Highlights from a recent Webcast on Modern Infrastructure

CONVERGENCE CRITICAL TO NEXT-GEN DATA CENTERS

Putting compute, storage, and networking into unified appliances can help agencies increase capabilities and save costs.

CONVERGED VS. HYPERCONVERGED

■ A converged infrastructure is one in which the compute, networking and storage are bundled into a single new hardware form factor.

■ A hyperconverged infrastructure layers software on top of a converged infrastructure on the same single piece of hardware.

In this age of digital transformation, federal agency officials find themsealves caught between the demands for delivering modern services with current technology and the constant struggle of tightening budgets. As a result, they must carefully consider their return on investments not only in the short term, but over the long run as well.

Agencies can help preserve the value of their investments and ensure technological longevity by, "unlocking the hardware to be an agile platform the deployment of software and the software-defined data center," says Cameron Chehreh, vice president and chief technology officer at Dell EMC Federal, during a June 15 webcast titled "Modernize Your Data Center Infrastructure."

Converged and hyperconverged IT infrastructures play a pivotal role in this digital transformation. A converged infrastructure provides compute, networking, and storage in a single new hardware form factor. A hyperconverged infrastructure leverages the power of software on top of that so users can exploit and extend their data center in a more rapid scale-out manner, says Chehreh.

Shrinking power, compute, networking, and storage down to the smallest possible footprint is enabling new capabilities without adding costs, says Matt Tracewell, vice president of Tracewell Systems. The company's partnership with Dell helps it tweak Dell EMC technology for specific requirements, such as moving the cloud out to the tactical edge.

These new infrastructure platforms enable next-generation data centers by helping them become self-aware and self-healing. Managers can add capability without having to hire experts. "That combination of converged/ hyperconverged with software is really allowing customers the opportunity to gain access to innovation in technology, create a modern software-defined data center, and then allowing them to deal with the expansion of the mission requirements without the expansion of budget," says Chehreh.

Steps Toward Transformation

There are three primary focus areas that serve as building blocks for modernizing traditional setups and creating innovative and even mobile data centers for use on ships at sea, aircraft in flight, or vehicles on the road—IT, workforce, and security.

IT transformation is the bedrock for building a next-generation enterprise. Data centers were built long before digitization exploded, so they are fraught with server, storage, and networking silos. "The opportunity today when we start talking about converged and hyperconverged infrastructure [is] you can maximize that benefit by simply modernizing the infrastructure core to leverage these assets," says Chehreh.

Having hardware-aware software in the data center also means managers can automate service delivery. With constrained budgets, this ability to unlock additional capability and better meet mission requirements is a distinct advantage. These changes often transform IT operations. Going from a classic IT infrastructure to one based more on service management results in not only a modern data center, but also puts the agency on the path toward greater cloud and hybrid cloud adoption, says Chehreh.

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"Leveraging software to orchestrate capability and increase capacity is where modern efficiency is coming into the data center," he says. "Ultimately, we recognize that applications ride on these cloud-based infrastructures."

Think of it as a pyramid, with infrastructure modernization sitting at the base and cloud at the apex. As service delivery automation increases, the transformation of IT operations can fully emerge. "You really begin to shift from an IT operation into a mission-support partner," says Chehreh.

The technologies and attributes of modern architectures available today include Flash, cloud-enabled, scale-out, software-defined, and trusted; meaning the entire infrastructure is built on a trust-based relationship. "The value and benefit to these becomes significant because we now have a contiguous, harmonized platform from the tactical edge all the way back to the enterprise," he says.

Dell and Tracewell Work Together

One tool that exemplifies this idea is the Dell FX architecture, powered by Intel. Providing a single footprint for multiple uses, it has flexible blocks of compute, storage, management, and input/output. This helps users combine the resources they need for their workloads. On top of that, Tracewell Systems' T-FX line further enhances the Dell architecture's capability by modifying Dell EMC products to support unique computing needs, such as the aforementioned mobile data center requirements.

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"This whole IT transformation from a data center perspective is fairly defined, but when you need to put it on a ship or a helicopter or some other mobile data center, you tend to get lots of slowdowns," says Tracewell.

"When you try to move it out to the field, a lot of times you don't have the high-bandwidth connection back through the cloud, [so] how do you get that same value proposition in the pedigreed hardware and software solutions to be identical and small enough [especially in] … platforms next to other legacy equipment that have lots of specifications and certifications attached to them?" he says. "We can make that gap disappear and then you can really take advantage of that main stream of change and you get it in the form factor that meets that requirement."

Tracewell offers a 20 percent adaptation on Dell EMC's 80 percent solution. In other words, the company develops Dell EMC-enabled platforms designed to deliver targeted solutions for customers who need to adapt Dell EMC technology to support their unique computing challenges. Tracewell can modify Dell technology to meet standards such as military specifications, or MIL-SPECs, or Network Equipment-Building System compliance requirement. It can also address size, weight, power, cooling, custom mounting, and environmental requirements.

Tracewell can also adapt Dell products to seamlessly integrate with third-party technology. For example, the T-FX2S has a PCIe tray, a pluggable module that makes it easy to insert a range of PCIe cards. That means users could adapt rack servers with cards to have an appliance feel, but future data center capability and automation built into them. Users could also adapt a thin client to perform data center-type applications while it's forward-deployed. In short, users have the same platform migrated to a smaller form factor.

"You can take where you'll have a forward-deployed application and then specify that just like you would normal hardware and then be able to take care of the IT transformation," says Tracewell. "This does give you the exact hardware and firmware implementation adapted for these specialty needs."

And as the capabilities increase, the costs do not. "We're offering greater capacity at the relatively same cost of your traditional infrastructure," says Chehreh. "This helps agencies look at the cost equation in a different way and understand that you'll gain immediate benefit and efficiency in cost today but you'll also be putting capacity in for tomorrow's requirements."

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