EBOOK

Accelerating JADC2

Enable tomorrow’s battlefield today,
using a data fabric powered by NetApp

NetApp

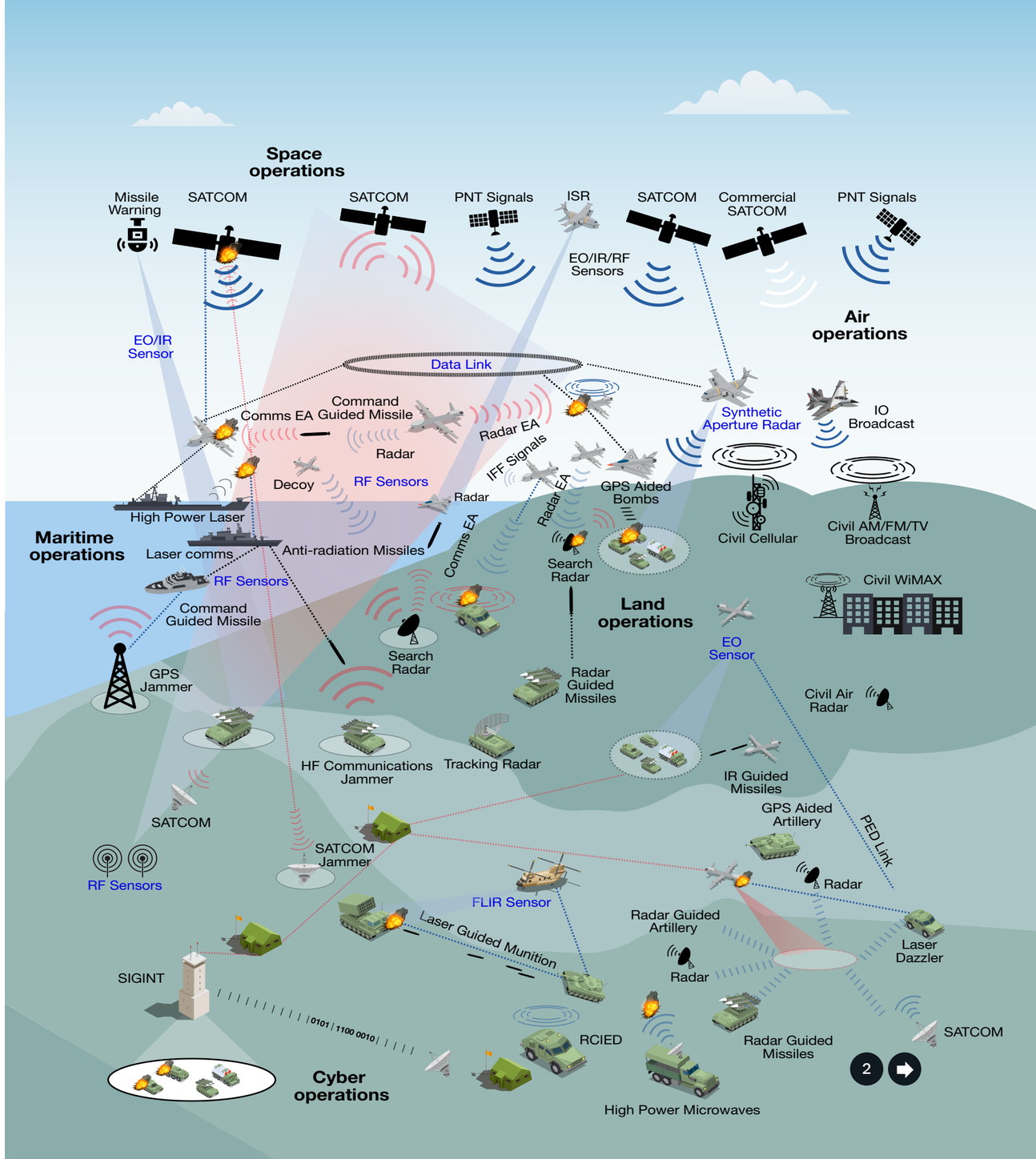
Contents

JADC2: Opportunity meets challenge

With the Joint All-Domain Command and Control (JADC2) network, the U.S. Department of Defense (DoD) is preparing to make a significant leap forward into the future of modern warfare. This effort brings together sensor information and connects warfighters across all military services, including the Air Force, Army, Marine Corps, Navy, and Space Force, to counter and defeat near-peer adversaries.

Data is the beating heart of JADC2. Success depends on the ability to rapidly collect, move, and harness data from the independent and siloed tactical networks run by each of the military services and coalition partners. With thousands of applications in a constantly changing global environment, JADC2 is a data problem on a massive scale.

NetApp is a cloud-led, data-centric software company with a 20-year track record as a major data services provider to the Department of Defense. We're in a unique position with the right data, the right software, and the right partnerships to help the DoD build a common data platform to accelerate JADC2.



NetApp: Your mission partner for JADC2

As a leading data services provider to the U.S. Government and a trusted mission partner for the armed forces, we support operational readiness across all domains, including many of the programs that will feed into JADC2.

We enable operational capabilities across network, airborne, tactical, weapons, intelligence, cyber, and battle management systems. Because of our involvement with defense agencies, such as health and logistics, we can supply valuable data needed to evaluate a unit's ability and materiel readiness to participate in the commander's intent. Access to vast amounts of data from across the domains makes us a force multiplier, enabling the DoD to do more with less.

NetApp is a leading storage provider to the U.S. Army and special forces, the Air Force, the Navy and special forces, and Marines with hundreds of petabytes deployed in enterprise and tactical environments.

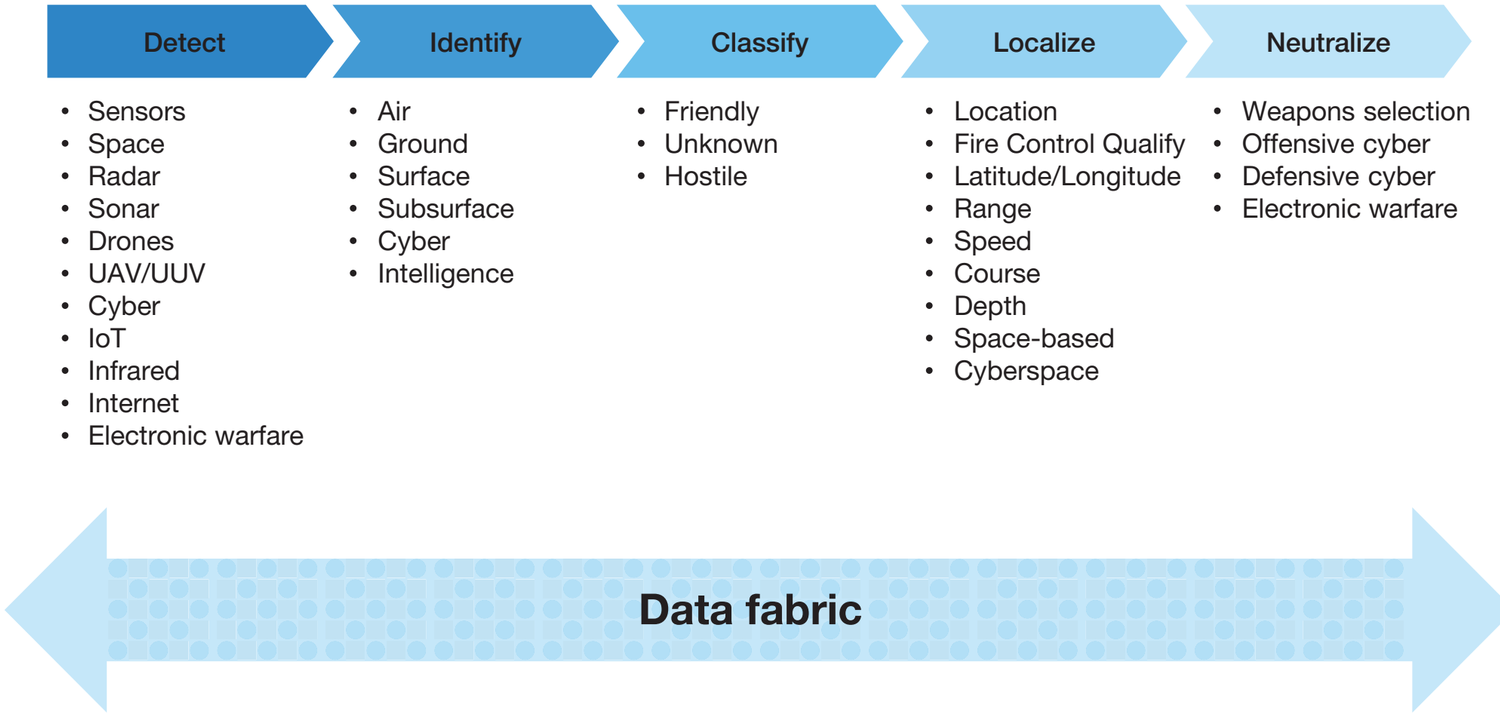
Foundations of JADC2

Getting information from sensors to shooters requires actionable data at every step of the observe–orient–decide–act (OODA) loop.

JADC2 scenario

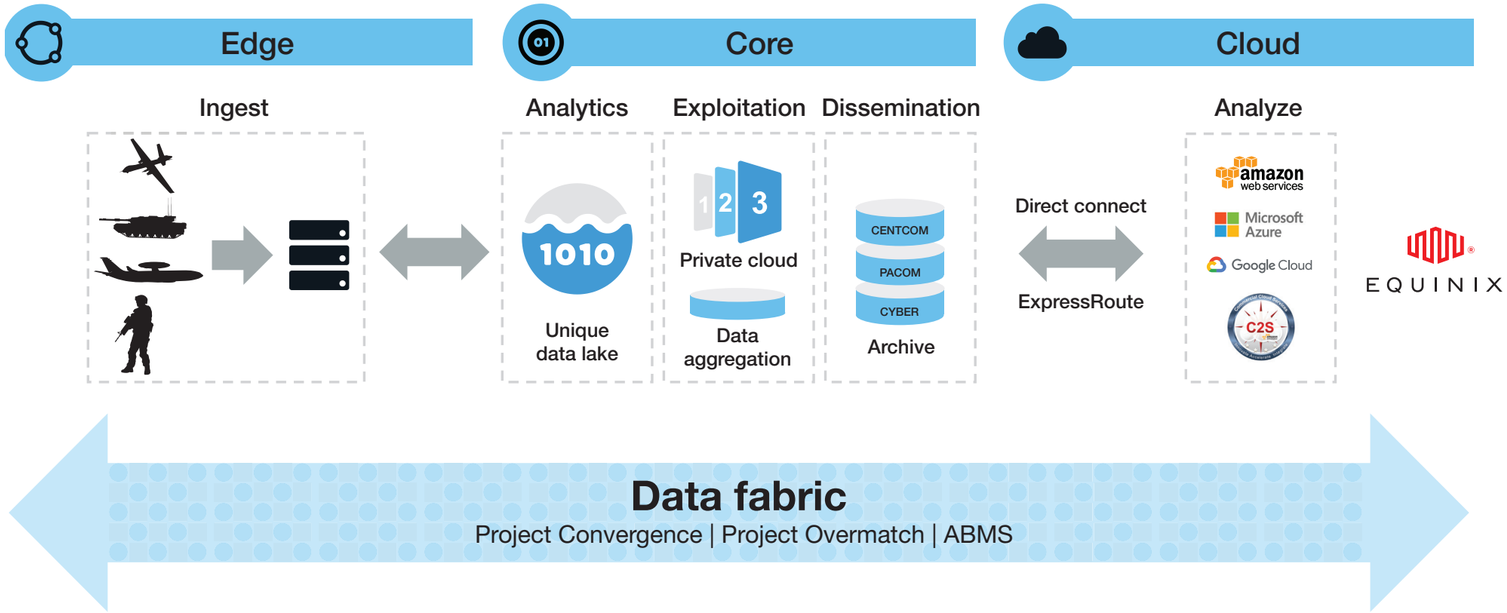
Telemetry data and real-time video are ingested from sensors at the edge and moved over land-mobile radio and satellite communications (Satcom) networks to the core for processing. The data is used to train inference models and filtered through an AI model where a decision is made and then transmitted back to the warfighter at the edge—all in near–real time.

It's one continuous data pipeline from sensor to shooter. And it doesn't work without a common data foundation. We call this the data fabric.



A data fabric enabled by NetApp

We can help you support multidomain operations across maritime, land, air, cyberspace, and space. Our data management technologies tie individual clouds together with a common data fabric.



What makes a data fabric enabled by NetApp different?

Universal data environment

Connect your data fabric with a universal data environment for file, block, object, virtual machines (VMs), and containers. Avoid vendor lock-in with a flexible data foundation that works with your choice of cloud.

Low latency when you need it

Store data at the edge and instantly and automatically move it where it needs to go based on flexible policies, without having to consume valuable networking resources.

Cost efficiencies

Save 20% to 80% of storage costs, with unmatched efficiency technologies, to achieve the mission faster and save costs. Keep your personnel focused on the mission instead of IT.

Real-time information and insights

Speed up your AI data pipeline with preconfigured solutions and reference architectures built in partnership with NVIDIA, NVIDIA Mellanox, and our ecosystem of AI partners.

Future proof for new technologies

Unlock developer innovation with the ability to move your applications from one Kubernetes cluster to another in a hybrid multicloud environment.

Protected, secure data with a Zero Trust architecture

Protect your data—and your mission—with instant backup, recovery, cloning, and versioning. Encrypt data during transit and at rest, and manage and monitor data access with role-based access controls and audit logging for compliance.

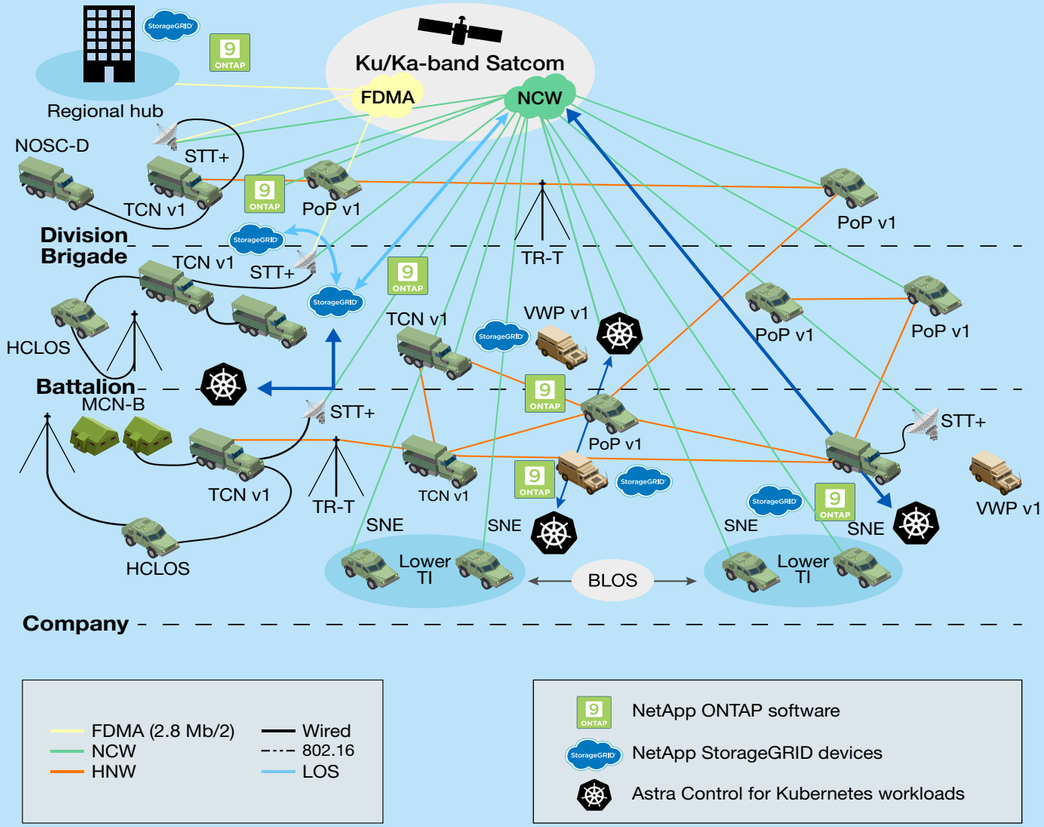
The challenge: Keeping data flowing

For JADC2 to work, the data collected from sensors at the edge must be available to decision-making authorities fast enough to be actionable. To do that, data must remain fluid—even across slow, degraded, and constrained tactical networks.

The solution: With a data fabric based on NetApp® technology, remote warfighters with limited compute and communications links can connect to cloud, artificial intelligence and machine learning (AI/ML), and data analytics resources in less disadvantaged locations.

- **Activate data mobility.** Enable data transport across domains. Get multidomain operations support for any application, in any location.
- **Enable application resilience at the edge.** Eliminate the complexity of replicating data over tactical networks and enable data recovery from any device.
- **Automate data tiering to any cloud.** Set policies on when to automatically move data into the cloud of your choice.

INCREMENT 2 Network diagram
(Initial networking OTM)



With NetApp ONTAP® software and NetApp StorageGRID® devices embedded across various networks, incoming images can be sent over localized radio networks. They can also be stored locally and automatically replicated to any other like system in the world, based on predetermined policies.

The challenge: Feeding the AI machine

It's one thing to move data where you need it. It's another thing to turn that data into information and that information into knowledge. The process of operationalizing AI requires massive amounts of data to flow unhindered through a five-stage pipeline, from ingest through archive.

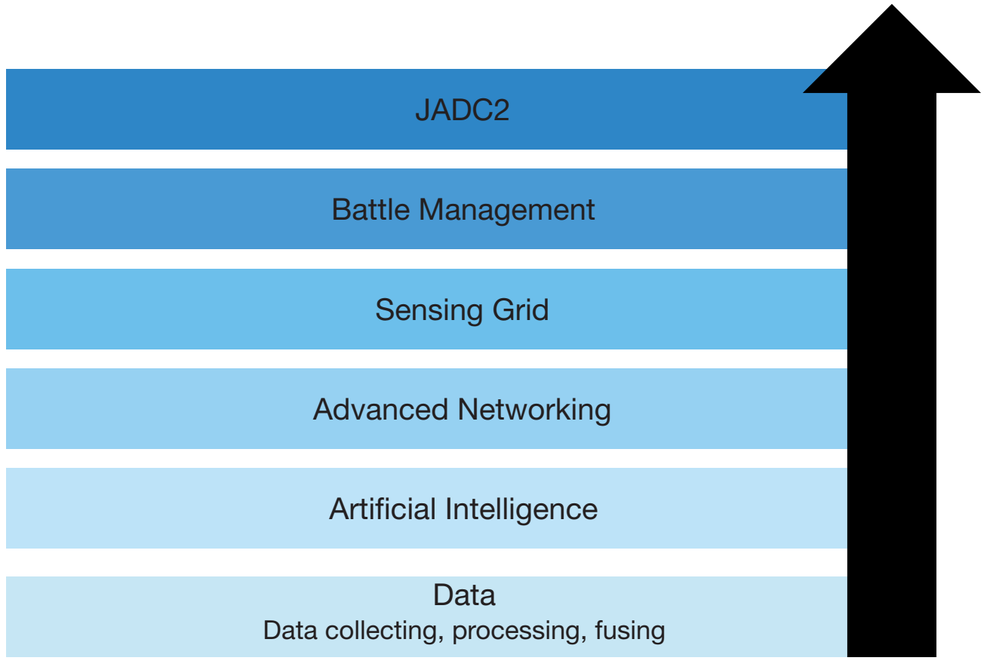
The solution: Build an integrated data pipeline with a single management environment that spans edge, core, and cloud. NetApp all-flash storage enables you to confidently tap into nonstop data feeds from satellites and sensors at the edge with virtually unlimited, nondisruptive scalability and performance.

Feed, train, and operate data-hungry AI, ML, and deep learning (DL) applications to make better, smarter decisions and reduce time on target.

- **Accelerate training workloads.** Gain a speed advantage with powerful cloud-connected all-flash storage systems.
- **Simplify data management.** Use Kubernetes and NetApp Trident to orchestrate and automate so that data scientists can focus on science instead of IT.
- **Future-proof your infrastructure.** Connect to the cloud of your choice whenever you want and nondisruptively integrate newer technologies.

An enormous amount of data is now generated and managed across devices and sensors, on-premises data centers, and in hybrid cloud environments. For an AI program to be successful, it's essential to have a data fabric that spans edge, core, and cloud.

With a data fabric of today's new services and solutions, you can speed up data pipelines to train DL models and power AI applications with the simplicity, choice, and scale you need to succeed.



The Foundations of JADC2

Why NetApp?

The largest data management provider to the U.S. Government

More than 12,000 systems and more than 800PB of storage deployed in federal civilian agencies, with 98 dedicated support staff.

Integrated with the world's largest clouds.

aws Google Cloud Microsoft Azure IBM **Cloud**

A leader in Gartner Magic Quadrant for primary storage arrays[1]
#1 storage and device management software (IDC)[2]
A leader in IDC MarketScape for object storage[3]
A leader in IDC MarketScape for scale-out file-based storage[4]

For a complete list of our most recent certifications, including ISO 27001, SOC 2 Type I and Type II, and FedRAMP, **visit the NetApp Trust Center Library**.

Get started

Plan your data fabric with a Cloud Design Workshop

This workshop compresses months of service business design into one day of actionable plans. You can use these plans as the foundation for your storage strategy and the blueprint for implementing internal, hybrid, or external cloud solutions.

To learn more about how a NetApp Cloud Design Workshop can help your organization deliver predictable IT cost, performance, and agility, contact your local NetApp sales representative or visit **www.netapp.com**.

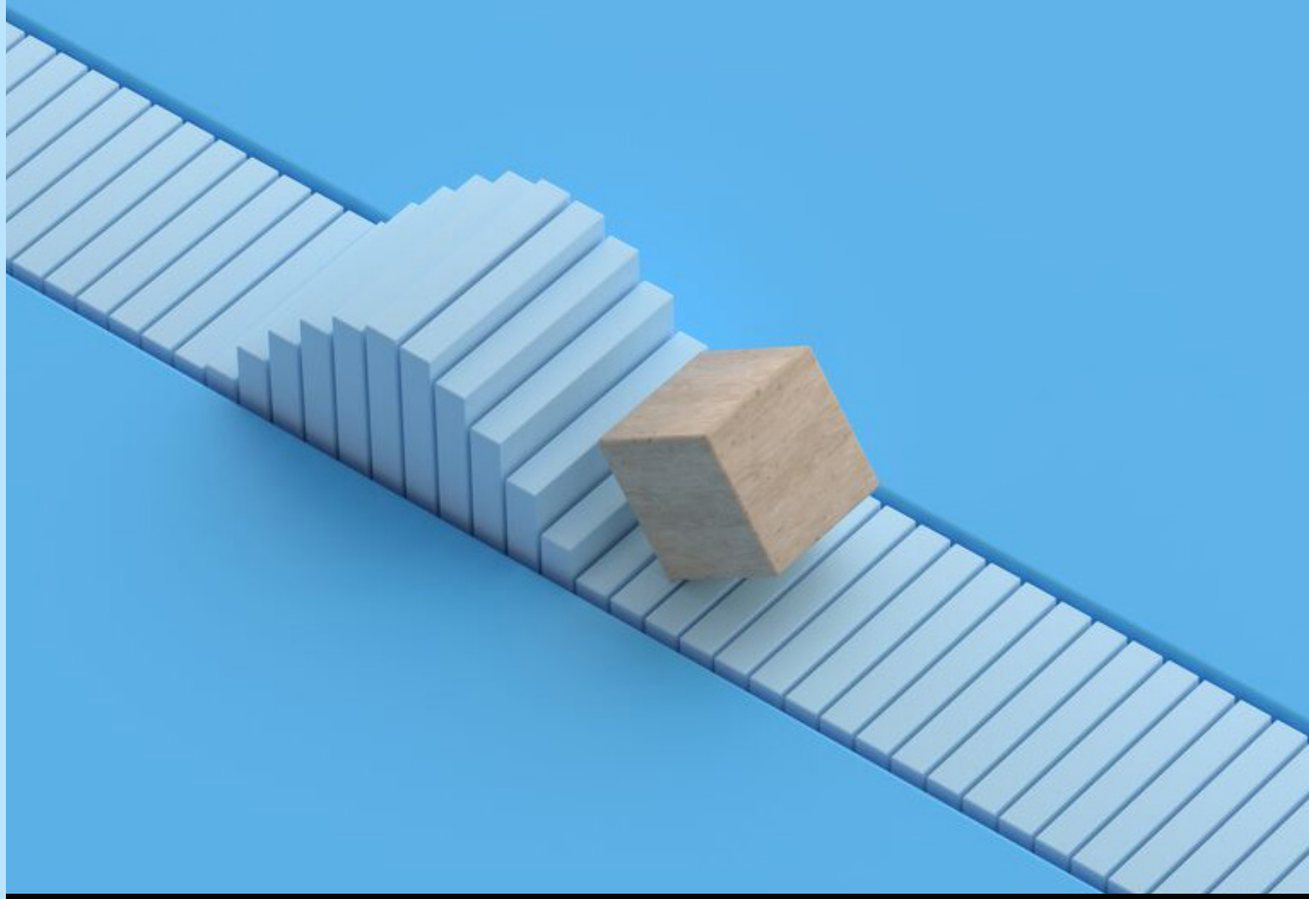
See a live simulation in a secure environment

Try it for yourself. Our secure proof-of-concept lab is equipped with edge devices and DGX servers to simulate your use cases.

Let us show you how NetApp and NVIDIA work together to provide warfighters with actionable information at the edge where it's needed. You pick the problem, we solve it.

To learn more, contact your NetApp sales representative.

1 Gartner Magic Quadrant for Primary Storage Arrays, November 30, 2020.
2 IDC, Worldwide Storage Software and Cloud Services Qview - 2020Q4, March 11, 2021.
3 IDC, MarketScape: Worldwide Object-based Storage, December 2019.
4 IDC, MarketScape: Worldwide Scale-Out File-Based Storage, December 2019.



About NetApp
In a world full of generalists, NetApp is a specialist. We're focused on one thing, helping your business get the most out of your data. NetApp brings the enterprise-grade data services you rely on into the cloud, and the simple flexibility of cloud into the data center. Our industry-leading solutions work across diverse customer environments and the world's biggest public clouds.

As a cloud-led, data-centric software company, only NetApp can help build your unique data fabric, simplify and connect your cloud, and securely deliver the right data, services, and applications to the right people—anytime, anywhere.

To learn more, visit **www.netapp.com**

NetApp