Reliable storage

Single-host choices
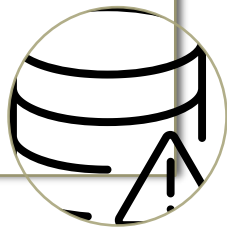
Does it matter to user?

Of cause not!

The user does not matter what storage technology lies behind his job.

It's the admin's job to prevent data loss.

Data integrity is the key point

- **Ultimate condition**: failure of storage device(s) should not lead to massive data loss or corruption

Redundancy

- There should also be the way to replace failed storage devices online

Availability

- And we have to be sure we got exactly what was stored

Consistency

Technologies: brief summary

Technology	Maturity	Price	Consistency	Host OS
Hardware RAID	Mature	High	So-so	Any (in practice, only Windows and Linux)
mdadm+LVM	Mature	Zero	None	Linux
ReFS+StorageSpaces	Young	Moderate	High	Windows
btrfs	Young	Zero	High	Linux
ZFS	Mature	Zero	High	Solaris[1], FreeBSD[2], MacOS[3], Linux[4]

Notes:

[1] – Origin.

[2] – First port. Very mature.

[3] – Currently not supported on bare metal.

[4] – Thanks to LLNL and OpenZFS team.

Choose wisely!

Further googling:

hardware raid vs mdadm

zfs vs mdadm

zfs vs btrfs

zfs vs xfs

hardware raid vs hba

zfs over hardware raid