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CloudScape II

Enterprise Cloud Use Cases

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Cloud Computing Is...



- * as a Service
 - [Infrastructure|Platform|Service|...]
- Accessed via a/the Network
 - Internet or Intranet
- Leverages Shared Resources
 - Servers, disks, databases etc.
- Simple Billing
 - Pay per use
- Simple(-ish) Management
 - Self service

Cloud Use Cases



- Cloud Properties

- Rapidly provisioned, flexible capacity
- Pay-per-Use, CapEx becomes OpEx

- Use Cases

- Short duration, experimental or risky standalone or well bounded applications or services. Rapid development, low barrier to entry, low cost of failure.
- Applications (again well bounded) with highly variable load
- Running non-core services – i.e. uneconomical to run internally

Large Enterprises and Clouds



- **Enterprise Business Drivers**
 - Deliver the right Quality of Service – performance, availability etc.
 - At the lowest cost
 - And enable agility/flexibility
- **Large Enterprises**
 - Have existing large scale infrastructure
 - Are able to achieve economies of scale
 - Have legacy tools, processes and skills
 - Need to integrate with external Cloud implementations
 - Want to leverage cloud properties internally too, i.e. internal Cloud implementations

eBay – The 30 Second Introduction!

eBay users trade about \$2000 worth of goods on the site every second

On an average day on eBay...



- A car sells every 56 seconds
- A pair of shoes sell every 7 seconds
- A cell phones sells every 7 seconds

1.3m people make all or part of their living selling on *

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*ACNielsen International Research, June 2006



eBay Is A Cloud Services Provider



- Trading as a Service (eBay)
- Payments as a Service (PayPal)
- Developers use web services APIs to access core functionality

eBay – Some Interesting Numbers



- 241+ million registered users
- 250+ million plus Items
- 10 million plus new items per day
- 60+ billion SQL transactions per day
- 600+ production database instances (inc replicas)
- 100+ clusters
- >4PB production data
- >8PB data warehouse

eBay Internal Drivers



- What's the same as every large Enterprise
 - Quality of Service
 - Cost
 - Agility
- What's different
 - 1 application instead of 3000
 - Economies of Specialization, thus...
 - Infrastructure \$ outweigh people \$
 - Typical enterprise = 70% people, 30% hardware/software/facilities
 - eBay Ops is dominated by hardware/software/facilities
 - Ultimately dominated by power \$

Driving Hybrid Clouds



- When power dominates, Enterprises want...
 - Datacenters that cater for average load and optimize for energy consumption
 - Variable cost excess capacity – i.e. Cloud Bursting
- Hybrid Cloud Use Case
 - Raises same issues as other use cases
 - Tighter integration requirements highlight opportunities and challenges
- So what are the they?

Cloud Is A Platform



- Applications & Services need to be architected and implemented to take advantage of this. This does not come for free!
- Risk of lock in to proprietary implementations
- Another platform for the datacenter
 - New operational model
 - New tools
 - New skills
 - Not necessarily cheap, quick or risk free

Integration – Application Challenges



- Can the application/service actually run on the Cloud?
- Can the application scale, adapt and take advantage of the external cloud platform's newer capabilities?
 - Stateless applications easier
 - Stateful may be problematic, especially transactional DB systems, due to performance constraints, topology etc.
- Can the application straddle the boundary between internal and external clouds, i.e. can one instance run on both at the same time?
 - Highly desirable for Cloud Bursting
 - Networking can be a challenge as you want this to work the same way as internally, i.e. IP address management, load balancing etc.

Management Challenges



- People, Processes and Tools
- Opaque Clouds
 - Performance Optimization is Hard
 - Fault Diagnosis can be challenging
- Security
- Regulatory Compliance & Jurisdiction

Overcoming The Challenges



- Internal cloud has to look like external cloud from the perspective of
 - The application
 - Operations
- This is not necessarily easy
- Need tooling that leverages capabilities but hides underlying implementations
- Tends to be custom today
- Hard to do without standards

Hadoop as a Service using HPC Basic Profile

