VMware Alternatives

Straight Answers to Tough Questions

Agenda

- Introduction
- Why consider alternatives to VMware?
- What are the realistic alternatives to VMware
- Conclusions
- Vendor-agnostic reference architecture for Type-1 Hypervisor Clusters
- About VMsources

Introduction

- John Borhek
  - Lead Solutions Architect
  - 215-764-6442 X1001
  - john@vmsources.com

What is VMsources

Three main Silos

Cloud Computing

- Full-service Secure Cloud
  - VMware Cloud
  - Proxmox VE Cloud
- Geographic diversity across CONUS
- Multiply certified/audited
- Guaranteed TCO
- Managed migration at no extra cost
- Meaningful SLA (guaranteed!)
- Fully-managed (MSP)

DRaaS / BaaS

- DR as a Service (DRaaS)
  - Guaranteed Resources
  - Pre-assigned public IPs
  - Pre-configured VLANs/NAT
  - Fully-managed setup/seeding
  - Fully-managed testing
- Backup as a Service (BaaS)
  - Immutable Repositories
  - o365 Backup
  - Veeam Backup and Replication
  - Veeam Cloud Connect

MSP / Consultancy

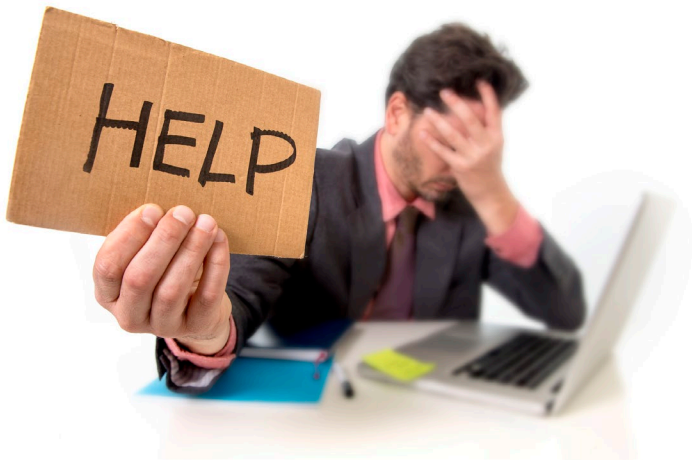
- Full-stack with: VMware vSphere, Proxmox VE, Hyper-V, Nutanix
  - Installs
  - Hardware Refresh
  - IP Storage
  - Hyperconverged Storage/vSAN
  - Full-service MSP
- HPE, Aruba and Cisco Hardware

https://vmsources.com

What has Broadcom done to alienate customers?

What didn’t they do? VMware customers are unhappy with Broadcom.

- Eliminated “perpetual” licensing
- Increased cost across the board
- Loss of value/equity in VMware licensing under Broadcom
- Initially introduced several lower-cost “subscription” licenses
  - Lured customers with vSphere Standard and vSphere Essentials Plus
  - Subsequently discontinued lower-cost subscriptions
- Customer service under Broadcom
  - Pay-walled vSphere updates
  - Moved aggressively against customers who continue to use “perpetual” licenses
  - Eliminated most existing channel/resale partners



Realistic alternatives to VMware

- Proxmox
- Microsoft Hyper-V
- Nutanix
- Scale Computing
- Others?

What to consider when evaluating alternatives

Avoid the same mistakes the entire world made with VMware

- Cost
  - Is the platform within your budget?
  - Does the platform have transparent and predictable pricing
- Flexible choices
  - Will migrating to this platform require a full hardware refresh?
  - Can this platform be installed in-place of VMware?
- Avoid proprietary lock-in
  - How likely is the platform to change in undesirable ways?
  - If the platform is no longer the right choice, how easy is it to move?

Comparison of basic features

Which Hypervisor fits your Organizations requirements?

Feature	Proxmox VE	Hyper-V	Nutanix	Scale Computing	VMware
Perpetual License	YES	YES	NO	NO	NO
Hypervisor Architecture	KVM	Hyper-V	KVM	KVM	VMware ESXi
Hypervisor Type	Type-1	Type-1	Type-1	Type-1	Type-1
Full suite on-premises	YES	YES	YES	YES	YES
Live Migration	YES	YES	YES	YES	YES
High Availability	YES	YES	YES	YES	YES
Native Hyperconverged Storage	YES	YES (extra cost)	YES	YES	YES (extra cost)
SAN Storage	YES	YES	NO	YES	YES
Container Support	NATIVE	NO	EXTRA	NATIVE	EXTA
Pricing Basis	CPU	Cores	Cores & Capacity	Cores & Capacity	Cores & Capacity
Hardware Compatibility	WIDE	WIDE	LIMITED	LIMITED	LIMITED
Open Source	YES	NO	NO	NO	NO
License	GNU/GPL	PROPRIETARY	PROPRIETARY	PROPRIETARY	PROPRIETARY
Enterprise Backup and DR integrations	WIDE	WIDE	WIDE	WIDE	WIDE
Native Backup and DR	YES	NO	YES	YES	NO
Native Platform Migration	YES	NO	YES	YES	YES

GOOD	CAUTION

Real-World CAPEX

Typical hardware required to deploy VMware or most* of its alternatives

Cluster with traditional iSCSI SAN

- 3-node HPE cluster ($158,000)
  - 6 X Intel 6444Y 3.6GHz 16C CPU
  - 768 GB RAM
  - 6 X 1TB Install SSD
  - 18 TB NET HPE MSA iSCSI SAN
    - 12 X 1.92 SSD
  - 3-yr Tech Care Essential Warranty
- Includes On-Site installation/migration 4-days

Cluster with HCI Storage

- 3-node HPE cluster ($149,000)
  - 6 X Intel 6444Y 3.6GHz 16C CPU
  - 768 GB RAM
  - 6 X 1TB Install SSD
  - 16 TB NET HCI Storage
    - 6 X 1TB SSD Cache Disks
    - 12 X 4 TB SSD Capacity disks
  - 3-yr Tech Care Essential Warranty
- Includes On-site installation/migration 4-days

Current prices from VMsources as of 02/06/2026 – Prices are changing rapidly – This is NOT a quote

VMware vSphere

Advantages

- Most widely used and trusted platform
- Single-pane-of-glass management with vCenter
- Highly scalable
- Core X86 architecture
- Supports traditional SAN/NAS
- Hyperconverged Infrastructure (HCI) storage with vSAN is native
- Supported by many Business Continuity suites

Disadvantages

- Cost / perceived cost
- Your desired license level no longer available
- Extra cost for Hyperconverged storage with vSAN
- Future of product development & support
- Limited hardware compatibility
- Trial version available?

VMware Subscriptions and Pricing

Package	Per Core MSRP	Licenses Included/Notes
vSphere Cloud Foundation	$350	vSphere Enterprise Plus, vSAN Enterprise, Aria Suite Enterprise, NSX Networking for VCF, HCX Enterprise, Aria Operations for Networks Enterprise, SDDC Manager
		vSAN Enterprise 1 TiB free per-core licensed to be included in vSphere Cloud Foundation software release
vSphere Foundation	$200	vSphere Enterprise Plus, vCenter Server Standard, Tanzu Kubernetes Grid, Aria Suite Standard, available Add-On's
		vSAN Enterprise 250GiB free per-core licensed to be included in vSphere Foundation software release

Source: https://community.veeam.com/blogs-and-podcasts-57/decoding-the-new-broadcom-vmware-vsphere-licensing-packages-for-small-deployments-6398
https://blogs.vmware.com/cloud-foundation/2025/04/17/vmware-vsphere-foundation-adds-vsan-capacity/

CAPEX + OPEX for VMware Clusters

	vSphere Foundation (VVF) w/iSCSI SAN	vSphere Cloud Foundation (VCF) w/vSAN
CAPEX		
Cluster Hardware	$158,000.00	$149,000.00
TOTAL CAPEX:	$158,000.00	$149,000.00
OPEX (annual)		
VMware	$19,200.00	$33,600.00
TOTAL OPEX:	$19,200.00	$33,600.00

Proxmox VE

One of the best alternatives to VMware

Advantages

- Cost
- KVM Hypervisor
- Wide hardware compatibility
- Supports traditional SAN/NAS
- Hyperconverged Infrastructure (HCI) storage included
- Supported by many Business Continuity suites and has native backup/DRaaS Tools
- Embedded migration from VMware
- Native container support

Disadvantages

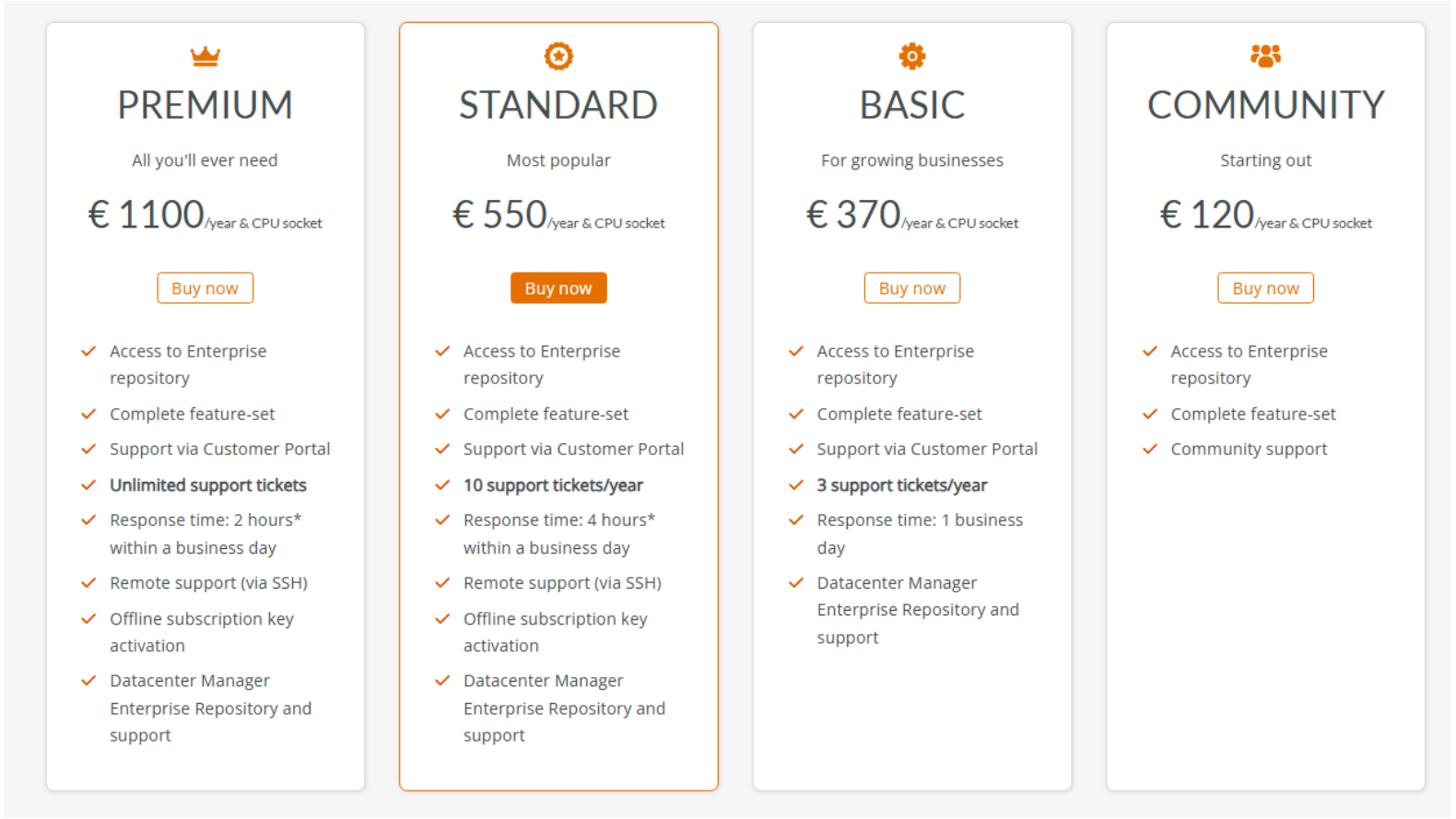
- Some required Linux / technical skills
- Shared SAN storage does not support thin provisioning

Migrating from VMware to Proxmox VE

Easy and Native tools

- Deploy a new cluster and migrate all together
- Use existing hardware and migrate one node at a time
- Native tools to migrate VMs from VMware
- Migrations are typically sourced from SAN or vSAN, so they are quick
- Once installed, the user interface is highly intuitive
- Proxmox can use your existing SAN

Proxmox VE Pricing



Current prices from VMsources as of 02/06/2026 –This is NOT a quote

CAPEX + OPEX for Proxmox VE Clusters

	Proxmox VE Standard w/iSCSI SAN	Proxmox VE Standard w/HCI CEPH Storage
CAPEX		
Cluster Hardware	$158,000.00	$149,000.00
TOTAL CAPEX:	$158,000.00	$149,000.00
OPEX		
Proxmox VE Standard	E3,300.00	E3,300.00
TOTAL OPEX:	E3,300.00	E3,300.00

Microsoft Hyper-V

Advantages

- Hyper-V included with Windows Server
- Supported by many Business Continuity suites
- Wide hardware compatibility
- Supports traditional SAN/NAS
- 180-day trial

Disadvantages

- Systems Center licensing extra
- Complex management consoles
- Struggle with scalability of networking and managing many networks

Microsoft Hyper-V Pricing

Package	Per Core MSRP
Windows Server Datacenter Edition*	$33.58
Microsoft Systems Center*	$225
* 16-Core minimum per CPU	

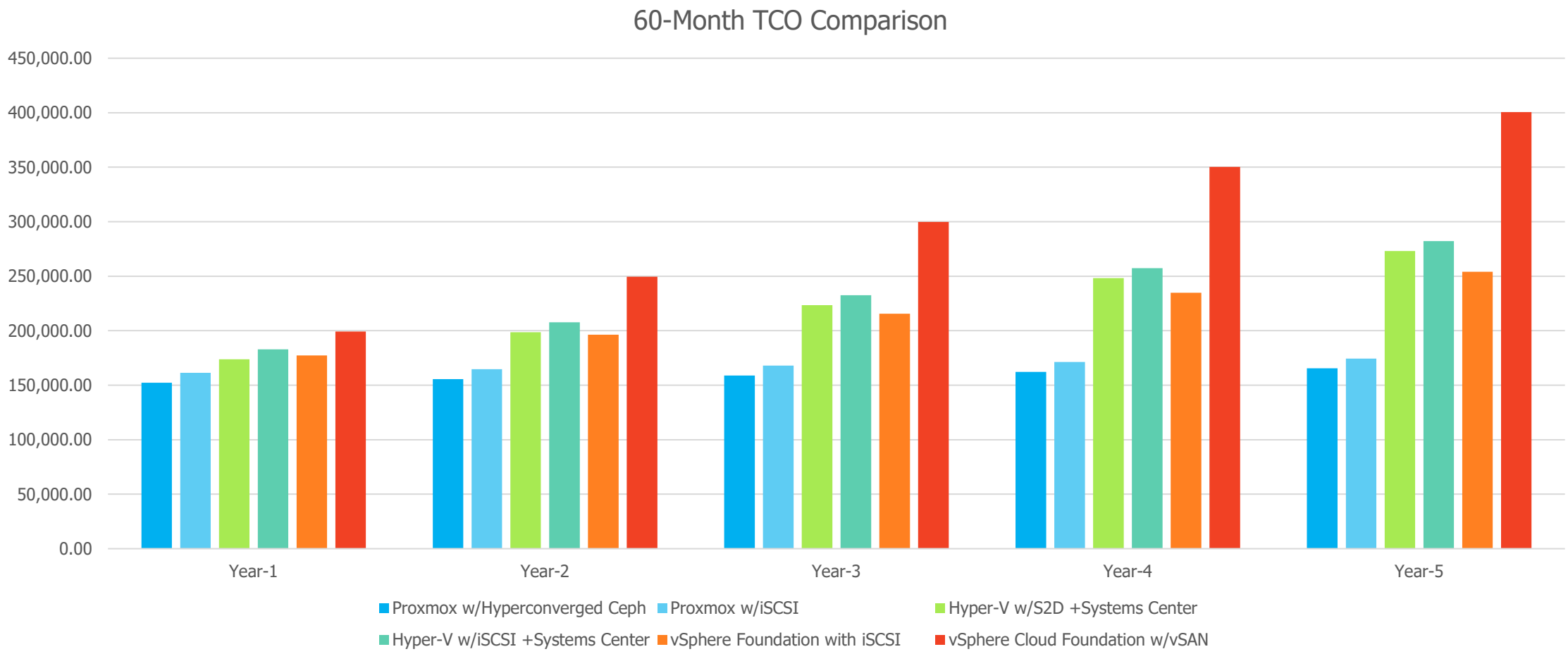
*Source: https://www.microsoft.com/en-us/windows-server/pricing https://www.microsoft.com/en-ca/system-center/pricing

CAPEX + OPEX for Hyper-V Clusters

	Microsoft Server Datacenter + Systems Center w/iSCSI SAN	Microsoft Server Datacenter + Systems Center w/ Storage Spaces Direct (S2D)
CAPEX		
Cluster Hardware	$158,000.00	$149,000.00
TOTAL CAPEX:	$158,000.00	$149,000.00
OPEX (annual)		
Microsoft	$24,824.00	$24,824.00
TOTAL OPEX:	$24,824.00	$24,824.00

60-Month TCO Comparison of Hypervisors

With new server nodes and licensing



Conclusions

Only two realistic alternatives

- We believe that only Proxmox and Hyper-V represent realistic alternatives to VMware because:
  - Widely supported and understood
  - Wide hardware compatibility
  - Choice of storage: NAS, iSCSI, Hyperconverged (HCI)
  - They do not represent a proprietary “silo” from which it is difficult to escape
  - Can run 100% on-prem with no external network or Cloud access required
  - Published, honest pricing
  - Ease of migration with native or common utilities

Vendor-Agnostic Reference Architecture

Straight Answers to Tough Questions

Agenda

- Introductions
- Cluster Design and Deployment
- Let’s consider Hyperconverged Storage (HCI)
  - HCI Storage Requirements
- Traditional SAN Storage
- Cluster Sizing
- Cluster Performance
- Why a 3-Node Cluster?
- HCI Cluster Design
- Traditional SAN Cluster Design
- The Fine Print

Cluster Design and Deployment

- Maximizing your investment through smart choices
  - Platform choice
  - Hyperconverged (HCI) storage or traditional SAN
  - Cluster network speed

Let's consider Hyperconverged Storage (HCI)

Advantages

- Requires no traditional SAN
- Potentially very fast
- Scalable
- Supports deduplication and encryption-at-rest

Disadvantages

- Requires three nodes minimum for quorum
- Inefficient disk use in smaller clusters
- Cost of disks plus licensing may be prohibitive
- May have limited hardware/disk compatibility

HCI Storage Requirements

In small clusters, HCI requires more disks

- Requires 3 nodes for quorum
- Requires 10GbE or faster networking
- HCI provides availability through "Network RAID" or "Storage Policy"
- You need to have *<u>at least</u>* one[1] full copy of all your data on an additional node if not two[2] additional nodes
  - A 1 TB Virtual Machine running in a 3-node HCI cluster will either consume 2 TB or 3 TB

3-Node HCI Cluster 18 X 4 TB SSD (Capacity) and 6 X 1 TB (Cache)					
4 TB	4 TB	4 TB	1 TB		
4 TB	4 TB	4 TB	1 TB		
					72 TB RAW
4 TB	4 TB	4 TB	1 TB		35 TB NET[1]
4 TB	4 TB	4 TB	1 TB		24 TB NET[2]
4 TB	4 TB	4 TB	1 TB		
4 TB	4 TB	4 TB	1 TB		

[1] Primary level of failures to tolerate (PFTT) = 1

[2] Primary level of failures to tolerate (PFTT) = 2

Traditional SAN Storage

Traditional SANs require fewer disks to achieve same NET capacity

- Traditional SANs:
  - Use RAID to achieve availability and RAM for cache
  - Present NET storage capacity after RAID
  - Support deduplication and encryption-at-rest

Traditional SAN 10 X 4 TB SSD / RAID 6 (N-2)						
4 TB	4 TB	4 TB	4 TB	4 TB		40 TB RAW
4 TB	4 TB	4 TB	4 TB	4 TB		32 TB NET

Cluster Sizing

- Determine total workload requirement
- Build in expected growth
- Size your cluster N-1 (up to 8 nodes) or N-2 (9-16 nodes) to accommodate maintenance / node failure
- Right-size the CPU to minimize licensing cost
- Choose storage to meet capacity needs
- With multiple cluster locations, consider deploying uniform server specifications to facilitate hardware interchangeability

Cluster Performance

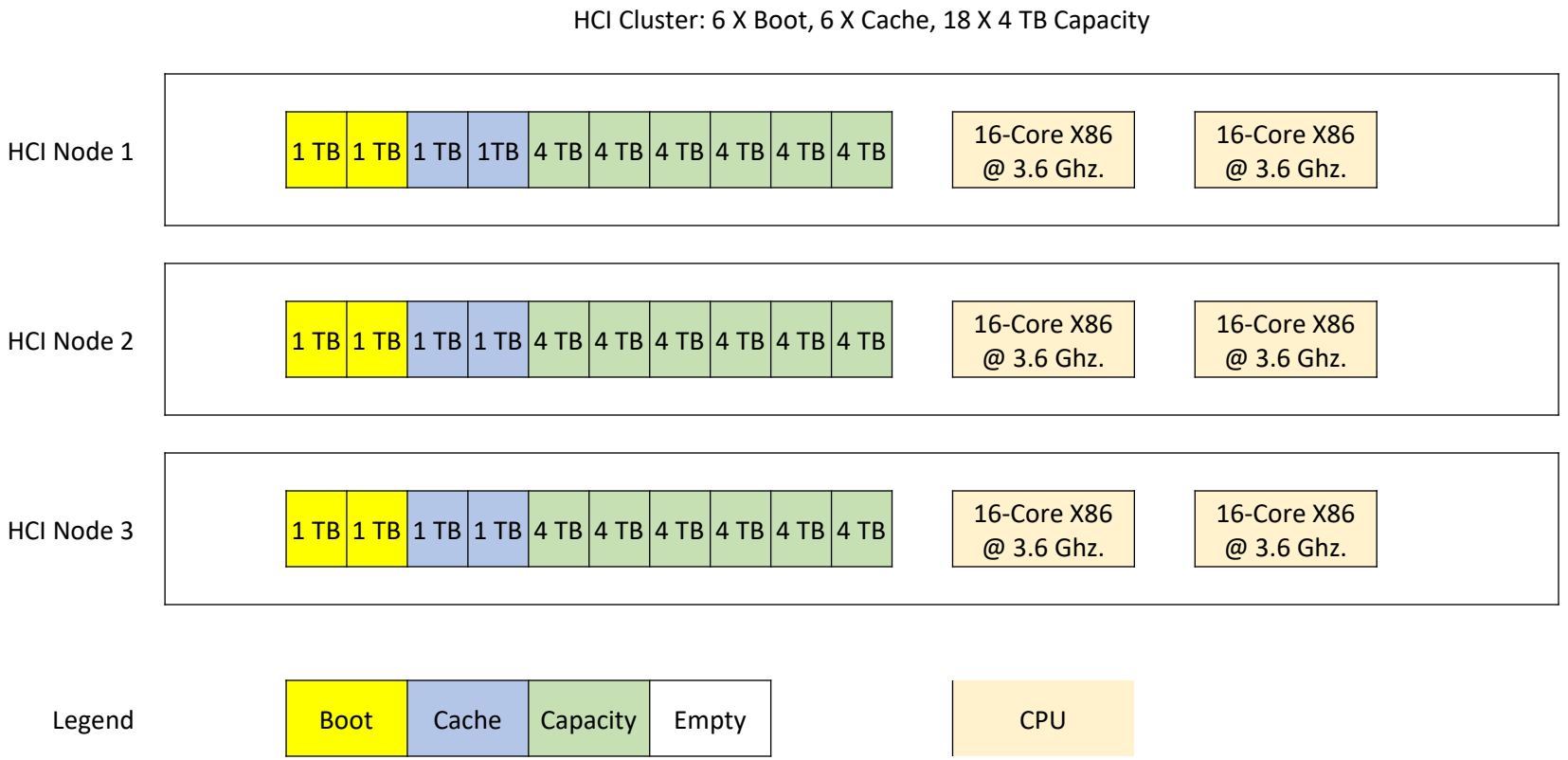
CPU and RAM

- CPU Speed will be a factor
  - Are there applications which require a minimum CPU speed?
  - Are there databases or other storage-performance sensitive workloads?
  - Are you better off with 24-core CPUs at 2.2 Ghz. or 16-core CPUs at 3.4 Ghz.
- RAM is a big investment
  - To determine RAM requirements, you need to plan on potential host failures and overhead
  - If [TOTAL VM RAM] requirement for VMs is 384 GB
    - Overhead is always recommended to be 20% or greater
    - One [HOST FAILURE] in a three host cluster [CLUSTER SIZE] must be tolerated
    - [RAM PER HOST] = ([TOTAL VM RAM] + 20%) / ([CLUSTER SIZE] – [HOST FAILURE])
      - (384 + 20% = 461GB) / (3-1) = 230.4 GB per host on all three hosts

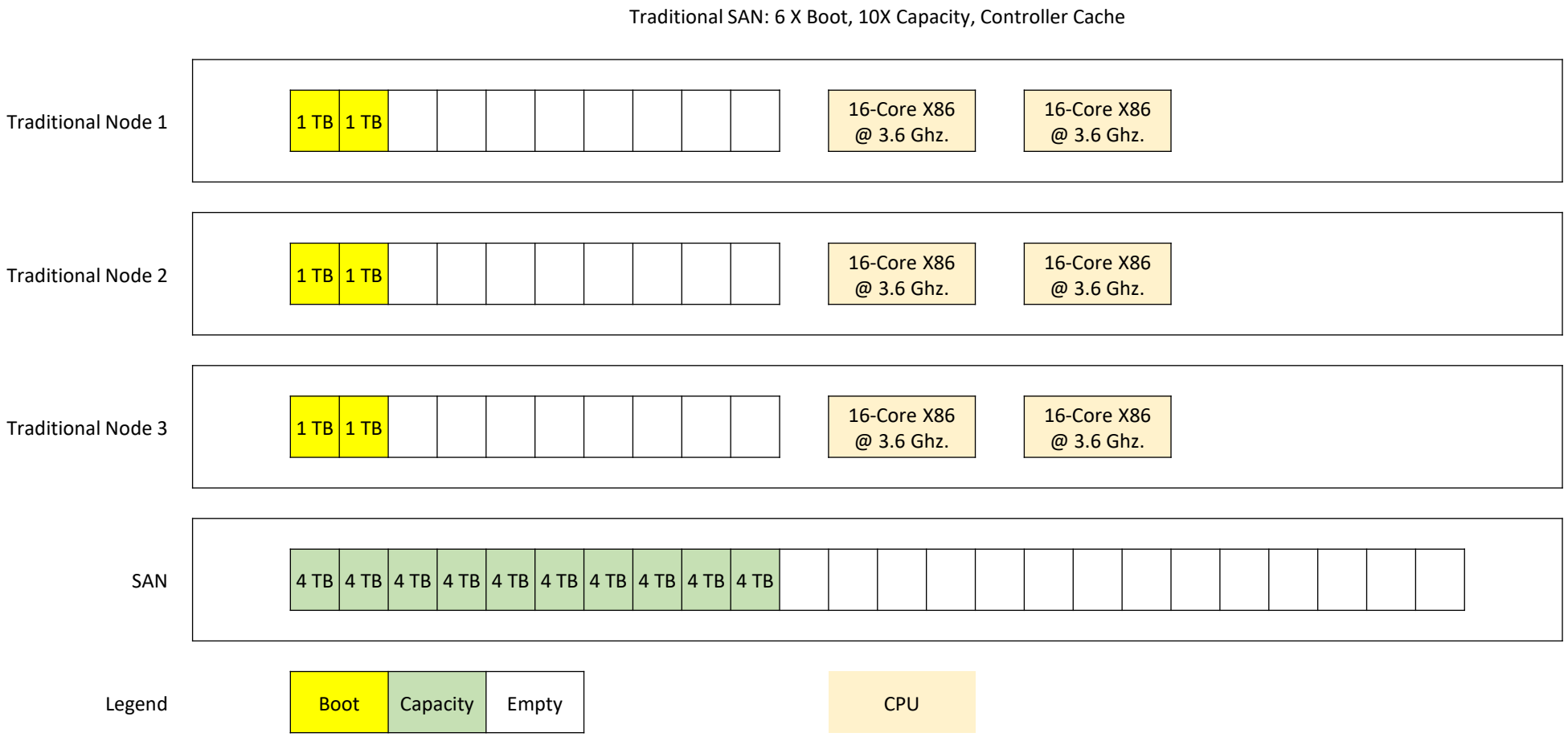
Why a 3-Node Cluster?

- 3-node clusters are the meat and potatoes of Private Cloud computing
  - Scalable to support hundreds of high-performance workloads
  - Higher speed network with less physical switch traffic
  - More economical licensing
  - Less power consumption
  - Smaller footprint
- Three-node clusters can be configured with up to:
  - 2995 Ghz. (768 cores)
  - 6 or more TB of RAM
  - 24 HDD / SSD / NVMe drive slots on 1U hosts
  - Enough Compute for several hundred high-performance workloads

HCI Cluster Design



Traditional Cluster Design



“The Fire Print”

- Integrators and OEM vendors will often undersize their designs and quotes, just to get you to sign on the bottom line:
  - Leaves you holding the bag after deployment
  - You either stay the course and make excuses for needing more money
  - Or you admit you were wrong and fire the vendor
- Some vendors will sell single-node or two-node “HCI” clusters
  - This is nothing more than local storage, possibly supplemented with backup or replication
  - Two-node HCI clusters with a “witness” node are feasible but risky
- Deduplication / Compression can work well
  - Deduplication and compression requires considerable Compute resources from the cluster where applied, be sure to account for that in cluster sizing
- Vendor “Appliances”
  - Vendor “appliances” can range the gamut, but you need to check the spec’s and make sure that latest-gen CPUs and sufficient RAM are provided.

About VMsources

A better idea

VMsources Cloud and Infrastructure

What VMsources can do for your Organization

- VMsources knows and understands Infrastructure and Hypervisors better than anyone else.
  - We'll help you spec. the right hardware for your needs
  - We'll help you choose the correct hypervisor/platform
  - Get the Infrastructure you need, not what the salespeople need to sell.
- VMsources Cloud is built for its tenants
  - Fully-managed "white glove" experience
  - 100% USA
  - Complete support and migration included
- VMsources Backup and DRaaS is designed for your success
  - Immutable repositories
  - S3 offload
  - Immediate compliance with the 3-2-1 Rule for all backups

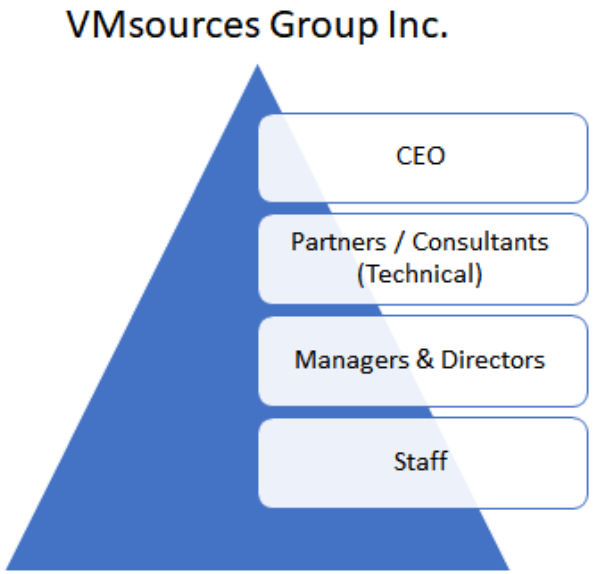
About Us

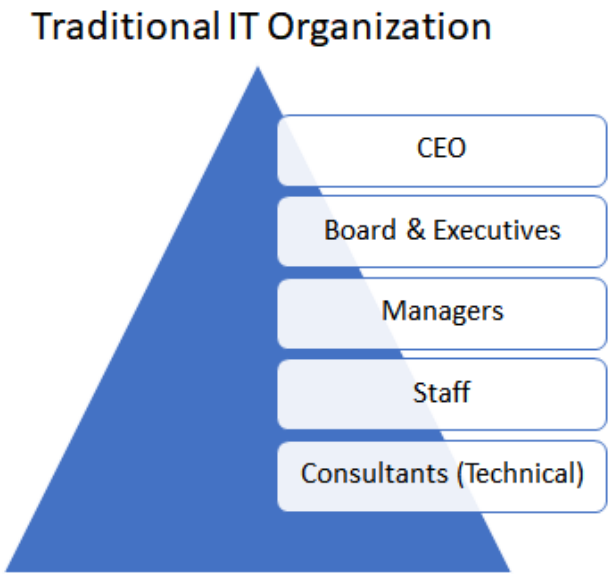
We are proud to bring the best technical guidance to the top of a traditional organizational structure.

Simplicity is elegance

VMsources is a customer-facing MSP specializing in Private Cloud, Infrastructure, and Network.

It is VMsources mission to act as the client's advocate at every stage of the project, from concept to completion.





VMSOURCES
Cloud & Infrastructure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