



ARCHITECTURE

Nutanix Says...

Nutanix says HCI offers a next-generation architecture and you can be like a hyperscaler with Nutanix.

Questions to Ask

HCI platforms like Nutanix may be suitable where performance and scaling are not concerns, but many firms, including large cloud and SaaS providers like Google, Facebook, and Microsoft Azure, have moved to disaggregated architectures for primary workloads. Do you know why?

Nutanix Weaknesses

The Google File System Nutanix claims architectural inspiration from was retired in 2012 & they do not run compute & storage functions on same nodes.

Gartner (MQ) says Nutanix has a *“lack of seamless integration with legacy IT data centers.”*

Pure Storage Strengths

Disaggregated architectures based on all-flash storage eliminate trade-offs, reduce data, and independently scale, which lowers costs & operational issues.

Customer Validation

“By choosing Pure Storage flash, we eliminated disk performance issues, and with the reliable support infrastructure that Pure provides the selection was simple,”

– IT Manager, TFE Hotels

TCO

Nutanix says HCI offers 40% to 60% lower TCO compared to traditional architectures.

Nutanix’s basic hybrid solution CAPEX can be lower, but how much more is OPEX over 5 years? How much will HCI impact your software licensing costs? How much extra CAPEX will you pay for all-flash if hybrid performance proves inadequate?

Annual support costs are ~30% of total cost, and high core licensing costs with higher host memory & CPU consumption drives up TCO.

Multiple storage capacity overheads increase TCO:

- 20% cache, 10% host & 33% RAID overhead)

Nutanix often “bait & switches” positioning four-9s pricing against competitors with greater availability.

Gartner (MQ) says *“the company’s contract negotiations don’t match market price competitiveness,”* and *“Adoption of Nutanix AHV trails the leading hypervisor vendors, and some customers that have made a significant investment in VMware and Microsoft ELAs and training have difficulty justifying the switching costs of moving to AHV.”*

Maintenance cost is <25% of TCO & disaggregated architecture only needs host CPU for data transmission; remainder for hypervisor & VM activities.

Lower cost/GB vs. HCI with industry-best storage efficiencies for lower TCO.

Only when all services are enabled can Nutanix compare “apples to apples” with Pure.

Uses 90% less storage capacity with 5:1 data reduction; RF3 is included.

“When you compare the data reduction numbers, it made the cost even less than we expected. This ‘free’ capacity allowed us to defer the purchase of new capacity until the next fiscal year.”

– Storage Administrator, Ohio National Insurance



PERFORMANCE

Nutanix Says...

Nutanix says they can run business critical apps like Oracle & SAP without impacting performance or scalability.

Questions to Ask

Nutanix can run some business critical apps, but how will performance degrade for high concurrent users, VM migrations, larger database block sizes, or for data encryption?

Nutanix Weaknesses

HCI is a complicated architecture with numerous performance trade-offs including:

- RF level (2 or 3); data encryption & reduction
- Data protection type (EC vs Mirror)
- I/O amplification (4.5X)
- VM migrations (occur during load balancing & hypervisor HA)

Performance can drop 50%+ for larger database block sizes or high concurrent user counts.

Pure Storage Strengths

Consistent <1ms latency during normal operations, failures & maintenance / upgrades while delivering automatic data protection, reduction & encryption.

Offers 20% better server utilization compared to HCI & up to 300K IOPs @ 32KB.

Allows Cloud admins to focus on apps, not storage.

Customer Validation

“A year ago, we had maybe 100 users at any one time; now, we consistently have 800 to 900 concurrent users.”

– **Director of Technical Services, John Muir Health**

HIGH AVAILABILITY

Nutanix says they offer five-9s availability to ensure business-critical workloads are always available.

Nutanix usually comes standard with four-9s, what will it cost to upgrade to their max of five-9s and how will 5 min. per year of downtime per VM impact mission-critical apps?

Nutanix often “bait & switches” with four-9s & charges more for five-9s.

With VMware HA restart, HCI servers can create user-disruptive IO boot storms, which is followed by data reconstruction/rebuild.

Loss of discrete failure domains; server faults cause disruptive storage faults, which start data reconstruction/rebuild.

Gartner (MQ) says: *“Some business-critical applications, most notably those based on Red Hat Enterprise Linux (RHEL), are not certified by the operating system or application vendor for AHV, forcing customers to maintain their current hypervisor.”*

Installed base reports >six-9s & 100% performance during unplanned failures or planned maintenance.

Standard RAID-HA tolerates two concurrent SSD failures without data loss or performance penalties.

FlashArray self-heals when an SSD fails without causing performance loss; FlashStack NDU completes in minutes.

“It always works; no hiccups. We love it and we’re glad we drafted them for our storage infrastructure.”

– **Senior Director Application Development, San Francisco Giants**



Nutanix Says...

Nutanix says HCI offers a one-click upgrade process and is simpler than 3-tier architectures (aka disaggregated).

Questions to Ask

Nutanix can be simple to deploy, but how complex is it to manage conjoined storage and servers at Scale? How complicated will it be to manage hundreds of storage options, SW updates, and HW refreshes to network ports, VLANs, firewalls, etc.?

Nutanix Weaknesses

Lack of discrete compute and storage failure domains can negatively impact performance and availability during upgrades.

Software automation does not reduce time or frequency issues, and the over-simplification of the upgrade process leads to clusterwide tradeoffs.

Gartner (MQ) says *“The ability to perform highly valued one-click HCI software upgrades does not extend to upgrades of firmware on some third-party platforms on which the Enterprise Cloud OS is deployed.”*

Pure Storage Strengths

Independent upgrades of compute & storage simplify processes; can upgrade independent VMs if/when required; upgrades delivered via cloud are non-disruptive & don't impact performance.

Hypervisor updates can leverage vendor tools (e.g; VMware SDDC Mgr) & complete in a fraction of the time as no data is migrated & data protection is not compromised.

Pure only needs 3 clicks in vCenter to connect hosts, optimize performance, encrypt & reduce data, automate QoS, and more.

Customer Validation

“We operate a lean IT team without storage specialists, so ease of management and simplicity of the system were key in our decision.”

– IT Manager, TFE Hotels

SIMPLICITY

Nutanix says 100% software is better and offers AES-256 data at rest encryption to meet compliance requirements.

Nutanix does offer optional encryption but how much more will it cost and how much risk is your CISO willing to accept for vulnerable software encryption & security key management?

FIPS-compliant data at rest encryption is optional due to performance & cost impacts.

AOS software encryption & key management devices are vulnerable to security breaches & require multiple key devices.

May not fully comply with GDPR or NYDFS*; risks millions in fines & lawsuits for violating State Civil Codes as each node contains full certs & keys, which increases risk of theft.

Encryption via CVM on hosts consumes more host CPU & reduces # of VMs per host.

AES-256 hardware encryption meets the Safe Harbor requirements for all U.S. State Civil Codes.

Cannot be disabled & ensures full compliance for GDPR, NYDFS, HIPAA, PCI-DSS, etc.

Integrated key manager distributes keys across SSDs & refreshes daily to eliminate risks.

Supports optional 3rd-party key management.

“We have conversations about what we need to do in terms of industry and legislative compliance, and how we can tweak what we're doing to be as successful and competitive as we can. Pure Storage enables us to focus on this crucial aspect of the business.”

– IT Manager, Toyota Financial Services

SECURITY



BACKUP, DR & BC

Nutanix Says...

Nutanix says they improve application availability with VM snapshot backups and disaster recovery to the cloud.

Questions to Ask

Both Pure & Nutanix have a broad backup partner ecosystem, but how will the significant Nutanix backup and DR limitations, such as the inability to run VMs in AWS, impact your business?

Nutanix Weaknesses

Nutanix VM snapshots are solid & inline with storage array based snapshots but replication to AWS is extremely limited:

- Only 30TBs can be replicated per cluster
- Can't run VMs in AWS

Poor data reduction technology:

- Average 1.5 to 2:1 data reduction with VSI
- Data reduction is optional (due to performance penalty)
- 8KB dedupe & data reduction limited to each datastore
- Light-weight compression algorithm

Pure Storage Strengths

Includes integrated snapshots for VMs, can backup VMs to Cloud (CloudSnap), can soon replicate & run in cloud (Cloud Block Store for AWS & VMC).

RPO within 5 min; BW efficient data transfers; mirror or archive.

Unmatched in data reduction:

- Avg. >5:1 data reduction & 512B dedupe
- Automatic & always-on
- UNMAP ensures thin disks remain thin

Customer Validation

"We're heavily virtualized with VMware, and the ability of the two arrays to move data between the data centers is very important for business continuity."

– **Director of Technical Services, John Muir Health**

NOTES

**GDPR requires "ensuring appropriate protection of the (security) key," which is suspect with the Nutanix key management device. NYDFS is far more restrictive & 48 of 50 U.S. States require significant key protection.

<https://www.lexology.com/library/detail.aspx?g=1426e18d-f687-45a0-b779-4aeb362a03ac>

<https://portal.nutanix.com/#/page/docs/details?targetId=Web-Console-Guide-Prism-v55:wc-security-data-encryption-aos-wc-c.html>

RESOURCES

CUSTOMER SUCCESS STORIES

- [John Muir Health](#)
- [San Francisco Giants](#)
- [Toyota Financial Services](#)
- [Ohio National Insurance](#)
- [Toga Far East Hotels](#)

PURE STORAGE CONTACTS

- Vaughn Stewart, VMware Technical Alliances
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- Ray Mar, VMware Solutions Marketing