



THE RISE OF THE MODERN DATA CENTER



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THE TIME FOR TRANSFORMATION HAS ARRIVED

Over the past 15 years, IT has worked in a pretty predictable manner.

In order to automate critical business processes, companies have been implementing packaged applications from established software vendors such as Oracle, Microsoft, and SAP. In turn, IT departments have focused the bulk of their efforts on building and managing the infrastructure needed to run such applications, as well as developing the skills needed to deliver guaranteed, pre-determined service levels across the business.

As a result, companies have invested heavily in infrastructure related to enterprise applications, peaking in recent years at around 2.7 trillion US dollars.

But all of this has started to change.

With the rise of mobile devices, cloud computing, social media, the Internet of Things, and other disruptive forces, the way applications are built, deployed, and utilized has transformed significantly. The roles applications play within a business have changed radically, too.

An IT model that's built around maintaining big packaged applications no longer fits the new application reality.

In order to capture digital revenue streams, develop smarter products, and deliver the vastly improved experiences that customers expect, companies—including their IT departments—need to undergo significant transformation.

Along with running large enterprise applications for automation, companies need to continuously develop the consumer-grade mobile applications and embedded software that will transform their products, their services, and the ways in which they engage with the world.

All of this must be done, while simultaneously lowering costs, and refining the performance of older applications and the infrastructure on which they run.

The only way to achieve both of these goals—innovate and optimize—is to transform the technology we use to deliver IT services.

This begins with bringing down the cost and effort involved in running the older automation software packages—the SAPs and Microsofts of the world—so that IT can shift its human and financial resources toward other investments that help make possible the more transformational aspects of the business: ever-changing mobile experiences, better data analytics, and deeper innovation around products and services.



A COMPLEX SET OF PRIORITIES

In balancing the “optimize to innovate” paradigm, however, IT executives face a complex set of priorities.

The first of these is figuring out exactly where, when, and how to lower the cost of operating enterprise applications. A big part of this involves identifying which enterprise workloads might be better serviced off-premise with a managed service provider or public cloud and which are better kept using on-premise infrastructure platforms.

The second set of priorities involves making sure the lines of business have easy access to the IT resources that allow them to transform services, create new revenue streams, and establish differentiation in the marketplace. This includes supporting new application development, whether developers are working on- or off-premise.

Additionally, as newer cloud-based applications mature, increase in number, or become more strategic in nature, the CIO needs to decide if and when it makes better business sense to bring them back on-premise.

A DILEMMA FOR IT EXECUTIVES

The tension that arises between modernizing as rapidly as possible—without starving core business applications—is a challenge for most companies.

To succeed on both fronts, IT leaders are realizing that they must undergo significant transformation across the organization—from re-evaluating on- and off-premise infrastructure investments to making changes in staffing and skills training, engaging more deeply in line of business, Chief Digital Officer, and Chief Marketing Officer collaboration, and upping the commitment to ITaaS delivery.

In most cases, this is new territory and many are looking for guidance to navigate as effectively as possible.



THE MODERN DATA CENTER BEGINS WITH INFRASTRUCTURE

The first step toward supporting these often-conflicting IT priorities is to modernize the infrastructure components on which IT is built or, rather, to become a Modern Data Center. The best, fastest, most risk-averse approach for this is to leverage converged infrastructure platforms.

In the past, IT departments built their infrastructure and bought their applications, but now they're increasingly looking to invert that model. They want to buy simple, easy-to-deploy infrastructure platforms on which they can quickly build and run core business applications that differentiate their businesses, while also providing a platform for deploying next-generation applications.

Converged infrastructure allows for both. It reduces the time and cost of procuring, deploying, configuring, and managing hardware and software components separately, accelerating time to value for IT investments. Additionally, it's essential that converged systems are built on technologies that are third-platform ready—such as flash, scale-out, software-defined, and cloud-enabled systems.

The next critical step for becoming a Modern Data Center is to automate the delivery of IT services to lines of business and application owners. IT must deliver, at every level, a self-service experience that is built upon a well-designed, API-driven management and orchestration toolset—one that frees development teams and other innovators from IT roadblocks.

CALL IT HYBRID CLOUD

What we are describing here is, in essence, a hybrid-cloud environment with on- and off-premise workloads running, being moved, and being managed in a seamless, integrated way.

But a well-run hybrid cloud experience cannot be achieved by using converged platforms alone. A truly hybrid experience requires a transformation of technology and IT operations. This means the people and processes that deliver value to the business must adapt to the model as well.

Updating skills and processes so that they align with Modern Data Center priorities is typically the most difficult step to data center modernization. Many choose to transform themselves (with broader internal infrastructure investment and transformation), while others choose to redirect human capital toward driving new business innovation.

As part of this, many decide to move traditional applications onto enterprise-class public clouds that can guarantee enterprise SLAs. Then, they shift the human capital investment that was used to manage those applications—the people and skillsets within IT—toward more innovative projects that directly promote business value. Whether customers decide to modernize their own data centers, move workloads to a managed provider, or both, they need a vendor partner with best-in-class solutions for any scenario.

Many approach this transformation in phases. They begin by modernizing infrastructure. Then, they automate IT services and incrementally transform people and processes in order to support new developer demands and business models. Others want to jump-start the process all at once to transform as quickly as possible.

To facilitate the jump-start approach, Dell EMC created the Enterprise Hybrid Cloud solution, which is a combination of hardware, software, and services that can get businesses benefitting from hybrid cloud services in as little as 28 days.

Whether a business decides to evolve in phases or as part of a jump-start solution, Modern Data Center transformation makes it much easier to balance the conflicting IT priorities of optimizing enterprise applications while investing in innovation. In other words, solving the CIO dilemma.

GETTING MODERN

Converged infrastructure platforms are the most efficient and effective way to begin modernizing the data center. All-in-one storage, compute, and network platforms simplify, speed up, and radically transform the traditional IT process of building things out component by component.

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- *Deliver applications 5x faster*
- *Provide new services 4x faster*
- *Decrease downtime by about 96%*
- *Reduce time keeping the lights on by more than 40%*

BLOCKS, RACKS, AND APPLIANCES: ONE SIZE DOES NOT FIT ALL

Last year, Dell EMC developed a strategy to support a wider range of organizations going through the modernization shift. This strategy aligns the converged approach into three basic systems: blocks, racks, and appliances.

We pioneered the converged infrastructure market in 2009 with the Vblock System. Today, we are the undisputed market leader of these block architectures built on discrete server, network, and storage systems.

In 2015, we announced rack-scale systems built on industry-standard servers, software defined storage, and compute technologies. Converged rack systems support enterprise and service provider scale requirements for general-purpose workloads in both traditional and next-generation cloud native applications.

Soon after, we announced hyper-converged appliances that deliver a complete virtual infrastructure experience in a compact 2U form factor. These compact units scale to dozens of nodes and are focused on the modular approach to scaling design that small to midsized enterprises, as well as remote and branch office teams, need most.

MODERN ESSENTIALS: SPEED, EFFICIENCY, AGILITY, AND HIGH PERFORMANCE

Experience demonstrates that the Dell EMC converged block, rack, and appliance family delivers tremendous value to the businesses that run them. People who adopt converged systems deliver applications about five times faster, provide new services four times faster, reduce downtime by about 96%, and reduce time spent on basic “keep the lights on” tasks by more than 40%. These kinds of cost and time savings are essential to running a Modern Data Center—one that can support everyday enterprise app needs, as well as the more highly scalable, iterative requirements of third-platform and cloud-native application development.

This is not to say that converged infrastructure, on its own, will yield such savings and results. It is the job of IT to align infrastructure investments with business requirements. In the words of a typical Dell EMC customer, business requirements of the Modern Data Center can be described a lot like this:

“I want to be agile, so that I can seize new opportunities in an ever-changing environment. And whatever I do, it has to be done with the utmost efficiency in terms of cost and speed. Everything is about speed. And not only do I have to deploy everything quickly, what I deploy has to be high-performance.”

Converged-infrastructure platforms deliver on these essential modern business requirements.

THE FOUNDATIONAL FOUR

When you break it all down, four foundational pillars, or attributes, must be in place to deliver business results via the Modern Data Center:

- Flash-based
- Scale-out
- Software-defined
- Cloud-enabled





IT must have the ability to deploy and manage information and applications—both on- and off-premise—as well as the flexibility to move those workloads back and forth as a business requires.

WHY FLASH?

Over the years, as demand for low-latency data performance increased, storage administrators had to solve the latency problem by increasing the number of spindles in their storage solutions—simply in order to deliver sufficient IOPS at acceptable response times for increasingly growing high-performance workloads.

By reducing the number of drives required to perform greater IOPS, flash technology dramatically reduces the cost of delivering consistent and predictable low-latency performance. This significantly reduces the floor space, power consumption, and cooling requirements needed to deliver day-to-day storage services, while ensuring a super-fast digital experience that everyone expects. Additionally, as flash prices have dropped and capacities have increased, the economics have approached an inflection point as flash drives have begun to drive capacity efficiencies as well.

WHY SCALE-OUT?

As business data and capacity requirements expand, scale-out architectural design means IT can deploy systems with a low cost of entry, while providing a modular approach to scaling out the infrastructure as requirements grow. By designing these systems to scale as a single-managed, scale-out system, IT can efficiently manage massive capacities with few resources. This is critical when dealing with ever-expanding workloads and the need to iterate and expand services in a rapid time frame.

WHY SOFTWARE-DEFINED?

Thanks to software, infrastructure systems are now managed as a single, elastic resource pool. This allows IT to manage massive capacities of infrastructure in a manner that modern architects refer to as “infrastructure as code.” This new software-defined model automates the configuration and deployment of IT services, delivering greater business agility and a more flexible, programmable approach to managing data services. This is essential in optimizing standard IT operations in order to focus greater resources on innovation.

WHY CLOUD-ENABLED?

Finally, cloud-enabled infrastructures are fundamental to Modern Data Center design. In today’s optimize-to-innovate environment, infrastructure services must be delivered via policy-driven methodologies. To achieve true agility, speed, and efficiency, these policies must extend beyond the data center. IT must have the ability to deploy and manage information and applications—both on- and off-premise—as well as the flexibility to move those workloads back and forth as a business requires.

TRUST AT EVERY LEVEL

Finally, customers must be able to trust the systems they leverage and the vendors they do business with. Dell EMC delivers the best-in-class Modern Data Center platforms and, thanks to RSA and Dell EMC's data protection portfolios, we also ensure information security and governance with local and remote data protection.

Our award-winning Global Services organization has an unsurpassed reputation for quality outcomes and real-time support. Given the uncertainty many face with the Modern Data Center and digital business transformation process, these skills and services are in steady demand and help set Dell EMC apart from many of its competitors.

AUTOMATE EVERYTHING: JUST DO IT

Once a plan is made to modernize data center infrastructure, the next step is to automate everything. Any manual process that is done as a predictable, repeatable step must be ruthlessly eliminated via management and orchestration tools up and down the IT stack.

EMC ViPR Controller and SRM use storage array APIs to consolidate and automate the configuration, deployment, and ongoing operations of heterogeneous storage systems, which dramatically simplifies and drives cost out of everyday storage operations.

VMware vRealize, OpenStack, and other cloud M&O software layers automate the delivery of all infrastructure services and provide a self-service experience for consumers of IT resources. Service catalogs can then be built and managed with these tools or higher-level software.

Full-scale automation is the single most transformative change in IT delivery today. Not only does it accelerate service delivery while guaranteeing predictable outcomes, allowing a business to be more agile with less risk, it also frees up human capital to focus on higher value projects and allows creative minds to collaborate with others, helping to transform a business.

TOTAL TRANSFORMATION OF IT SERVICES, PEOPLE, AND PROCESSES

Once full-scale automation processes are in place, full-scale IT transformation can proceed. And while IT services can be modernized and automated using hardware and software approaches to deliver the true well-run hybrid cloud experience that supports multiple CIO priorities, IT itself must continuously transform the people and processes that deliver business outcomes.

As discussed, IT-as-a-Service involves taking the Modern Data Center platform and layering onto it the capabilities for extensive automation. The real goal is optimizing IT production for business consumption. If our customers—the IT teams we serve—are to compete and win against external shadow IT service providers, they must operate like service providers themselves with the same ease of use, speed of service, and seamless scalability to support expanding requirements. Dell EMC has the tools and training to equip IT with those capabilities now and in the future.



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HOW WE HELP

To help customers move through all these changes, transform IT, and become future ready, Dell EMC offers a broad set of global services capabilities that focus on achieving data center modernization, wide-scale automation, and total IT transformation—with minimal risk to the business. These services include:

- **Data Center Consolidation & Migration**

EMC Global Services has conducted thousands of migration and consolidation projects over the past few years—everything from modernizing infrastructure and architecture platforms to consolidating and optimizing the data centers themselves.

- **Hybrid-Cloud Infrastructure**

This includes a range of services to help customers plan, deploy, extend, and manage hybrid-cloud-computing platforms to start brokering IT services from internal and external sources.

- **Application Modernization**

EMC Global Services helps customers analyze and execute application transformation by defining which applications should move to modern infrastructure or cloud models, when to build new applications, and when to re-platform, retire, or retain them. This includes building new cloud-native applications and employing DevOps and automation to reduce software development lifecycles. Our automated approach to application portfolio analysis is 50% faster, utilizes 75% fewer resources than similar services, and our proven methodology helps customers migrate applications to modernized environments quickly and without business disruption.

- **IT Organization & Process Design**

EMC Global Services guides customers in defining the processes, organizations, roles, skills, and training required to operate a service-focused IT organization. Leveraging our service-focused operating model framework, customers can quickly provide provision services to users with associated service levels and consumption-based pricing.

When it comes to the current state of modernization, most businesses we deal with are in either transactional or transformational spending mode and, in some cases, at the same time.

Customers in a transactional spending mode are buying just enough and just in time for maintaining traditional environments. Customers in transformational mode are either transforming existing IT systems toward a hybrid-cloud model or building and deploying new digital applications to transform ways in which they do business. In either scenario, the goal is a Modern Data Center design based on flash, scale-out, software-defined, cloud-enabled, and other trusted technologies. Across these focus areas, Dell EMC invests heavily in innovation, transforming our portfolio in order to meet customers where they're heading.

Through our best-of-breed technology, legendary customer services, and one of the broadest ecosystems of technology and service partners in the industry, Dell EMC stands out with the tools and skills people need to decrease costs, increase agility, remove risks, and drive digital business innovation.

More and more, we are hearing from customers that adopting a modernized hybrid cloud is helping them fuel their digital transformation. A recent IDG survey of almost 1,000 IT executives showed that those who moved toward a modernized hybrid cloud model saved approximately 24% on typical IT spending. The executives were then able to redirect nearly half of those savings (approximately 40%) toward new high-value initiatives and, as a result, were three times more likely than less modernized peers to meet digital business goals.



MODERN DATA CENTER JOURNEY

All of this only begins to tell the story of where businesses and IT teams are heading in the transformation process. Application paradigms will continue to evolve dramatically and, as they do, new skills, tools, and resources will come into play. There is no end point for transformation—it's as constant as human creativity and innovation—but there is a beginning. And that is the Modern Data Center.

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