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DevOps
Automated provisioning for your organization

Executive Summary

Automated provisioning is a key **DevOps** capability that delivers computing capacity on-demand without manual intervention. It provides the foundation for a flexible, extensible infrastructure with dynamic resource allocation across the enterprise, enabling app delivery at the speed of digital services.
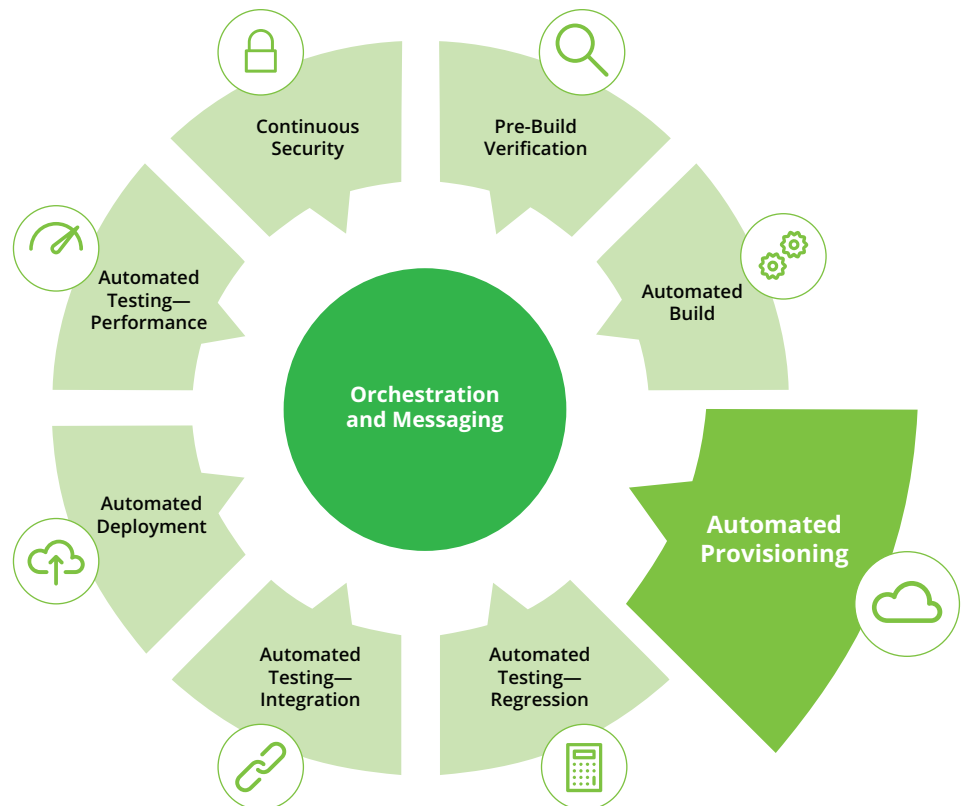
Introduction

Does mission or customer traffic to your website ebb and flow, causing performance issues or leave your organization with significant excess capacity outside peak volume? How often are your development and test teams sitting idle, waiting for their code to be deployed? How often do project delivery dates get pushed back due to infrastructure delivery delays? How much money is spent acquiring, provisioning, and maintaining computing resources that are not efficiently used? The problem may lie in an outdated delivery model reliant upon manual interaction at multiple points along the deployment lifecycle, fostering communication breakdowns between mission, development, and operational teams.

DevOps and Cloud

DevOps is about eliminating waste, rework, bottlenecks and automating manual tasks across the System Development Life Cycle

(SDLC) phases. A common misconception is that DevOps is a function of release and deployment automation. In fact, DevOps is much broader. It's a combination of culture, processes, and automation tools. The automation aspect across the software and infrastructure processes can decrease

costs associated with manual processes and increase velocity in developing new services and getting them to the market faster – all while supporting the mission. There is also some improvement in build quality, visibility and predictability in support of application development efforts.

Continuous Security · Pre-Build Verification · Automated Build · Orchestration and Messaging · Automated Provisioning · Automated Testing—Regression · Automated Testing—Integration · Automated Deployment · Automated Testing—Performance

Cloud computing—public, private, or hybrid—is the future of a successful, modernized IT infrastructure. It provides scalability and flexibility, in addition to cost-efficient pay-as-you-use pricing. The efficiency of Cloud computing environments enable your organization to transform your data center in the cloud. This efficiency can be extended even further with *Automated Provisioning*, a DevOps capability.

Automated Provisioning

Scripting and automation tools enable *automated provisioning*, which delivers instances on-demand by automatically allocating and delivering computing resources when needed for only the duration needed. This enhanced capability allows for automated scaling during peak demand (new legislation, mission phases, unpredicted spikes in traffic, etc.), and temporary instances for other DevOps capabilities such as automated testing cycles (integration, regression, performance, etc.). Solutions can be tailored to meet the needs of an organization by aligning with their established strategy.

Enabling Technologies

To deliver the DevOps promise of *automated provisioning*, three technologies are essential: Cloud Computing, Monitoring tools, and Deployment/Synchronization tools.

Cloud Computing

Cloud computing resources can be delivered through private, public, or a hybrid of cloud service providers. Private cloud resources require a significant upfront investment in hardware and software resources (e.g., VMWare, commodity servers) and enable total in-house control, but are limited to the capacity implemented by your organization. Public cloud service providers (e.g., Amazon Web Services (AWS), Microsoft Azure, etc.) require a very small upfront investment and help you scale resources on-demand basis, but at the cost of less control due to the outsourcing of the infrastructure.

Monitoring

With dynamic computing resource allocation, a comprehensive monitoring solution is essential. Suites of monitoring tools (e.g., Amazon Cloudwatch, Microsoft Cloud Monitoring, SolarWinds, etc.) can provide real-time visibility into how resources are being consumed, what has been provisioned to date, and other vital metrics for tracking and managing your on-demand infrastructure usage.

Deployment and Synchronization

Specialized DevOps tools (Chef, Puppet) allow deployment and synchronization across the dynamic infrastructure, providing a robust platform for keeping computing resources (manually and automatically provisioned) synchronized as changes are deployed.

Getting Started

The first step towards *automated provisioning* is identifying the available tools for your existing Cloud strategy. Next, a suite of tools and processes must be established that enables the *automated provisioning* capability. By aligning with your organizational goals and desired capabilities—near-term and long-term—a roadmap for success can be crafted.

What Success Looks Like

- Reduced lag for provisioning of computing resources
- Increased scalability and flexibility
- On-demand computing resources pool
- Reduced manual overhead
- Dynamic infrastructure with less waste and automated scaling

How Deloitte Can Help

Deloitte will align with key stakeholders on your organization's desired capabilities and goals. By leveraging the full breadth and depth of our Cloud expertise, we will perform detail analysis and develop a services-centric approach for your *automated provisioning* capability including:

- An optimized suite of tools tailored to your mission
- Lean, efficient processes that complement the tools and add value, not overhead
- A staffing plan for the full-lifecycle of the capability including Operations & Maintenance (O&M)
- A detailed roadmap for implementation that aligns to your organization's preferred methodology (Waterfall, Agile, Hybrid/Custom)

Upon delivery and approval, our staff of experienced Cloud consultants can provide execution, implementation, and O&M support for your new capability.

As part of our Technology Strategy, and Architecture service area, we offer a number of capabilities within our Cloud and Infrastructure service offerings that prepare you for the journey of modernizing and enhancing your capabilities. We have technology consultants with knowledge, skills, and experience in the following service offerings:

Service Offering	Description
Infrastructure Modernization	Consolidating/Standardizing data center architecture to simplify the environment; introducing automation and virtualization technologies that provide an increase in asset utilization, reduced configuration management burden, and higher availability; deploying new service platforms that enable anytime-anywhere service delivery.
Infrastructure Optimization	Optimizing capacity, retiring old assets, and crisply tuning infrastructure component performance to meet service levels; provides hardware, software, and labor savings due to reduced outages and greater asset utilization.
Infrastructure Delivery Model Design	Design new service operations processes (such as DevOps) and deploy enhanced automation tools that integrates performance monitoring across distributed environments to enable rapid deployment of new services while maintaining operational integrity.
Storage Solutions	New technologies such as storage virtualization and Large Data Object Storage (LDOS) and new processes for managing storage can significantly reduce costs of storage requirements.
End User Enablement	New technologies to allow rapid deployment of applications and next-generation firewalls and monitoring solutions allow data center owners enhanced application security control and monitoring.

Our knowledge, skills, experience, and demonstrated methodologies are designed to help save our clients' time and money. At the conclusion of the engagement, your organization can be positioned to more effectively deliver a dynamic, on-demand infrastructure.

Deloitte offers demonstrated knowledge and experience with IT optimization, server virtualization, IT infrastructure transformation, and cloud computing both for commercial and US government agency clients. Our resources allow us to develop approaches to demonstrate for you from our innovation centers how these tools can support your transformation towards automation and DevOps.

Deloitte can provide IT infrastructure subject matter specialists across a wide range of technical capabilities as well as experience with multiple hardware and software vendors. Our consultants have demonstrated knowledge and experience in the planning, designing, and execution of large (and small) virtual server and enterprise architecture implementations including supporting DevOps transformation and change management.
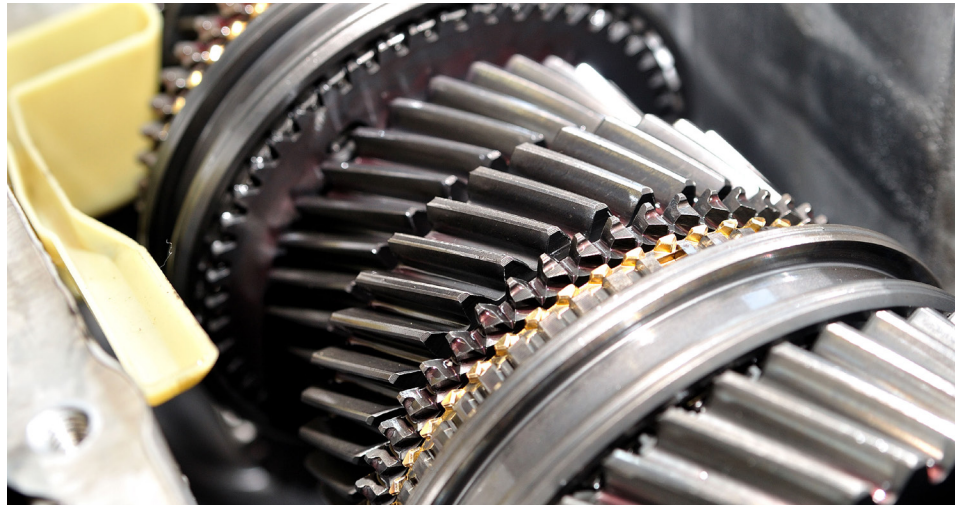
Contact us

David Savino
Managing Director
Deloitte Consulting LLP
dsavino@deloitte.com
+1 571 858 1559

David Bartolomei
Managing Director
Deloitte Consulting LLP
dabartolomei@deloitte.com
+1 703 251 1674

Robert Ratay
Specialist Leader
Deloitte Consulting LLP
rratay@deloitte.com
+1 571 814 7957

Eunice Lea
Senior Manager
Deloitte Consulting LLP
elea@deloitte.com
+1 571 882 5944

Ross Byczek
Manager
Deloitte Consulting LLP
rbyczek@deloitte.com
+1 202 306 5206

William Cuttitta
Specialist Leader
Deloitte Consulting LLP
bcuttitta@deloitte.com
+1 571 814 7957