

Constructing your Private Cloud Strategies for IT Administrators & Decision Makers

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Virtualization is Old News

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- By the end of 2011, IDC estimates that more than half of all IT workloads will have been virtualized.
 - That number is expected to rise to 69% by 2013.
- These numbers surely lead you to the realization that virtualization is yesterday's news.
 - Today's story centers around how best to make it work, and how to gain the biggest benefit out of it.
 - **Private Cloud** is one way to get that benefit.
 - Biggest limitation: Defining what a Private Cloud really is...

What Makes a Private Cloud?

- Discuss: So, what is Private Cloud?

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- A Private Cloud enables...
 - Availability for individual IT services.
 - Flexibility in managing services, as well as rapidly deploying new services.
 - Scalability when physical resources run out.
 - Resource optimization, to ensure that you're getting the most out of your investment.
 - Resource quantification, enabling IT to put capacity metrics to what was before only gut feelings.

Thanks, but No, Really...

What Really Makes a Private Cloud?

- A Private Cloud at its core is little more than...
 - A virtualization technology...
 - ...some really good management tools...
 - ...and their integration with business processes.

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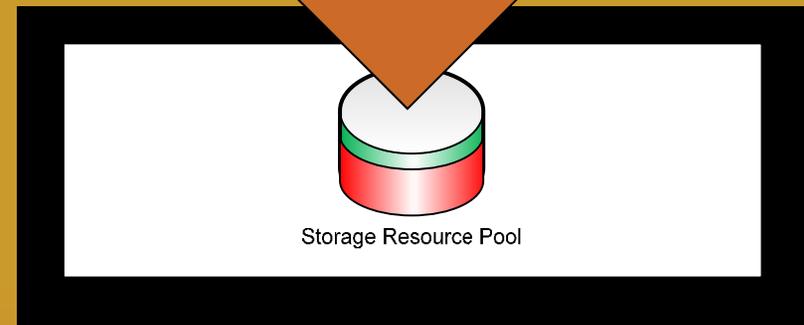
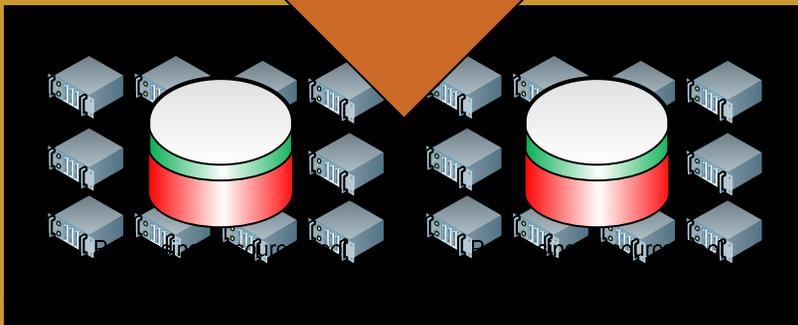
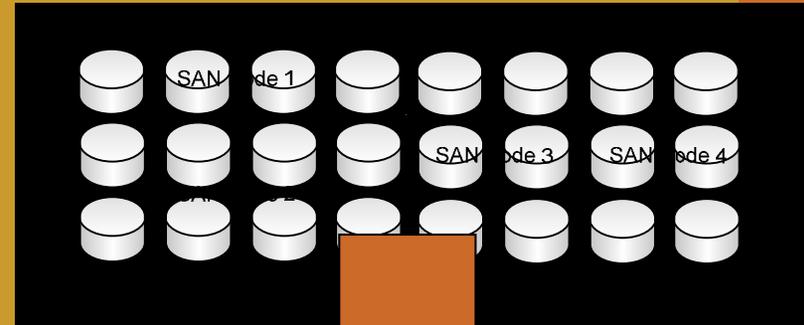
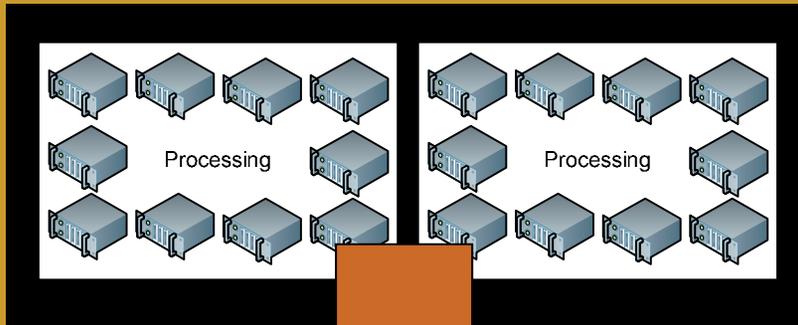
What Really Makes a Private Cloud?

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 - A virtualization technology...
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 - ...and their integration with business processes.
- “While VMs are the mechanism in which IT services are provided, the Private Cloud infrastructure is the platform that enables those VMs to be created and managed based on business drivers.”

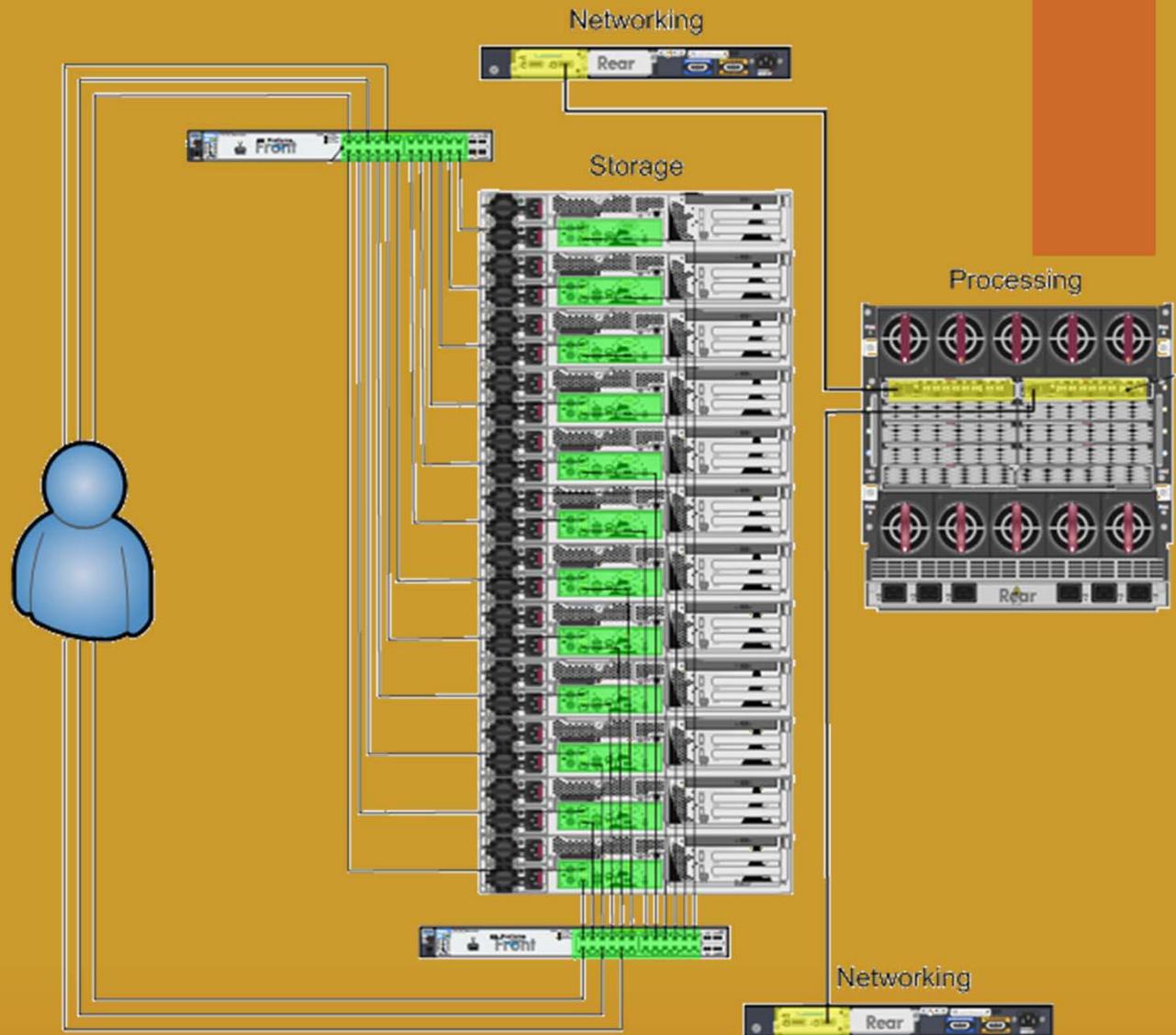
Source:

Private Clouds: Selecting the Right Hardware for a Scalable Virtual Infrastructure
<http://www.realtimepublishers.com>

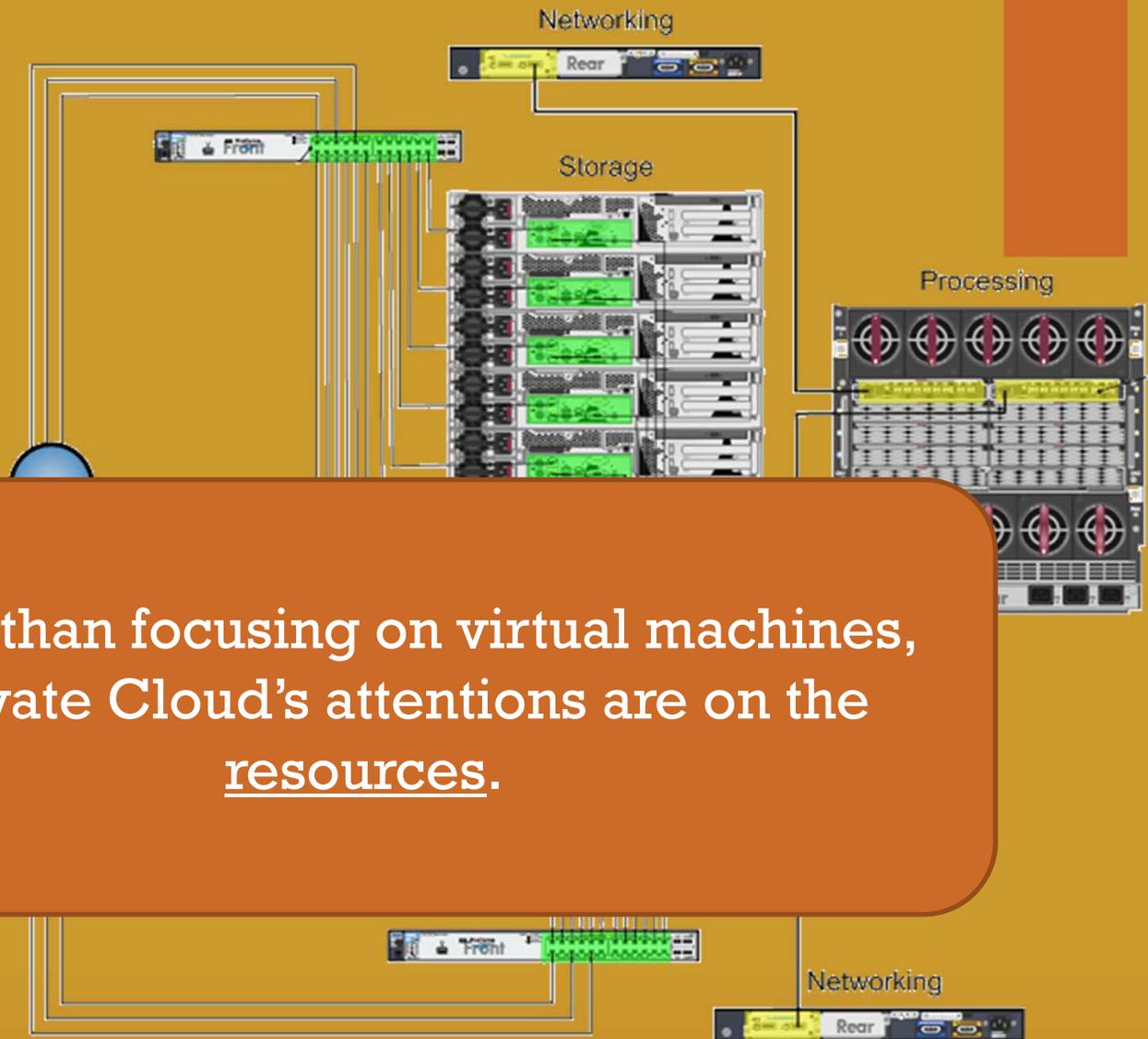
Private Cloud is a Resource Pool



Private Cloud
is a Further
Abstraction
from Simple
Virtualization

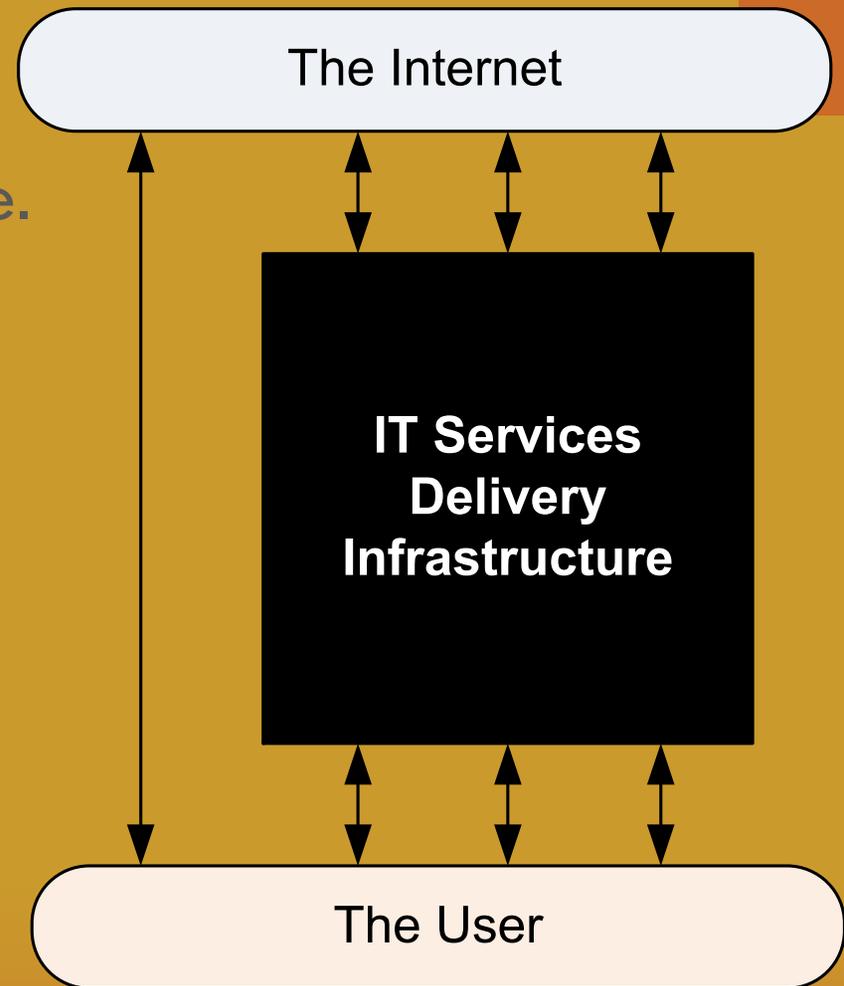


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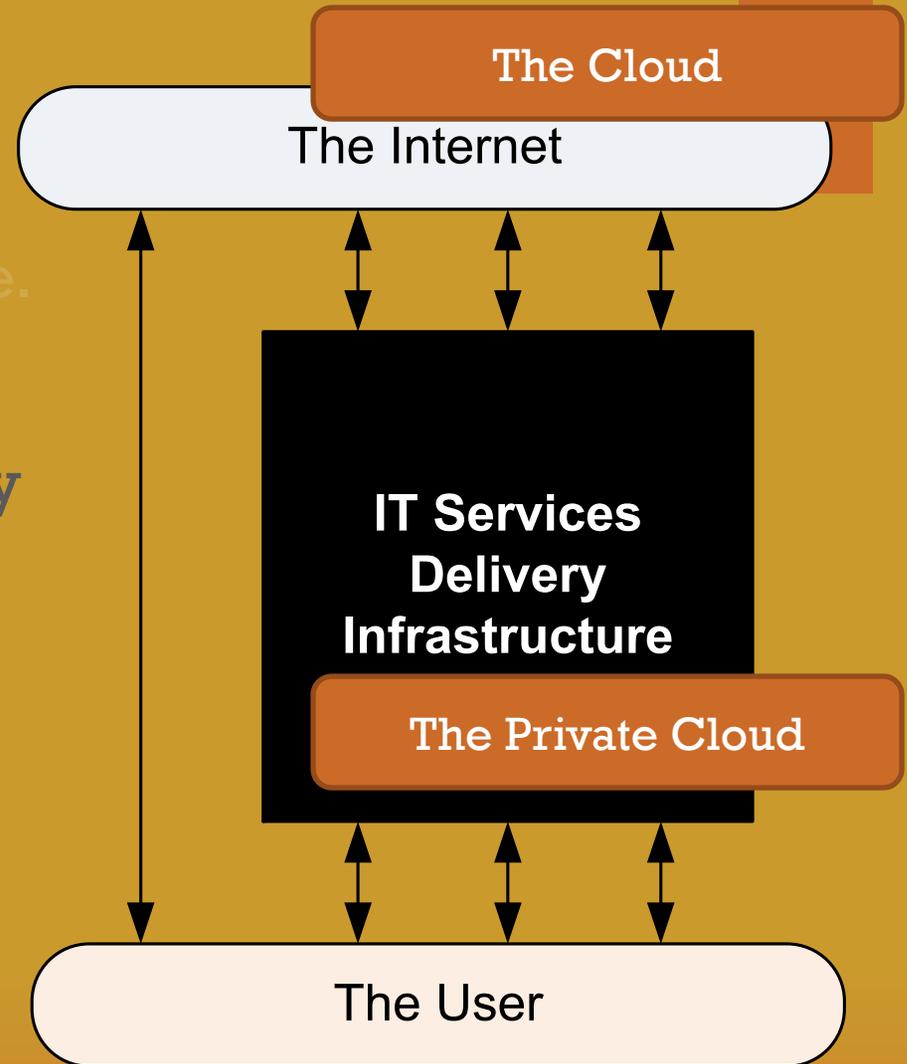
Private Cloud: The User's Perspective

- Private Cloud is perhaps best explained from the user's perspective.



Private Cloud: The User's Perspective

- Private Cloud is perhaps best explained from the user's perspective.
- Users connect into a local IT Services Delivery Infrastructure.
 - The Private Cloud
- They also connect to the Internet for IT services.
 - The Cloud
 - Cloud Services



Why is this
Fundamentally Important?



Why is this Fundamentally Important?

- Because, at the end of the day, your users really care less about how their IT services are delivered.
 - They can be delivered locally or remotely.
 - As long as those services are delivered securely and always available, users can do their job.

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- How does Private Cloud facilitate doing that?

Availability

Resource Optimization

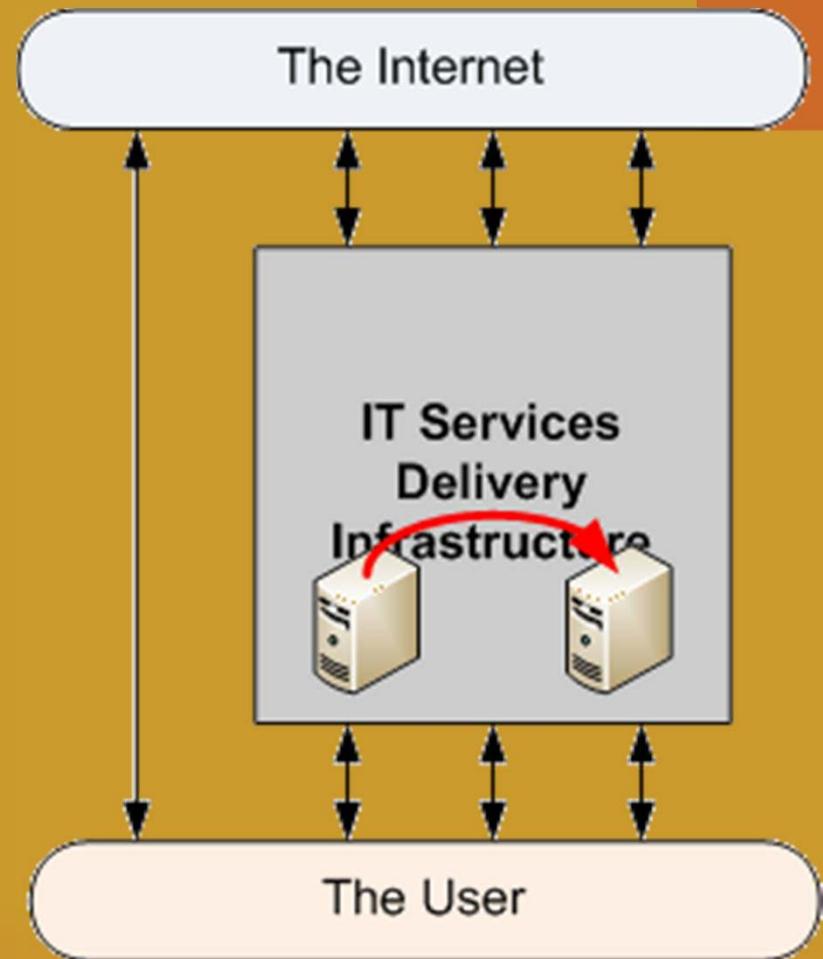
Flexibility

Resource Quantification

Scalability

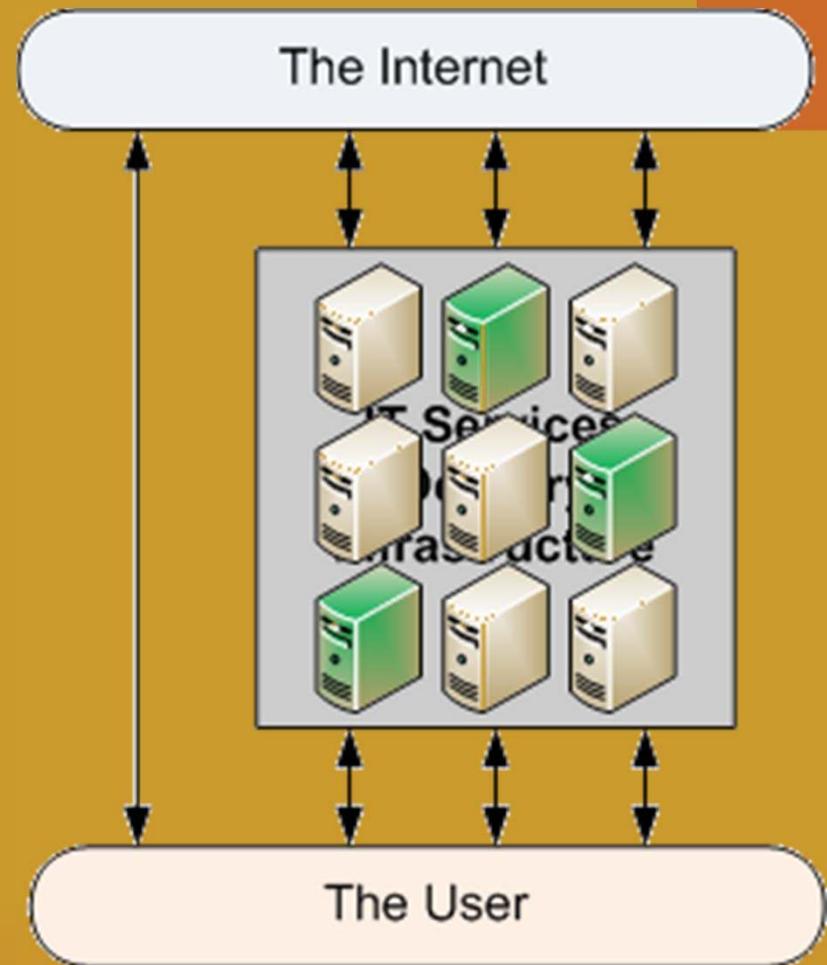
We Need: Availability

- Live Migration means that our VMs can run atop any hardware.
- IT can no longer think of service availability by individual server.
- The Private Cloud is constructed with the necessary resources to maintain service availability.



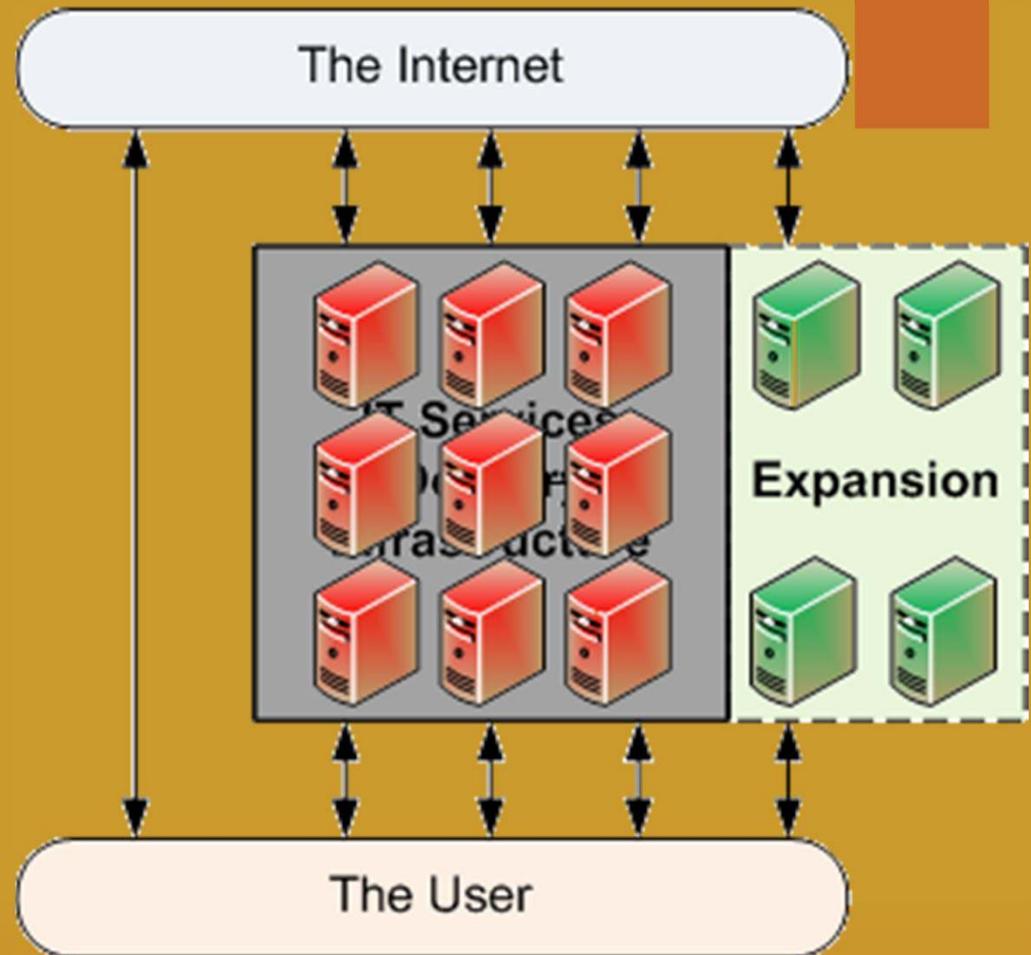
We Need: Flexibility

- A Private Cloud's collection of resources is reconfigurable to meet any need.
 - Immediately ready to provision new services.
 - IT's former technical hurdles are no longer a drag on business agility.



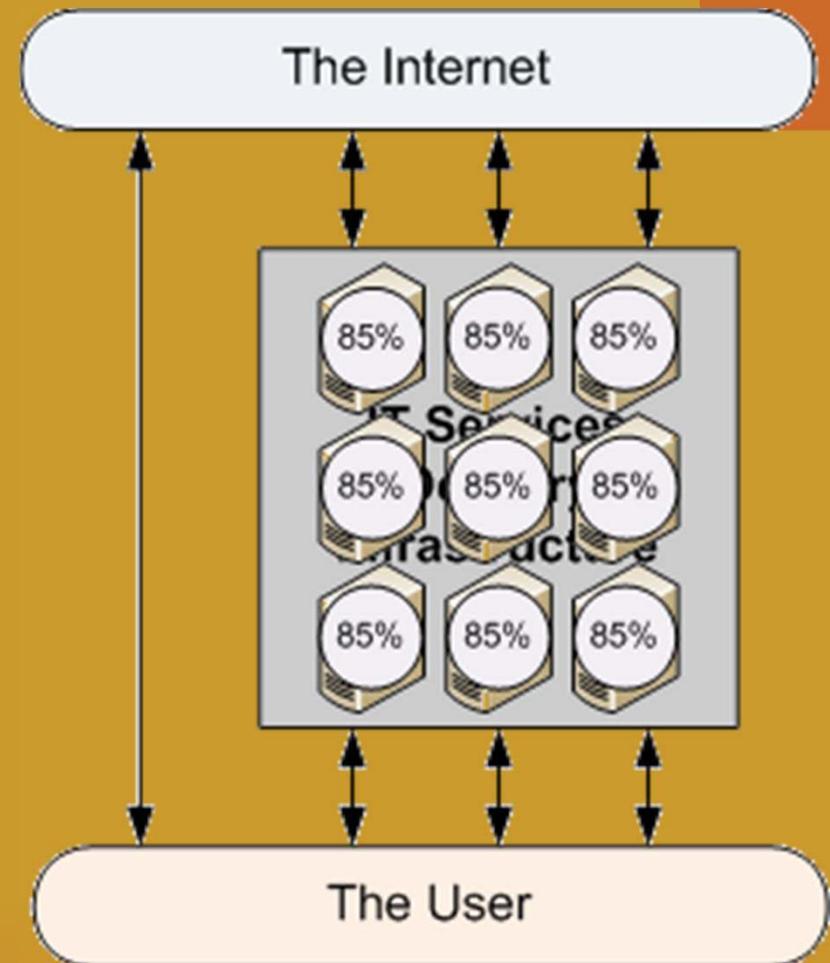
We Need: Scalability

- Resources are seamlessly and transparently scalable.
 - Hardware trivially “snaps” into to the environment.
 - No operations impact.
 - No extra engineering.
 - No delay. Resources are there before they’re needed.
- More hardware equals more available resources.



We Need: Resource Optimization

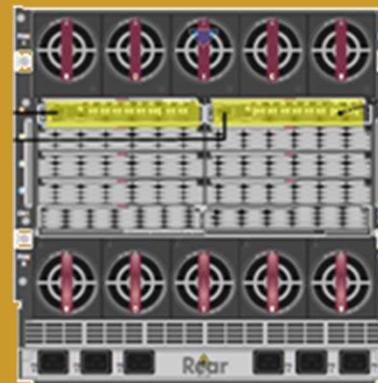
- Resources are always consumed at optimum levels.
 - Hardware utilization is balanced to protect against overuse.
 - Policies ensure resource availability for VM needs.
 - Resource requirements and capacity become plannable.
 - IT's former scut work becomes largely automated.



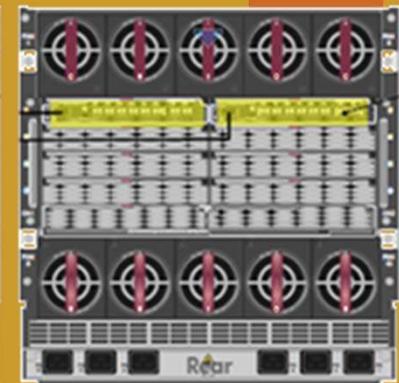
We Need: Resource Quantification

- Resources are quantifiable units within the virtual platform.
 - Blade Enclosure 1 supplies:
40,480 MHz of processing
256 GB of RAM
 - VM \server1 consumes:
2,048 MHz of processing
4 GB of RAM
- Resource assignment evolves from gut feeling to integer values for supply and demand.

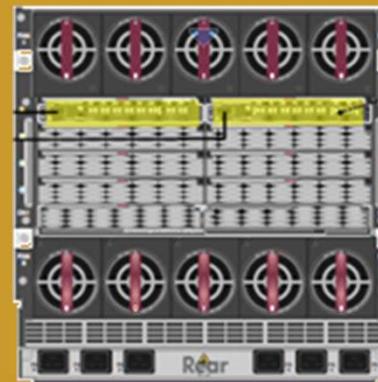
Processing



8x Blades, 2x 2.53 GHz Proc
32GB RAM =
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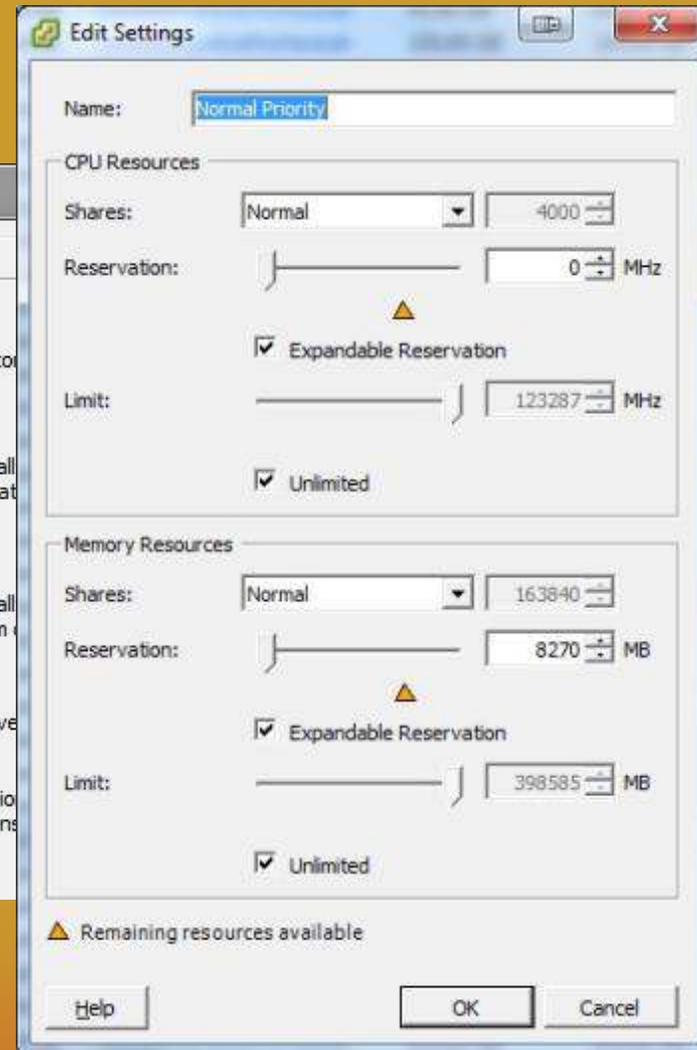
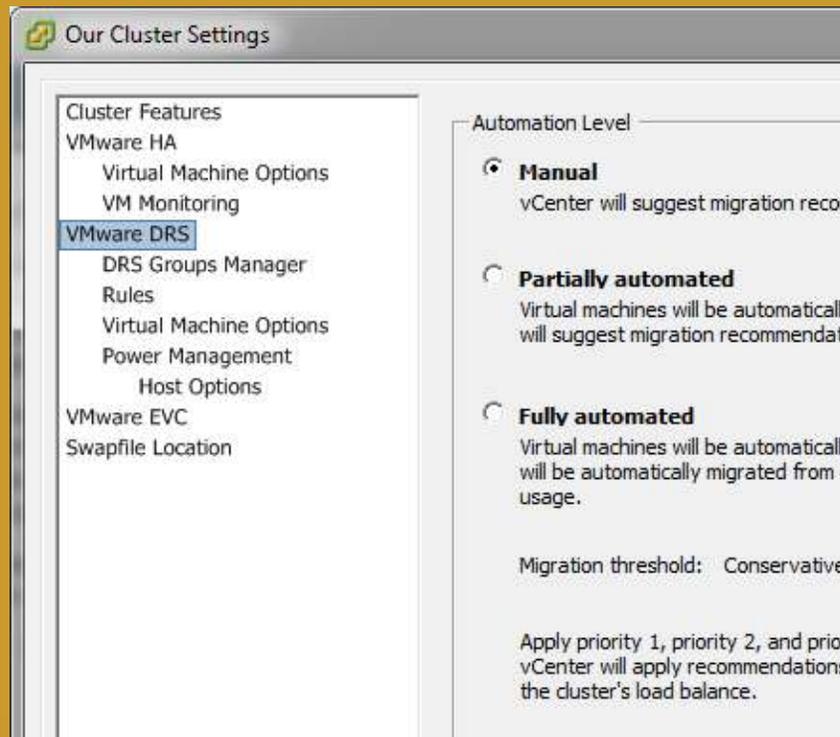


8x Blades, 2x 2.53 GHz Proc
32GB RAM =
40,480 MHz, 256GB RAM



2x Blades, 2x 2.53 GHz Proc
32GB RAM =
10,120 MHz, 64GB RAM

This is Not Vaporware.



So...What's Missing?

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So...What's Missing?

- Discuss: Considering all these things IT needs, what are our virtualized datacenters missing?
 - Short Answer: Standardization.
 - Longer Answer: Eliminating the sins of our past.
 - Even Longer Answer: Shifting our mindset as it relates to hardware towards one that fits what Private Cloud needs.

Private Cloud Needs a Different Hardware Approach

- Or, what is really an end to our industry's Second Generation of White Boxing.

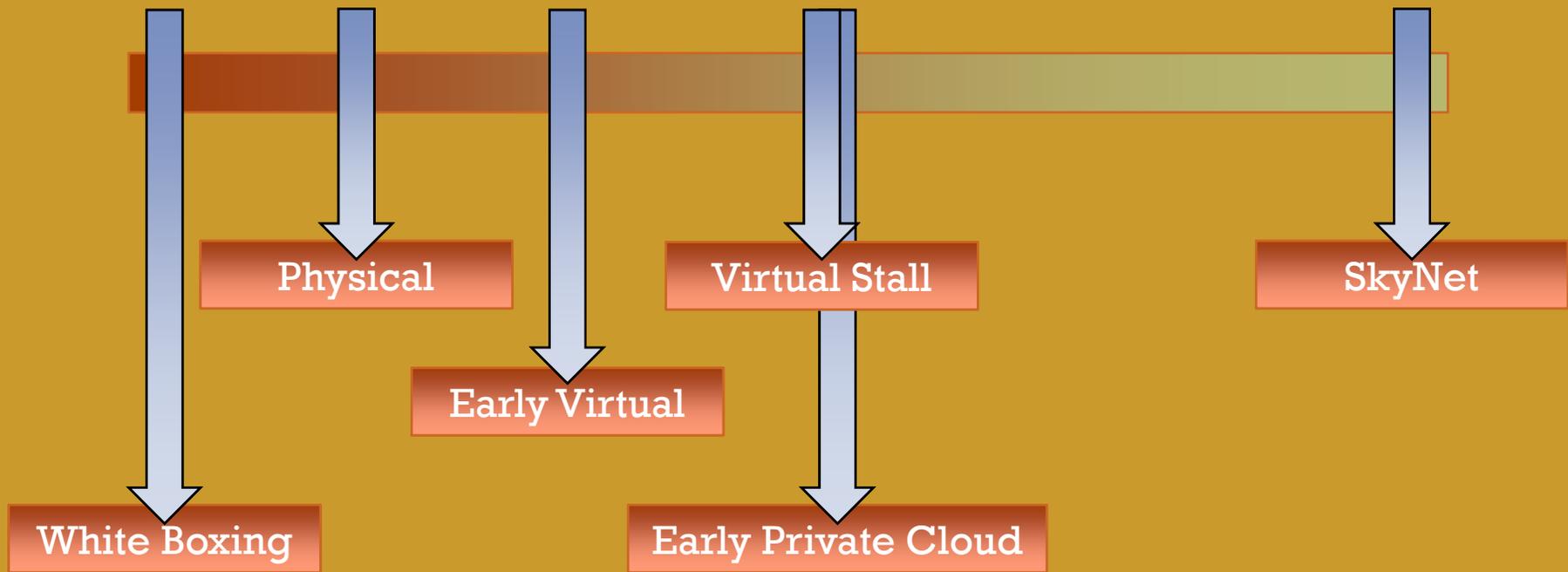
Ugh, White Boxing.

- You remember the good old days...



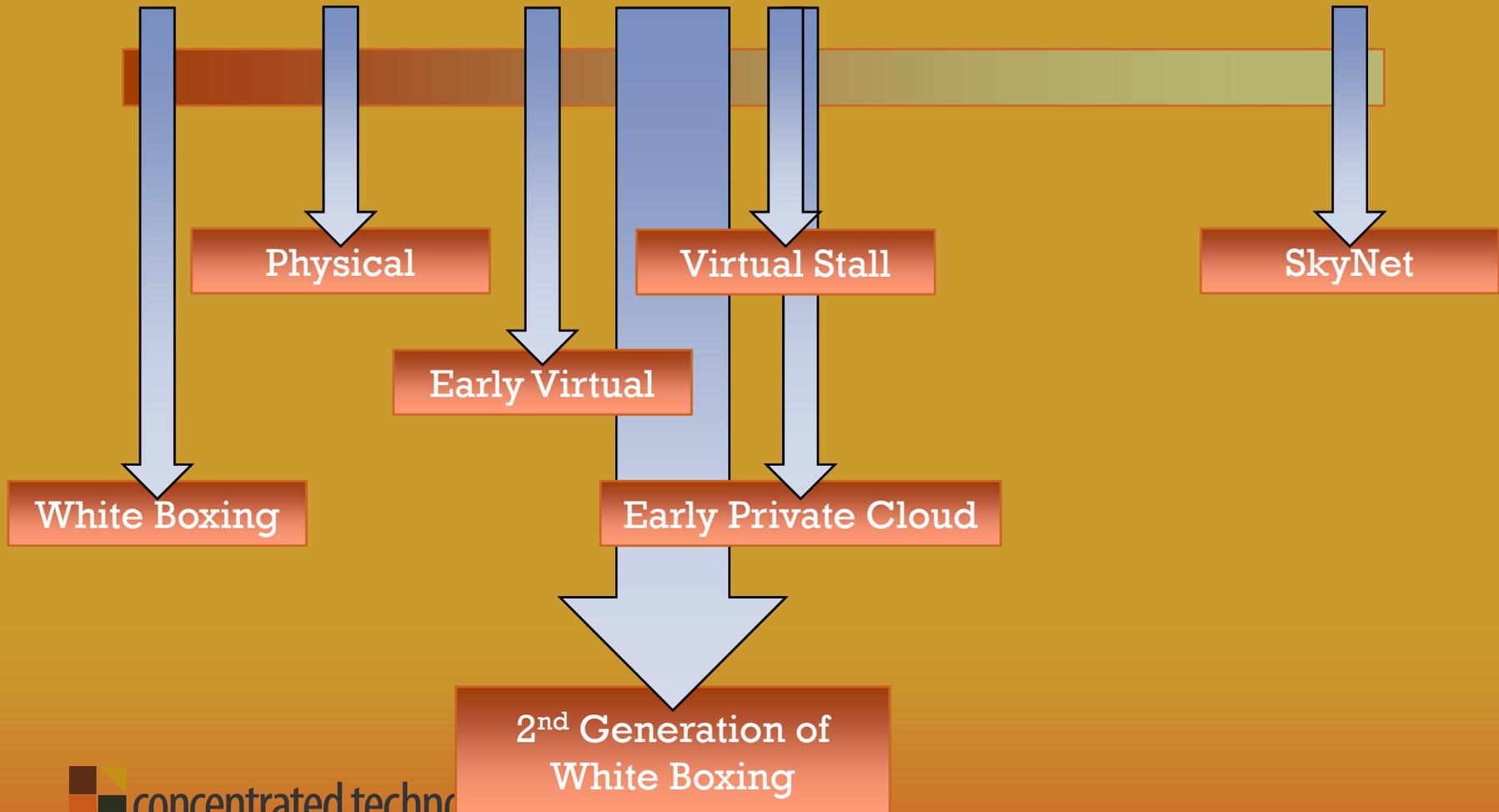
The White Boxing Timeline

(or, How we're Making the Same Mistakes a Second Time...)

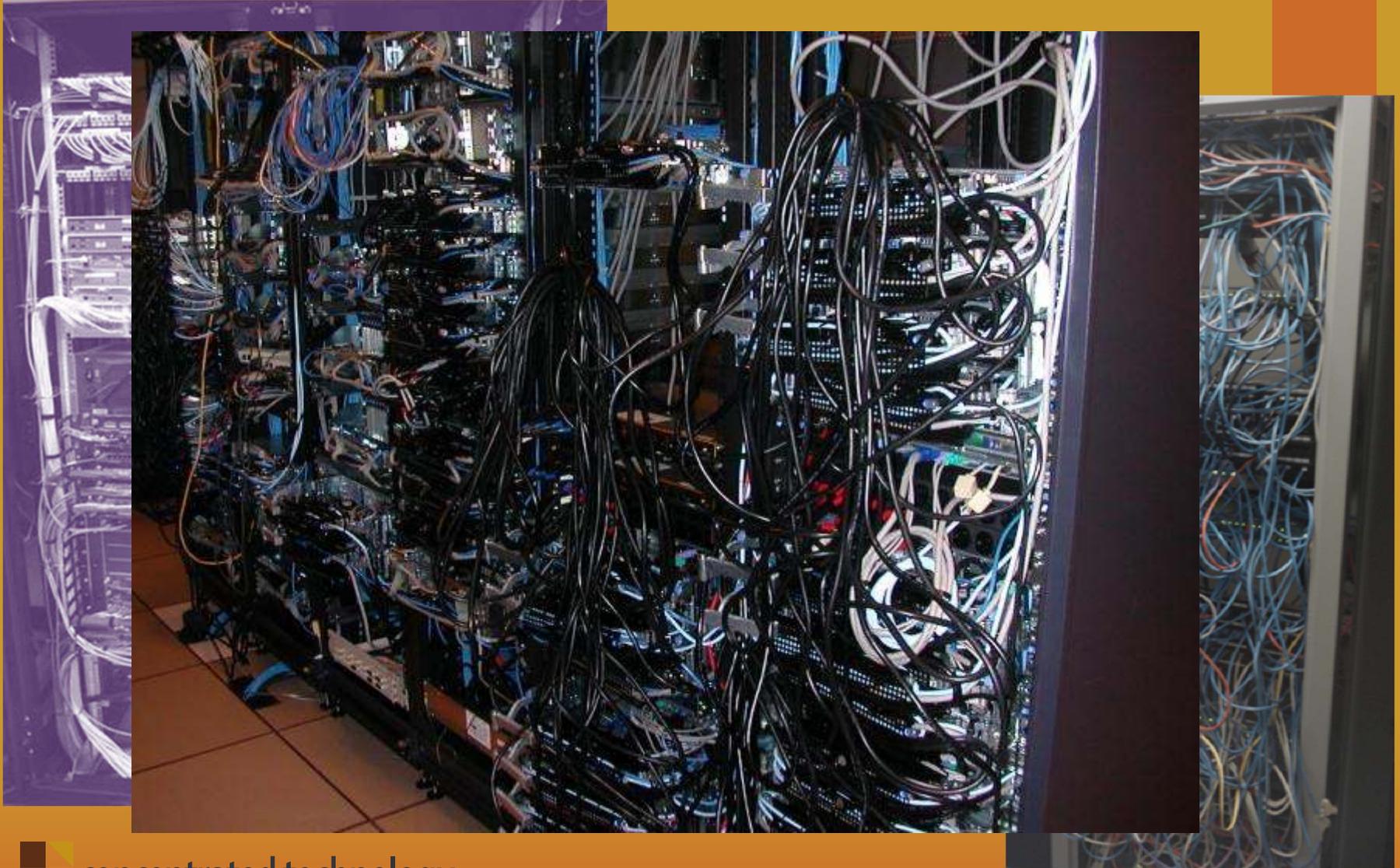


The White Boxing Timeline

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White Boxing, Generation II



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- IT's second generation of white boxing is repeating the mistakes of our past.
 - This time, however, it's not the server we're white boxing, but our entire datacenter.

White Boxing, Generation II

- IT's second generation of white boxing is repeating the mistakes of our past.
 - This time, however, it's not the server we're white boxing, but our entire datacenter.
- Just like before, White Boxing Gen II was fun.
 - But we very quickly discovered its inefficiencies.
 - VM Stall.
 - Insufficient ROI.
 - More work, not less.
 - Inability to understand, let alone achieve, success in Private Cloud computing.

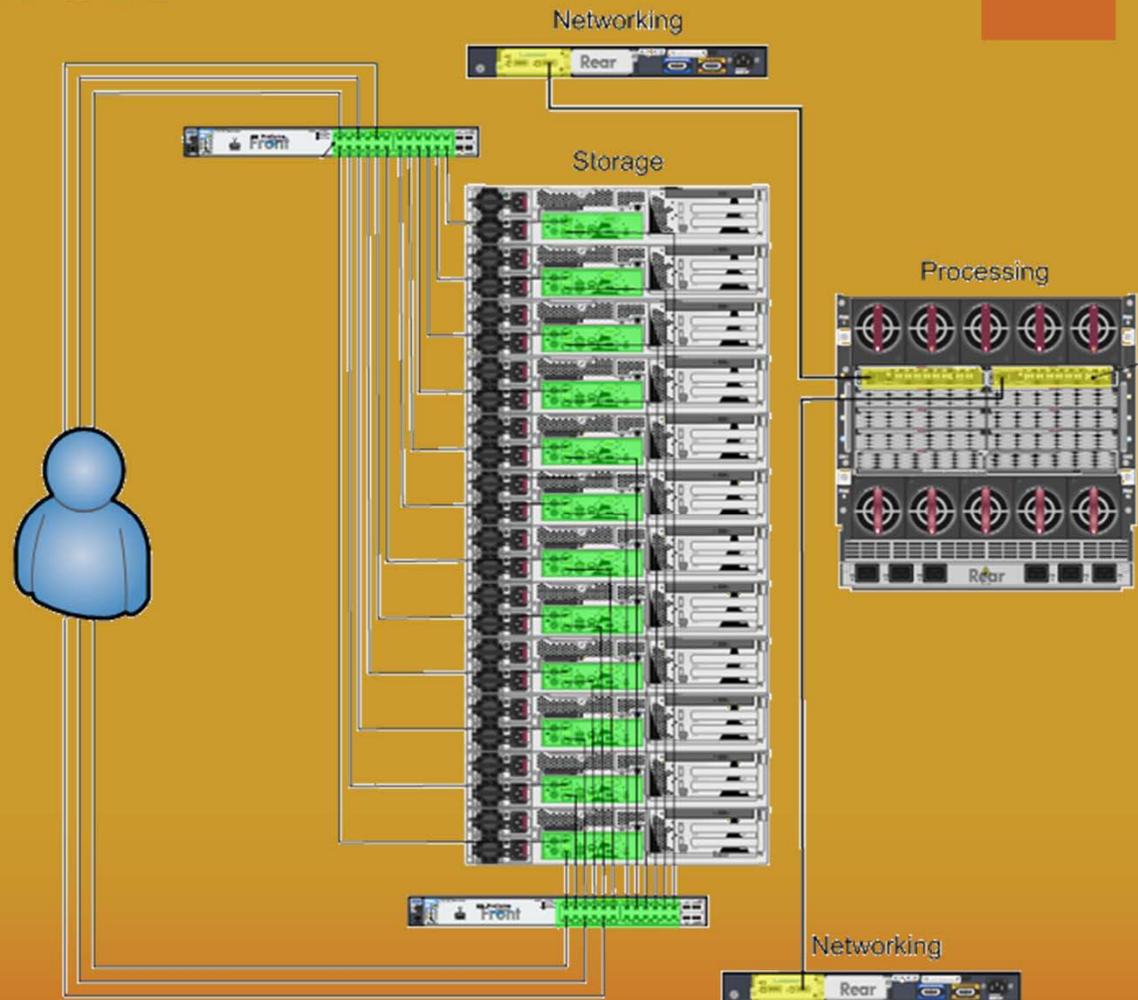
Introducing Converged Infrastructure!

Hardware that's Designed with Private Cloud in Mind



Converged Infrastructure offers to Evolve our DataCenters like we Evolved our Servers

- Factory integration for storage, networking, and processing.
 - Fewer Cables.
 - Fewer Configurations.
 - Fewer Failures.

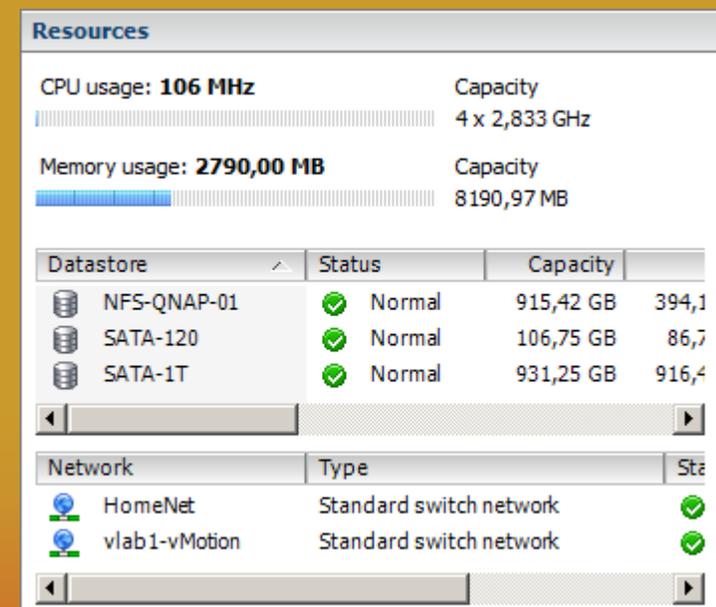


Stuff that's Keeping Private Cloud in Mind

- Each of Converged Infrastructure's hardware components contribute a known level of capacity to the Resource Pool.
 - Servers contribute processing and memory.
 - Storage contributes disk space.
 - Networking contributes throughput.

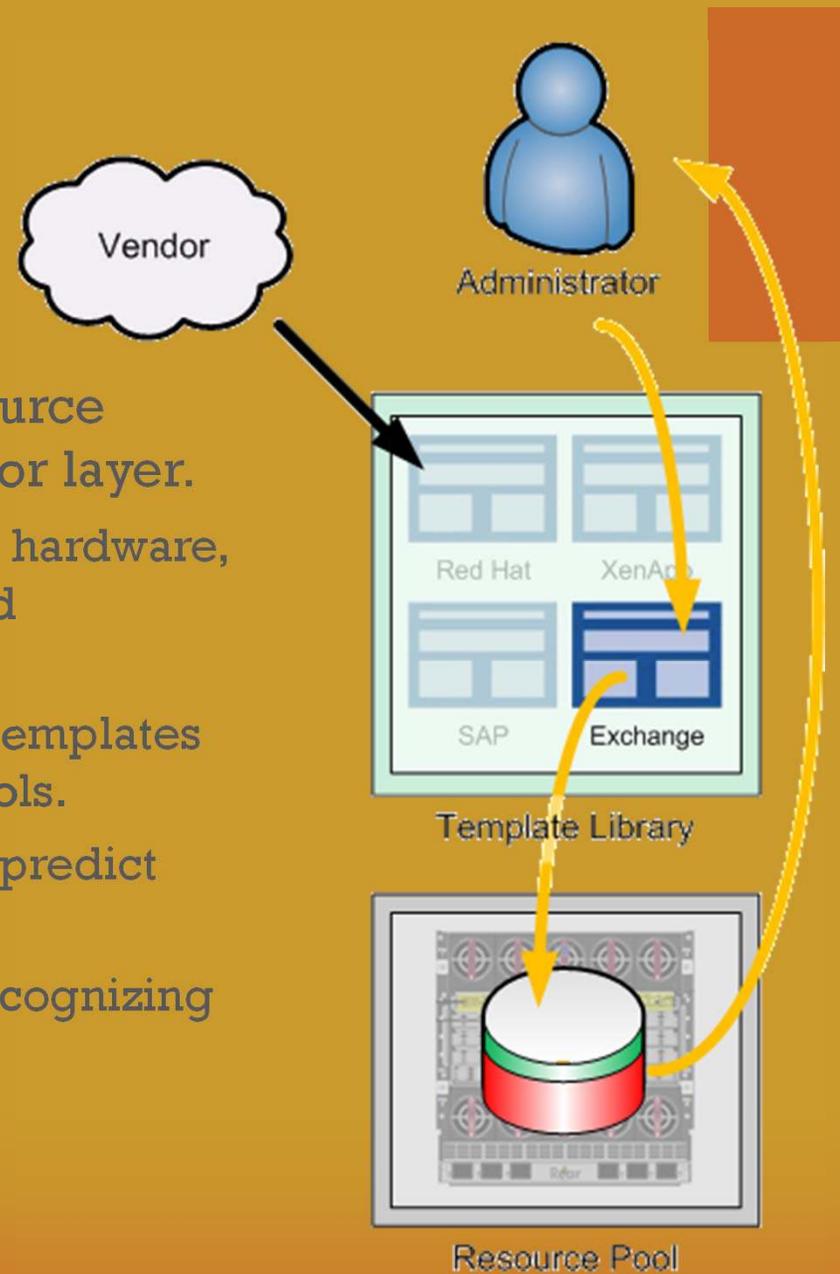
Stuff that's Keeping Private Cloud in Mind

- Each of Converged Infrastructure's hardware components contribute a known level of capacity to the Resource Pool.
 - Servers contribute processing and memory.
 - Storage contributes disk space.
 - Networking contributes throughput.
- VMs consume those resources.
 - The Private Cloud logically manages them.
 - The Converged Infrastructure physically delivers them.
 - It tells you when you need more.
 - You add more.



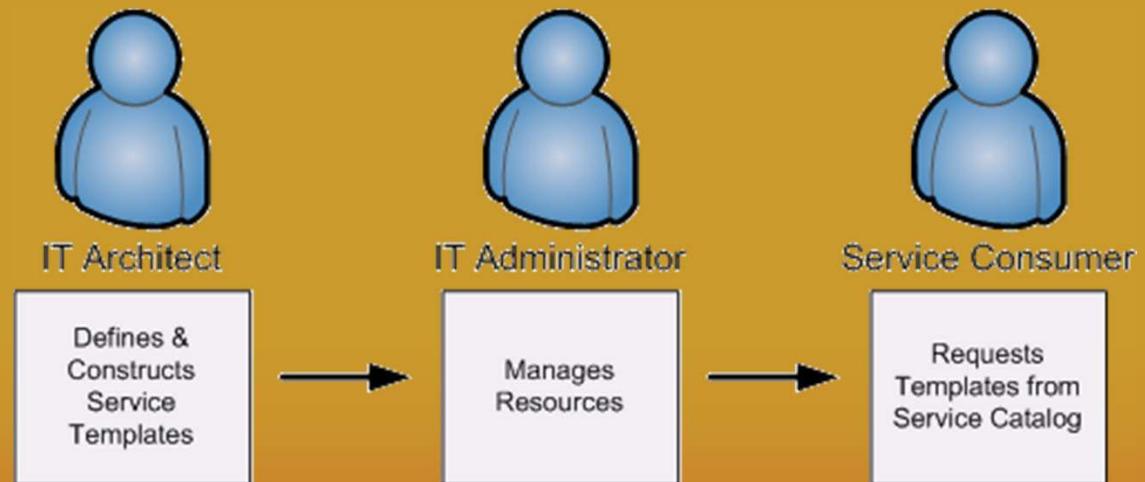
CI is More than just Hardware

- CI also introduces datacenter resource management beyond the hypervisor layer.
 - **Improved Visibility.** Can peer into hardware, network, storage layers for improved performance management.
 - **Improved Delivery.** Incorporates templates for deploying VMs into Resource Pools.
 - **Improved Quantification.** Able to predict and adapt to resource demands.
 - **Improved Planning.** Capable of recognizing future resource supply shortfalls.



Forewarning: CI will Disrupt IT's Division of Labor

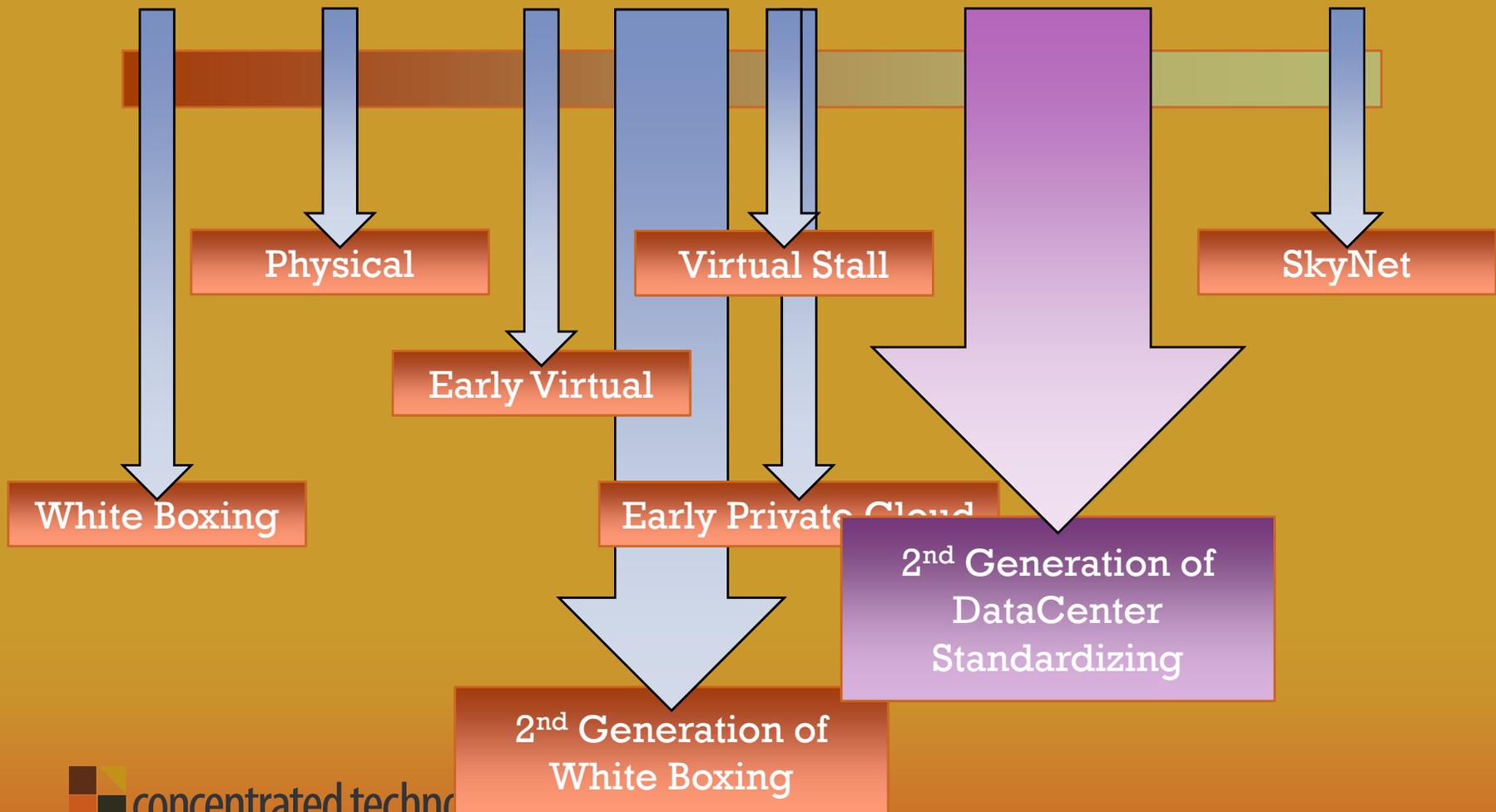
- IT's "middle tier" of administrators grows less relevant.
 - IT Architects define and construct service templates.
 - Service Consumers deploy templates from Service Catalogs.
 - IT Administrators manage physical and virtual resources, but these activities become largely automated.



Could this Be The Most Powerful Thing Ever?

- Possibly. The timeline seems to think so.

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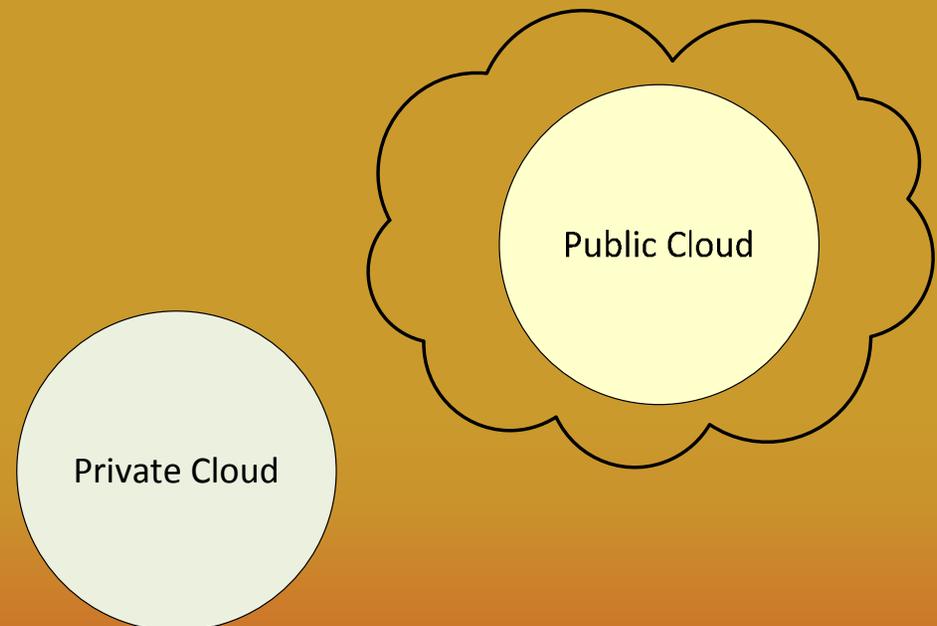
- Discuss: What do you think?

Your Next Step: Connecting Private to Public



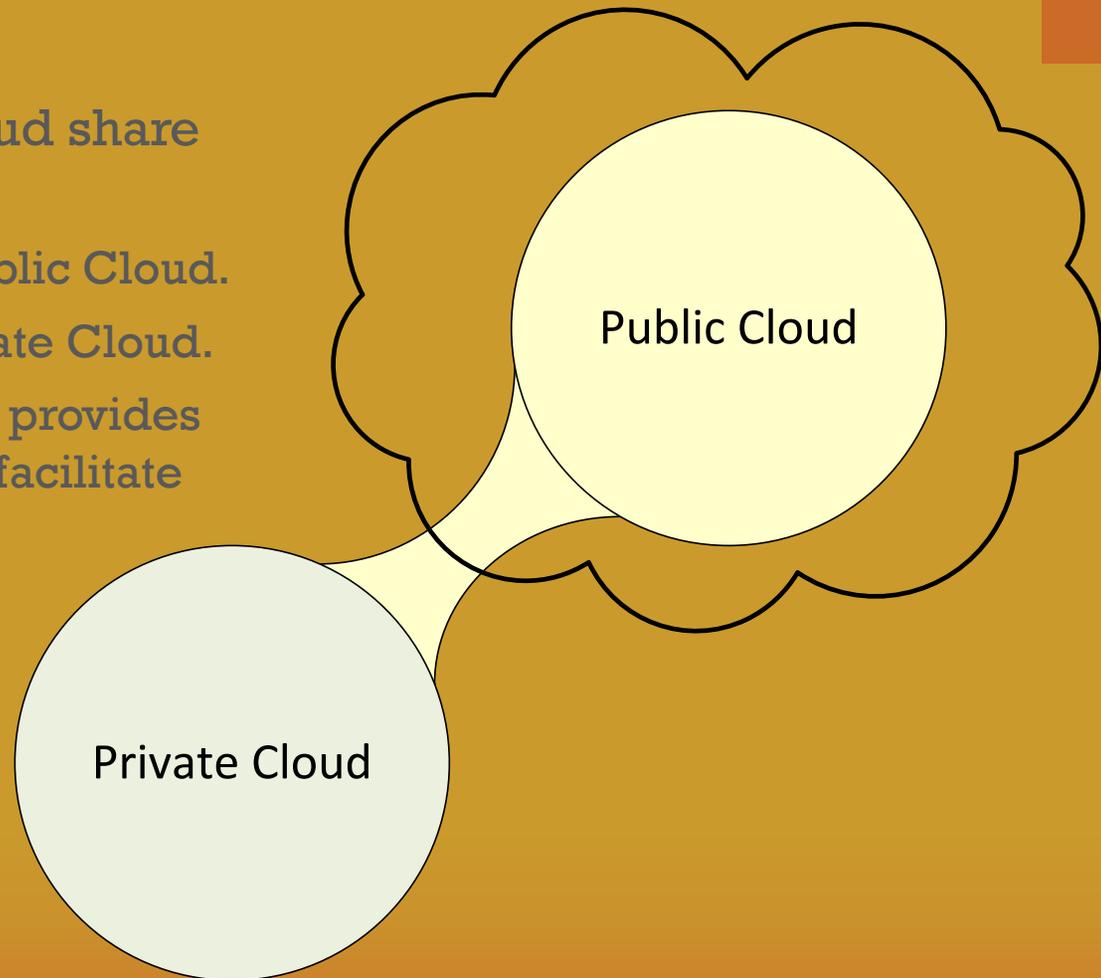
Your Next Step: Connecting Private to Public

- Hybrid Cloud integrates your local Private Cloud to someone else's Infrastructure-as-a-Service.
- What is that Integration?
 - P2V becomes V2C.
 - Data-at-rest gains encryption.
 - Networking adds IPsec.
 - Increased monitoring.

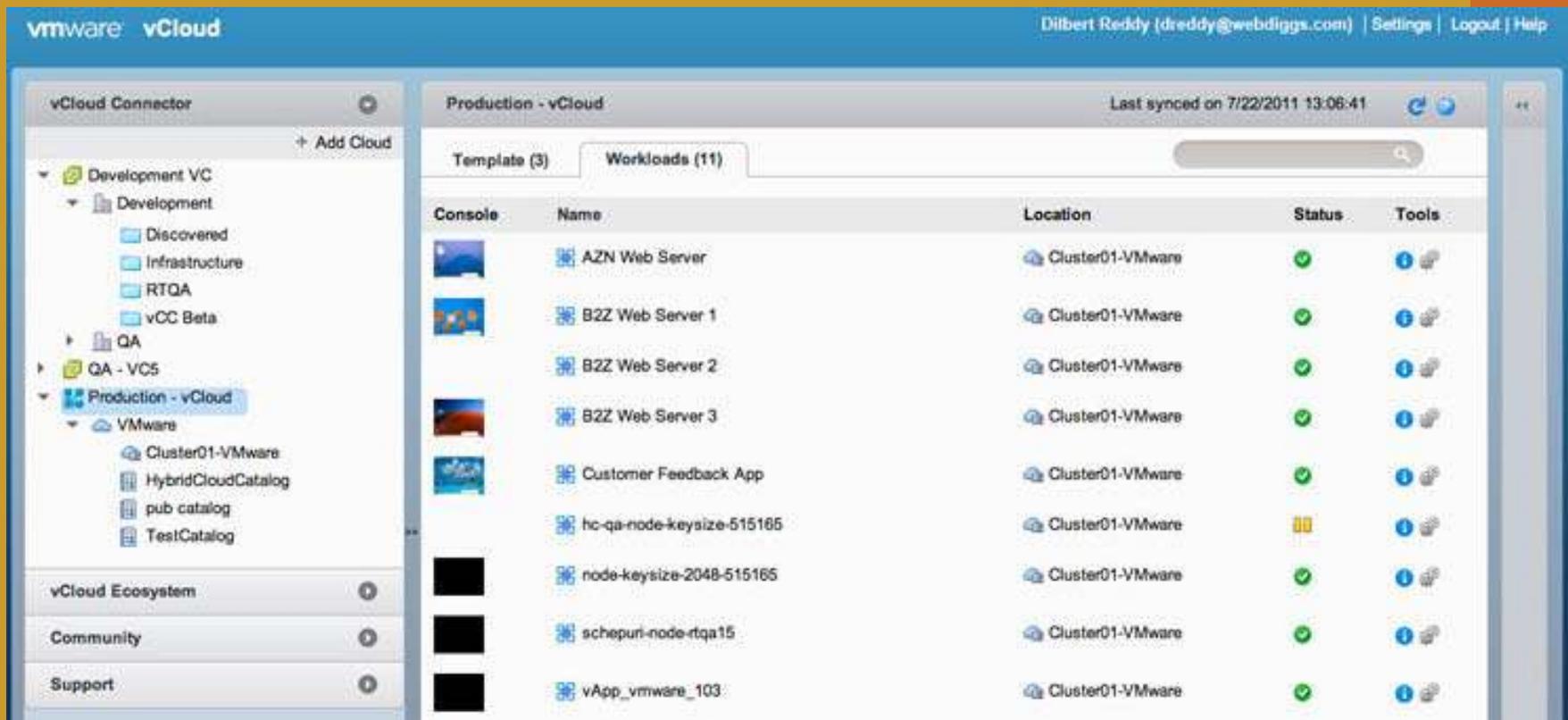


Your Next Step: Connecting Private to Public

- IaaS and Hybrid Cloud share many concepts.
 - IaaS provides the Public Cloud.
 - You provide the Private Cloud.
 - Your virtual platform provides the integrations that facilitate their connection.



Your Next Step: Connecting Private to Public



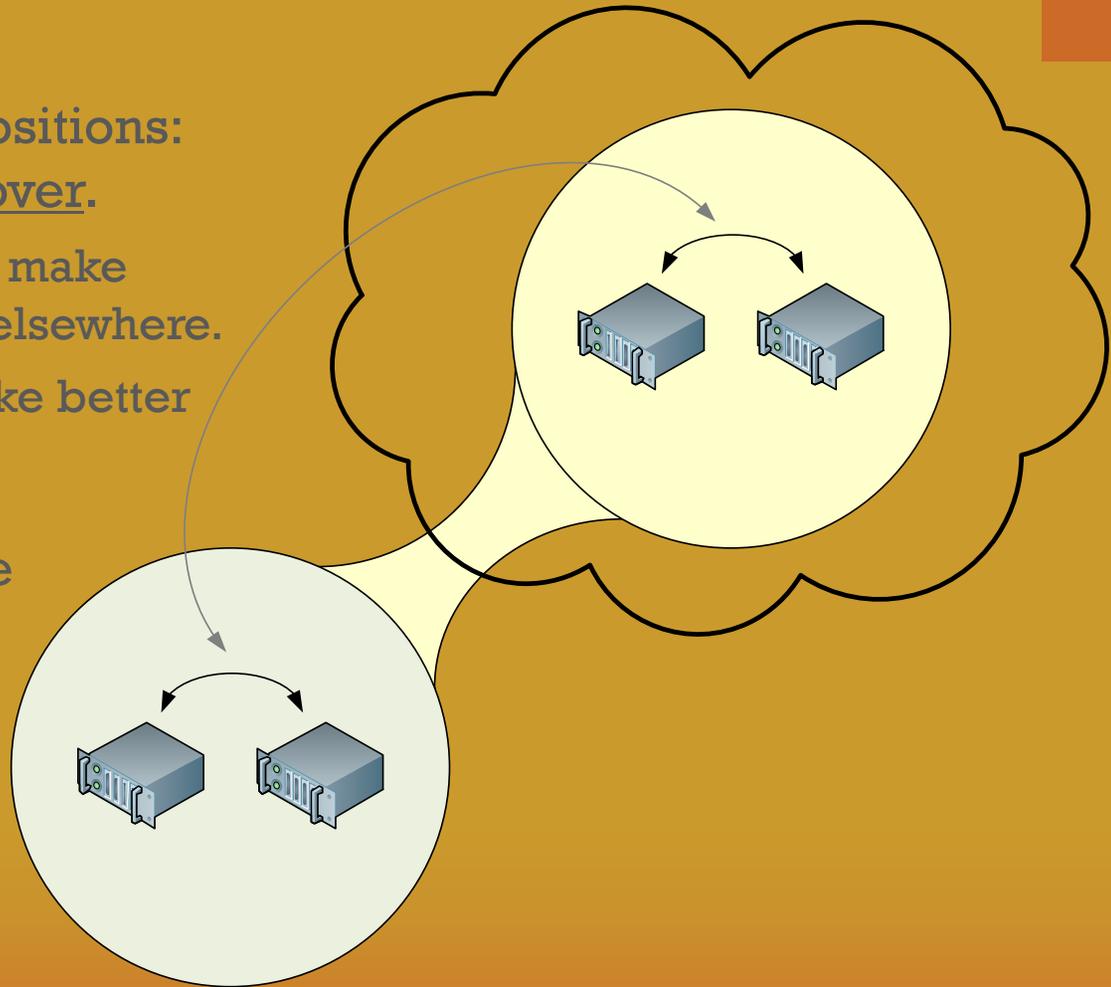
The screenshot displays the VMware vCloud interface. The top navigation bar includes the VMware vCloud logo, the user name 'Dilbert Reddy (dreddy@webdiggs.com)', and links for 'Settings', 'Logout', and 'Help'. The main interface is divided into two panes. The left pane, titled 'vCloud Connector', shows a tree view of cloud environments: 'Development VC' (containing 'Development' with sub-items 'Discovered', 'Infrastructure', 'RTQA', and 'vCC Beta'), 'QA', 'QA - VCS', and 'Production - vCloud' (containing 'VMware' with sub-items 'Cluster01-VMware', 'HybridCloudCatalog', 'pub catalog', and 'TestCatalog'). The right pane, titled 'Production - vCloud', shows a table of workloads. The table has columns for 'Console', 'Name', 'Location', 'Status', and 'Tools'. The workloads listed are:

Console	Name	Location	Status	Tools
	AZN Web Server	Cluster01-VMware	✓	
	B2Z Web Server 1	Cluster01-VMware	✓	
	B2Z Web Server 2	Cluster01-VMware	✓	
	B2Z Web Server 3	Cluster01-VMware	✓	
	Customer Feedback App	Cluster01-VMware	✓	
	hc-qa-node-keysize-515165	Cluster01-VMware	⚠	
	node-keysize-2048-515165	Cluster01-VMware	✓	
	schepuri-node-rtqa15	Cluster01-VMware	✓	
	vApp_vmware_103	Cluster01-VMware	✓	

- Hybrid Cloud is also no longer vaporware.

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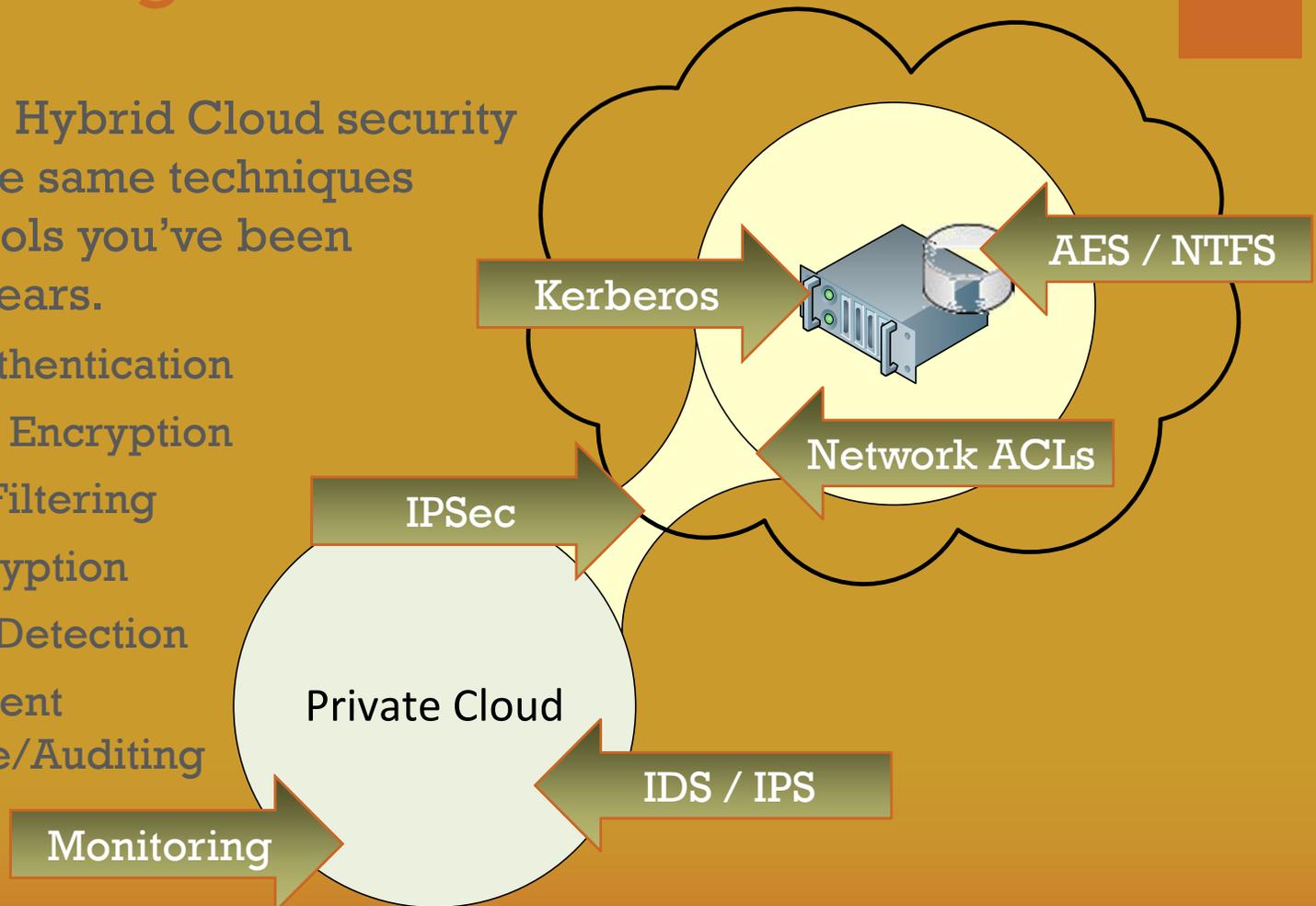
- IaaS' big value propositions: Burstability and Failover.
 - Some workloads just make sense being hosted elsewhere.
 - Other workloads make better sense hosted locally.
- Business rules define what goes where.
- IT is no longer hardware constrained.



Your Next Step: Connecting Private to Public

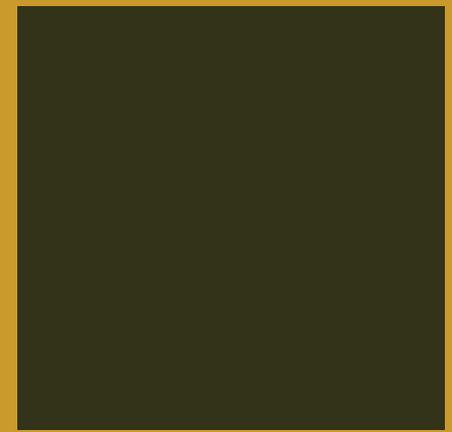
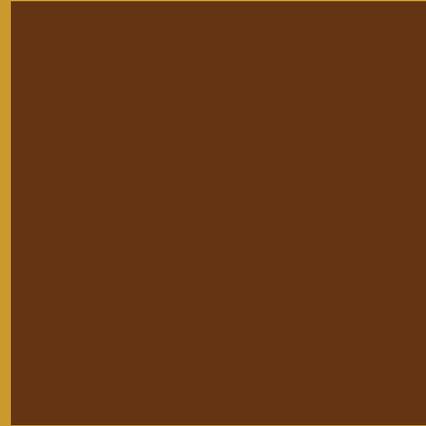
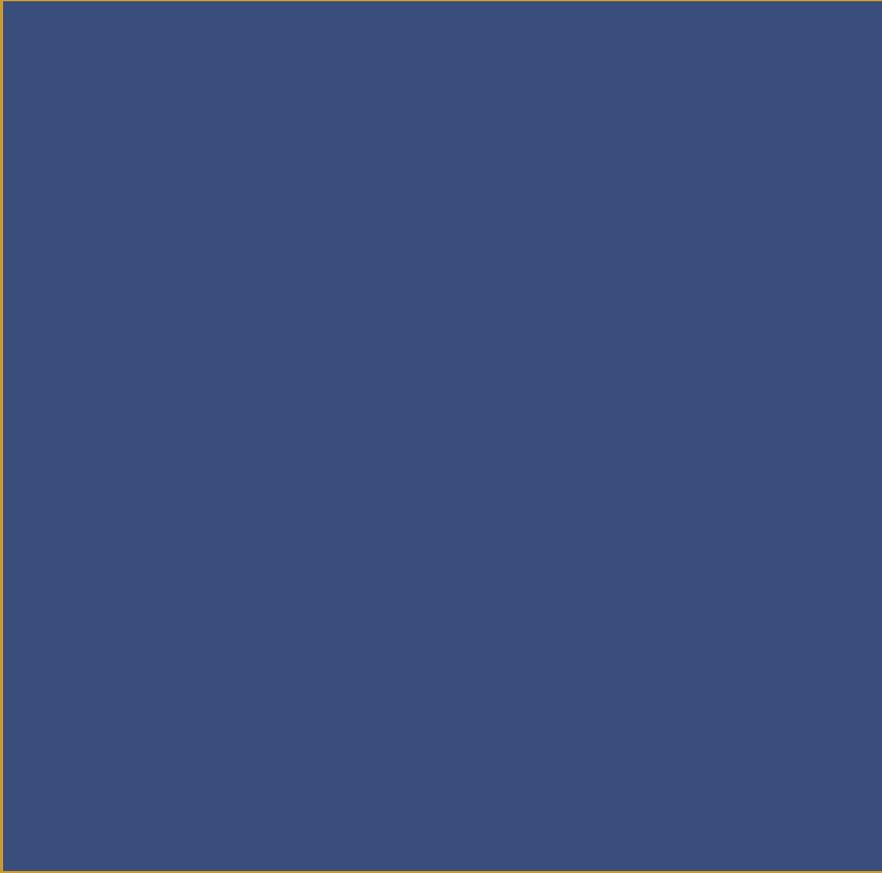
- SURPRISE! Hybrid Cloud security involves the same techniques and protocols you've been using for years.

- Server authentication
- Transport Encryption
- Network Filtering
- Data Encryption
- Intrusion Detection
- Independent Assurance/Auditing



Seven Simple Strategies in Evolving towards Cloud

- Here's the path others are taking...
 1. Virtualize.
 2. Cluster.
 3. Get comfortable with Resource Pooling.
 4. Evolve your Hardware Mindset.
 5. Evolve your Geolocation Mindset.
 6. Determine Cloud Candidacy.
 7. Rebalance Everything.



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