Replication at Block Level vs FS Level

1&1

Kernelspace

Userspace Application Layer

Apache, PHP, Mail Queues, etc

Potential Cut Point A for Distributed System

~ 25 Operation Types
~ 100.000 Ops / s

Filesystem Layer

xfs, ext4, btrfs, zfs, … vs nfs, Ceph, Swift, ...

Potential Cut Point B for Distributed System

DSM = Distributed Shared Memory => Cache Coherence Problem!

Caching Layer

Page Cache, Dentry Cache, ...

1:100 reduction

2 Operation Types (r/w)
~ 1.000 Ops / s

Block Layer

LVM, DRBD / MARS

Potential Cut Point C for Distributed System

++ replication of VMs for free!

Hardware

Hardware-RAID, BBU, ...