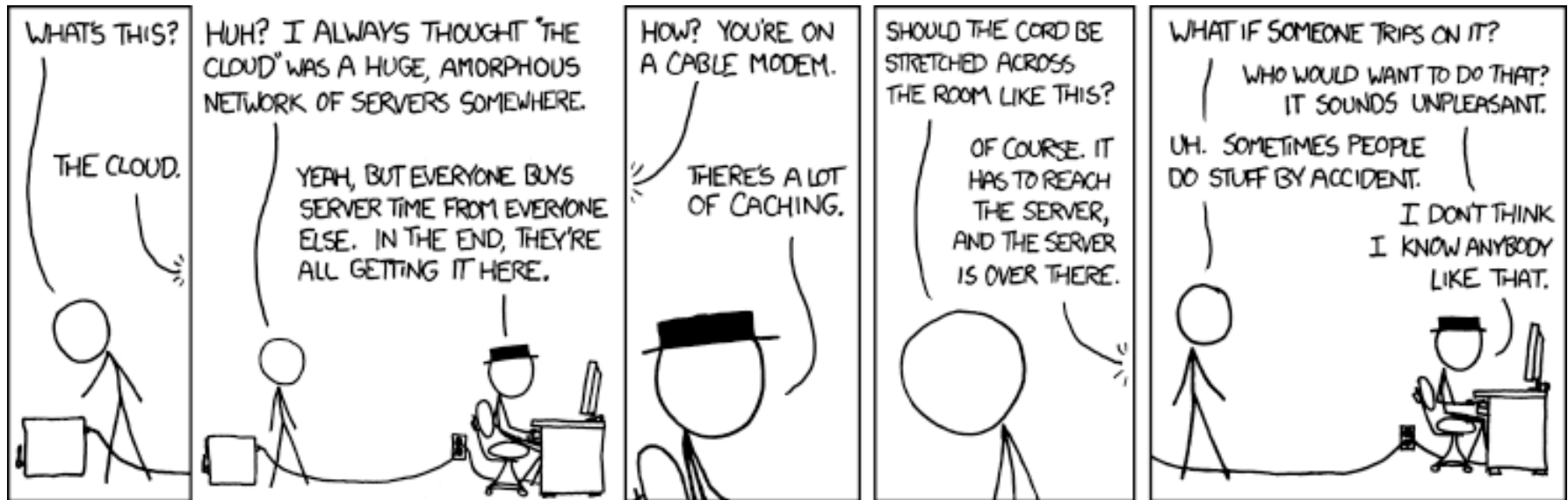


Win with Cloud on System z

Frank J. De Gilio
IBM Corporation
August 8, 2012
Session: 11748



From XKCD – Why they Need us!



There is planned downtime every night when we turn on the Roomba and it runs over the cord

Today's Challenges



85% idle

In distributed computing environments, up to 85% of computing capacity sits idle.



70¢ per \$1

70% on average is spent on maintaining current IT infrastructures versus adding new capabilities.



1.5x

Explosion of information driving 54% growth in storage shipments every year.



\$40 billion

Consumer product and retail industries lose about \$40 billion annually, or 3.5 percent of their sales, due to supply chain inefficiencies.



33%

33% of consumers notified of a security breach will terminate their relationship with the company they perceive as responsible.

It's time to start thinking

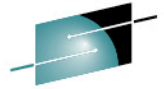
Differently

about infrastructure

Cloud is a User Model



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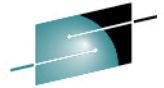


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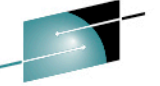


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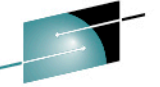


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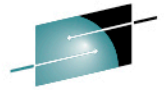




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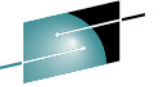


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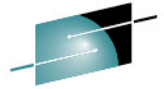


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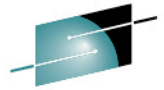


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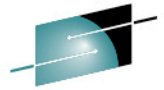


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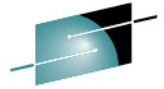


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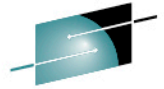


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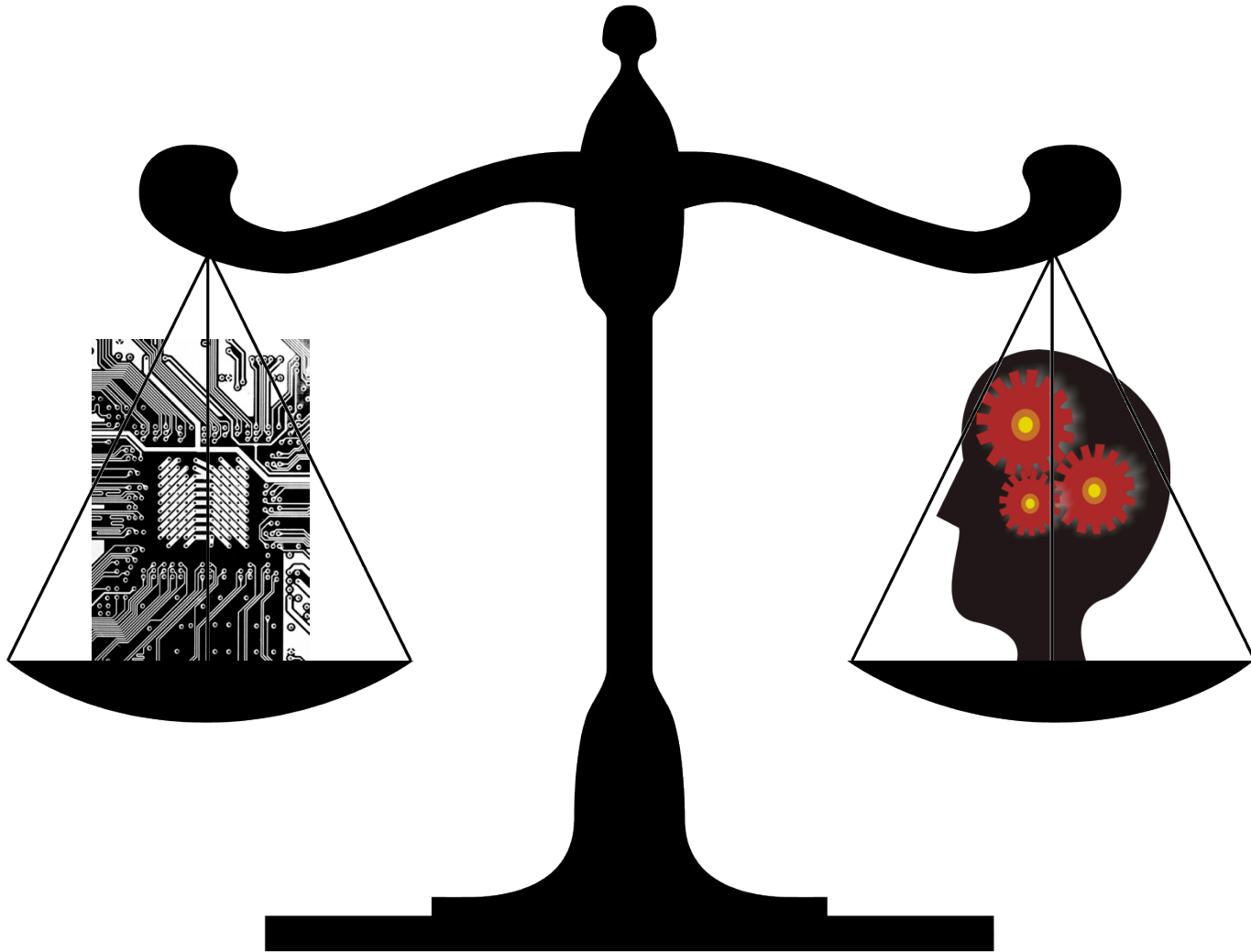


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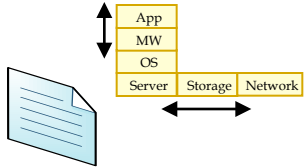


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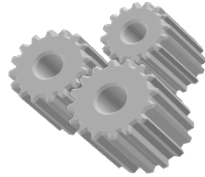
12 Steps for Creating a Cloud Service

1. Specify cloud service description



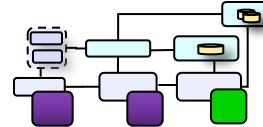
Describe function, price, SLA of cloud service, incl. management scope

2. Implement runtime functionality



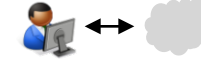
Examples: Select off-the-shelf hypervisor (VMaaS), implement custom app (e.g. LotusLive)

3. Define unit of delivery & rating



Examples: VM, file system, distributed app, virtual IP address, queue, web conference, RDBMS, 3-tier business app, etc.

4. Implement self-service delivery & management functionality



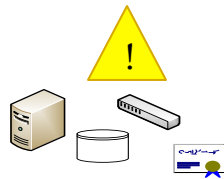
Examples: "Create VM, add more nodes to WAS cluster, change max # of seats for LotusLive web conf"

5. Implement monitoring metrics & event correlation rules



Select existing agent / implement new agent for monitoring JVM heapsize, hypervisor swap file size, # of processes, etc.

6. Implement incident, problem and asset mgmt processes



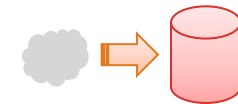
Incident, problem & asset mgmt process is specific to cloud service → customization needed

7. Implement resiliency SLA



Examples: HA for management system, delivered WAS cluster must be highly available

8. Implement backup approach



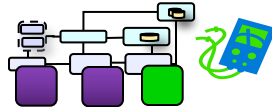
Examples: Backup all VMs, backup DB of LotusLive application

9. Implement security functions



Implement authentication, auditing, data protection, governance & audit

10. Implement cloud service specific billing metrics



Examples: CPU/hour, # of DB transactions, GB/month, # of users/webconf/hour, etc.

11. Implement rates for charging cloud service consumption



Examples: \$0.11/VMhour; \$0.19/MBsTransferred; \$0.02/webconference; \$0.05/fraudAnalysis

12. Register cloud service to service catalog



A cloud service must be registered to the service catalog to be externally accessible, entitlements need to be configured,

Cloud Service Lifecycle Management

Subscribe to Service

- Request a service
- “Sign” Contract

Offer Service

- Register Services and Resources
- Add to Service Catalog

Service Creation

- Scope of Service
- SLAs
- Topologies, Best Practices Management Templates

Deploy Service

- Request Driven Provisioning
- Management Agents and Best Practices
- Application / Service On Boarding
- Self-service interface

Manage Operation of Service

- Visualize all aggregated information about situations and affected services
- Control operations and changes
- Event handling
- Automate activities to execute changes
- Include charge-back

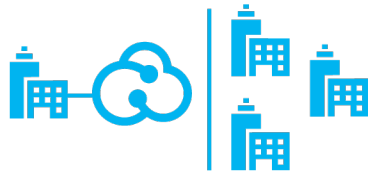
Terminate Service

- Controlled Clean-up



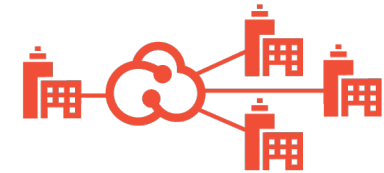
6 Components of Cloud

Cloud Models for All Needs & Priorities



Private cloud

On or off premises cloud infrastructure operated solely for an organization and managed by the organization or a third party



Public cloud

Available to the general public or a large industry group and owned by an organization selling cloud services.



Hybrid IT

Traditional IT and clouds (public and/or private) that remain separate but are bound together by technology that enables data and application portability



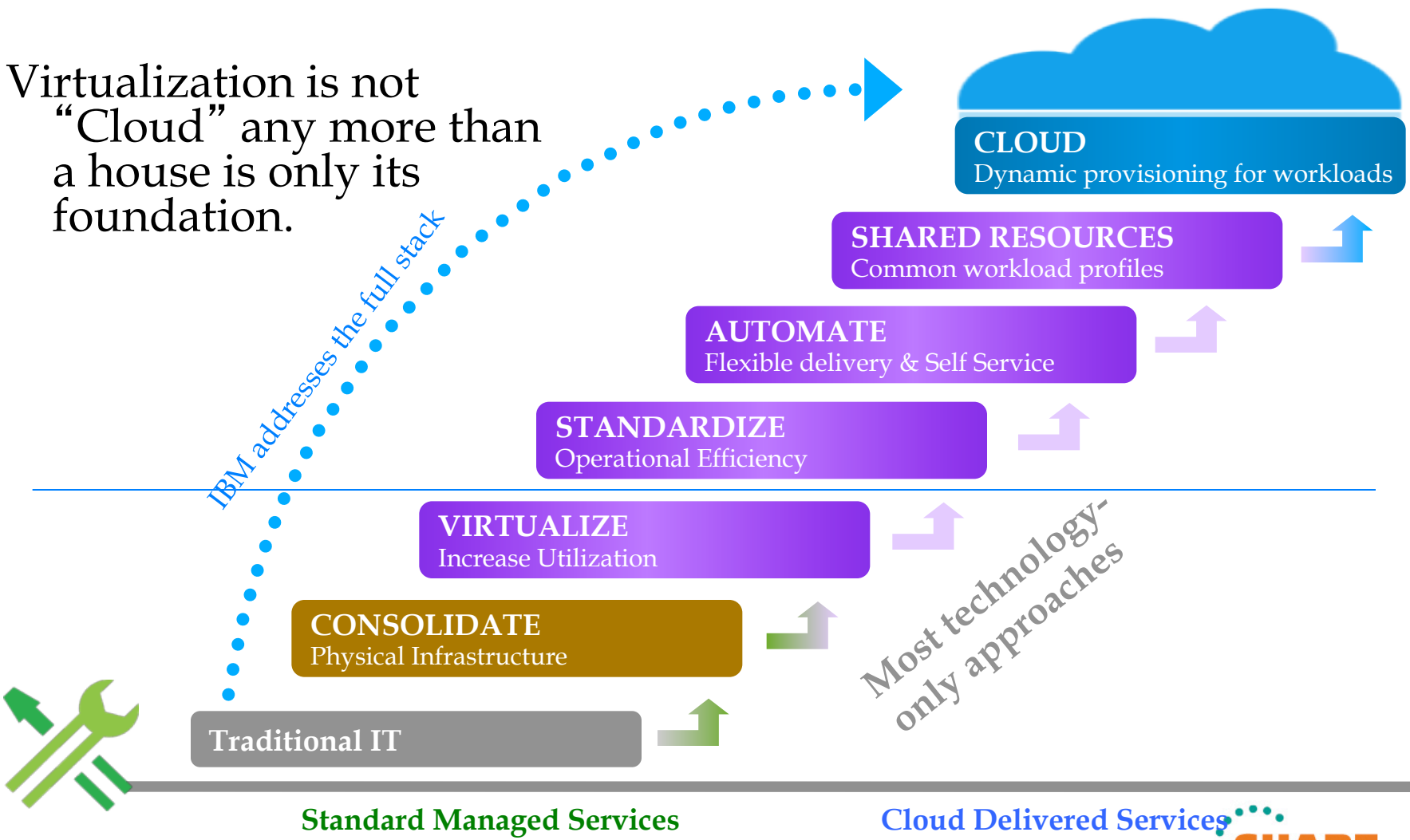
Traditional IT

Appliances, pre-integrated systems and standard hardware, software and networking.

Evolving to Cloud



Virtualization is not “Cloud” any more than a house is only its foundation.

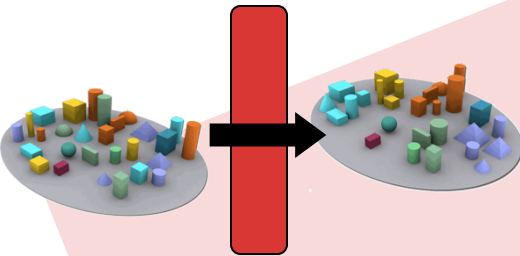


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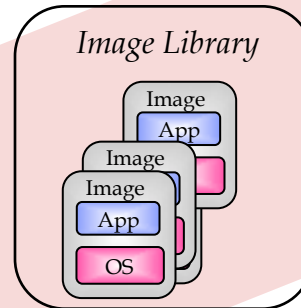
Building a Cloud Foundation

Consolidate and Virtualize



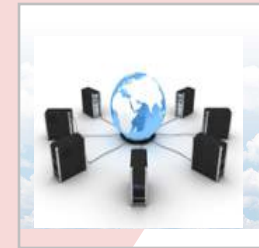
- Virtualization must become strategic across all platforms – servers and storage
- Monitor the virtualized environment
- Discovery, dependency and change tracking

Automate and Manage



- Automated provisioning / de-provisioning
- Pool standardized virtualized building blocks
- Capture and catalog virtual images used in the data center
- Management of the virtualized environment

Optimize Cloud Ready



- Integrated virtualization management with IT service delivery processes
- Elastic scaling
- Pay for use
- Self-service provisioning
- Simplified deployment with virtual appliances

STANDARDIZATION

LIFE CYCLE MANAGEMENT

Security: a Top Concern for Cloud

80%

Of enterprises consider security the #1 Inhibitor to cloud adoption

48%

Of enterprises are concerned about the reliability of clouds

33%

Of enterprises are concerned with cloud interfering with their ability to comply with regulations.



Cloud Needs to be Continuously Available

December 2010: Amazon says outage in Europe due to hardware failure, not hacking attack

September 10 2010:...Microsoft **BPOS** suffered another **outage** of some sort today it's **the second time in less than a week** that Microsoft's cloud has given some SaaS partners and customers fits...



Gmail was up 99.984 percent of time which means seven minutes of downtime per month over last year.

Cloud Data Integrity is Critical

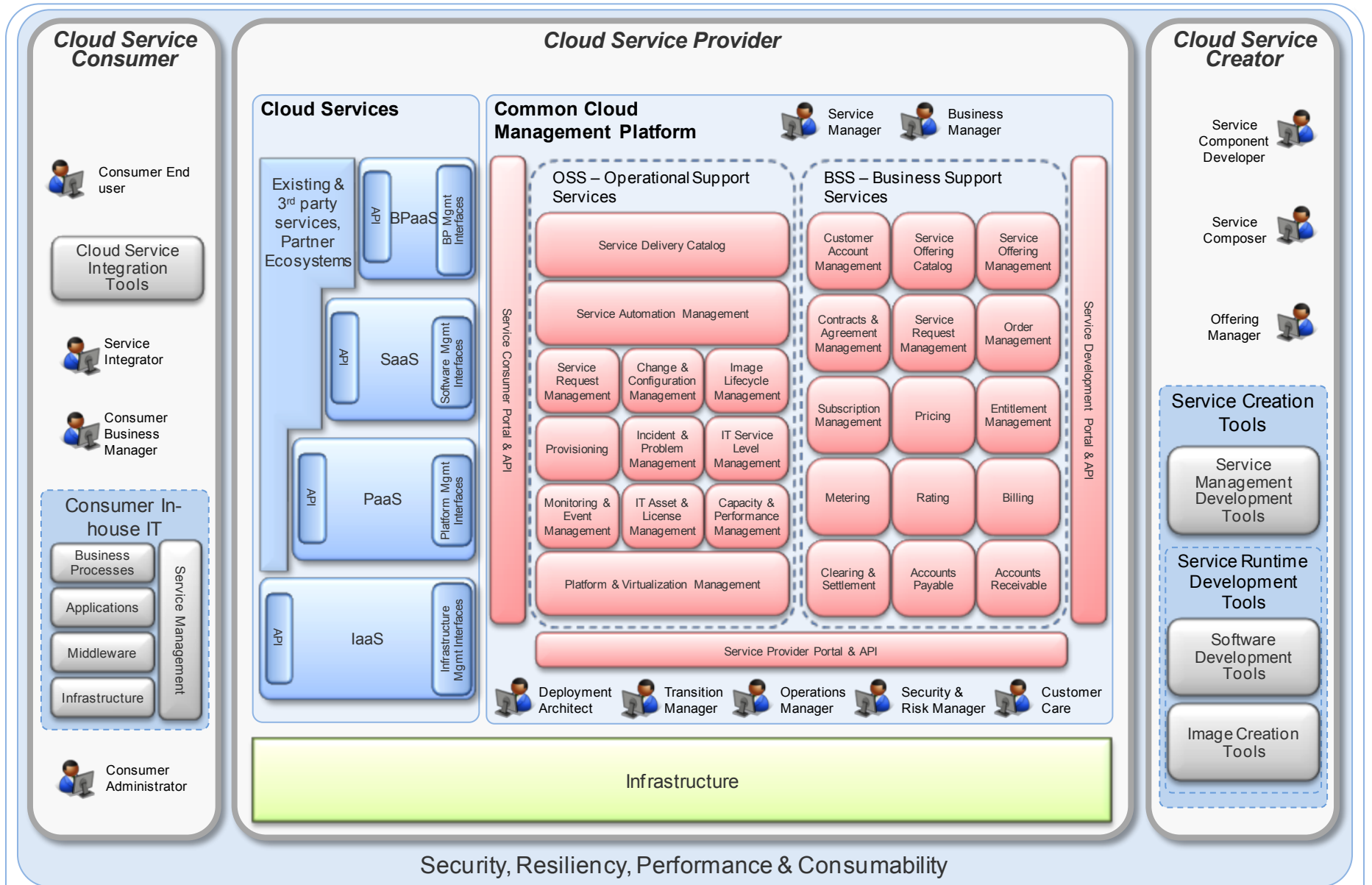
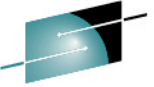
October 11, 2009: Microsoft Cloud Loses T-Mobile customer data

October 2nd, 2007: Amazon EC2 Outage Wipes Out Data

Piecing together islands of data from multiple locations involves synchronization and is not simply a data restore



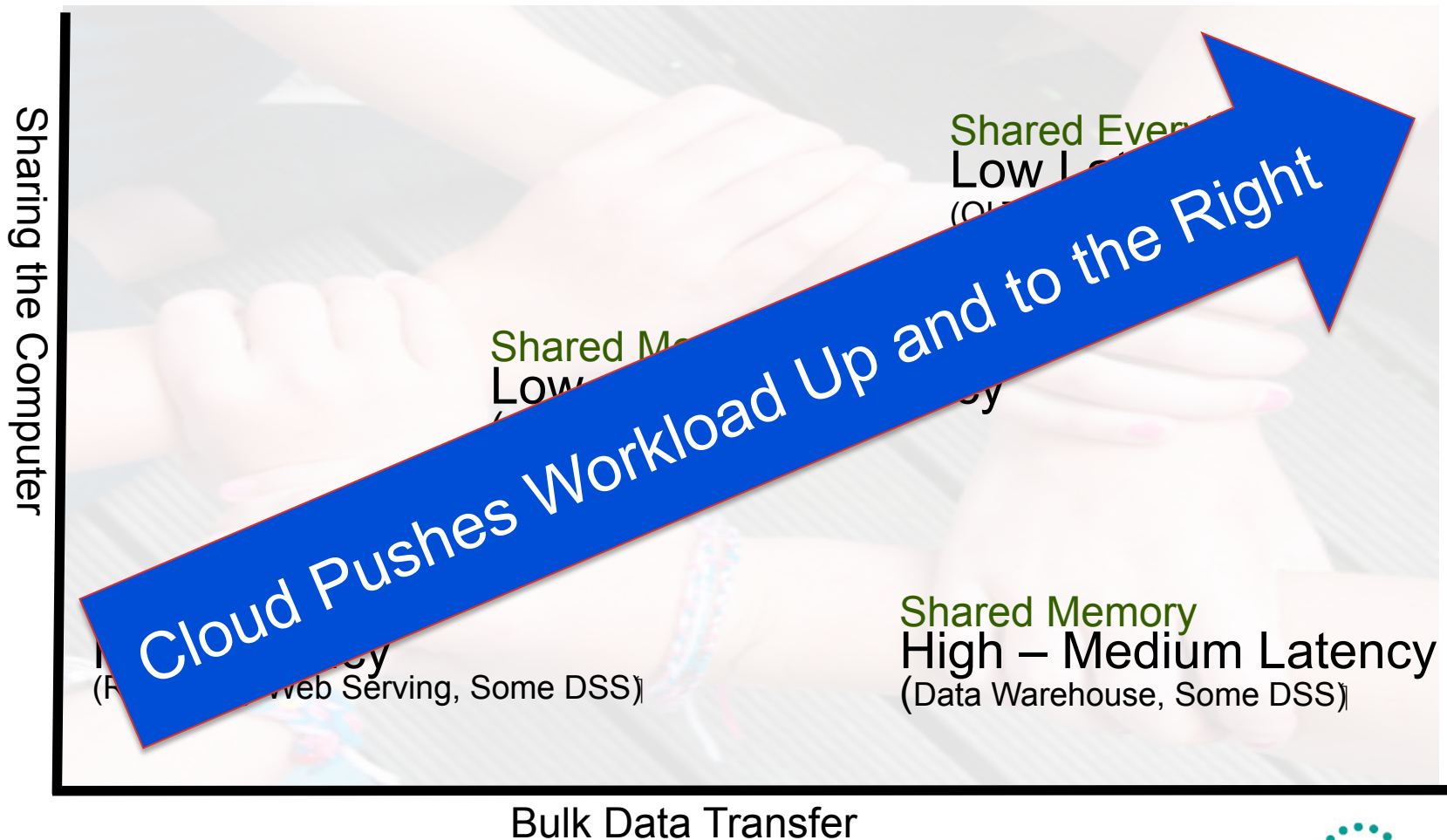
Cloud Computing Reference Architecture



Security, Resiliency, Performance & Consumability

Governance

Not All Computers are Created Equally



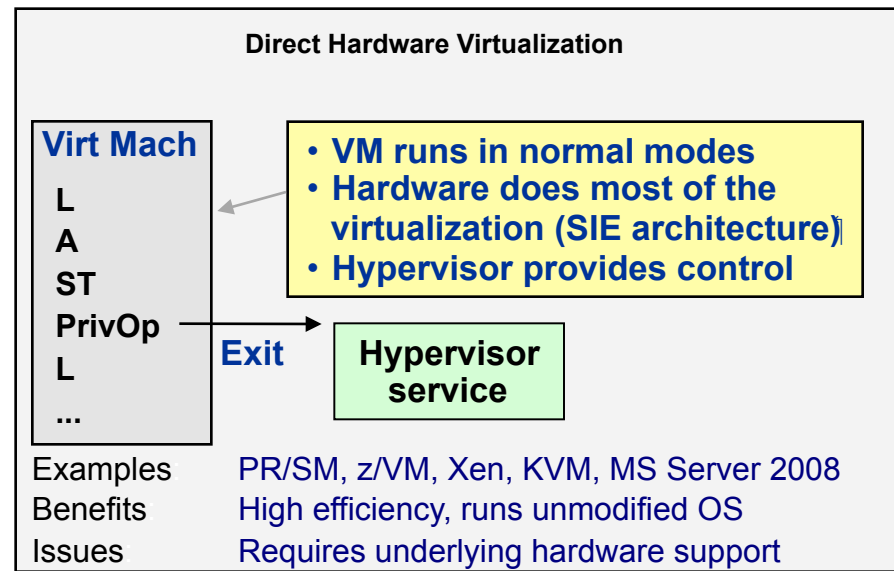
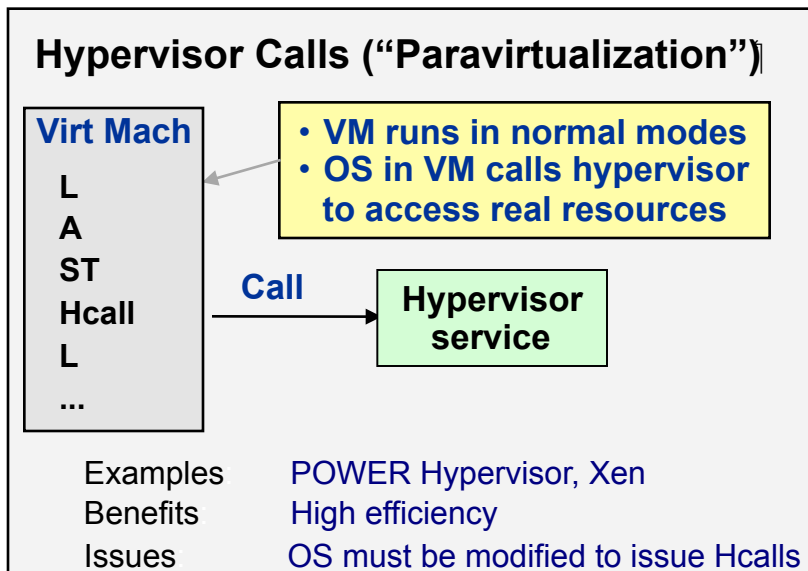
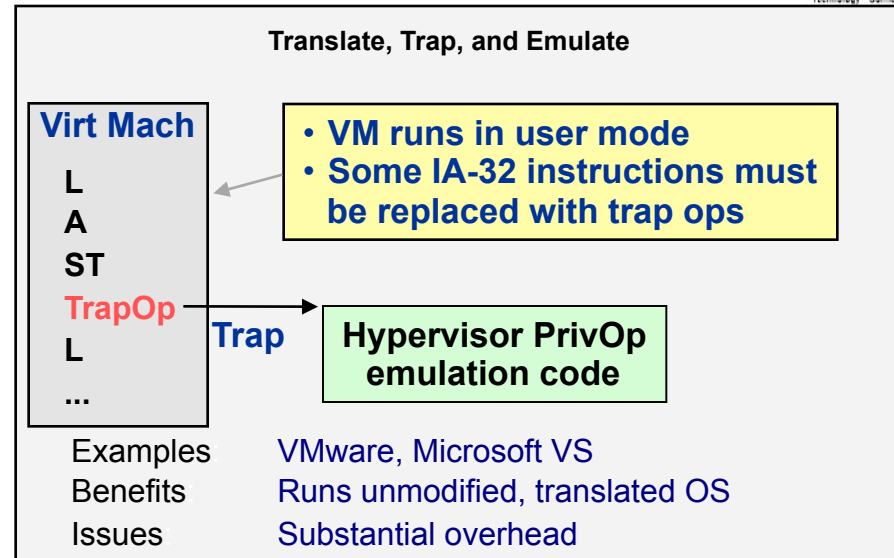
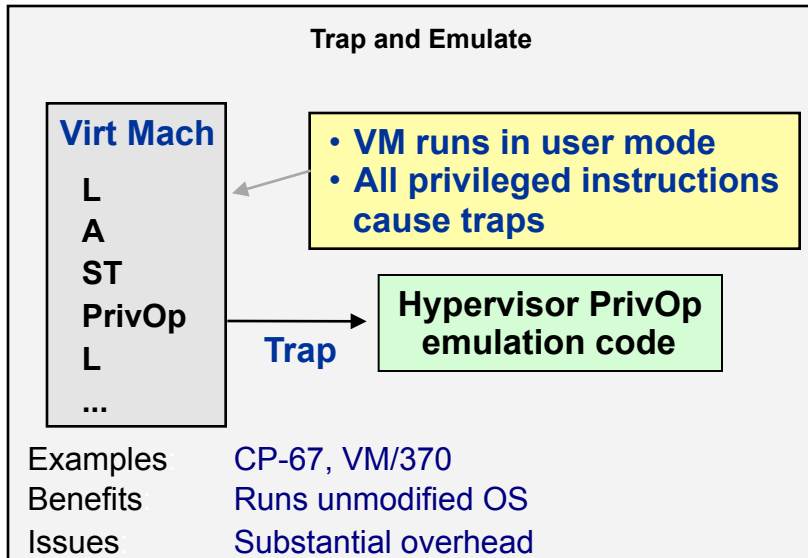
Welcome to the Party Pal!!!



System z: Enterprise-Class Computing

Pain Point	x86	Power	System z
Avoiding downtime	Good	Better	Best Unmatched system reliability and redundancy of server hardware assets.
Managing growth	Good	Better	Best Dynamically add real hardware; share system resources with multiple hypervisors in a single machine.
Underutilized Resources	Good (~ 50%) Very little hardware sharing as you scale	Better (~ 80%) Moderate hardware sharing as you scale	Best (up to 100%) Extensive hardware sharing as you scale; extremely granular sharing of system resources.
Need for flawless system monitoring	Good	Better	Best Superior statistics and operational insight.
Workload management	Minimal	Moderate	Extensive Also able to span architectures with zEnterprise (z/p/x).
Time to market	Good	Better	Best Server cloning can be achieved in seconds; granular and efficient sharing of resources facilitates rapid provisioning.

Not All Virtualization is Equal



Efficiency Keeps the Data Center Small

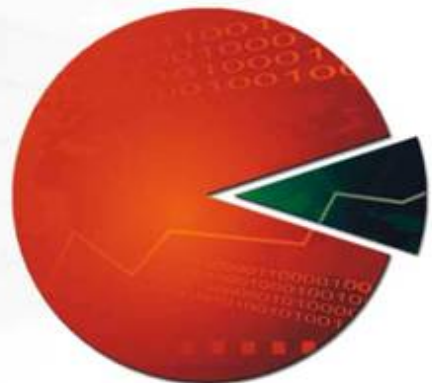
■ Used
■ Wasted



Mainframe



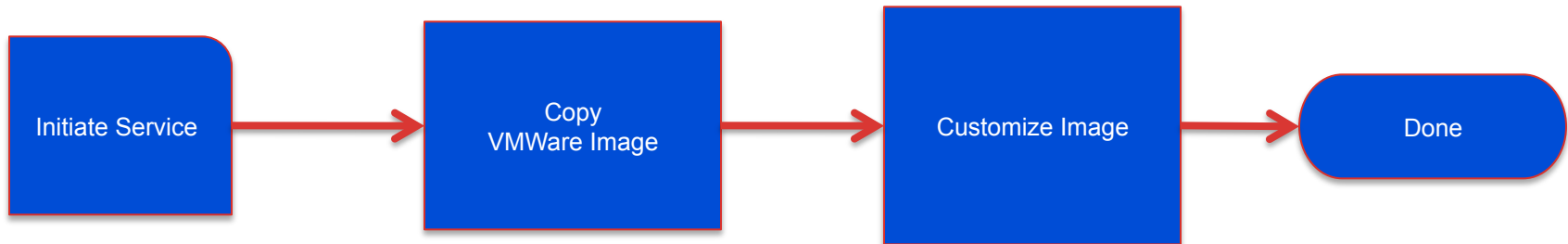
UNIX



x86

A Real Production Cloud Example

Replicate  300 Gig master image 16 times

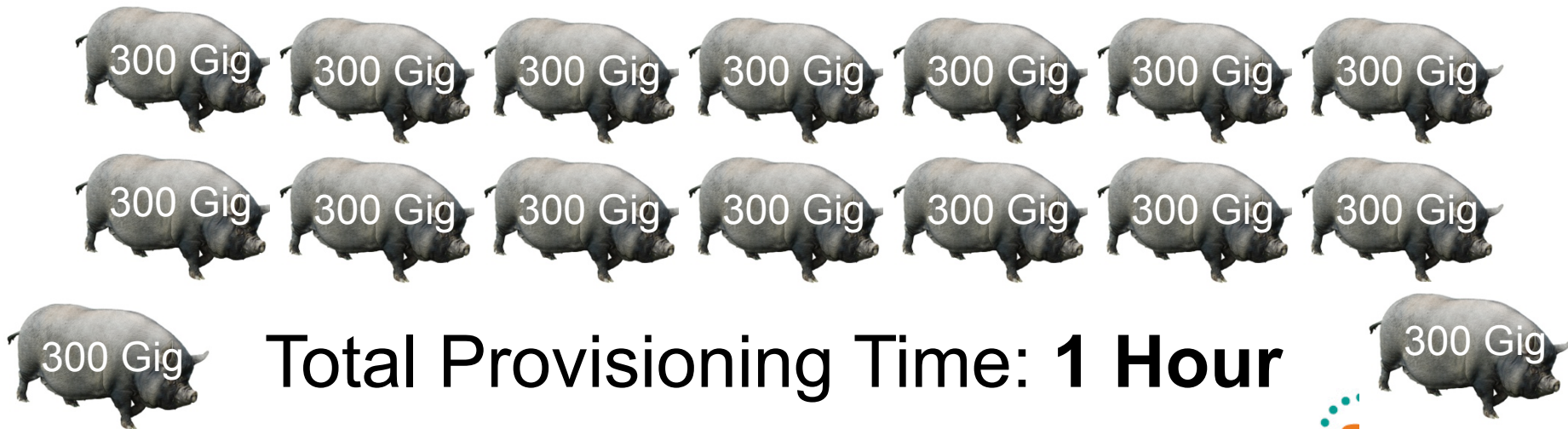
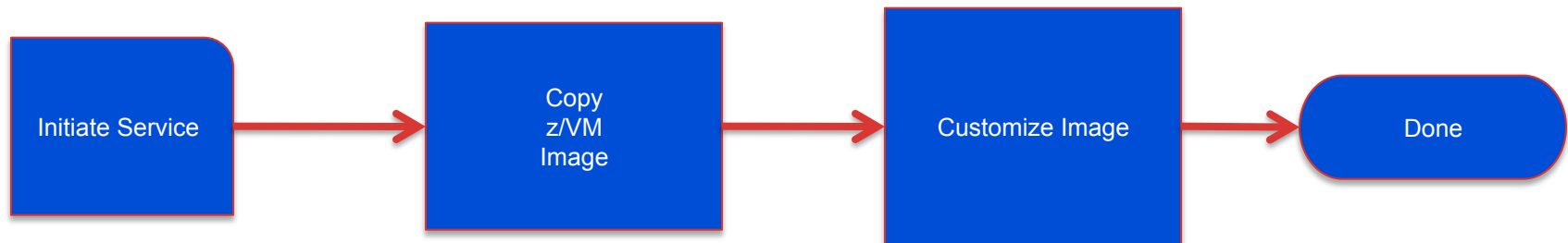


Total Provisioning Time: 3 Days



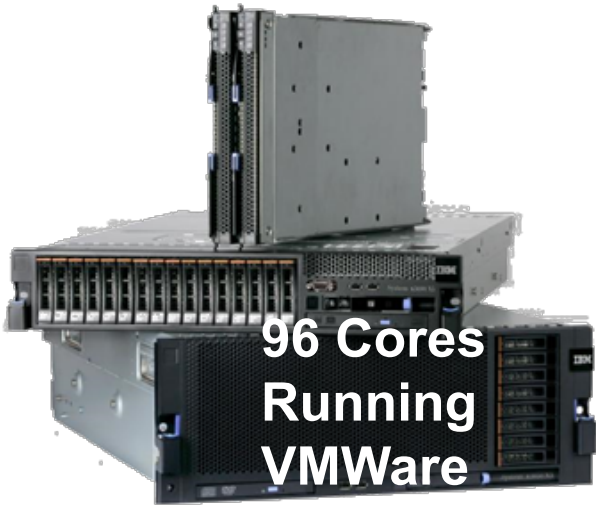
A Real Production Cloud Example

Replicate  300 Gig master image 16 times



Total Provisioning Time: 1 Hour

Real Cloud Production Example



VS



Major Asset: System z Staff



Major Asset: System z Staff

Ever hear of ITIL?

How many systems do you run?

Where is your system configuration?

How many variations are you running?

Where is your Software library?

How do you keep track of usage?

Role and Value of System z

Function	Cloud Model	z/VM	z/OS
Hardware Configuration	CMDB	HMC	HMC
Hw/SW Relationships	CMDB	System Directory	SYS1.PARMLIB
Monitoring	ITM	Performance toolkit	SMF/RMF/ OMEGAMON
Software configs	DSL	VMSES	SMP
Usage	TUAM	Performance Toolkit	SMF/RMF
Image Repository	Hipervisor / SAN	System Directory + Guest MiniDisks	SYS1.PARMLIB + DASD
Provisioning	TPM + HiperVisor	TPM Support	No TPM Support yet
Automation	TPAE	Netview	MPF - Netview
Service Request Management	TSRM	NA	NA
Pervasive Security	None	RACF/ACF2 etc.	RACF/ACF2 etc.

Cloud is a Whole IT Strategy!



Questions

