

Flexible platform for the tactical edge

How your hybrid cloud aligns with your mission

DoD edge workloads:

- AI/ML inference and models
- 5G and open radio access network (ORAN)
- Command and control (C2) systems
- High-performance computing (HPC)
- Low-latency message routing
- Containers and virtual machines (VMs)

Edge computing is part of JADC2 and JWCC

The JWCC and JADC2 framework ties sensors to shooters across all domains, commands, and services, using AI/ML and analytics. Processing at the edge avoids data transmission delays, from local sensors to distant clouds for processing.

Decision making moves to the tactical edge

The U.S. Department of Defense (DoD) is pursuing a new direction in providing capabilities to warfighters across the joint force, accelerating timelines for contracting. To support swift decision-making, the DoD is moving analytics from datacenters to the tactical edge—ships, aircraft, vehicles, and forward-deployed bases. Edge devices give artificial intelligence and machine learning (AI/ML) models the ability to take in and interpret sensor data more efficiently and more accurately and produce actionable information for more prompt decision-making. Processing sensor data closer to where it is produced avoids the latency incurred from a round trip to a cloud that might be thousands of miles away.

DoD edge computing use cases help with decision advantage that pertains to:

- ▶ Image detection and classification.
- ▶ Geospatial image analysis and integration.
- ▶ Automated data analysis, enrichment, and flows.
- ▶ Connected standalone data for real-time decisions.
- ▶ Cyber threat visibility, coordination, and response.
- ▶ Autonomous logistics and support systems.
- ▶ Signals detection, classification, and deconfliction.
- ▶ Augmented reality and virtual reality enrichment with real-time, all-domain battlespace data.

Edge computing is a pillar of the Joint Warfighter Cloud Capability (JWCC) and Joint All-Domain Command and Control (JADC2) framework to connect sensors across all military branches.

Modernizing the tactical edge

Red Hat, an enterprise open source leader, unlocks open source innovation within the complexity and scale of joint force warfighting domains. Red Hat's approach to a software-defined network (SDN) architecture provides the backbone for a security-focused and converged, joint all-domain digital infrastructure solution. The solution includes data collection, integration, analysis, and syndication and aims to provide warfighters and commanders with a single, collaborative environment to access geospatial data combined with the latest analytic models and tools.

Further, this solution encompasses the key tenants for mission priorities that concentrate on security, latency, and speed across all topologies, end to end. This approach provides a rich transport, communication, and integration layer for success. The collaborative environment and analytic tools help the warfighter interact with data in a single common operating picture (COP) and common intelligence picture (CIP).

While AI/ML are strategic tools, today's AI/ML systems are far more dynamic and must be regularly updated, modified, and adjusted to maximize the accuracy and value of the insights they deliver. Thus, AI/ML tooling should be focused on containerization, data management, and configurable deployments. Combined with a powerful AI/ML platform, Red Hat's portfolio—running on Red Hat® OpenShift® or Red Hat Enterprise Linux®—provides the flexibility and portability for containerized AI/ML tools to build, scale, reproduce, and share AI/ML results at an accelerated pace and consistently with a joint community of interest (COI).

Additionally, Red Hat technology differentiates itself through flexible messaging architectures that can achieve near-real-time situational awareness. A robust messaging infrastructure will allow a rich and performant data exchange among all nodes in the JADC2 domains, offering tremendous capability to process enormous volumes of data at speed. With Red Hat, you can bridge data between disparate systems and transform and enrich data at the edge of the network.

Western Digital Transportable Edge Servers withstand tough treatment

Western Digital Ultrastar® Edge-MR is a militarized, high-performance edge server designed to be more rugged to help your organization deploy remote data capture and perform analytics at the cloud edge, closer to where the data is generated.

Ultrastar Edge Servers offer several key benefits, including:

- ▶ The ability to extend data capture, analytics, infrastructure, and AI/ML beyond the reach of established global, regional, or local datacenters.
- ▶ Support for real-time decision-making by processing data closer to where it is created, eliminating latency associated with wide area networks (WANs) and reducing traffic on network backbones.
- ▶ The delivery of low-latency, cloud-like services—even when a network connection is intermittent or nonexistent.
- ▶ Integration with enterprise-class Western Digital Ultrastar NVMe™ Solid State Disks.
- ▶ A rugged shell that helps protect the server from shock and vibration during transit and is tested under MIL-STD-810G-CHG-1 and MIL-STD 461G for electromagnetic interference (EMI) emissions.

About Red Hat

Red Hat helps customers standardize across environments, develop cloud-native applications, and integrate, automate, secure, and manage complex environments with [award-winning](#) support, training, and consulting services.



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