Whitepaper

Why DataOps is the Missing Piece of Your Cloud Migration Puzzle

Charles Araujo

Principal Analyst, Intellyx

June 2022

"Hey, the new technology is cool and all, but you know that big giant mainframe everyone hates to talk about? It's still generating 60 percent of the revenue for this company."

I was in the middle of a conversation between two IT executives who were discussing the challenges of balancing the development of modern, cloud-native applications against the fact that many business-critical processes—and data pipelines—are still supported on traditional systems and architectures.

The comment above is from one of those executives, who shared his frustration about a conversation he had with a peer, and hints at a growing issue that will continue to bubble up in enterprises everywhere. While much of the world is already moving to the cloud and rushing to deploy modern, data-driven applications, there's a stubborn little problem: *the most important data these applications need often lives in traditional environments*.

This fact is bringing newfound relevance to an old challenge and giving rise to a modern discipline: data operations, or *DataOps*.

The Cloud-Data Balancing Act

There are two conflicting trends that have led to this situation.

On the one hand, we have finally reached the cloud tipping point. Organizations of all sizes and across most industries have now fully embraced cloud for core workloads and begun migrating a massive percentage of their target workloads to the cloud.

The appeal is clear.

Applications developed or rebuilt in a cloud-native manner create agility and speed and enable the delivery of modern experiences. But as organizations move past the isolated, greenfield efforts that dominated the early stages of cloud migration, they have hit a roadblock.

They are realizing that these more foundational workloads rely heavily on data that resides in the traditional systems that have long been at the core of the enterprise technology stack. Enterprises were supposed to have already eliminated this pesky roadblock, but a second trend has left it in place: *the shifting view of modernization*.

A New Perspective on Modernization

The early days of the cloud brought renewed calls for enterprise modernization, a long-standing and seemingly never-accomplished goal of IT leaders. The idea was simple. The significant financial benefits promised by the cloud would fund the modernization of the enterprise, allowing it to shed its mainframes and aging infrastructure once and for all, and clear the way for the modern era of cloud-based computing.

That was the idea.

But a couple of funny things happened on the way to this cloud nirvana. First, cloud operating costs didn't prove to be a universally good deal. Some workloads—particularly those with high transaction rates and low levels of variability—often proved more costly to run in the cloud than on a traditional stack.

Second, as organizations attempted to modernize their traditional infrastructure and migrate these workloads to the cloud, they often found that it was much harder to accomplish than it sounded. The massive in-system relationships made it exceptionally difficult to extricate select pieces of these monolithic applications to modernize them. In many cases, it came down to an all-or-nothing modernization choice. And for many organizations, the choice was nothing.

This combination of cloud and complexity has created a new, tempered, and much more rational approach to modernization. Organizations are now weighing the costs and complexity against the benefits and modernizing only where it provides significant business value.

The result is that many of those core business processes will continue to run on the traditional application infrastructure stack for the foreseeable future, thus leading to more frustrated outbursts like that of my executive friend.

In the wake of this more measured approach to modernization, enterprise leaders will need to continually strike a balancing act that enables cloud-based applications to operate natively, while addressing the reality and complexity of managing the data in-place in traditional environments.

The Unspoken Batch Problem

The challenge for enterprise IT leaders, however, is that striking this balance between modern cloud-based applications and traditional on-premises data sources runs into something that we rarely discuss in a modern context: *batch*.

Traditional systems don't generally treat data as something that flows freely between them. On-demand is not something that was part of the monolithic playbook, which, of course, is the complete opposite of how things work in the cloud-native world.

For modern applications, on-demand and real-time data is the expected operational state. And, as you'd expect, the architectural foundations of each of these approaches assume their respective data paradigms. Therefore, striking the

balance between cloud-based, data-driven applications and traditional data sources means coming face to face with managing batch data processing.

On the surface, that would seem to imply that it puts the onus on the new cloud-based applications to somehow account for the fact that data is being processed in batch. But that's not true. Both sides need to come together to effectively manage the flow of this new data pipeline and workload.

Modern applications need to allow for the fact that data may not be available on demand. And traditional sources of data must also be compositing the data in a way to make it most readily available to, and in alignment with, the needs of these new applications—which often look nothing like the traditional consumption models of the data.

The dance necessary to pull this off is the act of application and data workflow orchestration. And it represents both an old problem and the foundation for the newer discipline of DataOps.

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An Old Problem Finds New Urgency

The fact that the need to manage data workflow orchestration in traditional architectures is an old problem is, ironically enough, a good thing.

Moving vast amounts of data between interdependent systems has always been a critical necessity. But it's also something that has been rife with pitfalls, traps, and snares made up of field-type mismatches, poor data quality, and timing and sequencing challenges (among countless others).

As a result, most large enterprises have built extensive processes, disciplines, and sometimes, entire teams, to manage the data workflow orchestration process to ensure that it happens flawlessly. But the recent move to the cloud has made the adaptation of these approaches an urgent matter.

Therein lies some good news.

The traditional side of the house within most enterprise IT functions knows how to handle data workflow orchestration. The same principles that they have applied to traditional data workflow orchestration challenges also apply as they shift to dealing with today's hybrid environments—just with a few twists and a healthy dollop of some modern technology. Oh, and we're going to give it a new name: DataOps.

DataOps: Providing Data Orchestration and Workflow Management for Hybrid IT

Let's start with a definition. DataOps is a term that encompasses the control, management, and orchestration of data and its corresponding workflows to support specific, operational workloads, often by leveraging automation.

That's a mouthful, but it's an even bigger idea when you break it all down. This fact is particularly true in the context of the hybrid data pipelines necessary to support the interconnections between cloud-based, data-centric applications and the traditional architectures that serve up data and support mission-critical business processes.

As we have discussed, data workflow orchestration in traditional environments has always been challenging, even though the environments themselves were relatively stable and changed at a slow pace. Modern, cloud-native applications, on the other hand, are in a continual state of change—and their data demands and process connections are in a constant state of flux.

Moreover, the cloud-native architecture itself is ephemeral and continually evolving. While multi-cloud implementations within a single workload used to be rare, they are now becoming more common. But even if an enterprise chooses to stick with a single cloud provider, the various services, solutions, and technologies they offer are constantly shifting and changing.

It's one of the great benefits of the cloud—and makes data orchestration one big headache.

DataOps: Deserving of its New Name

Most of the time, when you take an old approach or technology and give it a sexy new name, it's just for marketing purposes. Not this time.

While the modern approach to DataOps can certainly trace its legacy to the data workflow orchestration of traditional environments, the complexity of connecting traditional to modern, and the ephemerality and continual evolution of those new environments, make DataOps a new and necessary practice.

The fundamental premise of adopting a DataOps practice is taking the traditional and long-proven approaches to data workflow orchestration and wrapping them in a set of new perspectives and technologies that allow them to function in the context of these ever-changing modern environments.

Central to this modern DataOps approach is respecting that both types of environments have their own unique characteristics and needs. It's impossible to manage everything from batch to real-time streaming data unless you start by recognizing that they are going to function in fundamentally different ways and that your processes and tools must respect that fact.

At the same time, however, you need to be able to visualize and monitor the entirety of the data pipeline—from traditional to modern—through a single pane of glass. While respecting the unique characteristics of each environment is important, you must also manage them as a coordinated whole.

And it's that last part of the equation that really makes DataOps its own discipline. The complexity of managing across these multiple environments and modalities is something that's almost impossible to do using the brute force methods of the past.

Central to DataOps is the ability to leverage automation, intelligence, and analytics to create visibility across the entire spectrum of the enterprise data pipeline—and then to make it manageable.

Without this new technology-enabled layer, it becomes almost impossible to keep up with the rate of change happening on the modern side of the equation without

breaking something on the traditional side of it. The technology behind DataOps makes all of this work.

The Intellyx Take: Why DataOps Must Be Part of Your Cloud Migration Strategy

Almost from the day someone coined the term, "the cloud," it's had an almost innate, futuristic appeal. It's easy to get excited about the possibilities as you imagine migrating current applications, building new ones, and modernizing your stack.

But once you get past that warm, fuzzy feeling, you realize that it's the less sexy bits that often make the difference between wild success and dismal failure. Moreover, the reality is that there is rarely an authentically "modern application" (at least one that's doing anything meaningful) that isn't, in fact, a hybrid construct built from a combination of modern and traditional components woven together.

Therefore, the effectiveness of your migration to the cloud is based significantly upon your ability to manage the data pipelines and workflows that underpin and support your newly cloudified architecture. And the devil in the details—the part that will likely have the greatest impact—is those bits that connect your traditional stack to your migrated one.

Get that part wrong and all your efforts will be wasted.

This sobering fact is why DataOps is so important and why you can get it right by leveraging tools like Control-M from BMC which was built to help you solve the data orchestration challenges of the hybrid IT world.

And make no mistake about it. Getting it right is what you need to do. In our hybrid world, the difference between leading the pack and chasing it will all come down to striking the right balance.

About the Author: Charles Araujo

Charles Araujo is an industry analyst, internationally recognized authority on the Digital Enterprise and author of The Quantum Age of IT: Why Everything You Know About IT is About to Change.

As Principal Analyst with Intellyx, he writes, speaks and advises organizations on how to navigate through this time of disruption. He is also the founder of The Institute for Digital Transformation and a sought after keynote speaker.

He is a regular contributor to CIO.com and has been seen in Time, InformationWeek, NetworkWorld, Computerworld, USA Today, and Forbes.
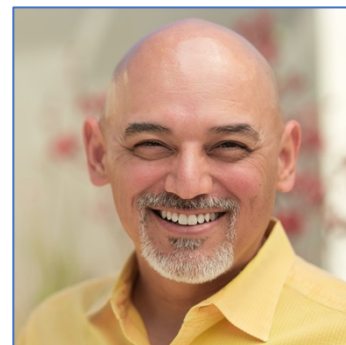
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