



Journeys in the Clouds **The Cloud Codex**

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The 451 Group

# The 451 Group

## Who We Are and Who Uses Us

- Analyzing the business of enterprise IT innovation
- Publish syndicated research
- 900+ customers encompassing...
  - Vendors
  - Investors (including 150 VCs and 80 investment banks)
  - Service providers
  - End users
- Offices in New York (HQ), Boston, San Francisco, DC area, London, Spain and Austria
- 90+ total employees, with 40+ analysts
- Tier1 Research and Uptime Institute subsidiaries

# The Cloud and ICE

## Infrastructure Computing for the Enterprise



Utility Computing

} What  
End Users See



} What IT /  
Service Providers  
See

# 451 CloudScape - Service Overview

- An interdisciplinary approach to illuminating the cloud computing landscape from a variety of perspectives
  - A comprehensive, coherent conceptual framework
    - the *451 Cloud Codex*
  - Cloud marketplace surveillance and analysis:
    - vendors, service providers
  - Market sizing, surveys
  - End users:
    - best practices, vendor selection, peer events
  - Actionable advice to improve opportunity for success

# A Cloud Codex

What are...

- Cloud services
- Criteria for defining Cloud
- Deployment models
- Required features?



# The Cloud Services Stack



# Managed Hosting vs. Cloud

## Managed Hosting Applications

Email & Messaging  
VoIP PBX Systems  
Corporate Web Sites  
Backoffice Systems  
Databases  
In-house ERP/CRM

**Static and  
Continuous**

## Cloud Computing Applications

Burst Web Operations  
Batch/Grid Processing  
Backup and Storage  
Test/Development/QA  
Disaster Recovery  
Software-as-a-Service

**Dynamic and  
Bursty**

# Cloud Criteria

- Publicly Accessible
- Programmatic Management Interfaces
- Multi-tenant Architecture
- Accounting Granularity and Cost Allocation
- Scalability and Elasticity
- Rich Web Management Capabilities
- Rapid Provisioning and Self-Service
- Virtualization and Hardware Independence



# Cloud Criteria vs. Architecture

## Cloud Criteria

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## Cloud Architecture

4 **Public Cloud Services**



3 **Private Enterprise Cloud**

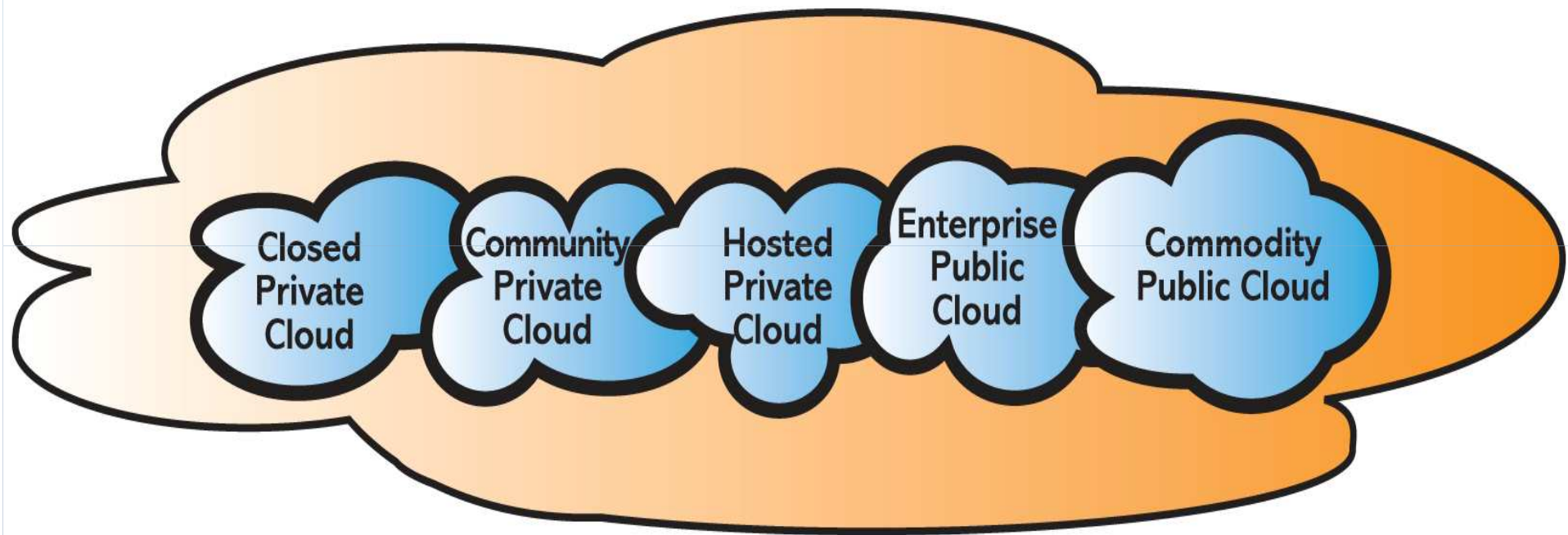


2 **Cloud-like Enterprise Architecture**

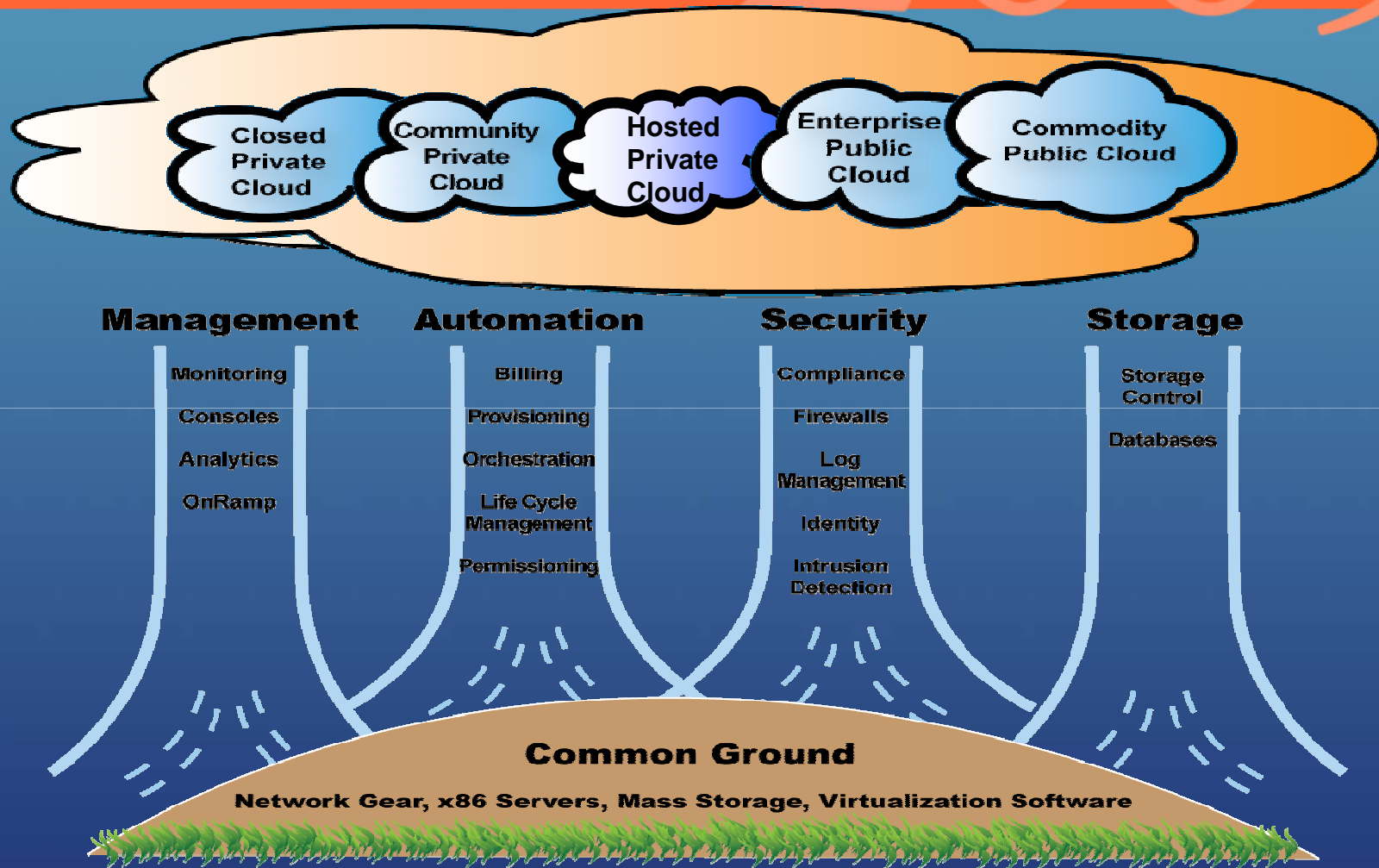


1 **Modern Enterprise Architecture**

# Cloud Spectrum



# Four Pillars of Cloud Computing



# Cloud Desires

- **Portability/Data Migration**

- **Standards**

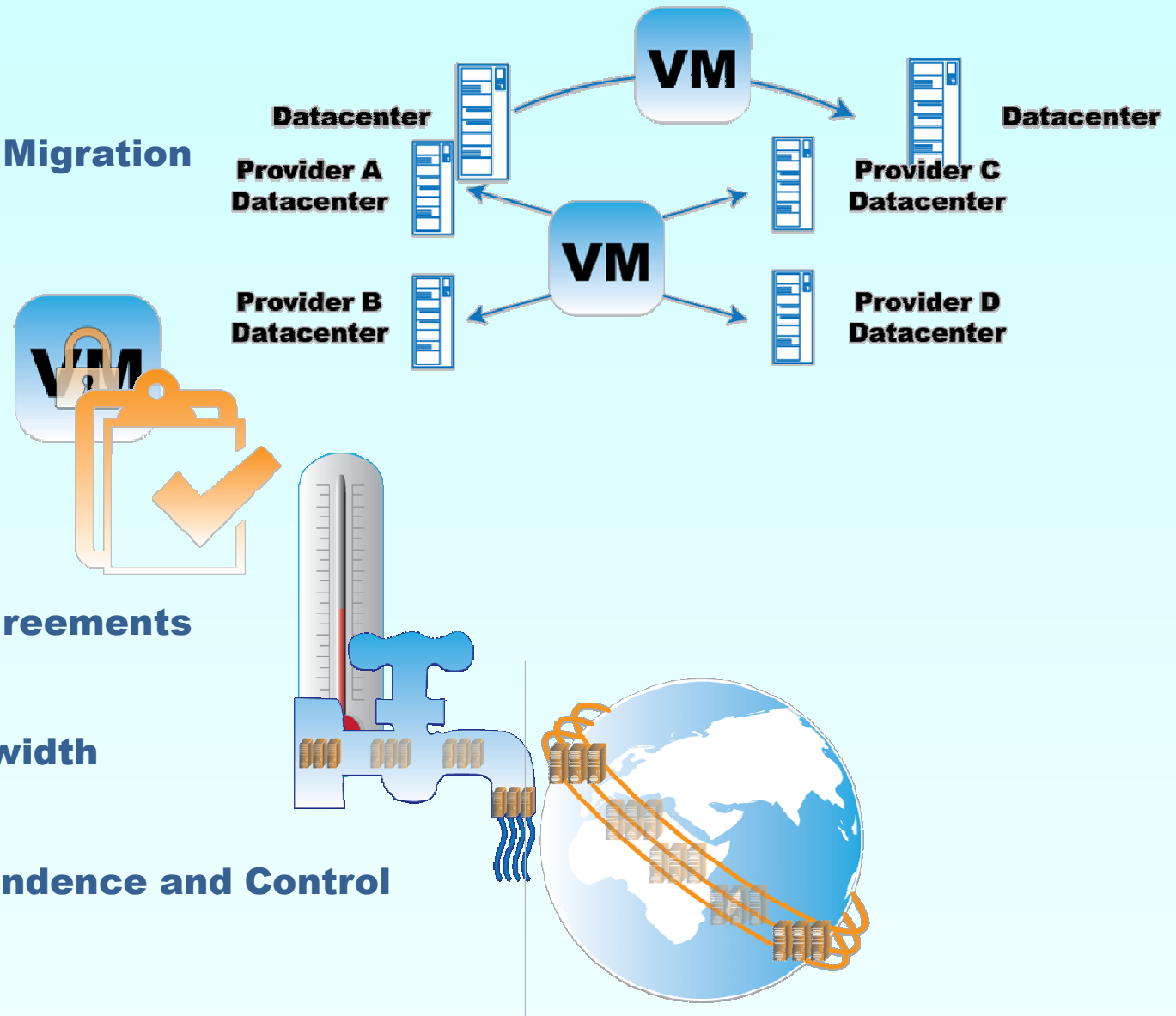
- **Interoperability**

- **Security**

- **Service-level Agreements**

- **Sufficient Bandwidth**

- **Location Independence and Control**



# Journeys in the Cloud



# Engineering – Private Cloud

- Project Services Network:
  - Brought IT back in-house
  - Remodeled in the image of Google, Salesforce.com, YouTube, Amazon... but not sold internally as ‘cloud’
  - Virtualized, multi-tenanted, multiple chargeback mechanisms
- Outcome:
  - 30% infrastructure cost savings
  - Key benefits: agility, collaboration, location-independence
  - Next up – put its user community in the cloud (desktops) – AWS?
  - Key advantage: project-based
  - Barrier – cultural



# Transportation – PaaS

- Project Halo:

- Use cloud to extend its enterprise operationally and commercially into the airport space
- Move departure control system onto a .NET service bus with universal access to run EasyJet and third-party apps
- Deploy over secure VPNs via local 3G operators
- Retain Savvis for certain dedicated apps



- Goal:

- Remove dependence on service desks
- Drive down cost and time to market
- Create private cloud for some operations, use public cloud for others
- Flexibility to support its 'bursty' model

# Pharmaceutical

- Project:
  - Longtime grid user has been trying to do this with its own datacenters
  - Three public cloud projects testing peak demand offload
  - Using insensitive data and NONMEM apps
  - Run HPC workloads (and grid middleware) on Amazon
- Goal:
  - Reduce capex, improve time to market and provisioning
  - Use cloud instead of buying additional CPUs
  - Also considering IBM and Microsoft
  - The greater the grid utility, the less economic benefit to use cloud
  - Wants to simply 'show up with code' (PaaS) and bypass IaaS altogether



# E-tailer

- Project:

- Use GoGrid public cloud for QA, testing and more
- Will move entire search engine marketing to cloud
- Also considering Amazon and IBM
- Cloud can help improve 3% utilization due to seasonal sales model?



- Goals and benefits:

- Reduce capex, improve time to market and provisioning
- Reduced QA deployment from two days to 30 minutes
- Multiple weekly changes to website instead of one
- Now considering PaaS, SaaS
- Organizational and cultural barriers

# Energy

- Challenge:

- Internal provisioning = weeks/months
- Developers went to AWS
- Guerrilla activity uncovered



- Innovation:

- Enfranchise use
- Extend existing management tools to support hybrid model with rules and reporting
- Self-service, service catalogs
- Baked-in process change?
- 'Real' cloud strategy under way...

# Chip Design – Cloudbursting



- Project:
  - Cloudburst internal grid to Amazon cloud
  - Already uses external services for CRM, HR, etc.
  - Cost allocation is key
  
- Challenges:
  - Meeting contractual obligations in the cloud
  - New spending – capex or cloud?

# Private Hosted, Enterprise Public Clouds

- Cloud Projects:



- Create private hosted, public enterprise clouds

- Goals:



- Support internal, external customers
- Turn fixed costs into variable costs



- Challenges:



- Flexibility
- Service management
- Establish enterprise QoS, SLA



# FSI – From Grid to Cloud?



- Investment banking groups champion use of grid for HPC
- Benefits realized from shared resources
- Same groups asked to extend shared infrastructure to support additional activities (e.g., retail banking)

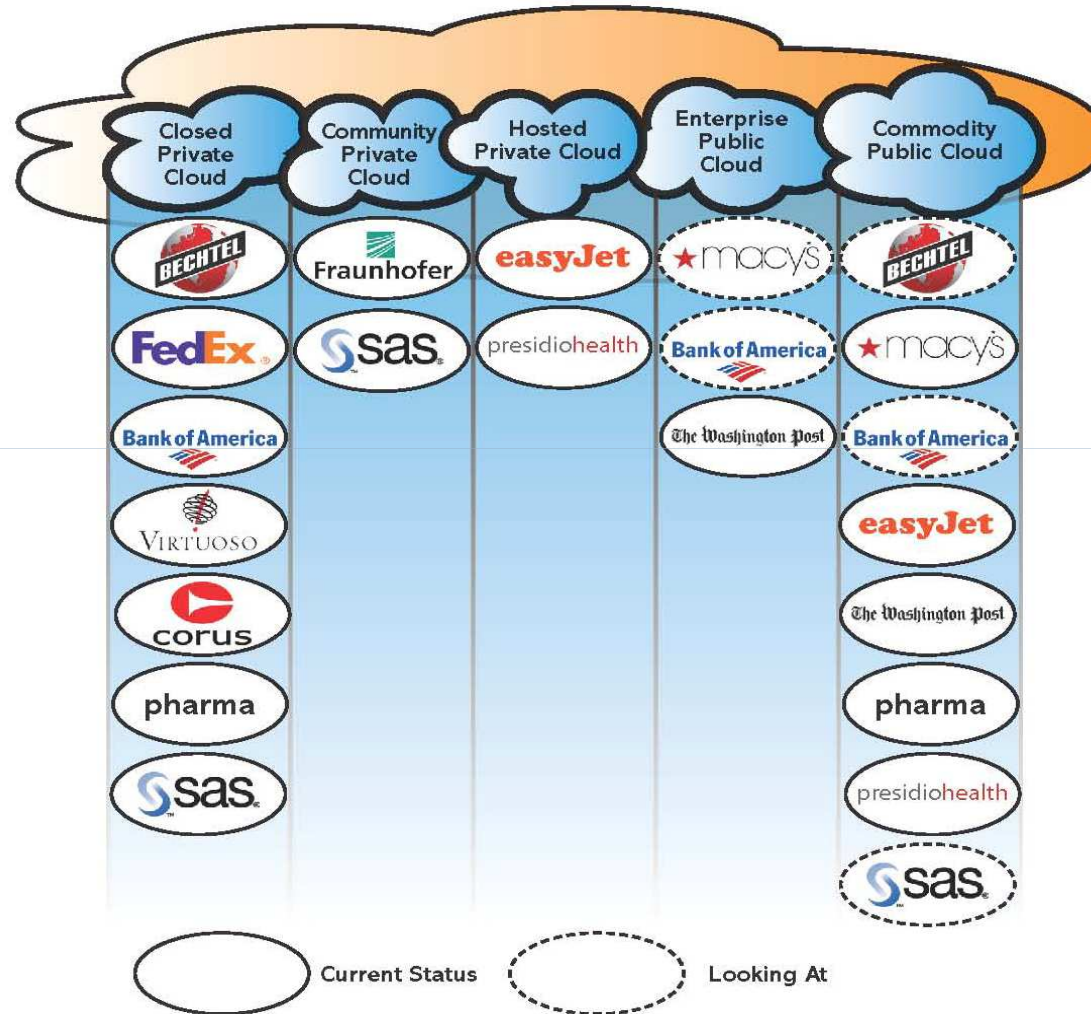


- Features:

- Improved utilization
- Utility cost allocation
- Silos to internal cloud: projected savings = 30%
- Public cloud experimentation



# Which Models Are Being Adopted?



# Some Drivers of Enterprise Cloud

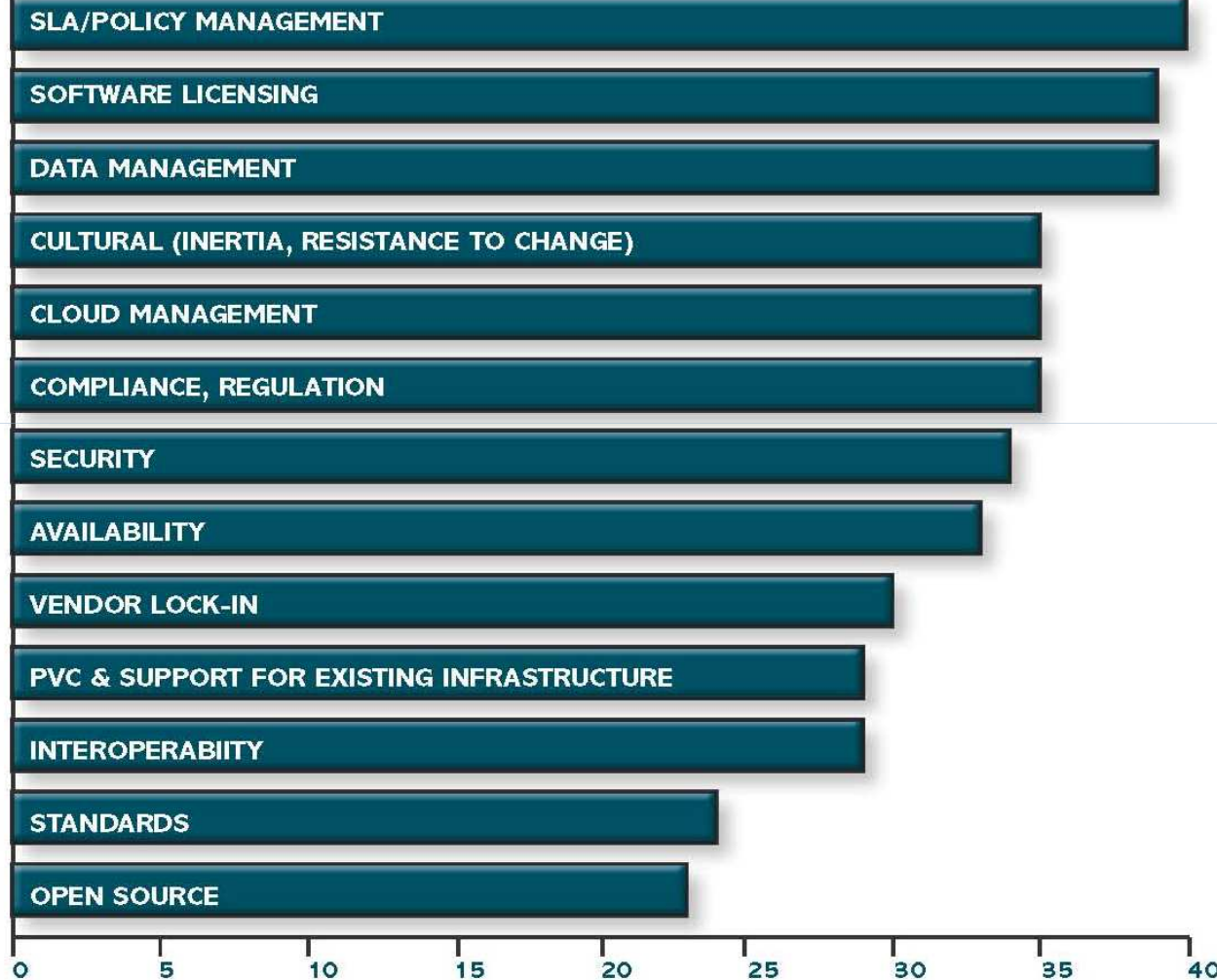
- Cost reduction in the short term
- IT staff already using cloud services
- Avoidance of capital expenditure
  - Reducing footprint – physical and carbon
- Managing underutilized resources
- Flexibility in scaling IT up and down
- Rolling out new services rapidly
  - Accelerated time to market

# Some Barriers to Adoption

- Security – data, application isolation, shared networks, compliance
- ISV licensing – adapting 20+-year models to new per-hour models
- Support SLAs – strength, ability to deliver, remuneration if failure
- Corporate governance policies – changes often required
- Interoperability – data format, data management
- Uncertainties of the business model, cloud vendor viability
- Direct threat to enterprise IT workers' jobs



# Specific Concerns



# What We Are Seeing

- PVC: people are starting to talk about an infrastructure progression from physical to virtual to clouds
- Public/private cloud – 30% infrastructure cost savings
- 25%+ of capacity in the cloud
- Benchmarking against Amazon
  - AMI becoming a de facto standard?
- Cost allocation, self-service

# Hmm, Seems Too Rosy – What's the Downside?



# What We Are Hearing

- “There aren’t any tools... There are too many tools... The tools don’t work the way I do!”
- How do I get from where I am today to cloud?
- Data Management
- How/when should I put an app on the cloud – and can I leave?
- How far up the stack will internal clouds go?
- Licensing in the cloud is a stumbling block

# What We Expect

- Once specific concerns are overcome, external clouds will be used on a production basis
- Almost without exception, IaaS will lead to an examination of PaaS
- ‘Standards’ won’t hold up or advance clouds – economics will
- A few public clouds, but many private clouds
- Benefits will depend mostly upon mindset?

# Cloud Computing Is Dangerous

- Danger illustrates the data management/  
security/availability issue
  - Major server outage caused loss of significant personal data at Microsoft's aptly-named subsidiary, Danger
- Where is the SLA?
- Compete with internal IT
- Can clouds cope with fast markets?
- Is a cloud cheaper?

# Recommendations

- Experiment with basic apps on multiple clouds, plan to span internal/external
- New project – no servers?
- Cloud scares suppliers; put it on RFPs
- It's a different sell

It's a hybrid world - don't stand still





Thank You

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