IDC

SPOTLIGHT

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The democratization of automation empowers platform engineers who may not have programming expertise to efficiently create, manage, and deploy automation solutions. Generative AI enables a broader range of professionals, including developers, to contribute and benefit from IT automation.

Enabling Platform Engineering Through Automation, Development Tools, and GenAI

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Introduction

The Compelling Need for IT Automation

Today's digital organizations face numerous IT challenges, such as skilling gaps, complexity, and scale; however, modern IT automation can mitigate many of these problems. Businesses can enhance efficiency and productivity by automating repetitive tasks and workflows and focusing resources on strategic initiatives.

Through workflow standardization, automation improves reliability by minimizing errors and reducing downtime. It also helps reduce operational costs caused by unmanageable IT tool sprawl, deriving more value from existing IT investments and allowing organizations to allocate resources more effectively.

AT A GLANCE

KEY TAKEAWAYS

- The hurdle of creating automation scripts has slowed the expansion of IT automation across the enterprise.
- Although platform engineers are responsible for automating application development, they often lack programming skills.
- Just as developers use GenAI for application coding, platform engineers need modern GenAI tools to build automation workflows.

Even in 2024, we have seen enterprises impacted by IT outages, illustrating the importance of modern IT automation. Organizations lacking effective IT automation were caught on their heels and severely impacted by this failed software update because they could not make configuration changes at scale. The outage significantly affected their customers and employees and caused considerable harm to their business and reputation.

This IDC Spotlight explores the features and capabilities that can expedite automation adoption throughout the IT organization. It also explains how automation can be incorporated into platform engineering integrated development platforms (IDPs) and the importance of embracing modern generative AI (GenAI) coding assistants to accelerate IT automation adoption.

Overview of Platform Engineering for Automation

IDC defines platform engineering as the discipline of designing, building, and maintaining a platform of curated tools, services, and knowledge — an IDP — that gives development teams self-service access to the necessary resources to build, test, and operate digital solutions. Automation plays a central role in platform engineering. It's the foundation for building and maintaining efficient, scalable software development environments.

The emerging role of platform engineers is about not just adapting to change but also embracing new technologies previously considered part of traditional development work. By integrating these advanced tools and capabilities, platform engineers can improve the developer experience and support the organization's broader goals. Standardizing and scaling automation processes are essential for platform engineers to meet the demands of modern application environments.

At the heart of platform engineering lies the creation of automation code that is both scalable and secure. This code significantly streamlines repetitive and time-consuming operational tasks. By automating routine activities, IT teams can focus on innovation and strategic projects rather than manual, repetitive tasks.

Platform engineers are increasingly becoming automation developers who require access to modern tools for efficient work.

Unfortunately, although platform engineers have a strong understanding of the automation needs and domains, many lack a programming background and have difficulty learning and effectively implementing automation coding. This learning curve can be daunting for nonprogrammers or those new to automation tools despite the clear benefits of automation in streamlining processes and enhancing productivity.

Today, platform engineers are turning into automation developers, playing a crucial role in ensuring the success of the application development teams they support. As such, they need access to development workspaces; templates for standardizing automation for deployments, provisioning, and management; and content collections with code and documentation. In addition, intrinsic security and compliance, access to an IDP, and plug-ins for common developer portals such as backstage and communities of practice for collaboration on curated automation content are becoming essential tools for platform engineers.

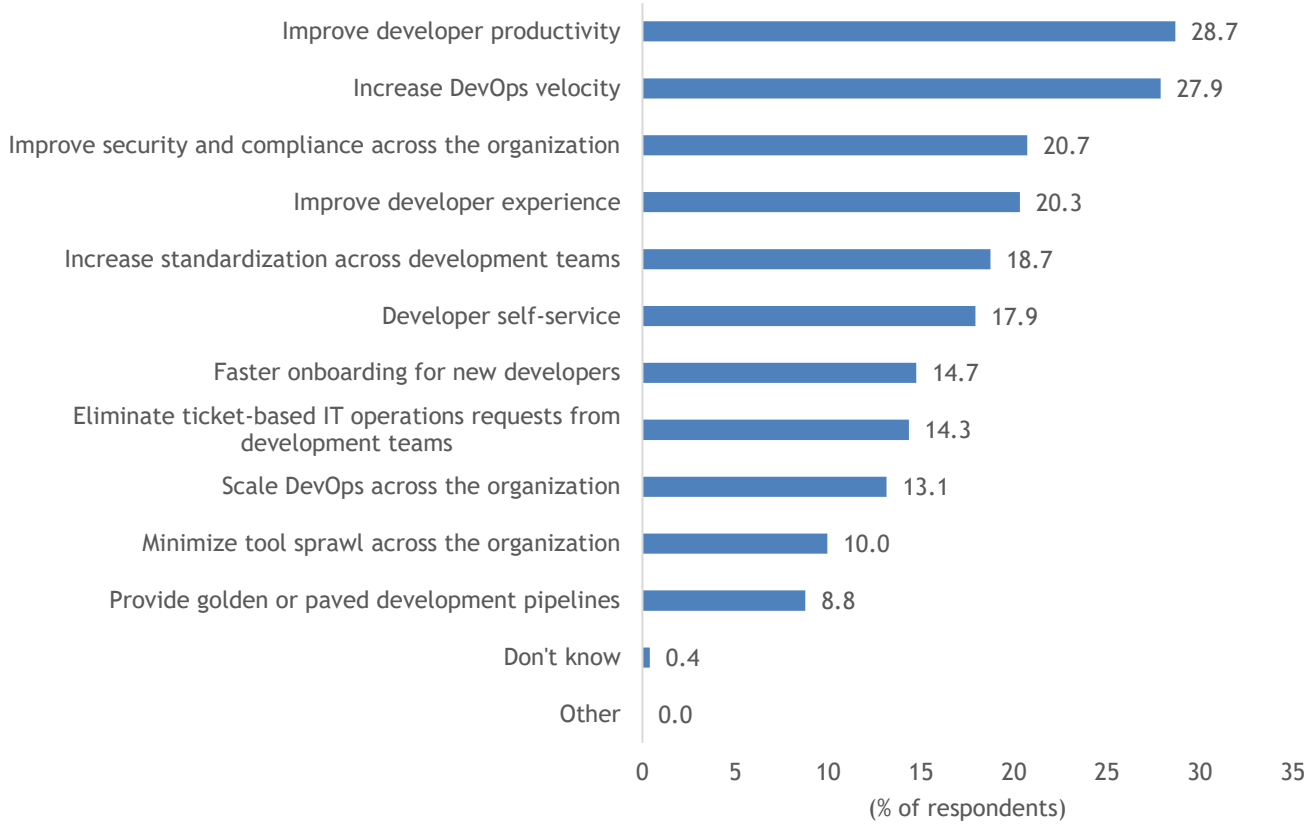
Benefits

Purpose of Platform Engineering

An IDP provides development teams with self-service access to essential resources for building, testing, and operating digital solutions. As Figure 1 shows, the primary drivers for building an IDP are improving developer productivity (28.7%), increasing DevOps velocity (27.7%), enhancing security and compliance across the organization (20.7%), and improving the developer experience (20.3%). These factors enable organizations to achieve key business outcomes, such as faster time to market and the delivery of innovative digital applications.

FIGURE 1: ***Top Drivers for Building an IDP***

Q What are your organization's top 2 primary drivers for building an internal developer platform?



n = 311

Note: For more information, see DevOps Practices, Perceptions, and Tooling Survey, 2024: Platform Engineering (IDC #US51622924, February 2024).

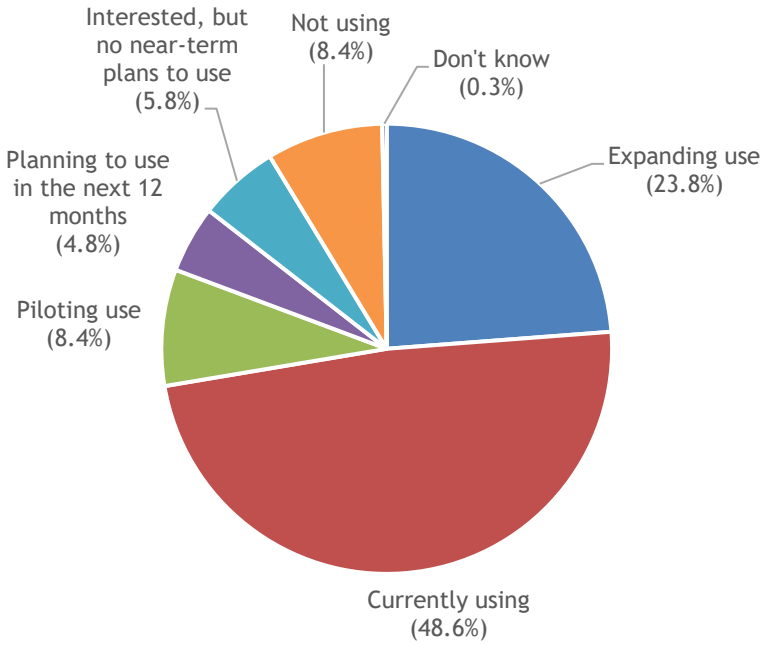
Source: IDC's DevOps Practices, Perceptions, and Tooling Survey, November 2023

An IDP enables application developers to get self-service access to all the tools and resources they need to do their jobs. Automation drives self-service access, improving the developer flow state and enabling developers to maintain a productive mindset without being interrupted by disruptive or mundane tasks, such as configuring or searching for content.

Organizations are increasingly leaning into platform engineering and building IDP environments for their developers. Figure 2 shows that 80.8% of organizations are expanding, using, or piloting an IDP. Notably, this is a 45% increase over the previous year, in which only 55.9% indicated as such.

FIGURE 2: ***Increasing Adoption of IDPs***

Q *Which best describes your organization's use of an IDP?*



n = 311

Note: For more information, see DevOps Practices, Perceptions, and Tooling Survey, 2024: Platform Engineering (IDC #US51622924, February 2024).

Source: IDC's DevOps Practices, Perceptions, and Tooling Survey, November 2023

Further, IDC forecasts that platform engineering roles will grow from 2.5 million to almost 4.1 million by 2027, with a CAGR of 10.1% (see *Worldwide xOps Census and Forecast, 2022–2027,* IDC #US50627023, May 2023).

GenAI

GenAI models are trained to generate data similar to what they have been trained on. These models leverage vast amounts of data and advanced algorithms to produce humanlike text or application source code. Unlike classical machine learning, which focuses on predicting outcomes, GenAI models are trained to identify patterns and make informed decisions. As a result, GenAI creates new data in addition to analyzing existing data. This generative approach allows GenAI to go beyond analysis and contribute creatively and innovatively to code generation.

Coding assistants featuring GenAI are gaining widespread adoption, as the following data points illustrate:

- 91% of developers have used an AI coding assistant to develop more than 20% of their applications (source: IDC's *U.S. Generative AI Survey,* 2024).
- 82% of developers worldwide noted that the primary integrated development environment (IDE) or code editor they use has auto-completion or intelligent code generation capabilities (source: IDC's *Developer View,* 2023).

- 78% of developers noted that AI coding assistants increased their software development productivity (source: IDC's *Developer View,* 2023).

For example, in IT infrastructure automation, GenAI coding assistants can generate code and configuration scripts to manage and maintain various aspects of IT environments. This automation includes provisioning servers, deploying applications, setting up networking configurations, and managing security policies.

One notable advantage of GenAI coding assistants is their ability to produce infrastructure as code (IaC) quickly and accurately, ensuring consistency and repeatability across different environments. AI coding assistants can also predict and suggest optimizations for performance and costs by analyzing usage patterns and system metrics. Overall, the automation capabilities of GenAI coding assistants not only enhance operational efficiency and reliability but also empower IT professionals to focus on higher-value tasks that drive innovation and business value.

GenAI also significantly enhances the software development landscape by enabling the use of natural language to streamline and automate various tasks. By allowing professionals to interact with systems using ordinary language commands, GenAI eliminated the need for advanced coding and scripting skills to create new content.

Just as developers use GenAI to improve coding efficiency, platform engineers increasingly need access to modern GenAI tools that can help them quickly learn and effectively automate existing systems and platforms.

GenAI solutions can democratize automation, empowering platform engineers who may not have deep programming expertise to create, manage, and automate systems and platforms efficiently. Consequently, GenAI fosters a more inclusive environment in which a broader range of professionals, including developers, can contribute to and benefit from IT automation, leading to increased productivity, reduced development time, and enhanced innovation.

Trends

IDC expects a continued surge in the adoption of GenAI-coding assistants due to their transformative impact on developer, platform engineering, and IT operations workflows. This trend will help to drive innovation, optimize resource allocation, and lead to more efficient and agile development cycles across industries.

Platform engineering will be at the forefront of integrating GenAI coding assistants, ensuring that developers across the organization have seamless access to advanced tools that can enhance productivity and code quality. Moreover, platform engineering teams themselves will increasingly leverage GenAI to automate workflows. The ability of platform engineering teams to successfully integrate and use GenAI within IDPs will be critical in shaping the future of software development.

GenAI coding assistants are evolving beyond their initial capabilities, becoming more specialized and tailored to specific technologies and development workstreams. This specialization will allow them to offer more precise, context-aware assistance that aligns with particular programming languages, frameworks, or development environments. By focusing on niche areas, these specialized assistants can deliver more relevant code suggestions, debugging help, and documentation, enhancing efficiency and accuracy.

Open foundation models will be crucial in accelerating the advancement of GenAI coding assistants by providing pretrained models that can be fine-tuned for various applications. These models, which are publicly available and often developed through collaborative efforts, offer a foundation for creating specialized coding assistants. Their availability

encourages experimentation and innovation by lowering the barriers to entry and making advanced AI capabilities more accessible.

The maturation of machine learning operations (MLOps) and large language model operations (LLMOps) will complement and extend traditional DevOps practices. Platform engineering teams will be instrumental in this evolution by enabling automation, streamlining deployment pipelines, and ensuring AI systems' reliability and security. By aligning MLOps and LLMOps with existing DevOps practices, platform engineering teams will help organizations achieve greater operational efficiency, accelerate model deployment, and maintain higher standards of model performance and governance.

Considering Red Hat

Red Hat customers can use the Ansible Automation Platform to automate IT operations across multiple hybrid cloud environments. These environments include public, private, hybrid clouds, on-premises datacenters, and edge locations. Organizations can standardize their operations around the Ansible Automation Platform, enabling IT teams to operate in a consistent and repeatable model.

Red Hat Ansible Lightspeed is a GenAI solution that augments the automation of IT tasks by generating Ansible Playbooks from natural language prompts. It is a part of the Ansible Automation Platform, enhancing the platform capabilities and enabling automation and platform engineering teams to learn how to create and maintain Red Hat Ansible content more efficiently.

Because programming experience is unnecessary, the solution can help organizations convert their subject matter expertise into trusted, reliable Ansible code that scales across teams and domains. This accessibility enables automation to expand across teams, empowering a greater number of automation content creators, including platform engineers and developers who may be unfamiliar with creating Ansible Playbooks.

The solution is:

- **Trained on best practice data:** Red Hat Ansible Lightspeed is purpose trained on Ansible code to provide enhanced trust and reliability, ensuring that insights and recommendations are based on secure best practices.
- **Uses AI-driven insights:** IBM watsonx Code Assistant provides code (Ansible Playbook) recommendations, best practices, and content explanations to educate and instill confidence in the generated code.
- **Integrated with Visual Studio (VS) Code:** Integration with Visual Studio Code IDE provides code recommendations directly within the code editor.
- **Trusted:** Indigenous security features of the Ansible platform and IBM watsonx Code Assistant code generation ensure data protection.

Ansible Automation Platform subscribers can further benefit from development capabilities, which include:

- **Ansible Content Collections:** Designed to help jump-start the integration of Red Hat Ansible with existing IT systems and platforms, Ansible Content Collections include the modules, roles, plug-ins, and documentation to help organizations get more value from their existing IT investments through automation.

- **Ansible plug-ins for Red Hat Developer Hub (RHDH):** RHDH is a framework for building IDPs, providing a customizable unified experience that reduces cognitive load and significantly boosts developer productivity. Ansible plug-ins for RHDH deliver an Ansible-specific portal experience with centralized access to guided learning paths, code repositories, self-service workflows, and more. RHDH accelerates onboarding and learning for new Ansible users and removes friction and swivel-chair operations for more experienced developers.
- **Ansible development tools:** These tools provide an integrated and supported suite of capabilities that help IT practitioners at any skill level accurately build, test, and deploy automation content faster than with manual coding.

Challenges

- **Complexity:** Automation often involves integrating diverse systems and technologies, each with its complexities and dependencies, which can be challenging to manage.

  Red Hat Ansible is purpose built to remove complexity from the creation and management of automation. Enhanced developer capabilities reduce the learning curve, minimize manual errors, and help accelerate the deployment of automation code, making automation more accessible and manageable for users at all skill levels.

- **Skills:** Building and maintaining automation often requires specialized skills in scripting, programming, infrastructure management, and system architecture. Ensuring a team has the necessary expertise and skills can be a challenge.

  Red Hat Ansible mitigates the skill challenges traditionally associated with building and maintaining automation. Through GenAI and other developer-specific capabilities, users can create accurate automation code without requiring in-depth programming knowledge or familiarity with Ansible syntax.

- **Security:** Automation code pulled from public repositories can introduce potential operational performance issues and vulnerabilities. Ensuring that automation code is trustworthy and adheres to best practices is critical.

  With Red Hat Ansible Lightspeed and other developer capabilities, organizations can deploy reliable automation to help harden their existing systems and reduce the potential downtime or even outages.

- **Competition:** The GenAI code generation market is seeing increased competition, and the low-code/no-code markets are already crowded with established players. Differentiating Ansible Lightspeed from these platforms will be crucial.

  Red Hat Ansible is an established solution in the automation space and the first to offer GenAI code generation. Further, with the expanded benefits of the larger automation platform as well as the curated automation developer experience, Red Hat is providing some distinctive capabilities to improve the effectiveness of the platform and automation engineers.

Conclusion

Although the necessity for IT automation is evident, challenges involving skills, complexity, and scalability have hindered its widespread adoption. Platform engineering has highlighted these issues because while platform engineers possess valuable domain expertise, they often lack the necessary programming skills to develop automation solutions. This skill gap makes it difficult for organizations to fully harness and scale the potential of IT automation and build effective platform engineering teams.

To address these challenges, organizations need access to modern GenAI coding assistants that allow a broader range of professionals, including platform engineers and developers who may be unfamiliar with building automation, to create automation content. Organizations seeking to advance their IT automation should explore the capabilities of the Ansible Automation Platform, Red Hat Ansible Lightspeed, and Ansible plug-ins for Red Hat Developer Hub to democratize and accelerate the development of IT automation and the adoption of modern platform engineering practices.

About the Analysts

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Jim Mercer is a program vice president managing multiple programs spanning application life-cycle management (ALM), modern application development and trends, emerging generative AI software development, DevOps, DevSecOps, open source, PaaS for developers, and cloud application platforms. His focus areas are DevOps and DevSecOps Solutions research practices. In this role, he is responsible for researching, writing, and advising clients on the fast-evolving DevOps and DevSecOps markets.

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Dr. Arnal Dayaratna is research vice president, Software Development at IDC. Arnal focuses on software developer demographics, trends in programming languages and other application development tools, and the intersection of these development environments and the many emerging technologies that are enabling and driving digital transformation. Arnal's research examines how the changing nature of software development relates to broader trends in the technology landscape.

IDC Custom Solutions

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