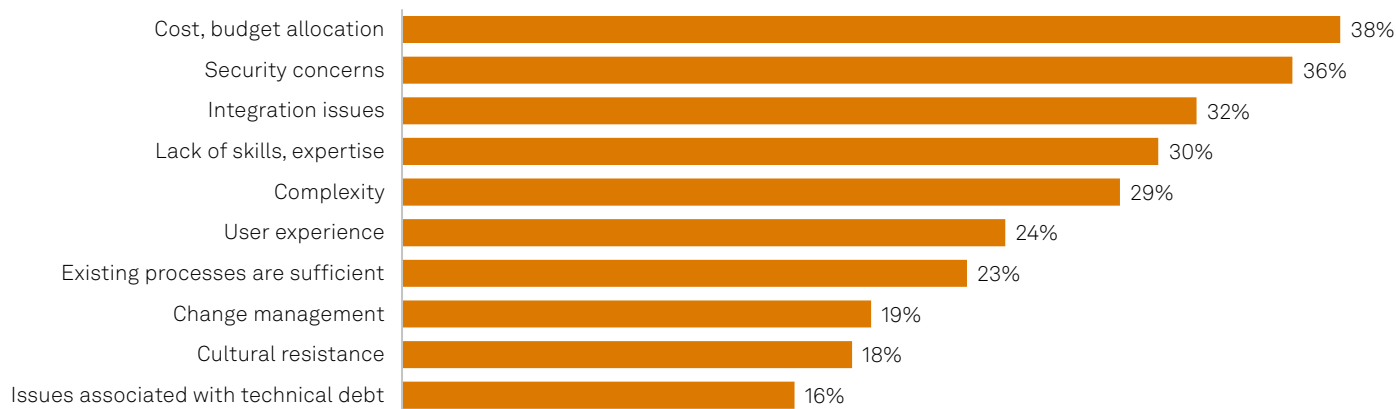# Cost, productivity, security shape today's platform engineering

The Take

Platform engineering, the next evolution of DevOps in enterprise IT, offers several advantages: cost efficiency, developer productivity, and improved quality and security. While DevOps delivered on collaboration, process and culture improvements, platform engineering promises to effectively build and maintain platforms that streamline application development and deployment. To achieve these and other benefits, enterprises must be ready to tackle the main challenges of platform engineering, which include cost, security risks, integration across platforms and software components, and a lack of skills and expertise (see figure below).

Platform engineering challenges

Challenge	Percentage
Cost, budget allocation	38%
Security concerns	36%
Integration issues	32%
Lack of skills, expertise	30%
Complexity	29%
User experience	24%
Existing processes are sufficient	23%
Change management	19%
Cultural resistance	18%
Issues associated with technical debt	16%

Q. What challenges, if any, do you expect (or have you encountered) in adopting platform engineering? (Select top 3).
Base: Respondents whose organizations have platform engineering initiatives (n=261).
Source: 451 Research's Voice of the Enterprise: Cloud Native, Platform Engineering 2024.

Enterprise use of platforms such as Kubernetes, which continues to gain ground across verticals and use cases, can enable benefits while addressing the challenges. However, given the array of tools and personas involved, organizations must contend with complexity, staffing and other hurdles in addition to cost, security and integration issues. Thus, it is critical to leverage a single platform that integrates the many open-source components that constitute an effective Kubernetes deployment, as well as supports the various personas (cloud admins, platform engineers, security teams, etc.) involved. Today's market also requires that deployments be cost-effective, and that teams have the ability to measure and prove benefits to make the case for ongoing and broader investment. Since cloud-native constructs have matured for use in a broader swath of enterprise applications, teams must also be able to centrally manage both container-based and VM-based applications in one platform.

Business impact

Cost and budget allocation is the top challenge for platform engineering teams. Enterprise IT investments and deployments must speed application delivery cost-effectively. This means leveraging efficiency and observability in platforms and tools by using resources wisely and reducing total cost of ownership. A related challenge centers on measuring and proving the effectiveness of platform engineering to justify investment and advocate for broader deployment. Overcoming these and other challenges requires a holistic approach that considers hardware, software and support, as well as the needs of various stakeholders.
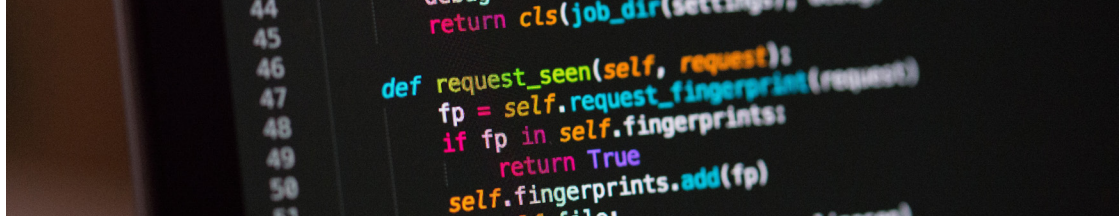
Security is another big challenge. As DevOps and platform engineering teams seek to "shift left" and integrate security earlier in the software development process, they must address security concerns. This DevSecOps collaboration entails clearing both organizational and technical hurdles since security initiatives are increasingly driven by non-security teams and platforms, and tools must be integrated and automated to avoid constraining developers and other teams. In addition, today's enterprise IT environment demands multi-layered security measures that can help boost software quality while also reducing risk.

Integration and complexity are hurdles to effective platform engineering and DevOps. Comprehensive, end-to-end platforms that seamlessly connect compute, storage, networking and security resources, and still enable integrations across the software development and deployment process, can help enterprises to better support their many applications and teams. This can also aid in addressing complexity issues, given platforms such as Kubernetes encompass many open-source components for orchestration, monitoring and observability, security and more — all of which must be centrally and consistently managed.

Lack of skills and expertise remains a challenge. Platform engineering teams face a skills gap as they support software development, deployment and IT operations, but organizations that upskill existing staff can have an advantage. For example, broadening existing staff skill sets to extend consistent management across traditional VMs and containers — as well as hybrid infrastructure such as public clouds, private clouds, on-premises and edge environments — can allow organizations to accomplish effective and efficient platform engineering without relying on recruitment or complete retraining.

Despite the challenges, platform engineering offers several benefits. Platform engineering offers the promise of improved developer productivity, faster delivery time, improved security and higher-quality code, which are the primary expected benefits identified in our VotE survey. Other advantages include cost and labor efficiencies, consistency and standardization, and enablement of on-demand, self-service use of resources by IT teams, further illustrating the value of overcoming key platform engineering challenges.

Looking ahead

Enterprise organizations that invest in their platform engineering practices can gain a competitive edge in the market through cost-effective and simplified deployments, increased developer productivity and innovation, and stronger application security. Effective implementation of platform engineering means standardization of tools and self-service capability for IT teams to improve their productivity and efficiency, collectively creating the framework for differentiation and innovation.

Unified, integrated platforms that support the array of tools and teams involved in today's software life cycle are critical to enabling effective platform engineering and collaboration. This includes evolving areas such as DevSecOps, where teams not accustomed to working together can collaborate so security is seamlessly integrated, automated and abstracted from developers.

Continued evolution of platform engineering and software such as Kubernetes requires organizations to future-proof their deployments, leveraging open-source components and deployment across public clouds, on-premises, edge and other environments to achieve greater efficiency and prepare for further integration. Success also hinges on supporting a variety of stakeholders with a centralized platform. In addition to platform engineering, DevOps, software development and cloud administration teams, stakeholders could include security, management and leadership, line-of-business and product management, and finance teams. This work can help organizations measure the effectiveness of deployments and make the case for further and broader investment across the organization.

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