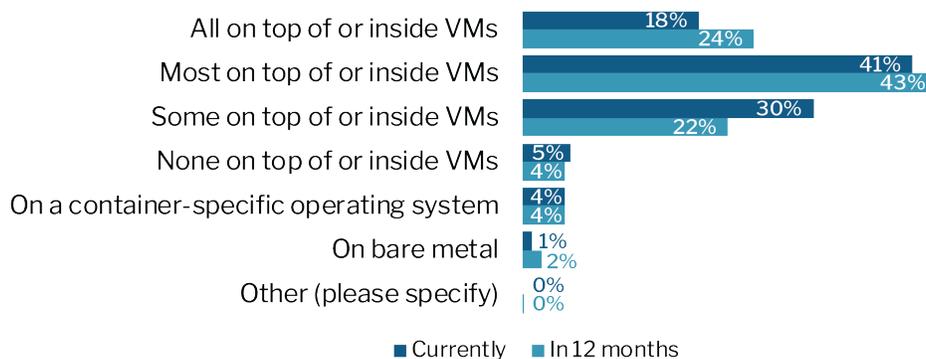# DevOps Trends for IT Operators and Executives

The 451 Take

Today's enterprise market requires collaboration and bridging the gap between developers and IT operations to achieve speed, efficiency, responsiveness and other DevOps advantages. Cloud-native technology such as containers and Kubernetes can also be critical to enabling and spreading enterprise DevOps deployments. But cloud-native technology and methodology can also present unique challenges, and our research highlights how virtual machines have staying power, as a large number of existing workloads are VM-based, and most containers still run on top of them. This highlights the need to effectively and consistently manage both containers and VMs, with coexistence of the two expected to persist. We've also seen containers and VMs influence one another – for example, with more advanced multi-tenancy for containers and lightweight and purpose-specific VMs also in the mix.

Containers Continue to Run Mostly on/in VMs

Source: 451 Research's Voice of the Enterprise: DevOps, Workloads & Key Projects 2020

	Currently	In 12 months
All on top of or inside VMs	18%	24%
Most on top of or inside VMs	41%	43%
Some on top of or inside VMs	30%	22%
None on top of or inside VMs	5%	4%
On a container-specific operating system	4%	4%
On bare metal	1%	2%
Other (please specify)	0%	0%

Q. Where do your containers run? (n=457) Q. Where will your containers run in 12 months? (n=455)

Enterprise organizations need to be agile and flexible to accelerate business innovation and rapidly respond to changes in the market. At the same time, companies must still ensure that faster DevOps releases and more efficient IT infrastructure management are sanctioned, secure and compliant. This can be difficult given the ongoing disconnect between developers/application owners and IT operators, and the need for IT operators to nonetheless support the specific needs of development teams – such as self-service access to Kubernetes resource objects that can be integrated into their CI/CD pipeline, support of open source technologies, and the ability to scale their applications as needed.

Organizations must also maintain consistency and security across development and production environments, as well as hybrid and multicloud deployments that span containers and VMs, on-premises, private cloud and multiple public cloud environments. Giving development teams flexibility in terms of the tools and platforms they want to use can help drive productivity and innovation. Giving IT operations teams the ability to run in hybrid and multicloud environments with consistent infrastructure and operations can drive a 'best execution venue' approach whereby applications run on the most appropriate infrastructure based on cost, performance, data sovereignty, geographic location or other factors, ensuring more efficient and effective IT management.

Business Impact

BREAKING DOWN BARRIERS. The importance of eliminating silos and aligning enterprise teams to achieve DevOps benefits – including speed, efficiency and readiness – has never been greater. We also see that after 10 years in the enterprise, DevOps has evolved beyond grassroots, developer-driven adoption and now increasingly includes top-down adoption involving management and leadership.

A BALANCING ACT. In today's adoption of DevOps, enterprises are balancing flexibility for developers with the need for sanctioned, secure and compliant software releases and IT operations. This means IT properties that can be configured to a namespace – a management approach that serves both IT operators and developers. The IT operators can define IT boundaries such as CPU, memory and storage quotas and policies at the namespace level, enabling application-centric management of IT properties and consistency across VMs. This also means security and other governance can be applied by the IT administrator one time to increase developer velocity while reducing risk. Also with a namespace, development teams get the infrastructure they need in a self-service model within the predefined boundaries, with minimal intervention from administrators, thus increasing velocity. Lifecycle management is also critical to ensure software stacks have the most stable, secure releases without going through the pain of manual updates.

CONSISTENCY IS KEY. Consistency across containers and VMs, and development and production environments, as well as across hybrid and multicloud infrastructures, can enable successful, secure DevOps deployment with resiliency, access control, security and network policy. Organizations that can provide flexibility for developers and peace of mind for IT operators and leadership are best positioned to minimize risk and maximize opportunities.

Looking Ahead

As organizations contemplate digital transformation, DevOps can serve as a starting point for more effectively leveraging technology teams and emergent tooling to increase velocity, drive efficiency and ready organizations for changes in the market. With roots in software development and remote management of IT resources, DevOps can also show the way ahead for effectively managing distributed teams and the different tools and environments they use.

As enterprises migrate software releases and IT operations beyond on-premises and private cloud deployments to more public cloud and SaaS environments, they must ensure that existing policy, security and compliance capabilities are maintained. This can be achieved in part by standardizing and consistently managing hybrid and multicloud deployments, containers and VMs, and testing/development and production environments. Deployments are then more likely to be sanctioned by the organization, and the developer and IT operations experience can be more consistent and familiar.

Cloud-native software such as containers and Kubernetes, which are critical tools for today's enterprise DevOps teams, continue to evolve and mature. While containers have been the domain of mostly developers seeking a simpler, more modern way to package and deploy applications, IT operations teams still live in a world dominated by VMs. Kubernetes is also driving the cloud-native trend beyond software developers to IT operations teams, who now have a tool for effectively managing distributed application deployment and hybrid/multicloud infrastructure. To effectively support cloud-native software for their teams, it's important that enterprises have a unified, consistent approach to managing mixed types of workloads, including both containers and VMs.

VMware Cloud Foundation is the ubiquitous hybrid cloud platform that accelerates DevOps and delivers developer-ready infrastructure. It is based on a proven and comprehensive stack that provides a complete set of software-defined services for compute, storage, networking, security, and cloud management to run and manage containerized and VM-based enterprise applications consistently across multiple clouds. It encourages and improves collaboration between development teams and IT operators. For more information, please visit: https://www.vmware.com/products/cloud-foundation.html.