Broadcom's Acquisition of VMware

& What it Means for Virtualization Customers

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Prepared by:

VSO, LLC

11220 Asset Loop

Manassas, VA 20109

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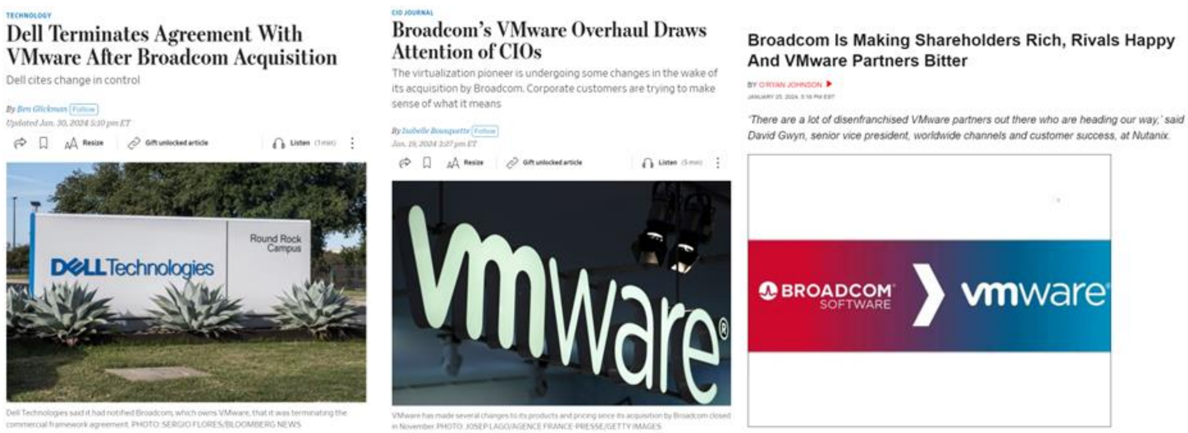
Abstract

Broadcom’s VMware Strategy is Seemingly Shifting Business Priorities

In November 2023, Broadcom completed its acquisition of VMware eighteen months after the initial announcement. During the acquisition and immediately after, Broadcom published several changes for VMware, namely the end of perpetual licensing in favor of a per core subscription-based pricing model, a move which has left VMware customers and partners eager to understand Broadcom’s strategy for the virtualization pioneer.



TECHNOLOGY

Dell Terminates Agreement With VMware After Broadcom Acquisition

Dell cites change in control

By Ben Glickman

Updated Jan. 30, 2024 5:10 pm ET

Dell Technologies said it had notified Broadcom, which owns VMware, that it was terminating the commercial framework agreement. PHOTO: SERGIO FLORES/BLOOMBERG NEWS

CIO JOURNAL

Broadcom’s VMware Overhaul Draws Attention of CIOs

The virtualization pioneer is undergoing some changes in the wake of its acquisition by Broadcom. Corporate customers are trying to make sense of what it means

By Isabelle Bousquette

VMware has made several changes to its products and pricing since its acquisition by Broadcom closed in November. PHOTO: JOSEP LAGO/AGENCE FRANCE-PRESSE/GETTY IMAGES

Broadcom Is Making Shareholders Rich, Rivals Happy And VMware Partners Bitter

BY O'RYAN JOHNSON

‘There are a lot of disenfranchised VMware partners out there who are heading our way,’ said David Gwyn, senior vice president, worldwide channels and customer success, at Nutanix.

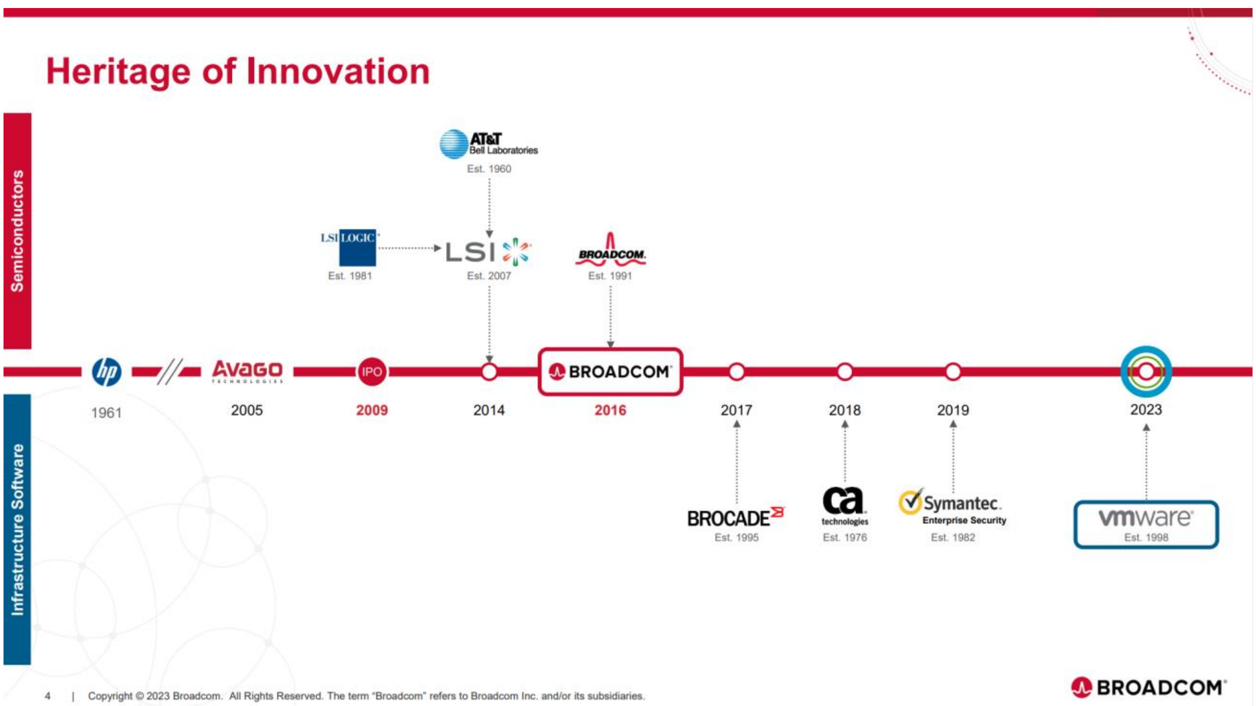
Recent articles about Broadcom VMware

This January, Dell terminated their agreement with VMware after the acquisition[1] and CIOs expressed concerns with the new pricing and support models in the *Wall Street Journal*.[2] Broadcom also announced that VMware’s top six hundred customers were their priority and their plan to take two thousand key accounts direct, removing partners for these customers.[3] Effective February 5, 2024, Broadcom transitioned VMware’s partner programs to an invitation-only Broadcom Advantage Partner Program.[4]

Background

Established as a Semiconductor Products Division of HP.

While VMware is a widely recognized name in Information Technology as a virtualization pioneer, Broadcom may not be as commonly known. The company started as a semiconductor products division of Hewlett-Packard in 1961. That division established itself as Avago Technologies in 2005 and began what would amount to fifteen acquisitions up to and including VMware. In 2016, Avago Technologies acquired Broadcom Corp. and Broadcom Limited was formed. Broadcom's heritage is over 60-years with origins at HP, AT&T/Bell Labs, and LSI Corporation, to name a few.[5]



Broadcom 's Heritage of Innovation

Though the timeline does not show it above, Broadcom also acquired Emulex Corp in 2015 - storage professionals may remember Emulex as a leading storage area network adapter company.[6] They followed with the Brocade acquisition in 2017 to expand Broadcom's fibre channel and storage business.

Also not on the timeline, Broadcom made an unsolicited $103B bid for Qualcomm Inc in 2017, a move that could have reshaped the industry of mobile phone hardware. In February 2018 Broadcom withdrew its bid to acquire Qualcomm, two days after U.S. President Donald Trump blocked the attempt.[6]

Prior to 2018, Broadcom's heritage of innovation was semiconductor solutions. Their revenue was infrastructure communication hardware:

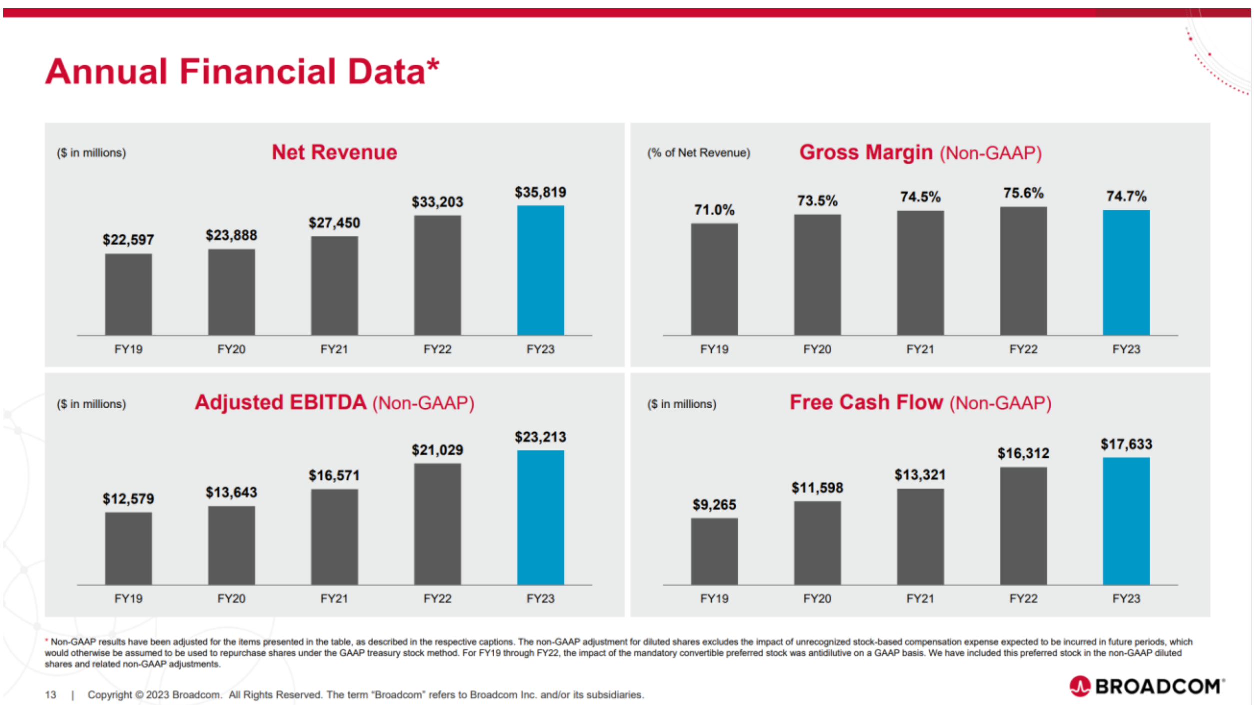
- Top-of-rack ethernet switches including the well-known Tomahawk chipset.

- A broad collection of network interface solutions connecting devices to network and storage fabrics.
- A variety of wireless controllers found in everything from Dell laptops to iPhones.

The company moved into infrastructure software and enterprise class software solutions in 2018 with the purchase of Computer Associates Technologies, followed by the acquisition of Symantec in 2019.

Broadcom – $35B FY23 -> $50B FY24 Projected

Looking at the financials, in 2023, 79% of Broadcom's $35B net revenue was semiconductor solutions.[5] Apple is Broadcom's largest customer and accounted for about 20% of the chipmaker's revenue in the last fiscal year,[7] amounting to almost $7 billion. With VMware, Broadcom expects to achieve $50 billion in 2024, a significant 42% bump. VMware revenue will help diversify and balance Broadcom's 2024 revenue.



Broadcom 2023 FY Financials

This is important for two reasons. First, although Apple inked a multi-billion-dollar deal with Broadcom in May 2023,[8] Apple plans to drop Broadcom chips by 2025 to use an in-house design.[9] Second, with the CHIPS and Science Act (CHIPS) signed into law in 2023, and a $53 billion investment in U.S. semiconductor manufacturing, research and development, and workforce being made, the trend to in-house semiconductor solutions is expected to grow, especially for tech giants like Microsoft and Apple. The CHIPS law also creates a 25 percent tax credit for capital investments in semiconductor manufacturing.[10]

Why did Broadcom acquire VMware?

It should be mentioned that although Broadcom designs and sells semiconductor solutions, it does not manufacture or fabricate (fab) the chips that are sold to the market. Like Apple, it is a fabless company. Broadcom's chips are physically produced by contract manufacturers like GlobalFoundries, SilTerra and Taiwan Semiconductor Manufacturing Company (TSMC).[11] Tech giants in-housing semiconductor solutions can put Broadcom in a competing rather than partnering position.

So why did Broadcom acquire VMware?

1. Revenue diversification. With 79% of its business in semiconductors, more infrastructure software revenue will help balance the company's revenue and mitigate any potential loss of semiconductor business in the future.
2. VMware has strong partnerships with the top public clouds, including AWS, Azure, Google Cloud Platform, and IBM Cloud, offering managed and bare metal virtualization solutions. This allows protected or regulated customers to use VMware's private cloud to take advantage of public clouds.
3. For a company that specializes in high performance networking and server/storage connectivity, VMware's NSX/Software Defined Networking and Data Processing Unit orchestration and security for non-public cloud infrastructure is a significant asset. Together with Broadcom hardware, there is potential to one day rival Cisco's Application Centric Infrastructure (ACI).

Broadcom CEO Hock Tan on VMware

Broadcom's CEO Hock Tan shared his vision for VMware at Broadcom:

> "We now have the scale to help global enterprises address their complex IT infrastructure challenges by enabling private and hybrid cloud environments and helping them deploy an 'apps anywhere' strategy... Our goal is to help customers optimize their private, hybrid and multi-cloud environments, allowing them to run applications and services anywhere."[12]

Broadcom CEO Hock Tan

In this "new and exciting era," Broadcom outlined significant investment in the advancement of VMware's innovation and customer value, with half of this investment in R&D and the other half helping accelerate the deployment of solution through VMware and partner professional services.

This brings us to a closer look at Broadcom's history and track record with other enterprise software acquisitions.

Broadcom's History with Acquisitions

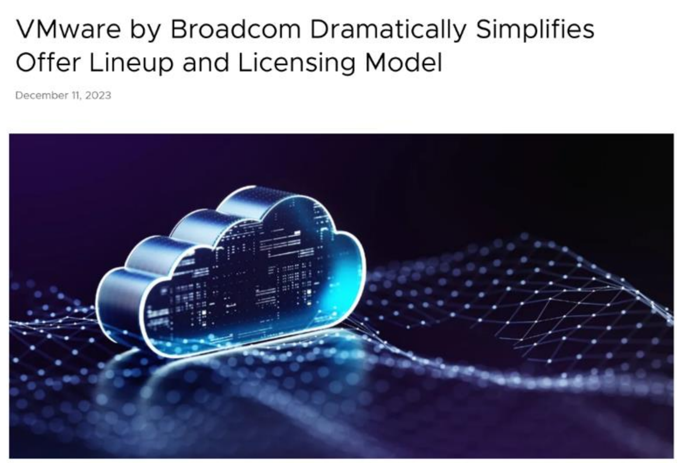
Quoting from NPI Financial,

> In 2018, Broadcom expanded into the enterprise software space with its acquisition of CA Technologies. A year later, it purchased the enterprise security business of Symantec.
>
> Along the way, a few notable trends emerged for customers:
>
> **Both loyal Broadcom customers and those acquired through CA and Symantec saw dramatic repricing. Increases of 60 to 400% were commonplace**.
>
> Many complained of a slowdown in innovation and support for acquired products.
>
> Some noticed big changes at the Broadcom deal table. Negotiations were all-or-nothing. If you didn't get on board with Broadcom's deal, you had no choice but to switch vendors, which was easier said than done given the entrenchment of Broadcom's offerings in the enterprise IT ecosystem.[13]

Paraphrasing Andy Sinclair's LinkedIn blog, Broadcom's success has been a result of **dramatically increasing the profitability of their acquisitions by implementing a lean operation and narrowing the product roadmap to only the profitable areas of the portfolio.** This is the reason Broadcom's previous M&A outings have been viewed by the technology sector as a negative outcome for both employees and existing customers.[11]

VMware Portfolio Simplification

In addition to the new pricing strategy, Broadcom is simplifying the VMware portfolio into two offerings, **VMware Cloud Foundation (VCF)** and **VMware vSphere Foundation (VVF)**. VMware Cloud Foundation is the enterprise-class hybrid cloud solution for customers to run their business critical and modern applications – in a secure, resilient, and cost-efficient manner, while the new VMware vSphere Foundation is for smaller to mid-size customers. We wanted to understand each offering to identify the technologies under the covers.[14]



Broadcom simplifies VMware offerings.

Products in Each VMware Offer

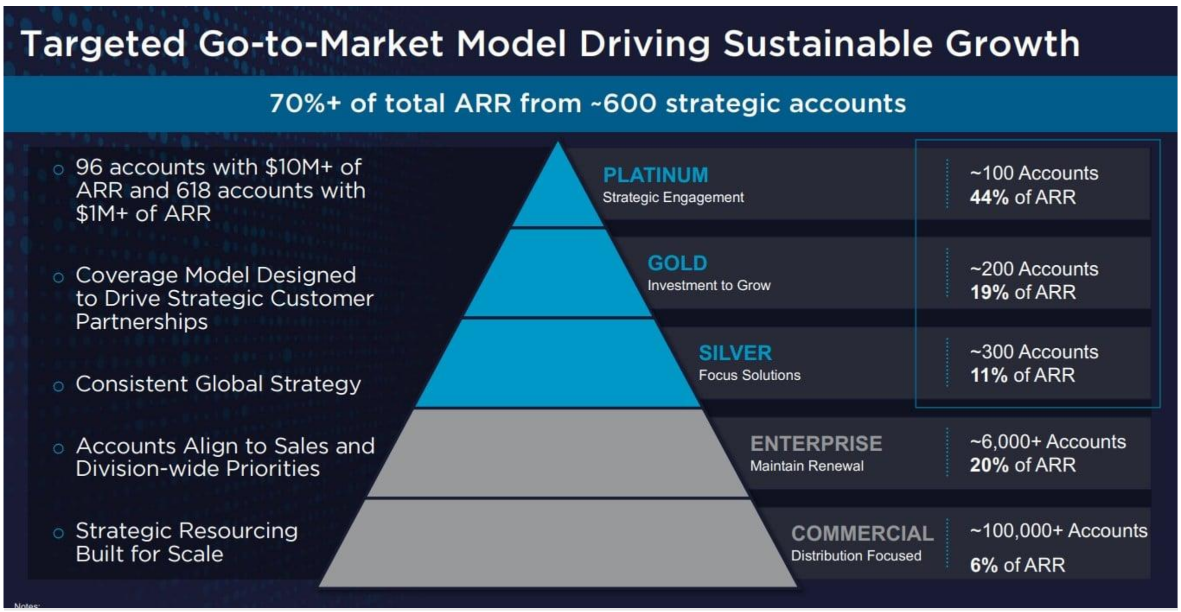
VMware Cloud Foundation includes vSphere, Tanzu Kubernetes Grid (TKG), vCenter, unified block and file software defined storage vSAN (1 TiB/Core), full-stack layer 2 through layer 7 software defined networking (NSX), Hybrid Cloud Extension (HCX), Advanced Overlay Networking (AON), Aria Suite

Enterprise, SDDC Manager, Select Support and Site Reliability Engineering (SRE). It is suitable for hybrid cloud solutions in large and medium-sized companies. Our research found a list price of $350 per core per year in a three-year package.[15]

VMware vSphere Foundation includes vSphere, TKG, vCenter, vSAN (100 GiB/Core), Aria Suite Standard. Aimed at medium and small companies with secure and stable workload platforms, we found the list price of $135 per core per year in a three-year package.[15]

Why is Broadcom Narrowing its Customer Focus?

Seventy percent of VMware's annual recurring revenue comes from six hundred strategic accounts, the top three layers shown in the pyramid below.



Broadcom go-to-market plan.

Broadcom's focus on these accounts will enable:

Customer Lock-in: top customers are typically large enterprises with complex IT environments, making it difficult for them to switch suppliers. This will allow Broadcom to maintain a stable customer base.

Cost Reduction: By focusing on a smaller pool of customers, Broadcom can significantly reduce its sales and marketing costs. This strategy also allows Broadcom to trim its R&D expenses by not considering the needs of smaller customers. Broadcom planned to divest end-user computing and Carbon Black.[16] Already on February 24, 2024, KKR announced its acquisition of the end-user division, including Horizon and Workspace ONE.[17]

Increased Margins: This approach has allowed Broadcom to increase its margins significantly. As mentioned earlier, Broadcom increased margins at CA and Symantec from EBIT margins of roughly 39 percent to 70 percent, which included cutting sales and marketing costs from 29 percent of revenue to 7 percent.[18]

Control Over Strategic Accounts: Recently, Broadcom identified about 2,000 of VMware's top accounts as "strategic," and it plans to manage these directly. This allows Broadcom to have more control over its most valuable customers.[3]

Challenge for Customers

The challenge customers face is to understand and make most efficient use of CPU cores in a time when the smallest core count per host machine is growing rapidly. When VMware was priced per CPU for up to thirty-two cores with perpetual licensing, this pricing allowed IT administrators to be less worried about cost efficiency. You pay Subscription and Support once per year and keep your cores per CPU under thirty-two to control costs. With every core being factored into the price of the subscription-based model, if customers have modern machines with many cores, the bill can increase dramatically. With Broadcom's new pricing model, sixteen cores per CPU is the minimum for VCF and VVF. We calculated the entry point for a single host would be $3,360 (1 year), as compared to the free ESXi license previously available.

We compared the VMware perpetual licensing to the new Broadcom licensing, using VMware's Enterprise Plus Edition and VCF. In Line #1, with four hosts, and up to thirty-two cores per CPU, customers would pay $19,120 annually for VMware Enterprise Plus Edition. For VCF, Line #2, with the minimum allowed/16 cores per CPU, customers will pay $67,200 upfront for a three-year subscription. In Line #3, thirty-two cores per CPU requires $134,400 to be paid upfront for a three-year subscription.

Perpetual vs Subscription License Comparison Example	# Hosts	$/CPU	# CPUs	$/Core 3-YR Price	# Cores	Per Year	3-Year Up Front Price
1. **Perpetual** VMware Enterprise Plus Edition	4	$4,780	1		up to 32/CPU	$19,120	
2. **NEW** VMware Cloud Foundation (16 cores)	4		1	$350	16	$22,400	$67,200
3. **NEW** VMware Cloud Foundation (32 cores)	4		1	$350	32	$44,800	$134,400

Comparison of VMware licensing costs.

Proposed Solution

VSO customers have asked about options for a path forward, given Broadcom's pricing and support changes for VMware. We offer options based on what best fits each Customer's business and IT needs.

Path Forward – Options

Options include:

- Easiest for existing VMware customers – consolidate and realize cost savings on-premises or in cloud.
    - VMware Cloud Foundation – enterprise/hybrid customer
    - VMware vSphere Foundation – smaller SDDC customers
- Easy alternative for reskilling – map and migrate to an easy-to-adopt platform such as Nutanix.
    - Nutanix Acropolis Hypervisor (AHV) (HCI)
- For customers with a Kubernetes Team – identify and move modern workloads to Rancher or OpenShift.
    - Rancher Harvester (HCI)
    - RedHat OpenShift on Kubernetes Services in IBM Cloud
    - RedHat OpenShift on Kubernetes Services on-premises – protected markets
- Others for specific use cases/skills
    - Hyper-V – for customers on a path to Azure
    - Proxmox – for development teams (note: support is limited)
    - KVM for very small clusters (does not support containers)

VSO's model of old and new pricing found the new, per-core pricing penalizes customers with heavyweight or core-dense hosts, especially if hosts are underutilized. This may indeed be the case for many customers due to VMware's previous per-CPU pricing model.

However, in public cloud, this pricing strategy encourages a core-efficient approach using smaller hosts and scaling to increase or decrease capacity as needed. To do this safely, the largest virtual machine requirements must be factored to size hosts properly. Personnel reskilling can be kept to a minimum using this approach. This consolidated hardware approach may encourage regulated and protected businesses to leave the datacenter for a private VMware cloud within public clouds.

VSO's V2V Program

For customers facing Broadcom VMware price increases, VSO offers a fast path forward, beginning with a FogLifter® pilot to quickly understand your VMware footprint. We help understand the count and core usage across your enterprise.

Our phased approach includes:

- **Phase 1: FogLifter® Pilot**
  – Count of existing VMware clusters, hosts and VMs
  – Core Usage
- **Phase 2: Initial Recommendations**
  – Understand business requirements, recommend solution options
  – Identify workloads being used and what can be migrated off
- **Phase 3: Build & Migrate**
  – Move workloads to a hardware-optimized VMware platform

– Move workloads to Nutanix, RedHat OpenShift or Rancher Harvester

- **Managed Services**
  – Manage Hybrid Systems, VMs and Containers
  – During migration and in steady state

Conclusion

Broadcom's acquisition of VMware brings pricing and support changes for customers in 2024. The shift to an invitation-only Broadcom Advantage Partner Program, the advent of perpetual licensing for subscription-based pricing, and dramatic portfolio simplification have caused concerns for customers and partners alike.

VSO works for customers' outcomes through solutions that best meet each business' needs, including VMware on-premises and in cloud, alternative hypervisors, and modernized container-based solutions. From FogLifter® Core Count and Usage Pilot, TCO-backed Initial Recommendations, Solution Build/Migrate and Managed Services, we work to consolidate, optimize, and modernize VMware environments. Please contact us if you have questions for your VMware enterprise.

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Appendix 1 - Features Comparison

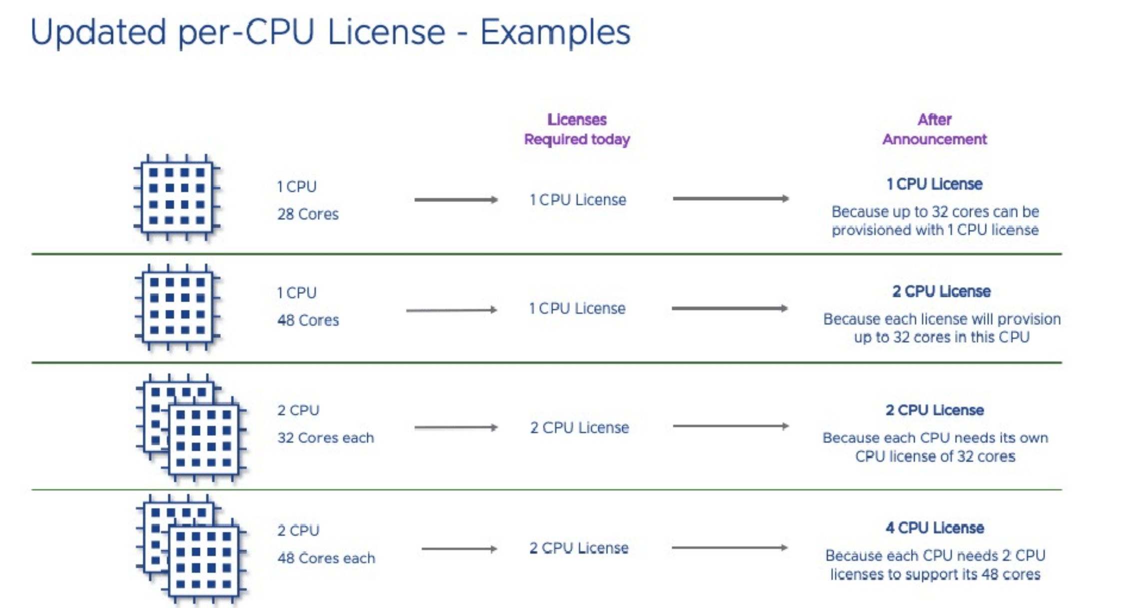
The table below compares the features of each solution, including VMware. We also build and support cloud options such as Azure Stack and Nutanix in cloud.

Feature	VMware	KVM	Proxmox VE	Hyper-V	RedHat OpenShift	Harvester/Kubernetes	Nutanix
Software Type	Proprietary	Open Source	Open Source	Proprietary	Proprietary	Open Source	Proprietary
Architecture	Bare-metal	Hosted	Bare-metal	Bare-metal	Microservice	Microservice	Hyperconverged Infrastructure
Deployment Complexity	Easy	Hard	Easy	Moderate	Hard	Hard	Moderate
Basis	VMKernel	Distribution Linux Package	Debian Linux KVM	Hyper-V Server	Kubernetes	Kubernetes	Nutanix Acropolis Hypervisor (AHV)
Hardware Requirements	Minimal, dependent on VM Workloads	Minimal	Minimal, dependent on VM Workloads	Minimal, dependent on VM Workloads	Medium	Large	
Centralized Management for Multiple clusters	Yes	No	No	Yes	Yes	Yes	Yes - Multi-hypervisor support
UI Console	Yes	Limited	Yes	Yes	Yes	Yes	Yes
Clustering	Yes	Limited	Yes	Yes	Yes	Yes	Yes, Nutanix NX or 3rd Party Hardware
High Availability	Yes, (Clustered)	Limited*	Yes, (Clustered)	Yes, (Clustered)	Yes, (Clustered)	Yes, (Clustered)	Yes
Fault Tolerance	Yes, (Clustered)	Limited*	Limited	Yes, (Clustered)	Yes, (Clustered)	Yes, (Clustered)	Yes
Networking	Distributed Switch, NSX	Basic (Bridged)	Basic (Bridged)	Virtual Switches	Internal Cluster Network with DNS	Internal CNI, Flannel for Management Network	Virtual Switches and Bridges
VLAN Support	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firewall/Security	Advanced, L2-L7, micro-segmentation	Linux and VM Firewalls	Yes, Firewalls	Yes, Firewall, Guarded Fabric, & Sheilded VMs	Controlled network, container image, and port access to pods	Controlled network, container image, and port access to pods	
Storage	vSAN	Storage Pools	Storage Pools	Storage Pools	OpenShift Container Storage	Distributed Block (managed by Longhorn)	Nutanix Unified Storage, Files Storage, Object Storage
Storage API	Yes	Very Limited*	Very Limited	Yes	Yes	Yes	Yes
Integrated Backup	Available with Data Protection or 3rd Party	3rd Party	Available with Proxmox Backup Server or 3rd Party	Azure Backup or 3rd Party	Yes	Yes	Yes
VM snapshots	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Live Migrations	Yes	Limited (With Shared Storage)	Limited	Yes	Yes	Yes	Yes
Built in Load Balancing	Yes	No	No	Yes	Yes	Yes	Minimal
Containerized Workload Support	Yes	Limited*	No	Yes	Yes	Yes	Yes
Monitoring Interface	Yes	Limited	Yes	Yes	Yes	Yes	Yes
Support	VMware License Subscription	RedHat, Oracle	Proxmox Subscription	Microsoft License Subscription	RedHat License Subscription	Rancher Prime Support	Nutanix Customer Xperience
Pricing	VMware License Subscription	Open Source (Support Cost)	Open Source (Support Cost)	Microsoft License Subscription	Hourly	Open Source (Support Cost)	License
TCO	High	Low	Low	Medium-High	High	Low	High

VSO Feature Comparison for VMware & VMware Alternatives

Appendix 2 - VMware pricing change in 2020

In 2020, VMware took its first step towards licensing per core by introducing licensing that limits CPU licenses to thirty-two cores per CPU. For any system with more than thirty-two cores per CPU, another license must be purchased. [17]



2020 per-CPU Licensing Model

Appendix 3 - FogLifter®

FogLifter® provides a curated IT data experience that emphasizes flexibility in reporting outcomes related to the measurement of Count, Caliber, and Cost of IT resources.

Count of IT Assets: Large IT environments change rapidly and daily. Gaining an indisputable count of assets such as servers, storage, network devices, databases, etc. is where most friction arises.

Caliber of Service (SLO, SLA, SRE): The measurement of the performance of IT assets, usually in SLAs, is the first lever and measurement that affects CSAT and costs.

Cost of IT Assets and Service: Once the Quantity and the Quality of Service are agreed, a PxQ cost can be calculated, using algorithms based upon precise times, tranches, etc.