



HYDRA™

DEPLOYABLE MODULAR EDGE INFRASTRUCTURE PLATFORM

White Paper

The Challenge: Compute at the Edge of Conflict

Modern military operations generate and depend on data at a scale that outpaces the infrastructure available to process it. Commanders at the tactical edge face a fundamental disconnect: the missions that most urgently require compute, storage, and analytical capability are precisely the missions where traditional data center access is unavailable, unreliable, or denied.

Whether operating in austere forward locations, conducting deployed cyber operations, or sustaining mission-critical applications in contested electromagnetic environments, today's warfighter needs infrastructure that travels with the mission—not infrastructure that the mission must reach back to.

Existing solutions fall short. Cloud-dependent architectures assume persistent connectivity. Traditional deployable servers lack the modularity to scale across mission sets. Purpose-built tactical systems are often too narrowly scoped, too fragile for contested environments, or too complex for rapid deployment by non-specialist operators.

Hydra: Purpose-Built for the Operational Edge

Hydra™ is a modular, containerized, full-stack fly-away infrastructure platform. Originally developed to power distributed cyber exercises and operational training environments for DoW customers, Hydra was engineered from the ground up around the constraints that define edge operations: limited connectivity, austere conditions, and rapid deployment timelines.

What makes Hydra fundamentally different is that it was never designed as a lab system adapted for

the field. It was built by cyber operators who have stood up complex infrastructure under operational pressure, in unfamiliar environments, with minimal support. That operational expertise is embedded in every design decision—from the hardware form factor to the software orchestration layer to the deployment workflow.

Core Architecture

Hydra delivers a self-contained, software-defined infrastructure stack that scales from a single ruggedized case to a multi-rack enterprise deployment. The platform provides:

- High-density compute and storage in ruggedized, transit-case form factors rated for harsh environments and designed for transport in military or commercial aircraft and ground vehicles
- Highly-configurable modular design enabling rapid configuration and deployment across isolated, connected, or hybrid network topologies for a broad variety of mission sets
- Containerized application orchestration supporting third-party, government-furnished, and custom-developed mission applications alongside AI/ML workloads, cyber toolsets, and collaboration services—all without dependency on external infrastructure
- Multi-environment operation across connected, disconnected, intermittent, and low-bandwidth (DDIL) conditions with seamless failover and data synchronization
- Rapid deployment by mission operators with pre-configured baselines and automated provisioning that reduce setup time from days to minutes and does not require IT SMEs for deployment
- Integrated power and connectivity options including portable battery systems, solar panel arrays for sustained off-grid operation, and satellite internet kits for establishing communications where no terrestrial connectivity exists—enabling Hydra to function as a fully self-sufficient operating node in the most austere environments

Beyond Training: Expanding Mission Applications

While Hydra's operational pedigree was forged in the cyber training and exercise domain—where it has powered complex, multi-nation distributed exercises and persistent operational training environments—the platform's architecture positions it for a significantly broader set of mission applications. We are seeing growing demand signals across four key areas:

Tactical Edge Compute and Storage

Forward-deployed units need local processing power for sensor fusion, intelligence analysis, and decision support without dependence on reachback connectivity. Hydra provides the compute density and storage capacity to run these workloads at the point of need, in the field, with the ruggedization and form factor to move with the force.

USE CASE: Forward Surgical Team — Edge Intelligence in Austere Conditions

A Special Operations task force is establishing a temporary forward operating base in a denied area with no existing network infrastructure and no reliable satellite connectivity. The mission requires real-time processing of ISR feeds, threat pattern analysis, and secure collaboration across a distributed team—all within hours of arrival.

With a traditional approach, this mission waits for infrastructure that may never arrive. With Hydra, operators uncase a ruggedized kit, deploy portable battery and solar panel systems for sustained power, and have a fully operational compute and storage environment running within minutes—no fixed power grid, no facility, no reachback required. Sensor data is ingested and processed locally. Analytical models run at the edge. When the mission requires external coordination, an integrated satellite internet kit establishes connectivity on demand—but the platform never depends on it. The team operates at the speed of the mission, not the speed of the network.

Customer Benefit: Eliminates the dependency on fixed infrastructure, external power, and reachback connectivity that delays mission execution.

Commanders gain decision-quality intelligence at the point of need, with a platform that is fully self-sufficient—reducing the sensor-to-shooter timeline from hours to minutes and removing the logistical tail that traditional solutions require.

Forward-Deployed Data Center Capability

For expeditionary operations, partner nation capacity building, or contingency response, Hydra functions as a deployable data center in a box. It delivers the full stack—compute, storage, networking, and services—without requiring the facility infrastructure, specialized HVAC, or installation timelines of traditional data center deployments. This is particularly relevant for OCONUS operations, theater security cooperation activities, and humanitarian assistance/disaster relief scenarios where standing infrastructure may be damaged, unavailable, or nonexistent.

Disconnected and Contested Environment Operations

Hydra was designed for environments where connectivity is a luxury, not a given. The platform maintains full operational capability in completely disconnected states, with intelligent synchronization when connectivity is restored. Critically, Hydra doesn't just tolerate disconnected operations—it can create its own connectivity. Configurable satellite internet kits allow operators to establish communications links where no terrestrial infrastructure exists, giving commanders the flexibility to operate fully air-gapped when operational security demands it, or to reach back when the mission requires coordination. This makes Hydra uniquely suited for operations in denied or contested electromagnetic environments, aboard vessels or aircraft, and in locations where adversary signals intelligence collection makes persistent network connections an operational security risk.

USE CASE: Partner Nation Cyber Capacity Building — Infrastructure That Deploys with the Mission

A Combatant Command is directed to build cyber defense capacity with a partner nation as part of a theater security cooperation initiative. The partner has limited IT infrastructure, inconsistent power, and no facility that meets the requirements for hosting sensitive training environments. Traditional approaches would require months of site surveys, facility construction, and equipment installation before training can begin.

Hydra eliminates this timeline entirely. The team deploys with a self-contained training and operations environment that includes realistic network ranges, adversary emulation infrastructure, defensive monitoring tools, and collaboration platforms—all operating independently of host-nation infrastructure. When the engagement concludes, the entire environment packs up and redeploys to the next mission. No residual footprint. No sunk infrastructure costs. No dependency on local facilities that may not meet security requirements.

Customer Benefit: Compresses the timeline from tasking to execution from months to days. Enables the command to execute more engagements per year with the same investment, reuse infrastructure across multiple partner nations, and maintain full operational security independent of host-nation network environments.

High-Performance Compute for Data-Intensive Workloads

The proliferation of AI/ML models, large-scale data analytics, and sensor processing at the edge demands compute infrastructure that doesn't exist in most forward locations. Hydra's modular architecture allows mission planners to configure high-performance compute nodes optimized for these workloads—including GPU-accelerated processing for machine learning inference—and deploy them where the data is generated rather than backhauling everything to a rear-echelon facility.

Mission Software Integration: An Open Platform Architecture

Hydra is not a closed ecosystem. Its containerized architecture is designed from the ground up to host the mission software the customer already uses or is acquiring independently. Government-off-the-shelf (GOTS), commercial-off-the-shelf (COTS), and custom-developed applications can all be deployed on Hydra without re-engineering—the platform provides the underlying compute, storage, networking, and orchestration layer so that mission software teams can focus on their application, not the infrastructure beneath it.

This is a critical distinction. Most edge infrastructure solutions force customers into a choice: use the vendor's software stack, or build your own infrastructure to run the software you actually need. Hydra eliminates that tradeoff. It can simultaneously host multiple third-party applications—C2 systems, ISR processing chains, intelligence analysis platforms, logistics tools, fires support applications—on a single deployable platform, with each application isolated in its own container but sharing the common infrastructure layer.

For DoW mission partners, this means Hydra becomes the infrastructure backbone that third-party software vendors deploy against—dramatically reducing the integration burden, accelerating time to capability, and ensuring that mission-critical applications can operate at the edge without each one requiring its own dedicated hardware deployment. The result is a composable, mission-tailored capability stack that travels with the force and adapts as requirements evolve.

A Platform for the Expanding Edge

Hydra was not built for a single mission set, and its addressable market reflects that. The Department of War's strategic pivot from cloud-centric to hybrid and edge architectures—driven by JADC2, contested logistics planning, and the recognition that reachback cannot be assumed in peer conflict—is creating demand for deployable, modular infrastructure

across every service, combatant command, and mission domain. Hydra is positioned to meet that demand across multiple market segments simultaneously.

Department of War — All Services

Edge compute is not a SOF-only requirement. The Navy needs shipboard and expeditionary processing for afloat operations and distributed maritime operations. The Air Force requires deployable IT infrastructure for Agile Combat Employment at austere bases. The Army's tactical command posts and division-level operations demand compute that moves with the force. The Marine Corps' expeditionary advanced base operations concept is built on the assumption that forward elements must be self-sufficient. Each service brings its own ecosystem of mission software—different C2 systems, ISR processing chains, logistics applications, and fires platforms—all of which need infrastructure to run on at the edge. Hydra's open platform architecture and scalability, from a single transit case to multi-rack configurations, means it can host any of them, making the addressable market not just organizations that need edge compute, but every mission application that needs to run forward.

Other Federal Agencies

The need for deployable infrastructure extends well beyond the military. FEMA requires rapidly deployable compute and communications for disaster response when local infrastructure is destroyed. DHS and CBP need field-deployable processing for border security and investigative operations. The FBI requires mobile command and forensic processing capability. DOE requires incident response infrastructure for sensitive sites. These are agencies we already serve, and Hydra addresses operational gaps that existing solutions leave open.

International and Foreign Military Sales

The global market for cyber capacity building is accelerating, particularly across the INDOPACOM and SOUTHCOM areas of responsibility, as well as NATO. Partner nations seeking to develop

organic cyber defense capabilities often lack the facility infrastructure to host traditional training and operations environments. Hydra's self-contained, fly-away architecture eliminates this barrier entirely—enabling FMS programs to deliver not just training content but the complete infrastructure to run it. This positions Hydra as a force multiplier for theater security cooperation, building enduring partner capacity without permanent infrastructure investment.

Intelligence Community

Forward intelligence operations, sensitive site exploitation, and expeditionary SIGINT processing all demand high-performance compute in environments where traditional data center access is impossible and security requirements preclude use of host-nation or commercial infrastructure. Hydra's ability to operate in fully air-gapped configurations, with organic power and connectivity, makes it a natural fit for intelligence missions that require both computational power and absolute operational security.

The Macro Trend: From Cloud-Centric to Edge-Ready

Across all of these segments, the underlying demand driver is the same: the national security enterprise is moving from an assumption of persistent connectivity and centralized compute to an architecture that must function at the edge, in contested conditions, with degraded or denied communications. This is not a temporary shift—it is a structural realignment driven by the realities of peer competition, contested logistics, and the proliferation of data-intensive capabilities at the tactical level. As the department moves toward modular, composable architectures, the value is increasingly in the platform layer that integrates and hosts mission applications—not in any single application itself. Hydra is that platform layer, and its modular, scalable, open architecture ensures it can serve across the full breadth of this expanding market.

Why Hydra: Advantage by Design

Hydra is not a concept paper or a lab prototype. It is production infrastructure that is currently deployed in support of real-world DoW cyber operations, exercises, and training missions. It reflects over 15 years of our experience operating at the intersection of offensive cyber, infrastructure engineering, and mission delivery.

Our team of cyber operators don't just build infrastructure—they operate on it. That operator perspective ensures Hydra is designed for the realities of mission execution: rapid setup under pressure, intuitive operation by non-IT personnel, resilience when things break, and the flexibility to adapt to mission requirements that change faster than procurement cycles.

Our customers—including DoW, DHS, FBI, and international partners—trust us to deliver not just technology, but operational outcomes. Hydra is the infrastructure backbone that makes those outcomes possible, whether the mission is training the next generation of cyber warriors, projecting capability into a partner nation, or providing the compute foundation for edge AI in a contested environment.

The Path Forward

The demand signal is clear: the Department of War and its mission partners need deployable, modular, resilient infrastructure that operates where the mission demands—not where the network permits. Hydra is that infrastructure, and we are the team that builds it, deploys it, and operates on it alongside our customers.

Explore more cyber capabilities and products at markonsolutions.com/full-spectrum-cyber.

