PowerOne

Use Case Review

By

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DATA ANALYTICS

Data Center Trends

In the 1960s, the average tenure for a company to remain listed in the S&P 500 was 55 years. Current projections indicate that 75 percent of the current S&P 500 member companies will be replaced in the next three decades. That dramatic turnover is due to many factors, including globalization and demographics. Superior management of data and shrewd investments in information technology (IT) are common traits of organizations experiencing rapid growth share compared to those that are in decline. Data is essential to enterprises in the digital era and IT moves the data to where it can best support organizational growth.

For decades, many organizations benefited from the improved capabilities and lower prices predicted by Moore's Law. However, as the growth rate of raw silicon power begins to level off, the ability to do more with less will depend on systems integration and automation. While the cost of equivalent technology has declined year over year for decades, operating costs—in particular the cost of labor—have increased steadily. The need to integrate and automate is clear.

Ten years ago, it was projected that all data center operations would be managed by a few vendors hosting cloud-based services by contract. The assumption was that efficiencies of scale would drive automation and that the cost advantages of standardization would eliminate the motivation to own and operate private data centers. In fact, in the past ten years have seen growth in public/contract clouds as well as in on-premises private clouds and traditional IT models. We now realize that private data centers are here for the long run, and that large investments in ongoing modernization and expansion are fueling demand for systems that have better integration and more automation out-of-the-box.

PowerOne Advantages

A key initiative of digital transformation is the optimization of the datacenter infrastructure layer. The PowerOne System is a new Dell EMC converged infrastructure (CI) offering that is:

- **Delivered as a turnkey system that provides fully automated VMware business outcomes**
- **Based on top-performing Dell EMC components: PowerMax storage, PowerEdge MX7000 servers, and PowerSwitch networking**
- **Designed and built to address the customer's ongoing investment in data center automation**
- **Aimed to accommodate the increasing technology consumption required for achieving digital transformation objectives**
- **Designed to be massively scalable to support thousands of servers and multi-petabytes of storage**

PowerOne Systems are engineered and assembled by a single vendor, providing a seamless customer experience that is fully supported by Dell EMC.

PowerOne Controller is a key component of the PowerOne System, providing increased levels of performance by automating:

- **Allocation of SAN Fabric and storage**
- **Allocation of compute resources through a dynamic, zero-midplane server infrastructure**
- **Administration of network resources by using near-zero-touch PowerFabric administration**

Through the effective use of automation, PowerOne Controller defines new operational paradigms in:

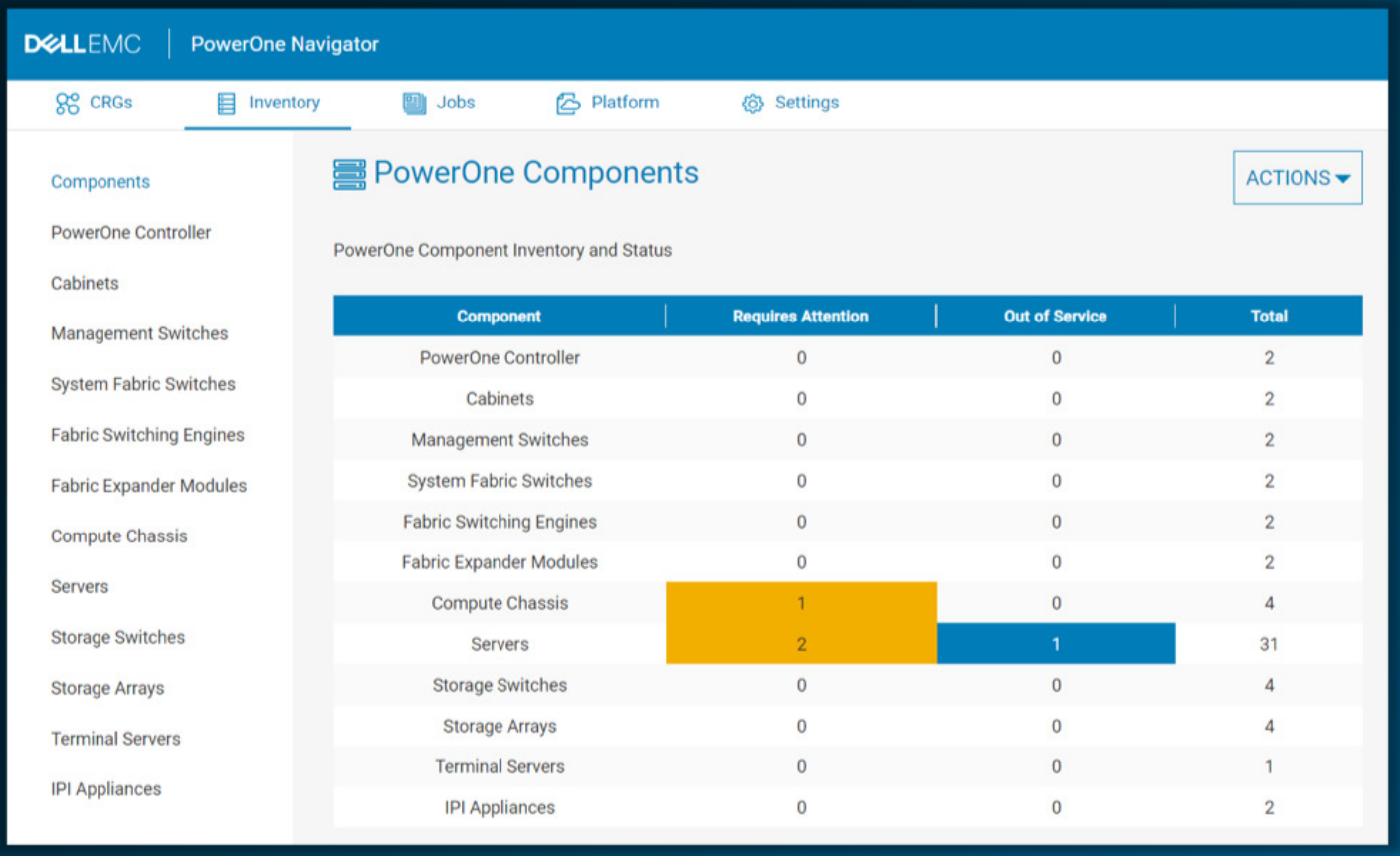
- **Infrastructure initialization, configuration, and provisioning**
- **Operational analytics and monitoring**
- **Inventory management**

PowerOne Controller reduces the time required to develop and deploy products, thereby reducing the infrastructure's time-to-value. Because the PowerOne System is designed according to VMware Validated Design (VVD) best practices, it can easily fit in with the customer's migration to the hybrid cloud and become a supporting element of a Dell Technologies Cloud (DTC) implementation. Using PowerOne Controller, deploying and managing VMware based workload domains has never been easier.

To respond to the ever-present market demand for cost optimization, the PowerOne System is built around asymmetrical scaling principles. Asymmetrical scaling allows for infrastructure growth just in the required layer (compute, memory, or storage), independently of the others. PowerOne offers the best alternative for business workload scenarios where there is a heavy demand just for storage or just for compute, avoiding the huge infrastructure costs associated with classic homogenous scaling. The resulting infrastructure is less complex and provides significant software and licensing savings by allowing infrastructure resources to scale only as required.

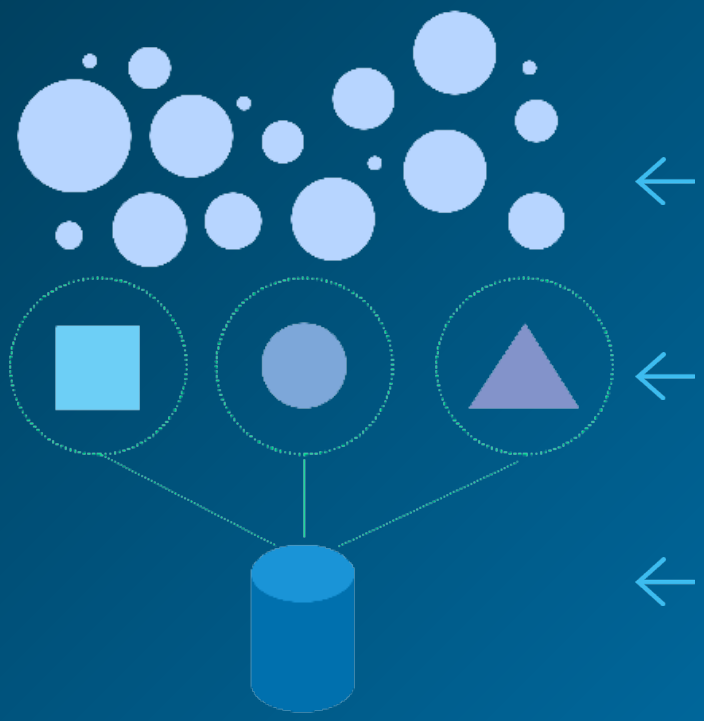
PowerOne management is based on its RESTful API and the API's front-end UI, PowerOne Navigator. PowerOne Navigator provides simple wizard-based operations that enable the customer to initialize, configure, provision, manage, and expand their infrastructure.

PowerOne Navigator showing PowerOne components and status
PowerOne Navigator also lets you automate the life-cycle management of your IT infrastructure to simplify data center operations, reduce infrastructure cost of ownership, and deliver a semi-autonomous management and operating experience.



PowerOne Navigator showing PowerOne components and status

PowerOne's asymmetrical scaling capabilities make it the perfect choice for consolidating data center workloads and for hosting the most resource-demanding business-critical workloads. PowerOne's PowerMax storage arrays, MX7000 servers, and PowerSwitch networking are ideally suited for hosting virtualized or bare-metal SAP, SAP HANA, or Oracle deployments, and for building high-performance SQL or Exchange clusters. PowerOne is designed to satisfy the demands of memory-intensive, low-latency, and high-bandwidth workloads.



Fragmented Data sprawl

- Inconsistent
- Contradictory
- Insecure

Data Consolidation

- Consistent
- Establishing uniform data protection
- Unified management and control

Enterprise Wide Single Source of Truth

- Enhanced data veracity
- Data Mobility\Virtualization
- Digital Rights Management

PowerOne Use Cases Being Driven by Digital Transformation

Use Case – PowerOne and Data Analytics

Data analytics is an experiment-centric activity. Anyone involved with data analytics projects can attest that it is impossible to predict the problems that might arise when moving from raw data to structured data to model development and validation. This situation makes resource planning difficult for everyone: the data engineers, the data scientists, and the IT operations staff who support them. At the start of any project, IT staff commonly ask “How many resources do you need and for how long?” However, the uncertainty inherent in data analytics work means that the answer is most likely “It is hard to say without some exploratory work.” An organization that has the appropriate data center systems and automation can turn that initial question into “How many resources do you need to get started?”

When IT staff confidently offer flexible scale-up and scale-down options for end users, you eliminate wasted time documenting and defending bloated resource requests. These options reduce the incentive for end users to make requests that cover as many contingencies as possible. Operations staff typically use tools that identify underutilized resources. This process triggers policy-based downsizing and a subsequent loss of credibility for the research team that made the initial request. This contention between IT staff and data analytics teams is too familiar in many organizations. The PowerOne System, together with the right process, can eliminate unnecessary waste and confusion for the teams that are most critical for turning data into business value.

Among the two most popular models of data center architectures, converged infrastructure (CI) overwhelmingly prevails over hyperconverged (HCI) systems for data analytics workloads. The ability to scale compute and storage independently leads to fewer wasted resources and lower total cost of ownership (TCO), even in environments that lack any significant automation. Even when accounting for the cost of multiple subject matter experts who perform typically manual work, on premises hosted data analytics has significant cost and time to value benefits. The efficiency is even greater for organizations that use PowerOne. An IT generalist using the PowerOne Controller can control most storage setup and configurations. There is no need to open service requests with subject matter experts or wait for resources in order to have time to work on internal projects. Quicker reaction to requests from research teams also results in less incentive to overprovision server and storage resources or to retain resources beyond their immediate need.

Just as data analytics researchers struggle to predict the total number of resources that are needed over the lifetime of a project, IT data center managers struggle with capacity planning for data analytics workloads to

meet the needs of the organization. Data analytics is the fastest growing type of workload and has the greatest potential for financial returns. The major contract cloud providers offer a solution that trades off capital expenses for higher operating costs that might at first seem to solve data analytics capacity planning challenges. Many studies show, however, that it is less expensive to purchase equipment for highly used data analytics workloads than to rent compute, storage, and networking by the minute or data volume from a contract cloud service.

The PowerOne System improves the already favorable economics of on-premises data analytics investments from initial acquisition and setup through life-cycle management and expansion. After Dell EMC onsite support staff install the PowerMax storage arrays, a single IT generalist can complete the remainder of the setup. Subject matter experts provide information, including local networking parameters, key infrastructure IP addresses, and decisions regarding high availability. The PowerOne launch assist software eliminates hundreds of manual steps that highly in-demand subject matter experts might need to coordinate and perform.

When the initial configuration is completed, the same IT generalist can allocate blocks of resources for research teams—without requiring support from storage, networking, or virtualization experts. The reduced need for your most highly skilled IT professionals to perform repetitive and low-strategic-value tasks frees them to work on higher-value business needs.

Using the PowerOne System to add resources as demand grows is also highly automated and within the capabilities of most IT generalists. The ability to independently scale the resource that is being depleted the quickest improves the economics of data center equipment compared to equipment rental. It also lessens the pressure on the analytics research team to adjust workflows until all system resources can be scaled simultaneously. Researchers often deal with computing shortages by running scripted jobs continuously and waiting longer for each experiment to be completed.

Conclusions

Many organizations are developing new and diverse sources of income by using the information developed by data analytics research. There are also many options, which are based on processes that use data analytics, to reduce costs by eliminating waste, optimizing schedules, and efficiently using resources. The wide range of use cases, coupled with the rapid development of new techniques, introduces both opportunity and uncertainty. Organizations need platforms for data analytics that:

- **Are easy to acquire and set up**
- **Scale storage and compute independently**
- **Reduce the need for internal resources that do not provide high strategic value**
- **Are easy to expand**

The PowerOne System addresses all these challenges. Though not unique to data analytics, you often encounter these challenges with more time criticality and potential impact to the business.