Open Source software for High Availability and SDS for Kubernetes

Philipp Reisner, CEO LINBIT

LINBIT helps you with

Protect Your Data

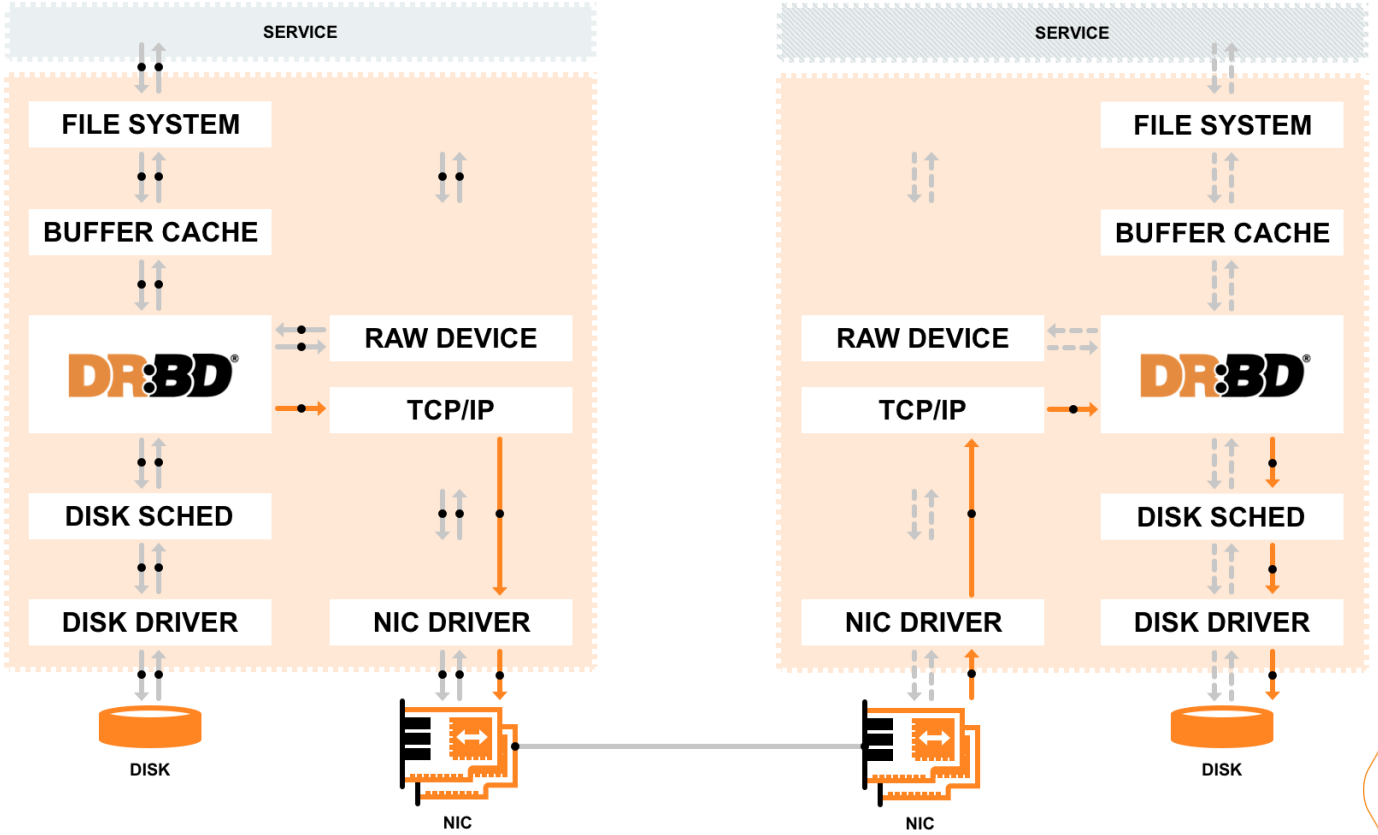
You will keep your data, no matter how precarious the situation — hardware failures, drives, servers, data centers, or even ransomware.

Keep Your Services Always On

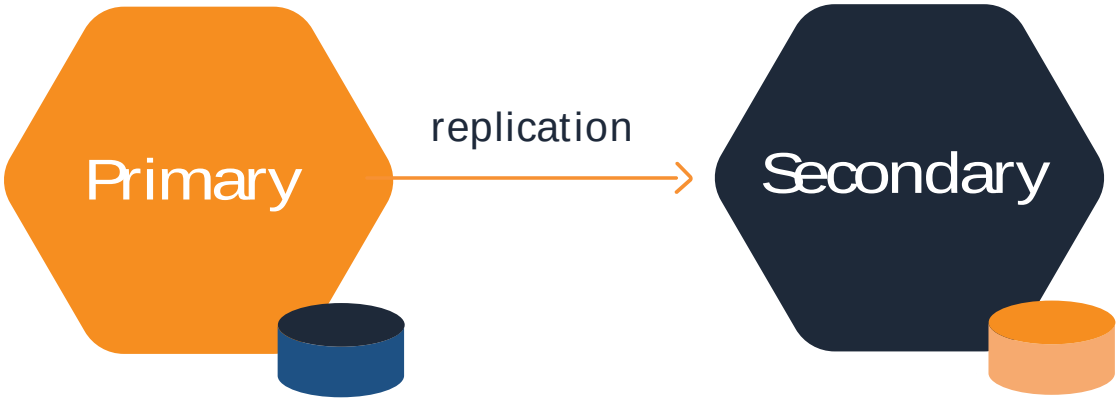
Shape Your Destiny

Exceed with Best Performance

Protecting Data by replication

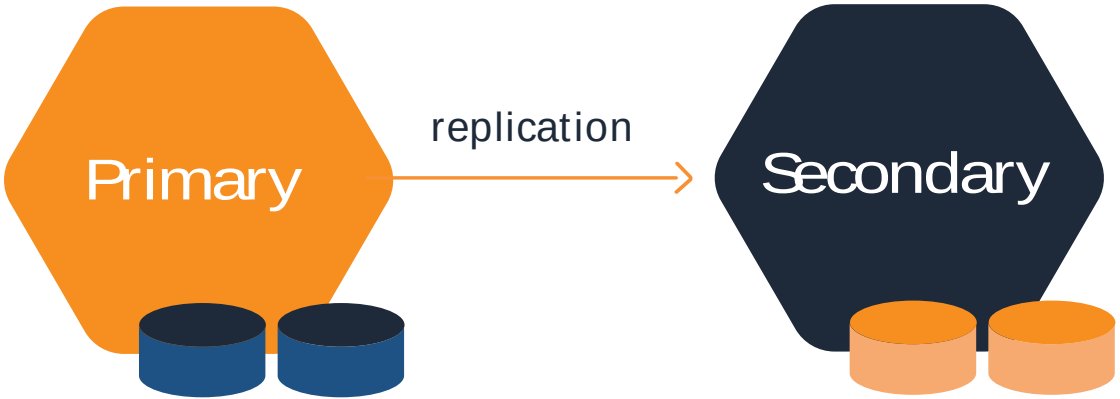


DRBD Roles: Primary & Secondary



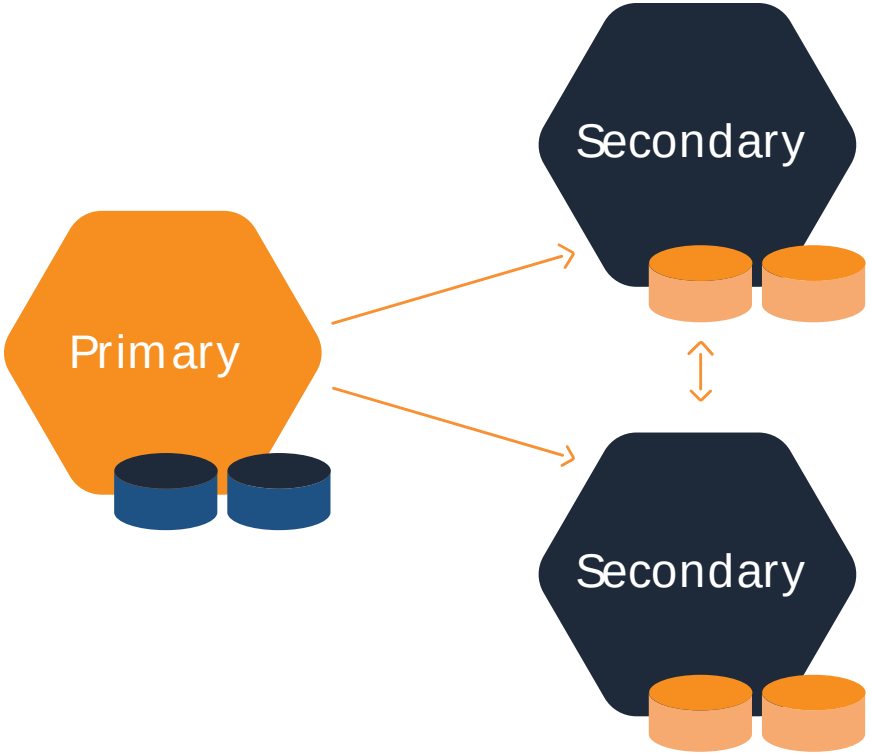
DRBD – multiple Volumes

- consistency group



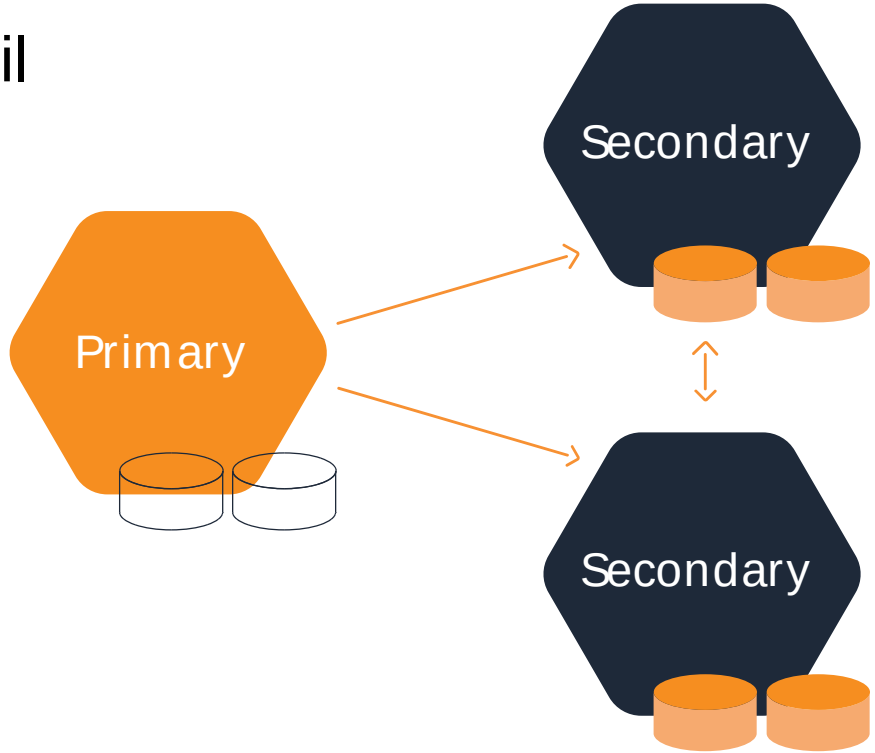
DRBD – up to 32 replicas

- each may be synchronous or async



DRBD – Diskless nodes

- intentional diskless (no change tracking bitmap)
- disks can fail



LINBIT helps you with

Protect Your Data

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

Exceed with Best Performance

Keep Your Services Always On

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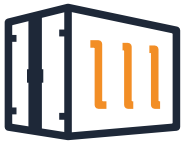
Failover Cluster

- Corosync/Pacemaker
- drbd-reactor/promoter



Containers

Virtualization

IaaS Clouds

Types of applications

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

LINBIT helps you with

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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 between LINBIT and you.

Exceed with Best Performance

Leading Open Source OS based SDS

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COMPANY OVERVIEW

- **Developer** of **DRBD and LINSTOR**
- **100% founder owned**
- Offices in **Europe and US**
- 40 **experienced Linux experts**
- Partner in **Japan: SIOS**

BUSINESS MODEL

- **Support Subscriptions**
- YUM/APT package repositories
- three SLAs
- **Open Source Software**
- GPL, Apache

THE LINUX FOUNDATION

CLOUD NATIVE COMPUTING FOUNDATION

REFERENCES

IBM imc NTT

SMBC日興証券 COMCAST T··Systems···

IQVIA™ SSI SCHÄFER

SOLUTIONS

LINBIT SDS

Since 2016

Perfectly suited for SSD/NVMe high performance storage

LINBIT HA, LINBIT DR

Market leading solutions since 2001, over 600 customers

Ideally suited to power HA and DR in OEM appliances

LINBIT helps you with

Protect Your Data

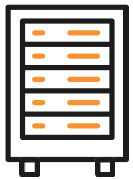
Keep Your Services Always On

Shape Your Destiny

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

Why is LINBIT SDS so fast?



In Kernel data-path

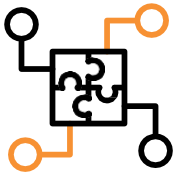
- Reduce number of context switches
- Saving on CPU/memory resources
- Minimal latency for block-IO operations
- Optional load-balancing for READs

Layout at volume allocation

- All participating machines have full replicas, which machines participate determined when creating a volume.
- Be faster at IO submission time
- Saving on CPU/memory

Build on existing components

- DRBD, LVM, ZFS, LUKS, VDO, ...
- Help day2 operations by leveraging on the opera tion teams prior knowledge
- Build on the shoulders of giants

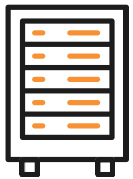


Hyper-Converged

Very well suitable for hyper-converged deployment

- Reduced network load for reads
- Reduces latency
- LINBIT SDS' Low resource consumption leaves most of CPU and memory for workload. About 0.5% of a single core are consumed by DRBD under heavier IO load (measured with an analytics DB)

Where are the IOPS numbers?



22 Million IOPS

- November 2019
- 12 nodes x86 (Intel)
- 25Gb network (Intel)
- Intel SSDs
- Blog post

25 Million IOPS

- March 2023
- 3 nodes ARM (Ampere)
- 100Gb network (Mellanox)
- Samsung SSDs
- Complete paper (21 pages)

Concrete results heavily depend...

- On the storage devices (NVMe-SSDs, PMEM)
- HCI , workload and storage device co-location
- Network switches and NICs
- CPU single core performance

Not STAC Benchmarks

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Thank you

https://www.linbit.com