



THINNING THE DATA CENTER & TAPPING THE CLOUD

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INTRODUCTION

- *This presentation is a summary of a variety of research along with input of my own. The last slide lists the main reports as reference in the presentation—highly recommend thorough research and learning as you plan out your game plan*
- *Reminder: Business Value and Business enablement needs to be the key to the IT decision making process—let that be the driver and not your own inhibitions with ‘new’ services-Collaborate w/Business*
- *You’re responsible to provide IT services, regardless of the delivery model that is used-Collaborate w/Business*
- *If you’d like assistance or consulting with these topics or any other aspect of IT, feel free to reach out.*

DATA CENTER QUESTION

- *What will you do when you need more Data Center Floor Space?*
 - *For those that own a Data Center(s)*
 - *Expand existing facilities?*
 - *For those that don't own a Data Center*
 - *'Rent' more floor space?*
 - *Maximize current floor space?*

STRATEGIES FOR DC DEMANDS

- *Internally Focused*

1. *Virtualization of servers & consolidation (78%)*
2. *Upgrade legacy equipment – old equipment is power hungry (60%)*
 - *Vendor offers: Replace 5-15 servers with 1 big new server and virtualize*
3. *Upgrade power & cooling systems (33%)*
 - *Older DCs built for mainframes-not optimized for dense equipment*
4. *Modify Cooling systems to supplement hot spots (21%)*

- *Expansion:*

5. *Expand the useable floor space within existing facilities (20%)*
6. *Construct new DC facilities (16%)*

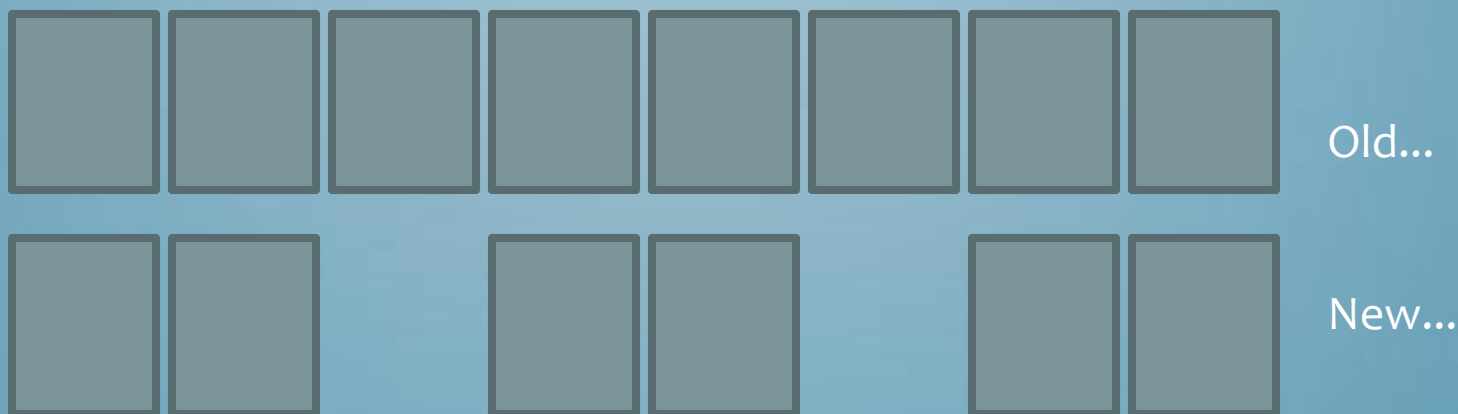
- *Externally Focused*

7. *Move less critical systems out to cloud services (15%)*
8. *Move less critical systems out to collocation (12%)*
9. *Other (1%)*

Thinning

“THINNING” ?

- In our older floor space, we replaced a number of racks of old servers with racks of blade servers. Although we greatly reduced the number of racks, we found we had to space them out to adjust for the added demands of power/heat dissipation for each rack.*



- Generally you should see cost savings through lower maintenance cost for newer equipment—we didn't as we had been doing self-maintenance on the older equipment.*

KEEPING UP W/DC MANAGEMENT⁶

- *Learnings' from Facebook:*
 - *Large companies have expertise/dollars to explore and implement new/power efficient technologies like Facebook*
 - *Eliminated the need for the UPS*
 - *Eliminated the need for Automatic & Static Transfer Switches*
 - *No mechanical cooling-maximizes use of outside air-utilizes 'spray cooling systems' to drop outside air 30 degrees*
 - *Few companies have the clout to tell manufacturers how to build their equipment*
 - *They had their servers built with different power supply to match power fed in which eliminated need for transformers*
 - *They had the fans reprogrammed so they aren't running all the time thereby reducing power.*

DC MANAGEMENT: NETWORK vs SYSTEMS vs STORAGE

Sample of what IT management needs to prepare for—industry recommendations to ‘keep up’ that will create ‘exciting discussions’ within your engineering groups! We all need to be focused on what’s best for the business!

1. *Build a flatter network*
2. *Build a faster ethernet*
3. *Virtualize the Network*
4. ***Consider Blades for Greater network flexibility***
5. ***Converge Data and Storage Networks***
6. *Converge cabling*
7. *Move to virtual network appliances*
8. ***Integrate Network and Server Virtualization Management***

“Let the I/O Roll”, Information Week Analytics, March 2011, Kurt Marko

WHY THE CLOUD HYPE?

- Vendors can increase sales/margin by offering services
- Businesses, like consumers, get caught up in marketing

NetApp

Reaping the Full Rewards of the Cloud

Don't just be a cloud-builder. Be a rainmaker—someone who gives real business purpose to cloud deployments.

[Read the strategic brief](#)

Profitable clouds are built on NetApp

Storage Today

- Primary Storage
- Disk Based Backup Storage
- Archival Storage
- Tape Infrastructure & Management
- Replicated Storage for Disaster Recovery
- Offsite Locations Geo-Resilience

Complex - \$\$\$\$\$

Storage - SSD, Tiering

Optimized Local & Cloud Snapshot

Live Archives

Cloud Clone

Cloud Snapshot Replication

Geo-Validation

Hybrid Cloud Storage

Simple - \$

NetApp

A NetApp Shared IT Infrastructure Helps Thomson Reuters Unleash Innovation

"We avoided building a two-megawatt data center at an estimated cost of \$65 million. Most importantly, we're spending our money on expanding the business rather than growing a technology footprint."

THOMSON REUTERS Rick King, CTO
Thomson Reuters
Professional Division

[Watch the Video](#)

Game Changers are built on NetApp

Cloudbook, volume 2, 2011: Issue 2 page 33

Who wouldn't want this????!!?

Warning: The 'IT General' states that not all of the hype is accurate. Watch for hidden costs, latency, outages, transition challenges. Basically, be careful—but there are benefits – And you need to be aware of them!

VIVEK KUNDRA, US CIO

- Chief information officer of the United States. Vivek Kundra, 36, is the first person ever to hold it, having been given the new job by President Obama in March 2009.
- “Startups are going to Google for e-mail, or to Microsoft, or to Hotmail. They're going to Intuit and using QuickBooks for the financial systems. They're going to a number of providers online to stand up a website, and they get value day one, literally. They don't spend months or years procuring those services“ Vivek Kundra

CLOUD: CURRENT LOGIC USED

Primary Reasons for Using or Evaluating Cloud Computing

What are the primary reasons that your organization is using or evaluating cloud computing?

Ability to quickly roll out business technology



Expectation that long-term expenses will be lower



Reducing number of activities that require in-house IT expertise



Replacement of capital expense with operational expense



Moving expenses from IT budget to line-of-business budgets



Moving control of business technology away from IT to line-of-business



Other

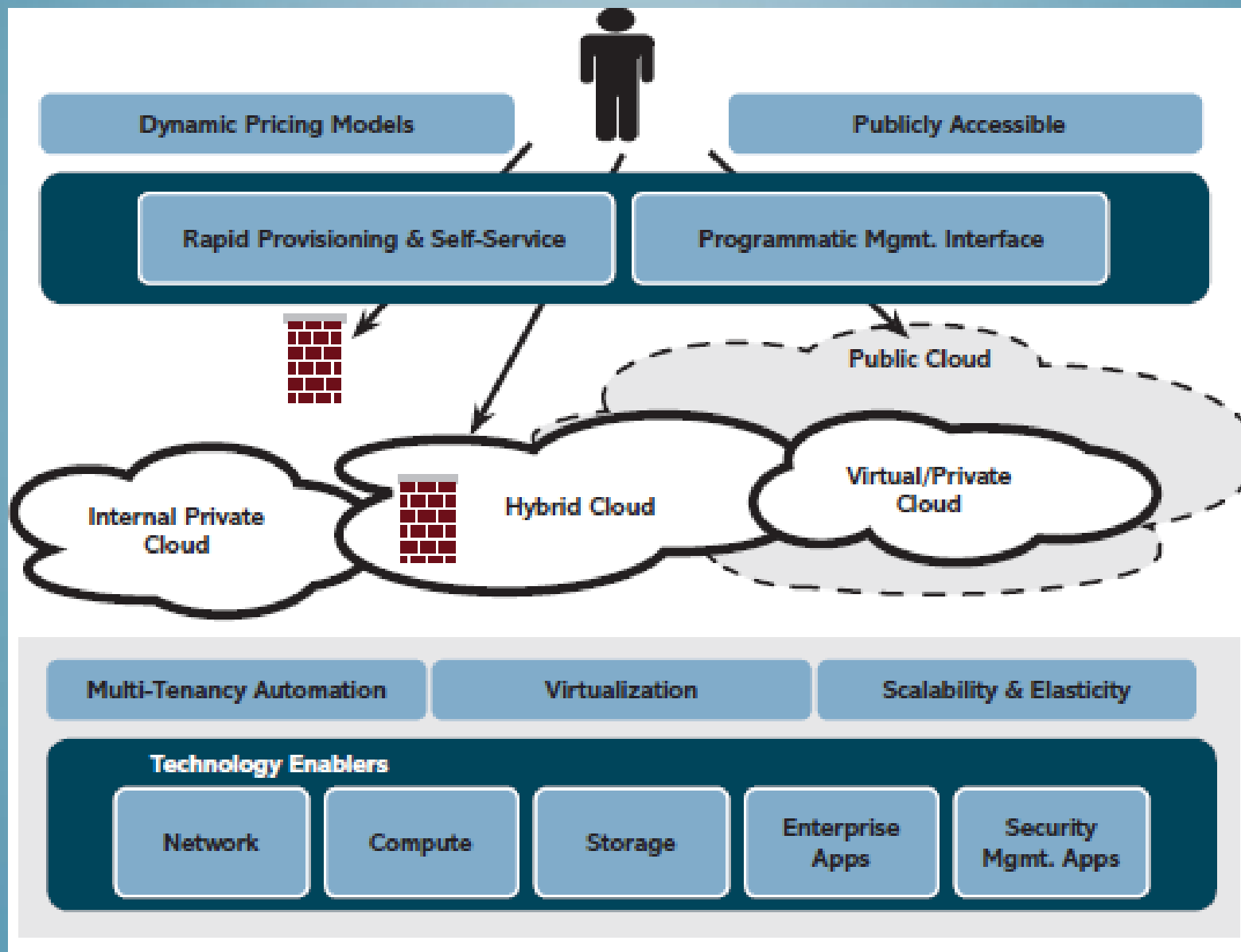


Note: Two responses allowed

Base: 279 respondents at organizations using or evaluating cloud computing

Data: InformationWeek Analytics Cloud ROI Survey of 393 business technology professionals, April 2010

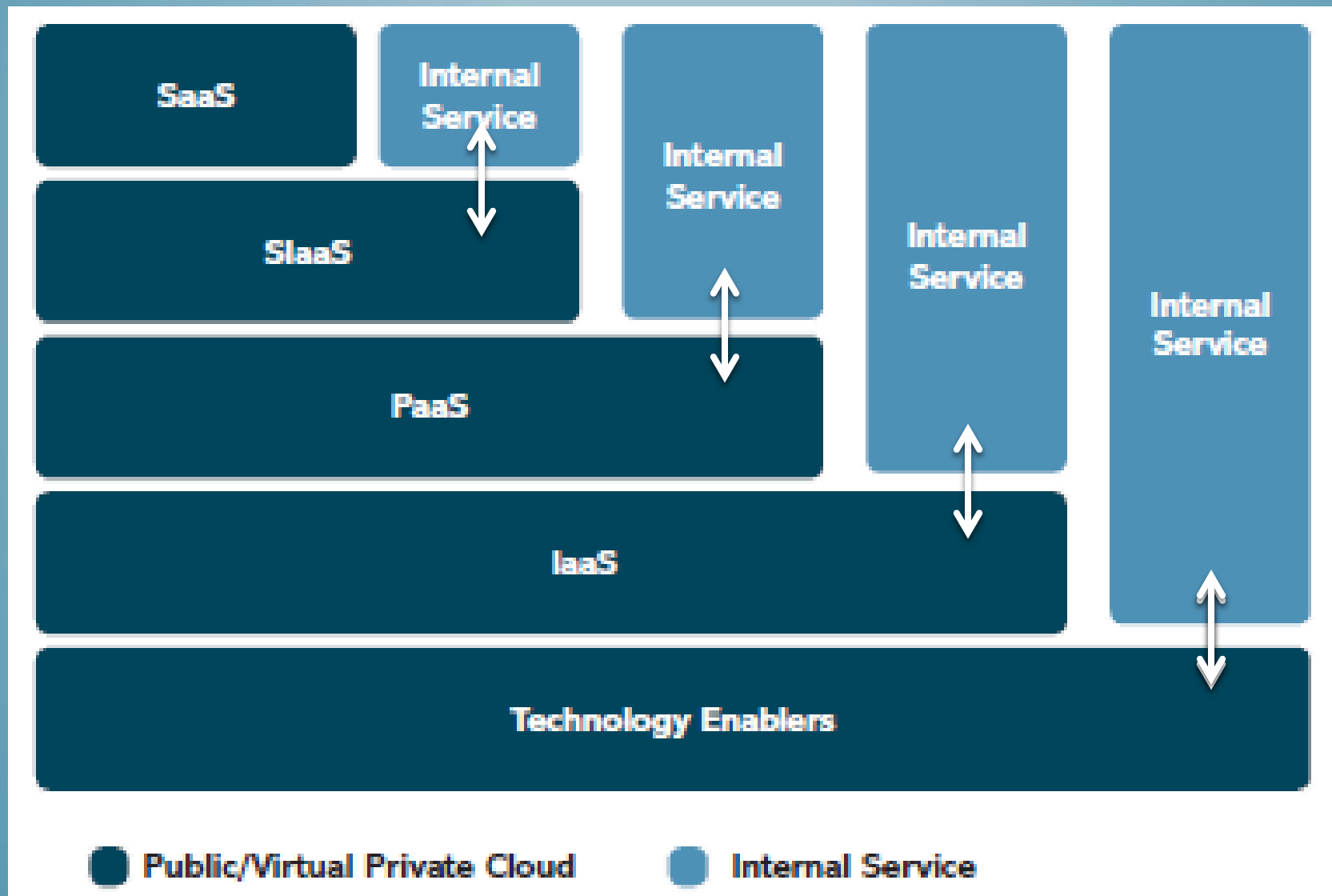
DEFINING “CLOUD”



CLOUD INFRASTRUCTURE CRITERIA

1. *Virtualization & HW Independence*
 - *Users don't worry about HW-Resources added w/o impact*
2. *Rapid Provisioning & Self-Service*
 - *Servers in 30-45 minutes*
3. *Scalability & Elasticity*
 - *Grow/Shrink w/o down or redesign / auto or manually*
4. *Multi-Tenant Architectures*
 - *Multiple organizations w/o 'impact' to each other*
5. *Dynamic Pricing Models*
 - *Pay-as-you-go!*
6. *Programmatic Management Interfaces*
 - *APIs to facilitate scripts to accommodate eom billing/reselling services/integrate cloud service w/existing portals*
7. *Publicly Accessible*
 - *Access and manage over the internet*

CLOUD DELIVERY MODELS



“Cloudscape – Cloud Codex”, Jan 2011 – the 451 group, Tier1 Research

CLOUDS: PUBLIC/PRIVATE/HYBRID

- *Public Cloud:*
 - *Shared IT service provided to customers via Internet*
 - *Customer's data is not isolated from others' data*
- *Virtual Private Cloud*
 - *Like a public cloud except customer's data is isolated from other customer's data*
- *Hybrid Cloud*
 - *Combination of Public & Private*
- *'Cloudbursting'*
 - *Internal cloud used for base IT load and public used for peak. (Gets confused with hybrid)*
- *Internal Private Cloud*
 - *Internal IT capability utilizing cloud-enabling technologies and offering as a service*
 - *Highly virtualized and enables App Dev (or other IT groups) to provision their own application platform*

THE CLOUD STACK: SaaS

SaaS – Software as a Service

- *A hosted application accessed through a Web browser. Offered with a subscription price. (different than hosted application management designed for traditionally licensed packaged apps)*
- *Provider delivers app based on a single set of common code and data definitions. Customers can extend the data model but not alter the source code.*
- *CRM: Sales Force automation, Customer Service Automation, Marketing automation, BI & analytics*
- *ERP: Content & Collaboration (messaging, workflow), Accounting & finance, Human Capital Mgmt, BI, Supply-Chain, Business process management*

THE CLOUD STACK: PaaS

PaaS – Platform as a Service

- An ‘in-cloud’ platform for the development and deployment of cloud application software*
- Designed to support the entire application development lifecycle : (development, testing, deployment, runtime, hosting and delivery)*
- Most commercially successful PaaS offerings are those where multiple apps can share resources and user info; salesforce.com as an example*

THE CLOUD STACK: SIAAS

SlaaS – Software Infrastructure as a Service

- *IT Management and security software delivered as a service*
- *Differs from SaaS only in that apps are not enterprise applications but, instead, are focused on managing, monitoring and securing the IT infrastructure.*
- *Systems & Network Monitoring and management*
- *Resource Utilization, Capacity Planning & Billing*
- *Problem Management, Event management*
- *Security*

THE CLOUD STACK: IaaS

IaaS – Infrastructure as a Service

- *Consists of virtual or physical hardware (compute, storage & network) offered as a service*
- *Provides pooled computing and storage services to users*
- *Outsourced servers, OS, storage, data-center space, network equipment, etc via a virtualized environment paid for on an on-demand basis*
- *Separate compute (CaaS) and storage (StaaS) offerings*

EXPANSION OF CLOUD

- *Security: Identity Management, Data & Information, App Security, Host/Endpoint, Network Security*
- *Online Back-up & disaster recovery*
- *Cloud Services: IBM, CSC, Accenture, Unisys, Capgemini, HP/EDS are all providing services to help you understand and implement.*
- *Business process clouds: BPCs are externally provisioned, one-to-many business process services based on highly standardized processes. PayPal, ADP*
- *Industry specific cloud: Accenture's Navitaire revenue management platform for the airline industry*

RETURN ON INVESTMENT

- ROI needs to have a comprehensive view of costs
- Size & Scale
 - Plan beyond the initial start-up. Factor in projected growth over 3-5 years
- In comparing, Internal IT tends to have additional capacity not being used
 - Out of necessity, unless you have a totally virtualized environment you have to have excess capacity to accommodate for growth
- Unless 100% is external, there will be complexity (added costs) in managing the environment
- Legacy apps on IaaS don't scale up and down as easily as native cloud apps.
- MS Exchange services are typically more expensive than running the system in-house over 5 year period

LOOKING AT EXTERNAL SOURCES

- Do not underestimate the expertise required to make good decisions
- Select the ‘right’ vendor and Managing “post-sale”
 - Sift thru the hype
 - Development of SLAs
 - Metrics relevant to business performance, not technology
 - Realistic performance targets
 - Define remedies for failure
 - Management of SLAs
- Transition Costs:
 - “Import and Export” fees
 - Downtime: Time it takes to move GB, PB of data (basically a DR exercise unless you get fancy)

EXIT STRATEGY

- *Before you sign, make sure you have an exit strategy*
- *Easy to start, harder to leave the longer you are there*
- *Variety of reasons you may leave: Dissatisfaction with service, new alternatives, change in strategy, etc...*
- *Feasibility of moving from one cloud to another*
- *All your data goes with you?*
 - *Is metadata being created?*
 - *SaaS generally creates Metadata... As an example, Facebook with your pictures and comments from friends.*
 - *Portability of your data*
 - *Document format when the export needs to occur*
 - *Ensure it's not proprietary otherwise you may be held hostage*
- *Can you implement your own back up strategy?*
 - *Amazon has an export/import feature for large volumes of data that aren't feasible across the internet. You send a hard drive and they perform the 'backup' to your physical drive*

PRICE COMPARE – IaaS - COMPUTE

Amazon has a large following...so the target for the not-so-well-knowns.

The question is: Do you know what your costs are to support similar systems?

And remember, you need to take a holistic approach to comparing prices! 3-5 year time line, too!

Prices tend to go up when you are locked in!

Ex: VMWare pricing increases: Changing to memory allocation vs actual usage. Will force your admins to be very good and 'right-size' memory--may impact performance. Realistically you allocate a lot of memory because it's easier to manage.

Joyent vs Amazon EC2 Pricing

SmartOS/Linux Windows

EC2 Instance Type vs SmartOS Joyent Machine Image (JMI)

EC2 INSTANCETYPE	LINUX/HR	AMAZON ALL-IN/HR	Smart OS JMI	PRICE/HR
STANDARD INSTANCES			STANDARD SMART MACHINES	
Small (Default) 1.7GB / 1c / 160GB	\$0.085	\$0.12	Small 1GB / 1c / 30GB	\$0.085
Large 7.5GB / 2c / 850GB	\$0.340	\$0.48	Large 8GB / 4c / 240GB	\$0.36
Extra Large 15GB / 4c / 1.8TB	\$0.680	\$0.96	Extra Large 16GB / 4c / 480GB	\$0.64
HI-MEMORY ON-DEMAND INSTANCES			HI-MEMORY SMART MACHINES	
Extra Large (17G / 2c / 420GB)	\$0.500	\$0.62	Extra Large 16GB / 4c / 480GB	\$0.64
Double Extra Large (34G / 4c / 820GB)	\$1.000	\$1.24	Double XL 32GB / 8c / 760GB	\$1.12
Quadruple Extra Large (68G / 8c / 1.6TB)	\$2.000	\$2.48	Quadruple XL 64GB / 12c / 1TB	\$2.24
CLUSTER COMPUTE INSTANCES				
Quadruple Extra Large (23G / 8c / 1.6TB)	\$1.600	n/a	Quadruple XL (32GB / 8c / 760GB)	\$1.45

SmartOS and Linux | JoyentCloud

<http://www.joyentcloud.com/products/pricing-comparison/smartos-linux/>

CLOUD COMPUTING SHOWPLACE

<http://cloudshowplace.com/home.php>

SaaS



Cloud Computing Showplace
Information and Insight Without the Clutter

- Home
- About Us
- SaaS Showplace**
- PaaS Showplace
- IaaS Showplace
- Industry Insights
- Industry News
- Cloud Computing Events
- Award Programs
- Sponsorship Opportunities
- Feedback / Contact Info

Software-as-a-Service (SaaS) Providers By Application Category

There is a rapidly growing number of SaaS providers addressing nearly every business and IT application need. You can select a specific application category below to find our latest listing of SaaS providers offering 'on-demand' software solutions in that area.

[Click here](#) if you'd like help selecting the best SaaS provider to meet your business and IT requirements.

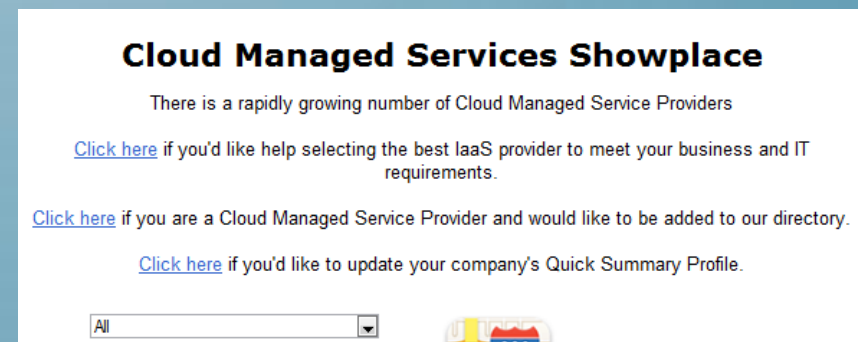
[Click here](#) if you are a SaaS provider and would like to be added to our directory.

[Click here](#) if you'd like to update your company's Quick Summary Profile.

Marketing

List of 170+ Companies!!!

IaaS



Cloud Managed Services Showplace

There is a rapidly growing number of Cloud Managed Service Providers

[Click here](#) if you'd like help selecting the best IaaS provider to meet your business and IT requirements.

[Click here](#) if you are a Cloud Managed Service Provider and would like to be added to our directory.

[Click here](#) if you'd like to update your company's Quick Summary Profile.

All

List of 50+ Companies!!!

5 Key Skills IT Teams Need to Embrace!

- **Faster Approvals:** Clouds promise faster provisioning. If it takes weeks, it's a problem!
- **Collaboration:** Systems admins, network managers, security pros, developers must team up on templates for templates from which virtual servers will be generated
- **Private Cloud:** Plan for part of the DC-pool of virtualized x86 servers to link to public cloud
- **What's In?** What to run in public clouds, w/o risking data or performance, draws on tech and business savvy
- **Relationships:** Like outsourcing, know vendor strengths and weaknesses, SLA and visibility into your workloads

GB COMMON SENSE

- **Be wise – understand the Cloud offerings!**
 - Don't be timid about pilots & benchmarking
- **Know the desires of your business/company!**
 - 'Listen' to their concerns or WHY they are pushing for Cloud
 - Agility? Capital? Speed? Salesman is a great golfer?
- **Service Providers are not necessarily 'better'**
 - They have 'rookies' in the trenches
 - They make mistakes in capacity planning
 - ITIL like processes aren't always in place
 - Change management isn't always as 'crisp' as it should be
 - They use commodity type equipment and rely on redundancy and clustering to compensate
- **Specialty vendors may not last – may get bought out**
 - Transitions to new infra, change in support model, pricing model
- **Initial costs may appear lower, but they will go up**

SOA & THE CLOUD

- *SOA and the cloud share common fundamentals*
- *Same design principles that make a good SOA service need to be applied to a cloud service: well defined interfaces, loose coupling, proper decomposition, common semantics, etc.*
- *If done right” means that organizations need to take an ‘architecture first’ approach to what they’re doing*
- *Potential for building newer, faster, in-the-cloud apps is tremendous--and the challenges of integrating these apps at the business process level are daunting*
- *Architects must not only understand the relationship of SOA and the cloud, but must ensure that it adds value rather than complexity, cost, redundancy, inconsistency, or risk*

DOCUMENTS USED

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