



ORACLE®

Building Hybrid Cloud Apps: Local Databases + The Cloud = Extreme Versatility

Mark A. Heckler

@HecklerMark

Principal Advanced Software Engineer,
Oracle USA

MAKE THE
FUTURE
JAVA



Program Agenda

- Session Objectives
- What is “The Cloud”?
- We Can See the Cloud from Here
- Plugging Holes with a Cloud
- Thinking Outside the Box
- Demo
- Let’s Talk!

Session Objectives

- Share ideas
 - Where are we now?
 - Where do we want to be?
 - How can we get there?
 - One path, one prototype...many possibilities
- Foster thought

What is “The Cloud”?

NIST Definition

- “Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model is composed of five essential characteristics, **three service models, and four deployment models.**”¹

What is “The Cloud”?

Simple Definition

- “Cloud computing is Internet-based computing, whereby shared resources, software, and information are provided to computers and other devices on demand, like the electricity grid.”²

What is “The Cloud”?

Simplest Definition

- “Cloud computing is a general term for anything that involves delivering hosted services over the Internet.”³

What is “The Cloud”?

For Our Purposes

- Unconventional
- Unorthodox
- A “new way” of doing things
- Every new tool brings new options, solutions, and challenges
 - Technical challenges
 - Other challenges

We Can See the Cloud from Here

- But most of us aren't in it
- Many of us *can't* be in it...not yet, not entirely
- Reasons for caution
- Can't let ourselves off the hook, though; our job is to solve problems

We Can See the Cloud from Here

Reasons for Caution

- Well-documented cloud provider failures
 - “Cloud Failures Cost More Than \$70 Million Since 2007, Researchers Estimate”⁴
 - “5 Serious Cloud Failures & Disasters of 2011”⁵
 - “Amazon Cloud Outage Causes Customer To Leave”⁶
 - Companies making the news for “cloud failures” include Amazon, Epsilon, Flipboard, Google, Heroku, Hosting.com, Hotmail, Instagram, Intuit, Microsoft, Netflix, PayPal, Pinterest, Skype, Twitter, Yahoo...
 - Estimated costs of an outage?

We Can See the Cloud from Here

Reasons for Caution

- Privacy concerns may impede acceptance
 - Legal/regulatory restrictions (actual)
 - Exposure, security (real and perceived)
- Management mandate
- Reliability, control issues
 - Well-documented cloud provider failures
 - Client company inability to control, well, anything

We Can See the Cloud from Here

Reasons for Caution

- Client company has little or no control when a failure occurs
 - “Utilizing a private cloud is a good middle ground between placing assets in a public cloud, *where you don't have much security or control*, versus doing everything on your own.”⁷
 - Avoidance, detection examples exist
 - “Netflix attacks own network with ‘Chaos Monkey’ – and now you can, too”⁸
 - Example of a “failure-embracing system”
- “Top 10 Reasons for NOT Using a Cloud”⁹
- “#CloudFail: Six pitfalls to avoid with enterprise cloud deployment”¹⁰

We Can See the Cloud from Here

We're Not Off the Hook

- We solve problems!
- Real Benefits
 - Flexibility - you and your customers can access things in the cloud from nearly anywhere
 - Agility - you can make something available to your customer quickly, with minimal (or no) additional setup, configuration, etc.
 - Low cost of additional resources
 - Capacity – can vary as demand varies
 - Innovation happens in new areas

Plugging Holes with a Cloud

- Overcoming tunnel vision
- Unrealistic to think you can “go cloud” by flipping a single switch
- How do you eat an elephant?
- Find (requirement) holes and fill them

Plugging Holes with a Cloud

Why Can't I Use it for Everything?

- One tool doesn't do everything; one solution doesn't fit every problem
- Laws, rules, regulations, risks deemed unacceptable by leadership and/or legal counsel

Plugging Holes with a Cloud

Is There a Balance Point?

- Infinite *number* of balance points!
- How do you find yours?

Plugging Holes with a Cloud

Filling Requirement Holes

- Requirements, use cases don't really change when they're turned away
- Requirements are key to cloud adoption in nearly all of the previous scenarios
- How can we fulfill the requirement while managing risks?

Plugging Holes with a Cloud

How Can We Fulfill the Requirement and Mitigate Risks?

- Existing functionality balances risks and requirements
- Demonstrate how a cloud solution solves the problem at hand better than other options
- How are we going to meet the requirement and maintain/improve our risk profile?
- “Cloud” is not a panacea and won’t be used in every situation

Plugging Holes with a Cloud

Prototyping for Better Solutions

- Nothing is perfect on the first iteration
- Failures produce improvements and drive better outcomes
- Success breeds (more) success
- Build from small to large

“In the lab, failure is positive. If everything you try works, it means you’re too careful, that you aren’t taking any risks. To fail is to learn.”

James Gosling

Father of Java

“To the man with a hammer, everything looks like a nail.”

Mark Twain

American author and humorist
(1835-1910)

Thinking Outside the Box

About that balance point...

- Public cloud
- Private cloud
- Hybrid cloud

Thinking Outside the Box

About that balance point...

- “Hybrid cloud provides the flexibility of in house applications with the fault tolerance and scalability of cloud based services.”¹¹
- “Hybrid clouds can offer the flexibility and cost savings of the public cloud along with the security and data protection of the private cloud.”¹²
- “Drunk on Cloud Kool-Aid? Time to Sober Up”¹³

Thinking Outside the Box

- “Edge cases” – not the same as “atypical”
- Provide excellent opportunities to prototype innovative solutions
- Everyone can and should win
- There *will* be failures while building successes
- One size does not fit all

Demo

- Goals
- Prototyping Cloud: The Mighty Bean Coffee Company

Demo

Basic Goals

- Usability
- Maintainability/Flexibility
- Scalability
- Availability/Reliability
- Extensibility
- Security
- Portability

Demo

The Mighty Bean Coffee Company: “We’re Serious about Our Java!”

- Built using the following components:
 - NetBeans
 - GlassFish, JSF
 - JavaFX, Scene Builder
 - MySQL or Oracle Database Express Edition
 - Evernote
- Pricing of above components make them perfect for prototyping, POCs
- Let’s build!

Demo

Prototype Cloud Cast of Characters

- CloudBean: interacts with cloud store
- Integrator: Reconciles local/cloud data
- CompositeOrder: Represents complete coffee order
- ENMLLib
 - ENMLInterface: defines interface to implement
 - ENMLNinja: constructs/deconstructs cloud orders
- Current Evernote API library
- Apache Thrift library

Let's Talk!

- Discussion
- To explore this and other topics further, please visit The Java Jungle¹⁴ at <http://blogs.oracle.com/javajungle>
- Continue the dialog via Twitter (@HecklerMark)¹⁵
- Thank you for participating!

References

1. <http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf>
2. en.wikipedia.org/wiki/Cloud_computing
3. <http://searchcloudcomputing.techtarget.com/definition/cloud-computing>
4. http://www.pcworld.com/businesscenter/article/257860/cloud_failures_cost_more_than_70_million_since_2007_researchers_estimate.html
5. <http://www.cloudways.com/blog/cloud-failures-disasters-of-2011/>

References

6. <http://www.informationweek.com/news/cloud-computing/infrastructure/240003249>
7. <http://www.oracle.com/us/corporate/profit/features/5ideas-cloud-161452.html>
8. <http://arstechnica.com/information-technology/2012/07/netflix-attacks-own-network-with-chaos-monkey-and-now-you-can-too/>
9. <http://www.johnmwillis.com/amazon/top-10-reasons-for-not-using-a-cloud/>

References

10. <http://gigaom.com/2012/09/23/cloudfail-six-pitfalls-to-avoid-with-enterprise-cloud-deployment/>
11. http://en.wikipedia.org/wiki/Cloud_computing
12. <http://www.oracle.com/us/technologies/cloud/building-on-the-cloud-404885.pdf>
13. <http://techcrunch.com/2012/09/22/drunken-on-cloud-kool-aid-time-to-sober-up/>

References

14. <https://blogs.oracle.com/javajungle>
15. <http://twitter.com/hecklermark>
16. <http://bit.ly/M8nUA>

MAKE THE FUTURE JAVA



ORACLE®

