ACCELERATING IT TRANSFORMATION THROUGH INTELLIGENT AUTOMATION IN SERVER INFRASTRUCTURE

EXECUTIVE SUMMARY

Today's businesses are rapidly transforming to prepare for the changes taking place in the global economy. Consider the following: Between 2006[1] and 2016[2], eight of the top U.S. retailers saw their market cap decline by an average of 51 percent with the highest topping out at 96 percent. During this same time, Amazon saw a staggering 1,934 percent increase. While business-to-business (B2B) ecommerce in the U.S. generated about $850[3] billion in revenue in 2016, industry pundits predict that number will reach $1.13 trillion in 2020. Globally? Approximately $6.5 trillion[4].

This shift to a digital economy is driving digital transformation within business organizations. This digital transformation is, in turn, driving IT transformation. Enterprise IT organizations begin to resemble cloud providers more and more. They allocate Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) on demand for business units that are developing and deploying more and more software applications and utilities to better understand and service their customers. While terms like DevOps drive the discussions of today, Moor Insights & Strategies believes the efficiencies gained in IT Operations (ITOps) are one of the key enablers to a successful digital transformation.

Companies of all sizes can benefit from tools that automate the deployment and ongoing maintenance of server environments. Put another way, in today's digital economy, where users need access to intelligible data faster, IT organizations must employ tools that automate the delivery of IT as a Service (ITaaS).

COUNTING THE COST OF SERVER LIFECYCLE MANAGEMENT

Server lifecycle management is the process of getting a server to a desired state, and maintaining that state over time to ensure it maintains integrity and serviceability.

1 Yahoo Finance, 2006.
2 Google Finance, 2016
3 Forrester Research, "US B2B eCommerce Forecast: 2015 to 2020"
4 Frost & Sullivan, "Worldwide B2B Forecast"

Maintaining a single server over its lifecycle adds up. According to an International Data Corporation (IDC) study, the cost associated with managing and supporting a single server over four years is $46,400. This cost does not include acquisition or productivity loss due to server failure or data loss.

Server lifecycle management can be grouped into four logical categories:

- Deploy
- Update
- Monitor
- Maintain

IT departments can address many inefficiencies associated with the deployment, updating, monitoring and maintaining of server infrastructure through technologies like Dell EMC's Intelligent Automation. Using such tools can reduce time to deployment, maximize resource utilization and, ultimately, drastically lower the cost of infrastructure management.

While IT organizations automate many aspects of server management, they still configure, deploy and maintain servers in a somewhat manual manner, requiring hours of human intervention. This manual process adds up in human resources required and error-prone processes that have a multiplying effect on productivity loss.

For example, consider the initial deployment of a server. The manual process of configuring and deploying a single server takes approximately 35 minutes, according to report published by Principled Technologies. As any IT professional knows, this arduous process is complex, time consuming and prone to human error. When deploying multiple servers simultaneously, this process becomes a complex project, and the potential for errors grows substantially.

Once deployed, servers require ongoing maintenance in the form of updates to both the operating environment and the underlying server hardware platform. The process for rolling out updates must be well-planned and executed flawlessly. Otherwise, a business can be at risk for extended down time while updates are rolled back and the last known good state is set across the enterprise.

Updating a server's operating system and its applications is complex. But management tools from Microsoft, VMware and others have gone a long way to simplifying and foolproofing this process. However, managing a server's hardware configuration –

BIOS, firmware and drivers – is far more complex. Despite great diligence, failures frequently occur and recovery is difficult.

The cost of server lifecycle management is often measured in the amount of time spent in the deployment, updating, monitoring and maintaining a server over its lifecycle. There are also indirect costs tied to lost productivity and lost opportunity. Given the resource and budget constraints IT organizations face, every hour spent on manual tasks that could be automated is an hour not spent accelerating IT and digital transformation.

Another indirect cost of manually managing configurations is the messy intersect between DevOps and ITOps. To fully realize the benefit of the DevOps methodology, server resources must be available at a moment's notice, which requires provisioning (and reprovisioning) that executes quickly and flawlessly. In other words, downtime is minimized and operating environments are pristine. Every firmware or driver update that requires a rollback is a direct hit against efficiency. And in today's world of 24/7 datacenter operations, every window requiring downtime for server maintenance has a direct impact on an organization's effectiveness and profitability.

Datacenter efficiency relies on the ability to control the method of rolling out updates. Having the flexibility to auto-update thousands of servers simultaneously, or groups of servers at intervals, is vital. And the ability to roll back single elements of an update package (say, a driver that negatively impacts a subset of servers) is equally important to ensuring peak datacenter operating performance.

A NEW PARADIGM

The market has been slow and incremental in its approach to server lifecycle management. Many of the tools and techniques used for server configuration management are relatives of management platforms designed decades ago, with proprietary interfaces that force vendors to "lock in." While many of these tools are good datacenter management from a "meta approach," the ability to effectively deploy, update, monitor and maintain each server is lacking.

Today's datacenter requires an IT organization that drives cradle-to-grave server configuration management with fully automated tools that remove human resources from the equation. Digital transformation begins with IT transformation. It's a concept that requires the IT organization to be a first mover. By automating lifecycle management, IT organizations can support the needs and goals of the business better,

faster and with greater efficacy. **Intelligent Automation** not only drives greater server availability, it also lowers the cost associated with server management and frees IT professionals to be proactive in support of the business. In other words, Intelligent Automation is a key aspect of IT transformation.

INTELLIGENT AUTOMATION FROM DELL EMC POWEREDGE SERVERS

Dell EMC's Intelligent Automation simplifies the management and maintenance of its PowerEdge server hardware. Designed to drive down the cost and resources associated with server lifecycle management, Intelligent Automation relies on integrated Dell Remote Access Controller(iDRAC) and OpenManage server management software to deliver reliable and efficient automation to PowerEdge Servers.

FIGURE 1: SERVER LIFECYCLE MANAGEMENT UTILIZING DELL EMC'S INTELLIGENT AUTOMATION

DEPLOY	UPDATE	MONITOR	MAINTAIN
▪ AUTOMATED, POLICY DRIVEN ▪ MINUTES TO OPERATIONAL ▪ 1:MANY	▪ FLEXIBLE UPDATING ▪ SCHEDULED REBOOTS ▪ COMPREHENSIVE ROLLBACK	▪ AGENTLESS ▪ PRO-ACTIVE ALERTING ▪ 3RD PARTY INTEGRATION	▪ REMEDIATE ▪ REPAIR ▪ REPURPOSE

Source: Moor Insights & Strategy

Intelligent Automation begins with server deployment that is a model of efficiency. According to a study by Principled Technologies, deploying 100 servers manually is a process that has about 22,000 steps and takes about 35 hours. That 35 hours assumes a flawless execution of those 22,000 steps. Deploying 100 PowerEdge Servers using Intelligent Automation features is a bit more efficient – 23 steps taking approximately 3 minutes. *This represents a time savings of well over 99 percent.*

While the process of server configuration and deployment guarantees a reduction in time to operation, it also ensures consistency across the server environment. This consistency of platforms not only assures optimized performance, it removes the complexities associated with server updates.

Automated firmware management on the new 14th generation of Dell EMC PowerEdge Servers is a feature that simplifies the life of IT administrators. Firmware is automatically tracked, updated and managed through PowerEdge's Intelligent Automation. And each

server's configuration can be scanned daily to ensure no firmware or configuration drift takes place.

One key to automating management of server platforms is openness. Openness in standards. Openness in interfaces. Aggregating the management of lower level conditions such as firmware revisions and power consumption into a centralized management framework simplifies the life of a datacenter operator. And this is an area where Dell EMC has a long history of success. With the rollout of the 14th generation of PowerEdge Servers, Dell EMC has further separated itself by supporting a multitude of standards such as Redfish, IPMI, WS-MAN, SNMP, NFS and CIFS/SMB. And the ability to manage your PowerEdge Server environment directly from your Microsoft System Center or VMware vCenter consoles adds yet another level of simplification.

REMEDIATION & REPROVISIONING MADE EASY

Maintaining an agile server environment is crucial to the success of any organization undergoing IT transformation. This requires a stable environment with the ability to quickly recover from failures and reprovision server hardware "on the fly". In the modern datacenter where ITaaS is the mantra, ITOps must be able to quickly repurpose servers to meet the needs of the business.

Through Intelligent Automation, PowerEdge Servers can recover from server failures with immediacy. Dell EMC touts a "two-click-to-restore" capability known as Easy Restore that allows for administrators to bring a PowerEdge Server back to a last known good state.

To support the repurposing of servers, Dell EMC's system management tools also automate reprovisioning. Through System Erase, a new feature on the 14th generation of PowerEdge Servers, administrators can quickly wipe a server clean and return it to its original factory settings by removing data from nonvolatile storage.

COUNTING THE COST OF SERVER LIFECYCLE MANAGEMENT WITH INTELLIGENT AUTOMATION

Using Intelligent Automation to manage a server throughout its lifecycle delivers many benefits to an IT organization.

EFFICIENCY

Intelligent Automation drives datacenter efficiency. This efficiency comes by way of increased uptime, increased agility and time saved on routine maintenance and management.

RELIABILITY

Being able to develop, deploy and enforce server hardware profiles ensures consistency among operating environments. This allows ITOps to deliver reliable IT services (IT as a Service) to developers and business unit stakeholders.

COST SAVINGS

Intelligent Automation drives down the cost of doing IT. By delivering compute platforms in a fraction of the time, with a fraction of the resources, ITOps can assure a much faster time to readiness.

INCREASED PRODUCTIVITY

By deploying Intelligent Automation technologies, IT organizations can shift their focus from maintaining infrastructure to proactively driving the digital transformation that their business is undergoing.

MI&S PERSPECTIVE

The dynamic nature of today's digital economy has fundamentally changed the way IT is viewed within a business. Rather than a reactive force focused on keeping a datacenter up and running, IT is now viewed as intellectual property. Marrying this dynamic with trends such as ITaaS and DevOps forces IT to operate in more of a cloud services model. This model demands maximizing resource utilization and lowering operational costs.

Driving down costs and allocating resources to areas of growth is more important than ever. This can only be achieved by driving efficiency in server lifecycle management. Dell EMC's Intelligent Automation technology, built into its PowerEdge Servers, allow IT organizations to achieve that operational efficiency.

In the future, MI&S believes that the datacenter will be fully autonomous. That is, self-configuring, self-deploying and self-healing. Self-healing through a management framework that can detect and correct problems before they arise. It will not be long before IT organizations replace hardware parts in anticipation of a failure that is imminent.

MI&S believes that embracing open standards will pave the path to the autonomous datacenter. Orchestration between hardware, software, application and network management is key. Companies such as Dell EMC, which actively participate in open standards committees such as the Distributed Management Task Force (DMTF), are positioned well to continue their leadership position in the Intelligent Automation space.

CALL TO ACTION

IT organizations of all sizes can benefit from the automation of server lifecycle management. Those benefits are rooted in cost savings, time savings and productivity gains. Because of these benefits, the journey to automate server lifecycle management should begin as soon as possible. To fully consider the right solution:

- **Count the Cost & Quantify the Savings:** IT organizations should calculate and compare the fully burdened costs of traditional server lifecycle management versus lifecycle management with Intelligent Automation. While total cost of ownership (TCO) can be nebulous, MI&S believes real cost of ownership can be associated with each lifecycle management methodology.

- **Look for Openness & Simplicity:** When evaluating Intelligent Automation tools, fully consider the heterogenous nature of an enterprise datacenter and the levels of integration it requires. Integration to virtualization management consoles and integration to network or datacenter management consoles. These integrations can only occur if the Intelligent Automation framework itself is open and extensible.

  Often, technologies that are very open and provide API level integration can lack usability. However, in today's IT organization, simplicity wins. It is imperative that the Intelligent Automation framework employed does not sacrifice usability for the sake of openness. That is, an IT administrator should be able to simply and easily drive full lifecycle management from the native UI associated with the Intelligent Automation solution.

- **Look for Leadership:** Before investing in any Intelligent Automation solution, IT organizations should carefully consider both the vision of a solutions provider as well as its track record. Look to invest in technology providers who fully understand the nuances of hardware configuration and lifecycle management. Typically, hardware providers are best at understanding this realm, as well as

protecting against drift and supporting remediation and reprovisionsing/deprovisioning.

MI&S believes that Dell EMC is uniquely positioned in the Intelligent Automation space with its PowerEdge portfolio of servers. Its depth of experience in systems management with OpenManage, combined with an embracing of open standards, sets Dell EMC apart from others. IT organizations looking to fully appreciate the cost savings and productivity gains associated with Intelligent Automation should consider adoption of the 14th generation of PowerEdge Servers.

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