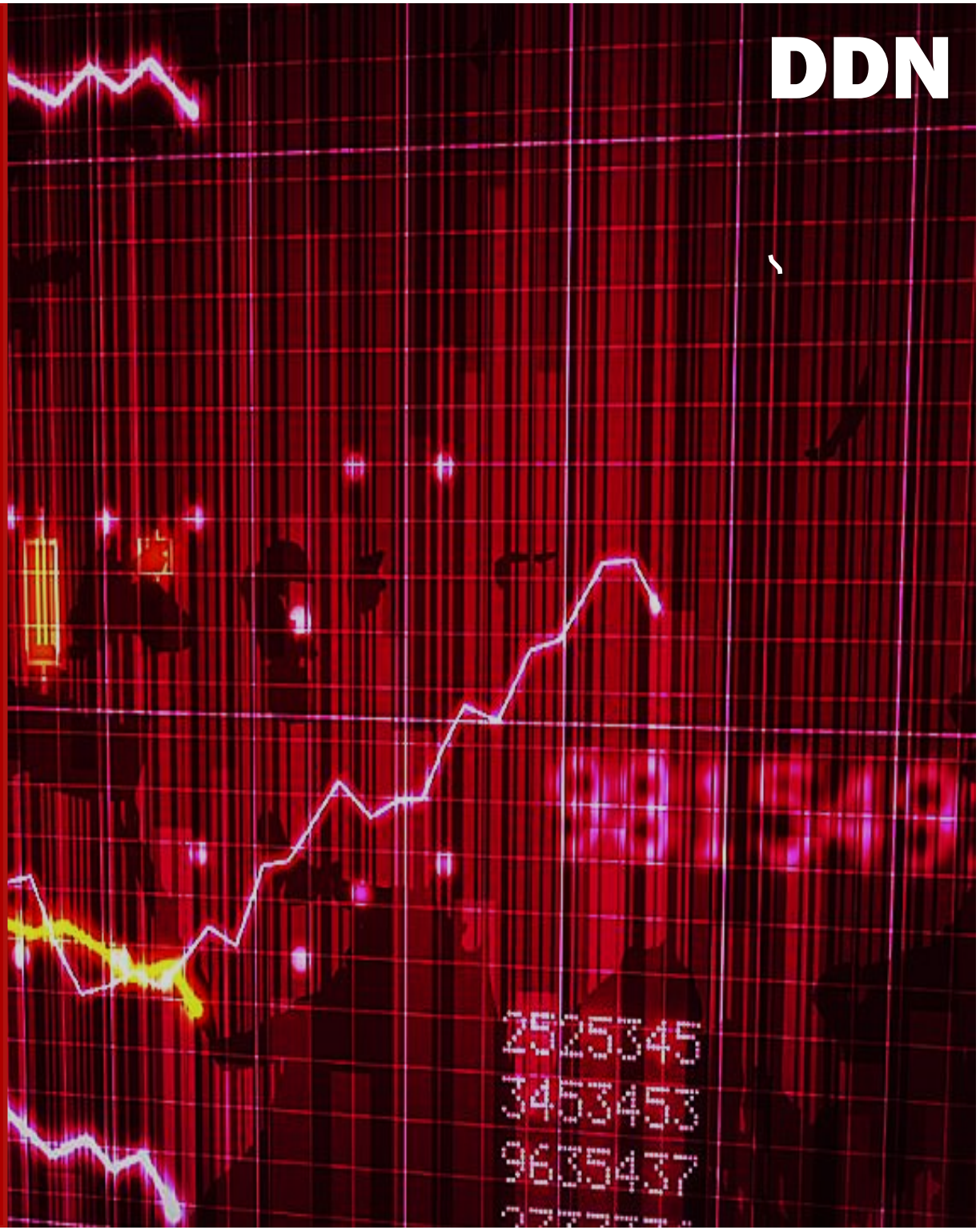
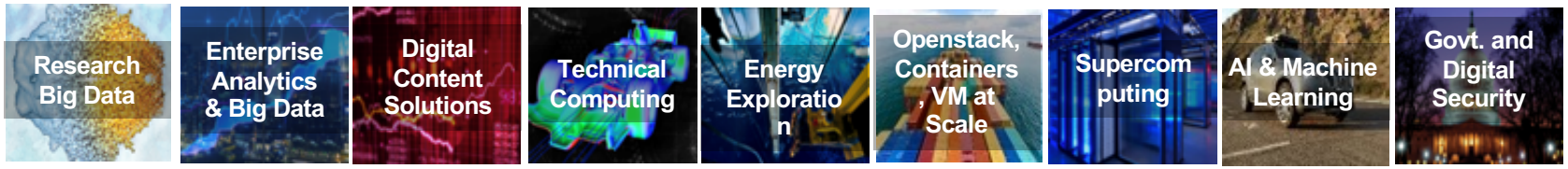
DDN Updates

DataDirect Neworks Japan, Inc
Nobu Hashizume



DDN | A Broad Range of Technologies to Best Address Your Needs

Your Use Cases



DDN Products & Solutions

DDN

Data-at-Scale Services

Scalable Storage Platforms

DDN HW PLATFORMS	DDN SOFTWARE CAPABILITIES					
LEVERAGING NVMe, Disk Drives, Enclosures, CPU, PCIe, RDMA Fabrics, Networking, GPU	Protection	Security	Data Distribution and Lifecycle Management	Open Monitoring	**DATA PERFORMANCE & SCALE** IOPs, GB/s Latency, single thread/client Concurrency, RDMA networks	**CONTAINERS & VM** orchestration and management

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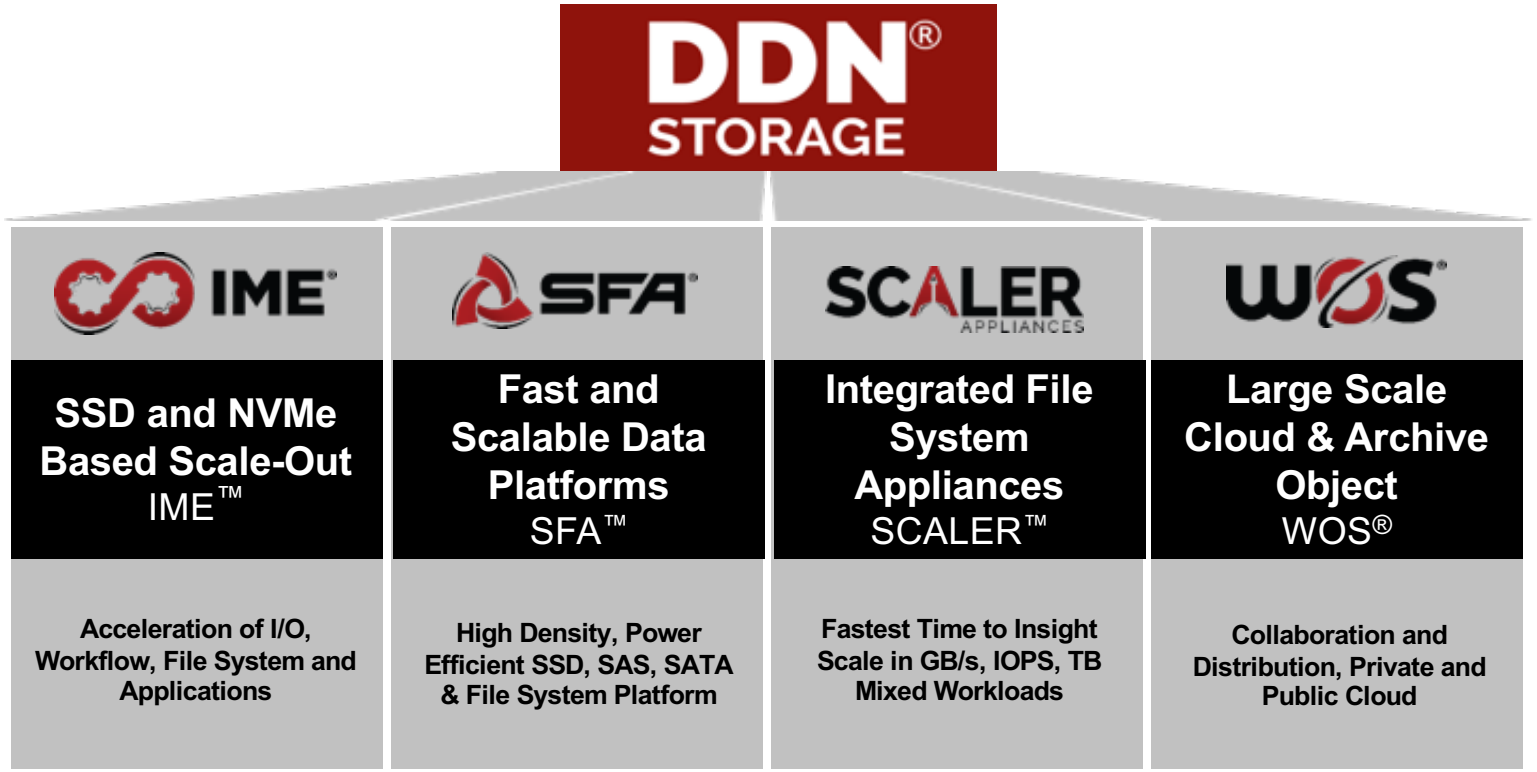
DDN | Software Defined, Flash, Hybrid and Cloud Storage



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DDN | Focused Storage Areas

- NVMe/SSD everywhere at scale
  - IME(Infinite Memory Engine)
  - All flash for Parallel filesystem
  - Lustre Persistent Client Cache
- Understand and optimizations of I/O Workflow
  - AI/Machine Learning
  - Life Science Pipeline
  - Data Archiving/Management

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A Fully Scalable, **High Performance**

Easy to Deploy **NVMe Data Platform**

For Your Most Demanding **Workloads**

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DDN | IME Solves Critical I/O problem

https://www.vi4io.org/io500/start

#	information				io500		
	system	institution	filesystem	client nodes	score	bw	md
						GiB/s	kIOP/s
1	Oakforest-PACS	JCAHPC	IME	2048	101.48	471.25	21.85
2	Shaheen	Kaust	DataWarp	300	70.90	151.53	33.17
3	Shaheen	Kaust	Lustre	1000	41.00	54.17	31.03
4	JURON	JSC	BeeGFS	8	35.77	14.24	89.83
5	Mistral	DKRZ	Lustre	100	32.15	22.77	45.39
6	Sonasad	IBM	Spectrum Scale	10	21.63	4.57	102.38
7	Seislab	Fraunhofer	BeeGFS	24	18.75	5.13	68.58
8	EMSL Cascade	PNNL	Lustre	126	11.17	4.88	25.57
9	Serrano	SNL	Spectrum Scale	16	4.25	0.65	27.98

IOR Hard : A single shared file, 47008 byte I/O size and Stride I/O
IOR Easy : File Per Process, 2MB I/O size and Sequential I/O

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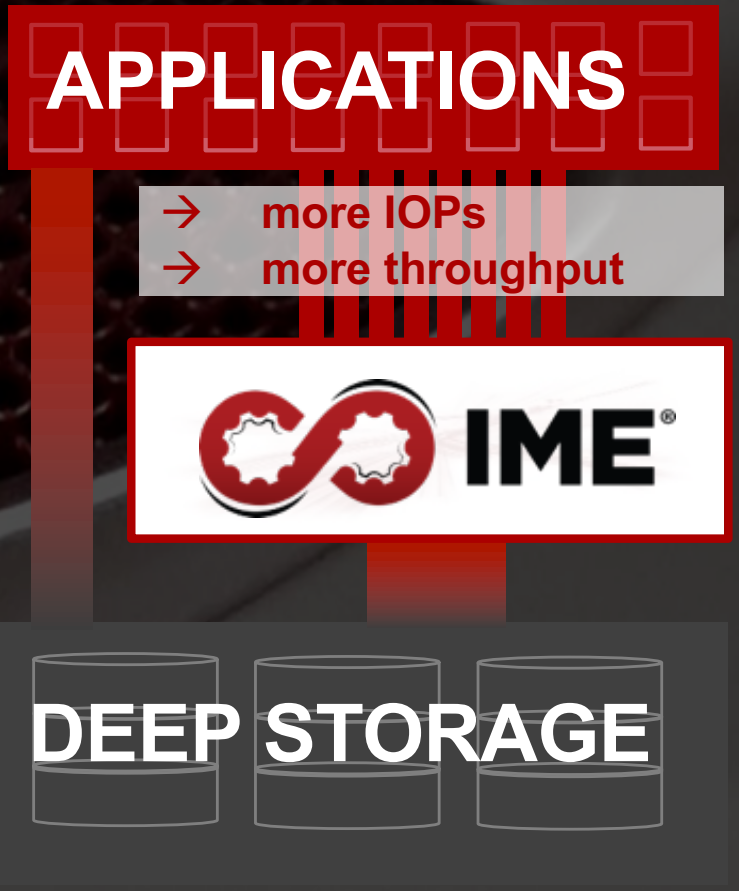
IME | NVMe Flash Software Data Platform

Truly Software-Defined • Commodity Hardware • Flash Native • Linear Scaling • Low Power • High Density Removes Filesystem Bottlenecks

IME240

IME | NVMe Flash Software Data Platform

- Transparent, Scalable Cache Layer Delivering Unprecedented Performance for Your Workflows
  - Dramatically accelerate random read, random write, shared file, high concurrency and streaming workloads by up to 100X
- Reduces Footprint and Power by Up to 1/3
- Extend Flash SSD Life By Up to 500%
- Optimally Scale to Requirements At Any Scale
- Zero Application Modifications Needed
- Protects Data Against Device and Node Failures



IME

SCALER APPLIANCES

SFA®

Ultimate in **Performance & Capacity** for both **Filesystems** and **Block** platforms with Hybrid Flash and Disk Drives

Massively Scalable and Easy to Deploy

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SFA| Fast and Scalable Data Storage Platforms for All Your Needs

- **True Parallel File System Performance**
- **Extreme Real World Throughput & IOPs**
- **Optimal at Any Scale for Your Changing Needs**
- **Adaptable Flash & Disk Pools for Best Cost**
- **THE Best Global File System Technical Team**

SFA®

EXAScaler | GRIDScaler

SFA| Optimal Speed and Capacity with Hybrid Flash & Disk Drives

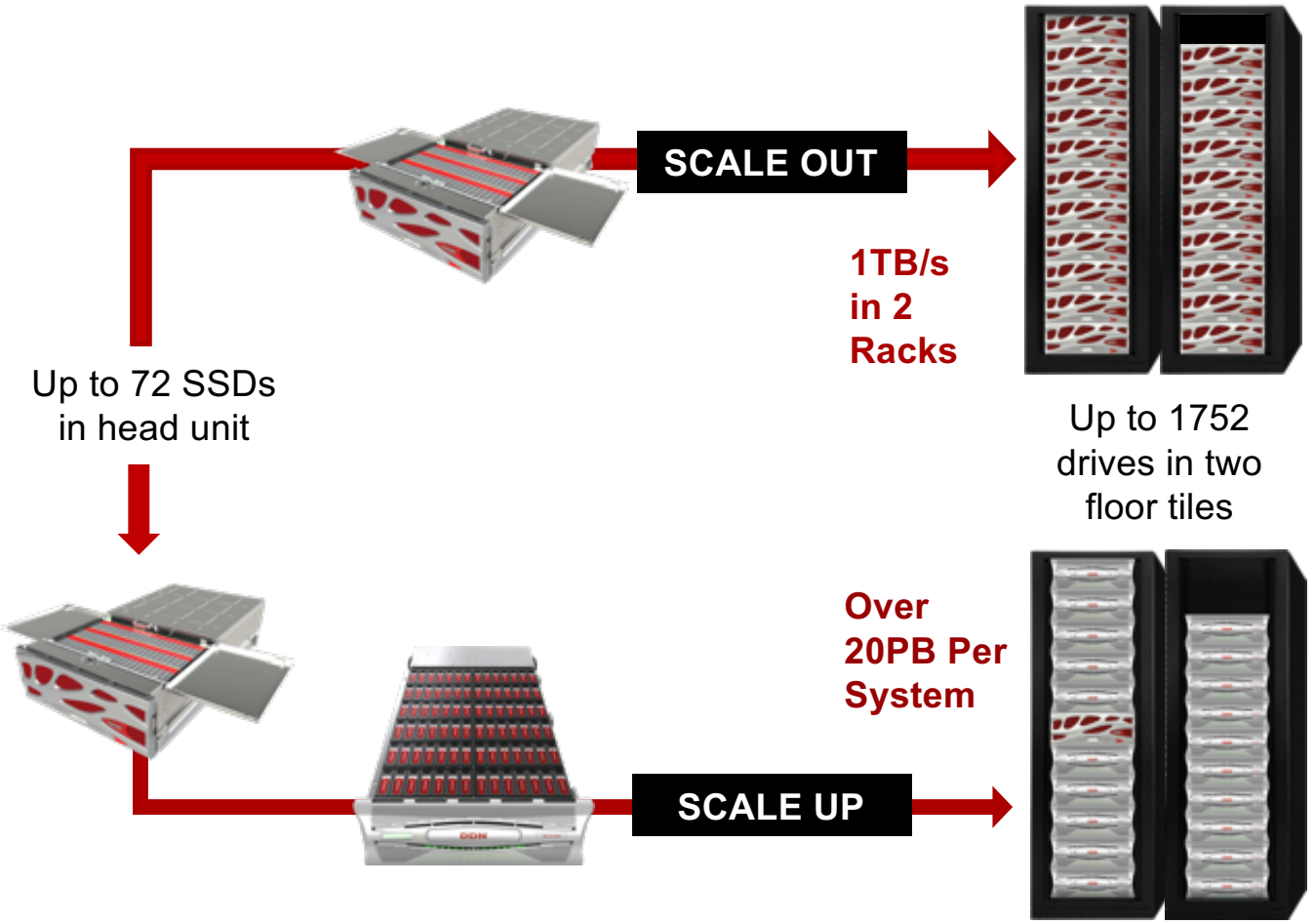
- **Filesystems that scale way beyond traditional NAS and Scale-Out NAS**
- **Built for simplicity at extreme performance**
- **Lustre and Spectrum Scale tightly integrated into DDN's SFA Architecture**
- **Broad spectrum capability for complex data workflows**
- **One Rack delivers**
  - **10 Petabytes of capacity with HDD**
  - **Up to 30M IOPs and 350GB/s per rack with Flash**

EXAScaler | GRIDScaler

SFA | Scale Appliances Up or Out

Ultimate Flexibility

- Any media type
- Any combination
- On demand



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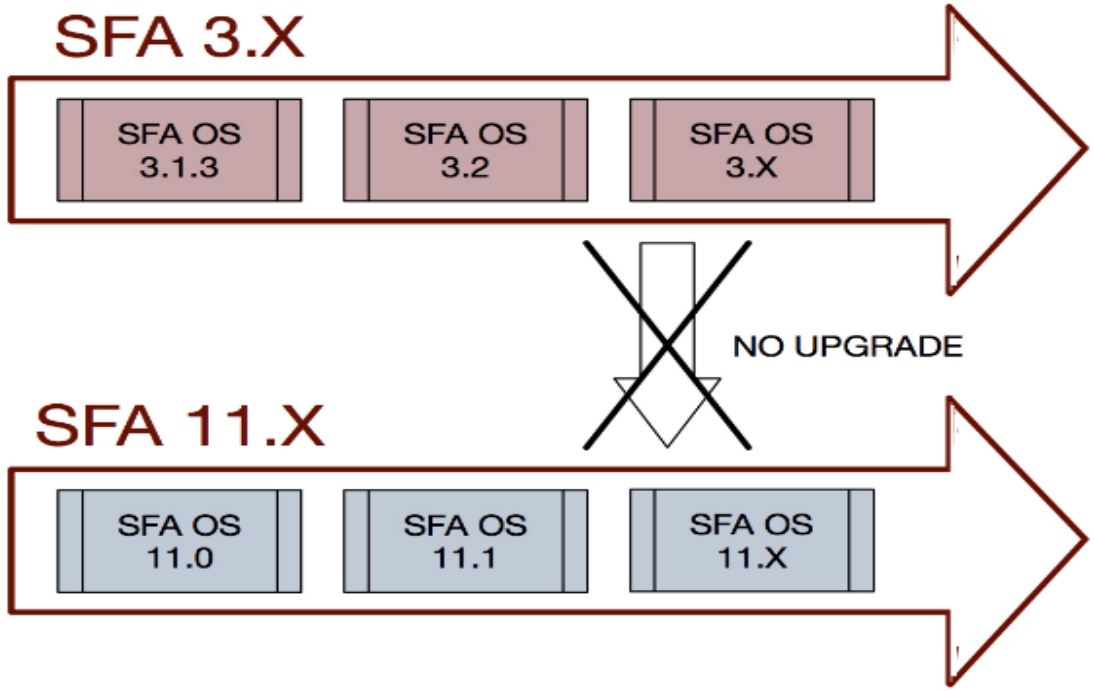
Product Positioning

- SFAOS11.X は新しいOSであり、従来のSFAOS 3.Xのアップグレード版ではありません
  - 11.X – Declustered RAID architecture (DCR)
  - 3.X – Traditional RAID architecture (“Legasy SFA”)
- 提案製品であるES18KおよびGS18KはSFAOS 11.Xのみサポートされます
  - SFA14KXはSFAOS3.X, SFAOS11.Xのいずれもサポートします



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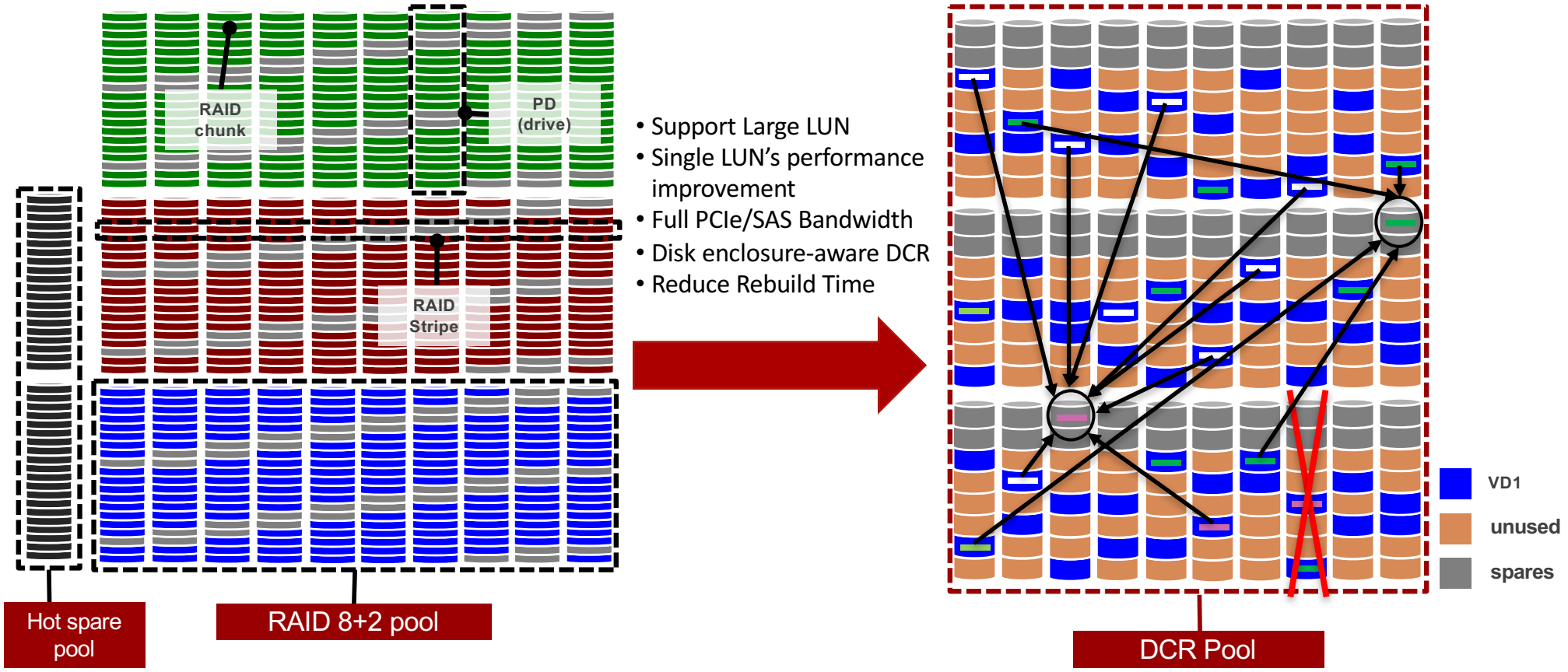
DCR概要



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DCRの特徴

- ディスク障害時の復旧時間の大幅な短縮
- 単一LUN性能の劇的な向上
- 大容量LUNを構成可能(数百ディスクを使用したLUN)
- 構成の複雑さを逓減
  - 少数の冗長グループ/LUN、プレゼンテーション/マッピング、ファイルシステムターゲット
- HCAの性能に迫るシングルスレッドIO性能

- 将来提供予定
  - 8+3, 16+3などの冗長性の向上

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DCR Rebuild例

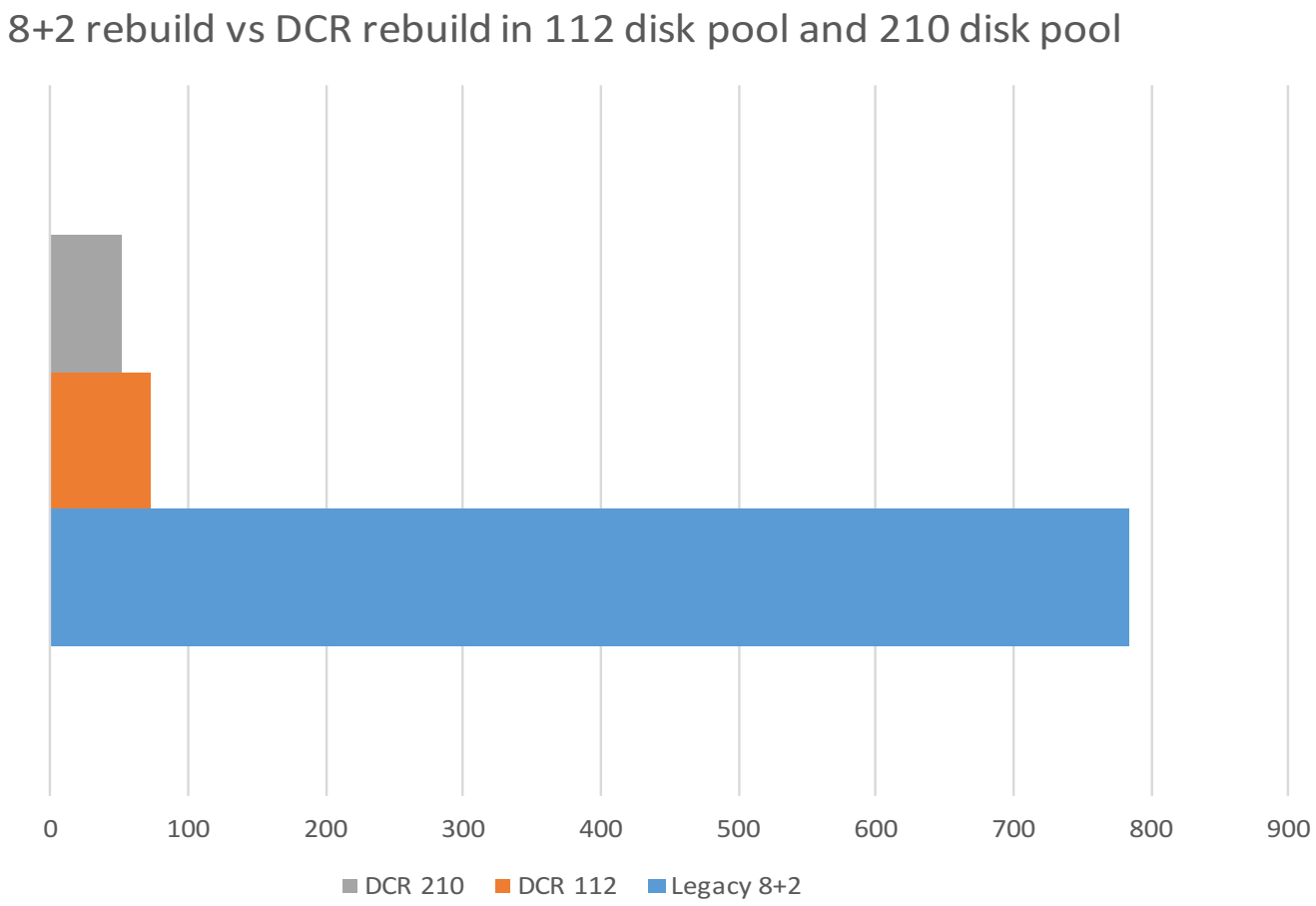
Minutes from failing disk to regaining +2 redundancy

DCR 210 disk pool - 591TB*

DCR 112 disk pool – 318TB*

Legacy 8+2 pool – 37TB*

*= Size of VD/LUN; 4TB Disks



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DDN | DDN for 2018

- Continue to investment in Highly Scalable Flash Storage Solution
  - Enhancement and Performance Improvements of IME
  - Price and Performance efficient All Flash Storage H/W and S/W
  - Mixed HDD and SSD/NVMe configuration with Parallel Filesystem

- Data Management
  - Data Security/Integrity and Multi tenancy
  - Data locality and Archiving

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New HW in 2018

- SFA14KX後継機
  - Intel Purley(SkyLake/CascadeLake) base platform
  - Highend : 60-75GB/s FS throughput
  - Midrange : 15-20GB/s FS throughput

- 2U24
  - NVMe only SFA

- SS9012
  - Full 12Gbps SAS Disk Enclosure
  - 90 Drives in 4U

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Thank You!

Keep in touch with us

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