

DATA SHEET

**Performance**

- Powered for performance tiers with Pure Fusion
- 150µs to 1ms latency
- NVMe and NVMe-oF (Ethernet and Fibre Channel)
- SMB and NFS protocol support

Efficient

- Industry-leading 5:1 data reduction average, 10:1 total efficiency
- Up to 5.5PB effective capacity
- Includes array software

Highly Available

- Proven 99.9999% availability
- Always-on, IOPs and bandwidth limits
- Built-in business continuity and disaster recovery

Simplicity

- AI-driven management with Pure1® and predictive support
- REST API for orchestration
- Non-disruptive upgrades and capacity expansions

Industry Recognition

- A Seven-Time Gartner® Magic Quadrant™ Leader for storage¹
- Certified Net Promoter Score in the top 1% of B2B companies by Medallia

Pure Storage FlashArray//X and FlashArray//XL

Accelerate business-critical applications with power and efficiency.

Pure Storage® [FlashArray™](#), the world's first 100% all-flash, 100% NVMe array, provides enterprise performance, reliability, and availability to power your critical business services. The FlashArray//X and FlashArray//XL configurations run everything from massive databases to modern cloud-native apps, with purpose-built solutions that scale from departmental to large-scale enterprise deployments.

With latency as low as 150µs, the all-NVMe architecture in FlashArray brings new levels of performance and latency to mission-critical business applications and databases. Think faster transactions and decisions and more responsive customer experiences even as application demand increases. Optional DirectMemory™ cache modules use Intel Optane SSDs to optimize read performance for the most demanding enterprise applications.

Consolidate More Workloads on Fewer Arrays

The all-NVMe architecture used in FlashArray storage provides the performance density that allows you to consolidate more business services—bigger databases, more applications, more users—on fewer arrays. The always-on quality of service (QoS) in Purity prevents workloads from hogging resources without setting artificial limits, so you're assured full performance of all your workloads. Consolidating workloads not only simplifies operations and decreases rack space requirements, but it also reduces power consumption and cooling costs to help you meet corporate green data center standards.

Next-generation Performance at Cloud-scale

With [Pure Fusion™](#) and FlashArray, Pure delivers a new infinite scale-out storage model that unifies arrays and optimizes storage pools on the fly, bringing the simplicity of the cloud operating model anywhere, with on-demand

consumption and back-end provisioning. End users can rapidly consume volumes, file systems, and advanced data services like replication without waiting for back-end manual work, making hardware truly invisible. And by upgrading to FlashArray//XL, organizations can scale up seamlessly, including support for the largest cloud-scale “platinum” tiers.

Innovation without Delay

The pace of innovation is faster than ever, measured in weeks instead of years. Pure’s unique Evergreen™ storage plans can keep the decisions you make today from boxing you in as your data grows, as you roll out new services, and as you support more users. With Evergreen, you get immediate access to ever-improving capabilities with a right-size guarantee when you purchase, and you can look forward to non-disruptive upgrades and capacity expansions as your storage needs evolve.

DirectFlash: Move Beyond SSD

FlashArray//X moves beyond legacy SSD architectures that are architected to make flash pretend to be a hard disk.

[DirectFlash](#)® within Purity speaks directly to raw NAND with a super-efficient NVMe protocol and leverages NVMe-oF over Fibre Channel or Ethernet for even faster network speeds between the array and application servers. You can implement DirectFlash using:

DirectFlash Software: Manages array I/O globally for a faster, more efficient architecture. DFS provides detailed I/O scheduling and performance management, making I/O performance deterministic and reducing average latency by decreasing the number of slow I/O operations that often occur in SSD architectures.

DirectFlash Module: A Pure-designed flash module that connects raw flash directly to the FlashArray storage via NVMe. Unlike traditional SSDs that use a flash controller or flash translation layer, DirectFlash Module is primarily raw flash. This design removes the performance roadblocks of SSDs used by many legacy storage architectures.

DirectFlash Module with DNVR (DFMD): Designed to boost write performance on the FlashArray//XL, DFMDs have distributed non-volatile RAM (DNVR) built into their DirectFlash Modules. Putting DNVR on each DFMD drive allows the FlashArray//XL configuration to offer a greater density of drive capacity in the array to reduce rack space requirements.

DirectMemory Modules and DirectMemory Cache: For the fastest possible response from databases, Pure DirectMemory with Intel Optane storage-class memory (SCM) delivers up to an additional 50% reduction in latency. DirectMemory Cache software automatically refers reads from the array’s flash media to onboard DirectMemory Modules. Boosting performance for apps like SAP HANA, Oracle, and SQL Server, as well as cloud-native databases, can be as simple as plugging DirectMemory Modules into your new or existing FlashArray//XL, //X90, or //X70² configuration.

DirectFlash Shelf: Lets you add additional NVMe capacity beyond the FlashArray chassis. DirectFlash Shelf connects to the FlashArray storage via NVMe-oF protocol and supports both Fibre Channel and RoCE (RDMA over converged Ethernet). The shelf maintains the ability to support different sizes of DirectFlash Modules as flash density improves and new forms become available, such as SCM, QLC, and others.

DirectFlash Fabric: Delivers performance close to DAS plus offers enterprise-class reliability and data services. NVMe-oF enables massive optimization between the storage controllers and host over fast networking. DirectFlash Fabric brings performance gains of up to 50% latency reduction compared to iSCSI, up to 50% greater transactions per second, 35% lower latency compared to DAS, and up to 20% latency reduction compared to Fibre Channel. At the same time, it offers up to 400% capacity efficiency and up to 25% host CPU offload.



Purity: The Software-defined Heart of FlashArray

[Purity for FlashArray](#) delivers rich, enterprise-level data services; DirectFlash global flash management; and Evergreen improvements with every release. Features such as ActiveCluster™ for business continuity, ActiveDR™ for disaster recovery, QoS, VMware Virtual Volumes (vVols), NVMe-oF, Snap to NFS, Purity CloudSnap™, and SafeMode™ are all examples of new features provided over time with non-disruptive, no-additional-cost Purity upgrades. All Purity storage services, APIs, and advanced data services are built-in and included with every array.

- **Data reduction:** Purity averages an industry-leading 5:1 data reduction with a total efficiency of 10:1 (including thin provisioning).
- **Always-on encryption:** Purity’s “encrypt everything” approach provides built-in enterprise-grade data security without user intervention or key management.
- **High availability:** Purity protects against concurrent dual-drive failures and initiates re-builds automatically within minutes. Purity also treats performance variability as a failure and uses parity to work around bottlenecks to deliver consistent latency.
- **Always-on ransomware remediation:** Cost-efficient, portable, SafeMode snapshots prevent cyber attackers from tampering with or maliciously destroying critical recovery data.
- **Intelligent quality of service (QoS):** Purity continuously tunes infrastructure using always-on QoS to prevent workloads from hogging resources and to ensure maximum utilization of the array.
- **Faster, more consistent performance:** Pure DirectFlash Fabric gives you maximum throughput with microsecond latency that’s far more predictable than with conventional SSDs.
- **Unified storage with file services:** If you run NAS-based apps in addition to SAN-based enterprise databases, Purity’s consolidated SAN and NAS capabilities let you avoid the trouble and expense of running two incompatible environments.
- **On-demand data portability:** Quickly and easily move data where they most cost-effectively meet service level agreements to satisfy your customers: between both physical and virtual machines, between on-premises and the cloud.

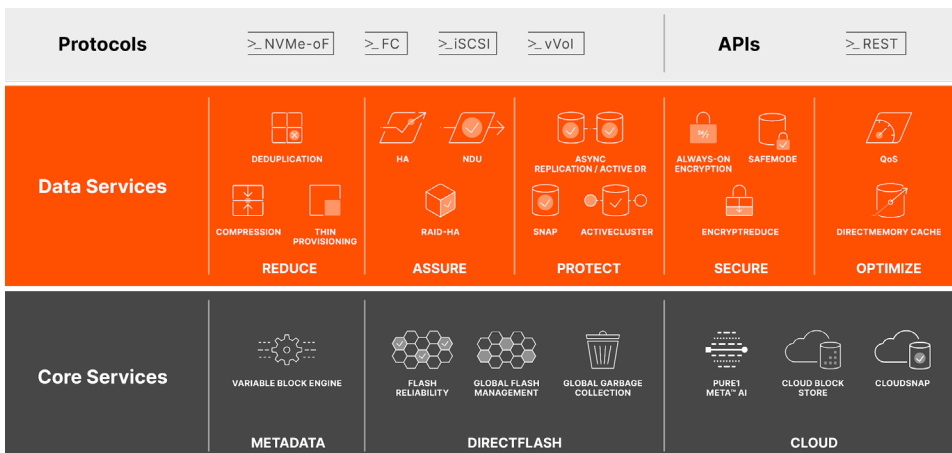


Figure 1. Purity FlashArray Features³



Speed Recovery Effortlessly with ActiveCluster and ActiveDR

Make slow recovery a thing of the past with Purity, ActiveCluster, and ActiveDR. [ActiveCluster](#) uses synchronous replication and a symmetric active-active design to deliver zero RPO and zero RTO automatic failovers without user intervention. Unlike active-passive implementations, Purity ActiveCluster simultaneously serves I/O on the same volume from both sites.

[ActiveDR](#) offers continuous data protection that seamlessly replicates application data across almost any distance, with the lowest possible RPO. ActiveDR radically simplifies remote site recovery with a single failover command, straightforward failback (re-protect), and non-disruptive disaster recovery testing. With ActiveDR, you can respond quickly to real-world outages and compliance testing requests with a single click or with a single API/CLI command.

Secure Data Protection with SafeMode Snapshots

Get flexible backup and recovery built for today's ever-increasing ransomware threats. Pure's immutable snapshots provide simple, built-in, local, and cloud-native protection for FlashArray. FlashArray [SafeMode](#) ensures your snapshots will be available to help you recover from a cyberattack. With SafeMode enabled, your snapshots cannot be eradicated for a fixed, configurable period, even by someone with admin privileges. Together, Purity Snapshots, Snap-to-FlashBlade, Snap-to-NFS, and CloudSnap enable free movement of space-efficient copies between FlashArrays, to FlashBlade®, to third-party NFS storage, or to the cloud, respectively.

Simplicity By Design, From Day One

FlashArray has the power to simplify everything in your storage environment. The hardware, software, and cloud management experience are co-designed to make everything just work. Get started quickly with everything you need in one box; no manual is required for a typical 30-minute installation (professional installation is also available). All array software is included, with no performance tuning required.

Cloud-based management with Pure1®: The [Pure1](#) data management platform provides a single view to monitor, analyze, and optimize your storage from anywhere in the world, and it delivers alerts directly to your phone. The Pure1 platform's artificial intelligence for IT operations (AIOps) and full-stack monitoring help prevent, identify, and resolve high-severity outages and other critical issues. Its Workload Planner can predict array capacity and performance as well as model existing and new workloads, while Pure1 makes it simple to purchase new or additional services directly from its user interface.

Pure Cloud Block Store™: Deliver consistent data services, resiliency, and APIs with Pure Cloud Block Store for AWS and Azure, with FlashArray, so you can run applications, enable disaster recovery, or perform test and development seamlessly across your on-premises and cloud environments. Make cloud storage better by leveraging Pure's leading data efficient, instant space-saving snapshots, and always-on encryption, in the cloud. [Pure Cloud Block Store](#) provides greater agility, TCO, and enterprise reliability with its dual-controller architecture and high availability across availability zones and public clouds for mission-critical applications running in the cloud.

Evergreen Storage™: With [Evergreen Storage](#), your FlashArray operates like SaaS and the cloud. Deploy it once, and then 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. Pure has engineered compatibility for future technologies directly into the product via the modular, stateless architecture of FlashArray. The Pure [Right Size Guarantee™](#) ensures that you start off knowing that you'll have the effective capacity you need. With the Capacity Consolidation program,



your storage stays modern and dense as you expand, without having to re-buy terabytes you already own. Pure uniquely offers all our core solutions either as products (CAPEX) or as services (OPEX⁴) via the Pure as-a-Service™ portfolio.

Technical Specifications

	Capacity	Physical
//XL170	Up to 5.5PB / 5.13PiB effective capacity* Up to 1.4PB / 1.31PiB raw capacity**	5-11U; 1850–2355 watts (nominal–peak) 167lbs. (75.7kg) fully loaded; 8.72" x 18.94" x 29.72"***
//XL130	Up to 3.53PB / 3.3PiB effective capacity Up to 968TB / 880TiB raw capacity	5-11U; 1550–2000 watts (nominal–peak) 167lbs. (75.7kg) fully loaded; 8.72" x 18.94" x 29.72"
//X90	Up to 3.3PB / 2.9PiB effective capacity Up to 878TB / 768.3TiB raw capacity	3-6U; 1160–1446 watts (nominal–peak) 97lbs. (44kg) fully loaded; 5.12" x 18.94" x 29.72"
//X70	Up to 2286TiB / 2078.9TiB effective capacity Up to 622TB / 544.2TiB raw capacity	3U; 1084–1344 watts (nominal–peak) 97lbs. (44.0kg) fully loaded; 5.12" x 18.94" x 29.72"
//X50	Up to 663TB / 602.9TiB effective capacity Up to 185TB / 171TiB raw capacity	3U; 868–1114 watts (nominal–peak) 95lbs. (43.1kg) fully loaded; 5.12" x 18.94" x 29.72"
//X20	Up to 314TB / 285.4TiB effective capacity Up to 94TB / 88TiB raw capacity	3U; 741–973 watts (nominal–peak) 95lbs. (43.1kg) fully loaded; 5.12" x 18.94" x 29.72"
//X10	Up to 73TB / 66.2TiB effective capacity Up to 22TB / 19.2TiB raw capacity	3U; 640–845 watts (nominal–peak) 95lbs. (43.1kg) fully loaded; 5.12" x 18.94" x 29.72"
Direct Flash Shelf	Up to 1.9PB effective capacity ⁷ Up to 512TB / 448.2TiB raw capacity	3U; 460–500 watts (nominal–peak) 87.7lbs (39.8kg) fully loaded; 5.12" x 18.94" x 29.72"

//XL Connectivity

Onboard Ports	I/O Expansion Cards (6 slots/controller)
<ul style="list-style-type: none"> • 2 x 1Gb (RJ45) Management Ports <ul style="list-style-type: none"> • 1 x RJ45 Serial • 1 x VGA • 4 x USB 3.0 	<ul style="list-style-type: none"> • 2-port 10/25Gb Ethernet, NVMe/RoCE • 2-port 40/100Gb Ethernet, NVMe/RoCE • 2-port 16/32/64Gb FCP, NVMe/FC • 4-port 16/32/64 Gb FCP, NVMe/FC

//X Connectivity

Onboard Ports (per controller)	Host I/O Cards (3 slots/controller)	
<ul style="list-style-type: none"> • 2 x 1/10/25Gb Ethernet • 2 x 1/10/25Gb Ethernet Replication • 2 x 1Gb Management Ports 	<ul style="list-style-type: none"> • 2-port 10GBase-T Ethernet • 2-port 1/10/25Gb Ethernet • 2-port 40Gb Ethernet 	<ul style="list-style-type: none"> • 2-port 25/50Gb NVMe/RoCE • 2-port 16/32Gb Fibre Channel (NVMe-oF Ready) • 4-port 16/32Gb Fibre Channel (NVMe-oF Ready)

* 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 and does not include thin provisioning.

** Calculated using raw label capacity.

*** Some maximum capacity configurations may use Pure Storage DirectFlash Shelf or Pure Expansion Shelf.



Additional Resources

- Read more about [Pure Fusion](#).
- Learn more about [Purity](#).
- Explore how your organization can benefit from [Pure1](#).

¹ Pure Storage has been recognized as a Gartner Magic Quadrant Leader for the last seven years: Pure was in the Leaders quadrant of the Magic Quadrant for Primary Storage Management for the past 3 years and was a Leader in the Magic Quadrant for Solid State Arrays for the previous 5 years. Gartner has retired this latter report and is provided here for historical purposes only.

² DirectMemory Modules are optional for //XL170, //XL130, and R2 and R3 versions of //X70, //X90.

³ Not all Purity features are supported on all FlashArray models.

⁴ OPEX treatment is subject to the customer's auditor review.

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