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Edge to Cloud is the secure link between front lines and the cloud



Imagine if our men and women in law enforcement, in the field of battle, or working on the ground in critical energy infrastructure spaces could access the computing power of the cloud at their fingertips. Edge to Cloud (E2C) technology makes this possible by creating a shared digital ecosystem between mission space devices (the edge) and cloud service providers, so that warfighters and other operators can share data and have analysis performed in real-time, at the actual edge location where the data is collected.

Commonplace devices become extraordinary

Not unlike connected devices that are so pervasive today, like smart refrigerators and thermostats, E2C technology enables any connected device to become part of a much larger, smarter system.

E2C technology can be thought of as a compute ecosystem connecting those edge devices into the broader cloud environment, which spans from those devices to highly powered cloud servers in real-time.

And like any technology, the better the equipment, the better the result. So in military applications involving advanced sensors, aerial communication platforms, or intelligence gathering applications, E2C technology gives warfighters a true competitive advantage both in the field and at leadership centers all the way up the chain of command and around the world.

Time sensitive analysis and decision making

But why is it so critical that field data be captured and analyzed in real-time? It's because in stressful situations—in battle operations—for example, mission-critical decisions are often made in seconds, and all the external inputs and decision points would be impossible to collect, analyze and act upon in the necessary timeframe. There's simply not enough brainpower available, even amongst the highest functioning operators and best-trained teams. Ultimately, that's the goal of building an integrated E2C ecosystem: to bring collection, processing, and analytics (which is historically done in data centers and intelligence headquarters) all to the edge where warfighters and other users can access this computing power with their boots literally on the ground, yet enable the compute power of the cloud to be applied when necessary.

Data "time to value," or in other words, the time it takes to gain insight from data that has been collected, has historically been a lengthy process involving days or weeks, if not months or years of analysis. This slow process has real-life consequences that can become deadly. Many of the United States' most impactful intelligence failures have come in circumstances where our intelligence services had most of the right information to detect a threat but unfortunately, it wasn't correlated or shared properly. E2C aims to enable the fusion and correlation of data from the millions of inputs from sensors around the world, including at the location of the warfighter, and to allow the analysis of this data in real-time in bi-directional (or distributed) ways that make mission-critical decision making more informed.

E2C beyond defense

The case for E2C adoption in defense and intelligence circles becomes very compelling when you begin to understand the millions of inputs and the sheer volume of data being collected around the world and the challenge to synthesize that into something useful for an operator. But there's also a

compelling story to be told that involves a challenge we're still in the middle of as a global community: the COVID-19 pandemic. It's true that regular press briefings, near-constant media coverage, a historically rapid vaccine development process, and a promising vaccine rollout in the U.S. have helped the public stay informed and ultimately more healthy. But surely greater access to real-time data would have allowed both medical professionals and lawmakers to identify more granular hotspots, assist in contact tracing, advise more strategic shutdowns and re-openings, and generally helped medical experts make better decisions, faster. The pandemic has highlighted for some observers the dire need to adopt this type of E2C ecosystem so all the various data points like spread patterns, vaccine trial status, patient information, and treatment trends can all be correlated, analyzed, and shared on the edge.

Pushing new capabilities

In addition to the core value of the E2C framework as a unified ecosystem to share real-time, bi-directional data, E2C allows us to deliver new capabilities to devices in the field in days, hours, or even minutes. Historically, new applications or capabilities can take months and years to be pushed and installed on laptops on the front lines. E2C represents a high-speed path that developers, using a modernized DevSecOps pipeline, can use to get the latest technology in users' hands, no matter where in the world they are.

Through the E2C compute ecosystem and the applications it enables, Leidos is seeking to build the compute equivalent of an electrical grid, facilitating real-time data sharing, processing, and analysis at the edge, putting the right information on the front lines, while also enabling the power of the cloud to be brought to bear when necessary.

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