Cloud Computing and Integration
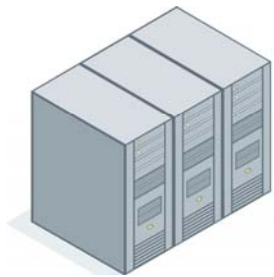
Sanjay Krishnamurthi

Chief Architect

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Agenda

- **Cloud Computing/SaaS Overview**

- **Amazon Web Services**

- **Salesforce.com**

- **SaaS Integration Challenges**

- **Demo : Informatica On Demand**

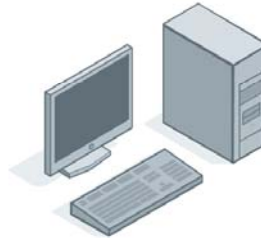- **Q/A**

Emerging Computational Paradigm
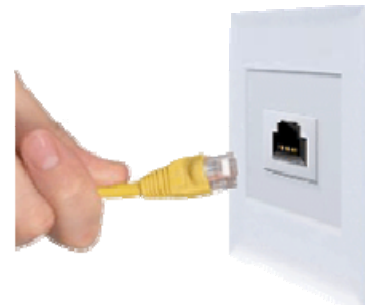
Mainframe Platforms

Client / Server & App Server Platforms

Cloud Computing

IBM

digital

ORACLE SIEBEL

PeopleSoft. SAP Microsoft

salesforce.com
experience success.

amazon
web services

NETSUITE

RIGHT NOW
TECHNOLOGIES

PaaS/SaaS 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)

Cloud Offerings Variations

- **Application as a Service**

- **Focused on business apps**
  - SFA (Salesforce.com)
  - Accounting (Netsuite)
  - HR (Workday)
  - CRM (RightNow)

- **Facilitate Rapid Enablement of Business Users**

Cloud Offerings Variations

- **Platform as a Service (PaaS)**

- **Come in various flavors**
  - Infrastructure Platforms
  - App Development Platforms
  - Business App Platforms
  - Special App Platforms

Platform as a Service Variations

- **Infrastructure Platforms**
    - Provide Infrastructure Services
        - Storage, Processing, Bandwidth, Network Connectivity
    - Applications developed using traditional software stacks
        - Typically support x86 based OSes (Linux being the primary one)
        - Mostly based on virtualization technology (XenSource etc.)
    - Developers can use pre-built images or custom images
    - Focused primarily on application delivery
    - Provide APIs for provisioning, monitoring etc
    - Pricing based on CPU usage, data storage & transfer
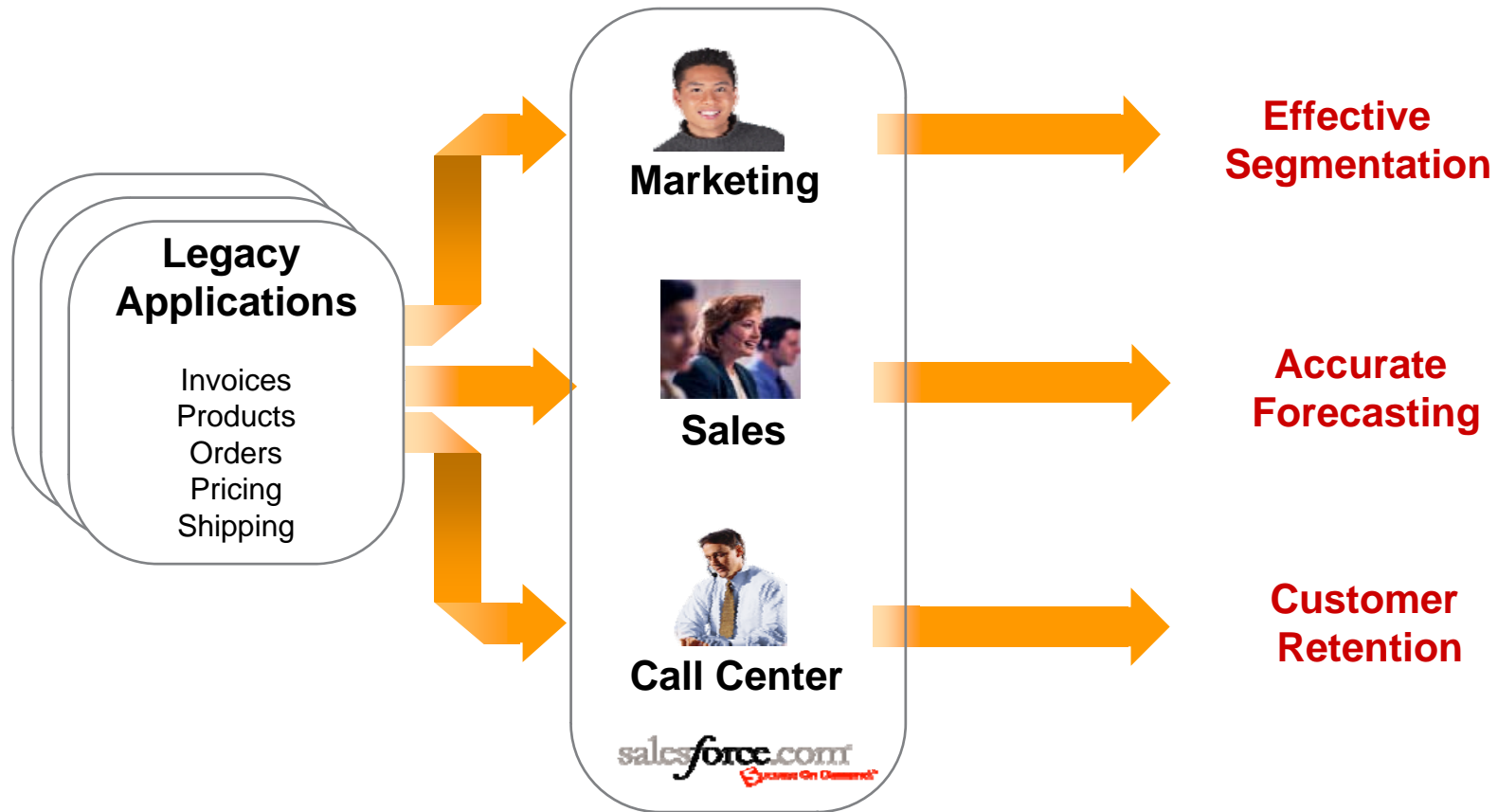   - e.g. Amazon Web Services, GoGrid etc.

Platform as a Service Variations

- **Application Development Platforms**
  - Provide Tools/APIs to develop custom web applications
  - Provide various levels of IDE support
  - Enable both development and delivery of applications
  - Examples
    - Google App Engine
      - Mapping, Calendaring and Spreadsheet APIs
      - Python (restricted subset) as development language
    - Coghead
      - Graphical Drag & Drop User Interface

Platform as a Service Variations

- **Business Application Platforms**
    - Provide Tools/APIs to build business focused applications
    - Enable developers to
        - Integrate, Customize and Extend Core Offerings
        - Build entirely new applications
    - Allow developers to leverage vendor ecosystem
        - Sell add-ons to existing customers
        - Enable mash-ups with other applications
    - e.g. Force.com

- **Special Application Platforms**
    - Geared towards developing apps for specific applications
        - e.g. Facebook Applications

Data Integration is critical for SaaS/PaaS

Legacy Applications

Invoices
Products
Orders
Pricing
Shipping

Marketing

Sales

Call Center

salesforce.com

Effective Segmentation

Accurate Forecasting

Customer Retention

"The average company maintains over 55 applications."

– HDI Best Practices Survey

SaaS vs Enterprise Applications
How are requirements for SaaS integration different?

- **Data silos outside the corporate firewall**

- **Security/Performance/Resilience over internet**

- **Lack of mature API's for many SaaS applications**

- **SaaS <u>business user</u> expectations**
  - Ease of use
  - Time to value
  - Price

Who's responsible for SaaS integration?
Answer varies based on company & SaaS deployment size

SaaS Admins

Salesforce.com Admin

IT personnel

Middleware Specialist
ETL, EAI

Sample Manager Titles

- Manager, Sales Operations

- Manager, CRM Programs

- Manager, SFA

- Manager, Customer Care

- Manager, Global Sales Process

- Manager IT

- Manager, IT Solutions

- Manager, Marketing Technology

- Manager, Business Channel Support

- Manager, Information and Sales Support

Two Pronged Approach to SaaS Integration
Solutions for IT & Business Users

On Premise

Integration
as a Service
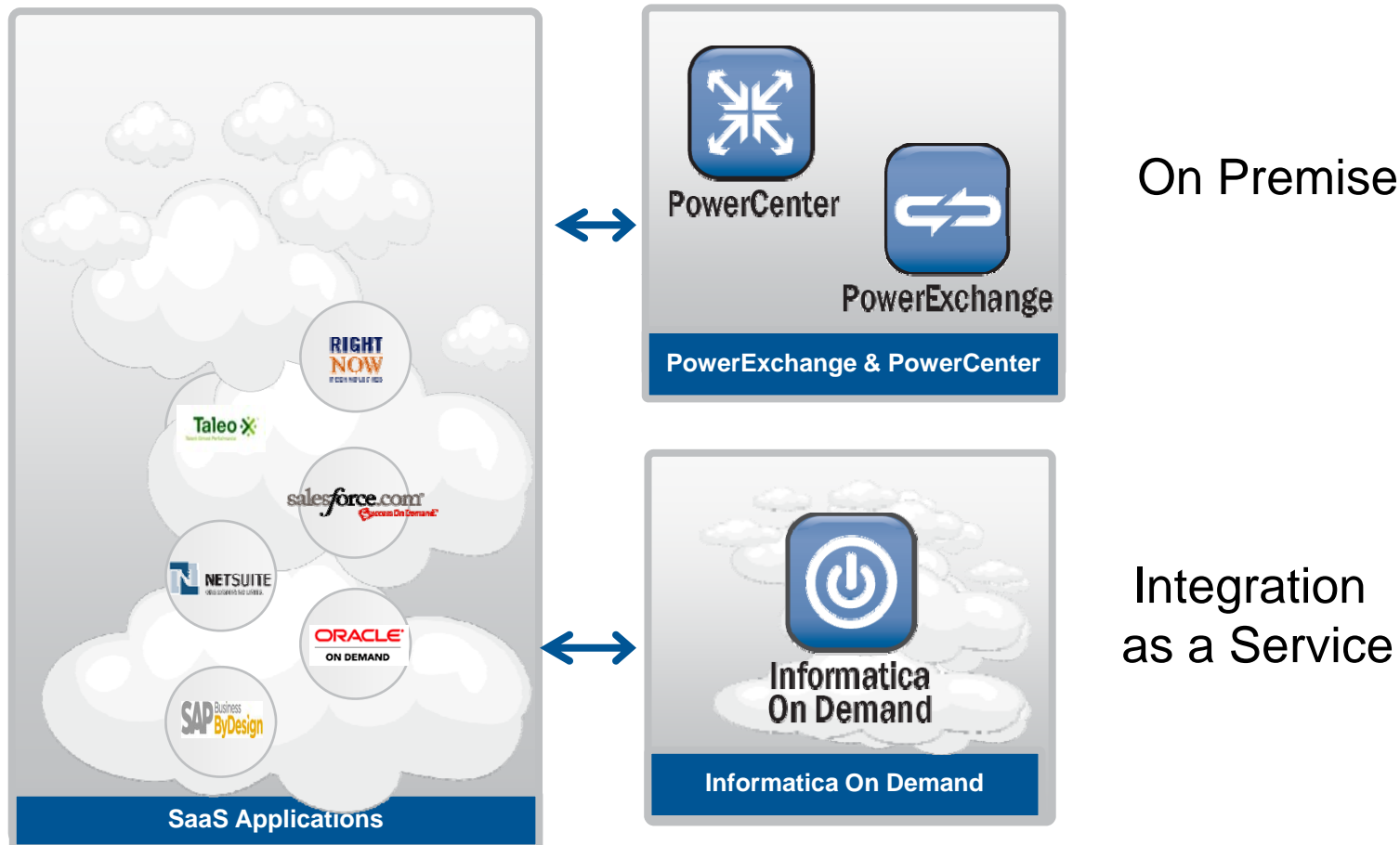
Informatica's strategy for SaaS Integration
Solutions for IT & Business Users

Integration as a Service (SaaS)

Informatica On Demand

- **SaaS Application Connectivity**
  - **PowerExchange for WebServices**
  - **PowerExchange for Salesforce**
  - **PowerExchange for RightNow**

- **Informatica On Demand (IOD) Services – SaaS offerings**
  - **IOD Services for Salesforce**
    - **Data Loader Service**
    - **Data Replication Service**
    - **Data Quality Assessment**
    - **Data Cleansing Service**
  - **IOD Services for other SaaS vendors**

Data Replication Service Use Case

On Demand Data Replication Service → **FIREWALL** → **Hyperion BI Suite 9.3** → **Tumbleweed** Messaging. Secure and Simple.

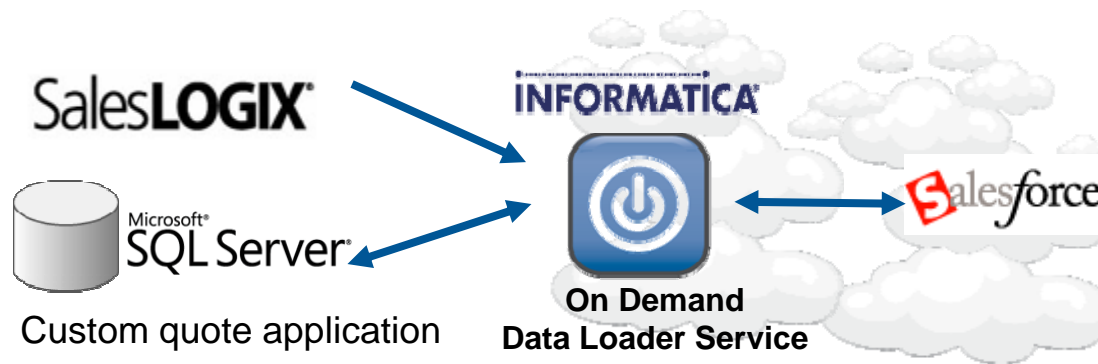| Challenge	Solution	Results

• Create on-demand dashboard for sales information
 	
• Deliver timely and reliable information
 	
• Alternatives difficult to run and configure – custom coding required
	• Implemented Informatica On Demand Data Replication Service
	  • AppExchange Certified
	  • No Hardware and No Software required
	
	• Replicating data in both full and CDC (changed data capture) extract mode
		• Replicated Salesforce.com data across corporate firewall with just a web browser
		
		• Signed up for service and within an hour had a full copy of sales data
		
		• Executive dashboards In production within 1 month

Data Quality Assessment Service Use Case

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Salesforce ⟷ [On Demand Data Quality Assessment service] ⟷ **Salesforce**

**On Demand
Data Quality Assessment service**

PLANTRONICS.
SOUND INNOVATION™

"Informatica's Data Quality Assessment service enabled us to pinpoint a data quality issue that had caused our marketing team to lose confidence in SFDC "

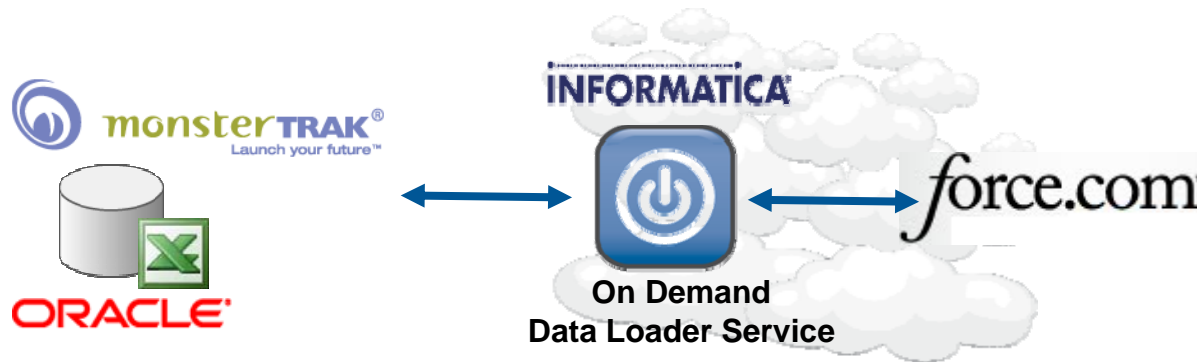| Challenge	Solution	Results
• Salesforce adoption had stalled due to unqualified and unquantified issues around Account Master data completeness and quality • IT had no resources to spend on identifying and resolving these issues • Salesforce ROI severely compromised as a result	• Informatica On Demand Data Quality Assessment services • Initially run against sample 10,000 Account Master Records	• Informatica Data Quality Assessment service revealed that Account Master completion was less than 20% due to incomplete data feeds/mapping • Project now in place to complete records in SFDC • Confidence in SFDC system has been restored

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Data Loader Service Use Case

On Demand Data Loader Service

Custom quote application

"We selected Informatica On Demand because the Service was 'production ready'"

Challenge	Solution	Results
• To increase productivity of remote offices and enable deeper customer relationships through the more customizable Salesforce, Chipworks needed to maintain the existing level of integration between a custom quote application and SalesLogix while migrating to Salesforce • Migration from SalesLogix required a 48 hour turnaround!	• Selected Informatica On Demand Data Loader Service over CRM Fusion's Demand Tools because of better database access and automation features • Data Loader Service removed a resource requirement to internal data synchronization with Salesforce.	• After a 6 week analysis and roll out a Salesforce integration , migrated off of SalesLogix to Salesforce within 48 hours. • Enabled direct database access to put account and contact synchronization from SQL Server to Salesforce in a "set and forget" production environment

Data Loader Service Use Case

"Salesforce Admins would have to be crazy not to try Informatica's On Demand Data Loader Service"

Challenge	Solution	Results
• Monster needed a fast, easy, affordable way of reporting on applicants and performance data on its MonsterTRAK production system without IT or outside contractors. • Too much effort was spent getting data from Oracle, manipulating it in Excel, and manually emailing it to business users each day.	• Implemented Informatica On Demand Data Loader Service to synchronize back end MonsterTRAK data with a custom Force.com application to provide fast, low cost BI/Reporting to the business • Leveraged Force.com reporting with back-end data to provide fully automated "self-serve" analytics and dashboards.	• Migrated from legacy Oracle/Excel workflow based reporting to fully automated Force.com based self-service reporting and dashboards in less than 1 month • Repurposed 0.5 FTE with automated integration and user-defined KPIs, using a separate application within Salesforce, that they already knew quite well.

Demo

Questions

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Amazon Web Services Update
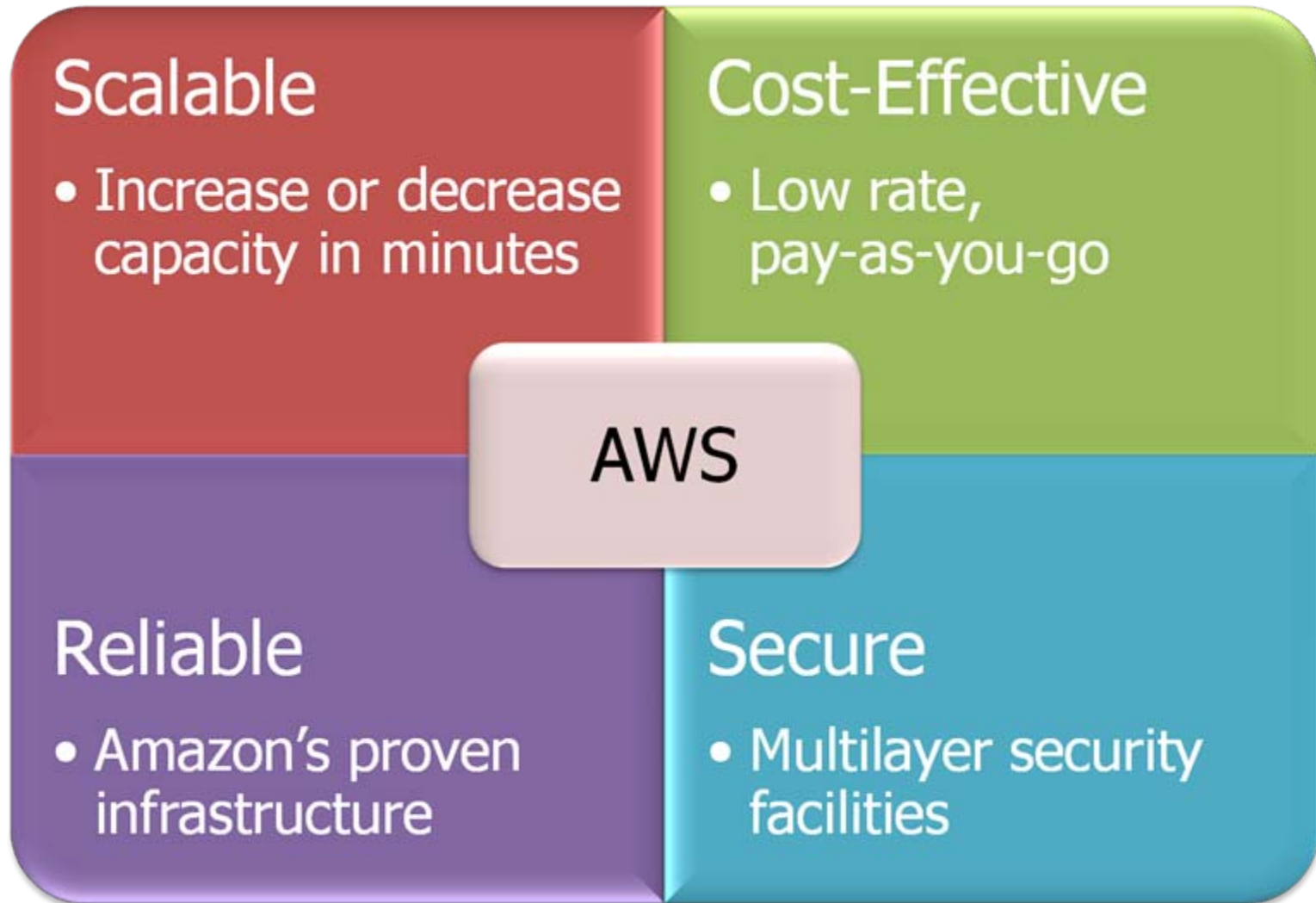## Jeff Barr – Senior Web Services Evangelist

Characterizing Cloud Computing

- **Infrastructure on demand**
  - Provision via API calls, not phone calls
  - Scale to meet actual demand
  - Effectively infinite capacity

- **Reduced need for capital**
  - Pay as you go
  - Operating expense, not capitalized cost
  - Business flexibility

- **Abstracted view of resources**
  - Reduced concern for "specs"
  - Storage, processing, messaging, bandwidth
  - Focus on business

- Hardware costs
- Software costs
- Maintenance
- Load balancing
- Scaling
- Utilization
- Idle machines
- Bandwidth management
- Server hosting
- Storage Management
- High availability

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Amazon Infrastructure Web Services

Scalable
- Increase or decrease capacity in minutes

Cost-Effective
- Low rate, pay-as-you-go

AWS

Reliable
- Amazon's proven infrastructure

Secure
- Multilayer security facilities

amazon web services™

Amazon SImple Storage ServIce

- Amazon S3: [Simple Storage Service](#)
- Programmatic access via web services API
- Highly scalable data storage in-the-cloud
- Simple to get going, simple to use
- Fast, highly available and durable
- Economical
- Big: 29 billion objects stored
- Busy: 70,000 TPS

amazon
web services™

Amazon Elastic Compute Cloud

- **Resizable Compute Capacity**
  As much as you need, when you need it.
  Scale up or down in minutes.

- **Complete Control via API**
  Create, scale, & manage
  instances programmatically.

- **Variety of Instance Sizes**
  CPU Power, Cores, RAM, Disk.

- **Wide Variety of Pre-built AMIs (Amazon Machine Images)**
  Hit the ground running with minimal system building effort.

- **Secure & Flexible Network Security Model**
  Full control of access for each running instance.

Amazon Web Services In Action

- Backup / Archive

- Media Sharing

- Media Distribution

- Academic Computing

- Quantitative Trading

- Media Rendering

- Search Engines

- Social Networking

Washington Post

- Hillary Clinton's public record coming

- How to process 17,481 pages PDF

- Developer suggests EC2

- 12 hour development time

- 200 instance EC2 job
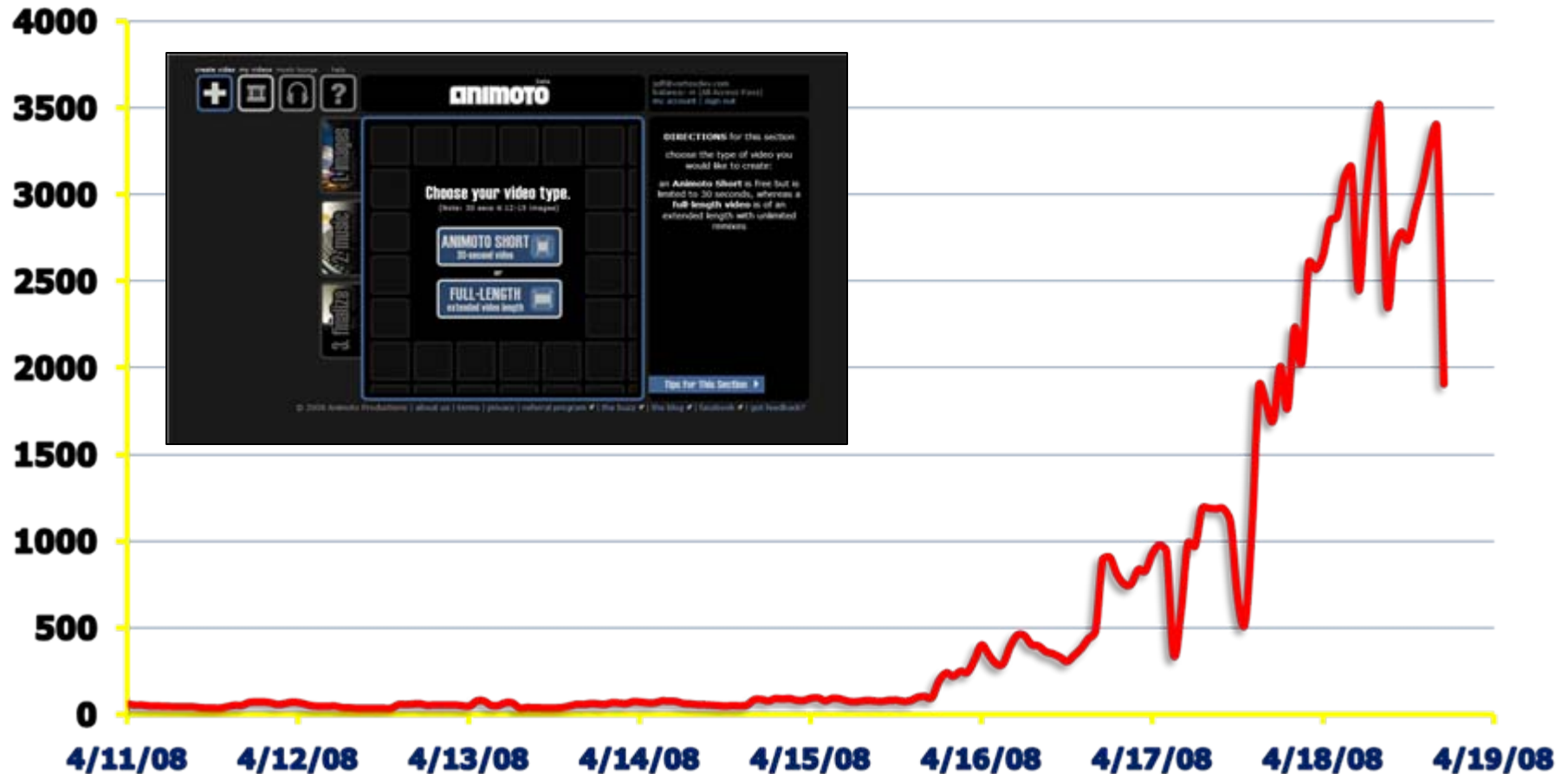
- 9 hours to OCR and index
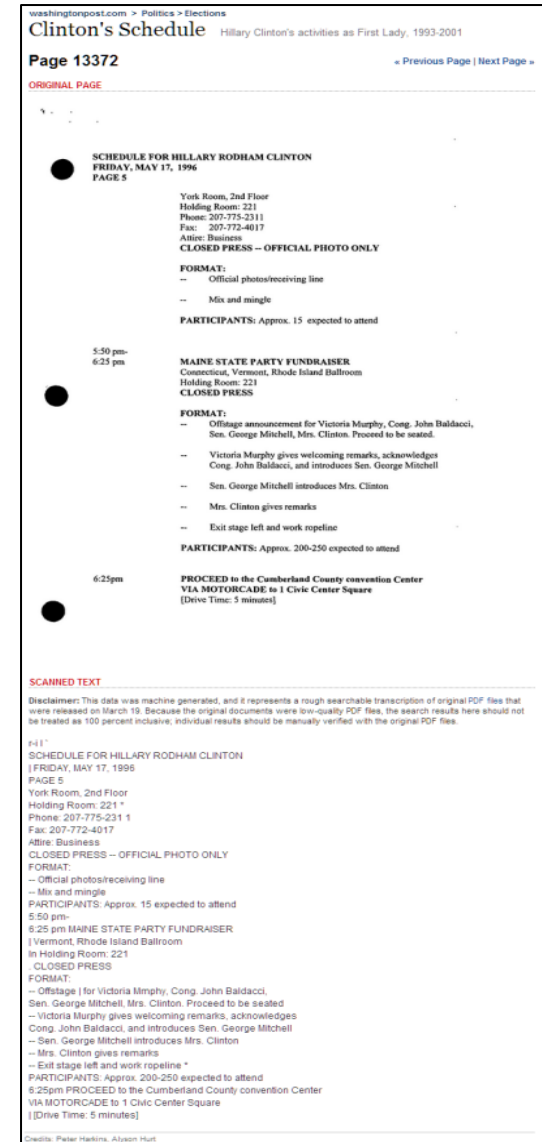
New York Times
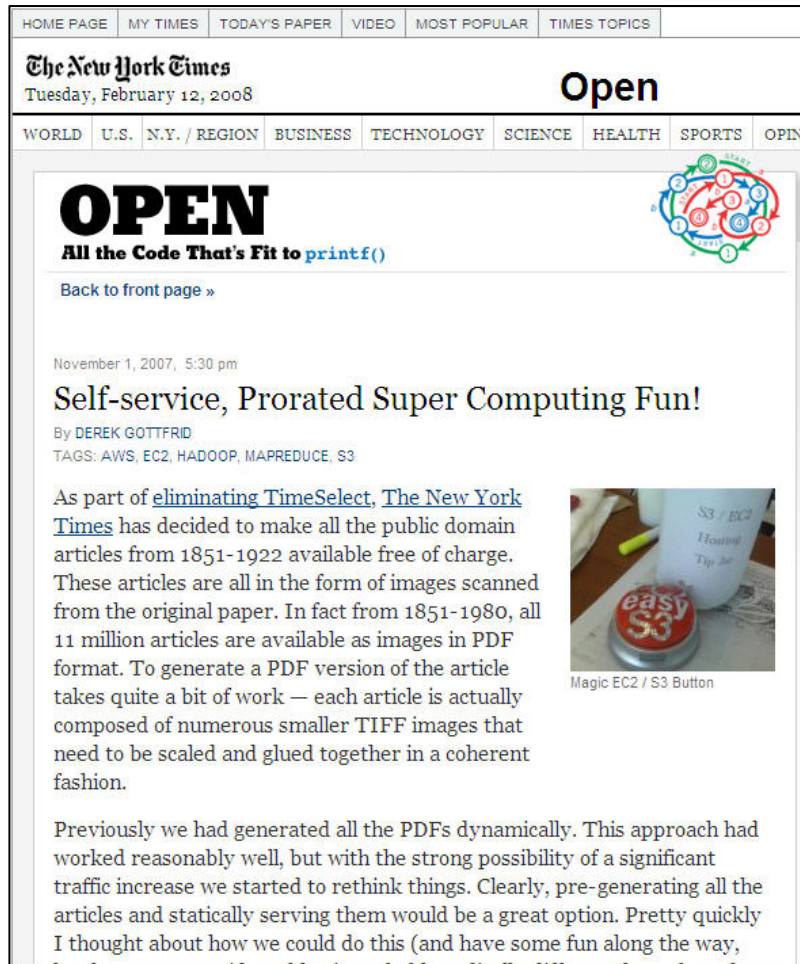
- 1851-1922 Articles

- TIFF -> PDF

- Input: 4TB of data (11 Million Articles)

- Processing:
  - 100 EC2 Instances
  - Hadoop
  - 24 hours

- Output: 1.5 TB of Data

Anlmoto.com

50 Servers to 3500 Servers In 3 Days

Why Entrepreneurs Like AWS

- No server required

- Easy scaling

- Pay as you grow

- No more fear of success

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webservices™

Why VCs Like AWS

- Invest in brainpower, not in servers

- Focus on true differentiation

- Reduced time to market

- Room to grow

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Next Steps

- AWS Home Page: aws.amazon.com

- AWS Blog: aws.typepad.com

- My Email: jbarr@amazon.com

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Cloud Computing and Integration

Peter Coffee
Director, Platform Research
salesforce.com

Things That Should Not Be Your Problem

Talent

Innovation

Infrastructure Services	Application Services	Operations Services
Network	Security	Authentication
Storage	Sharing	Availability
Operating System	Integration	Monitoring
Database	Customization	Patch Mgmt
App Server	Web Services	Upgrades
Web Server	API	Backup
Data Center	Multi-Language	NOC
Disaster Recovery	Multi-Currency	Capacity Planning
	Workflow	
	Analytics	
	Multi-Device	
	Messaging	
	Search	

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SOFTWARE

Not All Clouds are Alike

- Flexible but complex: the Grid
  - Grids imply dynamic arrival/departure
  - Grids may include specialized nodes
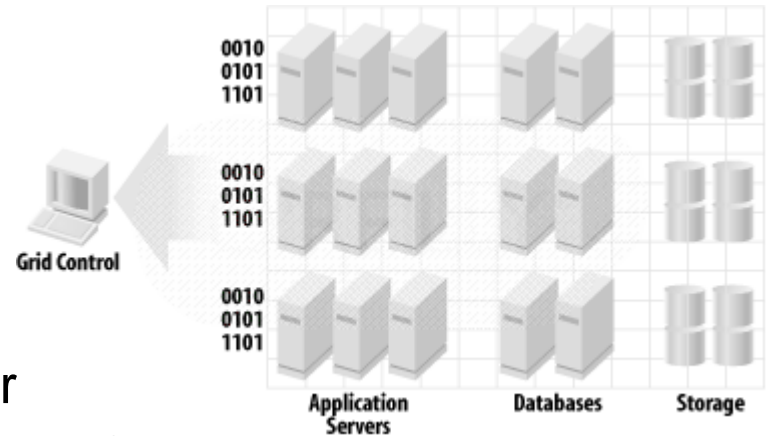
- Cost-effective but confined: the Cluster
  - Clusters are typically monocultures: just one type of node
  - Applications may require tuning to a particular cluster size
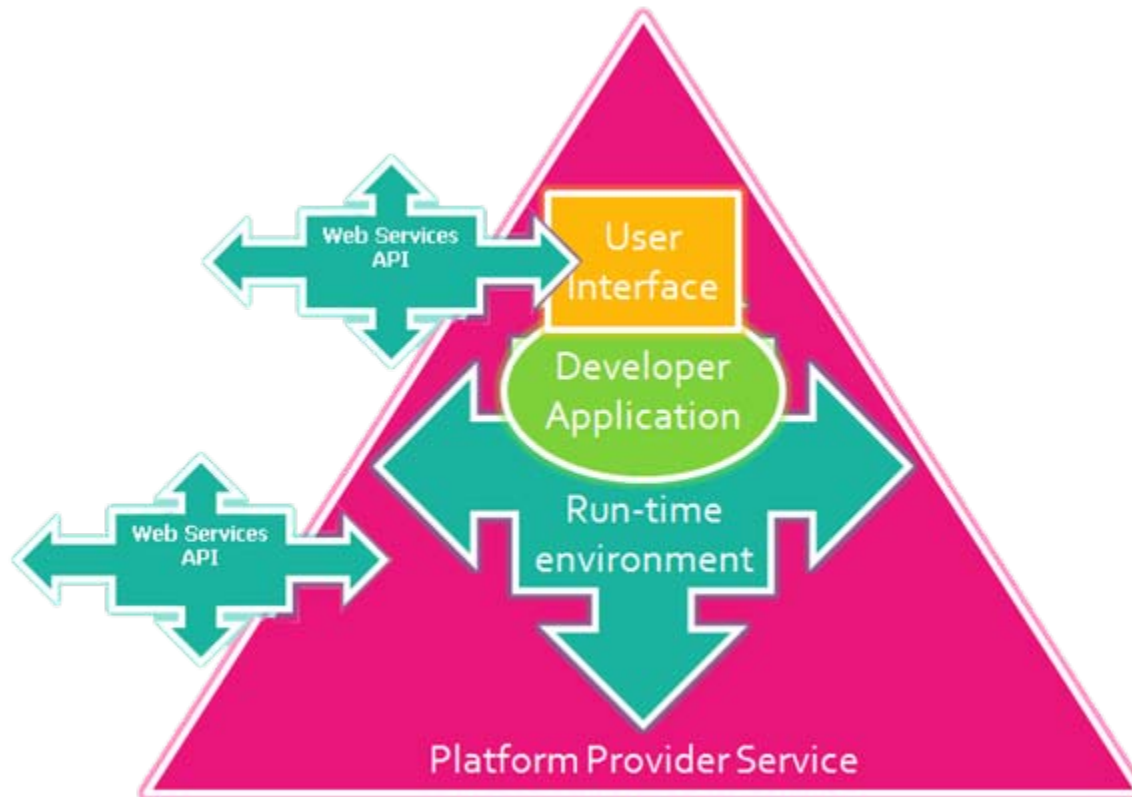
- Responsive but repetitive: the Hypervisor
  - Virtualized servers can be quickly provisioned
  - Software stack within the virtual server retains issues of versioning and configuration
  - Virtual appliances demand monitoring/management

- Enterprise cloud computing: API leverage
  - Immediate focus on function; immediate delivery of value
  - Concerns arise around perception of platform lock-in
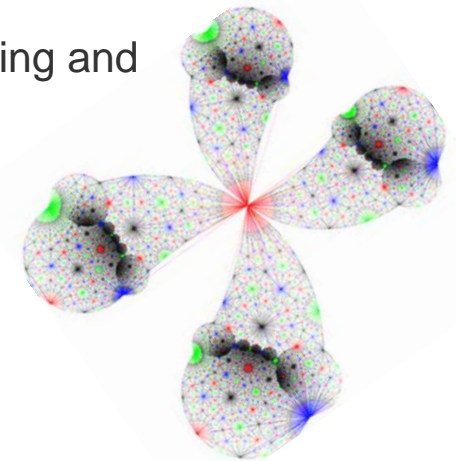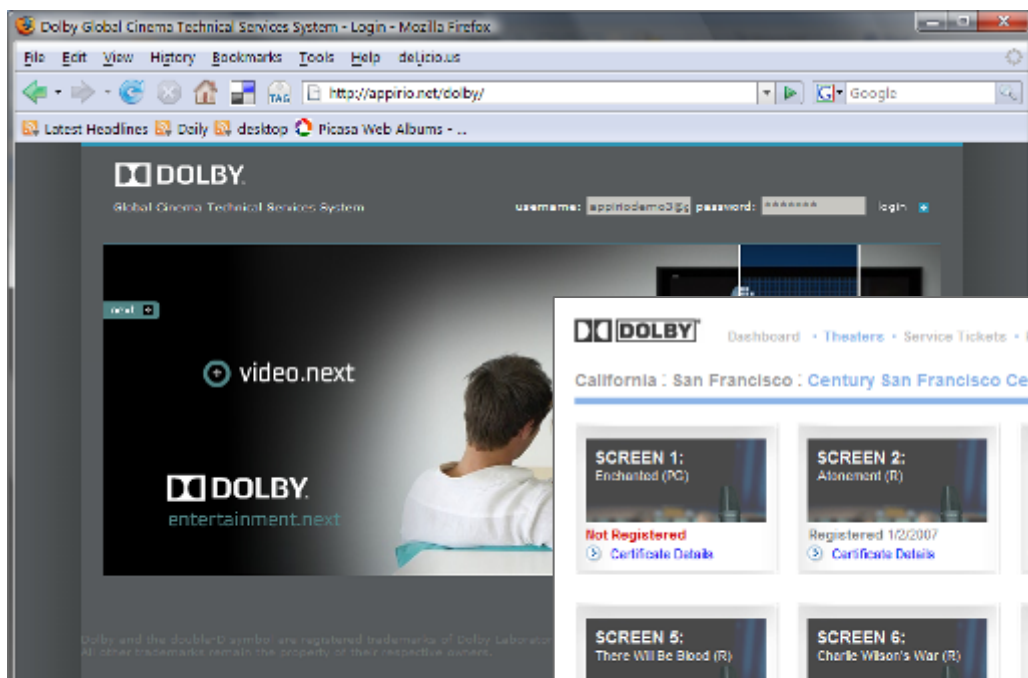
"Complete" must not mean "Closed"

Leverage from all Assets: Integration as a Service

Mash-ups from AppExchange	Native ERP Connectors	Native Desktop Connectors	Integration Partner Ecosystem	Developer Toolkits

force.com
api

"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.**"
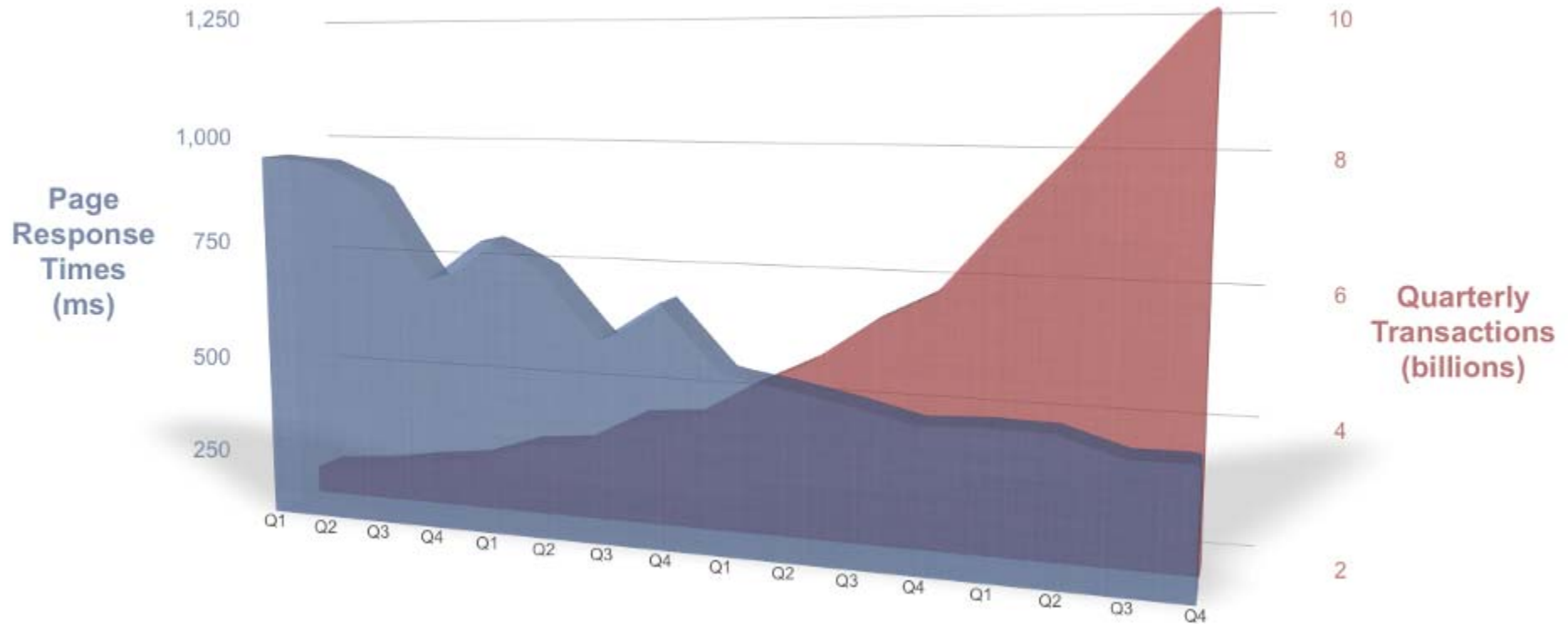
— Program Manager, Enterasys

Creative Solutions Today

- Immediate deployment to 900 stores

- Four new custom-built franchise management applications delivered in four months

- No increased burden on IT

S	Sales
S	Marketing
S	Service & Support
Papa Murphys	Franchises
Papa Murphys	Real Estate
Papa Murphys	Construction
Papa Murphys	Satisfaction

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Cloud Capability: Scalable and Sustainable

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Cloud Capability: Scalable and Sustainable

http://trust.salesforce.com/trust/status/

Date	Number of Transactions	Avg. Speed* (seconds)	System Status											
			APO (Japan)	EU0 (EMEA)	NA0 (SSL)	NA1	NA2	NA3	NA4	NA5	NA6	CS0	CS1	CS2
09/08/08	168,003,166	0.317	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
09/07/08	53,931,326	0.211	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓
09/06/08	60,739,380	0.209	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
09/05/08	159,387,679	0.294	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
09/04/08	166,955,133	0.300	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
09/03/08	168,377,608	0.312	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
09/02/08	165,910,826	0.308	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
09/01/08	93,227,745	0.314	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
08/31/08	56,090,803	0.281	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
08/30/08	61,995,242	0.228	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
08/29/08	150,255,461	0.287	✓i	✓i	✓i	✓i	✓i	✓i	✓i	✓i	✓i	✓i	✓i	✓i
08/28/08	166,533,774	0.302	✓	✓	✓i	✓	✓	✓	✓	✓	✓	✓	✓	✓
08/27/08	166,601,058	0.306	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
08/26/08	170,331,911	0.322	✓	✓	✓	●	✓	✓	✓	✓	✓	✓	✓	✓
08/25/08	160,360,746	0.304	✓	✓	✓	✓i	✓	✓	✓	✓	✓	✓	✓	✓

Cloud Security: No Need for Excuses
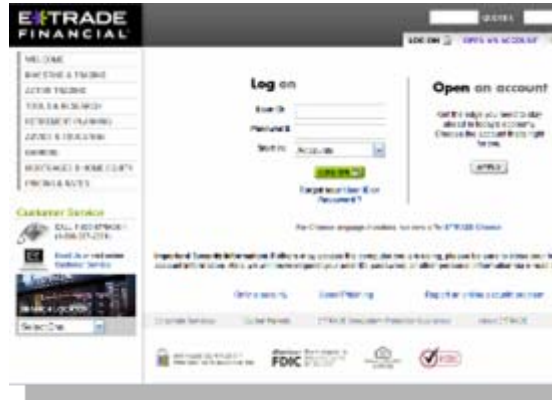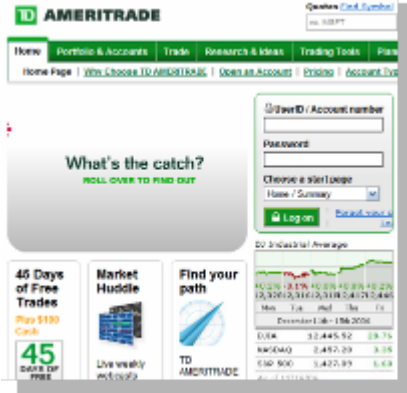
Facility Security

- 24x365 on site security
- Biometric readers, man traps
- Anonymous exterior
- Silent alarm
- CCTV
- Motion detection
- N+1 infrastructure

Network Security

- Fault tolerant external firewall
- Intrusion detection systems
- Best practices secure systems mgmt
- 3rd party vulnerability assessments

Platform Security

- SSL data encryption
- Optional strict password policies
- SAS 70 Type II & SysTrust Certification
- Security certifications from Fortune 50 financial services customers
- May 2008: **ISO 27001** Certification

"There are some **strong technical security arguments in favour of Cloud Computing**… (Craig Balding, Fortune 500 security practitioner)

salesforce.com

KELLY SERVICES

- Operations in 27 countries on 5 continents

- High staff turnover impaired historical data collection

- Kelly Financial Resources, Kelly Engineering Resources, and Kelly Law Registry standardized on common SaaS foundation

- Operational benefits
  - Anytime/anywhere access
  - Opportunities tied to parent accounts
  - Full sales history documented on every account despite turnover
 - Multi-language, multi-currency capabilities provided by Force.com platform

HarrisInteractive

- Executives wanted a "sales culture"

  – One common system for global market research operations

  – Cross-functional support for sales, marketing, finance, research

- Customized base sf.c products with more than 250 new data fields

- Developed automated workflows for approval and commissions management

- Extended functionality with third-party applications and custom-built applications on Force.com platform

- Improved sales forecast accuracy (near 90%) in less time (down 50%); less than one-month payback; global user adoption 90%

Transformation: The Time is Now

- Tom Peters' apology for *In Search of Excellence*:

  "Excellent firms **don't believe in excellence…**

  …only in constant change"
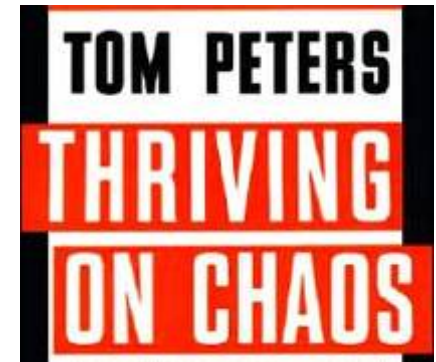
- Gartner's warning to CIOs who think they're technologists:

  "Within five years, 60% of chief executives will make their CIOs

  responsible for using information as a strategic asset"

  "Within five years, 40% of chief executives will make their CIOs

  responsible for business model innovation"

  "Some enterprises spend 90% of their IT budgets just to keep standing still"

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Next-Gen Apps Demand IT's Top Talent
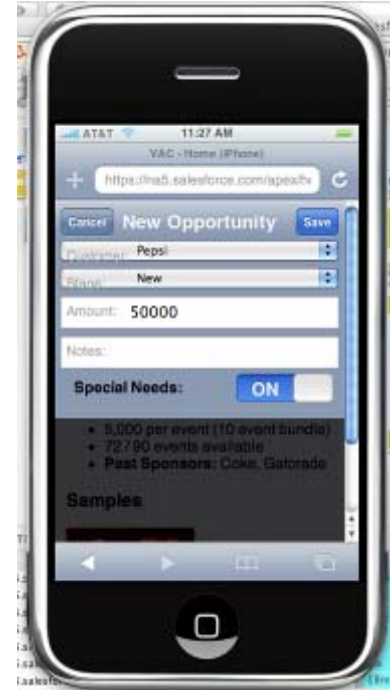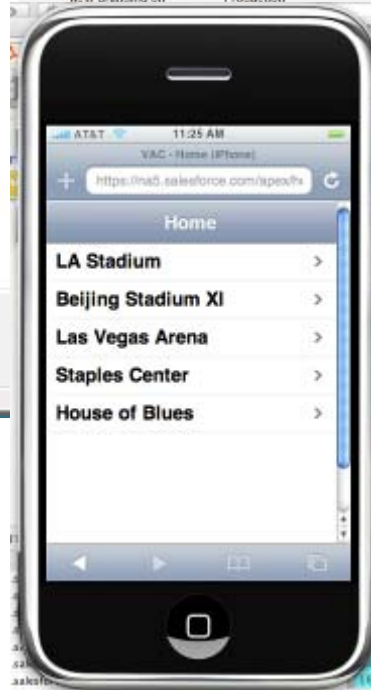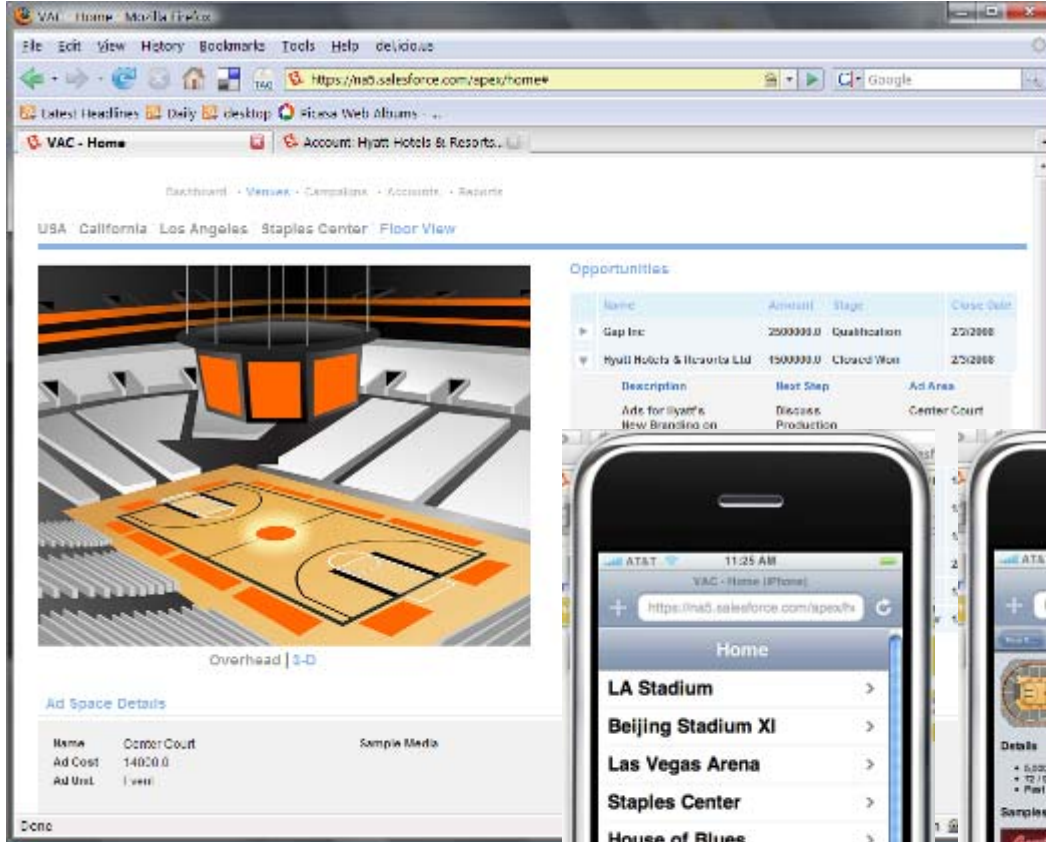
Clouds Elevate the Standard of Agility

"Ideas has been an unbelievable home run. We are loving it—the voice of the customer is totally present at Starbucks in a brand new way, thanks to the Force.com platform."

Chris Bruzzo
CTO, Starbucks

salesforce.com

The center of gravity has shifted

- New application ventures are cloud-based

- Enterprise trends favor cloud solutions
  - Space
  - Energy
  - Talent
  - Governance
  - Competitive environment

- It's not about any single provider
  - The cloud has become a solutions marketplace
  - Non-proprietary protocols maximize customer choice

Thank you

pcoffee@salesforce.com