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ESG WHITE PAPER

Managing Applications and Data On-premises and Across Hybrid Clouds

Simplify Operational Complexity in Public, Private, and Hybrid Cloud Environments

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Executive Summary

In an era of accelerated digital innovation, modern organizations need easy access to applications and data, wherever they reside—whether in an on-premises private cloud (i.e., data center), at the edge, in a hybrid cloud, or in a public cloud. The need to deliver applications faster, rapid time-to-value on projects, is important to organizations. Also, when planning capacity moves, companies need to ensure business continuity and disaster recovery (BCDR). As BCDR should be always required, it is important to note in which cases it should be a focus. And data must remain highly portable across private, hybrid, and public clouds in the event of an unexpected outage

Another focus would be to meet compliance or data sovereignty issues. As stated, there is also increased pressure for organizations to develop and deliver business applications faster and more reliably than ever before. However, within this type of a distributed cloud model, migrating, moving, and managing applications and data seamlessly often becomes problematic. All of this requires a hybrid cloud infrastructure software-based platform approach, which can deliver the flexibility needed to rapidly deploy workloads and business applications.

However, transitioning quickly to a hybrid model—migrating disparate data types and re-architecting legacy applications to make them suitable for running on a public cloud can be time-consuming and expensive. Separate management tools can create even more silos and lead to inefficient operations. Moreover, organizations engaged in application modernization are often faced with complex software development cycles that require high-level understanding of application dependency mappings and the integration of new tools and skillsets. These challenges can create a lengthier transformation process that increases project costs, risk, and lost opportunity.

This paper explores how the right hybrid cloud infrastructure solution can help organizations make the transition quickly to a hybrid cloud model so that they can not only rapidly develop and deploy applications faster but also ensure easy application mobility and management and a consistent, integrated security model, user permissions and access control across on-premises and cloud environments, such as Microsoft Azure.

Introduction

A hybrid cloud model is the preferred model for organizations looking to modernize their environment, offering all the advantages of an on-premises cloud, with the ability to meet regulatory and compliance issues, combined with the scalability and flexibility of the public cloud. In fact, 75% of organizations report that they are already using a hybrid cloud model or plan on adopting one in the next 12-24 months.¹

For those organizations with a private, on-premises data center, the journey to a hybrid cloud model can be bumpy and unpredictable, based on various business objectives such as:

- Moving from a three-tier data center environment to a more modern infrastructure type.
- Using the cloud to extend capacity to and from on-premises cloud or data center.
- Simplifying business continuity and disaster recovery objectives.
- Total cost of ownership (TCO) and optimal application/workload placement.

Many organizations often look to modernize by automating IT and expanding to the cloud. This drives those organizations to optimize their new, multi-cloud environment by adopting a consistent, hybrid approach. Some organizations may require a highly flexible environment to accommodate seasonal, peak, or ad-hoc capacity demands to satisfy regulatory

¹ Source: ESG Research Report, [Network Security Trends in Hybrid Cloud Environments](#), July 2022.

requirements. Other organizations need to simplify their business continuity and disaster recovery solutions and reduce data center and infrastructure costs.

Each of these scenarios introduces challenges but also provides a focus for best practice of hybrid cloud infrastructures. The hybrid cloud infrastructure solution provides easy application mobility and consistent management for all organizational applications and data across public and private clouds. In addition, a hybrid cloud infrastructure solution is key to highlight how organizations can benefit from a reduction in total cost of ownership.

Keeping the Business Up and Running in Every Season

Successful cloud migrations or extensions to the cloud for seasonal and on-demand bursting begin with capacity planning and need to be tackled with business continuity and disaster recovery in mind. By using hybrid cloud for on-demand elasticity, migration expansion, and disaster recovery, organizations gain the ability to build out disaster recovery sites in any public cloud region with scale-and-shrink capabilities on-demand. The cloud inherently allows for rapid procurement and global expansion without physical data center presence, which makes it simpler, faster, and more cost-effective by eliminating micro-waste, gaining higher resource utilization at a host-level, and, moreover, building a traditional data center deployment.

Achieving Data and Application Portability and Performance

It is essential for hybrid applications residing on-premises or in the cloud to leverage data portability and mobility, but when applications are refactored, there may be issues with compatibility. Organizations should also consider other application refactoring challenges such as dependency mapping complexity, duration, and cost of refactoring and mitigating additional business risks. In addition, there is added complexity from development processes, potential new tooling, and a lack of necessary development skillsets. Perhaps more important is that tying up an organization's development/engineering teams on refactoring apps is akin to dealing with a 'technical debt.' While refactoring is happening, those teams are not working on new projects to move the business forward or generate revenue.

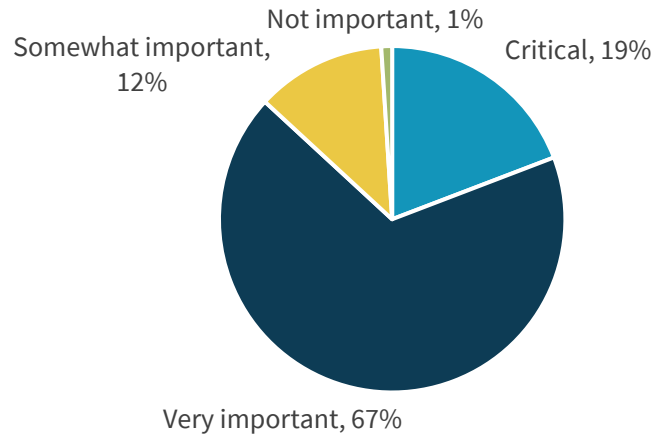
Also, having full control over resources running on bare metal, enables the customer to leverage the TCO benefits of more granular control over virtualization layer, even maybe over-committing CPUs, for example, instead of the cloud service provider. In fact, ESG reviewed and validated the analysis provided by Nutanix that their customer TCO calculations resulted in up to 53% potential TCO savings over traditional approaches from a combination of improved compute and storage resource efficiencies, avoidance of individual instance pricing tiers, micro-waste, and application refactoring costs.

Applications and data are also often repatriated back to an on-premises cloud for myriad reasons, such as test development, switching clouds or managed service providers (MSPs), seasonal workloads, and high demand for consumption of resources. These are just a few reasons why data portability and mobility are so important. According to ESG research, 86% of organizations consider application portability to be very important or even critical to their organizations, as shown in Figure 1.²

² Source: ESG Complete Survey Results, [Distributed Cloud Series: Cloud-native Applications](#), May 2022.

Figure 1. Importance of Application Portability

How important is application portability (e.g., ability to move from data center to edge to cloud, cloud to cloud, etc.) to your organization? (Percent of respondents, N=387)



Source: ESG, a division of TechTarget, Inc.

As hybrid cloud strategies become more pervasive, the ability to move applications between data centers, edge locations, and private and public cloud platforms has become a crucial consideration when it comes to deployment decisions.

Organizations should also consider virtualization since it optimizes bare metal utilization for on-premises virtual machines. There are several virtualization considerations for on-premises business applications that are migrating to the cloud, including price for performance and resiliency.

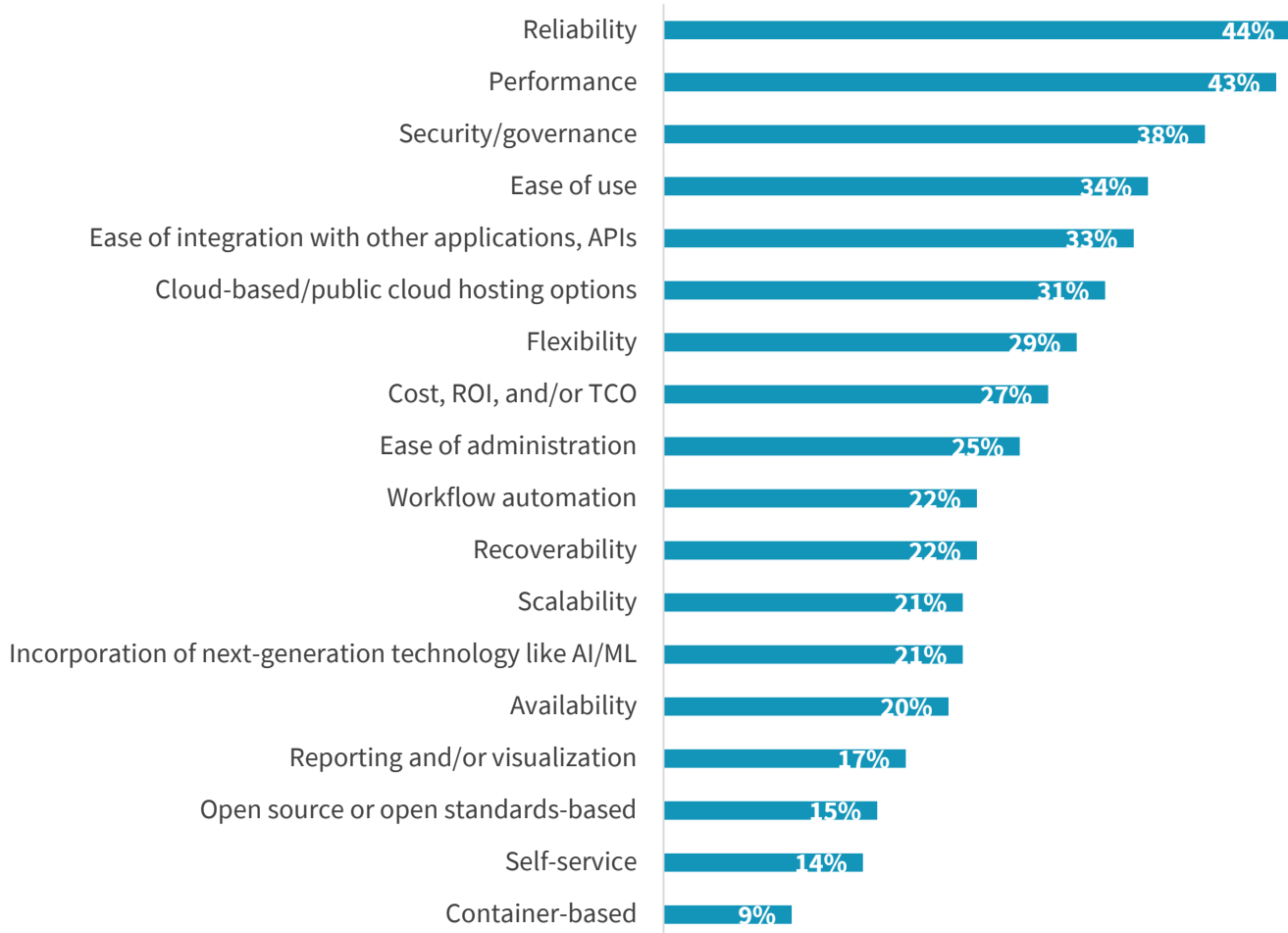
One approach to consider is a hybrid cloud solution that delivers the elasticity and cloud services using a robust public cloud provider with predictable costs, high performance, data sovereignty, and control, which delivers the best of both worlds.

Overcoming the IT Skills Gap and Changes to Processes and Technologies

The ability to move applications and data residing across many distributed or multi-cloud environments and multiple CSPs and MSPs can be difficult due to the new skills and toolsets required. Exposing more people to more data, including additional CSPs/MSPs and multi-clouds, will add pressure to existing IT processes and procedures and may require new skill sets and tool sets, impacting IT efficiency and customer experience. Customers should be able to apply the same security profiles to virtual machines that they do to on-premises resources, which may not be an option in cloud-native environments or, at the very least, may not be consistent across the hybrid cloud. This is important in the sense that organizations are often forced to make capability trade-offs. Vendors will continue being pressured to better satisfy customer requirements and check all the boxes on requirements lists.

Figure 2. Most Important Capabilities and Attributes to Support Data Initiatives

When looking to implement technologies to support data initiatives within your organization, what are the most important capabilities/attributes? (Percent of respondents, N=338, five responses accepted)



Source: ESG, a division of TechTarget, Inc.

Ensuring a Successful Cloud Journey

The Nutanix Cloud Platform software comprises hybrid cloud infrastructure and management capabilities for organizational applications and data that allows any workload to run anywhere. The hybrid cloud infrastructure is delivered by running Nutanix Cloud Clusters (NC2) on a hyperscaler such as Microsoft Azure, which brings the industry-leading hyperconverged infrastructure (HCI) software that has been powering data center modernization efforts to Azure BareMetal Infrastructure. Why is this important? From an

enterprise application perspective, HCI brings all the performance and resilience capabilities to the public cloud that organizations employ on-premises. This architectural and management consistency is what makes NC2 so compelling for organizations with traditional (legacy) applications they might want to move to public cloud. BareMetal Infrastructure is

Key Benefits

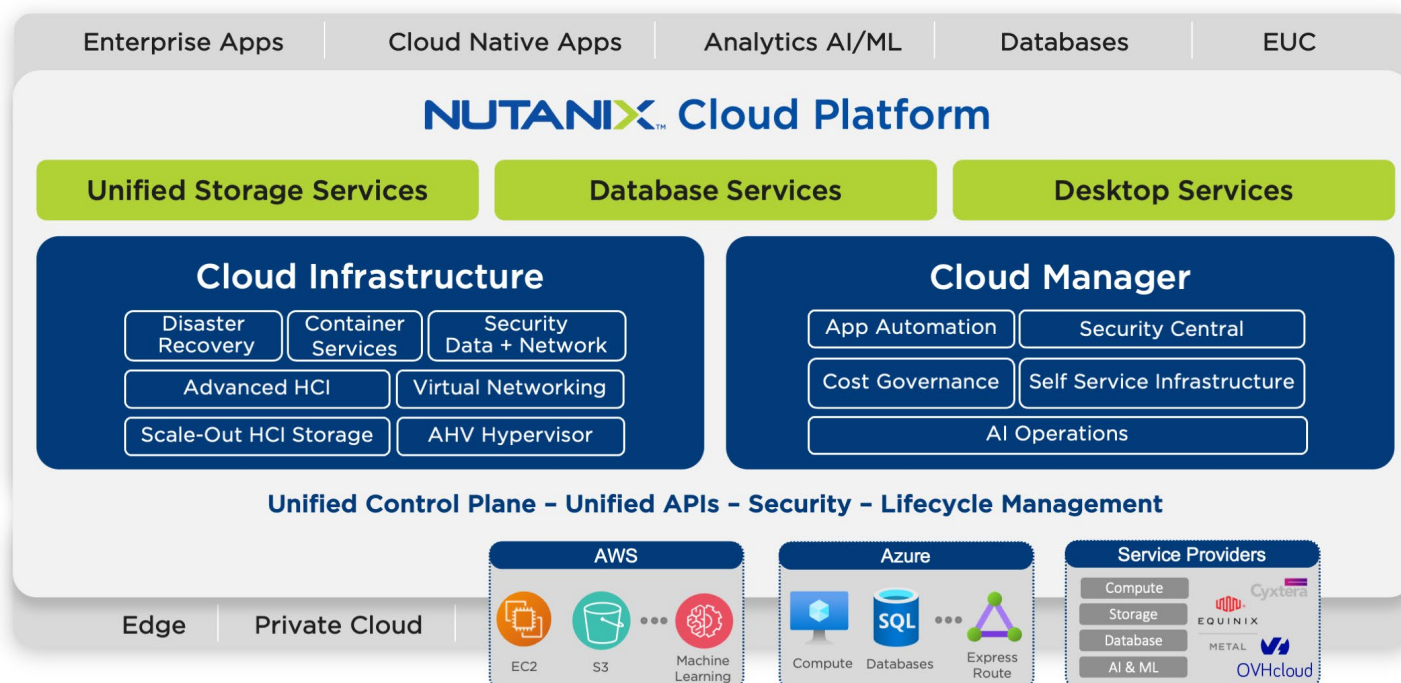
- Build, scale-out, or shrink your cloud in just a few hours.
- Seamless application migration without refactoring.
- Close proximity to native cloud services for easier integration and application modernization.
- Manage VMs, containers, and storage from a single console.

intended for workloads to differentiate between virtual machine instances and to have access to the entirety of the hardware. Nutanix Cloud Cluster provides:

- A choice of BareMetal Infrastructure configuration.
- Automated and hands-off laying down process for Nutanix Cloud Infrastructure and management.
- Integrated networking between on-premises and Azure clouds without resorting to inefficient network gateways of VPC peering.
- Deployment inside a customer’s existing cloud account and VNet, enabling reuse of those accounts with close proximity to other hosted and cloud native applications in the customer account (i.e., not separate VNETs with more complicated networking).

Nutanix Cloud Clusters on Azure makes it simpler, faster, and more cost-effective to run applications seamlessly across a private cloud and Azure. The solution lets organizations run the Nutanix HCI software on Azure BareMetal Infrastructure and integrate with Nutanix HCI software running on-premises to deliver a true hybrid cloud experience. Using the same HCI platform across a private cloud and Azure, with out-of-the-box networking integration, this dramatically reduces the operational complexity of migrating, extending, or bursting applications from on-premises environments to Azure. Companies can deploy and manage Azure BareMetal Infrastructure from the Nutanix management interface called Prism. This delivers a consistent hybrid cloud management experience, providing common tooling and operational practices across Azure and private clouds, allowing organizations to choose the right environment for the right workload without lock-in.

Figure 3. Nutanix Cloud Platform



Source: Nutanix

Use Cases

Nutanix and Microsoft Azure have partnered to provide joint customer support through the Nutanix support team to ensure organizations' success in:

- **Migrating to the cloud** – Organizations can migrate on-premises applications to Azure, with no code changes, simply and quickly, eliminating the time required to refactor legacy applications. This lets them more easily modernize applications with Azure services after migration.
- **On-demand elasticity** – Organizations can eliminate the wasteful on-premises resource requirements of cyclical applications and dev/test environments with on-demand Azure BareMetal Infrastructure. They can rapidly spin-up applications and environments when required and shrink the infrastructure when it's not. This is also something that can be fully automated via Nutanix Cloud Manager.
 - NCM can automatically add new nodes (with full rack awareness and, therefore, resilience, data protection, etc.) on-demand when NC2 is running low on capacity.
 - NCM can automatically add new Nutanix Cloud Clusters on Azure infrastructure when an on-premises app is resource-constrained. Then, using NCM Self-Service (formerly Calm), the application can be scaled out to this new, app support-dependent infrastructure.
- **Disaster recovery and business resiliency** – Organizations can use Azure regions as secondary sites in business continuity and disaster recovery plans. This offers the benefit of global availability and geographical expansion of a disaster recovery solution without having to own or manage the data center footprint yet gives organizations the ability to recover applications within minutes in case of a disaster event or unplanned outage.

The Bigger Truth

Organizations leveraging best practices that enable them to access all their applications and data, wherever they reside, is the preferred approach for modernizing cloud infrastructure. Organizations' journeys might consist of moving from their data centers to modernizing their infrastructures. From there, organizations often look to modernize by automating IT and extending to the public cloud. This then drives them to adopt a consistent approach across multi-cloud operations. Other organizations may consider simply using cloud to extend from on-premises to cater for seasonal and ad-hoc capacity demands. Some organizations are looking to simplify their BC/DR solutions and reduce data center and infrastructure costs.

A large majority of organizations are already using a hybrid cloud model or plan on adopting one in the next 12-24 months, according to ESG research. While disaster recovery tends to be the most common driver for hybrid cloud adoption, there are many other drivers for which Nutanix Cloud Clusters on Azure provides a platform for simplifying, migrating to, and managing applications and data on hybrid clouds. With this simplicity and consistency come additional benefits from the reduction in total cost of ownership to its ease of use and the cost-efficiencies associated with the subscription model of the public cloud.

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