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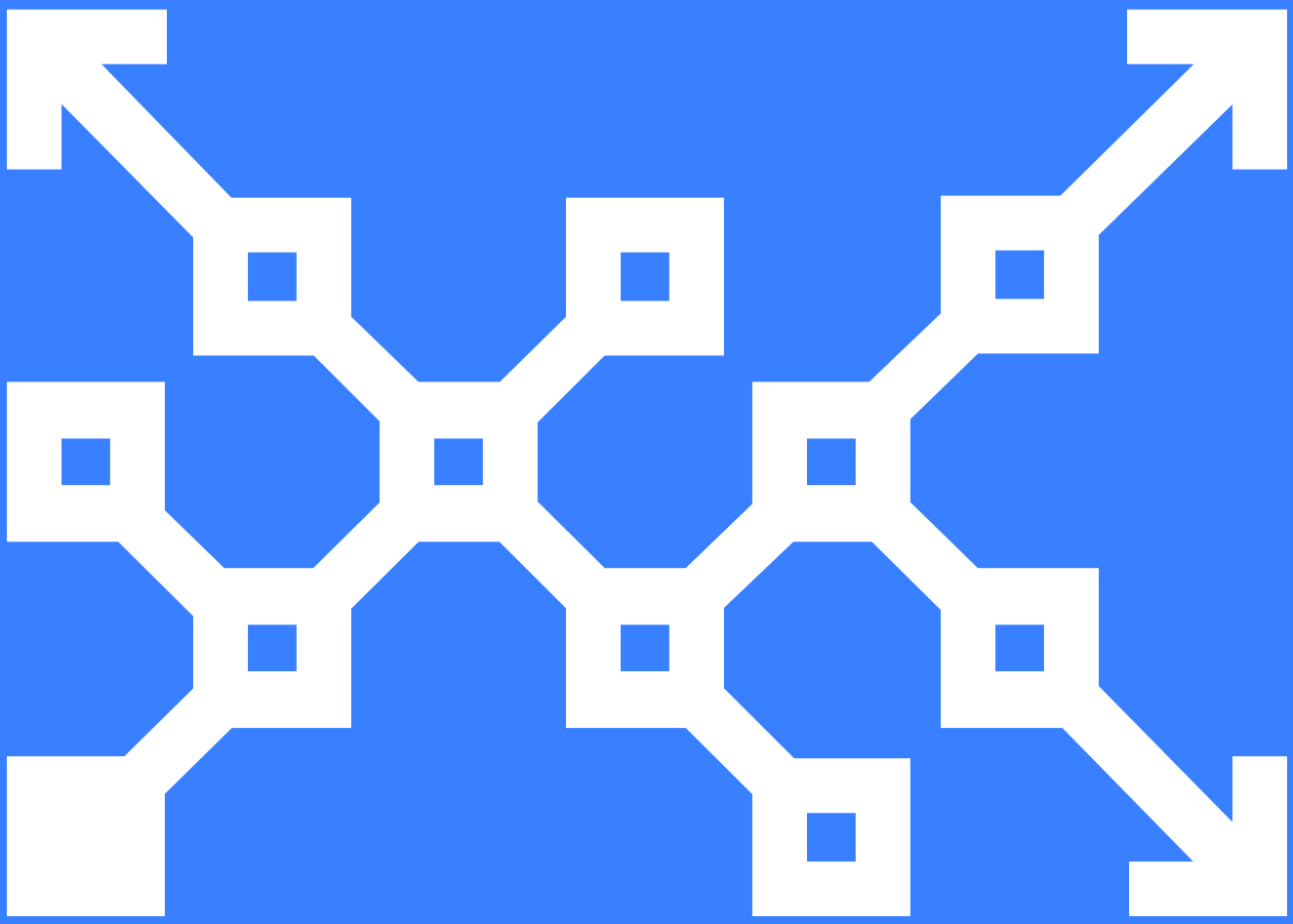
WHITE PAPER

Accelerate Digital Transformation with an Infrastructure as Code Strategy



Despite the sometimes overuse of the phrase “digital transformation” by the industry, it’s still relevant and a core part of many organizations’ strategies. In fact, according to the Tech Pro Research 2018 Digital Transformation survey, 70 percent of companies either have a digital transformation strategy in place or are working on one.[1] For reasons including improving customer experience, increasing the speed of innovation and improving time to market, digital transformation is now a must-have.

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Transformation success requires a focus on three core technical pillars: the cloud, IT infrastructure, and maintaining security and compliance. In order to achieve agility and other digital transformation goals, it’s necessary to streamline management and configuration workflows across all three pillars in order to increase responsiveness, and free up the resources and support needed for innovation.

As organizations move along their digital transformation journey, they will encounter technical challenges and pitfalls along the way. Having the right tools and someone to facilitate the journey are key components to successful digital transformation. Whether it be a technical peer, community evangelist, or even executive leadership, it’s important for someone to support and lead the effort. While the destination offers many benefits, getting there can be hard. It takes experience and knowledge, along with technical expertise, to navigate this path to a more agile, flexible organization.

IDC estimates 40 percent of all tech spending this year will go toward digital transformation.[2]

Choosing the Right Automation

Digital transformation is not possible without automation, but automation can mean many things. There are different ways to automate different workflows. Automation provides some straightforward, easy-to-recognize benefits, including time and cost savings, and reduction of errors and risk. Additionally, there are other tangible benefits to automating, especially within your IT infrastructure.

One of the best ways to automate infrastructure is to adopt infrastructure as code (IaC). Infrastructure as code is the practice of managing and provisioning infrastructure through readable definition files, rather than physical hardware configurations or interactive configuration tools.[2] It can be applied to bare metal servers and virtualized environments. While operators can use scripts, the term is more often used to describe declarative definitions.

Puppet's full portfolio of solutions enable an infrastructure-as-code approach across your heterogeneous environment, including Microsoft Azure, so you can continuously deliver infrastructure and applications, enforce policy compliance and remediate security issues quickly, and standardize how you manage your IT estate at scale – all using a universal common language.

The benefits include:

- **Deliver infrastructure changes quickly, safely and at scale**
- **Deliver software consistently and reliably**
- **Create a clear audit trail with automated documentation**
- **Automatically enforce desired state**
- **Enable continuous delivery**
- **Lay a foundation for DevOps processes**

95% of Fortune 500 companies have relied on Microsoft Azure to bring digital transformation home, leveraging the united power of big data, the cloud, and AI.[3]

Use Case 1: Ensuring Compliance and Security

Meeting regulatory compliance is becoming more prominent in a variety of industries. Regardless of what industry you are in, there is probably some form of regulation you need to meet. Not meeting mandatory regulatory compliance practices subjects you to monetary fines and penalties as well as being forced to participate in remediation programs and increased inspections by the regulatory agency. Brand reputation can be damaged in companies that experience repeated or large compliance breaches. You can lose your reputation in an instant, and it can take years to rebuild.

There are some staggering statistics related to cybercrime:

$2 trillion (2019)
$6 trillion (2021)

projected losses due to cybercrime[5]

60%

of companies will be targets of cybercrime[6]

21%

of files are not protected in any way[6]

every 14 seconds

a ransomware attack happens somewhere[7]

$2.4m + 50 days

average cost of a malware attack[8]

95%

of breaches are due to human error[9]

Automate and Relax

Using Puppet not only simplifies initial compliance and security, it ensures it a path forward. Puppet allows you to use DevOps style processes to create and verify new configurations and security policies, then simply and easily apply them to systems. Once a system has been spun up with a Puppet code configuration, the systems will check back with the Puppet server every 30 minutes to detect any deviations between its configuration and the Puppet code configuration. If a deviation is identified, the system will be changed back to the configuration in the Puppet code and notification of the change and the corrective action will be reported. This enforces all security policies while preventing configuration drift.

Since Puppet is declarative and self-documenting, your Puppet code becomes your documentation. And with version control you have a history of the changes made to your Puppet code for audit purposes. So, you can relax knowing that you are secure and in compliance.

Puppet customers have experienced:

2.8x
higher audit success rates

1.9x
less time spent on audit preparation

1.8x
less time fixing issues of security and compliance

Use Case 2:
Reduce Risk and Migrate to Microsoft Azure

There are many reasons to move to a cloud environment. One of the biggest is cost savings. Standing up a data center is expensive and time consuming. Moving to Azure allows you to bring new infrastructure or services online much faster. Cloud computing allows you to scale as needed based on your business requirements. Migration to the cloud can also eliminate the need for a local recovery plan. Depending on how you design your environment, you can actually have the cloud provide the backup required to protect your data and applications.

Migrating to the cloud can be a complex task.

The movement of applications, data and other business elements to a cloud computing environment isn't easy. You have to deal with data and application portability and interoperability issues, as well as data integrity and security. Automating tasks with Puppet makes the tasks portable to different deployment environments including public, private and hybrid cloud. This is even more beneficial in Microsoft environments since Azure runs on Microsoft Windows servers.

Managing your cloud environment is straightforward if you have a single dashboard for all of it. Tracking everything through multiple tools defeats one of the purposes of migrating in the first place. Puppet provides a single management interface allowing you to automate your entire environment.

Use Case 3: Faster, More Flexible Provisioning

Today almost every data center, no matter the size, is virtualized. Virtualization allows the physical machine to act like many different independent servers providing better utilization and ROI. But provisioning a new virtual server can be a slow, manual process and prone to errors. This adds additional cost and increases opportunities for security vulnerabilities. A manual process cannot ensure the system was set up correctly. Without an auditable, repeatable, and automated process it is difficult to verify the proper configuration of a system with anything short of a manual audit.

Some estimates put VM saturation as high as 90 percent.[10]

Infrastructure as code is the key to faster, repeatable, and more reliable provisioning. Using Puppet, you create a 'single truth' configuration once for servers such as your Windows Server or SQL Server, including all the parameters for OS, drivers, security, etc. Then you apply that code to the systems to provision and Puppet does the rest. Minutes later you have newly provisioned Microsoft systems with all the correct configuration and security parameters. In addition they will continually check back with Puppet to maintain that configuration.

Making Time to Innovate

By automating your provisioning process to remove manual effort you ensure fast, consistent system provisioning. You can authorize departments to self-service provision, letting them wait less and freeing up your IT operations team to focus on innovation.

Puppet customers have experienced:

2.7x
fewer failures

1.9x
reduction in lead time
(time from change request to deploy)

Use Case 4: Updating and Patching

It is important to keep systems up-to-date to ensure compliance and remove any security vulnerabilities. It is so important that most vendors offer regular updates to their existing products. Microsoft calls this 'Patch Tuesday.' Applying Service Packs (SPs), updates and patches can also be a manual, time-consuming process. An automated process to quickly install and verify SPs, updates, and patches lets you introduce new features to users more quickly.

With Puppet you can utilize Tasks and Plans to set up a patch management workflow (available via the Puppet Forge), complete with options for scheduling, blackouts, and narrowing patch sets. All of this helps to automate patch management workflows with real-time reporting.

Update at Scale

With Puppet, you just edit your code to apply the update, then schedule systems for updates or patching when required. Instead of spending days or weeks to handle an update, you are finished in minutes and can verify successful completion.

Customers using Puppet to manage updates and patching:

- **Have removed manual effort, freeing staff to focus on more valuable projects**
- **Can update hundreds of servers in minutes**
- **Achieved successful completion of the operation**

Migration = Agility + Savings

Automating tasks such as provisioning, updating, and ensuring compliance and security across your entire environment with an infrastructure as code approach like Puppet simplifies your migration. Take advantage of the agility and cost savings from migration to invest in new innovation that provides greater value to your customers.

Puppet customers have benefited from:

- **Automated provisioning in Azure**
- **A single dashboard for their entire environment**
- **An audit trail across their on-premises and Azure systems**

External References

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Puppet is driving the movement to a world of unconstrained software change. Its revolutionary platform is the industry standard for automating the delivery and operation of the software that powers everything around us. More than 40,000 companies — including more than 75 percent of the Fortune 100 — use Puppet's open source and commercial solutions to adopt DevOps practices, achieve situational awareness and drive software change with confidence. Headquartered in Portland, Oregon, Puppet is a privately held company with more than 500 employees around the world. **Learn more at puppet.com**