

SOLUTION BRIEF

# Easy, High Performance AI for Healthcare and Life Sciences

Simple, scalable AI infrastructure from Pure Storage and NVIDIA

Healthcare and life sciences are embarking on an artificial intelligence (AI) revolution. Impacts are occurring in all areas: patient care, drug research, hospital administration, payer services, and more. McKinsey [notes](#) there may be a collective opportunity starting point of over \$1 trillion.

Healthcare and life sciences (HCLS) organizations will tap the power of AI for faster innovation and a competitive edge. Yet AI requires a completely new infrastructure. The complexities of legacy solutions are holding HCLS back from moving into the new era of intelligence. AIRI<sup>®</sup>, a joint solution from Pure Storage and NVIDIA, offers an easy to deploy, scalable AI solution that helps speed your time to insight and value.

## AI at Scale Made Simple and Fast

AIRI is a certified [NVIDIA DGX BasePOD](#) reference architecture, representing the next evolution of the innovative and efficient AI Ready Infrastructure (AIRI) from Pure Storage and NVIDIA. AIRI combines Pure Storage [FlashBlade//S](#)<sup>™</sup> with the [NVIDIA DGX platform](#) to provide the underlying infrastructure and software to accelerate deployment and execution of HCLS AI workloads. This includes support for [NVIDIA Magnum IO GPU Direct Storage](#), which provides the highest-performance IO directly to the GPUs powering the AI infrastructure, energizing tasks like drug discovery and clinical decision support for better patient care.

NVIDIA also provides industry-tailored software and tools from the NVIDIA AI Enterprise software platform. This includes proven, open-source frameworks, SDKs, and libraries specific to healthcare and life sciences, such as [MONAI](#) for medical imaging, [Parabricks](#) for genomics, and [Holoscan for Medical Devices](#) for streaming medical data at the clinical edge. Additional resources are also available, such as [BioNeMo](#) for drug discovery and [FLARE](#) for federated learning.



## AIRI Technology Stack

- Pure Storage FlashBlade//S<sup>™</sup>
- Pure Storage Software: Purity//FB OE, Pure1<sup>®</sup> Management, Portworx<sup>®</sup> Kubernetes Data Platform, Pure RapidFile Toolkit.
- NVIDIA DGX H100, NVIDIA DGX A100
- NVIDIA Quantum and Spectrum Networking
- NVIDIA Software: NVIDIA AI Enterprise, NVIDIA Base Command, NVIDIA NGC, CUDA-X, Magnum IO, RAPIDS, MONAI, BioNeMo, and FLARE

## AIRI Simplifies AI-at-scale

- Reduces the complexity of integration with a proven and complete DGX BasePOD certified solution.
- Data scientists can focus on algorithms and outcomes, not infrastructure.

## AI-at-scale Is an Advantage

- More compute = faster training
- More data = higher accuracy
- AIRI makes it simpler and faster to run multi-node training

FlashBlade//S is the ideal data storage platform for AI, as it was purpose-built from the ground up for modern, unstructured workloads and accelerates AI processes with the most efficient storage platform at every step of your data pipeline. A centralized data platform in a deep learning architecture increases the productivity of data scientists and makes scaling and operations simpler and more agile for the data architect.

For full technical details, please consult the AIRI Pure Storage NVIDIA DGX BasePOD [Reference Architecture](#).

## Maximum Performance for Key HCLS Use Cases

The combination of FlashBlade® massively parallel storage and NVIDIA accelerated computing delivers maximum performance and simplicity for key HCLS use cases. Data science is enabling an end-to-end transformation of healthcare and life sciences.

- **Medical imaging:** AI can make medical imaging faster and more accurate. Virtual native enhancement algorithms can reduce time spent in MRI scans. Disease identification can be improved, lowering workloads on physicians and technicians. Image quality can be enhanced with better contrast and noise reduction. Pure Storage has deep experience and multiple partnerships in [medical imaging](#), including [Agfa](#), [Dicom Systems](#), [Sectra](#), [XNAT](#), and many more.
- **Drug discovery:** AI accelerates drug discovery by analyzing vast datasets, identifying potential drug candidates through molecular simulations and predictive modeling. AIRI provides both the parallel bandwidth and extreme scale needed to drive results using massive data sets.
- **Clinical decision support and pathology:** AI analyzes patient data and interrogates scientific literature, treatment history, care guides, risk assessment models and more to help clinicians make better and faster decisions. AI is also leveraged in pathology to provide comparative models for disease assessment. For example, Pure Storage is working with [Paige](#) using AI to better diagnose and treat cancer.
- **Genomics:** The impact of AI on genomics is immense. From supporting gene identification and extracting variants, to predicting protein functions and enhancing CRISPR gene editing, the list goes on. The combination of NVIDIA accelerated computing and the Parabricks toolkit with the speed, bandwidth and scale of FlashBlade is a powerful solution that delivers results as much as 33x faster than CPUs alone (see [test results](#)).
- **Corporate and finance functions:** For both providers and payers, AI can enhance back office processes, billing, claims management, customer service and more. AI-powered chatbots can service customers. Claims can be analyzed for fraud or compared against physician notes. Pure Storage provides the ideal storage platforms for both structured data ([databases](#)) as well as file and object storage for AI.

These are many other use cases that are being transformed by artificial intelligence and delivered on the AIRI platform. Pure Storage supports over 100 customers globally with AI initiatives.



## Adding Value with Additional Solutions

While the combination of FlashBlade//S and NVIDIA is the ideal pairing for high performance AI processing, not all data requires top-of-the-line storage performance. For longer-term data retention, Pure Storage offers [FlashBlade//E™](#), capacity-optimized file and object storage that gives you the density and energy saving benefits of all-flash at a price point similar to disk-based storage.

AI workflows are increasingly being run via containers and Kubernetes to achieve better scale, performance and resiliency. [Portworx®](#) by Pure Storage is a Kubernetes-native storage management platform that greatly simplifies cloud-native projects. It provides persistent storage for AI workloads with easy developer self-service. And Portworx simplifies the task of the IT department by providing enterprise services such as high-availability, backup, disaster recovery, roles-based access controls and much more.

Pure Storage has partnered with [NVIDIA DGX-Ready software](#) partners like Weights & Biases and Run:ai to optimize the MLOps stack for efficient GPU utilization, improve developer velocity, and more. Moreover, our upcoming Gen AI RAG reference architectures will help our HLCS customers accelerate Generative AI applications in their user journeys to solve critical pain points like quicker and more accurate clinical diagnoses and faster drug discovery.

## Optimized Infrastructure Is Essential to AI

AI adoption is on the rise across HCLS, yet most organizations lack the necessary infrastructure to handle the high-performance data demands and energy requirements essential for maximizing its benefits. This limitation poses a challenge to the successful implementation of AI to support critical healthcare initiatives.

Pure Storage conducted a survey<sup>1</sup> that found that for 88% of those who have adopted AI, the need for computing power has surged dramatically. In fact, nearly 3 in 4 IT buyers (73%) whose companies have implemented AI were not completely prepared for the energy requirements. As a result, nearly all respondents (96%) have already or plan to update their IT infrastructure, including 29% who say it has or will require a complete overhaul.

Right now, the vast majority of data in data centers—over 80%—remains trapped on magnetic hard disks. Shifting to flash-optimized systems is a preliminary step organizations can take to reduce power and space usage between five and ten times. Pure Storage arrays use up to 85% less power than competitive all-flash systems. And the Pure//E™ family of arrays are available at a price point equivalent to disk, with a 60% lower TCO over time. Pure Storage arrays can dramatically reduce your power needs, freeing up both rack and data center power resources to allow for AI compute expansion.

## Additional Resources

- AI/RI AI infrastructure [solution brief](#)
- Pure Storage and NVIDIA [joint webinar](#) on demand
- Pure Storage healthcare and life sciences [customer stories](#)

<sup>1</sup> Meeting the Energy and Data Challenges of AI Adoption