January 2011 Joint ISACA/IIA Meeting

Panel Discussion - Cloud Computing

January 13, 2011

Agenda

- Learning Objectives
- Introductions
- Definitions
- Discussion
- Resource Links

Note: Electronic copies of this presentation are available at:

www.isacantx.org/index.cfm/Presentations

Learning Objectives

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- Cloud Computing definition/differences from other computing models
- Key governance topics arising from cloud computing
- Key audit topics arising from cloud computing
- Key Cloud Computing compliance and contract exposures
- Key privacy and security exposures arising from cloud computing

Panelists & Moderator

Panelists

- Michelle Dennedy, Vice President, Security & Privacy Solutions for Oracle,
- David Coker *CCE, CISSP, CISA*, Partner, Glaze & Coker PLLC
- Jason Lindwall, Chief Operating Officer, Real Page Inc.

Moderator

- Austin Hutton *CISA CISM CGEIT*, Owner, Hutton Consulting

Cloud Computing Implications

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Cloud Computing promotion sounds a lot like the ASP and SaaS hype from a few years ago. However, the breadth, depth, and economic scale of Cloud Computing would suggest a more substantial and transformational impact.

The basic assumptions and definitions of Cloud Computing can be confusing and are fundamentally different than existing computing models. Elements of IT management that, in conventional models may be considered an issue/risk are features of a 'cloud' model. Consequently many underlying risk, management and governance assumptions must be revisited.

Market Size

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- There is general agreement that Cloud Computing is a huge market
- However, there is little agreement on actual size or rate of growth

Revenue and growth estimates: (multiple sources IBM, IDC, Gartner)

  - 2008 - $47B to $147B (backward looking views published in 2009 and 2010)
  - 2010 - $37B and $26B (2010 forecasts done in early 2009)
  - 2012 - $126B and $42B (2009 and early 2010 forecasts)
  - Annual growth rates 28% - 40% from 2008 through 2015

Definitions

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NIST and the Cloud Security Alliance define Cloud Computing as:

" A model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

Source: National Institute of Standards & Technology (NIST) & Cloud Security Alliance

Cloud Computing Characteristics

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- ***On-demand self-service***: Unilateral and automatic provisioning of computer capabilities.
- ***Broad network access****:* Capabilities are available/accessible over the network via a thick and thin clients on a variety of hardware devices.
- ***Resource pooling****:* The provider's computing resources are pooled using a multi-tenant model, with different physical and virtual resources dynamically assigned. The customer generally has no control or knowledge over the exact location of the provided resources but may be able to specify location at a higher level of abstraction (e.g., country, state, or datacenter).
- ***Rapid elasticity****:* Capabilities can be rapidly and elastically provisioned, in some cases automatically.
- ***Measured Service****:* Cloud systems automatically control/optimize resources via a metering capability. Resource usage can be monitored, controlled, and reported providing transparency for both the provider and consumer of the utilized service.

Source: National Institute of Standards & Technology (NIST) - summarized

Deployment Options

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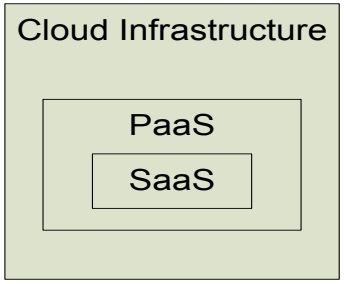
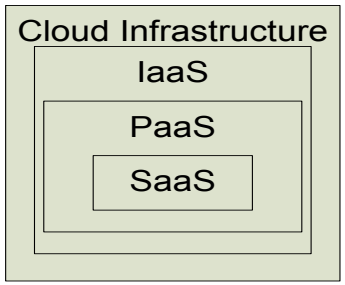
- ***Private cloud.*** The cloud infrastructure is operated solely for an organization. It may be managed by the organization or a third party and may exist on premise or off premise.
- ***Community cloud.*** The cloud infrastructure is shared by several organizations and supports a specific community that has shared concerns (e.g., mission, security requirements, policy, and compliance considerations). It may be managed by the organizations or a third party and may exist on premise or off premise.
- ***Public cloud.*** The cloud infrastructure is made available to the general public or a large industry group and is owned by an organization selling cloud services.
- ***Hybrid cloud***. The cloud infrastructure is a 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 (e.g., cloud bursting for load-balancing between clouds).

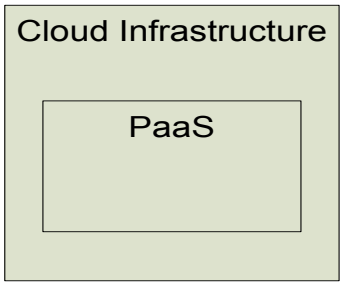
Source: National Institute of Standards & Technology (NIST) - summarized

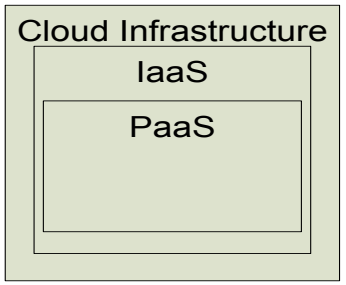
Cloud Computing Models



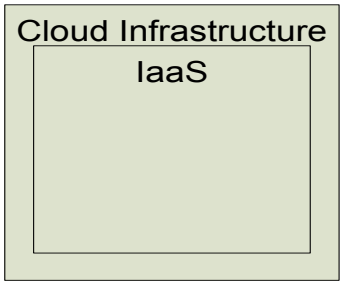


Software as a Service (SaaS) Architectures





Platform as a Service (PaaS) Architectures



Infrastructure as a Service (IaaS) Architectures

Source: National Institute of Standards & Technology (NIST) & Cloud Security Alliance

Service Models – Software as a Service

- ***Cloud Software as a Service (SaaS).*** The capability provided to the consumer is to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through a thin client interface such as a web browser (e.g., web-based email). The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings.

Source: National Institute of Standards & Technology (NIST)

Service Models – Platform as a Service

- ***Cloud Platform as a Service (PaaS)***. The capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages and tools supported by the provider. The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly application hosting environment configurations.

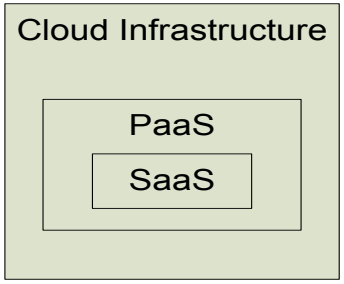
Source: National Institute of Standards & Technology (NIST)

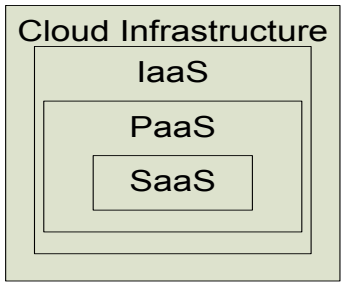
Service Models – Infrastructure as a Service

- ***Cloud Infrastructure as a Service (IaaS)****.* The capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications. The consumer does not manage or control the underlying cloud infrastructure but has control over operating systems, storage, deployed applications, and possibly limited control of select networking components (e.g., host firewalls).

Source: National Institute of Standards & Technology (NIST)

Cloud Computing Models





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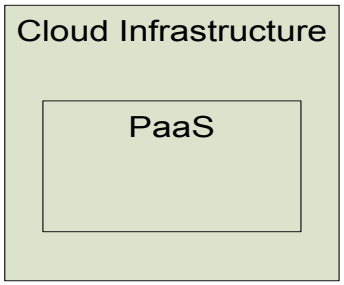

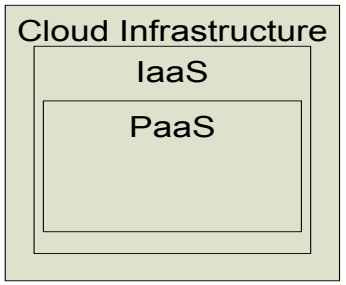

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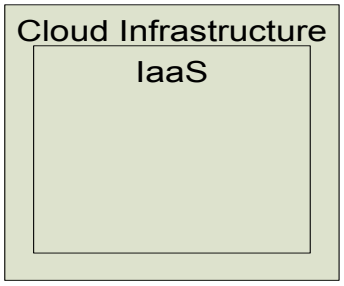

Infrastructure as a Service (IaaS) Architectures

Source: National Institute of Standards & Technology (NIST) & Cloud Security Alliance

Panelist Bio's

Michelle Finneran Dennedy – Oracle

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Michelle is the Vice President for Security & Privacy Solutions with a focus on the North American region. Her team is responsible for evangelizing the important role Oracle plays in the information strategy community as the premier provider of Security solutions for business.

Prior to her current role, Michelle was Chief Data Governance Officer within the Cloud Computing division at Sun Microsystems, Inc. Michelle worked closely with Sun's business, technical and legal teams to create to the best data governance policies and processes possible for cloud computing to build trust for cloud environments through vendor transparency.

Michelle also served as Sun's Chief Privacy Officer where she was responsible for the development and implementation of Sun's data privacy policies and practices. Michelle has a JD from Fordham University School of Law and a BS degree with university honors from The Ohio State University.

David Coker- Glaze & Coker PLLC

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David is a technology attorney, mediator, and testifying expert with over 14 years of diversified experience in e-commerce, network infrastructure design and configuration, database administration and security, system administration and security, expert consultation, computer forensics, and IT Audit.

David's expertise includes contractual and legal issues related to security, electronic discovery, and data privacy. David has an MBA in e-commerce is a Certified Computer Examiner (CCE), Certified Information Systems Security Professional (CISSP) and a Certified Information Systems Auditor (CISA).

Jason Lindwall – Real Page Inc.

Jason.Lindwall@RealPage.com

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Mr. Lindwall has been Chief Operating Officer of RealPage Inc., a leading provider of SAAS solutions for the multi family industry, since April, 2008. As Chief Operating Officer, Mr. Lindwall is a responsible for managing operations to be consistent with established goals, objectives, and policies.

Mr. Lindwall is also president of RealPage Cloud Computing Inc. a Division of RealPage Inc. Over the past two years Mr. Lindwall has grown the cloud business to include five of the top ten real estate management companies representing over 500,000 apartment units.

Mr. Lindwall also works with other cloud based solutions providers like SalesForce.com, assisting in the development of cloud computing strategies. He has more than 20 years experience of producing sustained revenue growth through technology initiatives.

Prior to joining RealPage, he served as the Chief Information Officer of Aspen Square Management where he was a responsible for several key technology initiatives.

Austin Hutton – Hutton Consulting

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Mr. Hutton has 20+ years of senior leadership experience in IT Management with American Express and YUM brands. He has been a contract CIO for a Fortune 50 subsidiary and is an IT management consultant holding CISA, CISM, CGEIT certifications and is a HITRUST Alliance Common Security Framework Practitioner.

Mr. Hutton's technical and management experience includes multiple aspects of Information Technology governance including global telecommunications infrastructure, enterprise reengineering efforts, IT organizational transition planning, enterprise scale project planning/audits as well as technical and operational analysis for mergers and acquisitions. Mr. Hutton He has also conducted numerous Information Technology controls assessments, overseen multiple SOX engagements, and Information Security Assessment engagements.

Mr. Hutton has co-authored several articles on IT governance, a member of ISACA's GRA sub-committee is a regular presenter at ISACA seminars, also a regular CISA and CISM review class instructor for the North Texas chapter of ISACA.

Resource Links

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- http://csrc.nist.gov/groups/SNS/cloud-computing/
- http://www.cloudcompalliance.com/
- http://www.cloudsecurityalliance.org/
- http://www.theiia.org/intAuditor/five-emerging-trends-in-technology-slide-show/cloud-computing/
- http://www.csoonline.com/article/print/647128
- http://isacantx.org/index.cfm/Presentations (April 2010 Luncheon presentation)
- http://www.informationweek.com/news/government/cloud-saas/showArticle.jhtml?articleID=228800167&cid=RSSfeed_IWK_ALL
- http://www.scribd.com/doc/18031511/US-Federal-Cloud-Computing-Initiative-Overview-Presentation-GSA
- http://www.isaca.org/Knowledge-Center/Research/ResearchDeliverables/Pages/Cloud-Computing-Business-Benefits-With-Security-Governance-and-Assurance-Perspective.aspx