

Platform as a Service

Enterprise Roles for Cloud Computing

Applications, Platforms
and Extrastructures

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It's Getting Awfully Cloudy Out There



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[Call for Papers: Cloud Slam '09, First Virtual Conference on Cloud ...](#)

WebWire (press release), GA - 8 minutes ago

7 /PRNewswire/ -- A global network of leading experts whose experiences are shaping the future of **Cloud Computing** is announcing the launch of Cloud Slam '09 ...


[Amazon Web Services releases web-based EC2 console](#)

CNET News, CA - 22 minutes ago

... years of experience in distributed systems development and deployment, focusing on service-oriented architectures, **cloud computing**, and virtualization. ...

[AMD Supercomputer To Deliver Next-Generation Games and ...](#)

Corporate Media News, CA - 47 minutes ago

And it will be powered by OTOY's software for a singular purpose: to make HD **cloud computing** a reality. We plan to have this system ready by the second half ...  [AMD](#)

[Ovum previews major IT Services issues for 2009 with 'The Ovum Eight'](#)

Express Computers, India - 49 minutes ago

Competing for the Cloud: **Cloud Computing** can encompass and potentially disrupt "traditional" models of infrastructure and applications outsourcing, ...

It's Getting Awfully Cloudy Out There



To Qualify as a Cloud

- **Common, Location-independent, Online Utility on Demand***
 - **Common** implies multi-tenancy, not single or isolated tenancy
 - **Utility** implies pay-for-use pricing
 - **on Demand** implies ~infinite, ~immediate, ~invisible scalability

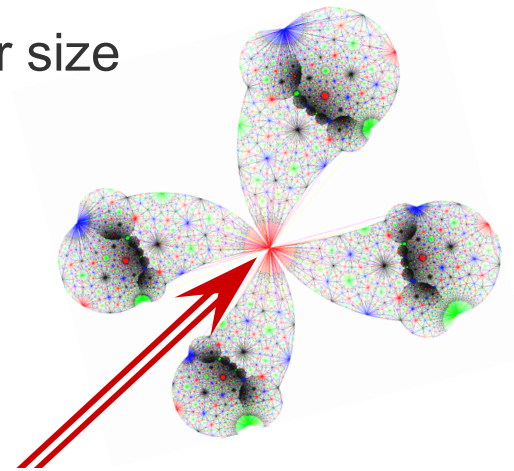
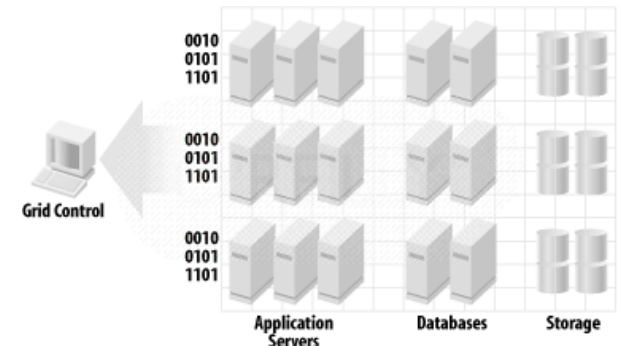
- Alternatively, a “Zero-One-Infinity” definition:**
 - 0 On-premise infrastructure
 - Acquisition cost
 - Adoption cost
 - Support cost
 - 1 Coherent software environment -- not a multi-vendor “stack”
 - ∞ Scalability in response to changing need
 - Integratability/Interoperability with legacy assets and other services
 - Customizability/Programmability from data, through logic, up into the user interface without compromising robust multi-tenancy

* Joe Weinman, Vice President of Solutions Sales, AT&T, 3 Nov. 2008

** From The Jargon File: “Allow none of foo, one of foo, or any number of foo”

Clouds Aren't All the Same

- Not every cloud is a “grid”
 - Grids imply dynamic arrival/departure
 - Electrical analogy has limits: CPU cycles aren't substitutable
- Most clouds are not “compute clusters”
 - Clusters are typically monocultures: just one type of node
 - Applications may require tuning to a particular cluster size
- Some clouds are servers in virtual slices
 - Virtualized servers *can* be quickly provisioned
 - Spin-up of instances = new management task
 - Hardware gets cheaper, management...not so much
- **Enterprise cloud computing implies API leverage**
 - Immediate focus on **function**; immediate delivery of **value**
 - Using appropriate frameworks enables a **huge head start**



Applications (SaaS) Ascendant

SaaS Enterprise SaaS Solution Demand: 2008-2010										
Company Adoption by Region										
SaaS Application	YE 2008								YE 2010	
	Worldwide		North America		Europe		Asia		Worldwide	
Collaboration (Email, WebConf)	1	45.0%	1	44.7%	1	46.4%	1	43.1%	1	66.8%
CRM/SFA	2	36.4%	2	37.4%	2	33.6%	2	39.7%	2	58.9%
Payroll	3	31.2%	3	32.5%	3	32.5%	3	25.9%	3	45.8%
Travel Services	4	28.6%	5	30.1%	5	28.5%	4	25.9%	7	39.7%
HR/Benefits	5	28.3%	4	30.5%	4	28.5%	5	22.4%	4	45.3%
Specialized Verticals	6	22.7%	6	21.9%	6	25.5%	9	18.5%	5	41.7%
Finance /Accounting	7	18.3%	7	16.3%	8	20.7%	8	19.3%	8	39.3%
BI & CPM	8	17.3%	8	14.8%	7	22.0%	11	15.5%	6	40.7%
Procurement & Sourcing	9	16.9%	9	12.8%	9	20.1%	7	20.7%	9	38.9%
ERP/Manufacturing	10	13.2%	11	9.7%	10	14.8%	6	20.7%	12	25.9%
Supply Chain Mgt (SCM)	11	12.5%	10	11.7%	11	12.2%	10	15.8%	10	27.5%
Compliance and Risk Mgt	12	10.4%	12	9.4%	12	10.0%	12	14.3%	11	26.0%

“On-premise solutions are going to drop off the cliff.”

William S. McNee, President/CEO, Saugatuck Technology, 21 Jan.2009 (ZDNet.com)

Our Cloud Began with CRM

▪ Fundamental ideas

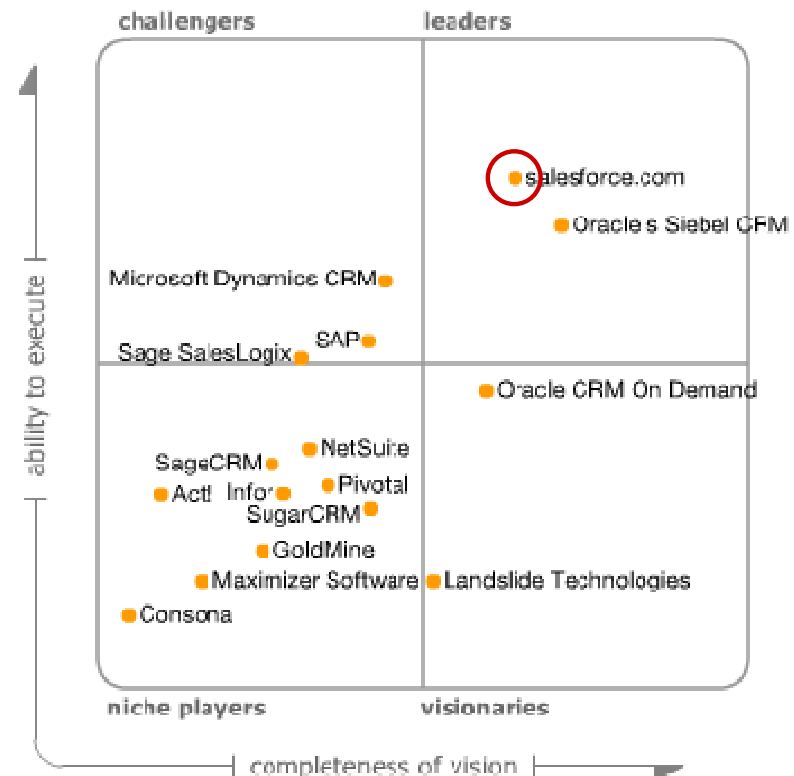
- Enterprise software should be as accessible as the Web
- Web-based systems should be designed for global scale
- Everything that's not distinctive to a customer should be shared
- Everything that's distinctive to a customer should be customizable

▪ Logical implications

- Multi-tenant architecture
- Metadata-based customization
- Transparent upgrades
- Ease of adoption enables focus on continued improvement

▪ Results

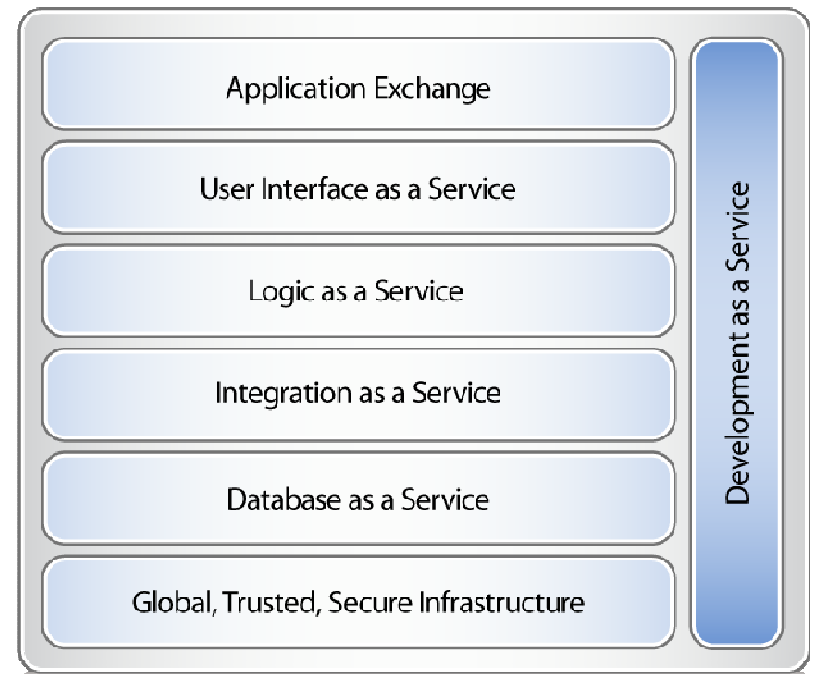
- **Industry leadership**
- **Customer success**
- **92% “would recommend”;**
77% have already done so




As of July 2008

Emergence by Demand

- **Customers wanted more**
 - More customization
 - More integration
 - More power to automate and extend
- **Clean-sheet architecture sped change**
 - 26 releases in nine years
 - 100% on current version
 - Web standards-based ecosystem
- **Results**
 - **Platform capability**
 - **Unlimited IT opportunity**

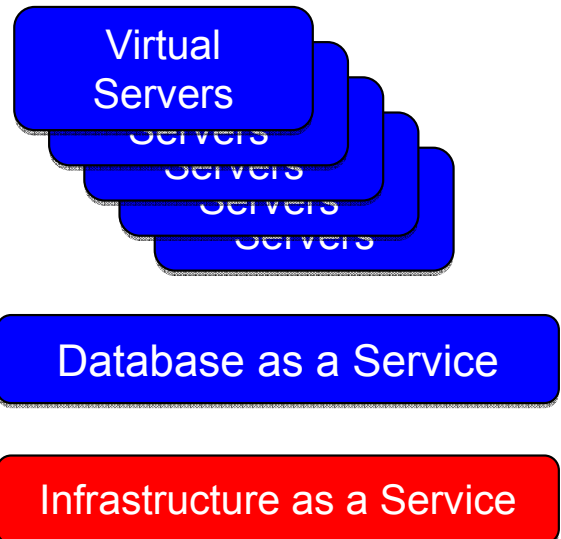


Proliferating Platforms (PaaS)



amazon web services™ S3 & EC2 Windows Azure

“Servers as a Service”




Virtual Servers

Database as a Service

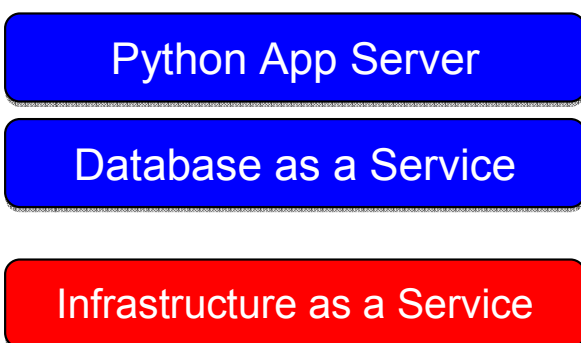
Infrastructure as a Service

~Familiar Developer Model
Rapid Scalability



Google

PaaS for the Inquiring Developer




Python App Server

Database as a Service

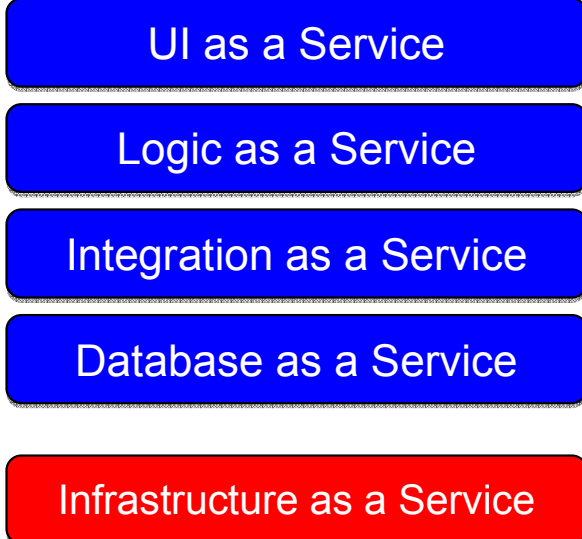
Infrastructure as a Service

β Offering
Innovative Technology



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PaaS as an Application Framework



UI as a Service

Logic as a Service

Integration as a Service

Database as a Service

Infrastructure as a Service

Supports Large-Scale SaaS
Deep-Dyed Multitenancy



The Cloud is a Services Supermarket



facebook

Google™



Combine platforms: Combine strengths

Force.com ↔ Amazon Web Services

Bring Amazon Web Services To Force.com Applications



Develop in Java, Ruby on Rails,
LAMP Stack

Access Mega Storage from
Amazon S3

Burst a Force.com App to
Amazon EC2

Force.com ↔ Facebook

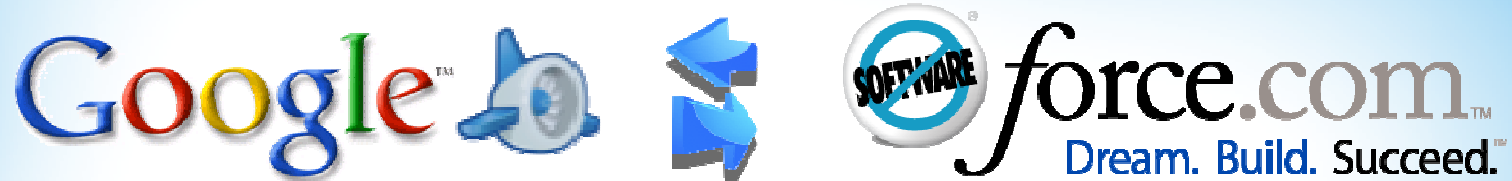


Force.com Developers Build
Social Apps for The Enterprise

Facebook Users Access Apps
on Force.com Sites



Force.com ↔ Google App Engine



- Python library and test harness
- Access Force.com Web Services API from within Google App Engine applications

Leverage from *all* Assets: Integration as a Service

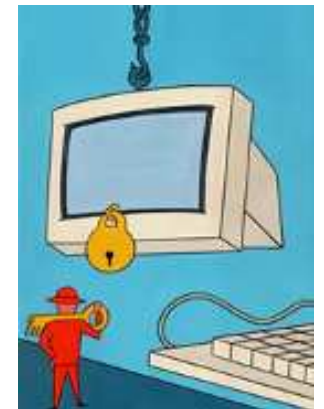
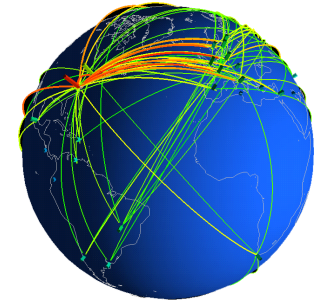


“Apex Connect provides a set of integration technologies that make it possible to bring together multi-tenant platforms, **reduce integration complexity, and improve time to value.**”

— Program Manager, Enterasys

Globalization Demands World-Class Governance

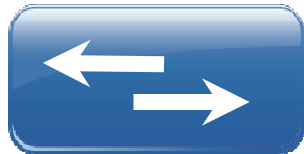
- “Boiler rooms in Berlin or Bucharest, a pump-and-dump scheme out of Parma or the Dordogne...
...are U.S. concerns” (Paul Atkins, SEC Commissioner)
- Governments are writing new data-handling laws
 - Notification of Risk to Personal Data Act
 - Personal Data Privacy and Security Act
 - Data Accountability and Trust Act
- Many tech trends oppose governance goals
 - Processing: enemy of encryption
 - Connectivity: attacker opportunities and tools
 - Storage: ever-growing risk of larger losses
- **Service models offer greater leverage:**
 - **Granular management of roles and privileges**
 - **Superior auditability of access and actions**
 - **Amortization of costs across global customer base**



Development as a Service

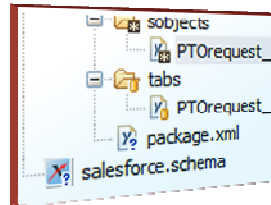
Pioneering Cloud-based Tools and Communities

Metadata API



Easy **Access** to Code and Schema

Force.com IDE



Everything You Need to **Build** Apps

Force.com Sandbox



Instantly **Set Up** Dev Environments

Force.com Code Share



Easy to **Collaborate** on Projects

What's In It for the Developer



BAE SYSTEMS

force.com

salesforce.com

- 20-month study of Force.com productivity conducted by Galorath Inc. during 2007-2008
- Work product: calibration of the Galorath SEER cost estimation tool for budgeting of Force.com projects
- Performed for BAE Systems plc to support BAE project proposal to Federal Aviation Administration
- Conclusions (compared to Java development):
 - **Requirements definition time reduced 25%** due to rapid prototyping and updating of Force.com apps
 - **Testing effort reduced by (typically) more than 10%** due to extensive re-use of already-proven code
 - **Development productivity of new code 5x greater**
 - **Overall project cost 30-40% less**

~~SOFTWARE~~

Compelling Cost Reductions

k\$	Internal IT	Managed Services	Cloud Provider
Capital Funds	40.0		
Setup Expenses	10.0	5.0	1.0
Monthly Svcs.		4.0	2.4
Monthly Labor	3.2		1.0
3-Year Cost	\$149,000	\$129,000	\$106,000

Scenario by George Reese, 24 Oct. 2008
broadcast.oreilly.com/2008/10/the-economics-of-cloud-c.html

By the Numbers

- 40% of IT execs have been using cloud computing for more than three years
 - 62% of surveyed firms plan to **increase their use of SaaS** this year
 - 60% project SaaS in vertical apps within two years
- By 2011, more than 70% of U.S. enterprise data centers will hit the wall on power, cooling and space:
 - More than $\frac{1}{3}$ of companies expect IT investment reductions in 2009
 - Outsource data-center demand is up 14% in the last 12 months; capacity has grown by only 6%
 - Data center costs have doubled in many markets; in London, they're up sixfold
- 37% of firms are **replacing current on-premise systems** with SaaS

PaaS Puts IT Spending Back in Balance

- Conventional IT model front-loads capital spending on infrastructure
 - Debt service and depreciation charges persist despite business contractions
 - Future capacity must either be bought in advance, or added later at higher cost with substantial business disruption
- PaaS enables preparation for upturn
 - New systems can be built and tested with negligible up-front investment
 - Resulting systems can be rapidly scaled to respond to improving conditions
 - **“It has been our repeated experience that business uncertainty is inevitably accompanied by opportunity”**

(Jack Welch, Letter to GE Shareholders, 1997)



About These “Extrastructures”



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[The Open Group Enterprise Cloud Computing Event - San Diego, 2009](#)

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[www.opengroup.org/sandiego2009-eccc/program.htm](#) - 17k - [Cached](#) - [Similar pages](#)

Please, no Stockholm Syndrome...

- Adopting the Cloud does not mean starting over
- Preserving familiar pain is not a measure of success
- Retain what's working: innovate and add value at Web speed
- Don't apologize for doing what made sense two years ago
 - Bandwidth has grown
 - Customizability has grown
 - Costs of doing things the old way are skyrocketing
- **Don't mistake the consumer Web for the enterprise cloud**

CEO Needs

Innovative
Governable
Affordable

CIO Mandates

Productive
Reliable
Secure

Enterprise Cloud Computing:
Platform as a Service

Thank you

pcoffee@salesforce.com