



VMware IT Speeds Application Releases and Application Quality with Continuous Delivery Methodology

Insights into Deploying
VMware vRealize Cloud Management Solutions

WHITE PAPER

Executive Summary

Change is constant at VMware. In fewer than two decades, the cloud and virtualization infrastructure leader has grown into a USD \$6 billion business, transforming the way customers build, deliver, and consume IT resources. Yet supporting exponential growth required VMware IT to adopt developer operations (DevOps) best practices and automate application releases to overcome communications, quality, and efficiency obstacles. By driving IT agility with a continuous delivery methodology, VMware IT reduced deployment time by 63 percent and deployment resources by 83 percent while doubling the speed of software releases and increasing release frequency by 6x.

Introduction

Success in the new economy requires companies to rethink traditional processes and approaches. It rewards enterprises that embrace digital solutions and automation to accelerate innovation. Recognizing the opportunity to increase IT agility and be a better partner to lines of business, VMware IT began a transformation to DevOps-Ready IT that would improve the way the team updated existing applications and released new internal and external services.

While representing a change in IT culture, DevOps seeks to improve collaboration between operations and development teams.¹ DevOps implementations use automation to accelerate IT service delivery and increase the standardization of systems and processes used to build, test, and run new software applications. DevOps initiatives break down the silos between various teams in the software development lifecycle. Organizations that invest in DevOps are proven to deploy code more frequently and with fewer failures, which speeds time to market for new and updated software applications and functionality.²

VMware's internal transition to DevOps-Ready IT began with the IT team building a cloud architecture based on the software-defined data center that [automated application provisioning in a VMware private cloud](#). The solution delivered a complete application stack—fully integrated and tested application environments for development and testing engineers—supporting developer choice in application programming interface (API) and graphical user interface (GUI) access to resources.

The automated solution quickly yielded impressive results:

- Reduced provisioning time from a 4-week average to 36 hours to under 24 hours
- Increased developer productivity by 20 percent
- Improved the consistency of provisioned instances
- Reduced annual infrastructure and operating costs by USD \$6M

VMware IT deployed VMware vRealize® Suite as part of the project to manage the delivery of dev/test application environments across a hybrid cloud environment. More intelligent operations improved computing performance and availability, right-sized capacity, and optimized resources. Unified views and extensibility also helped the team rapidly reuse existing test automation scripts and integrate third-party components. By automating the end-to-end provisioning and testing process, VMware IT became more agile. The team increased the efficiency of data center resources and improved developer productivity while decreasing project risk and application backlog.

¹ Gartner. "Gartner IT Glossary," <http://www.gartner.com/it-glossary/devops>.

² IT Revolution Press. "Puppet Labs 2015 State of DevOps Report," July 2015.

VMware IT soon realized a lack of release automation prevented the team from doing more to improve its DevOps practices and application release delivery, so the team initiated a second phase of DevOps-Ready IT. With this effort, VMware IT would advance the company's innovation agenda by adding continuous delivery capabilities to drive increased consistency across the software development lifecycle, further accelerating application delivery and increasing code quality. (Figure 1)

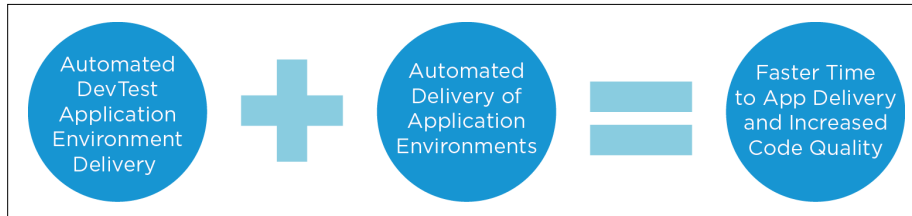


Figure 1. VMware IT advances the company innovation agenda with DevOps-Ready IT.

Accelerate Application Delivery by Automating the Release Pipeline Process

Faster application provisioning had solved a significant problem yet deadlines were still challenging to meet. Business stakeholders requested development and deployment tasks to be completed within service-level agreements (SLAs). Operations agreed, but without the ability to ensure consistency of software configuration, process, and testing across all teams involved in the software development lifecycle, new releases continued to take too long to reach production-level quality. Communications between teams was also an issue. Misplaced emails, non-existent history tracking, and poor status reporting made it impossible for stakeholders to understand where exactly additional delays were occurring in the release process.

Although automated application delivery—the inaugural DevOps-Ready IT project—had reduced the time needed to deploy new application environments, it was just one of the tasks required at each stage in the software delivery process. To truly accelerate application delivery, VMware IT needed to ensure artifacts and configurations were standardized as the software progressed from development, test, staging, and into production. VMware IT also needed to automate testing at each phase and provide better status tracking about where each project was in the delivery process.

Consistent with other large and growing enterprises, the scale of VMware IT application delivery had become massive. (Figure 2) Development and operations were connected but separate. Because of siloed systems and complex processes, operations staff were challenged to use the same techniques (e.g., agile, lean, test plans, etc.) as developers used. Without formal DevOps processes, individual operations and development engineers found it difficult to collaborate throughout the service lifecycle—from design and development processes to production support. Traditional VMware IT team operations were manual and time consuming, and although SLAs were met, often more changes were requested and the operations team pushed them into production.

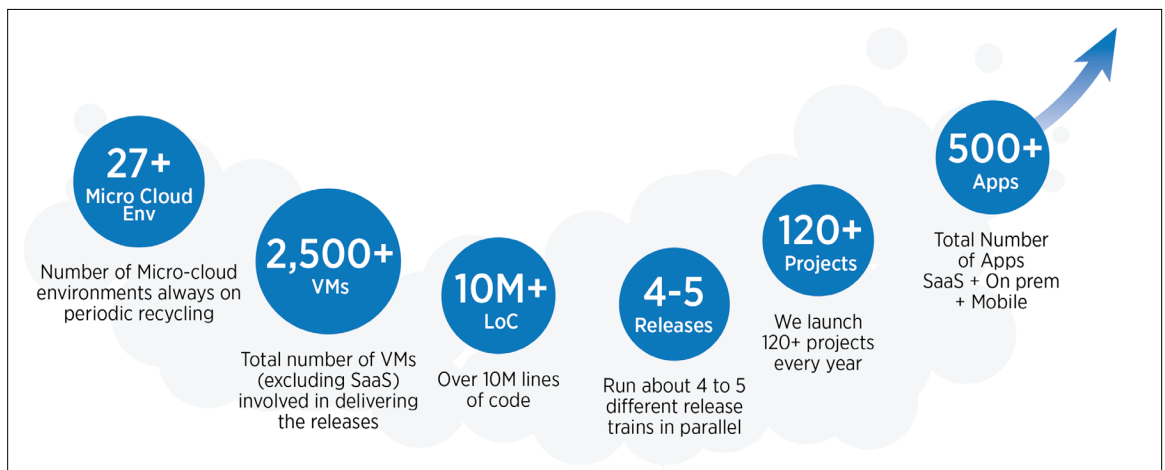


Figure 2. Projects VMware IT undertakes impact multiple applications.

To satisfy increasing line-of-business demands and improve software release efficiency, VMware IT deployed VMware vRealize® Code Stream™. The new product's capabilities—coupled with the automatic delivery of infrastructure already provided by VMware vRealize® Automation™—would enable VMware IT to automate artifact management, build, provisioning, and test tasks at each stage in the release pipeline. By optimizing release automation processes and achieving continuous delivery, VMware IT expected to increase release velocity, redeploy IT resources from lower-level release tasks to higher-level initiatives, increase release quality, and improve IT-business communications.

VMware Solutions At A Glance

VMware IT enabled DevOps-Ready IT with vRealize Automation and vRealize Code Stream. vRealize Automation automates the delivery of personalized infrastructure, applications, and custom IT services. vRealize Automation is part of VMware vRealize Suite, an enterprise-ready, cloud management platform that delivers the industry's most complete solution for managing a heterogeneous, hybrid cloud. vRealize Code Stream automates application release delivery. Together, vRealize Automation and vRealize Code Stream enabled VMware IT to deliver and manage infrastructure and applications quickly while maintaining control, resulting in the enterprise accelerating application delivery while achieving higher quality releases.

Transform to Continuous Delivery to Enable Nimbler IT

VMware IT's objective in embracing continuous delivery was to transform the release methodology to enable seamless business capability delivery. It established the foundation by supporting continuous infrastructure for end-to-end provisioning. The new DevOps processes addressed continuous planning and requirements while vRealize Automation and vRealize Code Stream added release automation and continuous delivery capabilities that enabled frequent, reliable software releases while reducing operational risks. (Figure 3)

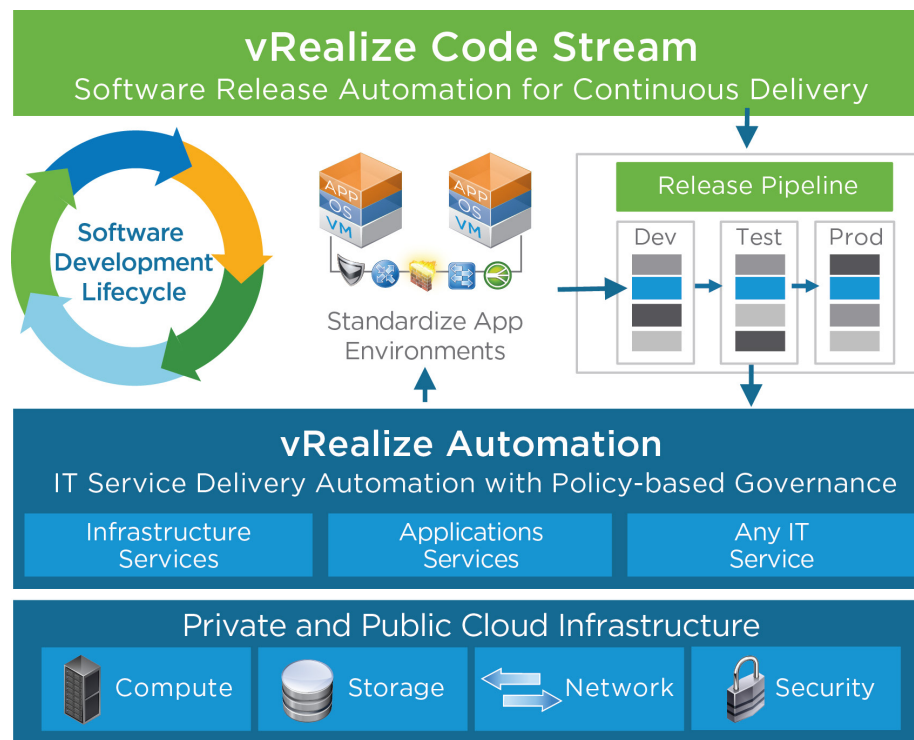


Figure 3. Together, vRealize Automation and vRealize Code Stream enable continuous delivery.

VMware IT introduced new three-layer automation that relies on vRealize Code Stream to orchestrate vRealize Automation to completely provision application stacks in support of continuous delivery. The process includes continuous integration, deployment automation with release bundle orchestration, and continuous deployment.

First, VMware IT automated 1,800 individual deployment tasks, reducing a manually intensive work process, and thereby, eliminating human intervention. The deployment automation processes, which included both code and configuration, was standardized in specific tool sets—for example, Perforce for check-in, and vRealize Code Stream plus other tools for invoke, build, deploy, test, and archive workflows. Infrastructure configuration was part of this integration. Because these processes would be automated into the future, the focus was on ensuring code quality. A primary benefit of this continuous integration was Day 1 engagement for DevOps.

The tasks are automated and bonded together in vRealize Code Stream, creating a single release bundle (containing all tasks and environments) that can be moved automatically as one entity between environments—and within the required one-hour downtime SLA. For example, once a bundle passes testing requirements, vRealize Code Stream can open the gate and orchestrate it to move from quality assurance (QA) testing to a user acceptance testing (UAT) to a production environment. Moreover, Code Stream makes it possible for a bundle with many objects to be deployed in multiple places with no manual intervention. Zero touch deployment, one console for release execution and reporting, as well as standardized governance and compliance, are among the benefits the team experienced using vRealize to orchestrate the entire deployment process.

For an organization that manages more than 500 applications, many of which work together to comprise a service, continuous delivery saves time. The VMware DevOps team estimates that projects can be pushed to production faster—every two weeks, which is significantly faster than the two to four months that the process used to take. A similarly significant reduction in the number of resources required to deploy code has also provided an opportunity for VMware IT team members, previously responsible for manual deployment processes, to learn new products and focus on making additional processes more agile. (Figure 4)

Using VMware cloud management solutions, VMware IT has achieved the following benefits:

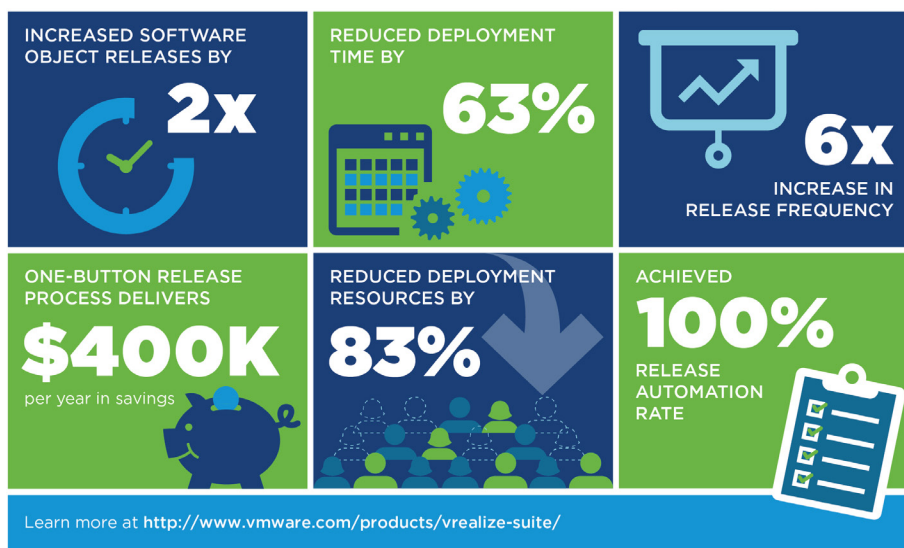


Figure 4. VMware vRealize cloud management solutions help ensure faster releases and lower costs.

New DevOps automation empowers development and IT staff to work together to deliver high-quality business applications faster. With greater IT agility, business leaders can more quickly take advantage of new opportunities that drive competitive advantage. Automating deployment configuration and artifact tracking help VMware increase application reliability by ensuring correct release artifacts are used across delivery stages—from development through production. Most important, VMware's DevOps initiative continues to evolve release automation maturity, as well as improve governance and visibility by facilitating cross-team collaboration via consolidated views and status across all stages in the pipeline.

“Automation is the key to DevOps and faster releases. Deploying an orchestration and automation solution in conjunction with practical DevOps processes, reduced our deployment time and resources, while giving us higher quality software.”

— Jerry Li, senior manager of VMware IT services, VMware

Get Started: Five Key Learnings

For high-growth enterprises focused on digital business, automating the release delivery process can improve service quality and raise customer satisfaction. Release delivery automation can also prevent increasing dependence on unreliable manual processes that can slow the introduction of new application functionality.

VMware IT relied on vRealize cloud management solutions to modernize application delivery. IT's experience with new DevOps processes, and the unique features in vRealize Automation and vRealize Code Stream, led to the following five key insights for organizations just getting started:

1. **Choose the right proof of concept (POC)** – Teams seeking to enable DevOps-Ready IT and increase IT agility should begin with a simple project. The POC can be a critical component, but it should be an isolated or siloed application rather than one that might negatively impact the business if things should not go as planned.
2. **Start with a small team** – Automation involves a human, cultural change that requires support from everyone involved. A smaller team—with just two or three dedicated automation engineers—will be easier to manage through process and solution transition.
3. **Have a roll-back plan** – Plan for the unexpected. Be sure that changes can be quickly rolled back should everyone not be equally engaged from the start.
4. **Deploy any new DevOps process and a continuous delivery solution concurrently** – Modeling a new methodology in a proven solution is simpler and less time consuming than introducing a new process, then a new solution.
5. **Create a dashboard** – Decide what to measure and then regularly report through the solution's dashboard so that executives and other sponsors can view changes and progress.

Discover the Advantages of VMware vRealize Cloud Management Solutions

DevOps-Ready IT improved collaboration between operations and development teams at VMware. VMware IT's commitment to DevOps and the deployment of a cloud management solution for application stack provisioning across a hybrid cloud resulted in significant productivity and cost benefits. The team's further investment in DevOps-Ready IT including an automated, continuous delivery methodology enabled VMware IT to cut deployment time by more than half and deployment resources by more than three quarters, while doubling the speed of software releases. The elimination of manual processes also improved service quality, raising customer and DevOps satisfaction levels.

To rapidly automate the deployment and management of a variety of IT services and applications, visit the [vRealize Automation 101: Hands On Labs](#) or learn more at [vRealize Code Stream](#).



VMware, Inc. 3401 Hillview Avenue Palo Alto CA 94304 USA Tel 877-486-9273 Fax 650-427-5001 www.vmware.com

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