



CLOUD COMPUTING

Tech Briefing



AGENDA

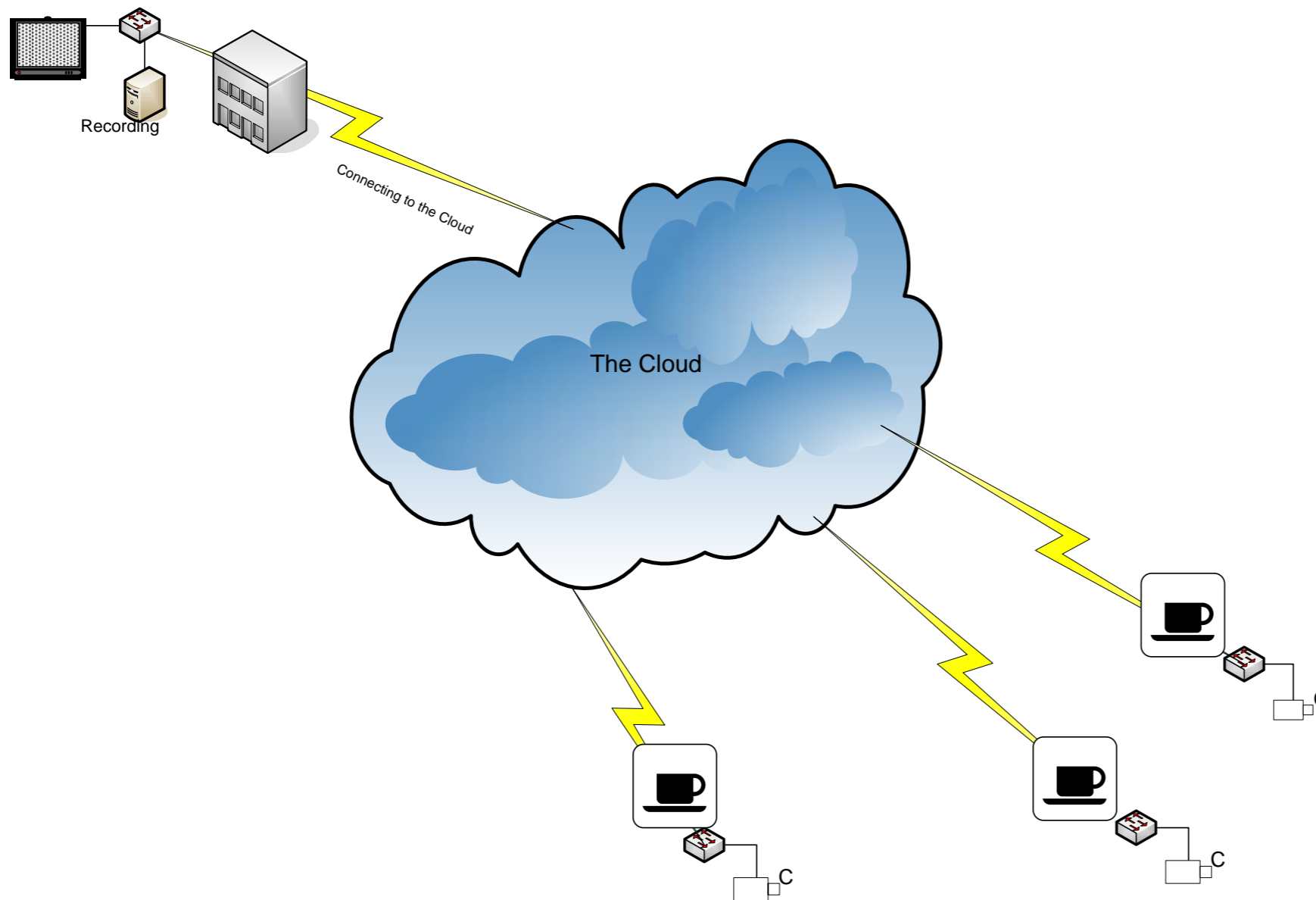
- Where does the term Cloud Computing come from
- Types of Clouds
- What's available in the Cloud
- Key elements for consideration when considering Cloud

Introduction

Key to learning is not that we know all that we need to know before we start doing, but that learning supports our ability to find what we need to know at the point that we need it.

It's all in the cloud!

What is The Cloud



The Cloud
Mass denotes
the role of the
service
provider in the
connectivity of
sites.

Deployment Model

PRIVATE CLOUD

Operated solely for an organization.

COMMUNITY CLOUD

Shared by several organizations and supports a specific community that has shared concerns

PUBLIC CLOUD

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

HYBRID CLOUD

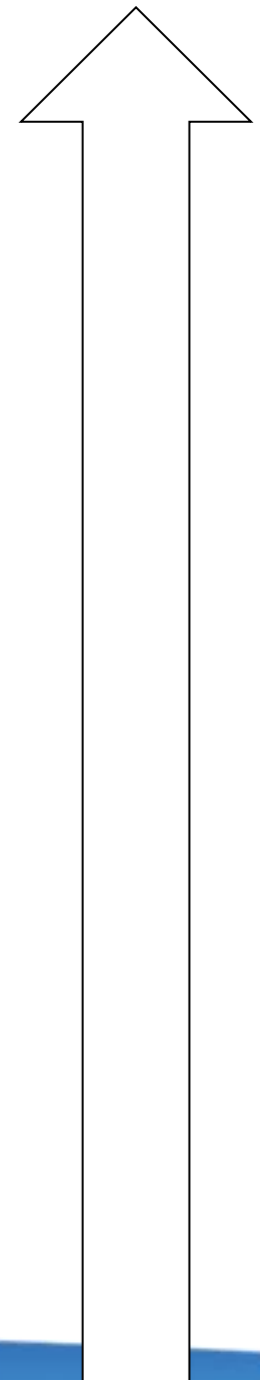
Composition of two or more clouds (private, community, or public) that remain unique entities but are bound together by standardized or proprietary technology that enables data and application portability

Cloud Related Service Offerings

- Adapted from Forrester

Cloud Market Types	Types of Offerings	Examples
Software-as-a-Service	<ul style="list-style-type: none"> • Rich Internet application web sites • Application as Web Sites • Collaboration and email • Office Productivity • Client apps using cloud services 	<ul style="list-style-type: none"> • Flickr • Myspace.com • Cisco WebEx office • Gmail • IBM Bluehouse
Application Components-as-a-Service	<ul style="list-style-type: none"> • APIs for specific service access for integration • Web-based software service than can combine to create new services, as in a mashup 	<ul style="list-style-type: none"> • Amazon Flexible Payments Service and DevPay • Salesforce.com's AppExchange • Yahoo! Maps API • Google Calendar API • zembly
Software Platform-as-a-Service	<ul style="list-style-type: none"> • Development-platform-as-a-service • Database • Message Queue • App Servicer • Blob or object data stores 	<ul style="list-style-type: none"> • Google App Engine and BigTable • Microsoft SQL Server Data Services • Engine Yard • Salesforce.com's Force.com
Virtual Infrastructure-as-a-Service	<ul style="list-style-type: none"> • Virtual servers • Logical disks • VLAN networks • Systems Management 	<ul style="list-style-type: none"> • Akamai • Amazon EC2 and S3 • CohesiveFT • Mosso (from Rackspace) • Joyent Accelerators • Nirvanix Storage Delivery Network
Physical Infrastructure	<ul style="list-style-type: none"> • Managed Hosting • Collocation • Internet Service Provider • Unmanaged hosting 	<ul style="list-style-type: none"> • GoDaddy.com • Rackspace • Savvis

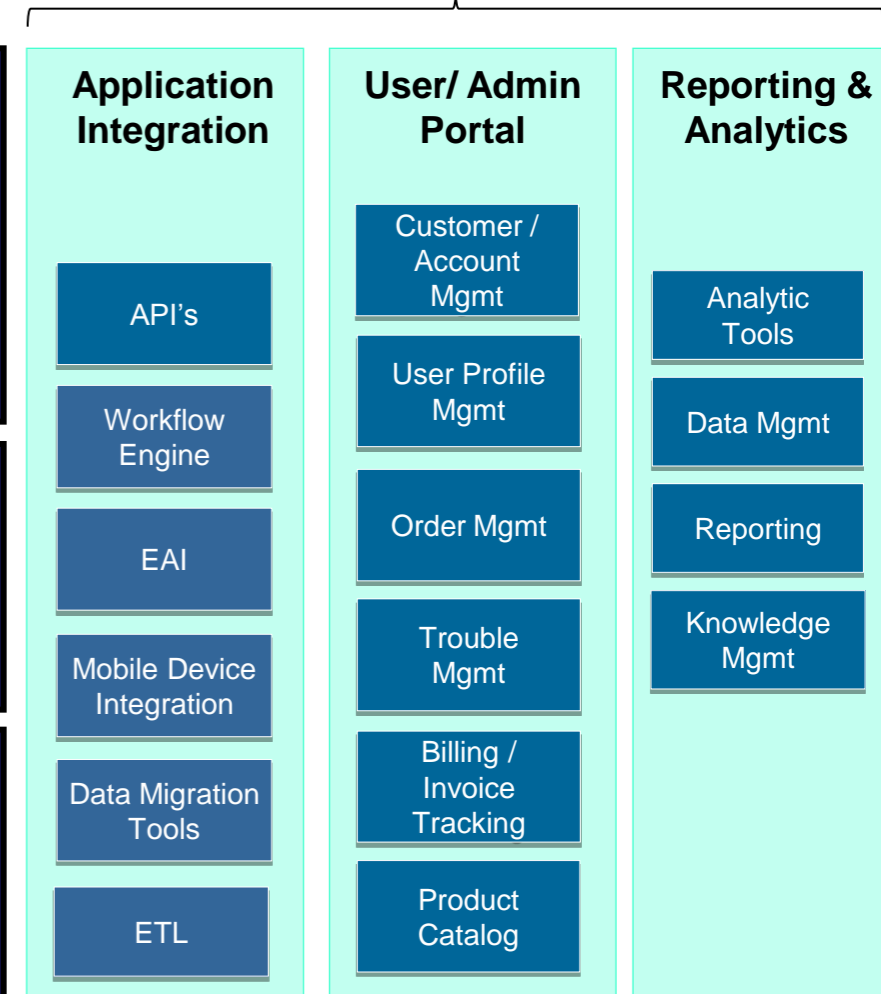
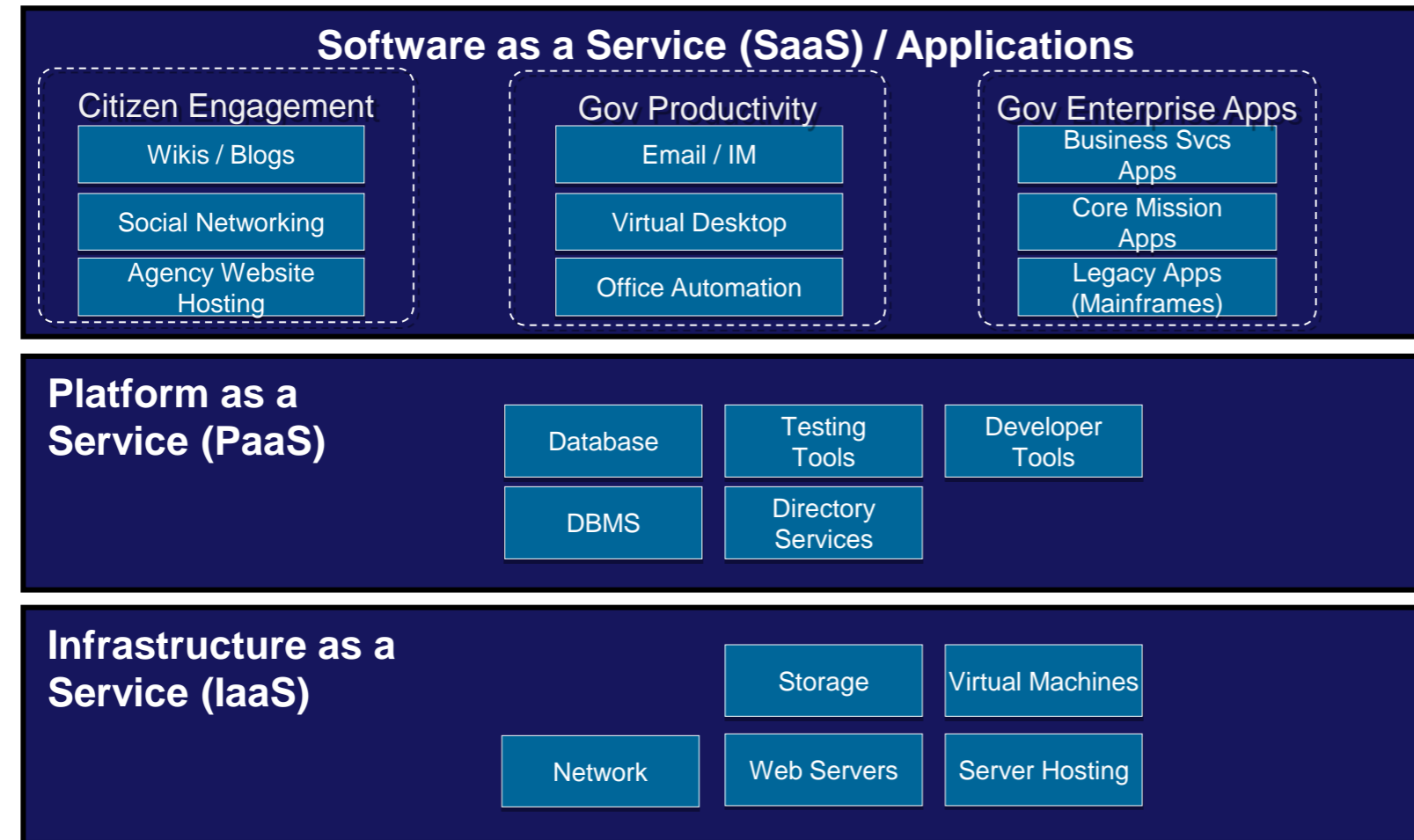
Level of Abstraction



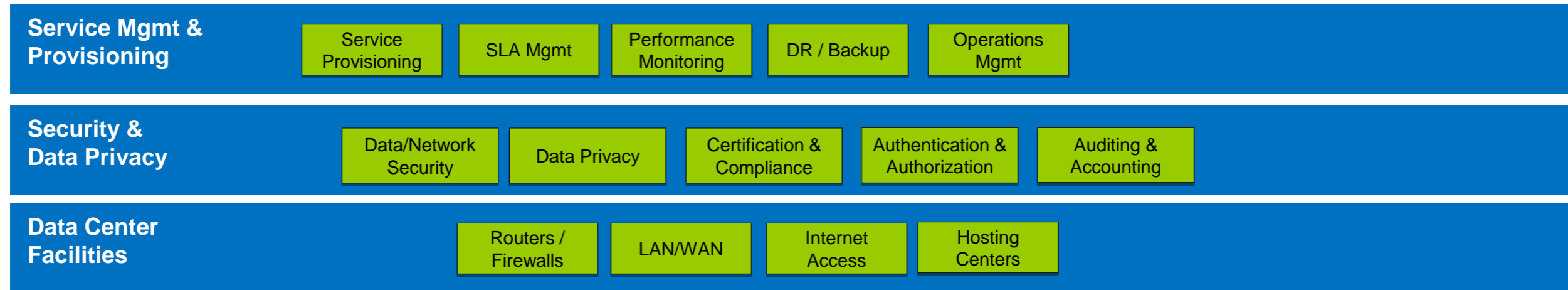
Government Cloud Computing Framework

Cloud User Tools

Core Cloud Services



Cloud Service Delivery Capabilities



Drivers for Cloud Computing Adoption

Scalability	Users have access to a large amount of resources that scale based on user demand.
Elasticity	The environment transparently manages a user's resource utilization based on dynamically changing needs.
Virtualization	Each user has a single view of the available resources, independently of how they are arranged in terms of physical devices.
Cost	The pay-per-usage model allows an organization to only pay for the resources they need with basically no investment in the physical resources available in the cloud. There are no infrastructure maintenance or upgrade costs.
Mobility	Users have the ability to access data and applications from around the globe.
Collaboration	Users are starting to see the cloud as a way to work simultaneously on common data and information.

Barriers for Cloud Computing Adoption

Security	The key concern is data privacy. Users do not have control of or know where their data is being stored.
Interoperability	A universal set of standards and/or interfaces have not yet been defined, resulting in a significant risk of vendor lock-in.
Control	The amount of control that the user has over the cloud environment varies greatly between vendors.
Performance	All access to the cloud is done via the internet, introducing latency into every communication between the user and the environment.
Reliability	Many existing cloud infrastructures leverage commodity hardware that is known to fail unexpectedly.

UC Berkeley View of Cloud Computing

- #1 Must-Read on the Subject
- Summary of Paper:
 1. Illusion of infinite compute resources on demand
 2. Ability to pay for resources as needed
 3. New term for an old idea (utility, cluster, grid)
 4. Top 10 obstacles to growth

Above the Clouds: A Berkeley View of Cloud Computing



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Berkeley: Top 10 Obstacles to Growth

1. Availability of Service
2. Data Lock-in
3. Data Confidentiality & Auditability
4. Data Transfer Bottlenecks
5. Performance Unpredictability
6. Scalable Storage
7. Bugs in Large Distributed Systems
8. Scaling Quickly
9. Reputation Fate Sharing
10. Software Licensing



(List from Feb 2009)

- Still predominance of “owning your own” IT
- Services in the region are moving in to the cloud
- Regional capabilities in data hosting and in country connectivity building out.
- It’s all about Service for users.

Thanks to Google, Slide Share,
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helped me prepare this

And

Thank you!