Grid and Cloud Computing Activities in Singapore and Applications in Life Science Research

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Singapore Government iN2015 Master Plan

MasterPlan for
> Infocomm Infrastructure,
> Services &
> Technology Development
> With a Business and Economic Focus

- To establish an Infocomm Resource Marketplace (IRM) that would allow businesses & companies to share, buy & sell infocomm resources such as software, computing & storage resources on an “on demand” basis

- Flexibility would enable new business delivery models & encourage innovation of infocomm services
IT Industry Leaders

Salesforce & Amazon AWS in Singapore

Salesforce.com opens first international data centre here

S’pore chosen for its technology-centric population and IT infrastructure

BY ONG ROOK KAI

SINGAPORE has become a key hub of Salesforce.com’s most important regions to deliver services to its nearly 60,000 customers across the world.

The US-based software giant yesterday officially opened its first international data centre, which started operating in an undisclosed site in Singapore earlier this month. It is Salesforce.com’s first such facility, complementing its two data centres in the US and extending its capability.

The company declined to stipulate the Singapore facility’s location for “security reasons.”

Speaking at Hall on the sidelines of the launch at the Raffles City Convention Centre, Salesforce.com’s president and chief operating officer Marc Benioff said that the data centre here will cater to customers in Asia, as well as the company’s large global customer base.

Singapore was picked because it has “very strong” technology-centric population and IT infrastructure. “The motivation was to offer global services to our customers and we therefore wanted a location outside the US because it needed to be at a different time zone,” Mr Benioff said.

He explained that a Salesforce.com customer anywhere in the world could have its computing chores processed at Singapore, which has now become part of the company’s “cloud” infrastructure.

“The cloud serves everyone everywhere and enterprise of all size,” he said, referring to a growing concept where a combination of resources such as servers and software are collectively used to provide a service across a network.

A commonly-cited example of such a computing model is Google’s popular Gmail service.

Salesforce.com is widely regarded as a pioneer of on-demand business applications that can be delivered over the Web, known as Software-as-a-Service (SaaS).

The company has also been promoting cloud computing for businesses. It has a platform based on this concept, called Force.com, which lets developers and corporate IT departments build and run business applications on it without requiring expensive infrastructure.

Yesterday, it announced a free edition of Force.com which can be customised by Singapore firms.

Opening ceremony: (from left) Andrew Khas, senior director, Industry Development Group, IDA; Ms Jenny, minister of State for Trade and Industry; Steve McWhirter, president of Asia-Pacific, Salesforce.com

Amazon Web Services Announces Expansion into Asia in the First Half of 2010

New Asia-Based AWS Infrastructure Will Enable Businesses to Run Applications, Store and Process Data, and Better Serve Their End-Users Located in Asia

SEATTLE—(BUSINESS WIRE)—Amazon Web Services LLC, an Amazon.com company (NASDAQ:AMZN), today announced an expansion of its services into an Asia-Pacific region in the first half of 2010, enabling businesses to deploy compute and storage resources in close proximity to their end-users in the region. Software developers and businesses will be able to access AWS’s infrastructure services from multiple Availability Zones in Singapore in the first half of 2010, in other Availability Zones within Asia over the second half of 2010. Services available at the launch of the Asia-Pacific region will include Amazon Elastic Compute Cloud (Amazon EC2), Amazon Simple Storage Service (Amazon S3), Amazon SimpleDB, Amazon Relational Database Service (Amazon RDS), Amazon Simple Queue Service (Amazon SQS), Amazon Simple MapReduce, and Amazon CloudFront.

To get started using Amazon Web Services, visit http://aws.amazon.com.

Developers and businesses located in Asia, as well as those with a multi-continental presence, have been eager for Asia-based infrastructure to minimize latency and optimize performance,” said Adam Selipsky, Vice President of Amazon Web Services. “We’re very excited to announce the expansion of AWS infrastructure into Asia to help our customers plan their technology investments and better serve their end-users in Asia.”

Pricing for Amazon Web Services in Asia will be announced when the services launch next year.

About Amazon.com

Amazon.com, Inc. (NASDAQ:AMZN), a Fortune 500 company based in Seattle, operates the world’s largest online marketplace. Amazon.com, Inc. seeks to be Earth’s most customer-centric company, where customers can find and discover anything they might want to buy online, and endeavours to offer its customers the lowest possible prices. Amazon.com and other sellers offer millions of unique new, refurbished and used items in categories such as Books, Movies, Music & Games, Digital Downloads, Electronics & Computers, Home & Garden, Toy, Kids & Baby, Grocery, Apparel, Shoes & Jewelry, Health & Beauty, Sports & Outdoors; and Toilets, Auto & Industrial.

Amazon Web Services provides Amazon’s developer customers with access to in-the-cloud infrastructure services based on Amazon’s own back-end technology platform, which developers can use to enable virtually any type of business. Examples of the services offered by Amazon Web Services are Amazon Elastic Compute Cloud (Amazon EC2), Amazon Simple Storage Service (Amazon S3), Amazon SimpleDB, Amazon Simple Queue Service (Amazon SQS), Amazon Simple Payments Service (Amazon FPS), Amazon Mechanical Turk and Amazon CloudFront.


As used herein, “Amazon.com,” “we,” “our” and similar terms include Amazon.com, Inc., and its subsidiaries, unless the context indicates otherwise.

Business Times - 16 July 2009
Cloud Innovation Centre

> 3-year programme to help organisations to undertake trials & POCs in enterprise cloud adoption, before proceeding to production cloud

> Seeks to lower costs & technology barriers to adoption

> Provides business & technology guidance & consultancy

> Training programmes
  - Target ~ 600 ICT professionals
Government Agencies using Cloud

- Board of Architects (SaaS)
- Infocomm Development Authority (SaaS, IaaS)
- Land Transport Authority (SaaS)
- MINDEF (SaaS, IaaS)
- Ministry of Education (SaaS)
- Ministry of Health (SaaS)
- Ministry of Manpower (SaaS)
- Ministry of Transport (IaaS)
- National Environment Agency (SaaS)
- National Library Board (SaaS, IaaS)
- Public Service Division (IaaS)
- Singapore Tourist Board (SaaS)
Youth Olympics
YOG IT Systems & Applications

- Game Management System
- Information Diffusion System
- Digital & Media Mgmt System
- Games-time sensitive data
- Games results system
- Athletes Information
- Weather information
Ministry of Education MOE-Google Platform

First in Asia to provide Web 2.0 communication & collaboration tools to 30,000 teachers & staff in over 350 schools

Goal is to adopt innovative technologies within education profession to drive next-generation learning & communications

Google Apps will replace existing e-mail system & might replace existing word processing software in future
Bulk Tender – Cloud Services

- Intended for Government ministries, statutory boards & participating entities (viz, NUS, NTU, CAG)
- Ease of procurement of Cloud Services
  - Offered on a utility model for apps in Restricted & Below categories
    - Customers will be charged only on actual usage

- Services include:
  - Infrastructure Services
    - Compute Services
    - Storage Services
    - Bandwidth Services
  - Platform Services
    - Operating System & System Services
    - Application/Web Hosting Services
    - Storage Backup Services
  - Optional Services
    - Software-as-a-Service
    - Software License Hosting Services
    - Professional Services
iSPRINT

> iSPRINT (Increase SME Productivity with Infocomm Adoption & Transformation)
  - Promotes use of IT to improve business operations, resulting in efficiency, productivity, increased revenue or value-add for business
  - Excludes basic IT services (e.g. email, backup, web development)
  - To support
    - Packaged solutions pre-qualified by IDA
    - Customised solutions

> SaaS subscription included as packaged solution
  - Capped for 12 months, based on 50% co-payment
  - SaaS vendors have to be on pre-approved list
Open Call for Cloud Computing Proposals

> To promote adoption of Cloud Computing

> Open to
  ▪ Government Agencies, Institutes of Higher Learning & Research Institutes, Singapore-registered companies

> Support
  ▪ Utilized computational resources (IaaS) based on approved duration & quantum of cloud services
  ▪ Funding not in form of cash

> Frequency of calls
  ▪ Calls in May & Nov 2010 and in 2011
Big Players

> HP Labs opened at Fusionopolis in Feb 2010
> S$50M over 5 years
> Supports ongoing HP initiatives e.g. Open Cirrus

IBM Cloud Lab Singapore

Intalio in Singapore

> R&D center in Singapore to develop Risk Management & Compliance (GRC) application & Partner Relationship Management applications
> Singapore was chosen for:
> Tap on Singapore NGNBN infrastructure
03 – 07 May 2010, Singapore

Grid & Cloud Applications in Life Science

University Grid and Cloud
> Teracampus Grid
> Life Science Bioinformatics University teaching for past 13 years in NUS involved Grid and Cloud
> Computational Biology Major, NUS
> Master in Bioinformatics, NTU
> PhD in Computational Biology, NGS, NUS
> Usage in Research: MasterClass on Bioinformatics Applications using gLITE and EGEE on Biruni, Genius and TWGrid.

Asean and Asia Bioinformatics
> International Conference on Bioinformatics to adopt Grid/Cloud-based BioDB100: 100 bioinformatics databases MIABi-compliant, Interoperable
BioDB100

Asia Pacific Bioinformatics Network

> AuthorID disambiguation system

> DocID document depository for data persistence

> MIABi minimum information about a bioinformatics investigation- sufficiency of disclosure for reproducibility and standards compliance

> Reinstantiation System - Demo
Cloud-based Reinstantiation System

- BioSlax LiveOS base free access
- Lzm compressed format
- Web interface for uploading Izm
- Instantiation of LiveOS+ database Izm file using Xen Hypervisor ®
- Full and instant access to unreachable or published but discontinued databases from archives
- Starting with database retrieval and web resources
- DEMO: http://biodb100.apbionet.org