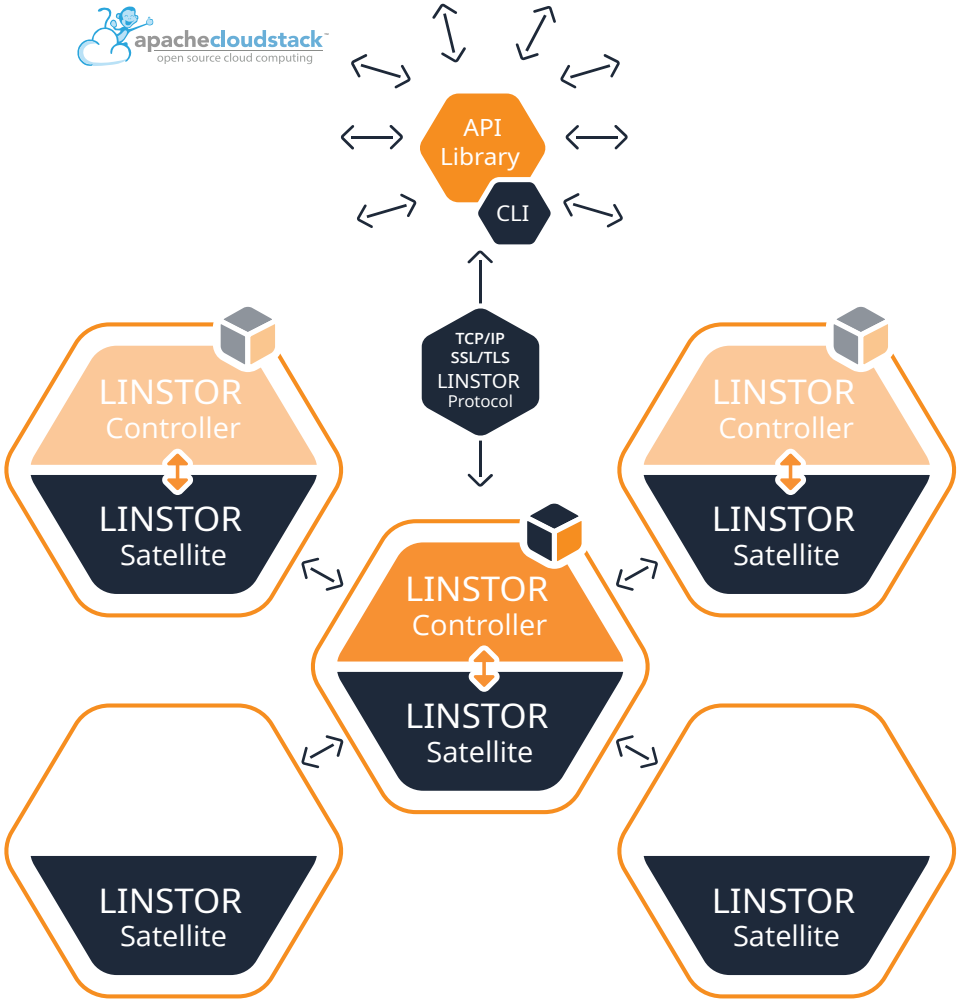
LINSTOR

Architecture and Example


apachecloudstack
open source cloud computing
API
Library
CLI
TCP/IP
SSL/TLS
LINSTOR
Protocol
LINSTOR
Controller
LINSTOR
Satellite
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Controller
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Example

LINSTOR - Hyperconverged

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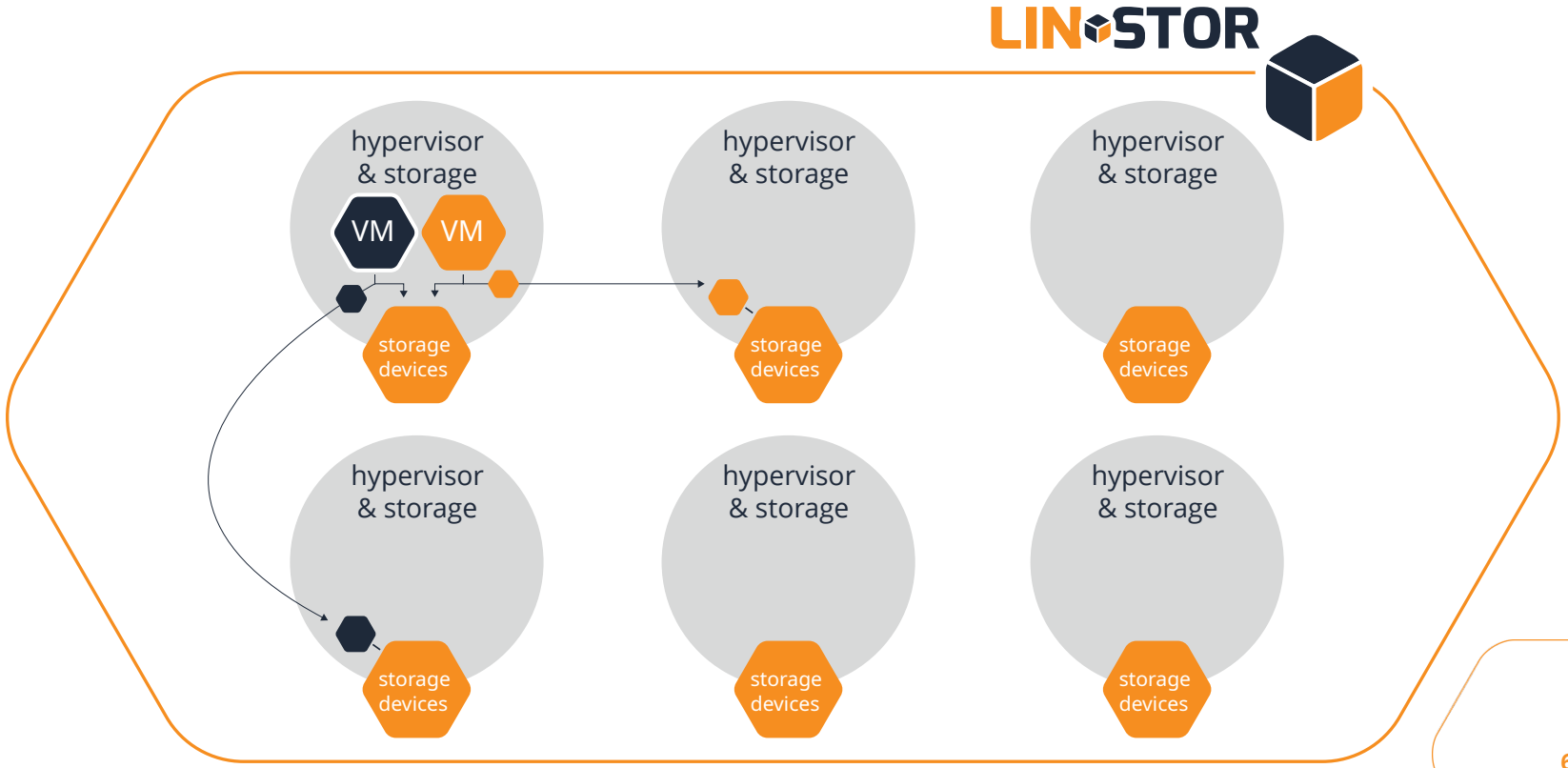
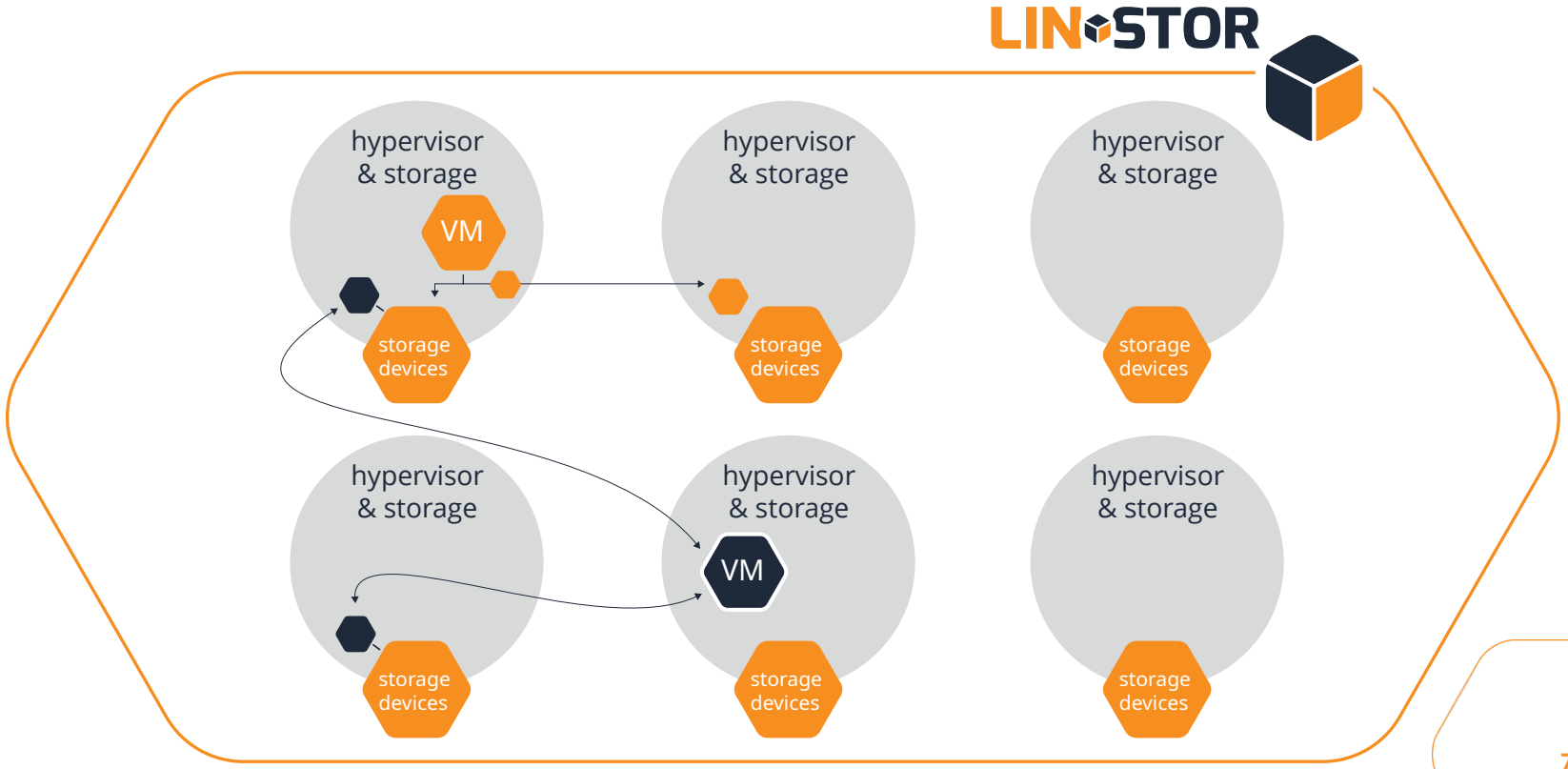


LINSTOR - VM migrated



LINSTOR - add local replica

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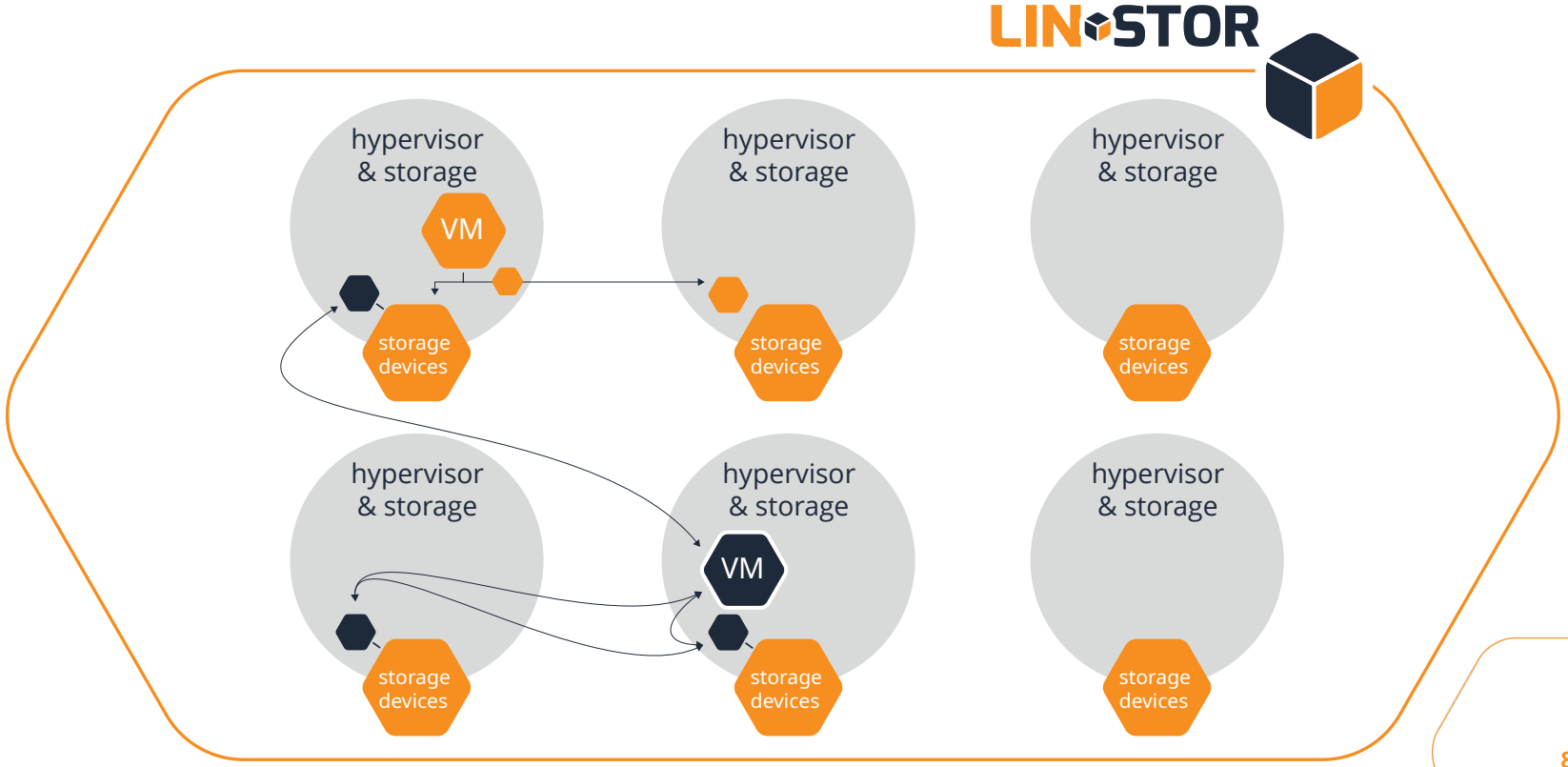

LINSTOR - remove 3rd copy

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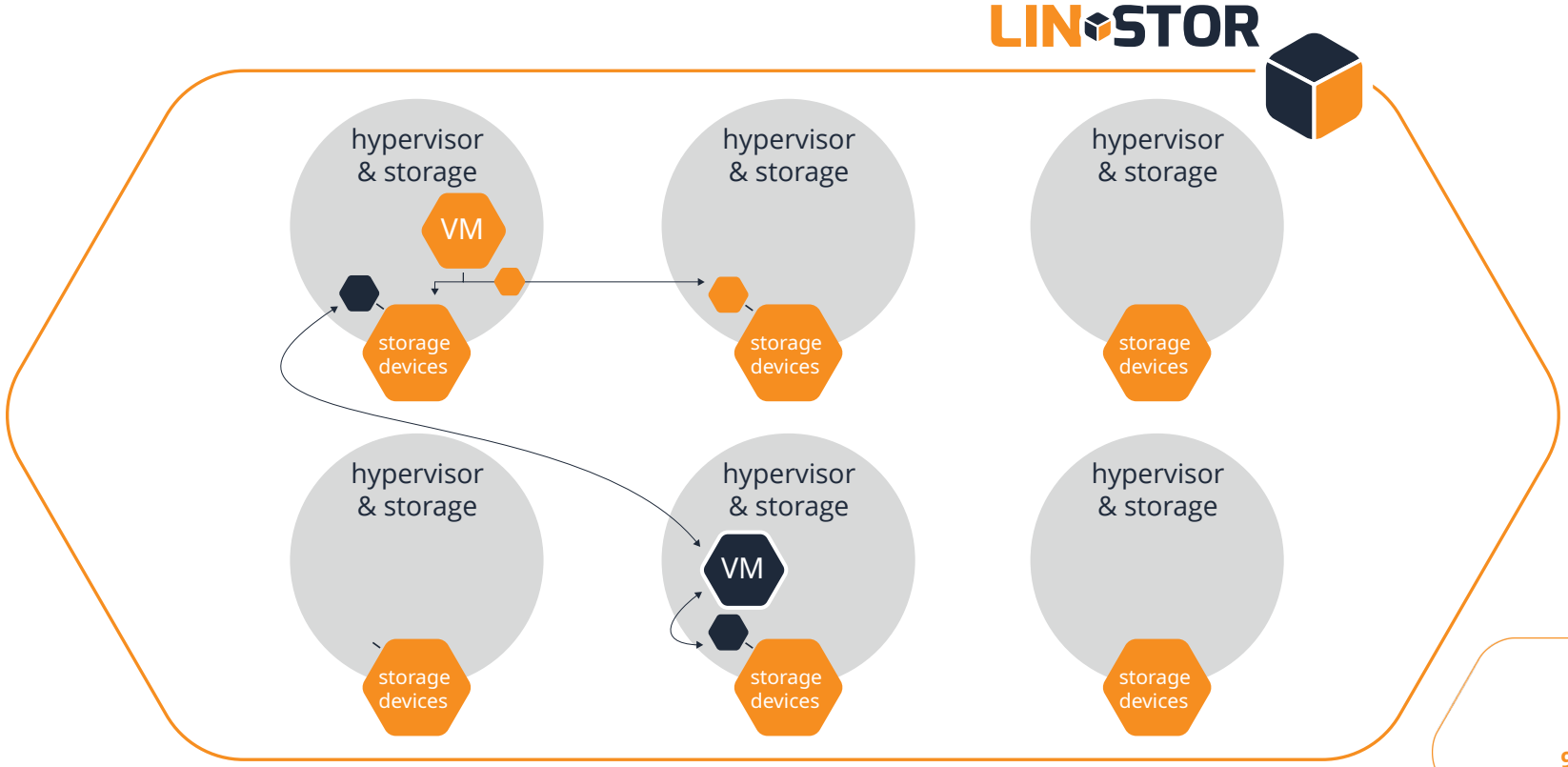

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DRBD

Overview

DRBD Roles: Primary & Secondary

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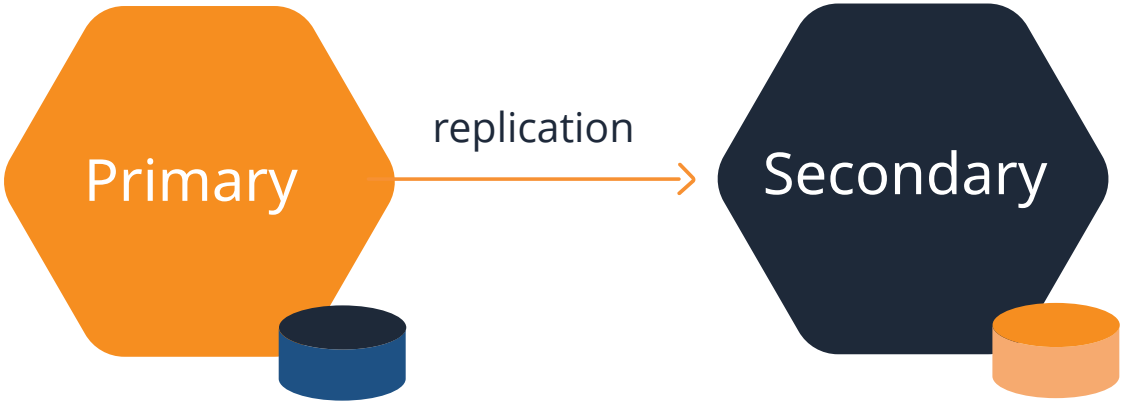
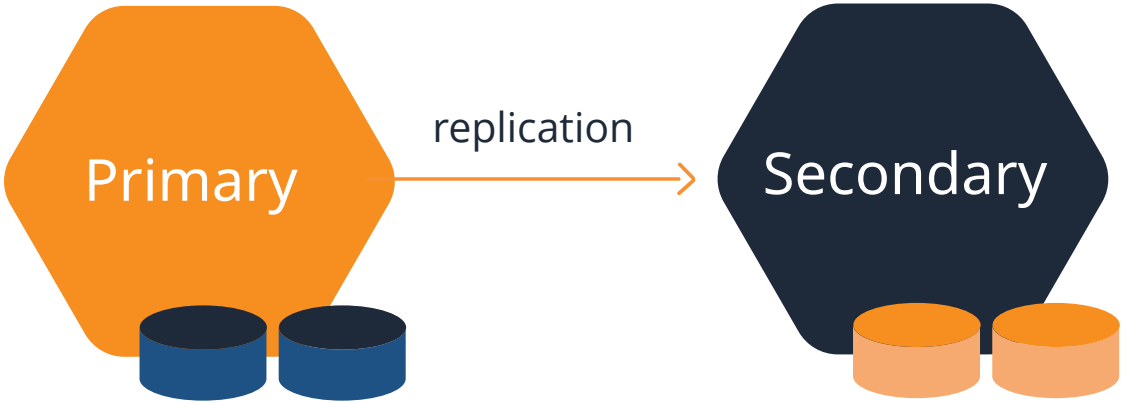


DRBD – multiple Volumes

- consistency group



DRBD – up to 32 replicas

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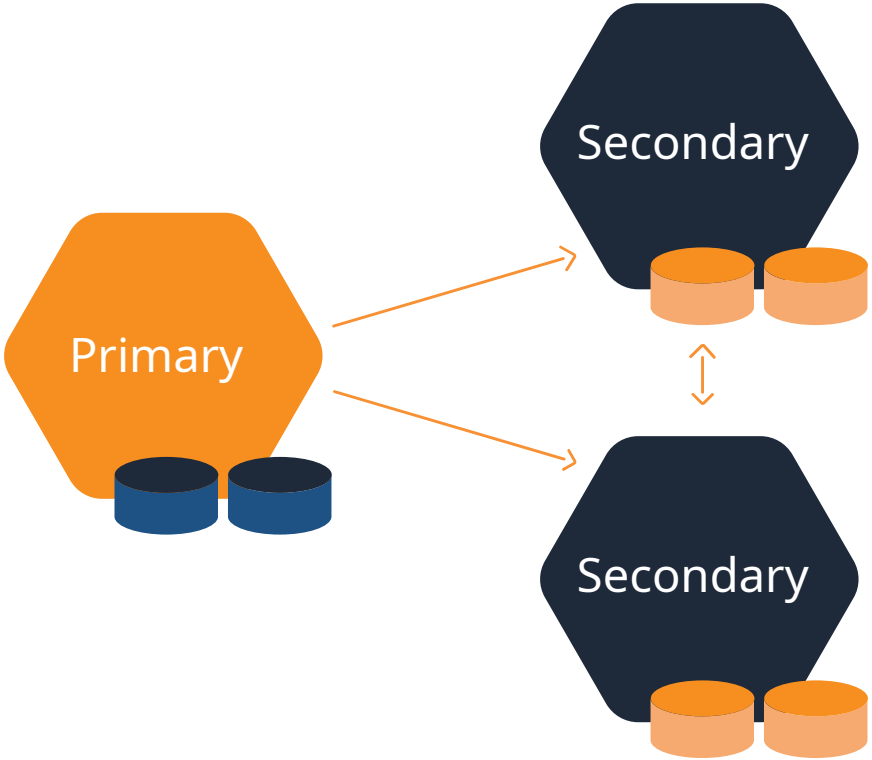
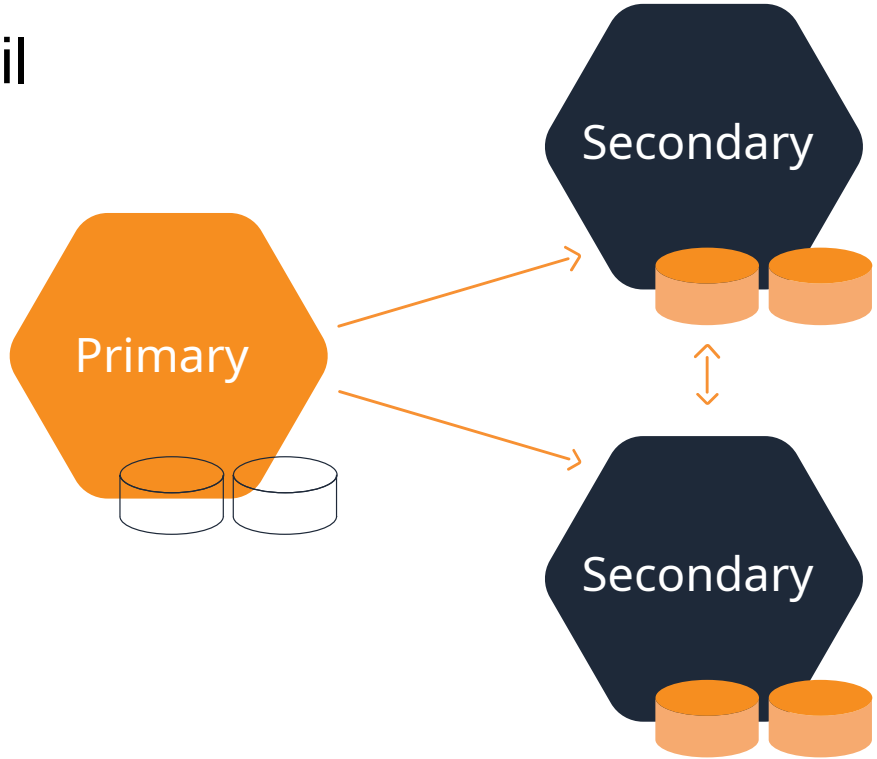
- each may be synchronous or async

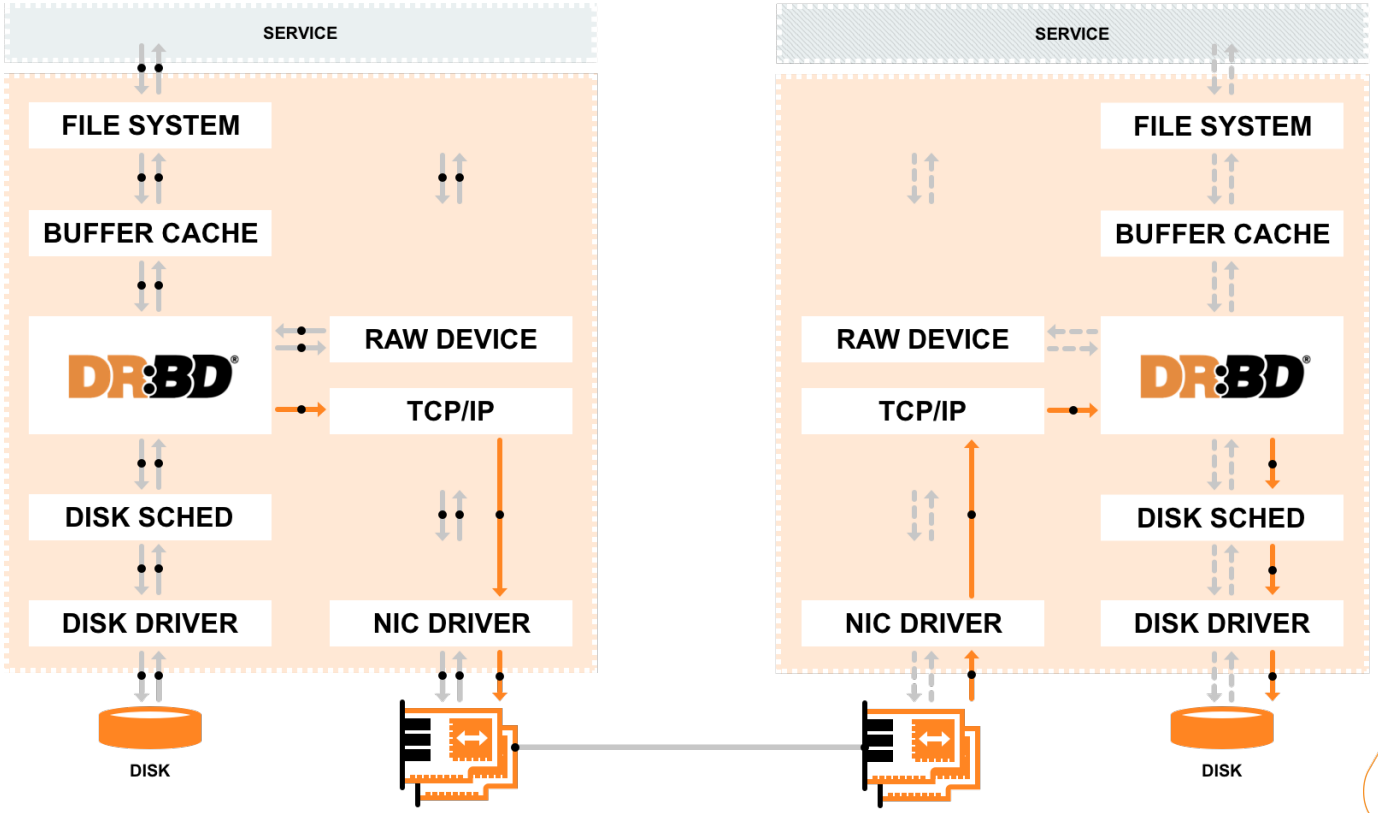


DRBD – Diskless nodes

- intentional diskless
- disks can fail



Data Path on TCP-IP/Ethernet



Where is it a fit?

Types of applications

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Transaction Processing

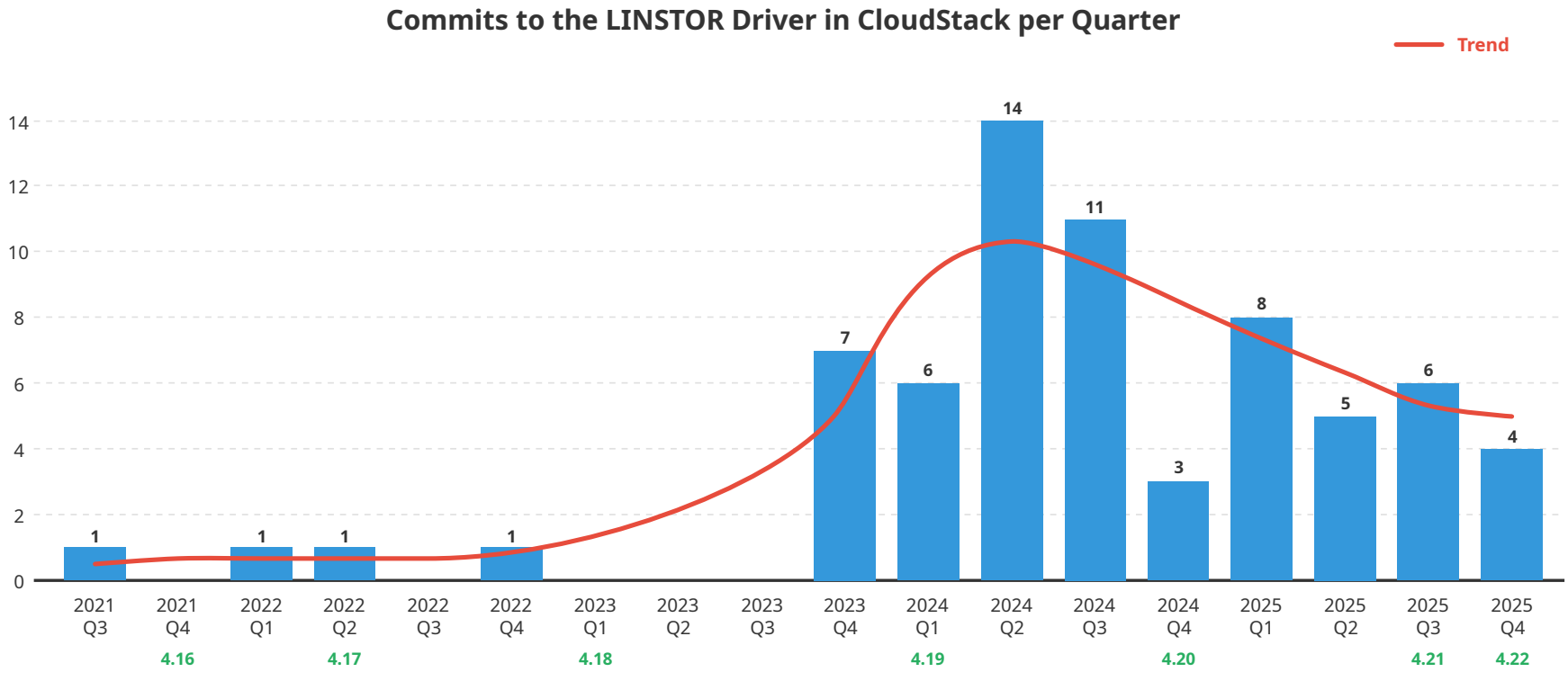
- Oracle DB
- PostgreSQL
- MariaDB
- Message queuing systems

Analytic Processing

- DB2 Warehouse
- And similar read intensive workloads
- Big Data, Map-reduce
- AI/ML training data

LINSTOR driver in CloudStack

Timeline


Commits to the LINSTOR Driver in CloudStack per Quarter
Trend
14
12
10
8
6
4
2
0
1
1
1
1
7
6
14
11
3
8
5
6
4
2021 Q3
2021 Q4
2022 Q1
2022 Q2
2022 Q3
2022 Q4
2023 Q1
2023 Q2
2023 Q3
2023 Q4
2024 Q1
2024 Q2
2024 Q3
2024 Q4
2025 Q1
2025 Q2
2025 Q3
2025 Q4
4.16
4.17
4.18
4.19
4.20
4.21
4.22

ROADMAP

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- Online storage migration between primary storages
  - Between different resource groups on one LINSTOR controller
  - Between different LINSTOR controllers
  - From a different primary storage to LINSTOR

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LINSTOR

Timeline and Roadmap

LINSTOR Timeline and Roadmap

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- **Scalability**
  - 100s hosts
  - 10000s of storage resources
  - Satellite restart form 120s to 8s @1000 resources
- Master passphrase for encryption in TPM 2.0
- Balance resources (after cloning)

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Timeline and Roadmap

DRBD Timeline and Roadmap

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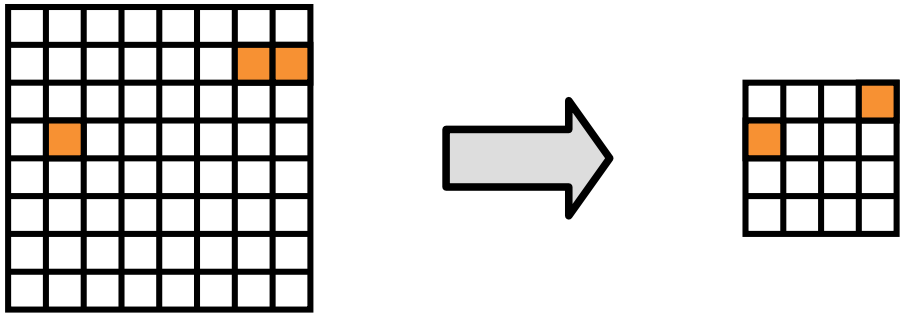
Changeable change tracking bitmap block size



DRBD Timeline and Roadmap

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- Resync without replication
- Further optimizations
  - Zero copy receive
  - Compound pages for I/O buffers

- Proper support for multi-datacenters

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In Summary

CloudStack & LINBIT SDS ...

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Protect Your Data

You will keep your data, no matter how precarious the situation — hardware failures, drives, servers, data centers, or even ransomware.

Keep Your Services Always On

The data might be worthless if your services can not access them. Keep your business running, no matter how bad the universe treats you.

Shape Your Destiny

You must trust the software you select to protect your data and services. Stay clear of a vendor-lock-in-trap. Open Source is the ultimate form of trust.

Exceed with Best Performance

Whether you invest in server hardware or cloud infrastructure, be assured that your services get the best performance in accessing your data under the constraints

cloud STACK
COLLABORATION CONFERENCE

Fill in the CloudStack User Survey

Help us understand the CloudStack Ecosystem