

# Bring Warfighter Capabilities To The Tactical Edge

**TIMELY, ACTIONABLE INFORMATION TO ENHANCE SURVIVABILITY, LETHALITY, AND MISSION SUCCESS**

Warfighters execute complex missions in dangerous and demanding environments. Their success requires actionable intelligence in a consumable format delivered on time. Cloud computing could enable that integration of sensors and effects with the massive expansion of computational processing, advanced analytics, machine learning, and artificial intelligence. However, warfighters at the tactical edge have not had access to the cloud because of limited, disrupted, and disconnected communications, security concerns, and severe size, weight, power, and cost (SWaP-C) constraints imposed by austere environments.

Leidos, in collaboration with our military partners, created our Edge to Cloud (E2C) ecosystem to solve this challenge. Edge to Cloud employs advances in software containerization, hardware miniaturization, automated provisioning, data access, Zero Trust security, optimized hybrid tactical and commercial communications, and advanced analytics to provide the capabilities of cloud computing at the tactical edge. E2C combines resilient commodity hardware, software, and communications that securely connects sensors, mission software, services, and data via a vendor-interoperable infrastructure. In doing so, it brings legacy systems and new capabilities to the point of use, adapted and delivered at speed and scale, across heterogeneous and intermittently connected environments.

E2C not only connects sensors, software, and services, but also provides a coherent framework for data management, information distribution, and analytic exploitation. E2C replaces the legacy approach of ex-post-facto integration of tactical devices by bringing the power of cloud computing to the point of collection, aggregation, and analysis through the use of commodity hardware. By deploying E2C Infrastructure as Code (IaC) using the Leidos DevSecOps process, E2C enables the standardization of infrastructure deployment models and rapid instantiation of those models to any level of the E2C ecosystem. The E2C approach features containerized software deployment to quickly and autonomously propagate upgrades, data, models, and software deployments across the ecosystem. E2C also enables an ever-expanding network of devices and sensors to collect, process, aggregate, and communicate information. Additionally, system data can be processed and analyzed in near real-time, enhancing situational awareness.



*"If you think about the challenge we have in AI, in amalgamating data and sharing data, what it means to take processing and move that processing requirement to the tactical edge, without a cloud none of this [is possible]."*

Lt. Gen. Dennis Crall, Chief Information Officer for the Joint Chiefs of Staff

But E2C goes far beyond “cloud at the edge”, with several significant advances in processes and technologies that can immediately augment any organization’s current and future missions. E2C delivers:

- ▶ A cloud computing ecosystem that enables collection, aggregation, and dissemination of data from producers to users, operators, and decision-makers to enable efficient, effective decisions and actions.
- ▶ A software defined ecosystem, employing an “Everything as Code” approach for infrastructure, configuration, security, and applications (This means E2C can provision a new environment to host a tenant, mission app owner, or project within minutes).
- ▶ A model for how edge devices (mobile compute, smart phones, edge sensors, wearables, Internet of Things devices) can be integrated to increase the speed and accuracy of data correlation to support decision making at the edge.
- ▶ An extensive palette of DevSecOps capabilities across the entire compute ecosystem, enabling a “Software Factory in a Box”, and allowing the deployment of a DevSecOps pipeline to any layer or node in the ecosystem in minutes.
- ▶ Cloud-based development tools in which operators can develop and deploy from anywhere. We augmented this capability with templates, configuration, tradecraft, and scripts in the ecosystem.
- ▶ Automated deployment of containerized mission software, models, applications, and microservices to any layer of the ecosystem (tactical edge, on premise, federated, enterprise cloud, commercial cloud, or hybrid).
- ▶ A hardware, cloud, and vendor-interoperable design: E2C can be extended to Microsoft Azure, Google Cloud Platform, and other cloud service providers, virtualized on-premise or hybrid models.
- ▶ Management and orchestration of all ecosystem nodes (and all containerized applications/services therein) from any other authorized and provisioned node.

## WHY PARTNER WITH LEIDOS

Leidos approached this challenge through a combination of Internal Research and Development funds and a Cooperative Research and Development Agreement with the U.S. Army. We teamed with partners such as Amazon Web Services (AWS), HashiCorp, Rancher Federal, GitLab, Telos and other technology leaders to build an ecosystem that would extend the cloud to the tactical edge. Our team’s prior service members brought an operational focus to develop the underlying systems, devices, and connections that power cloud at the edge and to meet the challenges posed by near-peer and Great Power threats. And we adopted recent innovations in systems composition, deployment, management, and connectivity that will enable rapid provisioning, deployment, and sustainment across the enterprise and the larger partner community.

## FOR MORE INFORMATION

[leidos.com/defense](https://leidos.com/defense) | [leidos.com/contact](https://leidos.com/contact)



## OUR CAPABILITIES

- ▶ System engineering & integration and life cycle support of mission-critical applications for a broad spectrum of government customers.
- ▶ Rapid and agile research, development, integration, test, evaluation and transition capabilities.
- ▶ Deep domain knowledge of soldier-borne information and communication systems, gained from decades of experience supporting a long legacy of Army dismounted soldier situation awareness programs.
- ▶ Leading-edge sensor application expertise and R&D programs.
- ▶ Extensive data analytics, exploitation, and AI experience to locate, integrate, and process relevant information and transform it into prioritized actionable information.
- ▶ Expertise in cybersecurity and information assurance for various U.S. Government Agencies, Intelligence Community (IC) organizations, and commercial customers.