INTERNATIONAL
Systems Group, Inc.

It's All About Cloud – Key Concepts, Players, Platforms And Technologies

3-day seminar

Description

Cloud computing has gained a lot of attention in recent years. It has mostly been used for non business critical applications like email, or for those business functions that could be outsourced to a vendor that offers large business applications in a Software as a Service (SaaS) model. However, it is apparent that the reach of the Cloud is expanding, and many companies are wondering how to plan for more substantial use of Cloud capabilities, such that they won't fall behind their competition.

This seminar will provide an overview of the key Cloud characteristics and capabilities, differentiating between Infrastructure as a Service (IaaS), Software as a Service (SaaS), and Platform as a Service (PaaS), including a Cloud reference architecture that covers all three types of Cloud. We will then discuss IaaS Cloud concepts based on the offerings of major IaaS vendors such as Microsoft, and a detailed discussion of Amazon Web Services. While these public IaaS Clouds offer substantial benefits, many companies want tighter control and are starting to build private Clouds. We will show what the requirements are, how to approach it, and who the vendors are that can help. Once we understand public and private cloud we can look at another model that is starting to gain some traction: the hybrid cloud, where critical business systems run in a private cloud, and peak capacity requirements of some applications are handled by public clouds.

The seminar continues with an in-depth description of PaaS, illustrating how the implementation of business applications for the Cloud is different from traditional development and deployment of on-premise systems (i.e. behind the firewall). In this context the seminar will also explain the synergy between Service Oriented Architecture (SOA) and Cloud Computing. We will explain the difficulties of moving applications that are not Service Oriented to the Cloud, and how the design principles of SOA are much better suited for Cloud Computing. This is key when we want to exploit the economy of scale by building and deploying multi-tenant applications.

The seminar will also address the major challenges for exploiting the Cloud, including the new security threats and how to address them, as well as the need to extend existing IT governance and Enterprise Architecture governance to the Cloud, so that Cloud deployment can be managed before it spins out of control. Another challenge we will look at is the integration of applications within the Cloud, across Clouds, and with on-premise systems. We will outline typical integration issues and solutions, and discuss the evolution of a new kind of Enterprise Service Bus (ESB), sometimes referred to as the "Internet Service Bus" (ISB). This discussion also includes the (few) standards that can be useful today to mitigate vendor lock-in, as well as the capabilities and restrictions of Open Source solutions.

Benefits of attending:

- Understand the benefits and challenges of running applications in the Cloud
- Distinguish between the three layers of a Cloud: IaaS, SaaS, and PaaS
- Understand the characteristics of developing applications for the Cloud
- Get an overview of the key characteristics of some of the popular Cloud platforms
- See where the synergies are between SOA and Cloud Computing
- Learn about the new security challenges and approaches to address them
- Obtain an overview how to extend existing governance models to cover the Cloud
- Understand the integration challenges within the Cloud and with on-premise systems
- Gain a competitive advantage by understanding the opportunities that Cloud introduces

Who Should Attend

- IT Architects who want to adopt a Cloud Computing strategy.
- IT Professionals who need to see how SOA can be applied to development and deployment of business applications in the Cloud.
- IT Managers and IT Strategists selecting technologies for Cloud Computing
- IT Managers and IT Strategies evaluating feasible strategies for IaaS, SaaS, and PaaS.
- Architects and Developers who want to know how the Cloud changes how applications are developed and integrated within the Cloud and with on-premise systems.
- Consultants who need to recommend and use different implementation strategies for combining SOA and Cloud Computing.
- Business Managers who want to understand the opportunities and challenges that Cloud introduces and have the tenacity and patience to learn technical concepts
- ISVs who want to offer their solutions in the Cloud

Agenda:

1. Introduction to Cloud Computing

- Overview of cloud computing
    a) Cloud definition
    b) From application hosting to SaaS to public cloud to private cloud
    c) Sharing & elasticity = economies of scale
    d) Cloud vs. traditional enterprise computing
- Typical usage scenarios
- Cloud benefits and opportunities
- From dedicated servers to virtualization to the cloud
    a) Overview of virtualization and hypervisor
    b) The major virtualization players
    c) Resource sharing and automation
- Chose your flavor: Infrastructure as a Service (IaaS), Software as a Service (SaaS), or Platform as a Service (PaaS)?
    a) Who is using what and why?
    b) A Cloud Reference Architecture
- The lay of the "land": a cloud taxonomy
- What are the challenges today?

2. Infrastructure as a Service (IaaS)

- IaaS architecture and key features
    a) What to look for when selecting an IaaS provider?
    b) Overview of major IaaS providers – how do they stack up?
- IaaS examples
    a. Microsoft
        i. Microsoft Windows Azure
        ii. Web Roles & Worker Roles
        iii. Scalability, load balancing, fail over
    b. Amazon Web Services (AWS)
        i. Overview
        ii. Elastic Compute Cloud (EC2) & Amazon Machine Images (AMI)
        iii. Regions & Availability Zones
        iv. Networking & security
        v. Monitoring, Auto Scaling, & Load Balancing
        vi. Building scalable and fault-tolerant applications
        vii. The big AWS outage & how to protect yourself
        viii. Management interfaces
        ix. Moving up the cloud stack: AWS services above the IaaS layer

3. The Private Cloud

- Benefits of keeping the cloud private
- Requirements: what do we need to build it?
- It's all about management and automation
- Hybrid clouds - challenges and solutions
- Cloud abstraction
- Build vs. buy vs. hosted
- Who can help: vendor overview
    a) VMware
    b) Abiquo
    c) Eucalyptus
    d) ServiceMesh
    e) Amazon Virtual Private Cloud

4. PaaS: Key Concepts & Major Players

- PaaS defined
- A complete PaaS stack
    a) Diverse functionality in a fragmented market
    b) What functionality do we need to build applications for the cloud?
    c) Yet another application container model?
- Multi-Tenancy
    a) What is a multi-tenant system?
    b) Evolving the economy of scale
    c) Customizing the application for a tenant
    d) Considerations for multi-tenant applications:
    Stability, SLA, legal & regulatory, security, maintenance, 3rd-party components
- A detailed look at major PaaS providers:
    a) Microsoft Windows Azure
    b) Google App Engine
    c) Force.com
- Private PaaS

5. Synergy of SOA and Cloud Computing

- Services and SOA defined
- Service Layer Model & the concept of loose coupling
- SOA + Event Driven Architecture (EDA) = e-SOA
- What is REST and why is it important for the cloud?
- Synergy of SOA and Cloud
    a) The Industry view
    b) Approaches to meet demand
    c) Architecting applications to take advantage of the cloud
    d) Service virtualization vs. server virtualization
    e) Automated, on-demand resource provisioning
        i. Example: GrepTheWeb application on Amazon
    f) Building multi-tenancy applications based on SOA
    g) SOA + WebSocket + Cloud = The new real-time Enterprise

6. Cloud Integration

- The need for cloud integration and its challenges
- How SOA can help: focus on integration
    a) From application integration to Service Oriented Integration (SOI)
- The need for (inter)mediation
    a) Mediation functionality
- From mediation to service virtualization
- Implementation choices for intermediaries
    a) Enterprise Service Bus vs. SOA Appliance
- What are the particular requirements for cloud integration?
    a) From ESB to "Internet Service Bus"
- Product Examples:
    a) Windows Azure AppFabric
    b) IBM Cast Iron
    c) Fiorano

7. Cloud Standards and Open Source Software

- Cloud standards
    a) Portability & interoperability: problem statement
    b) Distributed Management Task Force, Inc. (DMTF)
        i. Open Virtualization Format (OVF)
        ii. Open Cloud Standards Incubator
    c) Apache Libcloud
- Open Source Software (OSS)
    a) OpenStack

8. Securing the Cloud

- The evolution to Cloud Security
    a) From traditional Web applications to SOA to Cloud
- Cloud security is a multi-dimensional problem
    a) Dimension 1: IaaS, PaaS, SaaS
    b) Dimension 2: Network, VM, application, data
    c) Dimension 3: CSP, tenant
- A security implementation for cloud-based services
    a) Policy Enforcement Point (PEP) and XACML
    b) Policy enforcement on outgoing and incoming traffic
- OAuth, OpenID, SAML – making sense of the alphabet soup

9. Governance for Cloud-based Services

- Business vs. IT vs. EA vs. SOA vs. Cloud Governance
- Why SOA governance can be the basis for Cloud governance
- SOA governance standards and frameworks
    a) Open Group's Service Integration Maturity Model (OSIMM)
    b) Open Group SOA Governance Reference Model (SGRM)
    c) SOA Governance Vitality Method (SGVM)
- Cloud governance
    a) Similarities and differences to SOA governance
    b) Delineating responsibilities: cloud provider vs. cloud customer
    c) Switching cloud providers – the worst case test for your governance
- A Cloud governance methodology
- Technologies for implementing governance

10. Outlook and Conclusions

- Outlook and usage for cloud computing
    a) Parallel processing with Hadoop
- Cloud Return on Investment (ROI)
- Total Cost of Ownership (TCO)