

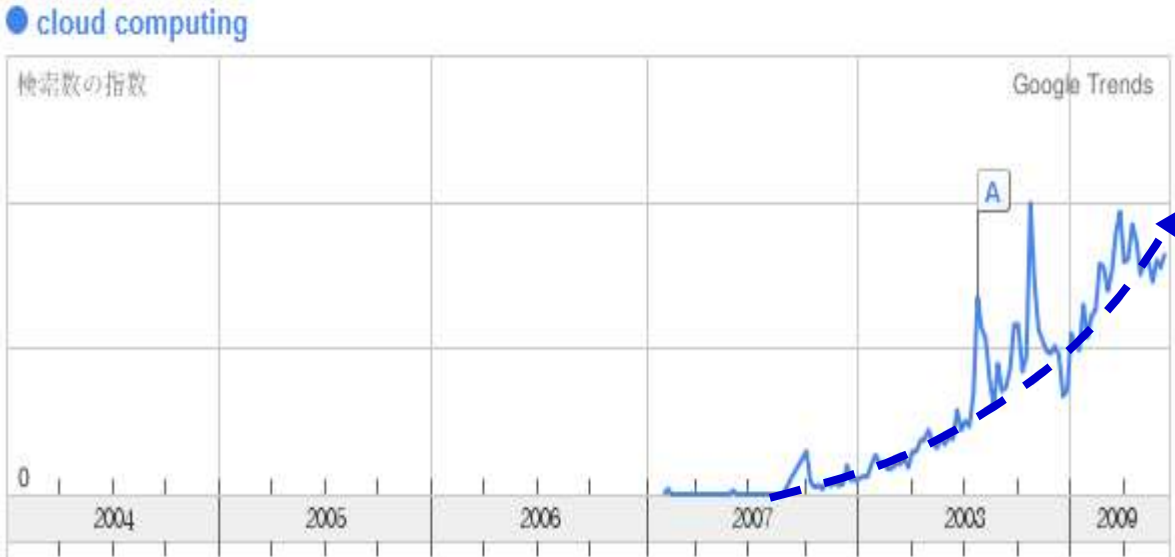
Cloud Computing Today and Tomorrow

Yoichi Mori
Technology Researcher





- **プロバイダーもユーザーも変わった**
これまで—Major IT Vender & IT Professional
クラウド—New Comer & Developer
- **メインストリームではない世界**
プロバイダーとデベロッパのシナジー
- **受身に回った大手ベンダー**
 - IBM、Microsoft、Oracle、Sun





- 革新的なアイデアは
誰が、どうやって作るのか



Scientist



IT Professional



Developer
& Community



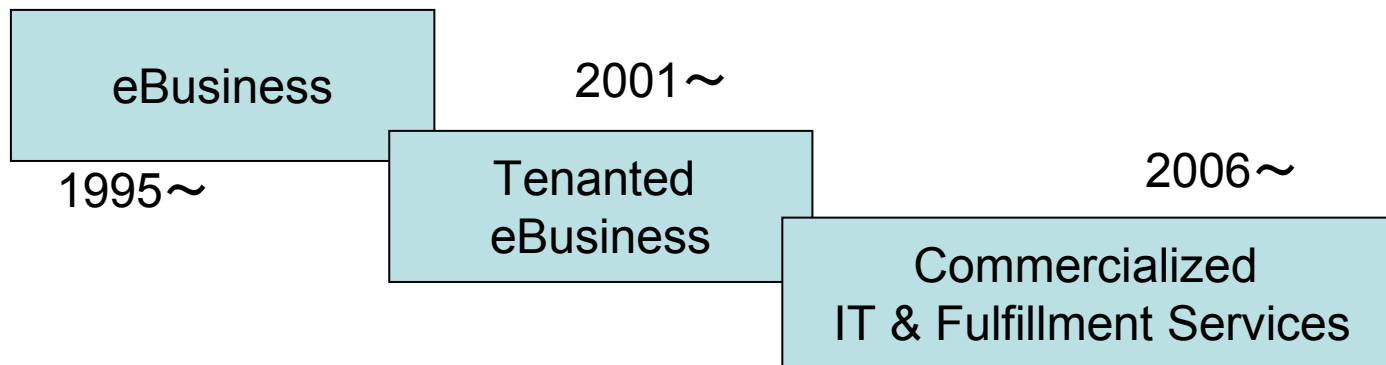
Citizen Engineer



- **Amazon S3** 2006/3 **Simple Storage Service**
- **Amazon EC2** 2006/8 **Elastic Compute Cloud**
 - Small Instance EC2 CUx1, 1.7GB 160GB
 - Large Instance EC2 CUx4, 7.5GB 850GB
 - Extra Large Instance EC2 CUx8, 15GB 1690GB
 - » EC2 Compute Unit 1.0~1.2 GHz AMD Opteron or Intel Xeon
 - High CPU Medium Instance EC2 CUx5
 - High CPU Extra Large Instance EC2 CUx20
- **Amazon EBS** 2008/8 **Elastic Block Store**
- **Amazon SimpleDB, SQS, CloudFront, Elastic MapReduce**



- **Amazon** 物流受託サービス **FBA/FWS** 2006/9
- **Amazon** 決済サービス **FPS** 2007/8

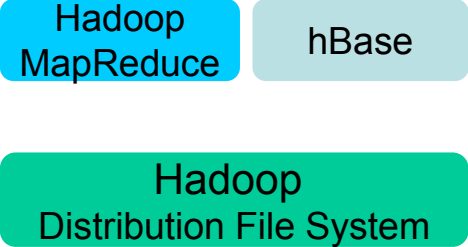
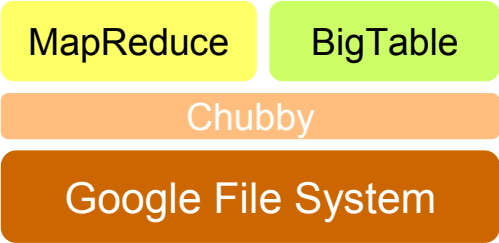


EC2 β Linux, OpenSolaris

→ EC2 正式版 (2008/10) Windows Server/SQL Server SLA 99.95%



- **Google App Engine Announced 2008/4**
Web Application Platform
based on Google Infrastructure
 - **Python, Data Store**
 - *Python 2.5, Runtime, Web Admin., Issue List, Dashboard ...*
 - **Java5,6 VM 2009/4**
 - *JRuby, Groovy ...*





- Salesforce.com Founded 1999, Siebel 1993 as ASP
- SFA+PRM+CRM
- Salesforce AppExchange 2005/9~2006
 - Lew Tucker VP
→Sun Cloud Initiative CTO
- Force.com





Create IT Personnel
& ISV Partner Community



Power Seller
→ Developer Community



Expansion of Developer Community

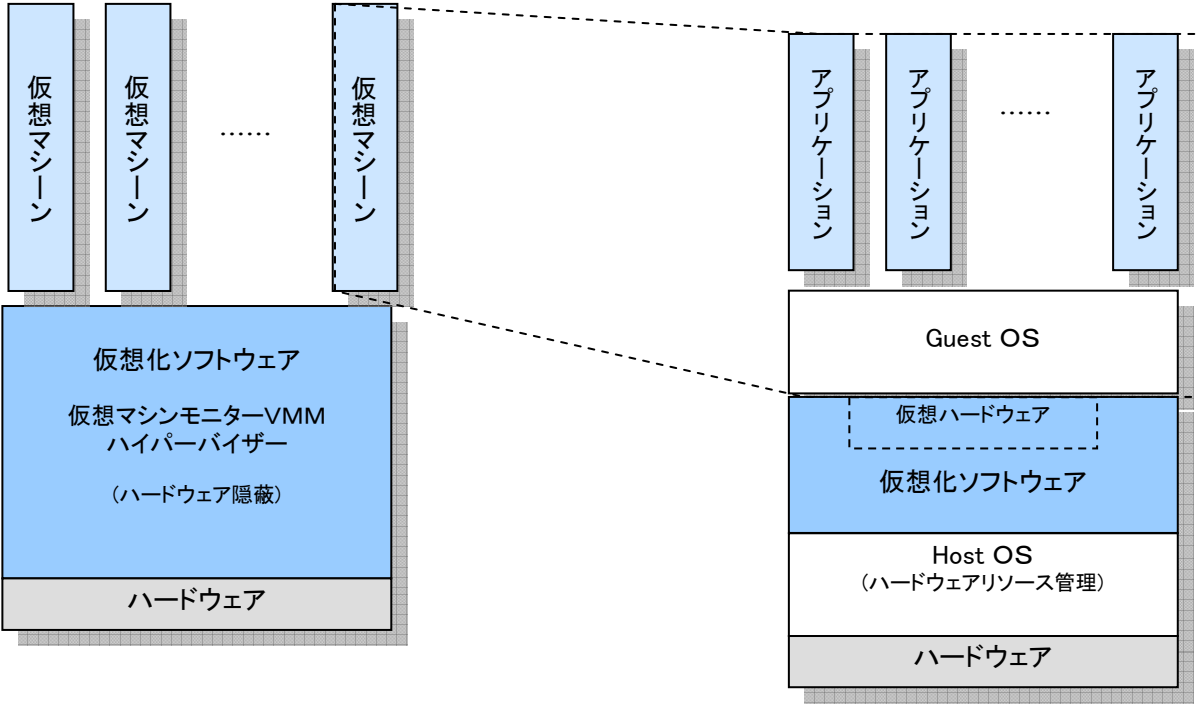


- **Grid Computing** (分散処理)
 - Globus、OpenGrid Forum
 - Sun N1 Grid, Oracle RAC
- **Cloud Computing** (仮想化技術)
 - VMware、Citrix/Xen、Windows Hyper-V, Linux/KVM

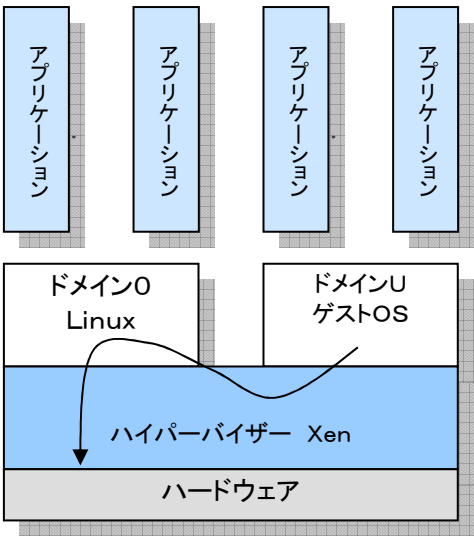


Host OS .vs. Hypervisor

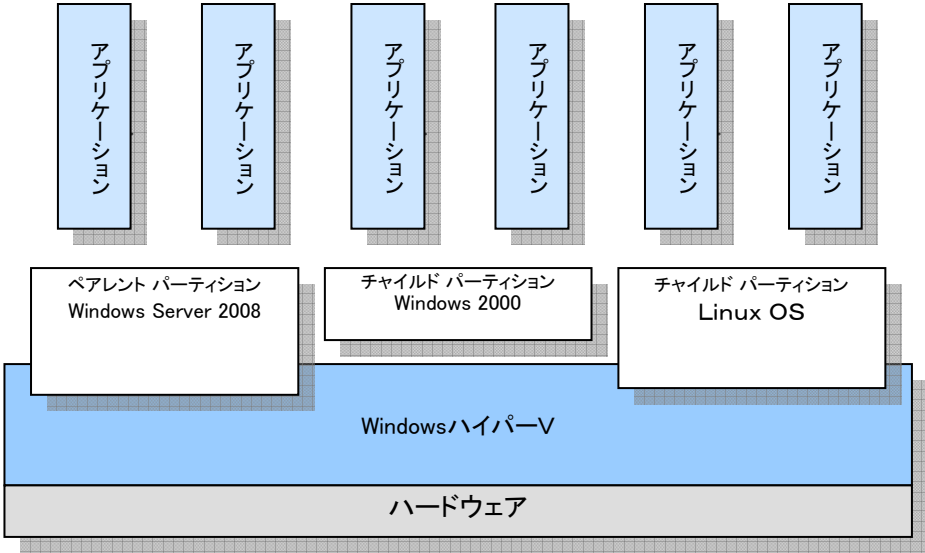
Full or Para Virtualization



Basic Architecture



Xen



Windows Server Hyper-V



Software/Application as a Service (SaaS)

Development as a Service (DaaS)

Middleware as a Service (MaaS)

Platform as a Service (PaaS)

Infrastructure as a Service (IaaS)



- **Oracle**

- Amazon-based Trial
- [Cloud Computing Center](#)
- Products
 - Oracle Database 11g
 - Oracle Fusion
 - Oracle Application Express
 - Oracle Workshop
- WebLogic for
- Tools
 - Amazon Machine Images
 - Oracle Secure backup Cloud Module
- Others

- **Microsoft Azure**

- .NET Hosting Services
- On Premise ↔ Cloud Computing
- Functions
 - .NET Services
 - SQL Services
 - Live Services
 - Application Services
- Tools
 - Oslo



- **IBM Smart Business**
 - Enterprise Public/Private Cloud
 - Desktop Virtualization and AWS
 - **Dynamic Infrastructure**
 - Tivoli Service Management Center for Cloud Computing
 - IBM Virtualization Engine
 - Dynamic Logical Partitioning
- **Sun Open Cloud Platform**
 - Compute & Storage Services, Virtual Data Center and Open API
 - Open Products
 - OpenSolaris, GlassFish, MySQL ...
 - Major Pieces
 - Sun xVM Server & xVM Ops
 - Q-layer's Virtual Data Center Technologies
 - Project Caroline & Hydrazine

今後の展望

What's Next?

Cloud Computing