SoftRAID:
High Performance Storage

Tim Standing

Vice President Software Engineering - Mac
Other World Computing, Inc.

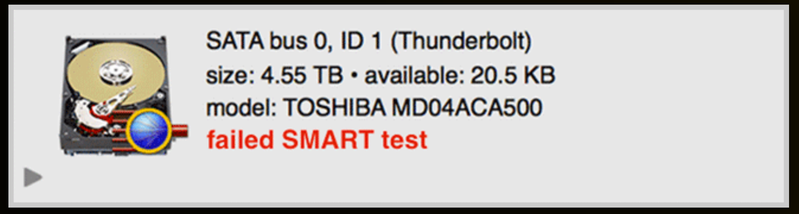
1. SoftRAID features
2. What's new in SoftRAID and at OWC
3. Upcoming Features and Products

1. SoftRAID features

SoftRAID Protects Your Data

- *Before* you use a disk

- *While* using your disks

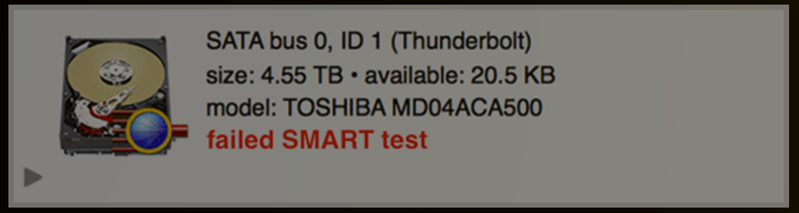


- *After* a disk drive fails

SoftRAID Protects Your Data

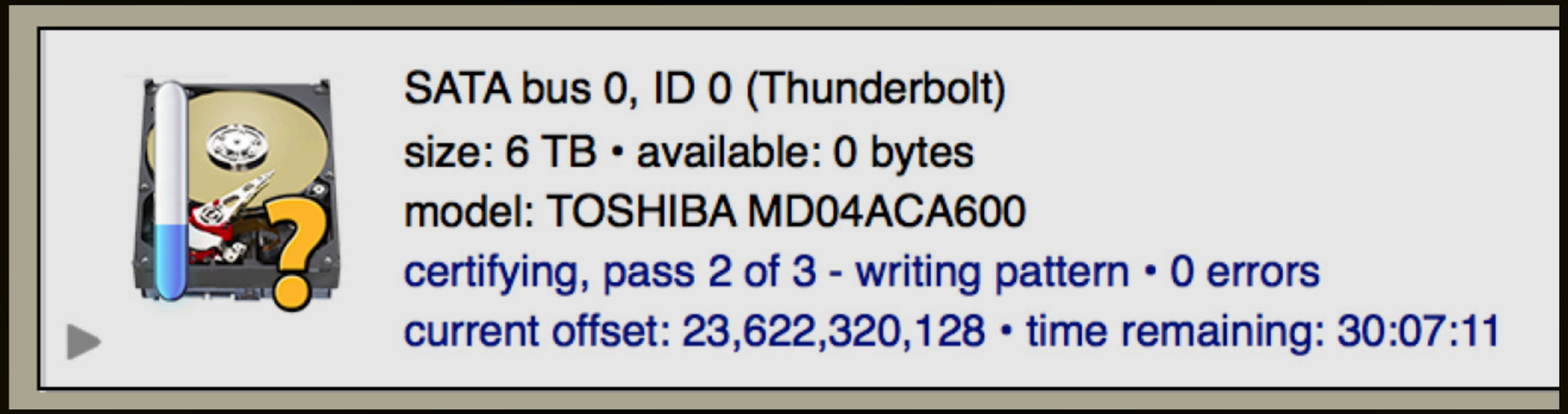
- *Before* you use a disk

- *While* using your disks



- *After* a disk drive fails

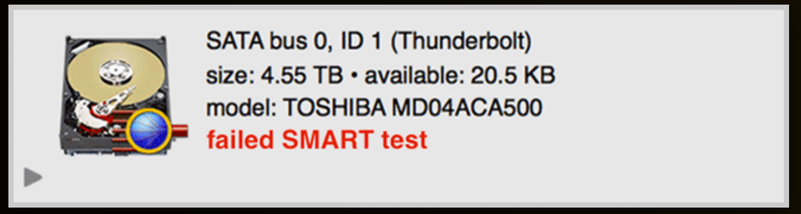
Certifying a disk with SoftRAID



SoftRAID Protects Your Data

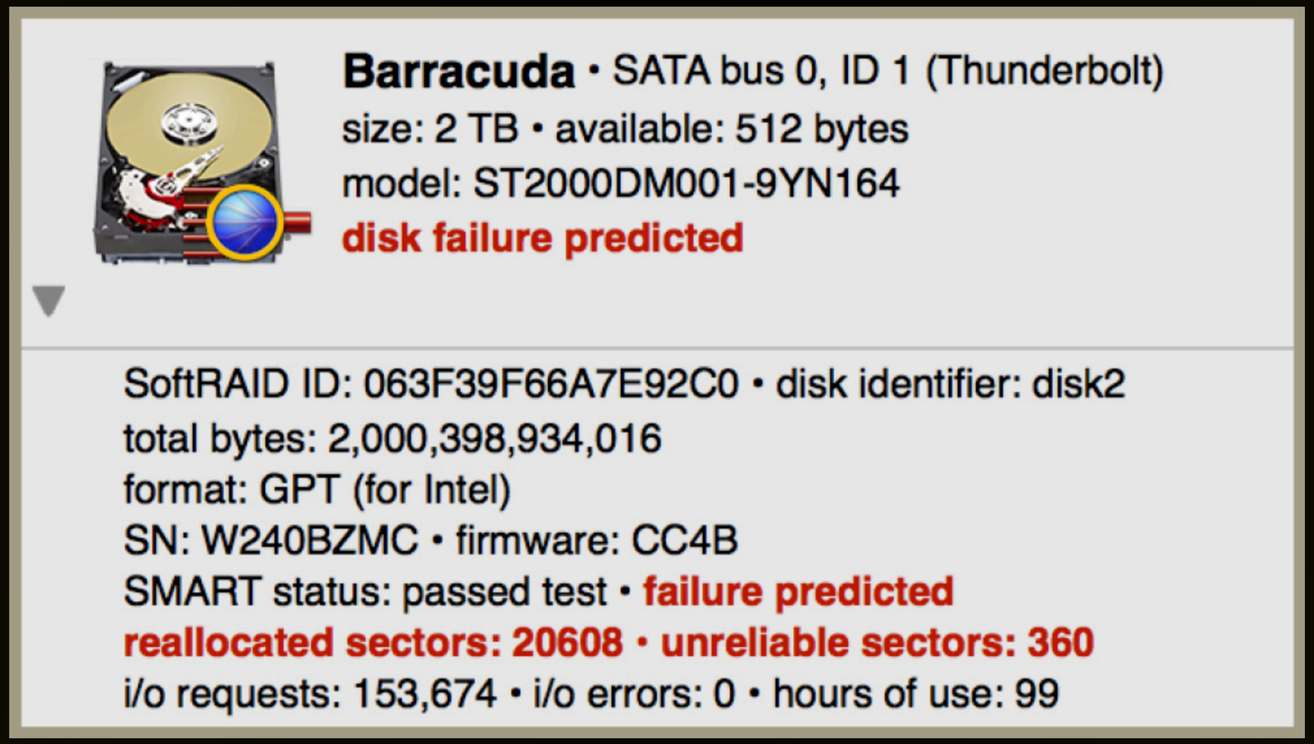
- *Before* you use a disk

- *While* using your disks



- *After* a disk drive fails

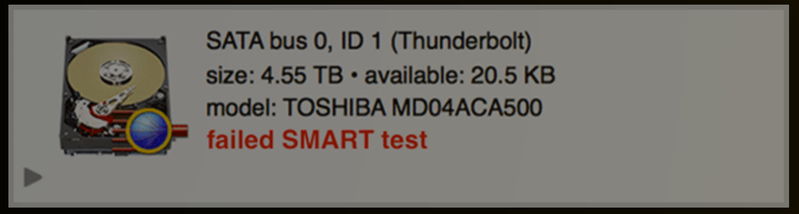
Monitoring disks with SoftRAID



SoftRAID Protects Your Data

- *Before* you use a disk

- *While* using your disks



- *After* a disk drive fails

2. What's new in SoftRAID and at OWC

OWC in Belgium

- Products ship directly from Belgium
- Warranty replacements and repairs
- Customer Support

OWC in Taiwan

- Hardware design team
- Manage manufacturing and parts
- Better relationship with vendors
- Investigate hardware issues

SoftRAID 5.8

- Compatibility with Mac OS 10.15
- Support for two new ThunderBay minis
- Fixes memory leak which affected very long operations

Statistics from 116,000 disks

- Collected SMART data and disk usage statistics every 7 days using SoftRAID Monitor over the past year
- User must opt in to data collection
- All data is anonymous
- Starting to analyze data for disk failure information

Statistics from 116,000 disks

(Percentage of disks predicted to fail)

SMART Attribute:	% of Disks:
Reallocated Sectors	1.58%
Uncorrectable Errors	0.65%
Unreliable Sectors	0.99%
Total = Predicted to Fail:	**3.22%**

Statistics from 116,000 disks

(Disks predicted to fail by manufacturer)

Brand:	% of Disks:
Hitachi	7.6%
Seagate	5.1%
WD	3.1%
Toshiba	2.6%

3. Upcoming Features and Products

SoftRAID version 6

- Two levels of functionality, SoftRAID and SoftRAID Pro
- Full support for APFS and Encrypted APFS volumes
- Additional volume types: RAID 6 and RAID 6+
- Accelerated parity calculation using SIMD instructions
- Currently in beta - Will ship early 2020

Parity Calculation on RAID 5

Corrupted data on RAID 5 detected

6

Calculated Parity

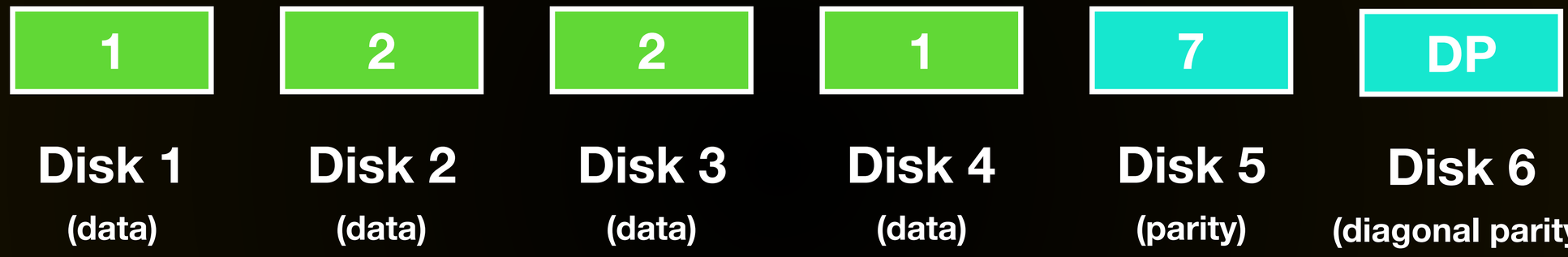
7 != 6

On Disk Parity != Calculated Parity

Parity Calculation on RAID 6

Disk 1	Disk 2	Disk 3	Disk 4	Disk 5	Disk 6
(data)	(data)	(data)	(data)	(parity)	(diagonal parity)

Corrupted data on RAID 6 detected



6

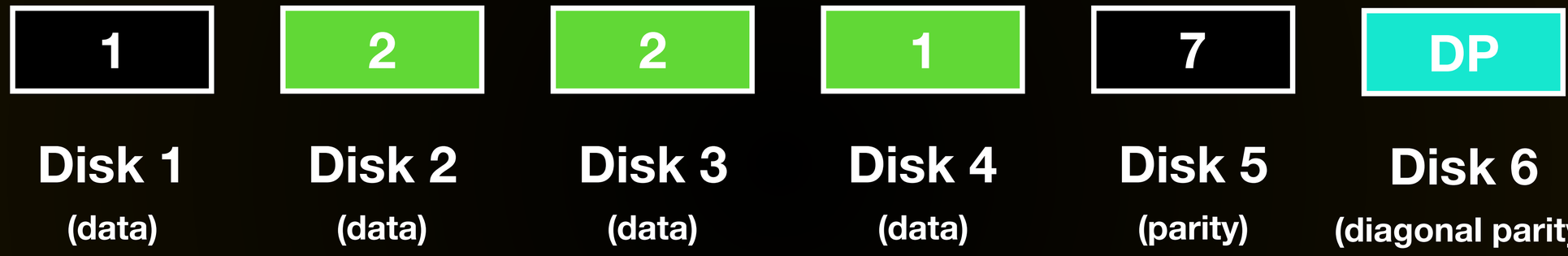
Calculated Parity

7 != 6

On Disk Parity != Calculated Parity

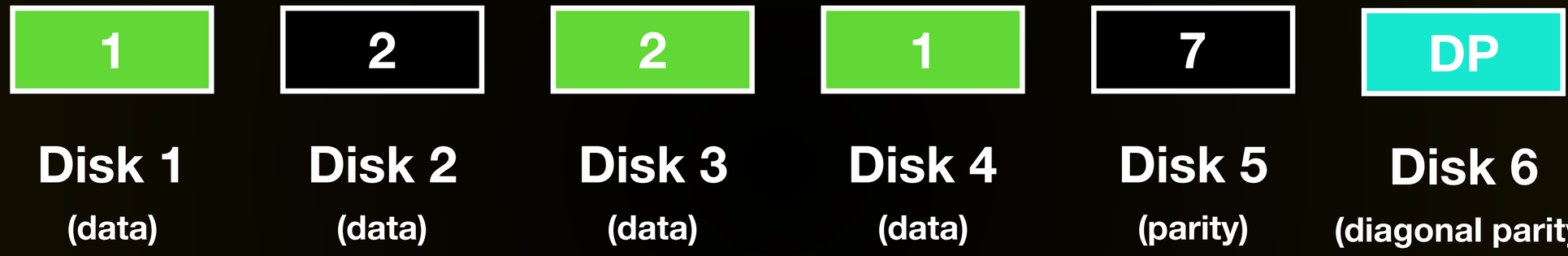
Locating the disk with corruption

(Corrupted disk not found)



Locating the disk with corruption

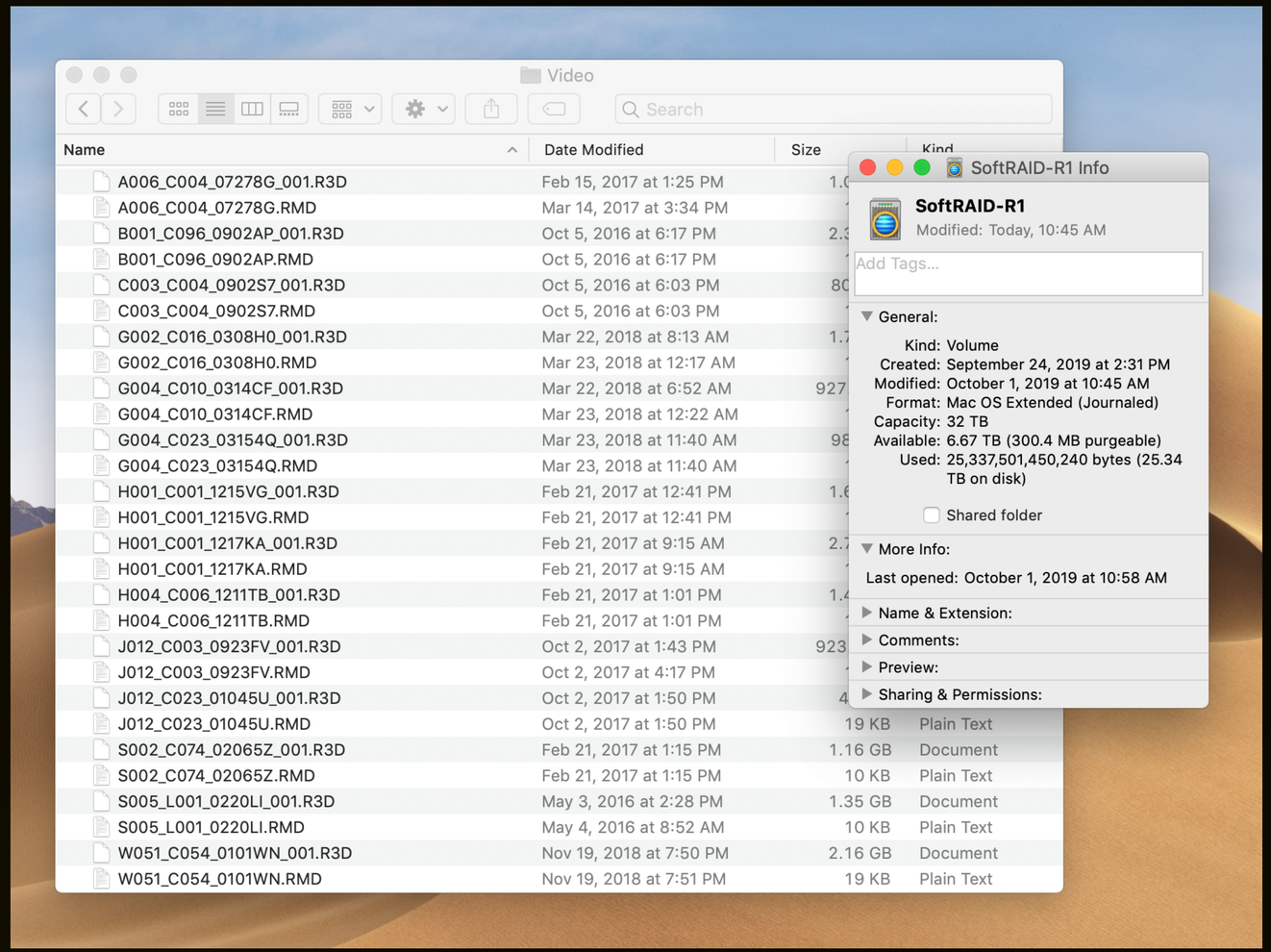
(Corrupted disk found)



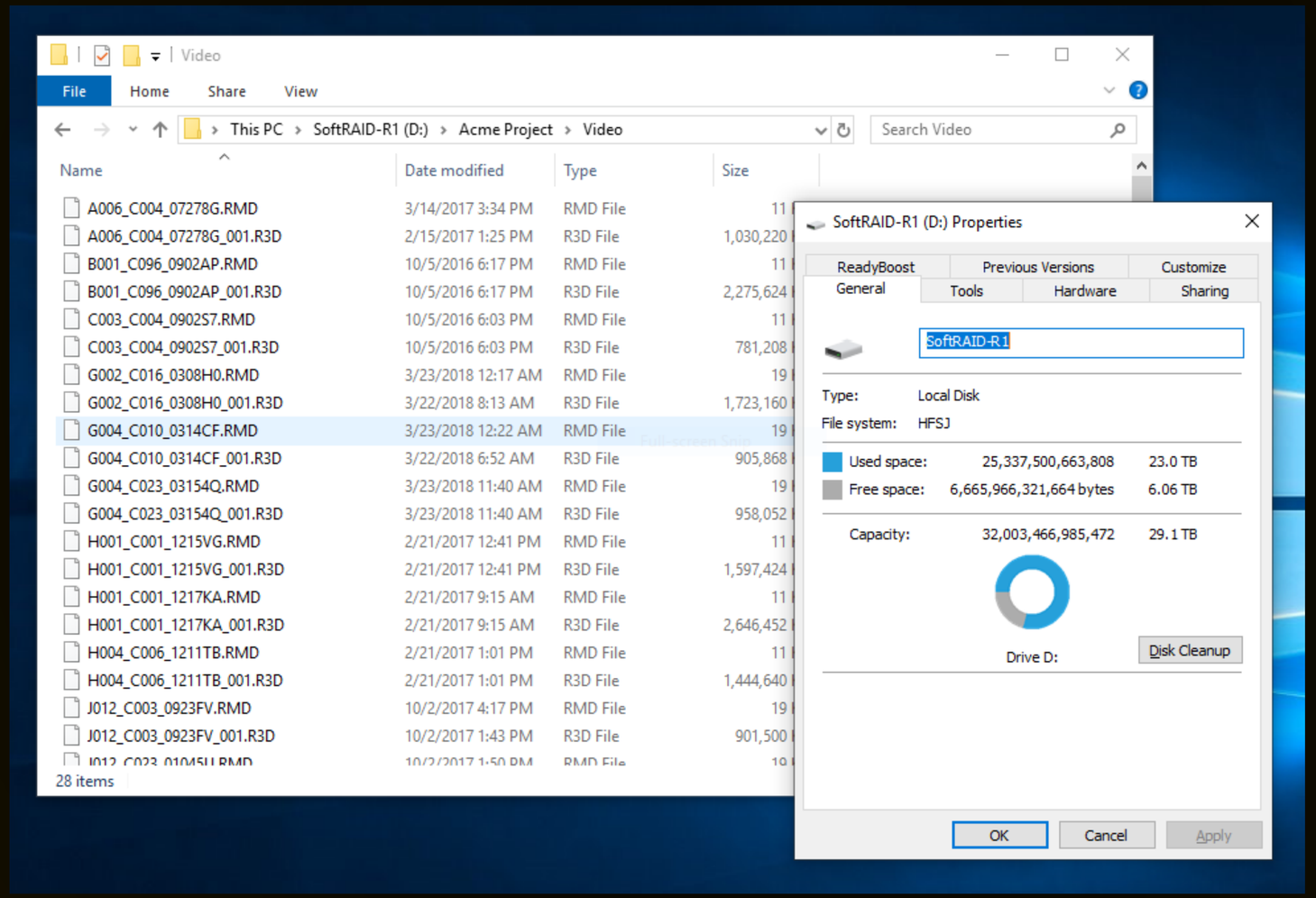
SoftRAID for Windows

- Supports RAID 0 and RAID 1 volumes
- Can create HFS+ and NTFS volumes
- Volumes interoperate transparently with SoftRAID for Mac
- Feature parity with SoftRAID for Mac
- Currently in beta - Will ship early 2020

A SoftRAID HFS+ volume on a Mac...



...will just mount on Window!

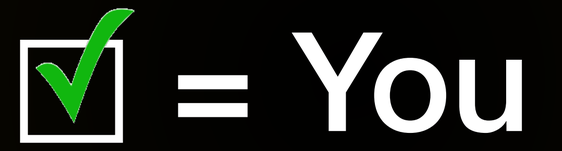


OWC ThunderBay 8

- Takes 8 disks
- Can use 2.5 or 3.5 inch disks with no adapter
- SATA interface chip uses PCIe 3
- Approximately 2 GB/sec with a RAID 0 volume

OWC Accelsior 4M2

- PCIe card with 8 lanes
- Uses 4 MVMe blades
- Sizes up to 8 TB
- Currently seeing 6 GB/sec on Windows

 = You

Q&A