

White Paper

Microsoft Azure Stack and Dell EMC: Focusing on the Tactical Edge

Delivering a Ruggedized Solution for the Harshest Environments

By Mike Leone, ESG Senior Analyst; and Leah Matuson, Research Analyst
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Introduction

Hybrid cloud is being embraced by businesses looking to digitally transform their organizations—and IT organizations across the board are striving to deliver a seamless user experience, regardless of where their applications, data, and infrastructure reside.

A number of organizations are pursuing hybrid from an infrastructure-up approach. They possess on-premises infrastructure to support business-critical applications and operations and are ready to transform by embracing public cloud services, frameworks, and offerings from preferred vendors where it makes the most sense to their business. Other organizations are born in the cloud and rely on cloud-native applications, but recognize the need to leverage on-premises infrastructure at specific locations. These “cloud-born” organizations have benefited from simplified operations via a cloud management framework and prefer not to sacrifice the established operational efficiency to which they’re accustomed.

To successfully transform, IT must be able to maintain operational efficiency and management simplicity across their environments, from core data centers, to public cloud, to the edge. Organizations looking to embrace hybrid cloud—especially as it relates to the strategic and tactical edge—are turning to Microsoft Azure Stack to provide a simple, seamless, and consistent IT experience—even where deployments are not contingent on an Internet connection.

Moving to the Edge

The term “edge” can mean many things, depending on the vertical, use case, or business unit. ESG’s general view is this: “edge” serves as a first landing zone for data where an interaction with that data can yield actionable insight. That insight can be industry-specific, answering questions such as: “Should the production line stop based on a detected anomaly?” “Should a field service worker be alerted based on a report of a downed powerline?” Or the insight may be more IT-specific, answering questions associated with data lifecycle, such as: “Where is the data generated, and to what location should the data be moved?” “Is the data properly secured?” “Is a network connection available?”

In these cases, the spotlight shines on IT to deliver a seamless experience with cloud-like simplicity and agility, while ensuring timely insight, security, and control. But IT continues its struggle to overcome a number of challenges, such as limited staff available in edge locations, limited space to easily deploy an infrastructure to support the use case, and lack of a consistent operating model across environments, which create delays virtually everywhere throughout the lifecycle of edge-generated data.

Some organizations want the promise of cloud benefits at edge locations—without disrupting on-premises operations. In fact, ESG research shows that when it comes to choosing a cloud infrastructure service, more than 1 in 4 organizations view compatibility with existing on-premises infrastructure as the most important

requirement. Organizations that have utilized the cloud to some extent want to extend the cloud experience from a centralized cloud to their edge locations as they look to widely distribute cloud services to on-premises environments—but several challenges are causing delays. In fact, nearly one-third (32%) of organizations view implementing security off-premises due to a lack of device and workload visibility as a top challenge, while 22% state an inability to move workloads transparently between cloud and on-premises environments.¹



¹Source: ESG Brief, [How Companies Choose Public Cloud Infrastructure Providers](#), April 2018.

With regard to the edge, perhaps the key value proposition that can assist companies in reaching their goals is consistency. Customers require consistency of deployments, processes, management, and experience across environments. This is even more important at the edge, as IT is unable to be as hands-on or as intimate as they can be with on-location deployments. Certain edge environments can introduce conditions not commonly experienced in traditional, “clean” data centers, which can include extreme temperatures, poor air quality, or the need to be mobile/on-the-go—all of which impacts the reliability of an infrastructure that must always be available.

Microsoft Azure Stack and Dell EMC

Microsoft Azure Stack is a purpose-built, preconfigured solution using Microsoft hyperconverged infrastructure (HCI) providing a hybrid cloud extension to Azure public cloud for on-premises compute, storage, networking, security, and other resources. Designed for efficiency, the solution helps cloud operators and infrastructure teams rapidly deliver Azure resources and services to end-users (as opposed to being stuck with a complex process of purchasing, setting up, and tuning infrastructure). As a preconfigured solution, Azure Stack can be deployed and easily operated by data center staff or a cloud service provider.

Delivered via strategic hardware partnerships, Azure Stack enables IT to select application locations based on business, technological, and regulatory compliance requirements, while maintaining a consistent operating framework with existing processes and a streamlined management console. Applications and services developed on Azure or Azure Stack can be deployed on-premises or with a cloud service provider to support data customization, latency, and data protection objectives—without any code changes.

Dell EMC Cloud for Microsoft Azure Stack is a fully engineered hybrid cloud platform that is built on Dell EMC’s industry-leading PowerEdge hyperconverged infrastructure. Managed via the Microsoft Azure Stack interface, the Dell EMC Cloud for Azure Stack provides customers with a familiar Azure experience, whether in the cloud or on premises.

From Core and Cloud to Edge with Tactical Azure Stack

As organizations look to standardize on edge solutions, Microsoft, Tracewell Systems, and Dell EMC have partnered to deliver the first ruggedized Azure Stack offering. The Tactical Azure Stack was designed with capabilities enabling organizations to extend cloud deployments outside of the data center into remote and harsh environments.

With this solution, both administrators and end-users gain a consistent environment—from deployment and management, to user experience. The Tactical Azure Stack serves as a go-to for front-facing deployments and mobile environments at the edge for markets including government, military, energy, mining, and utilities. Within these markets are sub-verticals that include marine, disaster relief, and aerospace, where conditions are extreme and network availability is scarce.

While the Tactical Azure Stack is well suited for remote and extreme environments, the solution is virtually no different than the traditional Azure Stack solution. Businesses still benefit from the quality Dell EMC features to which they have been accustomed, such as patch and update capabilities, hardware lifecycle management, service, support, and integration with Isilon, CloudLink, and Pivotal Cloud Foundry.

Government and Military

When it comes to IT, the military sector presents unique challenges. Between meeting military standard compliance for harsh environments (excessive heat/cold, vibrations, or dust from a desert military base) and the reality of a remote environment deliberately not being connected to a network (or unable to connect), reliability is crucial.

The military requires durability, simplicity, and mobility in most every environment. Certain missions demand the succinct movement of personnel and require the same enabling technology by their sides as if they’re in military headquarters.

Given the common scarcity of qualified IT personnel, uptime and reliability are even more important in enabling a successful mission, as well as a seamless, cloud-like experience that can deliver necessary services.

The Tactical Azure Stack can withstand the harsh conditions experienced in military environments, while providing a comprehensive experience in a fully disconnected mode, unlike anything else on the market. Because the solution includes servers, storage, and networking gear required to run Azure software, connectivity to the Azure public cloud is not needed to use Azure services. Further, the ruggedized solution is highly portable, meeting “2-person-lift” requirements.

Mining

Environments where mining, drilling, and fracking operations (coal, oil, gas) are situated are some of the harshest in the world. At these locations, one misstep or miscalculation could lead to a massive explosion, cave in, or release of poisonous liquids or gases, taking lives in surrounding areas and negatively impacting the environment.

It’s no surprise that mining companies are continually seeking viable methods to minimize worker and environmental risk, while maintaining operational excellence—and they’re turning to modern technologies. Modern technologies enable businesses to harness the power of data and Internet of Things (IoT) initiatives to gain valuable insights, ensuring data is properly collected, processed, and analyzed in real time to mitigate risk to workers and the environment.

Worker safety is paramount, and smart systems and devices can help companies protect employees by utilizing essential, yet frequently inaccessible, data. For example, augmented reality/virtual reality training simulations can be used for object detection and collision, and remote digging, allowing companies to leverage real-time telemetry data to perform data analytics on connected devices throughout a mining site. While this sounds ideal, the extreme environmental conditions in which mining and energy operations are performed can be challenging. Often, onsite/field operations don’t have the luxury of compute and storage in clean data centers or public cloud environments to attain advanced real-time analytics anchored by artificial intelligence (AI).

A key issue facing the mining industry is a lack of connectivity from onsite operations to core data centers, or the public cloud. This common scenario not only prevents companies from being able to embrace advanced technology to achieve successful IoT initiatives, but also exacerbates the lack of onsite employees who possess the appropriate skillsets to deploy and manage advanced applications that rely on next-generation technology.

With Tactical Azure Stack, organizations can employ an IoT-enabling technology that embraces isolated and harsh operating conditions. Easy field deployment means the connected remote or edge location can be up and running in no time, with prepackaged Azure services enabling real-time data collection and analysis. With real-time insights attained from data analysis, organizations can realize reduced physical risk to workers and achieve improved operational efficiency. While government and military, and mining serve as key verticals, the solution applies to numerous use cases across virtually all verticals undergoing active business transformations with a focus on real-time, data-centric insights from IoT-enabling technology.

The Bigger Truth

The operational efficiencies organizations obtain by leveraging cloud services have reshaped on-premises operating requirements. Simplicity, agility, and reliability are must-haves for organizations looking to port the cloud experience on-premises. This is especially important at the edge, where operating environments lack the traits of a traditional “clean” data center. Temperature, air quality, and vibrations are just the beginning of the challenges experienced in these environments. With limited physical space, a lack of skills, and intermittent (if any) connectivity, organizations need a reliable way to deliver the required IT services at the tactical edge.

With Tactical Azure Stack, organizations can seamlessly run Microsoft Azure Stack on reliable Dell EMC hardware at the edge, extending Azure deployments from core data centers to remote and edge environments. And with the new ruggedized solution, organizations can ensure a consistent end-user experience by reliably delivering the IT services that matter, even in the harshest environments that lack network connectivity.

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