



The Need for Cloud-Native Enterprise Storage and Data Management

The 451 Take

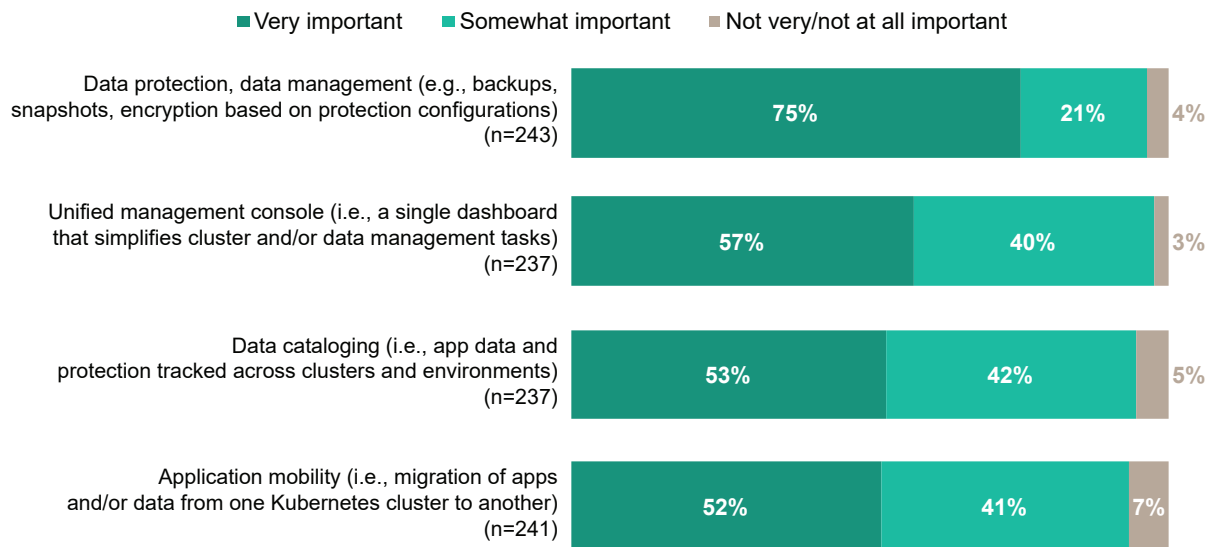
Cloud-native technologies such as containers and Kubernetes have given organizations effective tools for building and deploying efficient and portable applications. A recent 451 Research Voice of the Enterprise (VotE): DevOps study shows that primary benefits driving the usage of cloud-native technologies include efficiency of IT operations, enhancements to developer speed and productivity, and application portability. However, in the same VotE DevOps study, 56% of organizations with containers in use said that half or more of their container applications are stateful, indicating that the importance of – and the amount of data associated with – stateful containerized applications is on the rise. The dynamic of data persistence and containers has evolved, and through capabilities such as the Kubernetes container-storage interface, it's easier than ever to create persistent volumes for Kubernetes-based applications. However, data protection and longer-term data management have not experienced similar standardization and are considerations that have lagged behind.

Importance of Container Lifecycle Management Capabilities

Source: 451 Research's Voice of the Enterprise: Storage 2H 2020

Q: Please rank the importance of the following container lifecycle management capabilities.

Base: Organizations that have adopted containers or are in discovery/POC



Despite the fact that containers were initially designed for stateless use cases, stateful data-rich applications are more common; this means that organizations will need to ensure the same level of enterprise-grade storage performance and data resiliency for containerized applications that they have become accustomed to with traditional apps. Nearly all (96%) organizations with containers in use regard data protection and data management as an important container lifecycle management capability (see figure above). Because of the potential for complexity with Kubernetes, features such as application-aware data protection and simplified management experiences are of increasing importance.



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CLOUD-NATIVE APPLICATIONS INTRODUCE ONGOING OPERATIONAL CHALLENGES. Kubernetes adoption is increasing and making it more important to address ongoing operations and management at scale (regardless of whether adoption is organization-wide or just a few individual teams). Complexity and a lack of skills or personnel are two of the primary challenges when it comes to using cloud-native technologies. Larger numbers of stateful apps mean that the management burden for applications will grow along with the capacity needed to support them. To prepare for ongoing operations and scalability, organizations will need to leverage tooling that can help mitigate the complexity of Kubernetes-based workloads.

STORAGE FOR STATEFUL APPS MUST SUPPORT MULTIPLE INFRASTRUCTURE TYPES. Stateful applications require storage infrastructure and are being deployed in the public cloud and on-premises at roughly equal rates. Slightly over half (52%) are using public cloud services while 48% are using either existing on-premises infrastructure (including traditional storage arrays and hyperconverged infrastructure) or software-defined storage purpose-built for containerized apps.

DR/BC MUST KEEP PACE WITH STATEFUL APPS. In our VotE: Storage, Data Management and Disaster Recovery 2020 study, 43% of organizations with containers in use indicated that they are relying on legacy data-protection tools as their primary data-protection strategy for containerized applications and associated data volumes. However, legacy data protection tools tend to be geared toward backing up an entire VM or disk and not toward supporting dynamic cloud-native applications. Organizations will have to determine whether existing tooling can effectively support their stateful apps or whether they need to take an app-centric approach to data management.

Looking Ahead

Container adoption and DevOps are typically intertwined, and in the coming years, there will be increasing diversification of environments being used for DevOps implementations. According to VotE: DevOps, the different flavors of IaaS as the primary environment for DevOps will grow in the next two years. As the number of environments diversifies, there will be a need to protect data wherever it is, but also enable the movement between locations and infrastructure types. Some of the core enablers of disaster recovery and business continuity can also be powerful mobility and migration tools. Containers have some inherent portability, but use of technology such as mirroring, granular replication and snapshots are ways to ensure high availability of clusters, as well as availability across different locations. However, these technologies and processes must be made accessible to the range of personas brought together in the context of cloud-native adoption, including developers, DevOps engineers and traditional infrastructure personnel. Our VotE DevOps data shows that a lack of skills is one of the primary challenges associated with use of cloud-native technology for 31% of organizations. One way to counter this gap is through access to management tools that can cater to the skills and experiences of these different personas, whether it be through GUI, API or CLI.

Cloud-native adoption doesn't exist in a vacuum; the COVID-19 pandemic continues to impact organizations of all sizes, and companies across verticals are facing the need to modernize their businesses. 451 Research's VotE: Digital Pulse, Coronavirus Flash Survey June 2020 found that 16% of organizations are accelerating their adoption of cloud-native software development practices and another 42% are continuing with adoption as planned despite the pandemic. With the residual effects likely to be felt for some time to come, it is important for organizations to make the most of their existing infrastructure investments as they learn to integrate new ones.



Diamanti delivers solutions that propel enterprises to adopt and expand Kubernetes. Diamanti's cloud-native data plane solution extends across on-premises and cloud-based environments, supporting any Kubernetes cluster distribution, and makes it possible to manage the complete lifecycle of all applications including stateful applications with container-aware data services to back up, protect and migrate persistent data. To learn more, visit diamanti.com.