Role of Cloud Computing in the 21st Century Business

Session #7629

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IBM SWG Standards Strategy

The world is getting smarter – more instrumented, interconnected, intelligent.

Smart traffic systems

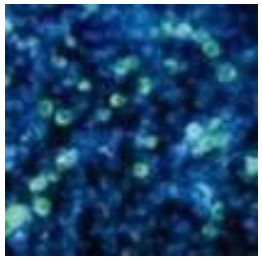
Intelligent oil field technologies

Smart food systems

Smart healthcare

Smart energy grids

Smart retail



Smart water management

Smart supply chains

Smart countries

Smart weather

Smart regions

Smart cities

Our planet is not only getting smaller and flatter...

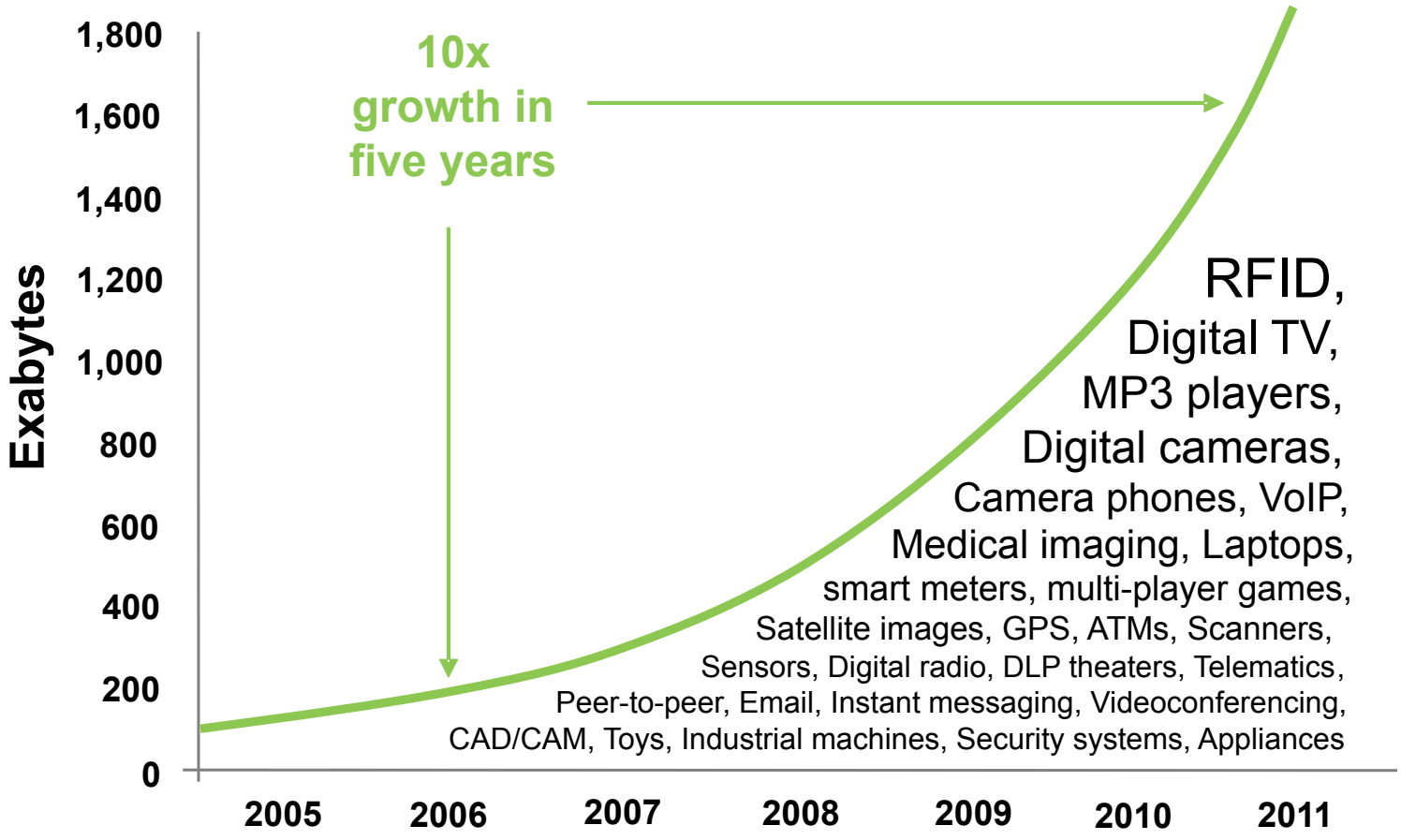
Our world is becoming
INSTRUMENTED

Our world is becoming
INTERCONNECTED

Virtually all things, processes and ways of working are becoming
INTELLIGENT

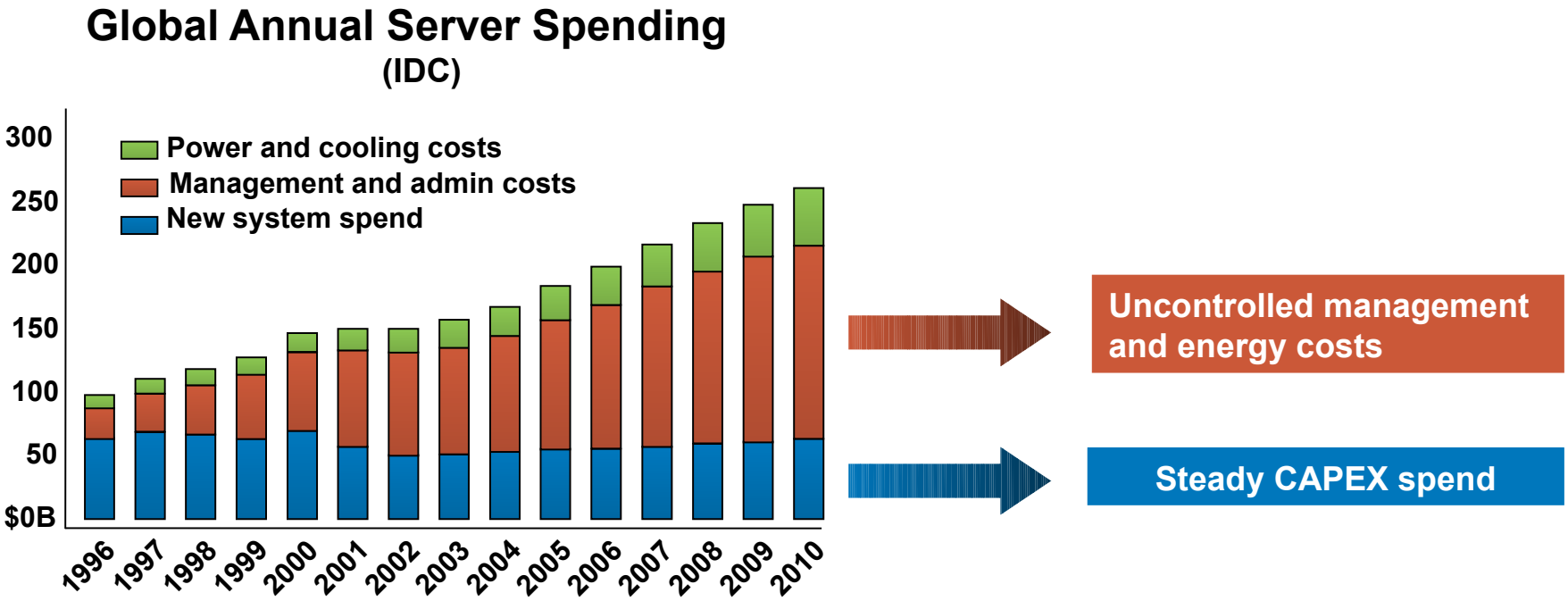
…It's getting smarter!

By 2011, the world will be 10 times more instrumented then it was in 2006. Internet connected devices will leap from 500M to 1 Trillion.



Approximately 70% of the digital universe is created by individuals, **but enterprises are responsible for 85% of the security, privacy, reliability, and compliance.**

A crisis of complexity. The need for progress is clear.

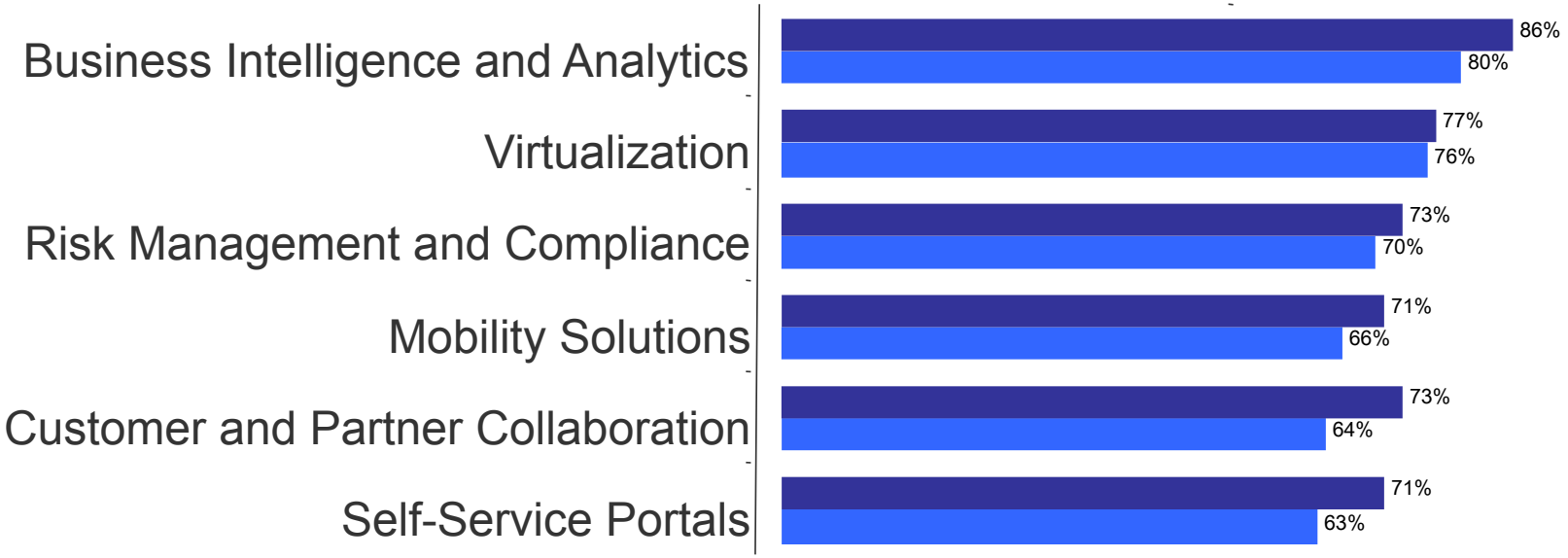


To make progress, delivery organizations must address the server, storage and network **operating cost** problem, not just CAPEX

Source: IBM Corporate Strategy analysis of IDC data

CIOs' visions of enhancing competitiveness include business oriented elements

Six Most Important Visionary Plan Elements



Interviewed CIOs could select as many as they wanted
http://www.ibm.com/services/us/cio/ciostudy/

Source: IBM Global CIO Study 2009; n = 2345

Cloud computing services are delivering real, measurable results and addressing IT infrastructure challenges

Capability	From	To
Server/Storage Utilization	10-20%	70-90%
Self service	None	Unlimited
Test Provisioning	Weeks	Minutes
Change Management	Months	Days/Hours
Release Management	Weeks	Minutes
Metering/Billing	Fixed cost model	Granular
Standardization	Complex	Self-Service
Payback period for new services	Years	Months

Financial Service Provider – Smart Business Test Cloud Cloud Computing Case Study

The Company	Large Financial Services Provider in the United States.
The Challenge	• Creating custom configurations reliably for testing business applications was difficult and resource intensive.
The Solution	▪ Smart Business Test Cloud ▪ Created a self-service, flexible and secure environment for use by internal developers and testers worldwide to develop, port, test and validate their software on standard systems and middleware.

The Benefits	▪ Improved time to market, higher quality and reduced costs
	▪ Projected business case results
	  ▪ Overall savings: $2.2 million (over three-year period)
	  ▪ Payback period: 10 months
	  ▪ Net Present Value (NPV): $1.5 million
	  ▪ Return on Investment (ROI): 435%

Collaboration Matters – LotusLive Cloud Computing Case Study

The Company	A social networking consultancy operating throughout the UK with strategic relationships with organizations in mainland Europe and USA
The Challenge	▪ Reduce time and money spent on client travel ▪ Eliminate time spent on searching email for files, version control problems ▪ No budget or IT resources to implement new collaboration infrastructure
The Solution	Use LotusLive **Files** to create a central place to store and share information with external audiences (e.g., Statement of Work, project plan, presentations) Use **Activities** to : ▪ Manage projects and tasks for software and infrastructure roll-outs ▪ Streamline client communication and work on tasks together ▪ Improve document version control ▪ Use **Online Meetings** to reduce travel costs ▪ Use **Contacts** and **Profiles** to manage contact list
The Benefits	▪ Saved 5-10 working days on a typical 8-week project, increasing productivity by **25%** ▪ Saved an estimated **20%** on total project costs (including travel) ▪ Reduced unnecessary e-mail communication ▪ Completed multiple projects with external audiences (worked across firewalls)

IT transformation includes Cloud Computing within IBM.
Yielding a cumulative benefit to IBM in excess of $4B

IBM Technology Adoption Program (TAP)

Saving IBM over $2.5M per year

Self-service, on demand IT delivery solution for 3,000 IBM researchers across 8 countries

Enterprise class utility computing solution for clients

Systems platform testing for Enterprise Clients, SMBs, & ISVs

Cloud computing solution for IBM Learning Centers in Europe

IBM Cloud Implementation

Analytics	Collaboration	Development & Test	Desktop	Storage	Business Services
Blue Insight 80K employees using Cloud analytics growing to 120K in 2Q	LotusLive 60% of all web conferencing minutes via LotusLive	CIO Dev/Test Cloud Provisioning time decreased from 1 week to 1-2 hours. Used by ½ new US development projects, expanding WW	Workplace Cloud 700 users in China Dev Lab growing to 1200 by 2Q. Goal 10K desktops WW.	Block Storage Cloud ~5 PB of disk storage potential in scope for cloud	Production Cloud 1K applications identified, 200-300 targeted for initial migration

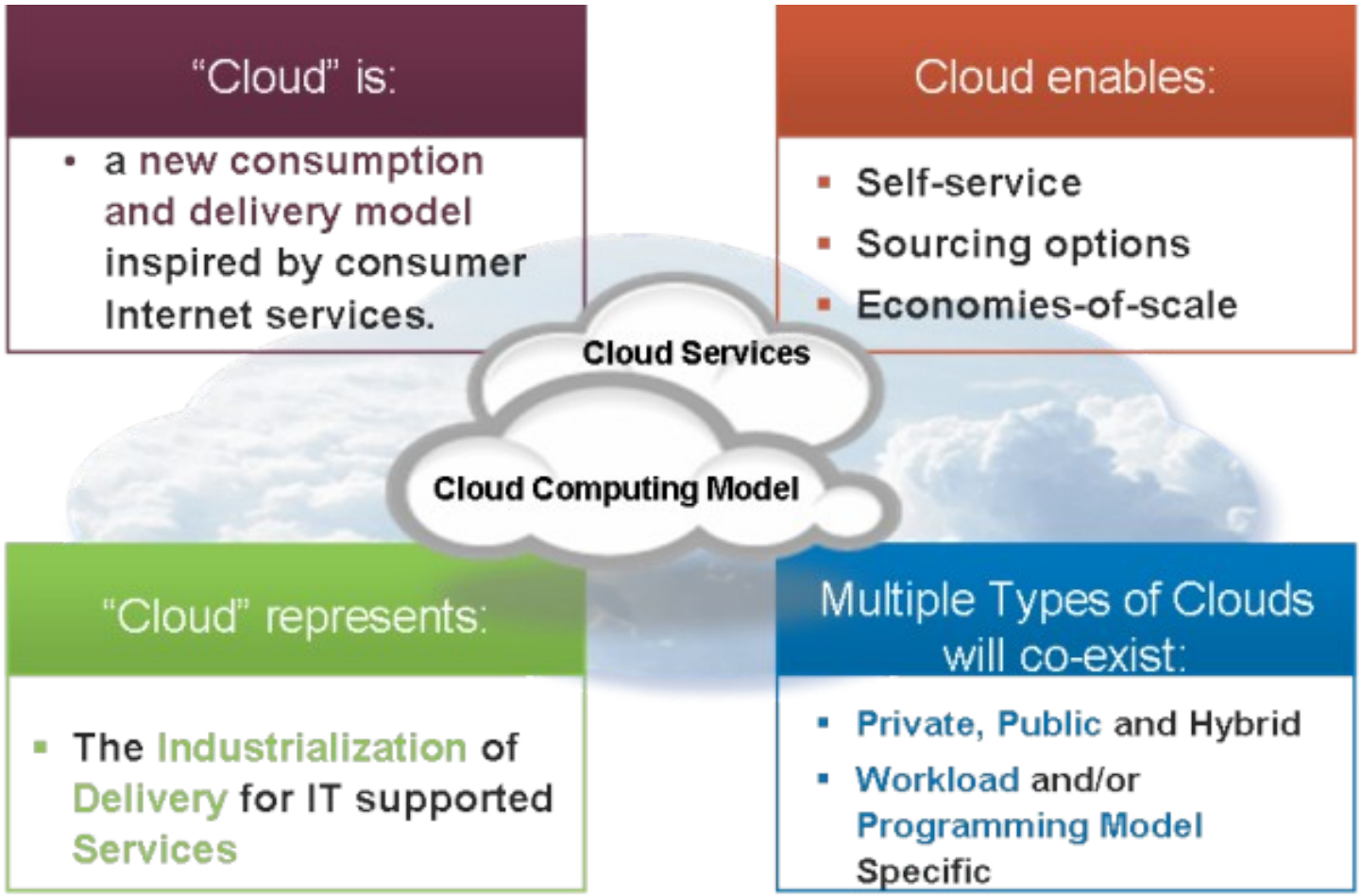
Fit for purpose middleware platform

Common Compute Platform
(Compute/ Network/ Storage)

Base Enterprise Platform

Separating hype from reality

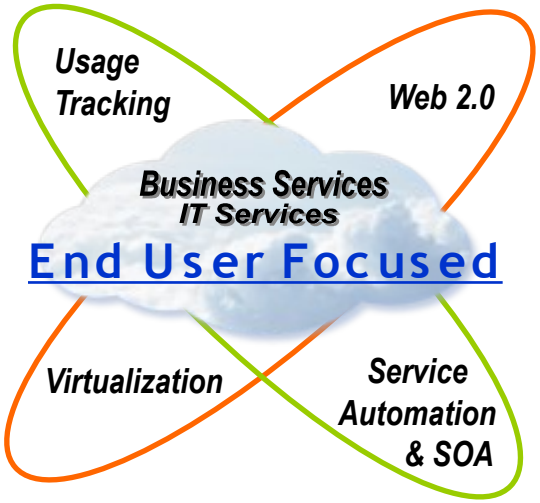
- Cloud is essentially IT consumption and/or delivery models that are optimized by workload
- What does that mean?



Is cloud computing really new? Yes, and no.

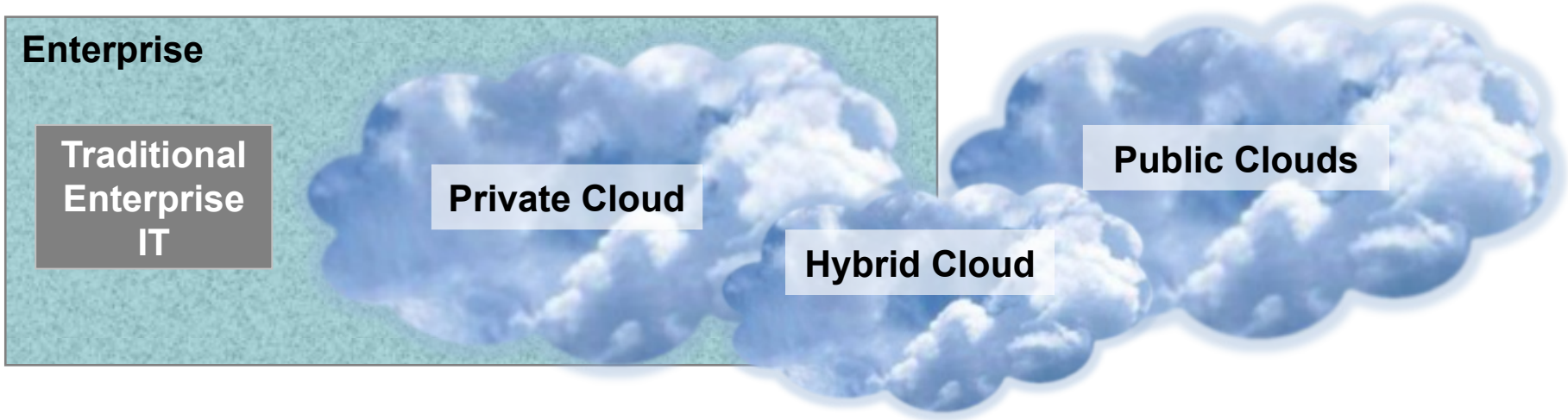
Cloud computing is a **new consumption and delivery model** inspired by consumer Internet services. Cloud computing exhibits the following 5 key characteristics:

- On-demand self-service
- Ubiquitous network access
- Location independent resource pooling
- Rapid elasticity
- Pay per use



While the technology is not new, the end user focus of self-service, self-management leveraging these technologies is new.

Today there are three primary delivery models that companies are implementing for cloud



Private Cloud

IT activities/functions are provided "as a service," over an intranet, within the enterprise and behind the firewall

- Key features include:
  - Scalability
  - Automatic/rapid provisioning
  - Chargeback ability
  - Widespread virtualization

Hybrid Cloud

Internal and external service delivery methods are integrated, with activities/functions allocated to based on security requirements, criticality, architecture and other established policies.

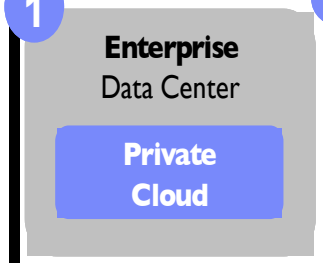
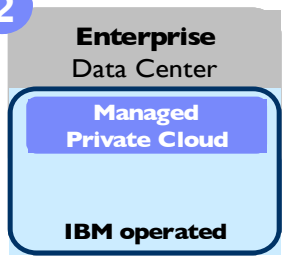
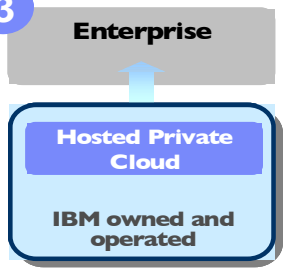
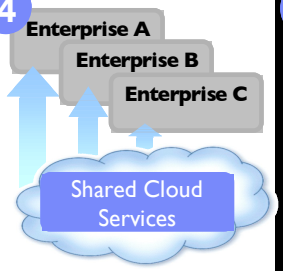
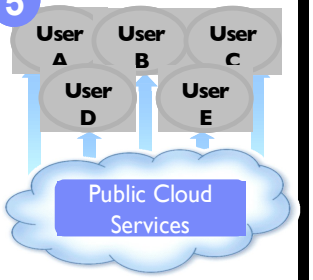
Public Cloud

IT activities/functions are provided "as a service," over the Internet

- Key features:
  - Scalability
  - Automatic/rapid provisioning
  - Standardized offerings
  - Consumption-based pricing.
  - Multi-tenancy

Source: IBM Market Insights, *Cloud Computing Research*, July 2009.

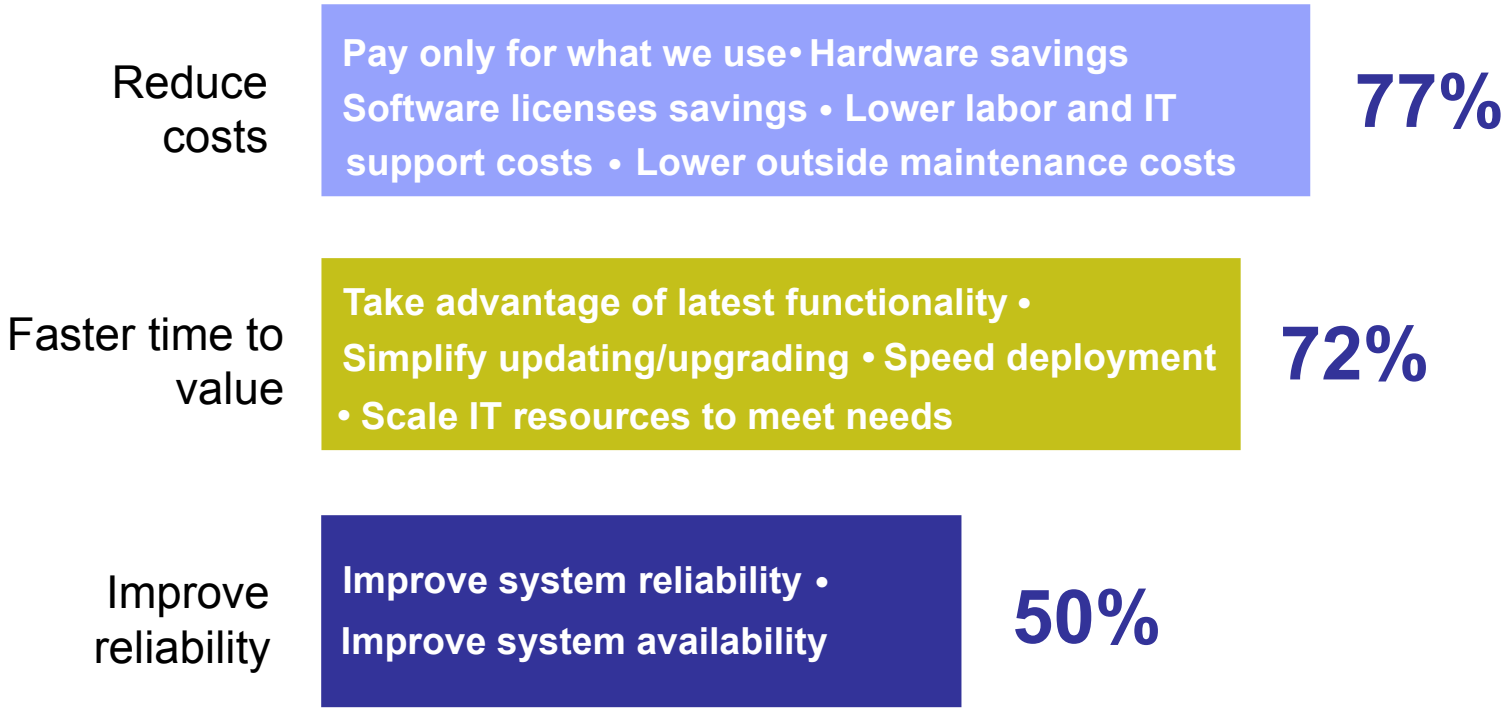
Cloud Deployment Models can provide options

Deployment Models	1	2	3	4	5
					
	• Private • Implemented on client's premise • Client runs / manages	• Enterprise owned • Mission critical • Packaged applications • High compliancy • Internal network	• 3rd party owned and operated • Standard-ization • Centralization • Security • Internal network	• Mix of shared and dedicated resources • Shared facility and staff • VPN access	• Shared resources • Elastic scaling • Pay as you go • Public internet

Data resides outside Client's firewall

Cost savings and faster time to value are the leading reasons why companies consider cloud

To what degree would each of these factors induce you to acquire public cloud services?



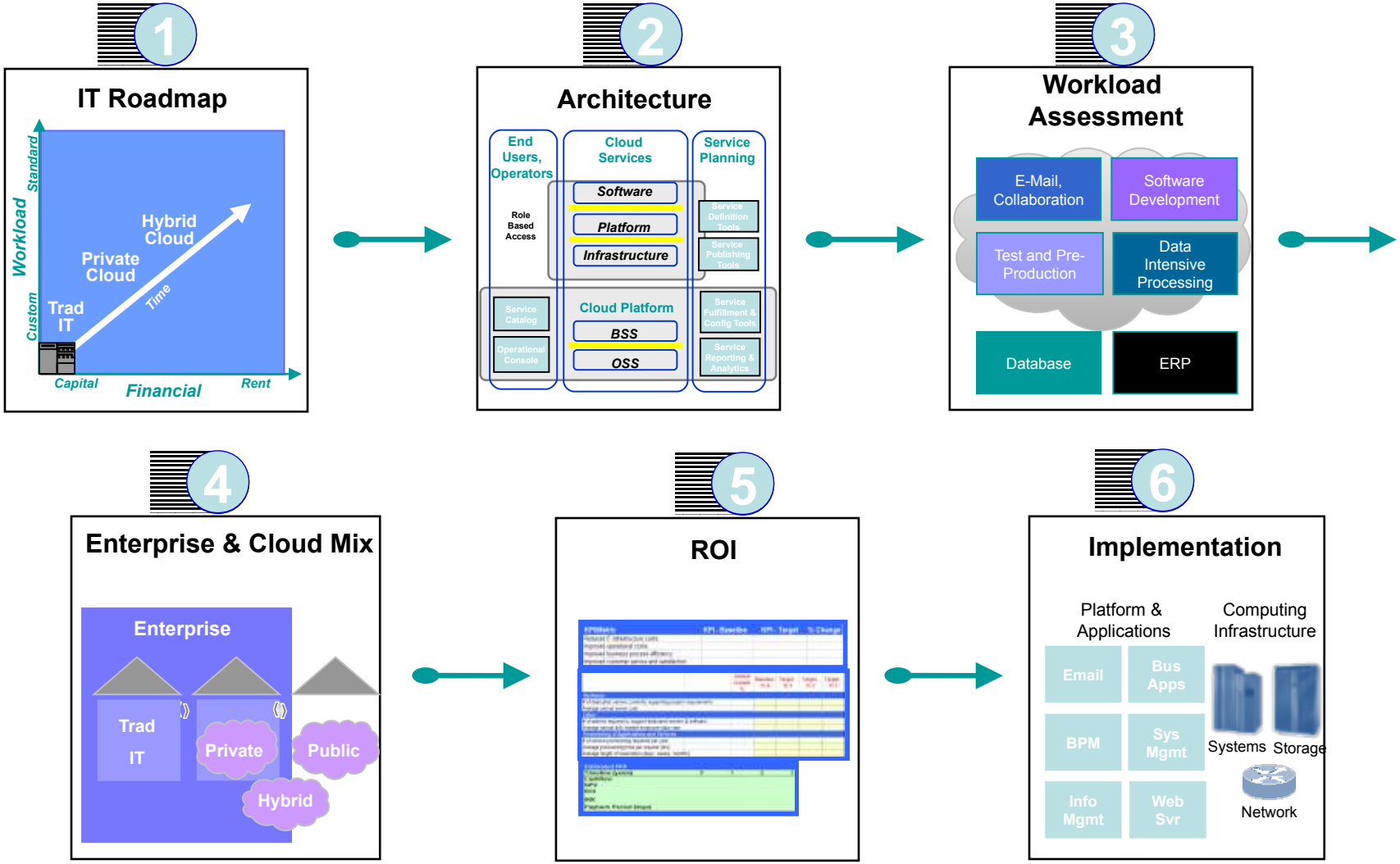
Respondents could rate multiple drivers items

Source: IBM Market Insights, *Cloud Computing Research*, July 2009. n=1,090

Managing Cloud Adoption

- Cloud economics look compelling
  - Small companies will adopt as reliable, easy-to-use services are available
  - Scale economics are within reach of many enterprises
- Client migration will be work load driven
  - Trade-off is value vs. risk of migration
  - Workload characteristics are critical
  - New workloads will emerge as cloud makes them affordable (eg pervasive analytics, Smart Healthcare)

Six Steps to Getting Started with Cloud Computing

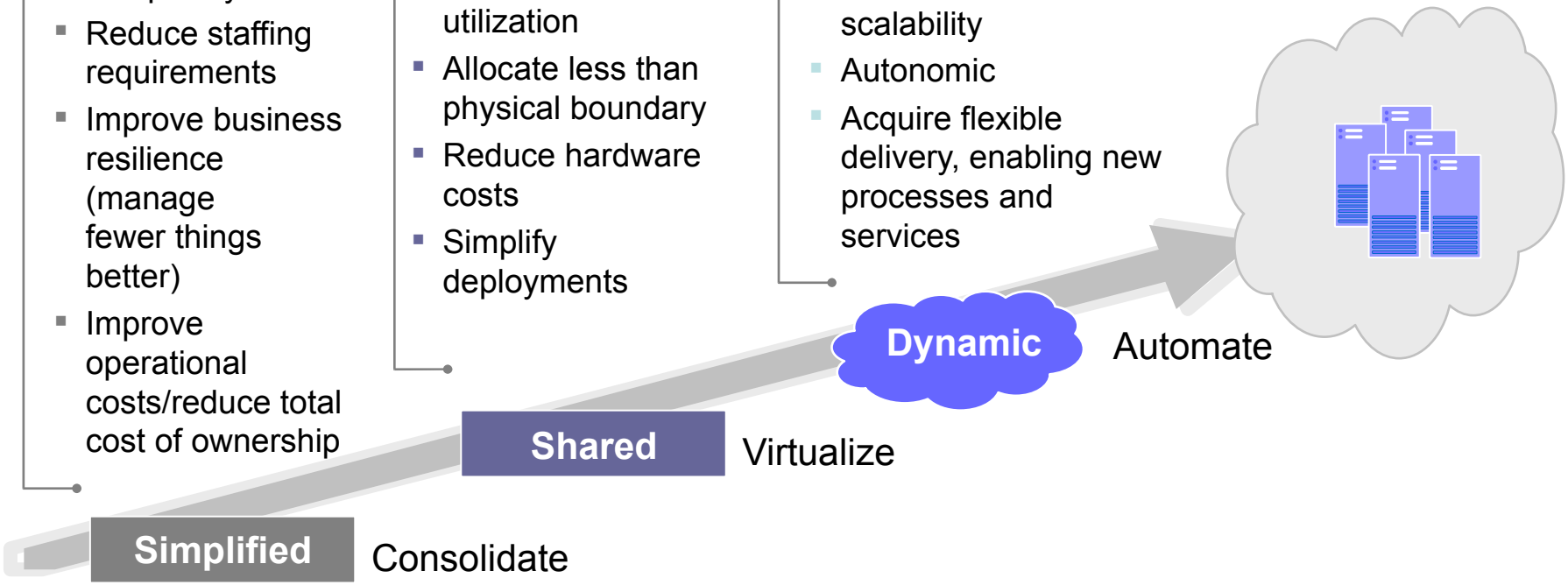


Create a Roadmap for Cloud as Part of the Existing IT Optimization Strategy

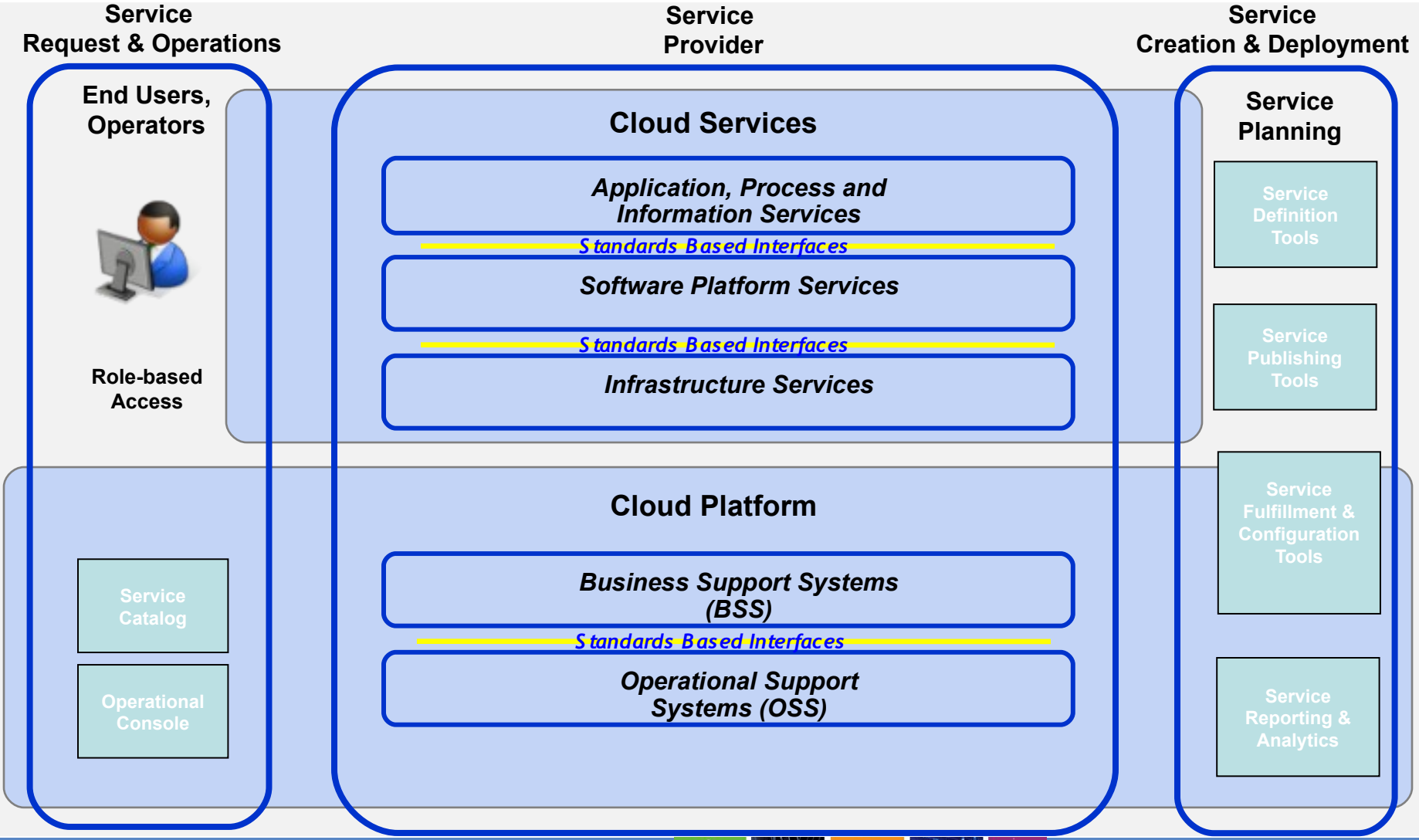
- Reduce infrastructure complexity
- Reduce staffing requirements
- Improve business resilience (manage fewer things better)
- Improve operational costs/reduce total cost of ownership

- Remove physical resource boundaries
- Increase hardware utilization
- Allocate less than physical boundary
- Reduce hardware costs
- Simplify deployments

- Standardize services
- Dramatically reduce deployment cycles
- Gain granular service metering and billing
- Obtain massive scalability
- Autonomic
- Acquire flexible delivery, enabling new processes and services

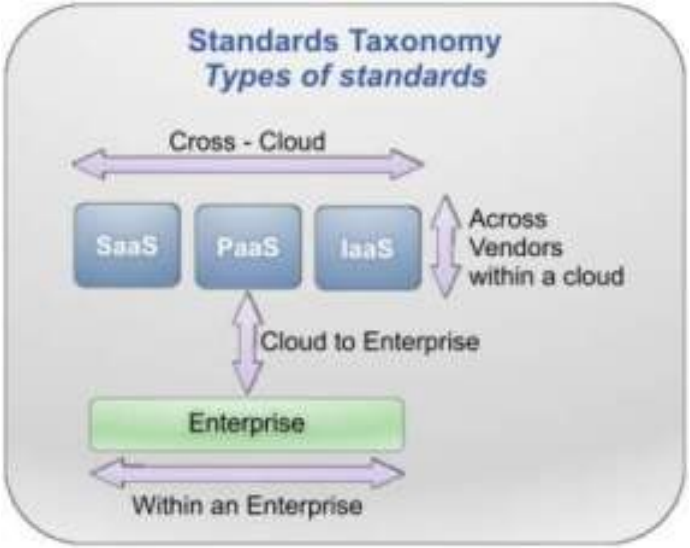


An Architectural Model that includes Standards-based Interfaces is key



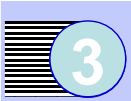
Cloud Standards

- Cloud platforms are diverse; open standards are critical
- The Open Cloud Manifesto outlines standards principles:
  - Existing standards should be reused
  - All standards efforts should be based on customer requirements
  - Standards development efforts should stay coordinated



- IBM has initiated a community-based effort to collect customer requirements
  - First draft completed 8/2009
  - Broad industry participation/interest (over 800 participants with 30+ contributors)
- IBM is working with standards organizations to drive new standards for:
  - Virtualization - DMTF
  - Security e.g. OASIS IDCloud TC, Cloud Security Alliance
  - Common interfaces – e.g. Cloud Interop Forum
  - Management
  - In short, IBM is leading, engaging or monitoring Cloud standards activity in no fewer than 50 orgs!

Client Migration will be Workload Driven

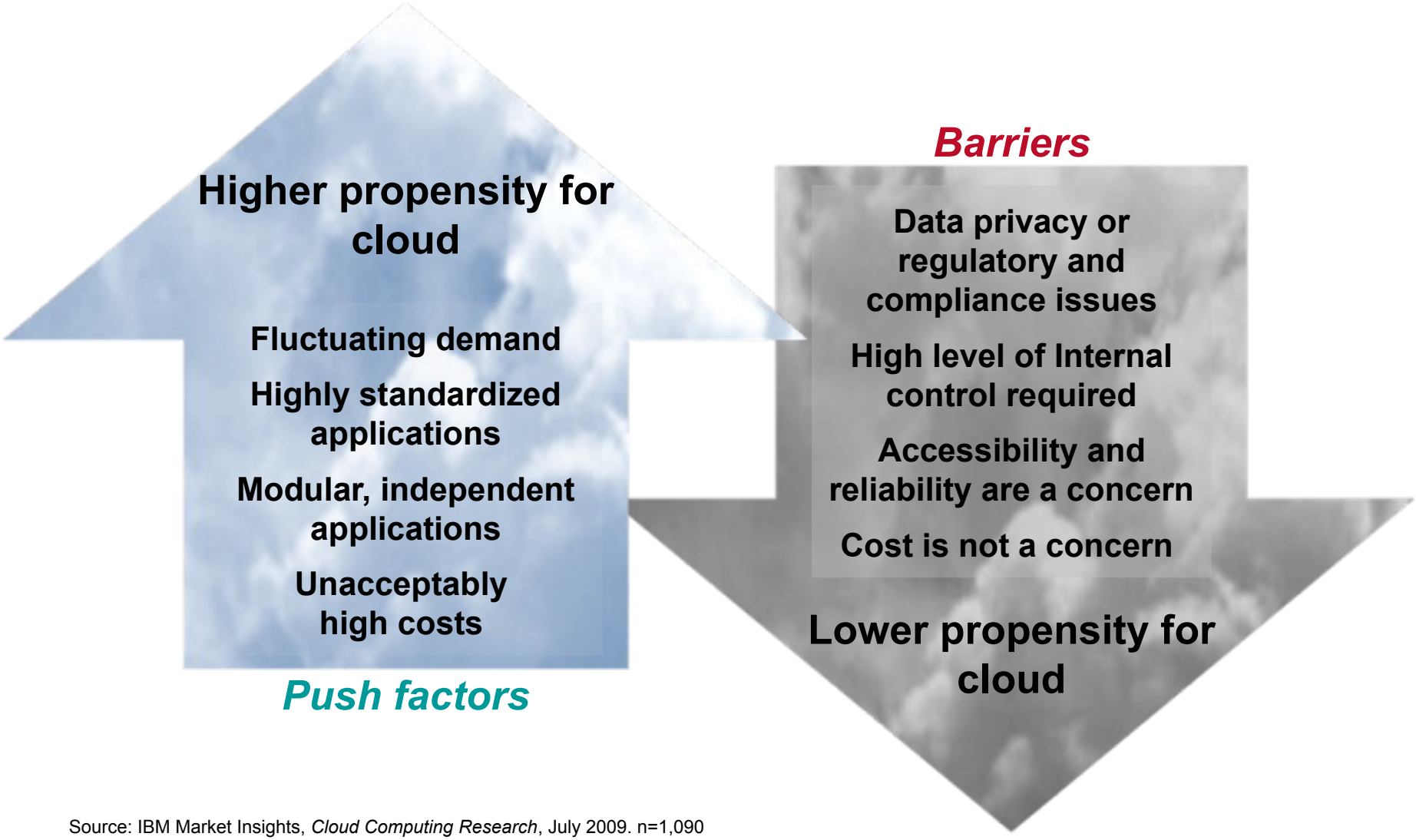


Workload

- Workload characteristics determine standardization
  - ***For example, transaction and information management processes may present challenges and risks***
  - ***Other workloads, such as collaboration and development and test, will move faster and can provide rapid return-on-investment and productivity gains.***
- For most enterprises, the best opportunities will be clear

Test for Standardization	Examine for Risk	Explore New Workloads
▪ Web infrastructure applications ▪ Collaborative infrastructure ▪ Development and test ▪ High Performance Computing	▪ Database ▪ Transaction processing ▪ ERP workloads ▪ Highly regulated workloads	▪ High volume, low cost analytics ▪ Collaborative Business Networks ▪ Industry scale “smart” applications
 	 	 

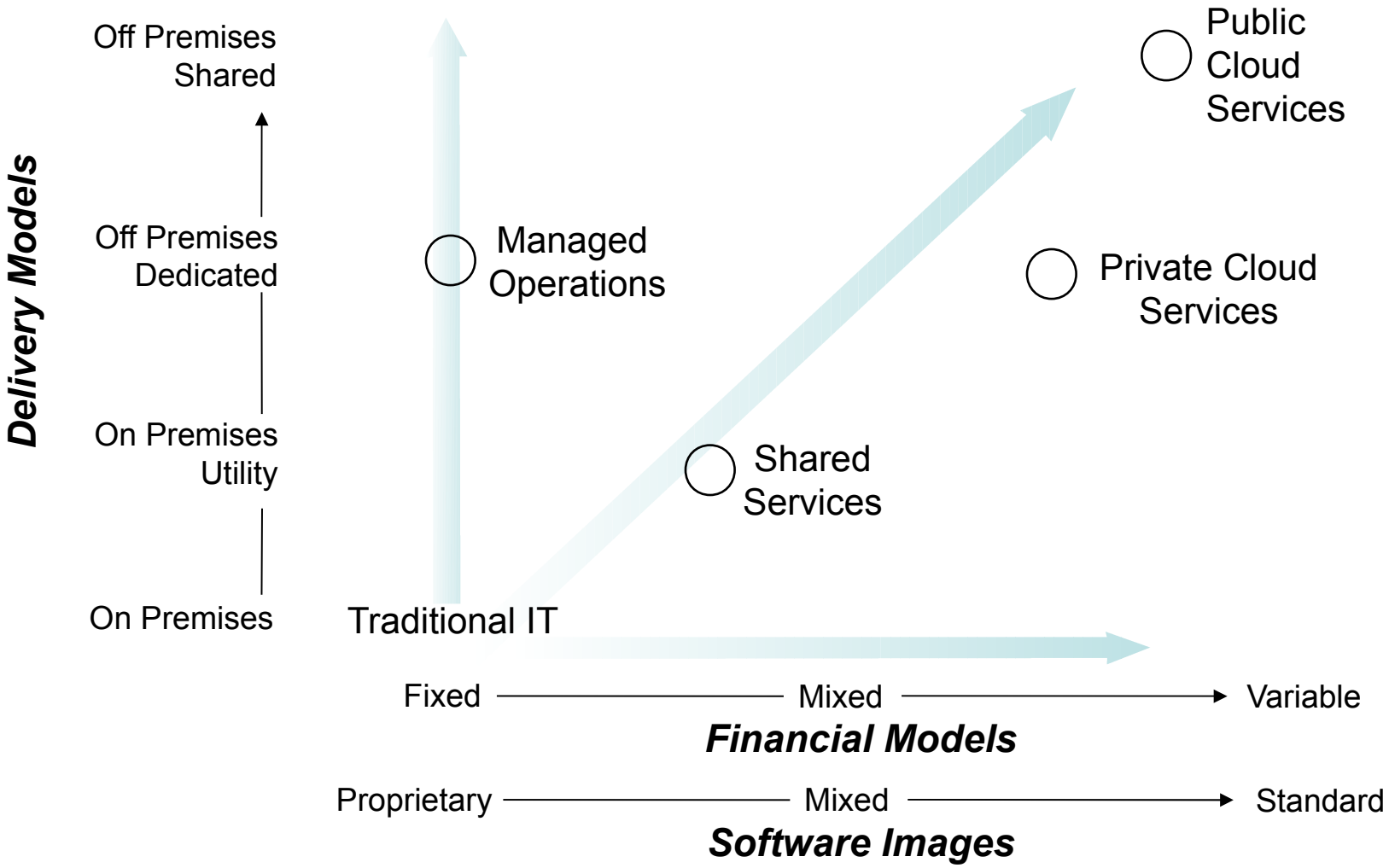
Workload Characteristics for Cloud Delivery



Source: IBM Market Insights, *Cloud Computing Research*, July 2009. n=1,090

Public and Private Clouds
Decide the Right Mix for the Enterprise

4 Enterprise / Cloud Mix



Public and Private Clouds are Preferred for Different Workloads

Top public workloads

- Audio/video/Web conferencing
- Service help desk
- Infrastructure for training and demonstration
- WAN capacity, VOIP Infrastructure
- Desktop
- Test environment infrastructure
- Storage
- Data center network capacity
- Server

Infrastructure workloads emerge as most appropriate

Top private workloads

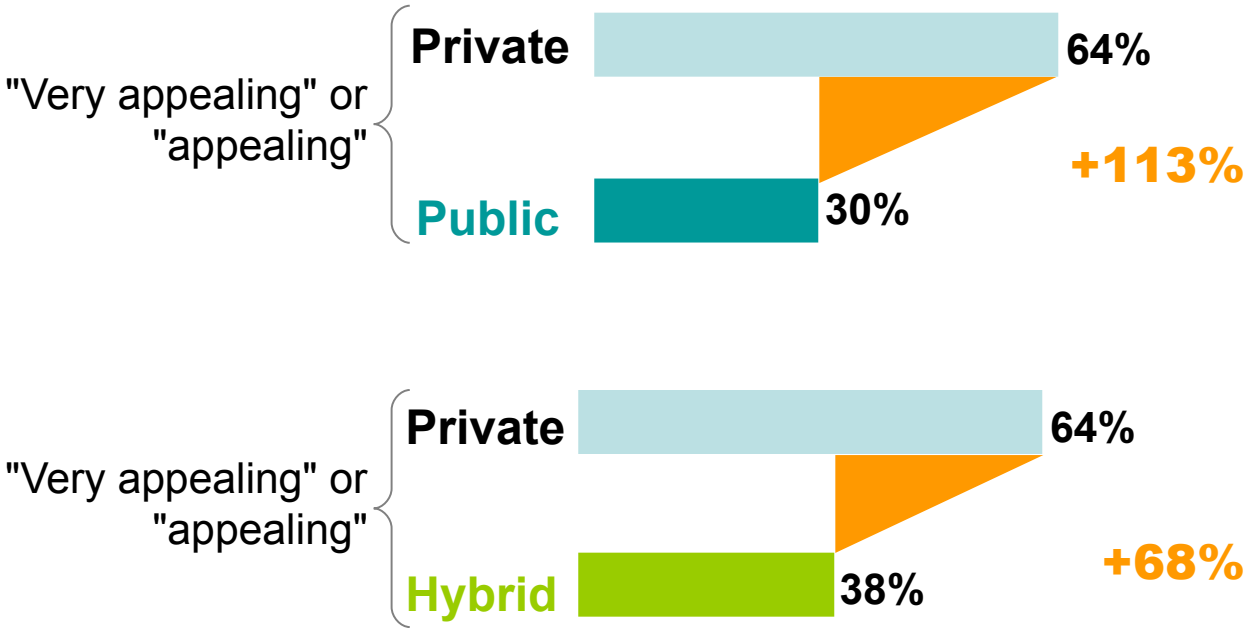
- Data mining, text mining, or other analytics
- Security
- Data warehouses or data marts
- Business continuity and disaster recovery
- Test environment infrastructure
- Long-term data archiving/preservation
- Transactional databases
- Industry-specific applications
- ERP applications

Database- and application-oriented workloads emerge as most appropriate

Source: IBM Market Insights, *Cloud Computing Research*, July 2009. n=1,090

Clients interviewed significantly prefer private clouds over public or hybrid clouds

Overall, how appealing are the public, private and hybrid delivery models for your company?



However, adoption of Public Clouds is expected to grow by 26% CAGR between now and 2013*

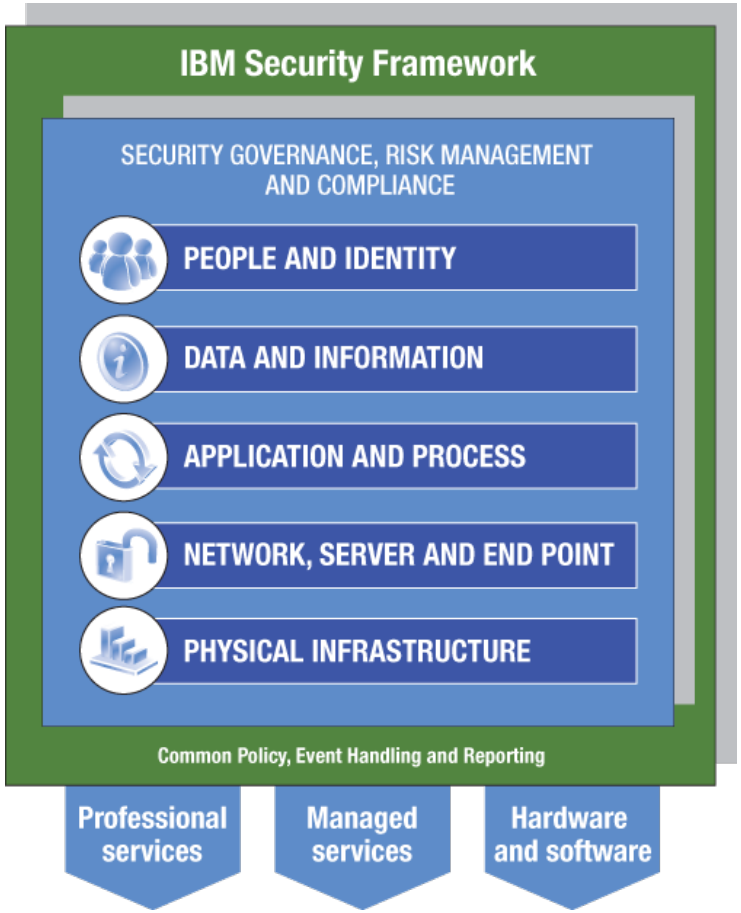
Source: IBM Market Insights, *Cloud Computing Research*, July 2009. n=1,090

*IDC eXchange, IDC's New IT Cloud Services Forecast: 2009-2013, p=543, Oct 5, 2009

The IBM Security Framework

Comprehensive Risk and Compliance Management

- **15,000** researchers, developers, and SMEs on security initiatives
- **3000+** security & risk management patents
- **200+** security customer references and **50+** published case studies
- **40+** years of proven success securing the zSeries environment
- **$1.5 Billion** security spend in 2008
- Managing more than **4 Billion** security events per day for clients



Cloud Computing can Provide Dramatic, Measurable Business Value

5 ROI

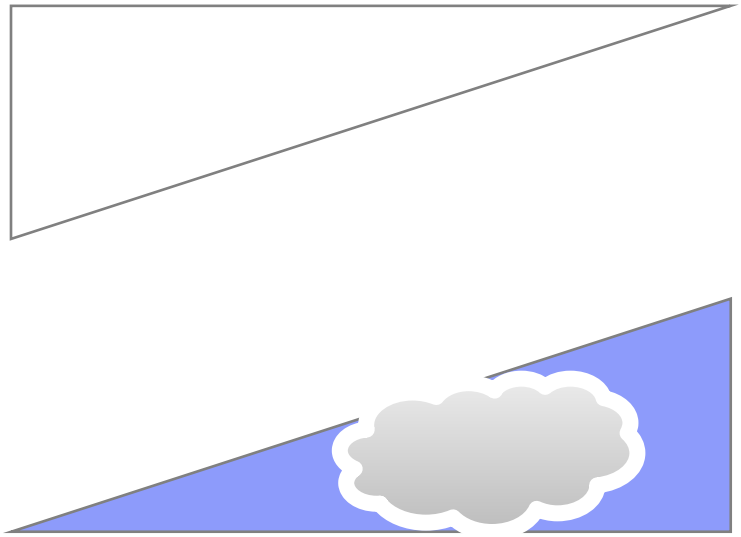
VIRTUALIZATION

AUTOMATION

STANDARDIZATION

Cloud attributes	From	To
Server/storage virtualization	10–20%	70–90%
Utilization of infrastructure	10–20%	70–90%
Self-service	None	Unlimited
Automated provisioning	Months	Days/hours
Change and release management	Months	Minutes
Service catalog ordering	Months	Days/hours
Metering/billing	Fixed cost model	Granular
Payback period for new services	Years	Months

Cloud accelerates business value across a wide variety of domains



Legacy environments — Cloud-enabled enterprise

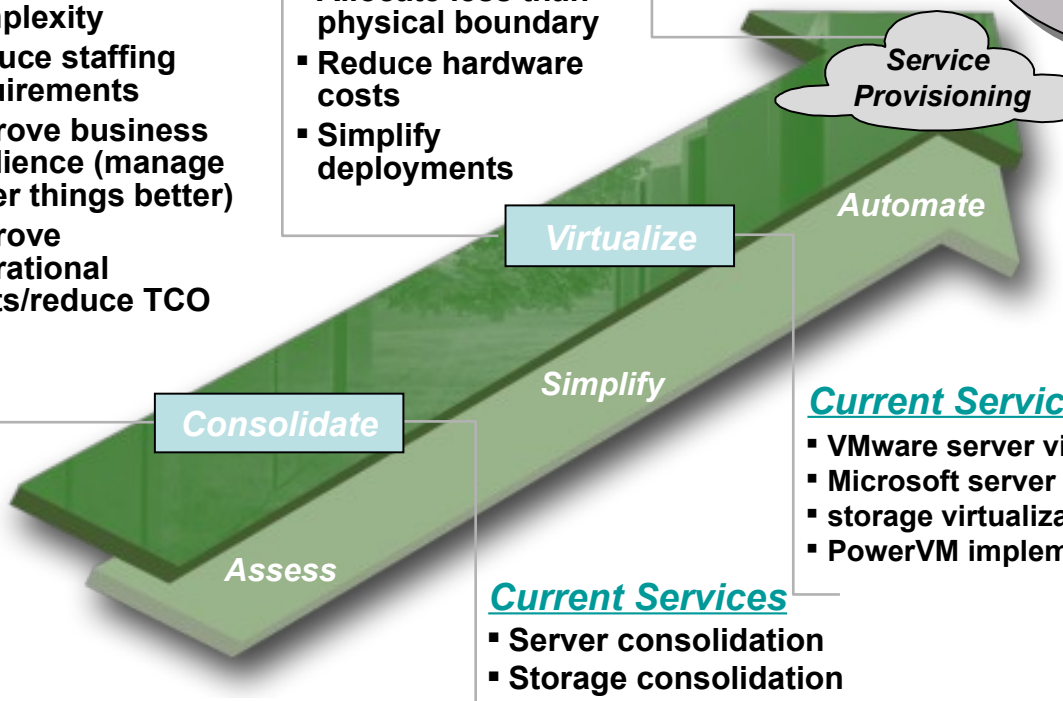
Roadmap to a Private Cloud Implementation

6 Implementation

- Reduce infrastructure complexity
- Reduce staffing requirements
- Improve business resilience (manage fewer things better)
- Improve operational costs/reduce TCO

- Remove physical resource boundaries
- Increased hardware utilization
- Allocate less than physical boundary
- Reduce hardware costs
- Simplify deployments

- Easy to access, easy to use Service Catalog
- Dramatically reduce deployment cycles
- Granular service metering and billing
- Drive standardization



Information Management Services

Infrastructure as a Service

Internet Data Center

Current Services
- VMware server virtualization
- Microsoft server virtualization
- storage virtualization
- PowerVM implementation

Current Services
- Server consolidation
- Storage consolidation
- Consolidation efficiency study

Cloud Platform Stack
- *Service Oriented*
- *Massively Scalable*
- *Dynamic Service Management*
- *Multi-tenancy*
- *Secure*
- *Self-healing*
- *Flexible*

Cloud computing helps businesses become smarter

Reduce **Costs** | Accelerate **Growth** | Increase **Speed** | Enable **Innovation**

Processes

Enable innovation in business models and processes and faster application delivery and change.

People

Facilitate new types of collaborative interactions with customers, partners and colleagues to respond quickly to changing business needs

Information

Improve visibility into business operations and quickly anticipate opportunities and threats

Infrastructure

Achieve new levels of efficiency and effectiveness of infrastructure assets

In Summary … there is opportunity in the shift to a smarter planet.

- Growth of instrumentation, interconnection and intelligence in the world will drive the emergence of IT and business services ... and the requirement for service management systems.
- New IT consumption and delivery models are very compelling for some workloads today – and will position your enterprise for the future.
- IBM offers new choices to:
  - Reduce infrastructure and operational costs.
  - Accelerate service deployment and return on investment.
  - Deliver consistent, secure services.

Thank you!

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For more information, please visit:
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