ESG SHOWCASE

The Necessity of an Automatic IT Environment

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ABSTRACT: Faced with a recent surge in digital demands, IT administrators' time is more valuable than ever. Time wasted with basic configuration, issue isolation, and troubleshooting is more than a nuisance; it is a stumbling block for enterprises. Automation offers hope but is often an add-on that brings in added complexity and resources like a DevOps team. Automation needs to be simple for IT and built into the infrastructure. Brocade's Autonomous SAN technology offers an impressive step to achieving this goal because it can help organizations understand, troubleshoot, and optimize their data centers without human intervention.

Overview

IT has long been filled with rigorous tasks, often daunting but typically manageable, fraught with 2:00 a.m. calls to resolve issues, weekend work for basic maintenance, and wasted personnel hours isolating issues to the right vendor or component. IT is a complex 24-hours, 7-days-a-week job, one that is quickly becoming even more complex as the rise of the digital economy changes the definition of success for IT.

Modern perceptions of IT organizations are dismal. Only 6% of the line-of-business executives ESG surveyed view their company's IT group as a competitive differentiator for their business, while 25% regard IT as a business inhibitor. Given that much of the world's economic success has been built on technology, this perception is unfair. So, what's behind it? Among executives who believe IT inhibits business success, 43% say that their IT organization's processes to deploy services take too long.[1]

IT is being judged by a new set of rules. Not only do IT services need to be reliable and predictable, but they are now also being judged on how quickly they are deployed. IT essentially needs to do the impossible: accelerate IT delivery, support increased investment in digital transformation, and keep pace with an ever-increasing number of digital demands from line of business teams and developers, while reducing cost with the same or fewer IT personnel, as talent becomes scarcer. Automation seems like a perfect answer, able to expedite operations, free personnel cycles, and remove human errors. All of which allow maintenance tasks to be performed automatically during production hours or in nightly maintenance windows, removing the need to do basic maintenance on weekends. Integrating automation tools, however, often adds another layer of complexity, risk, and learning.

What if the infrastructure that your organization already has deployed could self-diagnose and resolve issues without intervention? What if the SAN could monitor application performance, identify network congestion, and prioritize bandwidth? What if the hardware could automatically isolate issues to a configuration error or a malfunctioning component in the data center, even if that component was from another vendor? Brocade Autonomous SAN technology is

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[1] Source: ESG Master Survey Results, *2019 Technology Spending intentions Survey*, March 2019.

architected/designed to do this and more, offering an essential step in the direction IT infrastructure must go. The goal is to move to a time when infrastructure solves its own issues, tells you why it was misbehaving, and optimizes itself, freeing IT administrators to address the larger and more valuable concerns of the business.

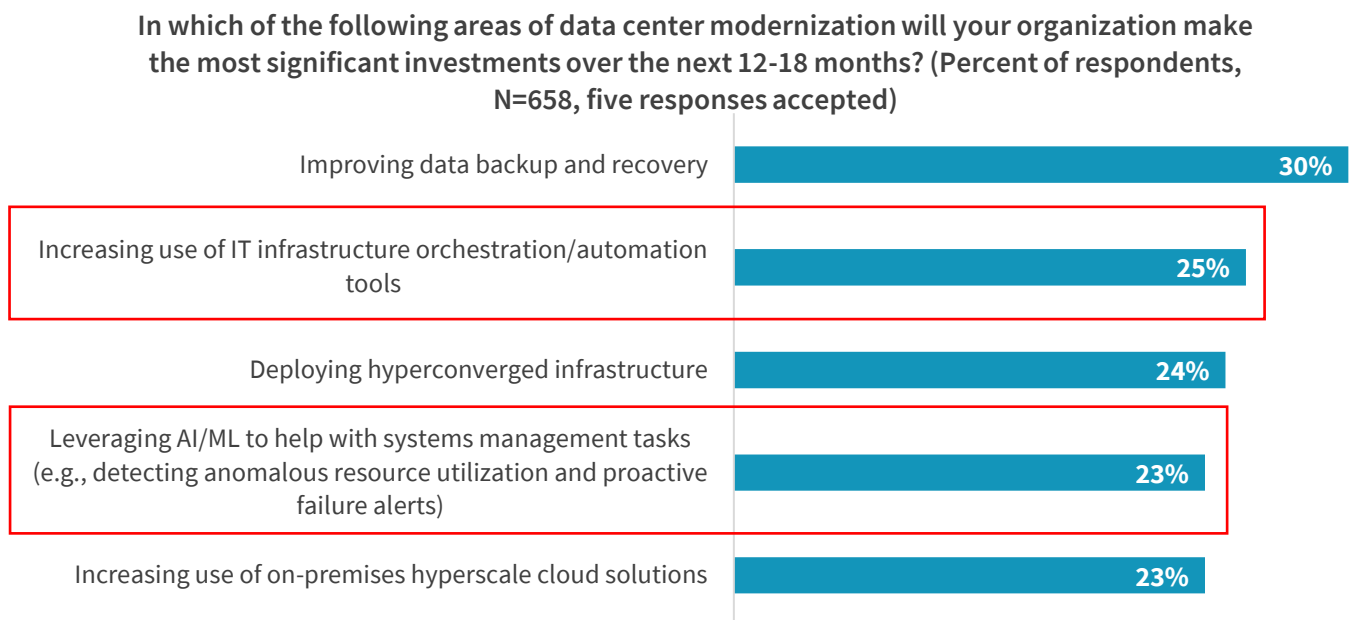## Automation Is a Must, and Modern Businesses Are Embracing IT

As a larger percentage of the business success depends on data, IT is forced to assume a larger burden. Nearly two-thirds (64%) of IT decision makers say IT is more complex today than it was two years ago. The demands of digital businesses exacerbate the problem. Organizations with mature digital transformation initiatives, for example, are 3x more likely than those with no digital transformation initiatives (29% versus 9%) to say IT is *significantly* more complex today.[2]

In order to address the rise in demand for data and IT services, businesses are unable to simply hire more IT admins to keep pace. IT talent has become scarce; nearly a third (32%) of IT organizations indicated that they have a problematic skills shortage in IT architecture and planning.

In order to adapt to a larger diversity of demands and an increased scarcity of infrastructure administrators or architects, hiring practices are evolving. Most storage decision makers (62%), expect the majority of their new hiring over the next 12 months to be for IT generalist positions rather than domain specialists (such as storage admins).[3] As a result, the depth of knowledge in specific subject areas can be expected to diminish. Under these conditions, it is increasingly less likely that an IT admin will have the time, experience, or ability to delve into the nuances of data fabric technology—for example, to diagnose and troubleshoot complex issues. As a result, IT organizations are looking toward automation to fill the gap.

Among the most commonly identified data center modernization investments planned for the next 12 to 18 months, 25% of IT organizations expect to increase the use of IT automation, and 23% expect to leverage machine learning to assist with systems management tasks (see Figure 1).

Figure 1. Top Five Data Center Modernization Investment Areas

In which of the following areas of data center modernization will your organization make the most significant investments over the next 12-18 months? (Percent of respondents, N=658, five responses accepted)

Area	Percent
Improving data backup and recovery	30%
Increasing use of IT infrastructure orchestration/automation tools	25%
Deploying hyperconverged infrastructure	24%
Leveraging AI/ML to help with systems management tasks (e.g., detecting anomalous resource utilization and proactive failure alerts)	23%
Increasing use of on-premises hyperscale cloud solutions	23%

Source: Enterprise Strategy Group

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[2] Source: ESG Master Survey Results, *2020 Technology Spending Intentions Survey*, January 2020. All other ESG research references and charts in this showcase have been taken from this master survey results set, unless otherwise indicated.
[3] Source: ESG Master Survey Results, *2019 Data Storage Trends*, November 2019.

While these statistics offer insight on the goal, the execution is often more complex. For example, IT orchestration and automation (34%) was the second most commonly identified problematic skill shortage among IT decision makers, behind only cybersecurity (44%). Automation that requires news skills adds complexity and defeats the very purpose of automation. Next level intelligence and automation must be integrated into the infrastructure, so the benefits can be accessible via existing tools, processes, and skill sets. In this manner, an IT organization can reap the full benefits of automated technology.

What Part of the Data Center Should Have Automation Integrated?

To answer the question on where automation should be integrated, a case could, and probably should, be made that it should be integrated everywhere. With that in mind, one location, specifically IT infrastructure that comprises the storage network, presents a vital and valuable location for the collection of insight and the application of automation in the data center. Fibre Channel switches are well situated to collect telemetry data on data flows and movement. The storage network has visibility to a wealth of physical devices, including the network, the hosts, and the storage targets.

The SAN's position at the center of the data path offers a prime location to automatically configure topologies when provisioning new infrastructure. Its visibility into multiple components can help organizations intelligently diagnose issues. The fabric can also redirect traffic to automatically mitigate issues around poorly behaving components.

Brocade Autonomous SAN

Broadcom, a leader in storage networking technology, has introduced its Brocade Autonomous SAN technology that captures rich telemetry data on the fabric infrastructure, the connected endpoints, the data traffic and flows, and the application environment. With this autonomous SAN technology, Brocade aligns with a broader trend in the IT infrastructure industry to offer more intelligent and self-optimizing systems but takes it a step or two forward.

Other technologies offer insight inside their network, server, or storage systems, which, while valuable, does not address issues derived from the interactions between different servers and storage devices from different vendors. Brocade's ability to automatically identify and resolve these typically more complex interoperation issues makes its technology so valuable. The Fibre Channel switches' position in the data path allows it to have visibility into the surrounding components and gather intelligence not only on Brocade's infrastructure but the entire storage network and the surrounding components as well.

Brocade's autonomous SAN vision is comprised of three value themes: self-learning, self-optimizing, and self-healing. Combined, these three elements deliver a massive step forward in achieving autonomous infrastructure.

Self-learning

The Brocade technology analyzes millions of data points to create a real-time understanding of the data fabric environment. Through this insight, Brocade can identify individual applications and their performance characteristics across the fabric, as well as identify the performance of the various devices that comprise the fabric—the switches, hosts, and targets. Once the data fabric is understood, Brocade can automatically learn application flows. With this data, Brocade then creates health metrics on each component along with the applications and then presents this data to the administrator. Brocade automatically identifies and detects abnormal traffic behaviors and areas of degraded performance. Combined, these capabilities eliminate countless wasted personnel cycles doing manual analysis to capture, track, and maintain this detailed level of data traffic understanding. Even if the personnel cycles were available, this level of analysis is becoming nearly impossible to maintain manually given the massive scale of modern data center environments.

Self-optimizing

With its application-centric insights, Brocade allows IT administrators to apply priorities for specific application data traffic. These prioritizations can then help guarantee performance levels by automatically monitoring and shaping traffic as patterns shift, when congestion occurs, or when components misbehave or even fail. For example, Brocade will identify a misbehaving device that stops returning buffer credits to the switch. In a traditional environment, an issue would cause the switch to stop sending frames to the device, causing frames to back up in the fabric. Brocade's Autonomous SAN will isolate the port traffic for the misbehaving device to a virtual channel of the fabric and allow all other traffic to go around. Brocade can also automate manual activities such as those used for new infrastructure deployment and provisioning, which can expedite the deployment of IT services, something line of businesses executives are clamoring for, while minimizing the risk of human error.

Self-healing

Extending the value of Brocade's ability to self-learn and self-optimize, its Autonomous SAN technology can automatically identify and resolve issues. For example, Brocade can identify data traffic congestion and automatically fail over or adjust traffic. If congestion occurs at the server due to abnormal or unexpected server behavior, Brocade will identify the congestion and notify the Emulex adapter of the issue through an alert and signal. Based on that issue, the Emulex adapter will take automatic corrective action to mitigate the impact of the congestion. This activity will generate an event notification that will be rolled up in the management tools to make the administrator aware the SAN had an issue and fixed it.

Imagine a scenario where this sort of issue occurs at 2:00 a.m., and the network mitigates the issue automatically and flags the trouble component for resolution, notifying the administrator to resolve it as soon as possible. Brocade's technology helps enable the infrastructure to manage itself, which in turn helps minimize the chances of working nights or weekends. In a similar fashion, Brocade can also detect and automatically reconfigure fabric configurations that fall outside best practices.

Brocade includes its autonomous SAN technology in its Brocade Gen 7 portfolio.

The Bigger Truth

Businesses can succeed or fail based on their ability to maximize the potential of their digital information and the infrastructure that supports it. As revenue opportunity and IT activity become more intertwined, a larger burden is placed on IT. This is the current state for modern business, as nearly half (49%) of businesses agree that data is their business and 63% expect to develop and offer new data-centric products and services (i.e., either selling data or insights based on that data) in the next 24 months.[4]

IT needs automation for assistance. IT needs its infrastructure to address the tedious, time-consuming, labor-intensive, but ultimately lower value tasks, so that precious high value IT resources can focus on driving the business. Data center infrastructure is adding intelligence to help. Organizations are investing in automation. To truly transform the data center, though, infrastructure must come with automation built-in throughout the platform and offer insights not just on itself, but on the surrounding ecosystem as well. Brocade's Autonomous SAN presents a huge step in the right direction, automatically understanding, optimizing, and healing a major portion of the data center. This area is poised to return countless benefits to those organizations that leverage its capabilities.

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[4] Source: ESG Master Survey Results, *2019 Data Storage Trends*, November 2019.

Enterprise Strategy Group is an IT analyst, research, validation, and strategy firm that provides market intelligence and actionable insight to the global IT community.

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