



# SMART INFRASTRUCTURE MANAGEMENT

## How to Transform the Management and Modernization of Your Infrastructure to Maximize Business Outcomes

**The DX Institute** | Digital Transformation | The Digital Experience | The Digital Enterprise

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Transformation and modernization are top-of-mind issues for every enterprise IT executive. But whether it's replatforming legacy applications or migrating them to the cloud, enterprise IT leaders routinely suffer from run-away costs, unforeseen complications, and out-of-control environments on the other side of the modernization process.

Yet, as an enterprise IT leader you have little choice but to forge ahead. The outcomes your business counterparts demand, coupled with the ever increasing risks incumbent with legacy environments, mean that you need to find a way to transform and modernize your tech stack.

The irony is that while much of the focus during modernization and transformation efforts is on the application, the real source of challenges is often not the application at all.

What if the real issue is that you're not paying enough attention to the unsung hero — and liability, if you don't address it: *your infrastructure*.

I'll even go so far as to say that you will never truly succeed at modernizing and transforming your IT application stack — nor avoid the crazy, unexpected costs, the lack-of-control challenges, or the unforeseen performance issues — until you have first modernized and transformed your infrastructure.

The question that holds enterprise leaders back is understanding what infrastructure modernization really means, and how to do it amid all the other pressures and constraints you face.

The good news is that it is possible to free your applications from their legacy shackles and rapidly (and cost effectively) transform your infrastructure by changing the way you look at infrastructure management in the first place.

You need to move past looking at it as a moribund practice akin to maintaining your plumbing or flossing your teeth. Rather than avoiding and minimizing it, you need to see it as the gateway to the visibility, transparency, and governance you need.

**The essential missing element is the smart utilization of infrastructure data. It's why I call this approach smart infrastructure management — and it will change how you approach your modernization and transformation efforts.**

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THOUGHT

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*Aged and inflexible  
infrastructure is like the iceberg  
floating invisibly below the  
surface waiting to strike — you  
don't see it until it's too late.*

# WHY YOU'VE SKIPPED OVER — AND THEN STRUGGLED WITH — INFRASTRUCTURE MODERNIZATION

“Hey, Charlie. Can I talk with you?”

Her name was Donna, and as she spoke, these words sent a shiver down my spine. At the time, I was running IT Operations for a \$1 Billion healthcare firm, she was the head of business operations — and she was never happy.

We had built a well-oiled machine that just ran. All the time. Without fail (well, almost!). But she would always find the smallest thing to nitpick. Without fail. What frustrated me most was that this was a wildly different situation than when I had arrived two years earlier. At that time, our infrastructure was failing several times a day and our singular goal was to finish each day without a fire burning out of control.

But as we modernized our infrastructure and stabilized our operations, it did what it's supposed to do: it faded into the background.

The fundamental challenge with infrastructure modernization is that we pay little attention to our infrastructure in the first place — until something goes terribly wrong or costs spiral out of control.

Whereas an application that needs modernization slaps you in the face every time you use it, aged and inflexible infrastructure is like the iceberg floating invisibly below the surface waiting to strike — you don't see it until it's too late.

This invisible nature of legacy infrastructure is the root cause of many of the challenges facing today's modernization, transformation, and cloud migration

efforts. And it leads to a whole slew of impacts:

- Issues with migration processes
- Missed provisioning needs
- Unexpected costs during migrations
- Runaway costs post-migration (particularly in the case of cloud-based modernization efforts)
- Governance issues
- Performance challenges

Getting a handle on these challenges is difficult because most organizations lack a structured and managed way to get the visibility and transparency they need to do so. After all, you can't modernize or improve what you cannot see.

Moreover, while there's a fairly well-established playbook for application modernization, the pathway for infrastructure modernization is much less clear unless you're willing to universally replatform everything — which can work, but is an expensive and risk-laden approach.

Go through this mental exercise and you realize that you need a new and better way of handling this situation. You need an approach that is proactive, rather than reactive, and that gives you options to address these challenges without having to bear the cost, burdens, and risks of rebuilding everything from scratch — which we all know isn't going to happen in the short-term, anyway.

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## THOUGHT

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*The benefits of smart infrastructure management are easy to see. But what does “smart” really mean in this context? And why is getting smart about your infrastructure management the difference maker?*

# THE THREE ESSENTIAL ELEMENTS TO MODERNIZING AND TRANSFORMING YOUR INFRASTRUCTURE

The problem is clear. The benefits of smart infrastructure management are easy to see. But what does “smart” really mean in this context? And why is getting smart about your infrastructure management the difference maker?

Getting smart about modernizing, transforming, and managing your infrastructure comes down to three things:

- Data
- Visibility
- Transparency

The last two — visibility and transparency — are enabled by data. So, in that respect, smart infrastructure management is all about infrastructure data.

But I’m calling these out separately for two reasons. First, merely having data isn’t enough. In fact, you probably already have a lot of data you’re not using effectively. The enabling value — the ability to do smart infrastructure management — comes down to how you use data to create visibility and transparency.

But that's still not enough. The second reason that I'm calling data out separately is because you need to have the right data to make this approach work. Moreover, you'll need to shift your culture around how, where, and when you use data to truly get smart about how you manage, modernize, and transform your infrastructure.

I'm going to go into each of these three essential elements in more detail in the following sections, but first, let's talk about why these three are the difference makers — and, therefore, act as the key that unlocks your ability to modernize and transform everything.

The reason lies in a shift that must occur within your organization. In order to transform your infrastructure — and, therefore, everything else — you need to first shift your infrastructure management model away from an instinct-driven approach and, instead, embrace an approach that utilizes objective, quantifiable, and data-driven decision making.

It is this shift that will allow you to strike the balance — change what needs to be changed to meet specific demand, without having to change everything all at once.

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# THE THREE ELEMENTS OF INFRASTRUCTURE TRANSFORMATION



## VISIBILITY



## DATA



## TRANSPARENCY

But this shift relies on data that will create the visibility to understand what exists within your environment, relationships between environments, and consumption trends that let you know what is really happening within your environment. This visibility, in turn, creates the transparency needed to effectively govern your environments and make clear-eyed decisions as you migrate workloads, replatform

applications, and undertake your modernization efforts.

Combining these three key elements is what will enable you to embrace smart infrastructure management and, ultimately, transform your environment. But it all comes down to getting them right.



THOUGHT

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*The starting point of smart infrastructure management is data. But not just any data — infrastructure data that is both granular, time-series, and maintained over time.*

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# DATA IS THE FOUNDATION OF SMART INFRASTRUCTURE MANAGEMENT

The starting point of smart infrastructure management is data.

But not just any data — infrastructure data that is both granular, time-series, and maintained over time.

These two elements are essential because they are what give you the fine-grained control you need to make the right decisions.

First, it must be sufficiently granular. That means that you need to be able to understand the performance and consumption characteristics at a level detailed enough to enable targeted decision making.

Second, and perhaps more importantly, you need to capture this data in a time-series fashion, and retain it over time. The reality of infrastructure consumption and performance is that it is highly dynamic. The degree to which infrastructure is utilized varies significantly over time, sometimes changing minute-to-minute, sometimes seeing wildly different performance and consumption characteristics at only specific periods of time linked to business demands (e.g., end of day, once monthly, weekends, etc.).

Snapshot-based data will often miss these trends, particularly trends based on occasional spikes that happen over long periods of time. It is essential, therefore, to have time-series data that enables you to identify these trends and project future circumstantial needs in the context of the overall performance and consumption characteristics.

Having this level of granularity and time-series based data is the difference between making informed, but guess-based decision and being able to rapidly make objective, data-based decisions.

For example, consider the difference in provisioning between so-called t-shirt sizing and rightsizing.

Lacking quantifiable data, most organizations address infrastructure provisioning using t-shirt sizes — small, medium, large, x-large, etc. Closing one eye, sticking your tongue in the corner of your mouth, and holding your thumb in front of your face, you make a best guestimate as to which size is going to work for any given workload. And, in all likelihood, you move up a size, just in case.

While this approach has historically been the best we could do, it has led to significant over-provisioning and

the occasional catastrophic under-provisioning, which of course, leads to even more overprovisioning!

It's an imperfect approach that is more art than science.

The goal is to move past this thumb-in-the-air instinct-led approach and begin to make all operational decisions based on objective and contextualized data.

Whereas t-shirt sizing is an informed guess, rightsizing is about leveraging this highly granular and time-series data to identify trends and to create predictive models that tell you exactly what is happening and what is likely to happen in the future. With this insight, you can make the best provisioning and architectural decisions (e.g., should you migrate this workload or not) based on your business needs.

## CASE STUDY: CLOUD COSTS CUT BY OVER 50%

*What happens if you move to the cloud and your costs explode?*

*One large retailer saw their cloud costs balloon to more than double what they expected because they didn't understand their actual resource usage. Leveraging smart infrastructure data to rightsize their environment, they were able to cut their cloud costs by more than 50% and get them back in line with expectations.*



## THOUGHT

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*Visibility sounds obvious, but is often highly fragmented through a menagerie of monitoring and vendor management tools. What is often lacking is a simple way to get full visibility into the technical infrastructure in a single interface.*

# VISIBILITY: THE INFRASTRUCTURE MODERNIZATION-MIGRATION- OPTIMIZATION LINK

Once you have the right data, you'll unlock the second game-changing element of smart infrastructure management: visibility.

Visibility, as it sounds, is simply the ability to have clear insight and understanding into the various aspects of IT's operations, processes, and technical performance. In practice, it means having a clear understanding and unified line-of-sight into your technical assets, their often complex relationships to one another, and their respective performance and consumption characteristics.

While this sort of visibility sounds obvious, in most organizations any visibility is highly fragmented as it comes through a menagerie of monitoring and vendor management tools. What is often lacking is a simple way to get full visibility into the technical infrastructure in a single interface.

Moreover, it is not just visibility to the assets themselves that is important, it's the ability to understand the relationships between them and the potential performance and consumption impacts based on those relationships. It's also essential to be able to scale your perspective so that you can leverage this visibility at the most macro level to see the broad landscape and relationships, but also be able to drill into the granular data based on your specific needs or situation.

# CASE STUDY: \$51MM IN SAVINGS

*What happens when you create visibility into your operations?*

*You have the ability to optimize before you migrate, saving costs and ensuring the success of your migration effort. One large government entity leveraged smart infrastructure data to analyze their storage needs (which represented over 50% of their projected cloud costs) prior to migration. The result: \$17MM in savings each year for three years!*

The key — and what makes this level of visibility so difficult — is to have all of it in one place. To be able to go from macro to micro and from a singular device (or even attribute) focus to the broad relationships its party to, simply and without losing context, is the essential element.

The appropriate level of infrastructure data is the enabler, but you must also put it to use in service of creating this type of visibility. Doing so is what creates the link between your management practice and the ability to leverage it to modernize, migrate workloads, and optimize them. In almost all cases, it is this visibility gap that creates the challenges as organizations attempt to modernize. Not understanding the interconnections, the performance trends, and even the full landscape of the production environment is what leads to the gotcha moments during modernization and migration efforts.

*By ensuring that all stakeholders are operating from the same set of data, insights, and contextual understandings, you can ensure that decisions are made jointly and from a shared perspective.*



# WHY TRANSPARENCY IS THE GREAT ENABLER

Data is foundational. Visibility will enable you to understand what's happening and your options. But the final step is to leverage this data and visibility to create transparency.

In this context, transparency is the ability to expose the operational state to its various stakeholders, and empower proper decision-making.

It enables you to provide access to this data and insight to business consumers, application or DevOps teams, SREs, and others who have a vested interest in the operational state. Most importantly, you can provide this data, visibility, and insight to governance bodies that are responsible for the management and oversight of operations, strategic planning, architecture, provider relationships, and so on.

While this level of exposure can seem scary at first glance, it is the great enabler of modernization, transformation, and cloud migrations because it closes the understanding gap that is the greatest cause of failure.

## CASE STUDY: REDUCED COSTS AND IMPROVED PERFORMANCE

*What if the cloud isn't the best place for your workload?*

*One large financial services firm used smart infrastructure data analysis to discover that they could improve performance AND reduce costs by repatriating 110k virtual machines to a private cloud.*

In most cases, the failures associated with modernization and migration efforts are caused by the lack of a shared understanding of the current operating environment. Absent this shared understanding, various stakeholders make what ultimately become poor decisions because they are operating in a vacuum. By ensuring that all stakeholders are operating from the same set of data, insights, and contextual understandings, you can ensure that all stakeholders are playing on the same field and that decisions are made jointly and from a shared perspective.

When applied to governance processes, this shared understanding enables proper, holistic oversight. It enables governance bodies to understand the current state, predict future states, and understand the impact of any decision on all stakeholders. Moreover, it helps ensure that these governance bodies can appropriately hold outside stakeholders (i.e., outsource providers, cloud providers, etc.) accountable using defensible data to do so.

## CASE STUDY: DATA-DRIVEN GOVERNANCE STOPS OVERBILLING

*What happens when you empower your governance teams with data?*

*A large insurance provider had outsourced all data center operations, which normally leaves you at the mercy of your outsourcing partner. But the organization's governance team leveraged smart infrastructure data to identify 1200 VMs that they had decommissioned, but were still paying for — holding the outsourcer accountable and significantly reducing costs.*

# YOUR DYNAMIC, OPTIMIZED, MODERNIZED, AND TRANSFORMED FUTURE

Some time ago, I was speaking with an IT executive who proudly told me that they were 100% in the cloud. Knowing just how hard that is to accomplish, I innocently probed to understand what he had done and how he'd done it. After just a few minutes of questioning, it became clear that 100% in the cloud was merely aspirational. In fact, the vast majority of their environment remained on-prem.

This executive's aspirational desires aside, the fact remains that modernizing your environment and intelligently migrating workloads to the cloud (or wherever they best serve your organization) remains a challenging and risk-laden proposition for any in-production workload.

But where there is great risk, there is also great reward.

The business imperative for modernization is clear. The key to competitiveness in a dynamic and rapidly changing market is a highly adaptable and agile technology stack — and that starts with your infrastructure.

***Data-centric smart infrastructure management is the foundational capability that acts as force multiplier giving you the insights, contextualization, and shared understanding you need as an organization to transform your modernization efforts from risk-laden chores to the driver of business outcomes that you require.***

# | ABOUT THIS REPORT

## CHARLES ARAUJO, THE DX INSTITUTE AND THE DX REPORT

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Charles Araujo is a technology analyst and internationally recognized authority on Digital Transformation, the Digital Enterprise, the Digital Experience, and the Future of Work. Researching Digital Transformation for over 10 years, he is now focused on helping leaders transform their organizations around the digital experience and to reimagine the future of work. Publisher and principal analyst of [The DX Report](#), founder of The DX Institute, founder of The Institute for Digital Transformation, co-founder of The MAPS Institute, and author of three books, he is a sought-after keynote speaker and advisor to technology companies and enterprise leaders.



## ABOUT GALILEO PERFORMANCE EXPLORER

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Since 2007, [Galileo](#) has enabled organizations to manage the growing complexity within their infrastructures and develop actionable blueprints for growth and transformation. Galileo is the data-driven enterprise solution for proactive monitoring, optimization, and strategic management of complex modern and legacy infrastructure stacks, living on-prem or in the cloud. Thoughtfully created by industry experts bearing the weight of managing complex systems, Galileo helps IT teams see what is relevant, anticipate and adapt to system changes, increase speed to resolution, and reduce operational costs.



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