

ASSESSING DELL TECHNOLOGIES' VISION FOR AUTONOMOUS OPERATIONS

EXECUTIVE SUMMARY

Automation is the key to success. These words have perhaps never been more accurate than in today's age of the digitally transformed business. A company will win or lose depending on how fast it responds to the needs of its markets, customers and employees. And technology is what enables IT organizations to increase responsiveness to the business needs while improving the efficiency of IT operations.

In the digital business, automation should be an imperative when faced with a sprawling IT landscape—which now spans the edge, hybrid multi-cloud instances, and, of course, the datacenter. Automation helps predict future growth and proactively identifies—and even remediates—points of failure before they can occur. It can even find and fix vulnerabilities to improve security and prevent the breach or exploitation of an organization's data.

Successful organizations have become reliant on such technologies to drive more efficient IT operations and increase uptime and availability of services. Organizations that haven't yet adopted automation in IT operations will continue to be overwhelmed by the daily deluge of data while responding to IT tickets that don't add value to the business. Indeed, for businesses in the digitized economy, automation is necessary for survival.

In this new world where every business is a technology company, autonomous operations (AO) will be the next key differentiator. AO is artificial intelligence (AI)-driven infrastructure and datacenter functions. In practical terms, AO is the use of AI to preemptively correct or respond in real time to issues that impact infrastructure and IT operations. AO is perhaps the most natural "killer app" for AI. As with any AI application, there are two critical elements to AO: the availability of data and the ability to act on that data.

In this paper, Moor Insights & Strategy (MI&S) will explore how AO can drive greater efficiencies in the digitally transformed business. Further, we will dive into Dell Technologies' AO vision and strategy and assess how it aligns with the market's needs.

AUTONOMOUS OPERATIONS – COMING TO A DATACENTER NEAR YOU

The path to autonomy is a continuum from completely manual to some level of automation and on to full autonomy. Many companies have embraced light-level automation augmented by scripting and manual actions, versus a more autonomous environment where systems themselves detect and correct. Let's use the airline industry as an example to compare.

A family is sitting at the ticket counter of a major airline, checking in for a weeklong vacation at the beach. Nothing happens as the airline representative clicks their "print screen" button to print tickets and baggage tags. They click again. As they curiously look at their screen the representative at the screen next to them asks, "Is your system printing?" And down the line, every kiosk, every station grinds to a halt across every airline in the airport (because, of course, this is a shared service).

The representative calls IT, which is aware of the situation and has identified a print server failure and begun rolling over the function to the backup. Ten minutes later, the printing problem is resolved, but the damage has been done. Lines are queued up. Customers are frustrated and will miss flights. And even those who successfully board because the airline delayed departure times will miss connections. This 10-minute outage will end up costing the airlines, hotels and restaurants, and consumers.

This is a fairly common scenario in the world of IT automation, even though it is an incredible gain of efficiency as compared to its predecessor. If this was a manually managed environment, such an event could take hours to resolve, and the impact to the consumer, the airline, and its partners would be much larger.

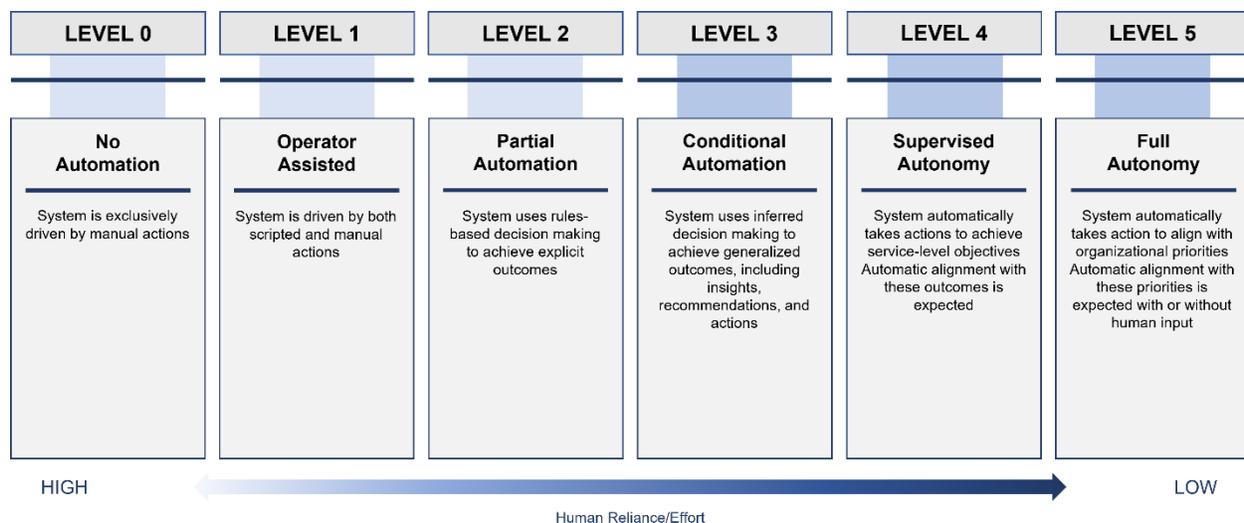
But now, let's look at autonomous operations. In the same situation, the family might experience a momentary delay as the print server transitions to a functioning system before getting their tickets and moving along.

In this scenario, the root cause of the failure and the conditions leading to it were recognized far in advance, and corrective actions were taken before any failure occurred. Perhaps it was an upgrade that caused an application failure or a backup restoration that encountered a hiccup. It almost doesn't matter because the result is no cost to the airlines, partners, downstream vendors, or (most importantly) consumers.

THE AUTONOMOUS CONTINUUM

It is common and accurate to draw a parallel between autonomous operations and self-driving vehicles, both of which have six stages. Whereas stage 0 represents a fully manual environment, stages 1-5 represent a sliding scale to full autonomy (i.e., “plug it in and let the robots do the work”). The reality is that virtually no successful IT organizations live completely in stage 0, yet the end state for all operations to reside at stage 5 is a very distant horizon.

FIGURE 1: THE AUTONOMOUS OPERATIONS CONTINUUM



Source: Moor Insights & Strategy based on Dell Technologies data

While most IT organizations sit in Levels 1 and 2 of autonomous operations, the rate of innovation and pace of adoption is accelerating. This hunger for greater levels of autonomy is driving an increase in the pace of innovation and rate of adoption.

It is essential to repeat the MI&S assertion that achieving Level 5 Autonomy for complex systems is on the very distant horizon. We are beginning to see some low-level functions such as cache management and power management achieving full autonomy. And this is OK, it shows us that gains are possible and will continue to fund innovation in this area as it advances.

As one looks across the modern datacenter environment, inclusive of the edge and cloud, clearly some functions can achieve higher levels of autonomy faster, while others will lag. And some may stay at a lower level forever due to business or regulatory requirements. The key for an IT organization is understanding the nuances of driving

autonomy in the datacenter and investing in the companies and technologies that can scale accordingly while supporting the uniqueness of the organization.

When evaluating AO solutions and the companies that can deliver them, there are two fundamental questions an IT organization should ask:

1. Does the vendor have a depth of understanding of how my whole datacenter works?
2. Does the vendor have a complete ecosystem that enables openness “up the stack”?

These questions are essential for many reasons. First, IT organizations should look to a vendor delivering an infrastructure portfolio supported by monitoring and management utilities deployed and refined across companies of all types and scenarios spanning all environments – from the core datacenter to the edge and the cloud. When trusting your IT environment to an AO framework, you want to trust that the people behind that framework have walked in your shoes and are aligned with your business priorities and needs.

Second, and equally important, is the issue of openness and ecosystem support. No single IT solutions vendor is going to own the market. We will continue to operate in a market where different technologies perform better at certain functions. As a result, working with an AO vendor that understands this reality and embraces openness as a design principle is important.

For example, a company may use Dell Technologies for its monitoring and management capabilities and ServiceNow for incident management and notifications. In this situation, the ability for Dell to push notifications to ServiceNow without disrupting workflows is critical. If such capabilities are not available in the AO frameworks being evaluated, the evaluation should end.

As MI&S continues to evaluate the IT operations market, we believe Dell is well-positioned to be a leader in the space as it lays out a vision and strategy for AO. This is not a viewpoint that comes lightly; instead, it is the result of evaluating several factors, including:

- Depth of portfolio, including hardware, software, and toolchain
- Years of experience in delivering solutions

- Number of deployments
- Ability to deliver services and solutions to the market
- Customer-centric relevancy (i.e., building what the customer wants and needs)

Granted, some of these criteria are subjective. However, we believe Dell has a market pragmatism driven by customer readiness and need. The company appears to be focused on delivering the features and functionality that customers demand today while laying a framework in anticipation of where customers will be in their AO journey tomorrow.

DELL TECHNOLOGIES' STRATEGY – MI&S PERSPECTIVE

Dell Technologies has established a vision grounded in reality and designed to meet each IT organization wherever it may be on that autonomy continuum. This enables IT organizations to drive toward Level 5 on their own timelines, with a solid set of technologies adapted to their environment.

Further, Dell Technologies built its strategy on a solid set of proven technologies. The cornerstone of Dell's strategy is CloudIQ—cloud-based monitoring utilizing machine learning (ML) and predictive analytics to root out issues long before they occur. CloudIQ is an engine that supports Dell Technologies' entire portfolio—hyperconverged infrastructure/converged infrastructure (HCI/CI) compute, storage, networking, and data protection.

While CloudIQ is the cornerstone of Dell Technologies' AO vision, integrating it with instrumentation and the technologies the company has developed and matured over the years strengthens its value. For example, iDRAC, a baseboard management controller (BMC) designed onto every PowerEdge server, collects thousands of operating statistics. By utilizing iDRAC, CloudIQ has the data necessary to make AI an effective engine for autonomous operations.

A STRATEGY GROUNDED IN RELEVANCE

It can be easy to look at strategic visions and quickly dismiss them, as horizons tend to be longer-term, and every innovation is "up and to the right" on a PowerPoint chart. Dell's strategy is an extension of what it has deployed across datacenters around the globe, managing servers, storage environments, and the networking that ties it all together. As we mentioned earlier, this is a strategy based on market pragmatism, enabled by proven technologies.

Dell Technologies approach to autonomous IT operations answers the two questions posed earlier. As the largest infrastructure company globally, the company has a depth of experience across virtually every kind of operating environment and any operating condition.

Regarding openness and depth and breadth of ecosystem, Dell also excels. It designed its management technologies to be open by default. The company seems to understand that the IT market has many players who can bring value to an organization and strengthen cooperation. A good example of this can be seen in the company's early (and extensive) support for the Desktop Management Task Force (DMTF) and its Redfish API. Dell contributed to the development of this management API and has fully supported it since its inception.

APEX – A PREVIEW OF WHAT'S TO COME?

If an IT organization wants to see how Dell's AO strategy unfolds, look no further than the company's APEX as-a-service offering. While the potential financial benefits of APEX are often highlighted, its guarantee of uptimes with zero-touch is what excites IT professionals.

WHAT THIS MEANS FOR IT ORGANIZATIONS

While most analysts and pundits will tell you that IT's role has shifted during the digitization of business, the fact is IT's role has expanded – not shifted. Yes, IT is being asked to integrate more closely with business units and play an advisory role. But this is in addition to its current responsibilities, i.e., deploying, provisioning, and maintaining critical IT infrastructure in a datacenter that has expanded from a building with servers, storage, and networking to seemingly countless devices connecting to the edge spanning the cloud. All this means IT is being asked to do more than ever, and IT staffing, or the available labor market, is not growing at a pace that enables the organization to keep up.

Because of this, IT organizations that adopt and execute a comprehensive AO strategy will be on the winning side of the digital evolution. Even absent digital transformation projects that most organizations face, the expansion of the datacenter to the edge and cloud require IT organizations to adopt a comprehensive AO strategy.

The direct and indirect cost savings associated with adopting AO are pretty obvious, if not always quantifiable. More importantly, however, is this articulated ability for IT to expand its role within the business, which brings many indirect benefits.

CLOSING THOUGHTS

The era of digitization is well upon us, and one can argue that IT is literally in the throes of digital transformation. As these transformation projects near completion, IT will be further challenged to tread water as every business function, transaction, and customer interaction will be driven by technology. If IT doesn't embrace and deploy an AO strategy, its most precious assets—its people—will either burn out or move on. AO needs to be the foundation from which IT organizations map their strategies for deploying, provisioning, and managing infrastructure.

But AO is complex and not without risk. IT organizations are (rightfully) cautious when managing the very infrastructure that will cause a business to succeed or fail. As a result, they should partner with IT solutions providers with the portfolio and experience to ensure success.

Further, the AO journey is not a capability-maturity model whereby every function drives toward achieving Level 5. Rather, MI&S agrees with Dell's point of view that the successful end-state of AO adoption as a continuum, where each function is optimized along the six stages of autonomy.

Every company is different in its journey to an autonomous environment. While some IT organizations have embraced automation to its fullest, others have business, operational, and regulatory constraints that prevent a more rapid adoption. This requires IT solutions providers to meet each customer where it is on its AO journey.

Moor Insights & Strategy sees Dell Technologies as uniquely positioned in the AO space for many reasons. First and foremost, it marries the largest IT infrastructure business with decades of experience in managing IT operations.

Second, Dell embraces innovation in a very pragmatic way, enabling its customers to "size" for their environment. Customers aren't hastened along a path to adopt innovation, but the technology is there for IT organizations that are more advanced from a capability/maturity perspective.

For more information on Dell Technologies' AO strategy, visit www.delltechnologies.com/autonomousoperations

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