The Hypervisor Rollercoaster

August 30th

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Agenda

- Why might you want to move?
- Who could you move to?
- What do you need for feature parity?
- How do you move?
- Where do you move?
- When do you move?
- Return on Investment of the migration

Quick Disclaimer
Not that I'm going to disparage any multi-billion-dollar companies...

- The views expressed in this presentation are those of the speaker and not necessarily those of Mirazon or any gracious partner companies, sponsors or vendors.
- Come to think of it, the speaker would also prefer not to be sued.
  - Hyperbolic statements or sarcasm used to make the presentation less dry, and more amusing, should not be taken as direct facts or the opinions of the aforementioned.

Why might you want to move?

- Broadcom acquisition has caused turmoil
  - For a month and a half, they couldn't even take quotes
  - Focusing on enterprises exclusively
  - Migration to new portal left users without any portal for weeks
  - New portal is heavily restricted
- Broadcom acquisition has caused massive price increases
  - Changed to per core
  - Every SKU is now a bundle
  - For some users, this is a 4x or more price increase
  - If you already had a large VMware suite, this might be closer to break even

Why might you want to move?

- VMware Explore [Formerly VMworld] was this week.
- Broadcom CEO Hock Tan was very apologetic... "You are going to see change – Sorry."
- Highlights:
  - CEO's decisions to push their companies to the cloud left IT with PTSD where silos of tech have left them "screwed"
  - IT has learned clouds are "trauma inducingly costly" and complex
  - "The future of the enterprise is private, private cloud, private AI using your private data"
  - "We are serious businesspeople. So are you. We are all about business at Broadcom: we are here to run your business more efficiently"
  - "We are not here to show you bright shiny objects"

- Fiscally responsible if you can re-design your apps
  - SaaS, PaaS, Containers, Serverless
- Sometimes this is easy (moving to Office 365)
- Sometimes this is difficult (10-year-old ERP)
- Every server becomes a project, be it small or large
- "Lift and shift" often greatly exceeds on-premises costs

Who could you move to?
Microsoft Hyper-V/Azure Stack HCI

- Hyper-V has been in market for 16 years, with a <u>core hypervisor</u> that's stable, mature and fast

- Management ecosystem provided by Microsoft is… awkward.

Management Tool	Single Server	Small Cluster	Large Cluster	Hyper-Converged Cluster
Hyper-V Manager	Easy, quick.	Only if something is broken	Only if something is broken	Only if something is broken
PowerShell	Yes, not required	Yes, not required	Yes, maybe required	Yes, absolutely, you have no other option
Failover Clustering	No	Yes	Yes, but sometimes tedious	Ish. Some things can't be done in the UI
Windows Admin Center	Yes, but some features not there	Yes, but some features not there	Yes, but some features not there	Yes, but some features still aren't not there
System Center Suite	Are you insane?	Are you insane?	SCVMM + SCOM + SCCM	SCVMM + SCOM + SCCM + PowerShell

- Azure Stack HCI is an OEM integrated solution that combines certified hardware from a major OEM with Microsoft's Azure software stack.

- Can be managed from the Azure console, 'eliminating' all of the previous limitations/issues/frustrations/infuriations... if you like how Azure is managed.

- It's a monthly subscription.
  - $10/physical core/month for base Azure Stack HCI
  - $23.3/physical core/month for the Windows guest licenses

- Both can be mitigated with Azure Hybrid Benefits (AKA you already own datacenter licenses with SA)

Who could you move to?
Microsoft Hyper-V/Azure Stack HCI

- Example:

- 4x servers, each with 24 physical cores
  - These servers are bought from the OEM at normal costs.

- Licensing on top of the hardware would be:
  - $10/mo * 96 = $960/mo for Azure Stack HCI
  - $23.30/mo * 96 = $2,236.80/mo for Windows licenses
  - $3,196.80/mo or $38,361.60/year for Azure Stack w/ Windows on top of hardware costs.

Who could you move to?
Dell VxRAIL/HPe Simplivity

- These are VMware hyperconverged solutions.
- Their OEM partnerships were redone with updated VMware costs.
- They won't be cheaper than your renewal.

Who could you move to?
KVM on Linux

- KVM – Kernel-based Virtual Machine
  - Open Source
  - Came out in 2006
  - Been part of mainline Linux kernel since 2007
  - Type-1 hypervisor
  - Supports variety of storage
  - Has live migration
  - Widely adopted and re-skinned for commercial sale

- Hyperconverged solution with multiple purchase options: Dell XC, HPe DX, Fujitsu XF, Lenovo HX, Nutanix NX (SuperMicro), Cisco… doesn't have a clever branding.

- KVM derivative is called AHV (Acropolis Hypervisor)

- Historically, cheap to get into ecosystem, then renewals are expensive.

- Company has operated at a loss for 12 years approximating $4.7Bn.

Revenue and net income (loss)
(in $ million)

FY ended in July	Revenue	Y/Y growth	Q/Q growth	Net income (loss)
FY12	6.6	NA		(14.0)
FY13	30.5	362%		(44.7)
FY14	127.1	317%		(84.0)
FY15	241.4	90%		(126.1)
FY16	444.9	84%		(168.5)
FY17	845.9	90%		(379.6)
FY18	1155	14%		(297.2)
FY19	1136	-2%		(621.2)
FY20	1308	15%		(872.9)
FY21	1,394	7%		(1,034)
FY22	1,581	13%		(797.5)
FY23	1,863	18%		(254.6)
1FQ24	511.1	15%	3%	(15.9)
2FQ24	565.2	16%	11%	32.8
3FQ24	524.6	17%	-7%	(15.5)
4FQ24 (estim.)	530-540	7%-9%	1%-2%	NA
FY24 (estim.)	2,130-2,140	14%-15%		NA

($238 million IPO in 2016)

Table courtesy of the Storage Newsletter

Who could you move to?
KVM on Linux – Oracle Virtualization

- Oracle's KVM derivative
- It's free (if you don't want support)
- It bypasses some draconian Oracle licensing pitfalls
- Otherwise it's normal KVM
- General industry rule of thumb: if you aren't currently an Oracle shop, don't become one.

Who could you move to?
KVM on Linux – [IBM] Red Hat Enterprise Linux Virtualization
(note: this slide is actually wearing a red hat, and that was purely by coincidence of repeating colors)

- Red Hat's KVM derivative
- Red Hat bought the company that originally made KVM
- It's free (if you don't want support)
- Red Hat seems a bit confused on whether they're focusing on KVM or moving to OpenShift [containers]
- Otherwise it's normal KVM
- Everyone is still waiting on the IBM hammer to ruin Red Hat (4 years ago)

Who could you move to?
KVM on Linux – Nearly Everyone Else

- Notice the commonalities in the previous slides
- Reskinned KVM
- No support Unless you pay even if it's "free"
- A lot of companies fall into THIS bucket:
  - Scale Computing
  - ProxMox VE
  - QEMU
  - Hpe's new GreenLake KVM offering

Who could you move to?
Xen on Linux

- Open Source
- Came out in 2003 from the company XenSource
- AWS ran on it until 2017 (started to move to KVM)
- Citrix bought XenSource in 2007
  - This caused a lot of people to fear closed-sourcing of it and move away
- Type-1 hypervisor
- Supports variety of storage
- Has live migration

Who could you move to?
Xen on Linux - XenServer

- Citrix's "free" hypervisor ("up to 10,000 CPUs")… if you buy their other products
- No support unless you're buying a suite
- Hasn't had a lot of development for years
- Low market adoption, except for hosting Citrix

- A "Xen Project Incubation Project" hosted by Linux Foundation

  - I'm not saying this exists purely because Citrix's acquisition scared away anyone else from messing with it… but….

- Community Support exclusively

- Can buy support through a 3rd party called Vates

Who could you move to?
So, what's the magic bullet that fixes all my woes?

- No clear winner for every situation
- Microsoft has the second most market share
- Microsoft has a miserable management offering
- Nutanix is a huge name, hemorrhaging money
- If you're already in with one of the other companies, might make sense
- The random rebranding companies are largely private with no idea how well they're doing.

What do you need for feature parity?
VMware Ecosystem

- ESXi/vCenter: Server Virtualization
- Horizon: Desktop Virtualization
- NSX: Network Security and Network Virtualization
- vSAN: Hyperconverged storage
- Aria/Ops Manager: Monitoring/automation
- Tanzu: Kubernetes

What do you need for feature parity?
The Cloud!

- As per all conversations, there's a cloud play

- Most of the hyper scalers offer a full suite

- As per usual: a lift and shift to the cloud will almost always* cost more

- As per usual: refactoring your apps to be cloud native will be work

*(let's conservatively go with 4 nines: 99.99%)

What do you need for feature Parity
On-Premises Alternatives

- Only one company comes close to full stack: Microsoft
  - ESXi -> Hyper-V
  - vCenter -> Hyper-V Manager/Failover Clustering/WAC/System Center Suite
  - Horizon -> RDS brokers
  - NSX -> Hyper-V + System Center Virtual Machine Manager
  - vSAN -> Storage Spaces Direct
  - Aria/Ops Manager -> SCOM/SCCM
  - Tanzu -> Native/Docker Containers

What do you need for feature parity?
Third Parties

- Don't forget however, VMware doesn't exist in an island
  - Backups?
  - Monitoring?
  - Orchestration?
- What will you need to get feature parity?
  - New vendor first party?
  - Do third parties exist for this vendor?
    - EX: Veeam supports VMware and Hyper-V fully
    - EX: Veeam supports AVH with limitations
    - EX: Swapping to agents is a big change if you move to non-natively supported vendors

- Moving to a different hypervisor is a mini-project for every server
- Some servers don't notice, some explode
- What tools are you going to leverage?
  - First party tools?
  - 3rd party tools?
- How are the conversions done?
  - Online
  - Offline
- Are you just going to rebuild any on the new environment?

How do you move?
You're migrating servers again

Remember all the woes you've had before

- Hardware and driver dependencies
  - VMXNET3
  - Mouse/Keyboard

- Licensing and activations
  - Tied to hardware serial numbers

- Network and network configuration changes
  - The joyous "duplicate IP" fun of windows

- Specialized VMware features (NPIV, SR-IOV, USB passthrough)

- Do you have servers to install this new hypervisor on?
  - Are they suitable for production?
  - Do you need to buy extra ones?
  - What will you do with current ones after you buy new?
- Do you have storage to copy your whole environment?
  - Is it suitable for production?
  - Do you need to buy more?
  - What will you do with it after you expand?

Where do you move
Where do you stick it?

- Do you have infrastructure to run old and new virtualization simultaneously?
  - Cooling
  - Power
  - Networking
- Do you have backup space and licenses to run both simultaneously?
- How will you handle DR during the transition period?

When do you move?
You've got free time, right?

- IT is busy. If not, are you hiring?
- These migrations aren't normally quick tasks.
- Each server is its own mini-project
  - Validate the move succeeded
  - Validate networking still works
  - Validate with an application owner it still works right
  - Make sure it's being backed up
  - Make sure it's going to DR
- Each of these must be scheduled in maintenance windows

When do you move?
You've got free time, right?

- Does your team have to forgo another project to complete this one?
- When are you going to do training? Both classroom and OTJ to learn this new environment?
- Can you finish before you have to renew VMware anyway?
- Consultants can help, but still need internal IT to help with scheduling and validation.

- Given everything listed before; does it make sense to move?
- Example of costs:
  - VMware renewal jumped from $15,000 to $60,000
  - New Hypervisor option is $20,000/yr. Or only $15,000/yr if you sign a 5-year commitment.
  - Don't have enough servers to spare one to run in parallel: $100,000 over 5 years w/ support.
  - Need more storage capacity: $45,000
  - Need more backup space: $10,000
  - Total hard costs for 5 years: $230,000

The ROI of moving
Business decision, not an emotional one

- Don't forget though, there are soft costs:
- Depending on complexity and size, this could easily take half an IT person's time for a year:
  - Researching how to design a solution
  - Setup new solution
  - Test solution
  - Move servers
  - Training
- US Average IT Admin salary = $89,000 + 20% benefits = $106,800
- Half a year of working time = $53,000

- VMware costs: $300,000 for 5 years
  - Hard Costs: $60,000/yr
- Moving to a new vendor for 5 years: $283,000
  - Hard Costs: $230,000
  - Soft Costs: $53,000
- Is it worth it?
- What projects are you not doing to do this project?
- Will VMware's price stay the same?
- Will the other vendor's price stay the same?

What was the whole point?
Once again: Business decision, not an emotional one.

- Everyone is angry about this
- Yes, including the people stuck in the middle of selling it
- There isn't a clear cut "you should move to these people"
- There isn't a clear cut "you'll save money"
- Time and energy are VERY valuable things
- Make sure you're thinking through the business case

Next Month:
What's new with Server 2025!

For the 8th Server OS release in a row, you're stuck with me!

Thanks! Q&A

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