

# FLASHARRAY

## AT A GLANCE

### ACCELERATE

latency sensitive apps,  
DBs, VMs, virtual desktops

### CONSOLIDATE

all your Tier 1 applications  
on an All-Flash Cloud

### TWO YEARS OF PROVEN 99.9999% AVAILABILITY

inclusive of maintenance and  
generational upgrades

### MULTI-SITE ACTIVE/ACTIVE STRETCH CLUSTER

with Purity ActiveCluster

### 2X BETTER DATA REDUCTION

without performance impact

### GET TO 100% NVMe

//X is the first mainstream 100%  
NVMe AFA

### PURE STORAGE RECOGNIZED AS LEADER IN GARTNER MAGIC QUADRANT

for solid state arrays three years  
in a row

### FLASHARRAY RANKED HIGHEST IN GARTNER CRITICAL CAPABILITIES

for OLTP, Server Virtualization,  
and Virtual Desktop  
Infrastructure

### NPS OF 83 – TOP 1%

for customer satisfaction,  
validated by  Satmetrix®

## All-Flash Storage Built for the Cloud Era

The Pure Storage FlashArray family delivers software-defined all-flash power and reliability for every need and every budget, from the entry-level FlashArray//M10 to the new FlashArray//X – the first mainstream, 100% NVMe, enterprise-class all-flash array. With our Purity Operating Environment software, every FlashArray model enables organizations to achieve the highest levels of business continuity with ActiveCluster while enjoying proven 99.9999% availability, completely non-disruptive operations, and support that's above and beyond. Whether it's accelerating a single database, powering VMs and desktops, or the foundation of an all-flash cloud, the rich data services and effortless operations of FlashArray will make your enterprise storage something you simply don't worry about anymore.

## EFFORTLESS

### STORAGE THAT JUST WORKS

Pure Storage all-flash starts with unwavering reliability. That means your data is always-on, always-fast, and always-secure. FlashArray is self-managing and plug-n-play simple; no tuning required at any level. With Pure1®, every FlashArray enjoys SaaS-based monitoring and unrivaled proactive support. And, via the powerful global predictive intelligence of Pure1 Meta, we'll discover and fix potential issues before they occur. In other words, FlashArray practically manages itself.

## EFFICIENT

### STORAGE THAT DOES MORE

FlashArray drives down cost with proven 5:1 average data reduction (deduplication + compression) across the FlashArray install base – that's typically 2x better than the competition. Consolidate all your workloads safely with consistent mixed workload performance even through failures and upgrades, and get all your data services built-in and without performance penalty. Integrate and automate everything, seamlessly.

## EVERGREEN

### STORAGE THAT GETS BETTER WITH AGE

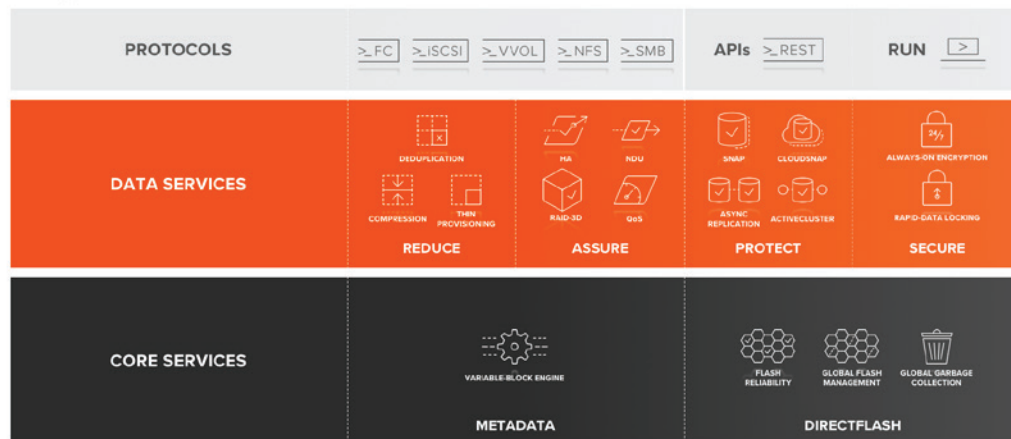
FlashArray behaves like SaaS and the cloud. Deploy it once and keep expanding and improving performance, capacity, density, and/or features for 10 years or more – without downtime, performance impact, or data migrations. With our Evergreen™ Storage subscriptions, you can stop re-buying TBs you already own.





## The Software-Defined Heart of FlashArray

Purity Operating Environment is software purpose-built for the cloud era. All Purity software-defined storage services and APIs, advanced data services, and global flash management are built-in and included with every array. And now Purity//FA 5 adds ActiveCluster, QoS, File, and VVols – again, at no extra charge.



### NOW WITH ACTIVECLUSTER

Achieve new levels of availability with Purity ActiveCluster – multi-site Active/Active stretch cluster. Get business continuity and zero RTO & RPO across your data center, metro region, or globally across three data centers. Set up in minutes, no third site required – and included with Purity//FA 5.

**PURITY REDUCE** implements five forms of inline and post-process data reduction, including compression and deduplication, to offer data reduction that's typically 2x better than the competition. Data reduction is always-on and operates at a 512-byte variable block size, enabling effective reduction across mixed workloads without tuning.

**PURITY ASSURE** provides high availability, dual-parity RAID-3D, non-disruptive Always-On QoS, and encryption – all of which are designed to deliver consistent performance to FlashArray during component failures and maintenance.

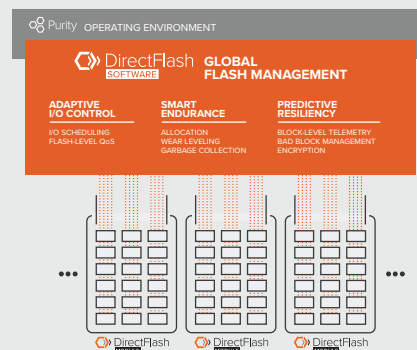
**PURITY REST APIS** leverage Purity's open platform, cloud connections, and integrations to drive automation with VMware, Microsoft, and open-source tools such as OpenStack.

**PURITY PROTECT** combines Purity ActiveCluster with space-saving snapshots, replication, and protection policies into an end-to-end data protection and recovery solution that protects data against loss locally and globally. All Purity Protect services are fully-integrated in FlashArray and leverage native data reduction capabilities.

**PURITY SECURE** means FlashArray meets the highest security standards with FIPS 140-2 validated always-on encryption, NIAP/Common Criteria Certification, and Rapid Data Locking.

**PURITY RUN** provides an open platform for running VMs / Containers right on the FlashArray. Now you can run custom code, extend interfaces, and enable analytic processing to happen where data is stored.

**PURITY DIRECTFLASH SOFTWARE** implements global flash management (allocation, I/O optimization, garbage collection, error correction) at the system level, driving 100% NVMe-connected raw flash within DirectFlash Modules, and eliminating the performance density limitations of large SSDs. DirectFlash avoids the unpredictable latency of SSDs and exploits the full potential of flash. The result is predictable, consistent, microsecond latency alongside higher throughput and reliability, better efficiency, and ultra-high density.



# FlashArray **//M**

## Best Value for All-Flash Consolidation

FlashArray//M is ideal for cost-effective consolidation of everything on flash. Whether you need to accelerate a single database, scale your virtual desktop environments, or power your all-flash cloud, there's an //M model that fits your needs. Put all your workloads on FlashArray//M and accelerate safely – with proven 99.9999% availability over two years, inclusive of maintenance *and generational upgrades*. Start with any //M model and scale seamlessly all the way to //X.

### ZERO-COMPROMISE DATA SERVICES

Consolidating on FlashArray is simple – there's nothing else to buy or install, and all data services are built-in and included. Our industry-leading 5:1 average data reduction (across the entire FlashArray install base) is inline and always-on, which means you'll save on storage, power, cooling, and space. And you can keep that space savings with data reduction-aware snapshots and replication.

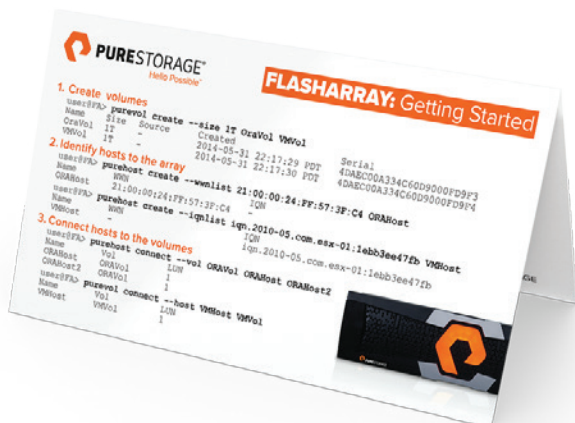
Enjoy the protection of always-on encryption and our zero-configuration, Always-On QoS while maintaining consistent mixed workload performance even through component failures and upgrades.

### FULL AUTOMATION

Completely integrate & automate FlashArray into an on-demand catalog of cloud IT services via REST, CLI, or Powershell. Seamlessly integrate with VMware vCenter, VMware vRealize, OpenStack, and Docker.

### SELF-MANAGING AND PLUG-N-PLAY

Setup is just one item to rack and six cables to connect – no bolt-on controllers and no external management servers. And there's no tuning within the array – no RAID, pool, tiering, caching or performance management – and no tuning of your database, file system, or virtual machine – ever. It's so simple, we've put all the details you'll need on a folding business card.



## PRE-VALIDATED FOR YOUR APPLICATIONS

FlashArray//M is tested and validated with a wide range of data center infrastructure and applications to enable seamless deployment and multi-workload consolidation in your data center. Accelerate your deployment further with the Pure FlashStack™ solution – end-to-end converged infrastructure powered by flash and supported by our partners.

### BUSINESS APPLICATIONS



### VIRTUALIZATION AND CLOUD INFRASTRUCTURE



### DESKTOP VIRTUALIZATION



### DATA CENTER INFRASTRUCTURE



# FlashArray //X

## First Mainstream 100% NVMe Enterprise AFA

FlashArray//X is next-generation all-flash storage. Designed for the cloud era, //X delivers the highest performance *and* enterprise reliability for Tier 1 applications. Microsecond latency and GBs of bandwidth – with all the rich data services, proven 99.9999% availability over two years (inclusive of maintenance *and generational upgrades*), and unrivaled Pure1 support that the FlashArray family is built on.

Among FlashArray models, //X represents a higher-performance tier for mission-critical databases, top-of-rack flash deployments, and Tier 1 application consolidation. //X is optimized for the lowest-latency workloads and delivers an unprecedented level of performance density that puts previously unattainable levels of consolidation within reach. And yet our Evergreen model means that any FlashArray can be fully upgraded, non-disruptively, to //X.

FlashArray//X will drive the next decade of performance advancement in FlashArray. We're forging ahead by enabling storage software to manage flash – directly, intelligently, globally. That's DirectFlash, ready to exploit the full potential of flash, or whatever silicon comes next. (This isn't something you can do just by plugging NVMe drives into a legacy disk array or an all-flash array.)

### SMALL & SPEEDY

Run your business with just 10 flash modules – while maintaining all the performance, reliability, and data services of your Tier 1 array. Just half the capacity of a single FlashArray//X chassis provides the density to consolidate all your latency sensitive DBs, VMs, and desktops – and accelerate.

### BIG & DENSE

At 1PB in 3U, a full rack of FlashArray//X can deliver 15PBs of effective capacity and enough bandwidth to replace your entire Tier1 footprint. Big or small, every deployment of //X delivers FlashArray's proven reliability and effortless monitoring via Pure1.

## //X IS POWERED BY DIRECTFLASH

**DIRECTFLASH SOFTWARE** is a new software module within Purity that takes software functions that would normally run inside each SSD (flash management, wear leveling, garbage collection) and implements them once in a global software layer for better efficiency, performance, and reliability.

**DIRECTFLASH MODULE** is the world's first software-defined flash module, a new Pure-designed NVMe flash module that enables our system-level software to speak directly to flash.

 **DirectFlash**  
SOFTWARE

+



 **DirectFlash**  
MODULE



### μS LATENCY

FlashArray//X delivers consistent latency in the 100s of microseconds

### 1PB IN 3U

Unprecedented density with 18.3TB DirectFlash modules\*

### EVERGREEN UPGRADEABLE

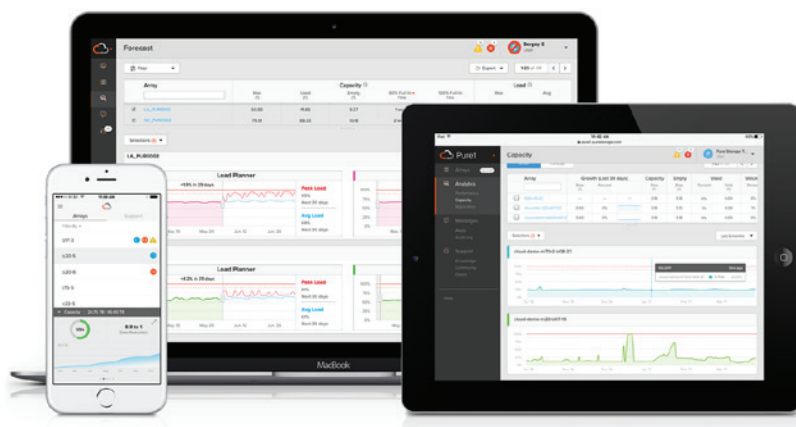
Every //M can be fully upgraded to //X online, with no disruptions and no re-buy of storage TBs





## SAAS-BASED MANAGEMENT, ANALYTICS, AND SUPPORT

With Pure1, you can manage and analyze your storage from anywhere, and with any device, just by logging in. Like SaaS, Pure1 makes new releases and improvements instantly available to all our customers. We even have a mobile app that will deliver notifications to your smartphone if your attention is needed.



## GLOBAL PREDICTIVE INTELLIGENCE ENABLES PERFORMANCE FORECASTING AND ULTRA-PROACTIVE SUPPORT

Pure1 Meta is the foundational AI engine within Pure1, providing intelligence to help better manage, automate, and support storage. With a global sensor network of 1000s of connected arrays and more than 1 trillion telemetry data points collected per day – over 7 petabytes of accumulated data – Pure1 Meta is continuously learning. By taking key performance measurements of each workload and referencing our global database of 100s of thousands of individual workloads, Meta can model and characterize the behavior and interactions of a particular workload – a concept we call Workload DNA. Meta analyzes and predicts how the workloads on your FlashArray will interact with each other, how they will grow over time in terms of capacity and performance, and whether a new workload will fit on the array. In addition, Meta continuously scans connected arrays against “issue fingerprints” to detect and alert Pure1 Support to proactively resolve issues before they occur on your arrays. Meta is driving higher reliability (with more than 500 Sev1 issues avoided to date), increasing simplicity, and lowering the cost of over-provisioning.



FlashArray operates like SaaS and the cloud. Deploy it once and enjoy a subscription to continuous innovation as you expand and improve performance, capacity, density, and/or features for 10 years or more – all without downtime, performance impact, or data migrations. We’ve engineered compatibility for future technologies right into the product – and that includes the NVMe-Ready Guarantee for //M and online upgrade from any //M to //X. There’s more: our “Right Size” capacity guarantee ensures you get started knowing you’ll have the effective capacity you need, and our Capacity Consolidation program keeps your storage modern and dense as you expand. With Evergreen Storage, you don’t have to re-buy TBs you already own.

The key to Evergreen expandability and upgradability for generations is the modular, stateless architecture designed into FlashArray from day one. By leveraging a chassis-based design and customizable modules, FlashArray enables both capacity and performance to be independently improved over time along with advances in compute and flash. Keep your storage evergreen, modern and dense – and always meet your business needs.



# CAPACITY CONFIGURATION OPTIONS

Capacity packs are available to accommodate any deployment. Expand capacity online within or outside the base chassis with flexibility to mix and match flash capacities and generations.

## FlashArray **//M**

	512 GB Modules	1 TB Modules	2 TB Modules	3.8TB Modules	7.6TB Modules
<b>10-MODULE CHASSIS CAPACITY PACKS</b>	<b>5 TB</b>	<b>10 TB</b>	<b>20 TB</b>	<b>38 TB</b>	<b>76 TB</b>
<b>12-MODULE SHELF CAPACITY PACKS</b>		<b>11 TB</b> 960GB MODULES	<b>22 TB</b> 1.9TB MODULES	<b>45 TB</b>	<b>90 TB</b>

Note: Only two configurations supported in //M10 are 5TB and 2 x 5TB

## FlashArray **//X**

	2.2 TB DirectFlash Modules	9.1TB DirectFlash Modules	18.3TB DirectFlash Modules
<b>10-MODULE CHASSIS CAPACITY PACKS</b>	<b>22 TB</b>	<b>91 TB</b>	<b>183 TB</b>

BASE CHASSIS



EXPANSION SHELF



# TECHNICAL SPECIFICATIONS\*

	CAPACITY	CONNECTIVITY	PHYSICAL
<b>//M10</b>	Up to 30 TB / 28 TiB effective capacity** 5 – 10 TB / 4.7 – 9.3 TiB raw capacity	16 Gb/s Fibre Channel 10 Gb/s Ethernet iSCSI 1 Gb/s Management & Replication ports	3U 575 – 625 Watts (nominal – peak) 95 lbs (43.1 kg) 5.12" x 18.94" x 29.72" chassis
<b>//M20</b>	Up to 250+ TB / 230+ TiB effective capacity** 5 – 80 TB / 4.7 – 74.4 TiB raw capacity	16 Gb/s Fibre Channel 10/40 Gb/s Ethernet iSCSI 1/10 Gb/s Replication ports 1 Gb/s Management ports	3U – 5U 600 – 950 Watts (nominal – peak) 95 lbs (43.1 kg) fully loaded 5.12" x 18.94" x 29.72" chassis
<b>//M50</b>	Up to 500+ TB / 450+ TiB effective capacity** 20 – 176 TB / 18.6 – 162.8 TiB raw capacity	16 Gb/s Fibre Channel 10/40 Gb/s Ethernet iSCSI 1/10 Gb/s Replication ports 1 Gb/s Management ports	3U – 7U 650 – 1280 Watts (nominal – peak) 95 lbs (43.1 kg) fully loaded + 44 lbs per expansion shelf 5.12" x 18.94" x 29.72" chassis
<b>//M70</b>	Up to 1,500 TB / 1,360 TiB effective capacity** 42 – 512 TB / 39.6 – 474.6 TiB raw capacity	16 Gb/s Fibre Channel 10/40 Gb/s Ethernet iSCSI 1/10 Gb/s Replication ports 1 Gb/s Management ports	5U – 7U 1230 – 1760 Watts (nominal – peak) 97 lbs (44.0 kg) fully loaded + 44 lbs per expansion shelf 5.12" x 18.94" x 29.72" chassis
<b>//X70</b>	Up to 1,050 TB / 950 TiB effective capacity** † 22 – 366 TB / 19.2 – 332.7 TiB raw capacity†	16 Gb/s Fibre Channel 10/40 Gb/s Ethernet iSCSI 1/10 Gb/s Replication ports 1 Gb/s Management ports	3U 1050 – 1320 Watts (nominal – peak) 97 lbs (44 kg) fully loaded 5.12" x 18.94" x 29.72" chassis

\* Stated //M specifications are applicable to //M R2 versions. //X70 specifications are preliminary until GA.

\*\* Effective capacity assumes HA, RAID, and metadata overhead, GB-to-GiB conversion, and includes the benefit of data reduction with always-on inline deduplication, compression, and pattern removal. Average data reduction is calculated at 5-to-1.

† 1PB scale is achieved with 18.3TB DirectFlash Modules, which will be available post-GA of //X.