

NUTANIX SOLUTION FOR DATABASES

Provides One-Click Simplicity for Oracle Tier 1 Workloads

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A wide range of corporations tired of integrating and managing complex IT infrastructure stacks are exploring a new solution: building an enterprise cloud with Hyperconverged Infrastructure (HCI) at the core. Replacing siloed infrastructure and going far beyond simple pre-converged racks of traditional hardware, HCI greatly simplifies IT. HCI is freeing up valuable staff from integration and babysitting heterogeneous solutions to better focus on adding value to the business and vastly improving qualities of service in all directions. Today, we find HCI solutions being deployed as enterprise private clouds in corporate datacenters—even for mission-critical/tier 1 database workloads.

However, like public clouds and server virtualization before it, HCI has had to grow and mature. Initially HCI solutions had to prove themselves in small and medium-size organizations – and on rank-and-file applications. After more than seven years of evolution, HCI has matured into a full tier 1 enterprise application platform, presenting the best features of public clouds including ease of management, modular scalability, and agile user provisioning. Perhaps the best example of enterprise mission-critical workloads are business applications layered on Oracle databases, and as this report will show, Nutanix is now an ideal platform for enterprise-grade databases and database-powered applications.

We find that the Nutanix platform not only can, by its natural mixed workload design, host a complete tier 1 application stack (including the database), but also offers significant advantages because the whole application stack is “hyperconverged.” The resulting opportunity for both IT and the business user is striking. Those feeling tied down to legacy architectures and those previously interested in the benefits of loosely integrated legacy-based Converged Infrastructure will want to evaluate how mature HCI can now take them farther, faster.

In this report, we will briefly review how Nutanix builds upon its HCI platform to provide a full enterprise cloud experience. In particular, we will look at the challenges of hosting full-stack, database-driven enterprise applications, and the benefits that the Nutanix approach delivers. We will also review how Nutanix supports and accelerates serious Oracle database-driven applications (e.g. ERP, CRM) at the heart of most businesses and production datacenters. We’ll see how Nutanix Era, a database lifecycle management solution, creates an ideal enterprise datacenter platform for tier 1 workloads, and how Nutanix Calm, a cloud automation and application lifecycle management service, enables IT to achieve one-click simplicity for both infrastructure and applications.

NUTANIX SOLUTION FOR ENTERPRISE DATABASE APPLICATIONS

Hyperconverged Infrastructure (HCI) has simplified IT for many organizations. Fundamentally, HCI converges server, storage, network, and even hypervisor functionality. By eliminating the need to integrate, operate and maintain disparate silos of heterogeneous vendor solutions, HCI accelerates the time to deploy, grow and scale applications, and is proven to deliver both greater availability and performance.

Traditionally, tier 1 applications might even require their own dedicated infrastructure – inherently inefficient, rife with extra complexities, and requiring extra staffing. In fact, each component of a

tier 1 application like the database, middleware, or front-end server might require its own dedicated infrastructure to help IT isolate performance, guarantee availability, and ensure capacity. Early HCI, as the new thing, was initially viewed as too risky for tier 1 workloads.

However, today's mature HCI solutions, leveraging flash, dense amounts of memory, and ever more powerful CPUs, along with naturally inherent multi-workload resource "sharing" capabilities (e.g. workload isolation, local data access, and IO acceleration), are fully capable of hosting tier 1 workloads in production. Evolved solutions help IT work more productively and proactively at the application level instead of working reactively at the infrastructure level. They help make infrastructure issues invisible to the application and "just work" for IT instead of requiring IT to work for the infrastructure (for more detail on this topic see the recent Taneja Group Solution Profile on Nutanix Enterprise Cloud Platform for Demanding Enterprise Workloads).

Mature HCI solutions are designed to naturally host a variety of mixed workloads at the same time, ensuring isolation from the noisy neighbor problem. This means that Nutanix can simultaneously host a complete tier 1 application stack (including the database) together, eliminating the need for multiple silos and stacks of dedicated resources, greatly reducing IT cost and complexity. And because the infrastructure is hyperconverged, such co-hosted application components generally recognize a whole raft of benefits including increased performance (everything is local), availability/reliability (fewer moving parts), and easier, truly scalable capacity (scale-out appliances).

Key business applications built over Oracle databases are usually layered with middleware or ETL processing, and are served by end-user business and/or analytical application components. When we look at the most common Oracle deployments today, we find the following two major use cases in almost every enterprise, each with its own infrastructure requirements:

- **Online Transaction Processing (OLTP)** – Business applications and systems of record, like ERP or CRM, that require real-time or near real-time transactional semantics to record, store, query and protect key business data. These applications are usually close to the front-line day-to-day business operations.
- **Decision-Support Systems/Business Intelligence (DSS/BI)** – Analytical and reporting applications that support both tactical and strategic decision-making leveraging large amounts of trailing historical data. These applications may inform current operations (Online Analytical Processing or OLAP) but are traditionally performed on copies of pre-processed and specially aggregated data.

Profiles of Common Enterprise Application Stacks

What does a typical Oracle stack application require? Let's look a little deeper at a typical example for each of the main use cases, and then explore some specific IT and IT infrastructure concerns and requirements of Oracle Database itself.

OLTP Application Profile

In the enterprise datacenter, OLTP applications, like ERP or CRM systems, are not just key to competitive business operations but are also often considered systems of record. This means at a high level that:

- Persisted transactional data must be protected, meeting not only business continuity needs, but also government regulation and legal compliance requirements
- Business transactional activities are core operational processes that demand high levels of service availability and performance (i.e. "mission-critical")
- Transactional processing capacities and supporting database storage (Capex) limitations can constrain business growth and opportunity if not agile and dynamically scalable
- Operational applications are increasingly served to mobile and globally distributed/accessible users

- Costs to integrate, operate, and support (Opex) enterprise applications can grow exponentially along the lines of any of the above factors, especially when siloed infrastructure needs to grow increasingly complex in response to growth and change

The traditional Oracle OLTP application follows a general tiered model, with the main database as the foundation. Deployed on top of that we might see multiple business process-specific modules that collectively comprise the bulk of the “application” layer logic. Some of these modules may implement automated “background” processing activities, while others implement interactive business logic and serve presentation layer requests. The presentation layer might provide desktop or web access, control user session and state, and even have client-side UI “apps” distributed across many kinds of devices and locations.

Traditionally this stack is hosted on a complex set of infrastructures that require intensive integration efforts to stand up, and a significant amount of operational focus to keep operational service level targets. These environments once deployed are often actually quite fragile, and thus changes - even expansion to meet business growth opportunities - can take a long time and are often constrained to “least risk/lowest benefit” options in practice.

DSS/BI Application Profile

The main challenge with analytical applications is handling massive data volumes and processing at scale. Historical data is always growing, and our experience shows that over time additional data sources and fields, complex queries, and advanced analytics will be added to any productive analytical system. Thus, analytical database applications have some key high-level differences from OLTP when it comes to their infrastructure demands:

- DSS/BI applications can be seen as strategically important, but they are by definition not online transactional. However, because of the time and effort in loading massive amounts of data, data integrity, reliability and protection is critical and becomes even more so with the size and complexity of the database
- Data tends to be serially loaded with lengthy, batch-style ETL operations. When processing windows take too long, they can severely impact the ability to generate timely intelligence and business value
- Any particular analysis or query may touch a lot of data. Often expensive specialized appliances are deployed to accelerate ingestion and query handling at scale (Capex). Any data storage and query handling capacity limits can constrain data set size and limit the complexity and type of queries, reducing business value
- Similar to OLTP, the costs to integrate, operate, and support complex workflows, archiving and massive analytical databases can grow exponentially along the lines of any of the above factors (Opex)

The traditional Oracle DSS/BI application differs from the OLTP model in that the database is usually loaded serially in batch mode and read interactively (possibly optimized for pre-defined queries).

Instead of middleware enforcing bi-directional business logic, we have complex ETL data flows on ingest, and multiple kinds of both automated and ad hoc analytical or reporting applications consuming (mainly read-only) views of data. Historically acceptable query response times can be minutes or even hours, but expectations for greater interactive performance continue to grow.

Oracle Database Workload Profile

Oracle Databases have a multitude of moving parts that each benefit from individual IT attention and targeted infrastructure alignment and tuning. In a virtually hosted environment, now the standard target for even tier 1 applications, we have virtual machine settings for virtual capacity, priority and resource isolation. In the database configuration itself there are also many tunable parameters that affect how the database uses those resources.

Even with all the compute settings, the proper storage alignment of many different types of files and IO related settings is fundamental to achieving good database performance (e.g. undo tablespace, redo logs, temp space, indices, caches, etc.). The DBA and storage team traditionally need to work hard on storage assignments and configurations to different performance tiers, data protection concerns in the form of enough backup/restore coverage and multi-site replication for DR/BC, and provisions for scaling both IO performance and persistent capacity. Obviously, the sheer number of different IO requirements creates complexity and often leads to sub-optimal results.

As we will see later in this report, perhaps the biggest database application hosting opportunity with HCI concerns data IO and storage.

Oracle Application IT Requirements

In summary, there are a handful of key IT infrastructure requirements to consider while designing an enterprise application architecture. The architect must keep in mind the full end-to-end application that must all operate as one service, as typified by the complete enterprise Oracle application, and is comprised of different modules—each requiring scalable resources, workload isolation, high resiliency, and optimal performance.

1. **Performance** – The end-to-end platform must deliver enterprise grade performance under the most demanding workloads. Different portions of an enterprise application may have different performance profile “demands,” and the platform must both provide for and isolate between these demands. Network communications can introduce the greatest latency, so architectures that minimize network traffic (e.g. co-hosting) can provide a significant performance advantage, but may risk resource contention and bottlenecks.
2. **Efficiency and Simplicity** – IT spends precious resources on tuning, upgrading, and patching disparate infrastructure to ensure they meet database workload requirements. As IT transforms towards a service provider mentality, a reduction in specialized, dedicated, and siloed infrastructure towards cloud-like, converged, shared resource architectures create massive opportunities to do more, deliver better services, and create new streamlined processes. The underlying infrastructure needs to grow simpler to deploy and operate – all with a more unified management control plane that covers all infrastructure resources.
3. **Extensibility and Flexibility** – Tier 1 enterprise apps need to grow quickly with the business, and sometimes change or evolve rapidly as well. Dedicated physical racks of resources are almost by definition inflexible. And it’s impossible to optimally scale an enterprise app that runs distributed across silos of infrastructure—both over- and under- provisioning have been the bane of IT architects since enterprise applications began to move off of dedicated mainframes.
4. **Availability and Data Protection** – A business-critical system requires high overall resiliency, so architectures must provide high running availability, reliable data integrity, complete backup/recovery coverage with low RPO/RTOs and solid disaster recovery/business continuity. In traditional siloed datacenters, protecting an enterprise database-powered application requires many complex moving parts (and is often not actually recoverable in any desired timeframe in practice).
5. **Test/Development Support** – Applications don’t live just in production, but also have test and development environments. It’s important for test and development efforts that teams have access to recent production database “copies”, which can be problematic to create and manage in practice. The whole application dev/test-QA/release lifecycle is becoming more agile and automated in DevOps fashion, requiring “life-like” development and test environments that can be spun up (and dropped) quickly. Database environments should be equipped with a Copy Data Management (CDM) system to manage the various database versions for both DevOps and data protection.

- 6. Total Cost of Ownership (TCO)** – Clearly, deploying and supporting dedicated racks of infrastructure is expensive (and prone to over-provisioning). But with enterprise database applications, software licensing costs are also significant. In fact, Oracle licensing can represent the main CAPEX factor in some enterprise applications. Although licensing itself can (and likely will) evolve with technologies, any way to limit or reduce the main licensing measurement can have immediate business impact. For example, if per-host CPU license can be leveraged (and optimally shared) across a multiple-workload supporting server (e.g. through virtualization, cloud platform) versus dedicated servers for each user, yearly IT license expenditures can be significantly reduced.

THE NUTANIX APPROACH TO MISSION-CRITICAL DATABASE WORKLOADS

In the last 10 years, virtualization has matured to the point where most have no issue with deploying enterprise applications, including Oracle Database and critical database-driven applications, on virtual machine instances. This enables a great evolution in datacenter architecture, but is really just the first step in optimizing infrastructure. Clearly, the complete virtualization of the datacenter eventually leads to cloud architectures and fully transparent infrastructure (at least from a business app owner perspective), but hypervisors by themselves can't do it all.

The next step we believe is a cloud-centric datacenter built on hyperconvergence. Nutanix embodies this larger vision with HCI at the core of an Enterprise Cloud platform. We will look at the all-flash Nutanix solution as a platform for the next-generation datacenter, capable of hosting multiple tier 1 workloads (meeting all the requirements previously introduced). In addition to its HCI platform, we will explore the one-click simplicity for Oracle database lifecycle management that Nutanix has recently introduced with a software solution called Nutanix Era.

Some of the key reasons that we think enterprises could begin to standardize Oracle application stacks on Nutanix HCI with Nutanix Era include its current maturity, demonstrated reliability, and complete full stack single-vendor convergence (including Nutanix's own independent hypervisor option). In this next section, we'll look at some of these details.

The Ideal Solution for Oracle Workloads

The Nutanix Solution for Databases consists of the latest Intel x86 server hardware with pre-integrated and optimized application infrastructure resources (compute, storage and scale-out clustering) – all managed and operated from within a cohesively virtualized environment. In other words, the Nutanix solution is made up of what used to be complex assemblages of disparate resources, only now “hyperconverged” for IT's immediate deployment in modular form. Additionally, they now include sophisticated capabilities that enable high application mobility, supporting high-end DR and other hybrid cloud datacenter architectural flexibility.

ALL FLASH NODES, ALL THE TIME

While Nutanix offers hybrid storage solutions well-suited for mixed workloads and consolidated virtualization targets, for the tier 1 Oracle-driven applications focused on in this report, we'd recommend looking first at the all-flash appliances. The NX-8000 Series for example, can pack a lot of power in a small footprint with up to 2 nodes in their biggest appliance unit, each node with dual Skylake or Cascade Lake processors (up to 48 cores), 1.5TB memory and up to 23TB NVMe flash (6xSSDs). As SSD's grow denser (and cheaper) we have no doubt these already impressive units will grow accordingly. (Note – Nutanix has direct OEM relationships with HPE, Lenovo, Dell, Fujitsu, and Inspur while also providing reference architectures on other popular platforms such as Cisco).

Flash acceleration can certainly be had in many ways, but by implementing storage using server-side flash as a distributed storage array, IT also gains a huge cost benefit. Applications get modern server-side NVMe protocol performance, and no separate flash array storage operations are necessary, saving OPEX. Performance and capacity can be scaled as needed using a variety of node configurations,

including both compute and storage-only options something that both IT operations and DBA's will find attractive when managing fast growing tier 1 databases.

Another large operating benefit comes in the form of Nutanix's self-healing nature. The web-scale design of the Nutanix Distributed Storage Fabric ensures that a failed node won't disrupt operations. In a siloed environment, especially one with multiple "stacks" of resources in a complex Oracle application, we might see faults in shared storage cascade across multiple components, but in a fully HCI "grid"-like cluster solution, virtualized (and thus mobile) workloads and distributed storage are highly resilient. This architecture also enables Nutanix to offer fully non-disruptive upgrades (over any and all of the hyperconverged resources it contains).

FOR DATA-DRIVEN DATACENTERS – FILE AND BLOCK

At the storage level, Nutanix has built-in storage services for both block (Nutanix Volumes) and file (Nutanix Files). These actually allow a Nutanix deployment to provide storage services to external workloads (and presents an interesting transition opportunity to refresh aging primary storage with Nutanix, then gradually move workloads or parts of a complex Oracle application "stack" into it over time).

Storage certainly gets simpler (less OPEX) for HCI hosted workloads with the single storage fabric for all workloads, and more performant in the all-flash Nutanix cluster benefitting from in-line compression. It's worth noting that hybrid versions with built-in intelligent tiering can also support post-processing compression as needed.

Because of the integrated design, VM-centric backup and replication is fully supported. This prevents isolated and wasted capacities, and the VM-centricity further contributes to application mobility. Storage services also have a "tunable redundancy," and support erasure coding for colder data. Nutanix storage can be fully aligned and tuned for each workload component requirement.

WHOSE HYPERVISOR DO YOU NEED?

Nutanix supports both Hyper-V and VMware hypervisors. But while those are necessary in some scenarios (and useful certainly during transition times), Nutanix has built their own hypervisor, called Nutanix AHV. This is based on open source technologies including KVM, and while some might be skeptical at first, hypervisors are becoming a commodity resource deserving "hyperconvergence" with the rest of the stack. There is simply less and less justification for organizations to license expensive 3rd party hypervisors in an increasingly cloudy world.

AHV has proved itself with solid core capabilities for automated HA failover of VM's, intelligent VM placement, live VM migration, converged backup and DR, and of course support for unlimited cluster scaling. By baking in the hypervisor into Nutanix AOS, end users have one less specialized vendor skill set to learn – there is one unified management that covers all of the HCI platforms. The hypervisor starts to become a transparent part of the converged stack.

It's also worth noting that AHV has API's that help with automating operations, workflows, test/dev processes and has the flexibility to plug into IT automation tools of choice. For instance, AHV can plug into OpenStack, VMware vRealize Automation, or Nutanix Calm. Calm is a cloud automation and application lifecycle management service that larger organizations might adopt at the enterprise operations and management level to help with complex tier 1 applications in production (e.g. ERP, CRM).

MULTI-SITE OPERATIONS

Tier 1 applications are usually global in nature, and demand active-active DR. To meet these enterprise needs, Nutanix provides a number of multi-site operational features. The first is native multi-site replication between Nutanix clusters, which enables an organization to easily project and thus protect data across disparate datacenters. If clusters are "close enough" for synchronous replication, Nutanix offers Metro Availability to meet essentially zero RPO and near zero RTO requirements.

Nutanix offers Nutanix Leap, which is a turnkey and integrated DR service, including runbooks, that also contains capabilities for those that want to leverage Nutanix Xi Leap for a cloud-based offsite disaster recovery managed service. Nutanix also supports hybrid cloud capability with AWS, Microsoft Azure, and Google Cloud Platform (GCP).

CONTROL AND MANAGEMENT

The unified Nutanix Prism management framework comes built in to their solution. It's hard to emphasize just how much IT effort can be saved when everything in a complex database-driven application stack can be virtualized and then co-hosted on one HCI platform. When the whole system is homogeneously managed through a single control plane, the cluster becomes highly resilient, capacity and performance are scalable, storage delivers "localized" I/O, and application components can be "migrated" at will.

Further, Nutanix can provide a valuable compromise solution when there is still a demand to keep the database physically hosted. Nutanix Enterprise Clouds can host all the virtualizable components and provide enterprise-wide storage through its Nutanix Volume, Files, and Objects Services, while IT can use Prism to manage infrastructure serving both virtual and physical workloads.

DATABASE-CENTRIC LIFECYCLE MANAGEMENT WITH NUTANIX ERA

Nutanix Era is a suite of software services that automates and simplifies database management, bringing one-click simplicity and invisible operations to database provisioning and lifecycle management. The following are the key services of Nutanix Era:

- **One-Click Provisioning** – Databases are deployed with ease and Era provides common API's and templates for multiple database engines. Complex HA environments are supported such as Oracle RAC. Pre/post create DB scripts that can be inserted for further customization. Furthermore, sophisticated policy-based SLA's for data protection are provisioned upfront.
- **Copy Data Management** – Nutanix Era provides copy data management with one-click cloning and refresh that can be used for test/dev or backup and restore. The copies are space-efficient allowing for fine-grain near-continuous RPO if needed. With automatic database log collection, any point in time can be recovered. Sensitive data can be filtered out of clones used in test and development scenarios.
- **Database Protection** – Rich policy-based SLAs enhance copy data management for database protection creating flexible RPO and RTO. Snapshots are managed through a lifecycle with fine-grain recovery for near term data and less frequent recovery for long term archival. Long-distance snapshots and replication are available for DR operations.
- **Database versioning and patching** –Nutanix Era provides one-click patching and rollback of database versions. Patch management of the database enables full testing of the patch before release which also helps ensure security by keeping databases up to date. Patch releases can be applied automatically or scheduled. The rollback of patch versions is also supported.

Even though this report focuses on Oracle environments, Nutanix Era supports a variety of additional database environments, including SQL Server, PostgreSQL, and MariaDB.

Meeting Oracle Enterprise Application Production Objectives

We've assembled this quick chart to help highlight key benefits of using mature enterprise-grade HCI for Tier 1 Oracle-based applications in the datacenter, comparing them broadly to other architectural approaches. While there is certainly much room for a deeper and more nuanced argument on particular scenarios in practice, we present this general chart mainly to show that HCI can not only be comparative, but favorable.

Tier 1 Workload Benefit	Nutanix HCI with Era	Converged Infrastructure	Dedicated Physical
Performance	 <p>Supports mixed workloads, local flash IO, minimized network traffic between stack components.</p>	 <p>CI can be specialized to workloads, but not agile with limited performance profiles.</p>	 <p>Can accelerate with specialized infrastructure, but fragile alignment and no mixed workloads.</p>
Resiliency/Availability	 <p>Multi-site operations, node and VM HA, application mobility, single management.</p>	 <p>Lower end-user integration risk, single support “phone call,” constrained to older versions, slower upgrades.</p>	 <p>Resiliency requires fully redundant active-passive silos, high management, and admin skills.</p>
Capacity	 <p>Automatically pooled grid of resources, unlimited scale-out in node units.</p>	 <p>Racked limitations and constraints with silo components.</p>	 <p>Can scale with dedicated resources but over and underutilization rampant.</p>
TCO	 <p>Can be consumed via CAPEX or as a Service. Only buy what you need up front. Minimized enterprise operations OPEX. Era provides seamless database Lifecycle Management including database version control.</p>	 <p>Increased CAPEX balanced with upfront OPEX savings, but those can quickly return to normal. Infrastructure is still typically over-provisioned to meet future needs.</p>	 <p>Traditional Silo IT defines our baseline expenses, today it’s considered too high! Overprovisioning is extensive and leaves capacity stranded.</p>
Test/Dev Support	 <p>Agile platform, multi-hypervisor, multi-site replication, application mobility, ext. Storage, VM centric backups. Era provides PCI safe clones, fine-grain rollback and roll forward support.</p>	 <p>Some automated provisioning, but test/dev might still need their own racks of like equipment</p>	 <p>Test/dev need to get their own separate dedicated environments.</p>
Cloud Enablement	 <p>Hybrid Cloud integration with AWS, Azure and GCP via Nutanix Calm. Offers built in DR services with Xi Leap.</p>	 <p>Some virtualization options leading to hybrid cloud capability typically offered by third-party solutions.</p>	 <p>By definition, not going in a cloud direction.</p>
Future Risk	 <p>Single vendor, but completely open platform (based on open source, commodity h/w, OEM’d). All future feature enhancements come via simple software upgrades.</p>	 <p>Often built for purpose – can get “un-racked” back into physical silos when needs change. Upgrades are often forklift in nature.</p>	 <p>Hard to repurpose, transform or upgrade when needs change, etc.</p>

BUSINESS BENEFITS OF NUTANIX FOR ORACLE ENTERPRISE APPLICATIONS

We've been looking a lot at technology in this report, but just as important are business and business application owner concerns. At a higher level, choosing an architecture could primarily be about helping the business operate better, faster, and cheaper. After all, if one can converge the Oracle application stack onto a simple HCI platform and gain significant performance at a lower cost, why shouldn't that be the main consideration? But more often than not, these decisions are really made based on the "least risk" principal – what is most likely to perform sufficiently, be available when needed, and that "we" can operate/manage/grow/troubleshoot with our current resources.

Here is where we see Nutanix stepping up to the plate. Their enterprise-grade HCI can help mitigate risk to the application owner, the DBA and the IT decision maker by offering enhanced performance, unlimited scalability, higher availability, and at a lower cost to acquire, own and operate. Nutanix Era makes database management a one-click experience with built-in provisioning, patching, copy data management, and data protection.

Adopting HCI for a tier 1 app may at first appear to be a decision requiring that one "throw what we have today away and take a big risk on a completely new platform." However, technology refresh must happen, workloads are increasingly virtualized – including the entire Oracle application stacks we've been talking about, and it's becoming foolish to ignore cloud opportunities. Nutanix HCI presents an easy to consume, modular, predictable solution which can be migrated onto (and off if ever necessary) at whatever speed is comfortable. In addition, adopting Nutanix and the suite of Nutanix cloud-centric products and services is likely closer to most cloud strategies in terms of benefits, while really providing on-premise infrastructure for security and operations.

If the value of popular pre-integrated "plain" rack convergence is quick deployment without required end user integration, then Nutanix HCI has even lower integration risk or delay. And the HCI modular appliance approach provides a much friendlier, more predictable "pay as you grow" model that remains simple even as it scales. From an app owner perspective, having a predictable growth model and non-disruptive scaling (upgrades too) is very attractive.

The business can also expect less downtime from the common causes that plague other architectures that require complex storage management, finicky configurations, slow manual provisioning, and inevitable integration and resource configuration errors. Theoretically, with all the features we've just listed, the business may never actually need to ever again suffer a forklift IT upgrade or transition with the associated pain of data migration again.

Recommended HCI Adoption Strategy – Getting Started

HCI by its very nature provides a broad swath of IT infrastructure, and despite the obvious benefits, can present an adoption and migration challenge to existing IT staff, operations, and datacenters. To help mitigate potential risks, we suggest starting with the following HCI adoption strategy:

Plan Now

1) HCI shouldn't be simply acquired as a reaction to some event (i.e. loss of key silo staff expertise) or in hopes that IT will figure it out once its deployed. Rather, IT should deliberately look at where (and how soon) HCI can be taken advantage of next. While HCI can simplify IT operations, it does mean change to the way things are done today, and a good transition plan will smooth adoption.

Play for Free

2) Nutanix offers a free trial, called Test Drive, that comes as 100% software to evaluate on up to four servers. This is a great way for IT professionals to get some "stick time," starting as early as today.

Use for DevOps or DevTest

3) Even if DevOps in production may yet be a distant dream, look for areas today outside of production that can make great use of iterative and/or rapid deployment of infrastructure. Areas like test/dev can use HCI solutions almost immediately and become instantly more productive and responsive. We also suggest looking at DR and considering HCI for a DR site implementation — especially when today's DR plan is not quite realistic.

Add New Apps

4) Once you have your feet wet with HCI, look for that new greenfield application that is just begging to be deployed quickly (and with a lower TCO) on HCI (rather than try to build and integrate a more complex infrastructure stack).

Migrate the Rest

5) Use the success and lessons learned above to migrate over other key workloads as they run into production constraints on their traditional infrastructures. Engage senior IT management to help look for opportunities to deploy HCI instead of a technology refresh of “silo” infrastructure. In other words, if facing an upgrade or refresh of aging storage arrays, look instead to migrate to HCI (and replace a broader swath of aging technology).

TANEJA GROUP OPINION

It's worth pointing out that the world keeps changing. We've just reviewed how enterprise-grade hyperconverged infrastructure solutions have matured to support mainstream tier 1 enterprise applications, including Oracle-based enterprise application stacks for ERP, CRM, and DSS/BI. But there is also an emerging class of big data and IoT-oriented applications that necessarily merge traditionally separate operational and analytical processing. Given that we've just seen how Nutanix supports both kinds of traditional enterprise database-driven applications, we predict that Nutanix is going to be an ideal platform for these new kinds of “converged processing” applications that combine the two very different workloads.

Moreover, we think all applications in the future, as they expand features and capabilities, will likely become more converged in this way. Increasingly, larger volumes of data are now “streaming” into an organization, and analytics is growing more interactive. Applications need to be built in a more agile manner, they will access more data on the fly, and they will all use a larger variety of “types” of processing. Nutanix Era and Calm are great examples of how application and infrastructure management can seamlessly work together. IT infrastructure must become more agile, more scalable, more performant, and more reliant. And, of course, no one wants the future to become more complex or costly.

HCI just makes sense as the future of IT infrastructure. It's inevitable that the stack of IT resources, including now the virtualization hypervisor, will further commoditize, and more and more of what IT operates will get “hyperconverged” in. In fact, we see the role of IT changing from managing infrastructure to managing IT for the business. Instead of focusing on the virtual layer, infrastructure silos, or integration complexities, Nutanix allows you to focus on the application and helping enhance and accelerate application benefits.

We are seeing that within a Nutanix implementation, the whole IT infrastructure, including the hypervisor and storage, can become invisible. With a full suite of cloud capabilities such as Nutanix Calm for multi-cloud management and Nutanix Xi Leap for disaster recovery services, the entire cloud experience will be invisible soon. Today Nutanix already is an on-premise cloud infrastructure – a private version of what the big public cloud providers build for themselves – modular, efficient, scalable, resilient and simple to operate. And most importantly for today's datacenter – supporting tier 1 database-powered application stacks at the core of business operations.

HCI has matured into an enterprise platform that should be on everyone's shortlist. Don't let old ways of thinking prejudice today's technology investing decisions. A Nutanix solution for databases should be considered even if you have (or perhaps now better said, "because you have") Oracle tier 1 applications. These enterprise applications internally consist of multiple workloads, and as we've seen, Nutanix HCI is an ideal platform to simplify and accelerate IT running complex multi-workload datacenters.

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