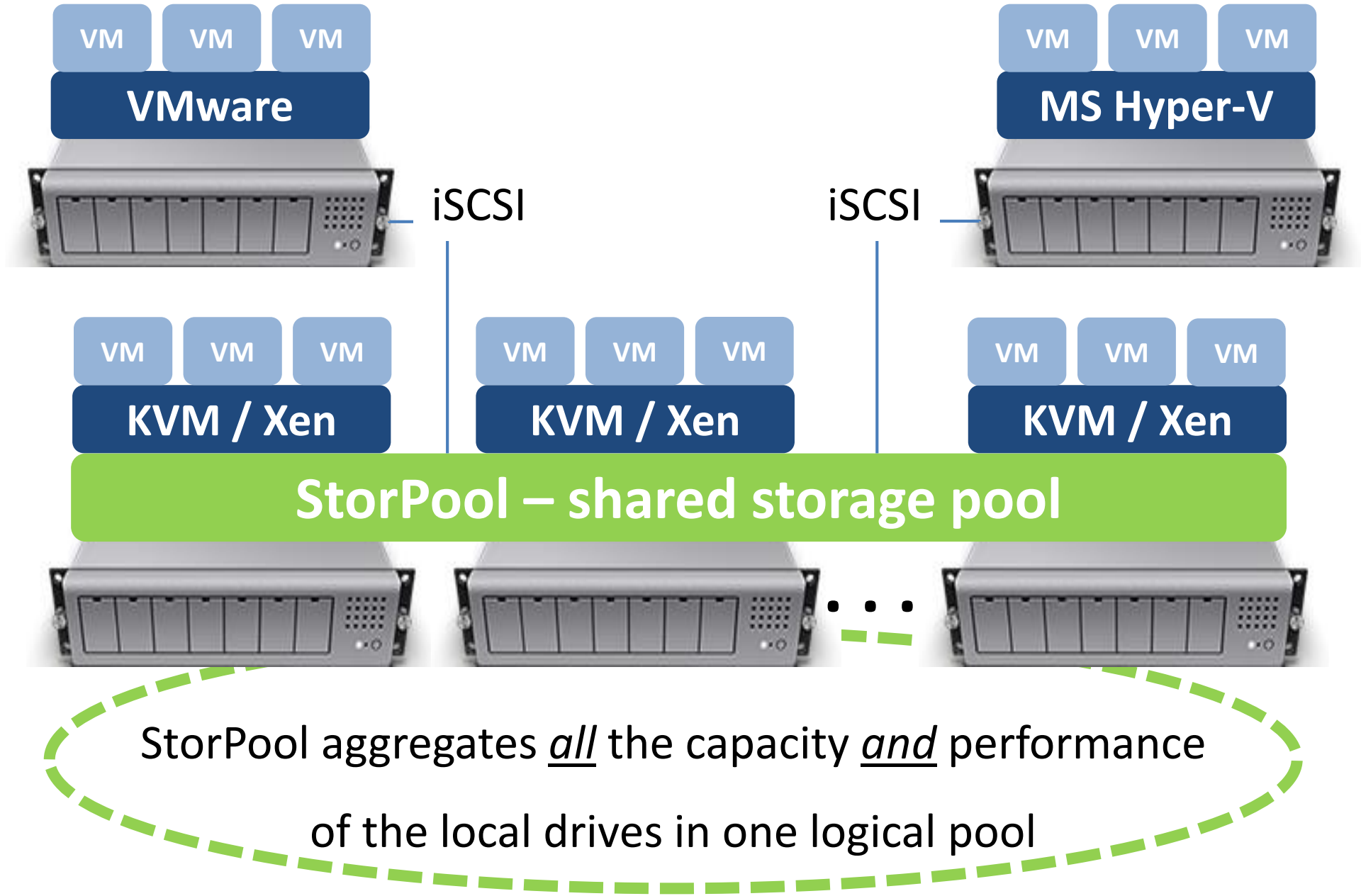
StorPool
DISTRIBUTED STORAGE

The Fastest And Most Efficient Block Storage Software

StorPool: Product Summary

1. Advanced Block-level Software Defined Storage, SDS (SDS 2.0)
   - ✓ Fully distributed, scale-out, online changes of everything, etc.
2. Runs on a number of standard servers (both converged or stand alone)
3. Focus on high-performance primary storage:
   - ✓ Replaces traditional SAN, All-Flash Arrays (AFA)
4. Reengineered the storage stack from the ground up
5. The result: exceptional performance, efficiency, flexibility:
   - ✓ Smallest 3 server system starts at 500,000 IOSP @ 0.2ms latency!
6. Mature SDS technology: running in production for 5+ years; 1PB+ scale systems; 14 major releases, global list of customers
7. **A CLOUD BUILD WITH STORPOOL HAS THE LOWEST TOTAL COST**

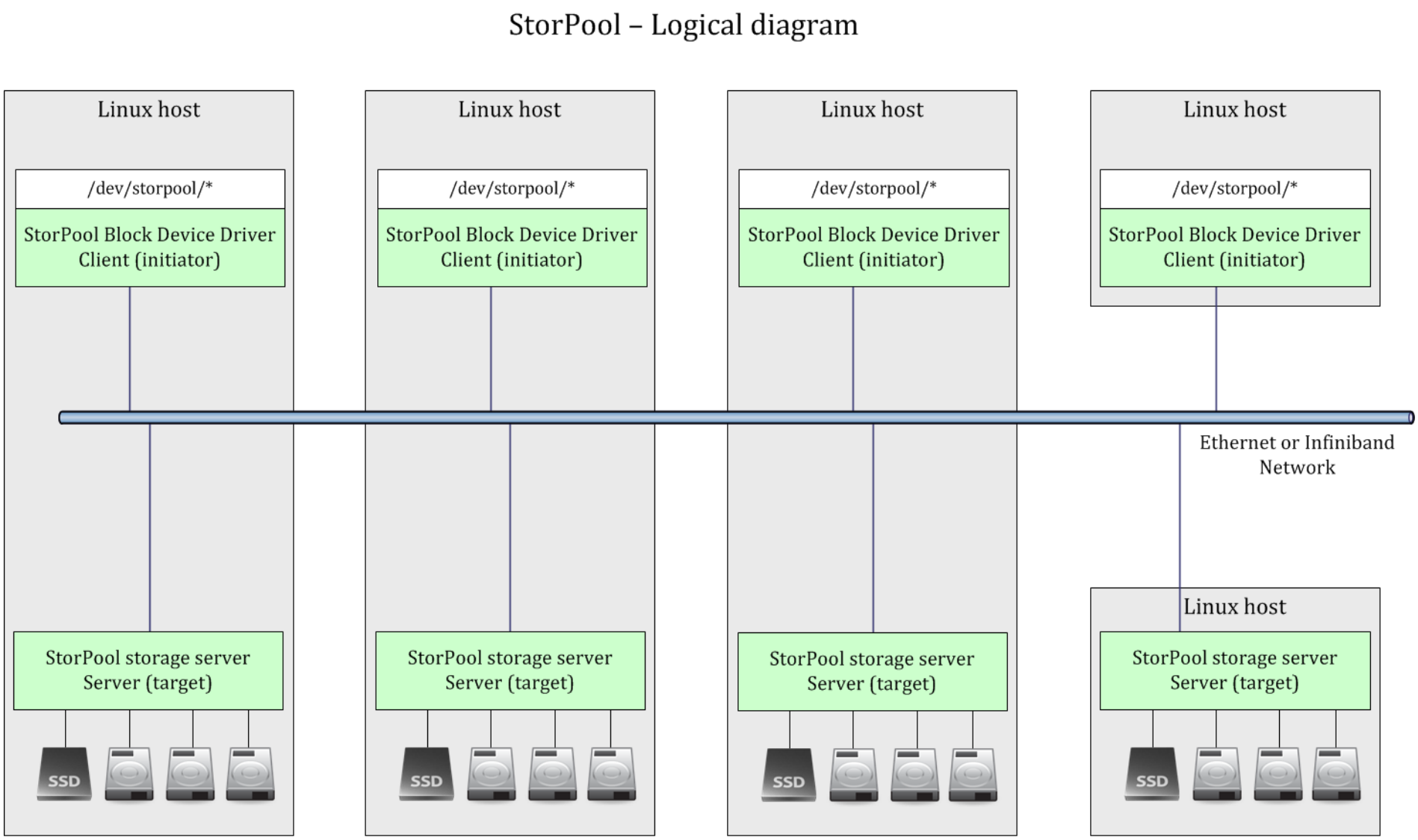
Where StorPool is in the IT stack



Functionality

- Access through StorPool initiator (Linux driver) or iSCSI (HA & scale-out version)
- Delivers **150,000+ IOPS** and **1,500+ MB/s per storage node** on SATA drives with **just 3 CPU cores and 16 GB RAM; 0.15-0.3 ms latency.** Supports SAS, NVMe & RDMA.
- Scale-out. 10 servers will have about 1.5 mln. IOPS and 15 GB/s in total at 0.15-0.3 ms.
- Quorum-based, consistent cluster of 3+ storage nodes. Flat structure, no dedicated metadata nodes, no dedicated monitor nodes, no dedicated access nodes.
- Own copy-on-write on-disk format designed for a distributed system from scratch.
- Can run converged/hyper-converged, thanks to our low CPU and memory usage (50x efficiency of competing solutions like Ceph).
- Redundancy guaranteed by copies (1, 2, 3 /recommended/) in different servers or racks.
- Integrated/supports almost everything in the Linux stack - KVM, LVM, OpenStack, CloudStack, OnApp, OpenNebula, LXC, Docker, Proxmox, etc, etc.
- Enterprise level feature set (full list of features at the end of the slides)

Logical Diagram – Using Native StorPool Driver, HCI



Competitors: storage hardware

Traditional SAN	All-flash or hybrid arrays	StorPool
Dell / EMC NetApp IBM HPE, etc.	SolidFire Nimble storage Pure Storage Tintri, etc.	Distributed Storage software (SDS 2.0)
(-) EXPEN$IVE (-) hard to scale (-) inflexible (-) vendor lock-in (-) complex (-) limited in performance (-) single point of failure	(-) expensive (-) limited scalability (-) storage only device (-) vendor lock-in (-) single point of failure	(+) affordable, pay-as-you-go (+) linear scale-out (+) storage & Compute (HCI) (+) no vendor lock-in (+) simple to setup & run (+) performance: starts at 500,000 IOPS and 0.2 ms! (+) reliable: fully distributed, end-to-end data integrity

Competitors: storage software

Not all storage software is created equal: looking similar, totally different capabilities

Nexenta, ZFS, Ceph, etc.
(SDS 1.0)

(-) limited performance and/or
(-) not-scale-out and/or
(-) resource hungry
(-) rigid, inflexible

StorPool
(SDS 2.0)

(+) all-flash speeds
(+) scale-out
(+) extremely efficient
(+) unmatched flexibility

Why StorPool?

1. **Unmatched performance:** 200,000+ random read IOPS and 1.5 GB/s sequential reads **per server; 0.2 ms latency** of the entire cluster/system
2. **Extreme efficiency:** uses 2 cores of server's CPU and 16 GB RAM, while delivering 200,000+ IOPS. Can deliver 400k+ IOPS per node with more cores
3. **Beats competition:** in terms of price/performance and price/functionality
4. **Cost reduction:** up to 90% (10x).
5. **Scalability:** can scale with just one drive or server at a time. Linear scale-out: 10 servers do 10x the performance of 1 server; 20 servers – 20x more
6. **Simplicity & flexibility:** easy to manage. A junior system administrator can manage StorPool. Online reconfiguration, in-service updates with no downtime. Deploy converged, on separate storage nodes or mixed
7. **Real, cash-flow positive business, global spread of customers**

Markets & Customers

Target market: Public or Private clouds - service providers, IT companies & Enterprises.

Use cases: workloads requiring block device – VM disks, databases, VDI, etc. Most common use case is primary storage for VMs.

StorPool Pricing

1. Monthly recurring (pay-as-you-go), 1 and 3 year prepay packages
2. Driver: price per TB on SSDs and TB on HDD
3. License includes all you need to get a system up and running: software license, hardware test, installation, tuning, 24/7 support, updates, new versions, active monitoring and preventive alerts, etc.

There are 3 storage tiers:

HDD-only system	**“SSD-Hybrid” system**	**All-SSD system**
“hybrid storage” performance, 3x replication	All-SSD/Flash level of performance, full copy of data on SSD, spare copies on HDD	Entirely All-SSD/Flash system, 2/3x replication on SSDs

Features List

- Distributed, scale-out storage cluster
- Own copy-on-write on-disk format and networking protocol
- End-to-end data integrity (in the client)
- Thin provisioning
- Data Tiering
- Self-healing
- Automatic data balancing
- Data locality
- Instantaneous copy-on-write Snapshots & Clones
- Storage QoS (Quality of Service) - IOPS & MB/s limits, per volume
- On-line reconfiguration
- Non-disruptive, in-service software upgrades
- Advanced Volume management – online resize (expand, shrink) of volumes
- RESTful JSON API with API failover
- Space saving features - TRIM/discard, Zeroes detection
- Integrated Backups & DR (Disaster Recovery)
- Multi-attach
- iSCSI support
- Most up-to-date list **here**

Resources & Contacts

1. **Concept video**
2. **Technical demo video**
3. **Storage Newsletter: Fastest Growing Storage Company in 2016**
4. **Review: Gestalt IT**
5. **Review: Storage Switzerland**
6. **Customer references**
7. **Performance tests & other resources:**
   - ✓ https://storpool.com/blog/storpool-performance-test-12-ssds-468000-iops
   - ✓ storpool.com/downloads

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