WildFire Storage Appliances: Affordable Extreme Performance Mass Storage

WildFire all-Flash storage servers are new breed of extremely fast, flexible, and affordable storage servers. Offering performance above 1.5 million random write IOPS and 8GBytes/sec, WildFire servers are faster than most storage appliances, many of which max out at under 150K IOPS. WildFire servers are faster "by design".

All-Flash Enterprise storage systems typically sell for $8 to $20 per GB. Building your own storage server using datacenter SSDs will typically cost $3 to $6 per GB. WildFire storage servers sell for as little as $2 a gigabyte.

Some all Flash storage vendors quote costs "after data reduction". Some quote before RAID overhead. WildFire servers start at under $2/GB for usable, uncompressed space. No games or gotchas.

The magic which makes this possible is Enterprise Storage Stack (ESS) software, developed and patented by EasyCo. ESS is a Linux filter: software which converts clusters of random writes into memory mapped linear writes.

ESS writes all data at the composite linear speed of the SSDs present. For instance ESS writes more than 1.5 million random 4KB blocks a second (6 GB/sec) to a 24-SSD RAID-5 set.

The structure of ESS reduces SSD wear amplification as well as RAID and file system write amplification by as much as 40 fold. Thus, WildFire appliances can achieve Enterprise grade durability goals with lower grade Flash media.

The ability to write RAID-5 and RAID-6 sets without performance penalty, plus the ability to extract Enterprise durability out of Commercial grade Flash media, result in the ability to build high-speed all-Flash mass storage at extremely low costs. Further, WildFire systems support up to 4:1 compression, depending on how much RAM your systems has and if your data is compressible.

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Open and adaptable: WildFire Systems are complete open Linux servers that can be used in pure storage or shared storage/compute applications. ESS managed storage is presented as a large block device ready for local and remote applications. Storage is fully optimized for LVM, stock Linux file systems, and stock block and file export protocols.

WildFire Systems are also optimized for new, high-performance, network protocols that exploit RDMA solutions. iSCSI over iSER and NFS over RDMA are directly supported over 10GigE and 40/56GigE network connections.

The open nature of WildFire servers enables full integration into your existing datacenter, SAN, and cloud infrastructure.

WildFire Systems are highly redundant featuring RAID protection against drive failures, redundant power supplies, ECC memory, and server-class components from major vendors. Full HA solutions are easy to implement using stock Linux and cloud tools. WildFire Systems give you the choice of what needs full HA, and what doesn't.

Model	Usable Capacity	Maximum Compressed	Starting Retail Price
Model 2	1,575 GB	3,100 GB	$7,650
Model 12	9,900 GB	17,000 GB	$25,100
Model 48	39,600 GB	70,000 GB	$76,100

WildFire Specifications

	Model 2	Model 4	Model 8	Model 12	Model 24	Model 48
Physical Properties						
Chassis (includes mounting raids)	1U 23.5" deep			2U 24.8" deep		2U 26" deep
Redundant HE Power Supply	720W			920W		800W
Removable Hot Swap Trays	8			24 (+2 rear for OS)		48
CPU std (optional)	Intel E3-1231 v3			Intel E5-1620 v2 (Intel E5-1650 v2)		Intel E6-2620 v2 (Intel E6-2643 v2)
RAM std/max GB	16/32		32/32	32/256	64/256	128/512
HBA	LSI 2308			3 x LSI 2308		3 x Adaptec 71605H
Included Network Interfaces	2 GigE + dedicated IPMI			2 GigE + dedicated IPMI		4 GigE + shared IPMI
Max SAN Interface	2 x 10 GigE SPF+ 2 x 40/56 GigE QSFP			8 x 10 GigE SPF+ 6 x 40/56 GigE QSFP		10 x 10 GigE SPF+ 8 x 40/56 GigE QSFP
Mass Storage Properties						
Internal redundant boot SSDs	1 (DOM)			2 (hot swap)		2 (internal)
Data Storage SSDs installed (Crucial BX100)	8			24		48
SSD Models and Endurance	Crucial BX-100 (typical. 1 overwrite/day for 5 years) Samsung 850 PRO (typical. 3 overwrites/day for 5 years)					
Standard RAID configuration	RAID-5			RAID-5 w/ hot-spare RAID-6		2x RAID-5 w/ hot-spare 2 x RAID-6
SSD capacity in decimal gigabytes (BX-100)	250	500	1000	500	1,000	1,000
Gross storage capacity in decimal gigabytes	2,000	4,000	8,000	12,000	24,000	48,000
Net physical storage at recommended configuration	1,575	3,150	6,300	9,900	19,800	39,600
Net storage with maximum compression at std RAM	3,150	6,300	9,000	17,000	35,000	70,000
Internal Performance Levels (without networking transport)						
4KB Random Writes per second	600,000	750,000		>1,500,000		>1,500,000
4KB Random Reads per second	400,000			600,000		800,000

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