Cars on the Ground, Customers in the Clouds

Scaling a Website While Enhancing Innovation
Cloud Computing as a Platform

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About Kelley Blue Book
Cloud as a Utility Computing Platform

> Why?
  - Cost
  - Flexibility
Cloud as a Utility Computing Platform

> How we operate servers on premise

![Graph showing servers over time](#)
Cloud as a Utility Computing Platform

> How we use our servers on premise
Cloud as a Utility Computing Platform

> How we really operate our servers on premise
Cloud as a Utility Computing Platform

> How do we pay for servers on premise?
Cloud as a Utility Computing Platform

> Viral Marketing

<table>
<thead>
<tr>
<th>Current Offers</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Incentive (Expires 2-1-10)</td>
<td>$2,000.00 Cash</td>
</tr>
<tr>
<td>Customer Incentive (Expires 2-1-10)</td>
<td>3.9% - 5.9% Financing</td>
</tr>
</tbody>
</table>

Note: Incentive Combinations & Availability May Be Restricted by Regional or Fleet Rules and Other Factors. See Dealer for Details.

Calculate payments for this vehicle.

View Other Chevrolet Silverado 2500 HD Crew Cab Trims With Incentives
Cloud as a Utility Computing Platform

How much flexibility is there?
Cloud as a Utility Computing Platform

> Problems with this approach

- Focus on planning for scale rather than building applications
- Hard to handle the unexpected
- Load and stress testing becomes critical up front
- Large initial cost
Cloud as a Utility Computing Platform

> Why not just virtualize everything? ("The Private Cloud")

![Diagram showing CPU utilization over time for two applications](attachment:diagram.png)
Cloud as a Utility Computing Platform

> Why not just virtualize everything? (“The Private Cloud”)

- Is this realistic?
- How many problems have we really addressed?
  - Focus on planning for scale rather than building applications
  - Hard to handle the unexpected
  - Load and stress testing becomes critical up front
  - Large initial cost
Cloud as a Storage Platform

- Same benefits as Compute
  - Built-in redundancy
  - Built-in scalability
  - Lower initial cost, and most likely lower overall cost
Demo
KBB.COM and the Cloud

What are we targeting?
- Redundancy
- Burst capacity
- Moving data from SQL to cloud storage
- Leveraging existing investments

On-Premise Implementation
- kbb.com, established 1995
- 14M UU/month
- Multiple physical data centers
- Technical implementation
  - Client – Silverlight, DeepZoom, WPF
  - Web – IIS 7, ASP.NET MVC
  - 63,000 lines of .NET code
  - 2.5 GB SQL Server DB w/ 125 tables, 15 indexed views, 117 stored procs, etc

Cloud Solution
- Cloud-based overflow capacity
- Windows Azure Web Role
- SQL Azure database

Benefits
- ~$100,000 savings / year in hosting costs alone
- Retire failover data center (27 Web servers & 9 SQL Servers)
- <1% code changes needed for application compatibility
- 6 weeks down to 6 minutes to add server capacity
KBB.COM and the Cloud
Less Data, More Apps

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Codename “Dallas”

- Marketplace
- Standard Data Access (OData)
- Billing
- Account Management

Services for Content Providers
Scale as a Competitive Advantage

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Cloud as a Platform

> Utility computing
  - On-demand infrastructure
  - Self-provisioning and servicing
  - Rapid elasticity
  - Economy of scale
  - Operational expenditures

> Infrastructure-as-a-Service

> Service delivery model
Cloud as a Platform

> Native cloud applications
  - Horizontal scaling (scale-out)
  - Parallelization
  - Shared-nothing
  - Multi-tenancy
  - Failure resilient (or fail-in-place)
  - Service-oriented
  - Staged production
  - Federated composition

> Platform-as-a-Service

> Application development model
Scale as a competitive advantage

2009 stats:

- +200B page views/month
- >3.9T feed actions/day
- +300M active users
- >1B chat messages/day
- 100M search queries/day
- >6B minutes spent/day
- +20B photos, +2B/month growth
- 600K photos served /sec
- 25TB log data /day processed
- 120M queries /sec on memcache

Infinite storage. Clouds of processors. Our ability to capture, warehouse, and understand massive amounts of data is changing science, medicine, business, and technology. As our collection of facts and figures grows, so will the opportunity to find answers to fundamental questions. Because in the era of big data, more isn't just more. More is different.

*Wired Magazine Issue 16.07 – 06.23.2008*
Cloud as a scale enabler

> Applications at Internet scale
  - Social networking
  - Social and geo analysis
  - Web as a platform
  - Big data (“The Petabyte Age”)
  - Real-time web
  - Semantic web
  - Derived intelligence

> Next-gen applications
  - Bio-engineering
  - Financial modeling
  - Federated business processes
Thank you!