

A PRACTICAL GUIDE FOR AUTOMATING IT

vmware®



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ARE YOU READY FOR THE DIGITAL TRANSFORMATION?

A Gartner, Inc. survey found that 59 percent of surveyed IT professionals believe their IT organizations are unprepared for the digital business of the next two years.³

CAN YOU PROVISION INFRASTRUCTURE QUICKLY?

A Forrester study found that only 24 percent of companies can provision infrastructure in hours. The rest take days or weeks.⁴

The Digital Transformation

The rise of the digital economy is driving rapid and fundamental changes in businesses and their operating models. In this new era, business success will increasingly revolve around a company's mastery of digital technologies—from consumer applications to the Internet of Things and beyond.

At the heart of this transformation is digitalization, which Gartner defines as “the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business.”¹

In this new era, speed and agility are keys to the success of a business—and this shift has major implications for IT organizations. IDC predicts that by 2019, 40 percent of IT projects will create new digital services and revenue streams that monetize data.²

Spurred on by the ease of use of on-demand resources provided by public clouds like Amazon Web Services (AWS), line-of-business leaders and software developers are demanding “consumer-ready” access to IT resources. They aren't content to wait weeks or months for the IT organization to deliver resources they need today. If they can't get their needs met in a timely manner, they are likely to bypass standard IT procurement processes and turn to the public cloud for quick, easy access to the sought-after services. To business units, these ready-to-use services may even appear to be cheaper than in-house IT offerings, although in practice that is not necessarily the case.

In this new, faster-paced business climate, the IT organization needs to up its game to accelerate development and delivery of applications and enable faster time to market for the business while supporting a complex, heterogeneous, multi-cloud environment.

Key Data Center Challenges

So how do you up your IT game to meet the new expectations of the business? In short, your IT organization needs to overcome common data center challenges that impede the delivery of IT services.

The typical IT organization is hindered by both economic and operational challenges. On the economic side, IT teams have to find ways to meet the new demands of the business with flat or decreasing budgets. At an operational level, the IT organization is bogged down by sluggish manual processes, rigid technology siloes, and ingrained inefficiencies that come with legacy infrastructure. These barriers make it difficult, if not impossible, for IT to meet the expectations of today's business leaders.

This isn't to say that no progress has been made. Many IT organizations have enhanced some aspects of the delivery of IT infrastructure to development and production groups using scripts, configuration management tools, and manual effort. Nevertheless, most have not achieved the high speed of delivery or high levels of operational efficiency that are needed today.

¹ Gartner IT Glossary: Digitalization.

² IDC press release. “IDC Reveals Worldwide CIO Agenda 2017 Predictions.” November 2, 2016.

³ Gartner, Inc. press release. “Gartner Survey Finds That Two-Fifths of IT Professionals Consider Their IT Organisation Ready for Digital Business.” July 13, 2016.

⁴ Forrester. “Accelerate Your Virtualization And Cloud Journey.” A Forrester Consulting Thought Leadership Paper Commissioned By VMware. June 2016.

At a broader level, the virtualization of compute and storage and new management tools have enabled a level of automation and more efficient IT operations, but significant barriers still block the road to the truly agile IT organization. In particular, the provisioning of network and security services is still carried out with predominantly time-consuming manual processes that are distributed across multiple teams and involve multiple handoffs. These complex manual processes can be riddled with errors and the need for rework.

It all adds up to a bottleneck that slows the delivery of IT resources and the rollout of new business services. Any speed and agility gained with compute and storage virtualization and automated provisioning and management are nullified, at least in part, by the manual provisioning required for a hardware-based network.

Ultimately, these challenges drive the need for a fundamentally new approach to the delivery of IT services—an approach built around the ability to do end-to-end automation across the data center, as well as across private and public clouds.

TAKING IT TO A HIGHER LEVEL

A Dimensional Research study found that 55 percent of IT professionals are planning for automated infrastructure and application deployment.⁵

Enabling Speed and Agility with Automation

One of the biggest keys to IT responsiveness can be summarized in a single word: automation. While often overlooked for other IT priorities, automation is required to achieve speed and agility in delivering IT services to the business. Without it, there is too much manual intervention required to provision, manage, and maintain a data center filled with an ever-evolving mix of servers, storage systems, and networking devices.

While initial automation steps are always helpful, they don't solve the overarching IT challenges. The greatest benefits stem from end-to-end automation. With that understanding in mind, forward-looking IT organizations are embracing an approach that fully automates the delivery and ongoing management of infrastructure and operations, including network and security operations, across the IT services lifecycle.

This end-to-end approach to automation starts with the virtualization of compute, storage, and networking resources, where control is abstracted from the hardware, and evolves to a Software-Defined Data Center (SDDC), where just about everything happens in software.

So where are we today? Most companies have virtualized their compute and storage environments but many lag behind on virtualization of the network and associated security services. In this next step in the virtualization journey, the network and security services that now occur in the physical infrastructure—including routing, switching, load balancing, and creating firewalls—are decoupled from the infrastructure and abstracted into the data center virtualization layer. All services are then managed in software.

From an IT agility standpoint, network virtualization is a lot like server virtualization. You achieve the same automated operational model as you do with virtual machines and realize many of the same benefits. You can produce a unique virtual network in seconds, and then programmatically create, move, copy, delete, and restore virtual networks as needed, without reconfiguring the underlying physical hardware or topology. It all adds up to a game-changing level of IT agility.

⁵ Dimensional Research. "Multi-Cloud Environments Are Becoming the New Normal for IT, Dimensional Research." February 2016.

AUTOMATION WITH VMWARE: AT A GLANCE

- VMware vRealize Automation™ is a component of VMware vRealize® Suite, a comprehensive, enterprise-ready cloud management platform that speeds up IT service delivery, improves IT operations, and provides business and developer choice with IT control across heterogeneous, multi-cloud environments.
- VMware NSX® provides a network virtualization platform that delivers the operational model of a virtual machine for the network by abstracting, pooling, and automating networking for the Software-Defined Data Center.

Automation Solutions from VMware

Modern applications require a software-defined approach that leverages automation to give businesses the speed, consistency, and quality needed to support ever-changing requirements. VMware is ideally positioned to help your organization meet this need. VMware changed the industry with server virtualization and has continued to introduce revolutionary technologies for the Software-Defined Data Center.

Today, VMware empowers your IT teams with capabilities that enable the full automation of the delivery and ongoing management of networking, security, infrastructure, and application components. Automation greatly reduces the complexity and amount of time it takes to respond to requests for IT resources and improves the ongoing management and security of the provisioned services and applications, while reducing errors throughout the process.

By automating IT you are standardizing the compute, storage, network, and security configurations of full application stacks using templates and policies. As a result, if you need to make a change, you simply modify the template and push it to production. For all of the workloads using the template, the change will be reflected automatically. Additionally, a record of all changes is maintained for audit and compliance.

Key Enabling Technologies for IT Automation

Today, IT automation is made possible with the enabling technologies that VMware provides with VMware vRealize® Suite and VMware NSX®.

- vRealize Suite enables your IT professionals to automate the delivery and management of “production ready” infrastructure and application components, speeding up IT service delivery, improving IT operations, and delivering end-user choice with control across heterogeneous, multi-cloud environments.
- NSX, in turn, enables your network and security teams to dramatically reduce the amount of effort and cost involved in provisioning key infrastructure components, such as logical switches, routers, load balancers, and distributed firewalls.

The Power of Two

While vRealize Suite and NSX are powerful in their own right, even greater value emerges when you combine the capabilities of the two products to enable the virtualization, automation, and integration of network and security functions.

With this combination, you can create and replicate virtual networks in software, eliminating bottlenecks associated with hardware-based networks. The virtualization of networking and security components into the hypervisor layer helps you simplify provisioning and ongoing networking and security operations, similar to the way virtualization at the compute layer simplifies server provisioning.

This embedded approach significantly reduces manual effort, wait times, and unnecessary rework while increasing security, standardization, and consistency. Your infrastructure operations team is then able to achieve the same automated operational model as with virtual machines, but for networking and security.

With VMware automation solutions, your networking teams can automate the provisioning, configuration, management, and decommissioning of network virtualization and security. Once the initial configuration of the physical network is done as an underlay network, the ongoing and frequent reconfiguration with new application deployments or changing application requirements is no longer required. All of those changes now happen in the logical network space using automation tools, pre-defined templates, or custom templates that consist of network topologies and services. With the template approach, environments can be provisioned in seconds with consistent configuration and security.

Once you've virtualized your networking and security services, you can run them automatically, without command line interfaces or administrative intervention. All services are flexible, automated, and controlled by software.

Automation, meanwhile, helps you create standardized, repeatable processes that improve the consistency and reliability of final configurations by reducing the chances for manual errors. Automation also helps you reduce operational costs by eliminating many manual tasks, and it improves development productivity by delivering application environments to engineers faster—so they can accelerate the delivery of the software that keeps the business competitive.

A Blueprint for Success

With the VMware solution, you can automate the end-to-end provisioning process for infrastructure and applications by modeling all policy and automation features into scalable, extensible “blueprints.” Using vRealize Automation, a component of vRealize Suite, and NSX together, you have the ability to model infrastructure and complete multi-tier application environments as blueprints that include network profiles and security policies.

Through native integration, vRealize Automation and NSX enable you to dynamically build networking and security services into your blueprints, providing repeatability while reducing manual network and security administration hassles. As a result, you can speed infrastructure and application provisioning from weeks or days to minutes while maintaining standardized environments and avoiding configuration drift.

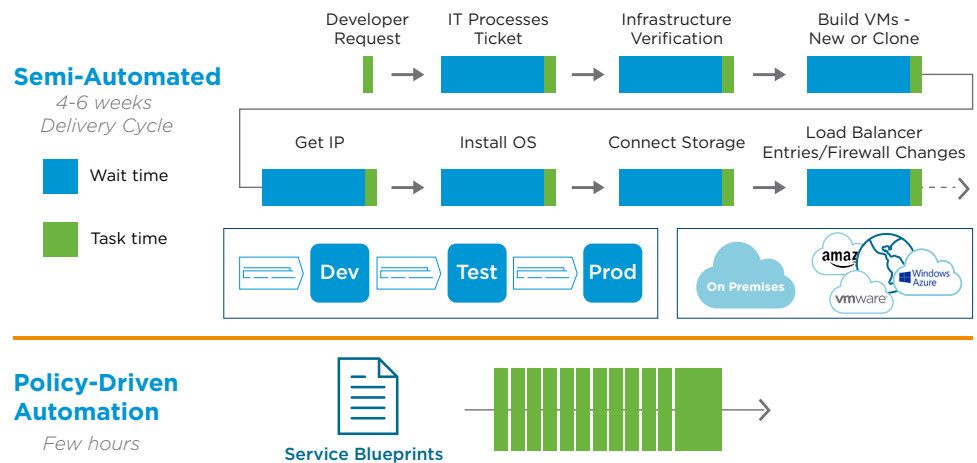


Figure 1. Full automation eliminates wait time and enables standardization.

Automation means networks are deployed in lock step with their workloads—as fully audited self-service transactions. And applications quickly move through development, testing, staging, and production, without changes to their IP addresses.

Moving forward, the blueprint approach enables virtualized network and security constructs to stay with the applications throughout their lifecycles. To change a networking configuration or security policy for a set of applications, you simply update the blueprint. Any application using the updated blueprint will automatically be updated to reflect the modified configuration. Security policies are consistently applied during provisioning, automatically following workloads, to help ensure that firewalls remain persistent.

A TRUSTED LEADER

VMware has been the leading vendor in both Cloud Systems Management⁶ and Data Center Automation⁷ for three consecutive years.

Key Takeaways

When your IT organization embraces an approach that fully automates the delivery and management of infrastructure and applications, including network and security operations, you are positioned to accelerate service delivery and respond faster to the dynamic needs of a digital business. Automation helps you eliminate bottlenecks across the IT service lifecycle, reduce rework due to errors in the provisioning process, and increase security.

Today's digital transformation is driving rapid and fundamental changes in businesses and their operating models. To support this, IT must similarly transform their data centers. VMware and Intel enable IT organizations to modernize data centers and deliver IT infrastructure and application services with the speed and agility to support business innovation and growth while optimizing TCO and improving resource utilization. VMware's software-defined HCI architecture and Intel® technology integrate compute, network, and storage virtualization technologies and enable businesses to modernize their infrastructure, automate IT, and run modern applications. This innovative, software-defined approach delivers cloud service provider agility and economics in the data center, and extends to an elastic hybrid cloud environment.

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⁶ IDC, Worldwide Cloud Systems Management Software Market Shares, 2015: Year of Continued Expansion, June 2016.

⁷ IDC, Worldwide Datacenter Automation Software Market Shares, 2015: Year of Suite Success, June 2016.

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