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Infrastructure Automation

Why? and why now?

A guide from Andrew Spencer Consultants



Infrastructure automation the new normal

For the past several years, you likely haven't thought about infrastructure automation all that hard. Other things have held your attention, like competing initiatives, limited resources, and making hybrid IT work for your organization.

And if you have given infrastructure automation any thought, you've likely put it off. Too many unanswered questions, right? Questions like, What is it? Who is using it? How do I know if I need it? Where do I even start?

This is why we wrote this guide
to answer the five most common questions about infrastructure automation the What, Why, Who and When and the How of automating your data center infrastructure.

This is a timely guide.

High-impact upgrade scenarios such as vSphere 5.5, Windows Server 2008 and SQL Server are forcing organizations to consider faster, more efficient ways to roll out major upgrades. Infrastructure automation can play a vital role, as you'll see.

And then there's the matter of agility. The status quo no longer works especially when it takes up to 10 weeks to deploy a new application or service. Yes, dedicated servers, storage arrays and network hardware aren't disappearing anytime soon. But organizations are increasingly looking to automation to meet the demand for agility.

Got questions about making infrastructure automation work for your organization?

Read on to get your answers.

What is Infrastructure automation

Let's start with the elephant in the room automation. When you hear the word, you likely think of self-driving cars, robots and artificial intelligence. But infrastructure automation isn't about things being done automatously. It's about things no longer being done manually. Infrastructure automation isn't about admins being replaced by code. It's about admins replacing manual processes and workflows with automated ones so the admins can concentrate on activities that help their organizations innovate and stay competitive.

If we were to give you a dictionary definition, we'd tell you that "Infrastructure automation is the process of scripting IT infrastructure environments." Not that helpful, right?

So, think instead about the chores you do each day. Installing an operating system. Installing and configuring servers on instances. Configuring how the instances and software communicate with one another. You do these things by hand, right? That's because network provisioning has always required admins to manually configure each device.

Well, infrastructure automation replaces these manual processes by describing an organization's infrastructure and its configuration as a script or set of scripts. In this way, environments can be replicated more quickly and with fewer errors. Infrastructure automation brings agility to both development and operations.



Infrastructure automation is simply the opposite of deploying and managing infrastructure manually.

"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

Why do businesses adopt infrastructure automation?

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Reason 1: Speed

Many organizations are implementing infrastructure automation to save time. Infrastructure automation does things faster. If you want to be faster, you have to slash the amount of time it takes to provision and configure new infrastructure.

Automation lets admins rapidly provision new environments. For example, let's say you're an admin in a busy shop with too much on your plate already. A request comes in from dev ops for a server. Doing things the old way (which is to say, the current way for many), you must spin up that server by hand. That takes hours, even days. Can your dev ops afford to wait days for a server? No. This is where infrastructure automation comes in, getting your server up and running in minutes.

Infrastructure automation gives you the agility you need to sustain competitive advantage in your marketplace.

Reason 2 : Consistency

Organizations are also implementing infrastructure automation to decrease or eliminate variability in new infrastructure deployments. After all, speed is of little benefit if the product it produces does not match the specs of the rest of your infrastructure. Or if it doesn't have the tools you need on it. Infrastructure automation eliminates variability in new infrastructure.

Infrastructure automation improves your consistency and your quality of service.

Reason 3: Productivity

Infrastructure automation is the answer to the constant demand from management to do more with less. It eases the burden of tedious and time-consuming management tasks, leaving room for admins to focus on other projects. Automation decreases the time needed to maintain complex environments. For example, if you're tasked with remediating 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 hundred.

Reason 4: Risk

Automation reduces risk, simple as that. The primary cause of system downtime isn't hardware or applications it's system administrators' mistakes. This is partly because many admins still use command-line interfaces, which often produce unanticipated consequences. What an admin types and how the system responds are not always predictable. Infrastructure automation reduces and even eliminates errors caused by manual provisioning. Unlike command-line interfaces, automated scripts always produce the same outcome and leave no room for human error.

Infrastructure automation helps you reduce risk and increase compliance.

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

Who should adopt infrastructure automation?

If you've read this far, you're likely wondering if infrastructure automation is something you need. And you're right to do so. After all, infrastructure automation isn't for everyone. Plenty of organizations have an IT infrastructure that is essentially static. If your organization provisions only a single host only once every six months, for example, your money is probably best spent elsewhere.

But for plenty of other organizations, infrastructure automation is becoming an imperative. Are you one of these organizations? Take this quick quiz to find out if infrastructure automation is right for you.

Q1: Do you operate a large dev ops team?

The challenge for large dev ops teams is that they are expected to write code for new applications immediately, but the IT resources needed to make that happen (servers, virtual machines) take days or weeks to provision. This slows down the speed of deployment, aggravates developers, and prompts many dev ops teams to go the shadow IT route by renting infrastructure from the cloud.

Q2: Is your data center infrastructure complex?

If your infrastructure is large or complex or both, and you don't have enough resources to manage it, you face challenges. When we say large and complex, we're talking about organizations that operate hybrid cloud and multi-cloud businesses, with apps all over the place. We're talking about organizations who use virtualization, and thousands of storage arrays, and hundreds of technologies, and dashboards to manage it all.

Then there's sprawl. Server sprawl. Application sprawl. Sprawl that takes up space, resources, power, cooling and management with various iterations of manual changes thrown in for good measure. Sprawl leads to inefficiency, and inefficiency increases risk of system downtime. Multiple environments also take up your time and resources. They are labour intensive. If you have a mix of cloud and on-premise assets, your risks and complexity are only compounded.

If your data center infrastructure is large and complex, your challenges include deployment times that are unacceptably long, not keeping up with demand, and the unacceptably high cost of doing everything by hand.

Q3. Are you tired of repeating yourself?

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? Just because there's an IT manual doesn't mean you have to do IT manually.

How did you do on this quiz?

If you answered "yes" to at least one question, you should explore infrastructure automation.

Some organizations see the value in automating their infrastructure, but they resist it anyway. Some IT personnel fear losing their jobs to automation. Others lack the skills or experience needed to make the transition. For still others, they don't know how to conduct a total-cost-of-ownership analysis, which means they can't know if automation makes sense financially. Here are some of the most common reasons data center staff give for resisting infrastructure automation.

- "I don't want to lose my job to automation."
- "I don't like giving away my control to a script."
- "Automation can't be more accurate than hand-coding.
- "Resisting change is part of my job description."
- "Automation takes the fun and excitement out of coding."
- "We've always done it manually that's our culture."



When is a good time to start automating infrastructure?



Are you planning a major hardware upgrade? Are you upgrading from vSphere 5.5, Windows Server 2008 and SQL Server? Now is an opportune time to consider automating your infrastructure, and not treat these upgrades as just another infrastructure project.

Here are a few other reasons to consider infrastructure automation sooner rather than later.

- Are manual configurations creating errors and inconsistency throughout your environment?
- Are you are facing outages caused by human error?
- Is your exposure to security and compliance breaches increasing?
- Is ongoing maintenance becoming more complex due to the sprawl of varying configurations across your environment?
- 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?
- Is your ability to serve growing business demands being hampered by slow provisioning speeds and cumbersome ongoing management?

How should organizations start infrastructure automation?

If infrastructure automation makes sense by now, you are likely wondering what to do next. After all, how do you move forward with so many competing initiatives, limited resources and expertise, and so many options available?

The key to a successful migration from manual to automation is planning. Treat infrastructure automation the same way you treat any other major project carefully. Thoroughly. Not ad hoc. Take a comprehensive approach to automation that addresses the following principles:

1. **Start with a gap analysis:** List the areas of your data center that are hindering your ability to deliver error-free results consistently and quickly. Look especially for processes that you do repeatedly by hand.
2. **Explore tools:** Create a short list of the vendors who can help you automate.
3. **Hire expertise:** If needed, hire a firm to help you discover how to leverage automation throughout
4. **Calculate TCO:** Calculate your total cost of ownership by looking beyond the cost of a vendor's solution to the total cost of implementing automation.
5. **Calculate ROI:** Compare how much you will spend with how much you will save to arrive at an estimate of your return on investment.
6. **Start with the biggest bang:** Start by automating processes and workflows where you will realize the most substantial business value.
7. **Automate anything new:** Whenever you create a new process or workflow, automate it.
8. **Start small:** Start with less-complicated processes and workflows and slowly move to more-complicated ones.
9. **Test, then deploy:** Test automation changes in your test and QA environments before deploying them to your live environment.

About Andrew Spencer Consultants

Andrew Spencer Consultants is an IT solution and managed service provider. Every day, dozens of organizations rely on Andrew Spencer Consultants to provide insight and expertise that speeds the adoption of technology, while managing cost and risk.

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