

## SOLUTION BRIEF

# High-Performance AI for Federal Agencies

Accelerate mission success with a modern AI infrastructure.

Artificial intelligence (AI) has the potential to transform government, and we're already catching a glimpse of its potential to improve health, safety, national security, and citizen services and drive better, more informed, data-driven decision-making. AI frees up millions of labor hours for critical tasks, leading to increased efficiency.

The power of AI can improve government operations, offering faster innovation and a better citizen experience. It is predicted that the Federal government will invest [more than \\$6 billion](#) in AI in fiscal year 2021 and agencies will want to ensure they make the most of the investment. AI requires completely new infrastructure, and the complexities of legacy solutions create roadblocks that prevent agencies from tapping into the full potential of the new era of intelligence.

## Simple and Fast AI at Scale

Architected by Pure Storage® and NVIDIA®, [AIRI](#)® is the industry's first complete AI-ready infrastructure. Powered by [FlashBlade](#)® storage and NVIDIA DGX™ A100 systems, AIRI offers agencies a simple, fast, and future-ready infrastructure to meet their AI demands at any scale.

## Maximum Performance for Agency Use Cases

The combination of NVIDIA DGX A100 systems with the massive parallelism of FlashBlade delivers maximum performance for key federal agency use cases. Data science is enabling an end-to-end transformation of agencies in areas like:



### AI for Federal Agencies

- Virtualized GPUs and petabyte-scale storage.
- Designed for AI workflows that are vital to federal agencies.



### Infrastructure for AI

- Future-ready infrastructure to meet AI demands at any scale.
- Powered by FlashBlade® storage and NVIDIA® DGX™ A100.



### Single Platform

- Meet the need for analytics, training, and inference.
- A single platform for multiple workloads and file types.



- **National security:** Collecting, analyzing, and responding to intelligence; improving logistics, cyber operations, information operations, and command and control; utilized in a variety of semiautonomous and autonomous vehicles.
- **Social services and tax administration:** Identifying fraudulent benefits claims that cost agencies billions. AI-powered fraud detection can enable governments to track down tax, benefit, and welfare corruption by identifying patterns in claims.
- **Healthcare:** Improving diagnosis, treatment, and delivery of patient care; tracking and preventing disease spread; leveraging large amounts of health data for research; classifying risks by drawing on population data; increasing operational capacity; identifying fraudulent health claims; and boosting productivity by streamlining manual tasks.
- **Citizen services:** Implementing chatbots for citizen services can enable agencies to perform a variety of tasks including scheduling appointments, answering common questions, and directing requests to appropriate areas within the government.
- **Document automation:** Extracting and inputting invoices, forms, legal, and other documents. Analyzing millions of tax documents and financial records to identify patterns that would indicate tax evasion or financial wrongdoing.

AIRI can optimize all these agency use cases and many more. With virtualized GPUs and petabyte-scale storage, AIRI can support multiple use cases on a single platform.

## AIRI Hardware and Software



Architected by Pure Storage and NVIDIA, AIRI enables AI at scale for every enterprise.

### Hardware:

- 4x NVIDIA DGX A100 systems and 20 PFLOPS of AI performance
- Pure FlashBlade with 15x 17TB blades and 1.5M NFS IOPS
- 2x NVIDIA 32x 200Gb EN Switches

### Software:

- NVIDIA DGX software stack with NVIDIA Optimized Containers

## AI-powered Government

Agencies collect a vast amount of new data every day. Without accurate analysis, data alone can't yield actionable insights. Better decision-making through data analysis has the potential to improve government services and save costs. There are three broad areas where agencies can achieve success with AI implementation<sup>1</sup>:

- **Smarter policy and decision-making:** AI has the potential to enhance the effectiveness and efficiency of policy and decision-making. AI and data analytics can make sense of demographic, consumption, behavioral, and other trends across agencies. This helps policymakers identify emerging issues and intervene with smarter policies and a more accurate understanding of their impact and costs.
- **New or improved service delivery:** AI can help agencies provide citizen services more effectively and even develop new services. AI can create new citizen engagement experiences by providing a single-entry point, connecting people with relevant government services tailored to their needs.



- **Cost savings and more efficiency.** AI-based process improvements can help agencies increase the efficiency of internal operations and processes. For example, AI-enabled procurement processes allow decision-makers to identify inefficiencies and potential cost savings in the products and services they purchase. Automation and AI have the potential to save governments between \$3.3 billion and \$41.1 billion annually<sup>2</sup>.

## One Platform for All AI Workloads

Traditional approaches to AI infrastructure result in server and storage silos that are over-spent on capacity or starve AI workloads. Federal AI data centers need a platform suited to the unique demands of analytics, training, and inference. Built on DGX A100 systems as the compute building block, AIRI flexibly adapts to organizational demand as AI models move from prototyping to deployment, with one universal AI system that offers right-sized resources for every workload and consolidates silos into a single elastic AI infrastructure.

Training AI models is the clearest interaction between data scientists and storage. As training jobs repeatedly read data sets, they drive a constant random read workload. DGX A100 systems process data quickly, so data must be accessible quickly as well. This requires a minimum non-sequential (random) read throughput from the underlying storage.

Unfortunately, most storage is tuned to specific file sizes and access patterns. That is because it is often more performant to read a small number of large files rather than millions of tiny files. AI workloads, however, are dependent on performant random read access for a range of file types and sizes. They also may need to write large amounts of data at parts of the workflow. Storage that's performant for only one access pattern or file type is likely to become a bottleneck during some parts of the AI workflow.

FlashBlade is uniquely designed to handle both large and small files and any range of access patterns. As such, it is ideally matched with NVIDIA to feed the GPUs at a pace that maximizes performance.

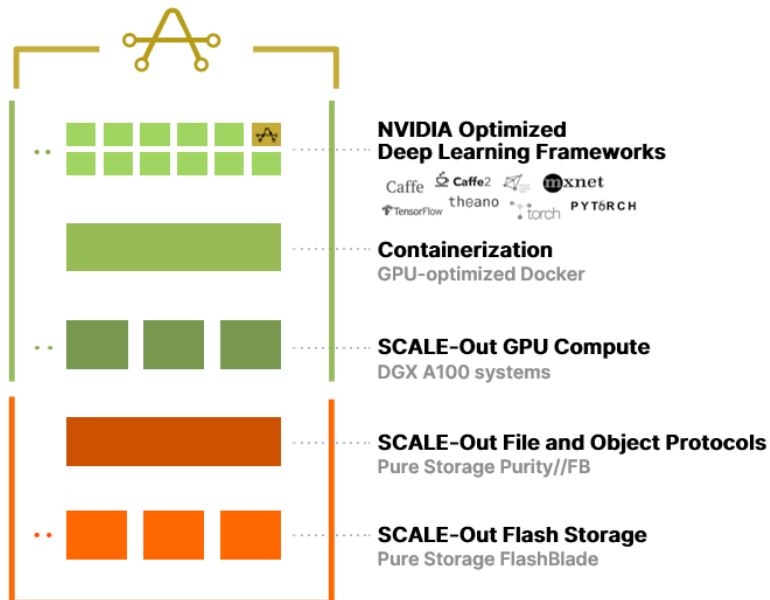
## Eliminate Data Bottlenecks

"Do-it-yourself" infrastructure requires constant tuning. As one bottleneck is resolved, another often shows up somewhere else in the system, resulting in weeks to months of lost productivity. AIRI is a complete infrastructure, tuned from software to hardware to keep the GPUs busy for workloads at any scale.



## AIRI Technology Stack

AIRI is built with a complete software stack that enables data scientists to get up and running in a few hours, not weeks or months.



## Additional Resources

- Explore [AI Infrastructure for Modern Innovators](#).
- Learn more about [DGX A100 systems](#).
- Read about how to leverage [trustworthy AI](#) in the Federal government.
- See how Pure delivers effective, efficient, and mission-ready data management solutions for [data-driven governments](#).
- Speed time to benefit and accelerate your Modern Data Experience™ journey with help from [Pure Professional Services](#).

<sup>1</sup> Unlocking the Value of AI-Powered Government <https://www.bcg.com/publications/2021/unlocking-value-ai-in-government>

<sup>2</sup> AI-augmented government <https://www2.deloitte.com/us/en/insights/focus/cognitive-technologies/artificial-intelligence-government.html>