BEYOND THE BUZZWORD

INFRASTRUCTURE AUTOMATION

A Softchoice guide to separating the buzz from the business value

softchoice

What's all the buzz about?

Back in 2011, famed start-up investor Andreessen Horowitz wrote an essay titled "Why Software is Eating the World." The piece went viral, with Horowitz rightly observing software companies were disrupting, and often replacing, legacy hardware counterparts, across all industries.

Today, there's a different but similar idea brewing in the back offices and boardrooms of businesses everywhere. Only this time, software is eating the data center. With the rise of hybrid cloud, multi-cloud and virtualization, software is increasingly vital to how IT manages, supports and delivers modern business demands.

Which brings us to "infrastructure automation." As a buzzword, the term couldn't be more tantalizing. It suggests the end of all manual provisioning in the software-defined data center. It's like your very own Siri or self-driving Tesla, but for spinning up, and configuring all your storage, server, compute and networking needs. To some veteran data center professionals, it all sounds like a job-stealing nightmare.

Well, not exactly.

As you will see in this guide, infrastructure automation (IA) is a sophisticated, intelligent approach to managing modern data centers. It's a strategy that can lead to significant returns, cost savings and efficiency. And it can help unlock your IT team's true innovative and intellectual potential. But, like all technologies, real considerations must be made first, before deciding to leap in.

What is IA, really? Who needs it? Why do they use it? And, crucially, how do you deliver it successfully?

Get the answers and find out what all the buzz is about!

What is infrastructure automation, really?

> The worldwide infrastructure automation market will reach $65 billion by 2022, growing at a compound annual growth rate of around 20% during the forecast period 2016-2022.
>
> *– Research and Markets*

Think about the manual tasks your data center team is responsible for each day: installing an operating system, configuring servers, provisioning storage, the list goes on. By its simplest definition, infrastructure automation (IA) is a set of tools and processes used to make these frequently recurring, rote tasks less time-consuming, more efficient and more reliable.

In practice, infrastructure automation replaces manual, everyday processes by templating an organization's infrastructure and its configurations as a script or set of scripts. A common umbrella term, which incorporates IA, is "Infrastructure as Code." In this way, environments can be replicated more quickly and with fewer errors, by writing a set of code, configured to specific needs and circumstances in the architectural and application lifecycle.

You do not need to replace your legacy infrastructure to enable automation. You do, however, require a layer of abstraction, a software-defined solution that connects and speaks to your underlying investments, on premise, in the cloud, or both. Infrastructure automation will have more of an impact if you can join both public and private clouds on the same underlying system, or hypervisor. In situations where network virtualization is present (a less prolific, but growing trend in today's enterprises,) IA also serves to ease the burden of provisioning and configuring software-defined networking.

What it isn't: A job killer!

One reason IT professionals are opposed to IA is fear of losing relevance. When we hear the word automation, we picture robots, self-driving cars, or the voice assistants on our phones. But, infrastructure automation isn't about replacing IT with code or artificial intelligence. It's about using code to replace manual processes, to speed up and improve and workflows. The true purpose is to allow your IT team to concentrate on activities that help your organizations innovate and stay competitive. It isn't a job killer. It's an opportunity to master a new skill and do more to keep the business competitive.

Buzzkill: Why IT resists automation

Here are some of the most common concerns we hear when speaking with clients about IA:

Fear: I don't want to lose my job to automation.

Reality: While automation reduces manual efforts, it can never completely replace the need for human expertise. Automation frees IT up to re-focus its energies on more strategic, business-impacting roles. This is a job opportunity, not killer.

Fear: I don't like giving away my control to a script.

Reality: Automation still requires rigorous attention to detail, trial and error. IT is in control the whole time. When done correctly, errors are reduced, if not completely eradicated.

Fear: Automation can't be more accurate than hand-coding.

Reality: Human error is the leading cause of unplanned downtimes. Plus, automation still requires upfront configuration and human oversight. It is not inherently more accurate or less accurate than manual coding. It's simply a different set of tools.

Why do businesses adopt infrastructure automation?

> Twenty-four percent of data center outages are caused by human error.
>
> *– Ponemon Institute Research Report*

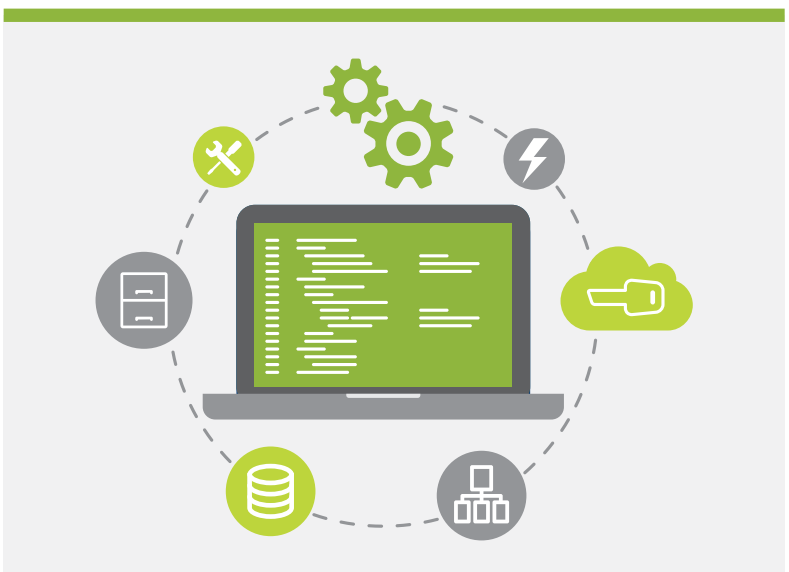
Manual processes and workflows lead to inconsistent quality of service. The constant need for human intervention simply can't keep up with the speed of business today — not when change and the push for immediate access to new capabilities is the new normal. Plus, executing manual configuration, repeatedly, introduces risk and the likelihood of human error. These flaws result in a number of compelling reasons why organizations look to IA:

Bandwidth and productivity: Infrastructure automation is the answer to the constant demand to do more with less. It eases the burden of tedious and time-consuming management tasks. Automation decreases the time needed to maintain complex environments. For example, if you're tasked with re-mediating a large security vulnerability, instead of diverting your team from other tasks or bringing in extra resources, you can simply write the necessary code and then execute it. Automation lets even the smallest of teams manage thousands of nodes with the same effort as managing a few dozen.

Risk and reliability: The primary cause of unplanned systems downtime isn't hardware or applications bugs, it's human error. That's why organizations are use infrastructure automation to decrease or eliminate variability in new infrastructure deployments. By eliminating variability, you reduce the odds of introducing human error at every instance. If you have a mix of cloud and on-premise assets, your risks and complexity are only compounded, creating yet more opportunities for costly mistakes. In short, IA reduces and even eliminates errors caused by manual provisioning. Unlike command-line interfaces, automated scripts usually produce the same outcome and leave no room for human error.

Freedom to innovate: The goal of hybrid IT is to deliver new value to the business, and move at greater speed. With IA in place, your resources are able to re-focus their energies on more innovative, ambitious goals, while learning and adopting new skills. Not only are businesses with modern agile approaches more effective and aligned to business results, they are also more engaging and rewarding for employees.

Who should adopt infrastructure automation?



Infrastructure automation is a powerful strategy to achieve hybrid IT, but it isn't a fit in all business cases, nor at all times. There are particular situations where IA will be more effective than others. Here is a look at some factors to help you understand where IA is on your agile infrastructure roadmap:

Frequent and painfully long deployment cycles: Speed to market is a leading benefit of IA. If you have a large dev ops teams that is expected to deploy new applications and patches frequently, with high urgency, timing is of the essence. Manual, status quo approaches can take up to 10 weeks, on average, to provision the needed architecture resources (servers, storage, compute). If a business-critical upgrade is needed faster, and frequently so, IA will be helpful. If IA is not deployed, your developers and stakeholders will grow frustrated and often seek alternative remedies (read: shadow IT), causing risk, lack of oversight and increasing liability in non-condoned public cloud. After all, a new AWS-hosted server is just a few credit card numbers and a click away.

Data center growing in complexity and size: If your infrastructure is large, complex or both, the resources needed to manage it will likely be spread thin. As a result, most of your time will be spent maintaining the status quo, serving the business its most basic needs. Meanwhile, other, more innovative and business-aligned initiatives will be left to simmer on the backburner. This situation is common in organizations that are already operating in hybrid cloud and multi-cloud environments, with apps and workloads spread out across numerous locations, dashboards and tools. Prime candidates for IA are organizations with ever sprawling data centre footprints, often with thousands of storage arrays, and dozens of technologies, and dashboards to manage it all.

Highly repetitive, manual workflow: Do you start from scratch every time you spin up a server or provision a virtual machine? Do you write the same lines of code over and over? If so, you might be a prime candidate for implementing IA. Not only do these frequent manual inputs create the possibility of error — and downtime — but they are an unnecessary cost, which should be purged as soon as possible.

Self-Assessment Worksheet:

	1 POINT	2 POINTS	3 POINTS	SCORE
Are manual configurations creating errors and inconsistency throughout your environment?	Rarely	Occasionally	Frequently	
Are you are facing outages caused by human error?	Rarely	Occasionally	Frequently	
Is your exposure to security and compliance breaches increasing?	Rarely	Occasionally	Frequently	
Is ongoing maintenance becoming more complex due to the sprawl of varying configurations across your environment?	Rarely	Occasionally	Frequently	
Does even the simplest patch management process require intensive testing to ensure exceptions are addressed, adding more time and overhead to achieve a business outcome?	Rarely	Occasionally	Frequently	
Is your ability to serve growing business demands being hampered by slow provisioning speeds and cumbersome ongoing management?	Rarely	Occasionally	Frequently	

How did you do?

If you scored 15 points or more, IA is strongly indicated for your businesss.

When is a good time to start automating infrastructure?

Timing is everything. In our experience, our clients face a few opportune moments in the natural infrastructure lifecycle where the transition to IA makes the most sense, provides the most compelling business value, and will have the least interruption to the business. To maximize your chances of success, look for these time-sensitive factors to prioritize IA.

Are you preparing for a high-impact upgrade?

Today, many enterprises are facing point-in-time upgrade scenarios which will have a major impact on the make-up of their underlying data center architecture. Two in particular stand out as timely examples: The end of service for VMware vSphere 5.5, and the end of extended support for Microsoft SQL Server 2008. In each situation, businesses will be faced with an urgent, unavoidable requirement to upgrade the underlying software and hardware driving mission-critical applications in their environment. The question is: Do you continue with the status quo, or do you take this opportunity to build the business case for something new?

These two scenarios are far from the only reason organizations will face a high-impact upgrade demand. Perhaps your existing hardware has reached capacity (yet again). Perhaps you are about to re-negotiate your virtualization investment. The point is, when these situations arise, you have two basic options. You can treat it as "just another infrastructure project," and move forward just as you have in the past, potentially exacerbating current challenges. Or, you can look at this as an opportunity to innovate. In the right circumstances, these events are the spark you need to justify a major shift toward agile infrastructure, including IA, as well Hyper Converged Infrastructure and modern flash storage.

Read more:
DevOps and Automation

How should organizations start infrastructure automation?

Once you determine why you might need IA, and why it is a fit for your business, now comes the hard part: doing it.

The good news is there is a proven approach every business should take, which will help bring clarity and build the strong business case to implement IA. This approach will allow you to prove the value, bring momentum to your project, and ensure a successful, long-term rollout of the right solution.

Determine need: Survey your team to see if they are frequently overburdened by manual, repetitive processes. Investigate previous unplanned downtime events and provisioning errors, and discuss if automation might have been able to prevent them.

Cost/benefit analysis: First develop a detailed understanding of your current costs and actual needs. Once you have a detailed real time picture, create a short list of the vendors, technologies and partners who can help you automate. You might also want to work with an experienced partner or stakeholders to help you define a future with automation. Determine a cost value for the time you can potentially save, while also underlining how the time you will be saving will be useful in achieving business-aligned initiatives, whether it be better employee experience, faster time to market or return on investment.

Identify starting point: You can go big, or go small with your first forays into automation. Both are equally valid and will depend on your priorities and the upfront work you have accomplished.

Get methodical: You will not automate everything overnight, nor should you. Where possible, continue to leverage existing resources and plot the course towards a modern architecture by expanding virtualization throughout data center infrastructure. A methodical approach is the most effective. Once you begin, slowly start to automate more workflows, while maintaining existing infrastructure and investments. When new workloads are introduced, make a policy of automating those as much as possible.

Partnering with Softchoice

One reason infrastructure automation has taken so long to reach the mainstream are the inherent complications involved in selecting, deploying and managing the right solution.

This is where Softchoice can help.

When you work with Softchoice, you will gain a comprehensive view of your applications – including underlying compute, storage and network architectures. This will allow you to identify opportunities to modernize infrastructure and introduce automation to drive greater efficiency. Armed with data-driven insights to evaluate vendor solutions, you will create a strategy that goes beyond costs and timing to include adoption of the technology itself. With ongoing mentorship, you will accelerate innovation and improve quality of service while continuously optimizing the performance of your applications.

Get started with a Data Center TechCheck

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- **Flash Storage:** Find out if your mission-critical apps need a speed boost — and where to get started.