Enterprise Java Apps
Full Control with IaaS Clouds

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About The Rambler

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Different Types of Clouds

SaaS
Software as a Service

PaaS
Platform as a Service

IaaS
Infrastructure as a Service

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Different Types of Markets

Individuals
Contractors, developers, hackers

Small Business
Startups, SMBs

Enterprises
Tenured Companies

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How Clouds Are Born

VMware Approach

Keep a close analog to the physical

Virtualize everything

Xen (and Others) Approach

Focus on the hypervisor

Automate VLANs and physical hardware

Ye Olde Rackspace

Blades for everyone!

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http://commons.wikimedia.org/wiki/File:Pile_of_IBM_HS20s.jpg

Where BlueLock Landed

Demo of vCloud Datacenter

Full of Awesomeness

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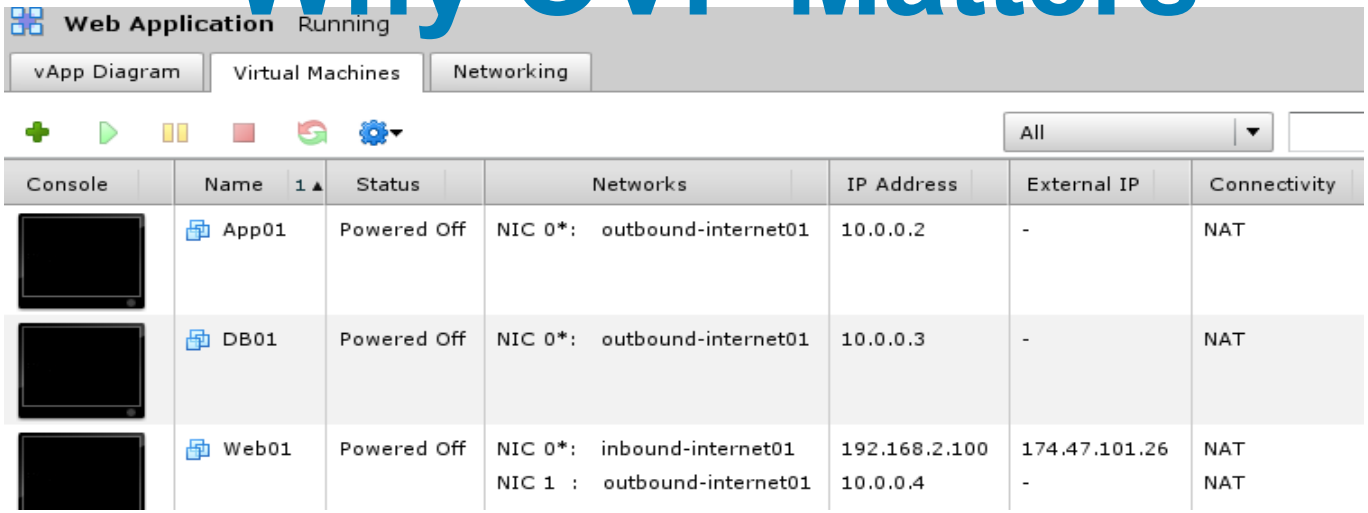
You're Presenting at IndyJUG

Where's the Java?

- Clouds are now focusing on the application, *not* the infrastructure
- Infrastructure now has an API. And APIs are fun.
- With the right cloud, the JRE becomes your infrastructure

Why OVF Matters

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  </DiskSection>
  <NetworkSection>
    <Network ovf:name="nat">
      <Description>The nat network</Description>
    </Network>
  </NetworkSection>
  <VirtualSystem ovf:id="vm">
    <Info>A virtual machine</Info>
    <Name>SUSE Linux Enterprise JeOS</Name>
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    <VirtualHardwareSection>
```

Deployment Options

Promote a vApp

Send QA your whole infrastructure

Promote Your Code

Deploy just your JARs, WARs

Build Everything from Scratch

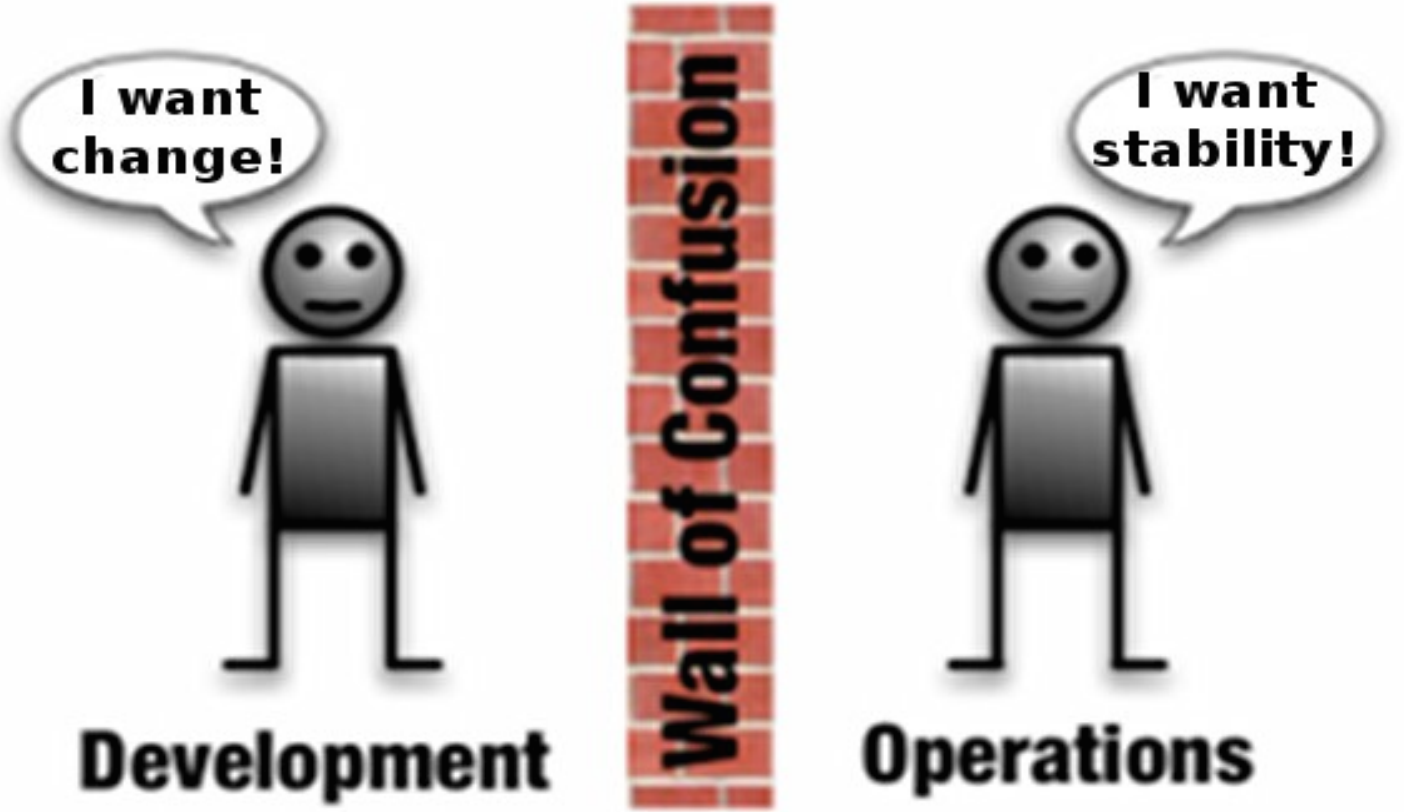
Leverage APIs to Build an Entire Environment

Deployment Options

DevOps

Development + Operations

Development vs. Operations



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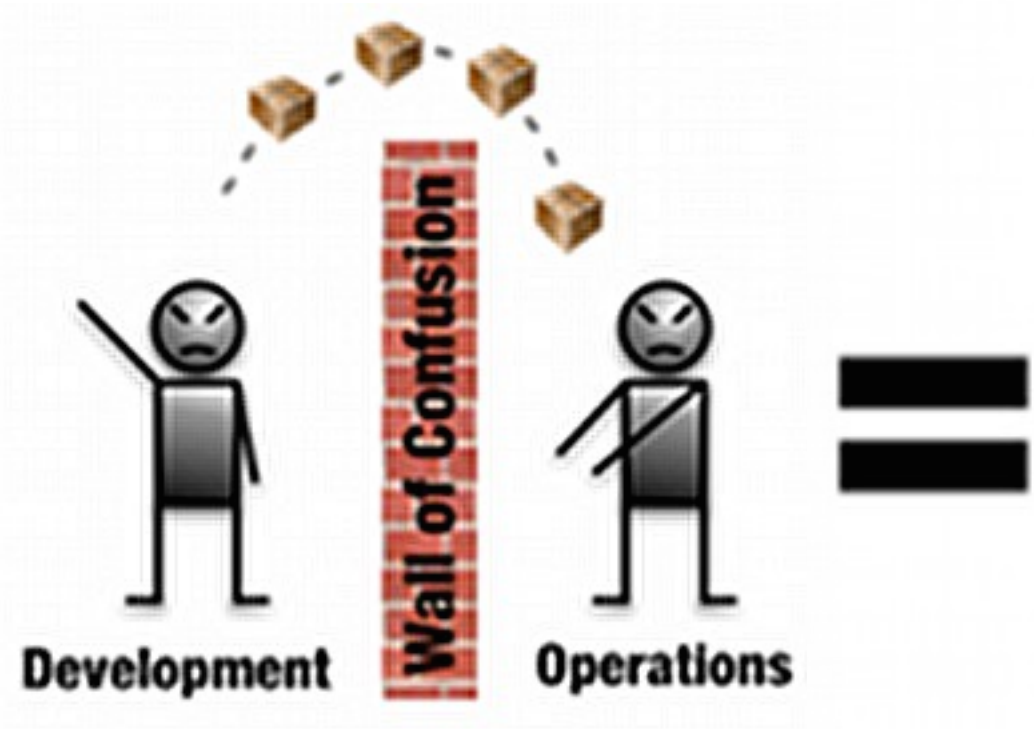
http://dev2ops.org/blog/2010/2/22/what-is-devops.html

Development vs. Operations



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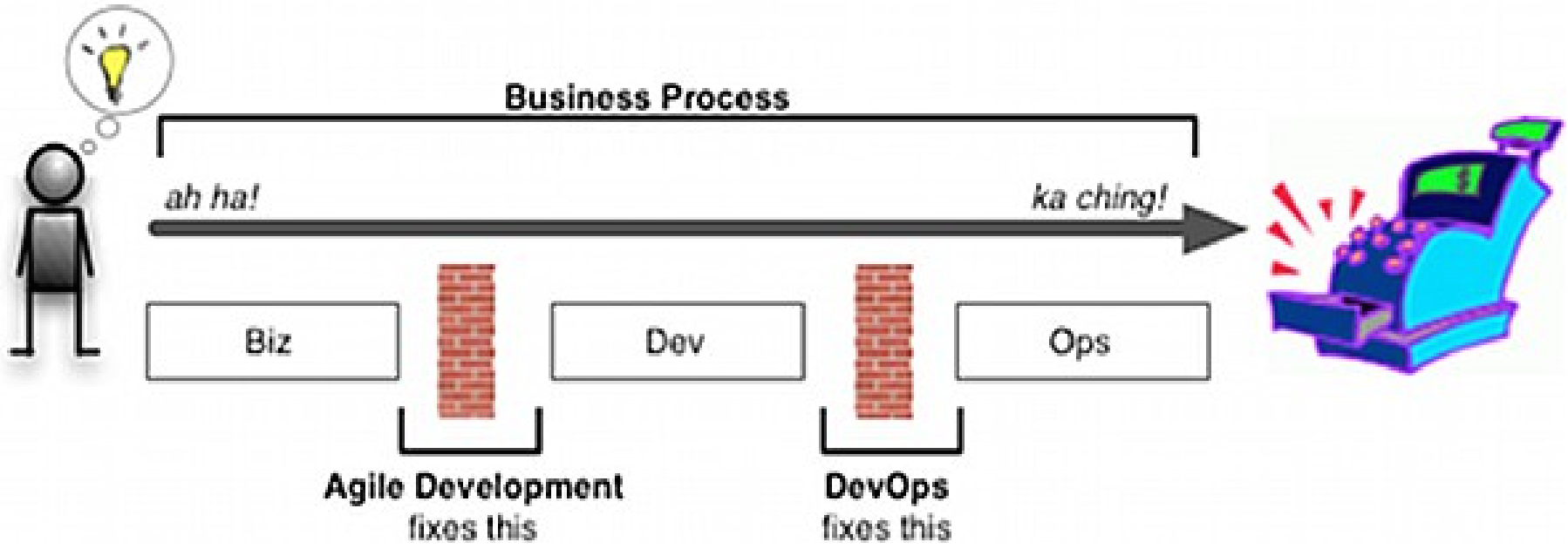
Development + Operations



DevOps Tools

vmware

OpsCode Chef

jclouds

Pallet
Agile Cloud Development

LIQUIBASE

Proceduralize

- Configuration file changes
- Package installation
- Deploying code
- Database updates
- Hot-Add RAM, CPU
- Horizontal Scalability

Demo of vCloud API

Redolent with spices

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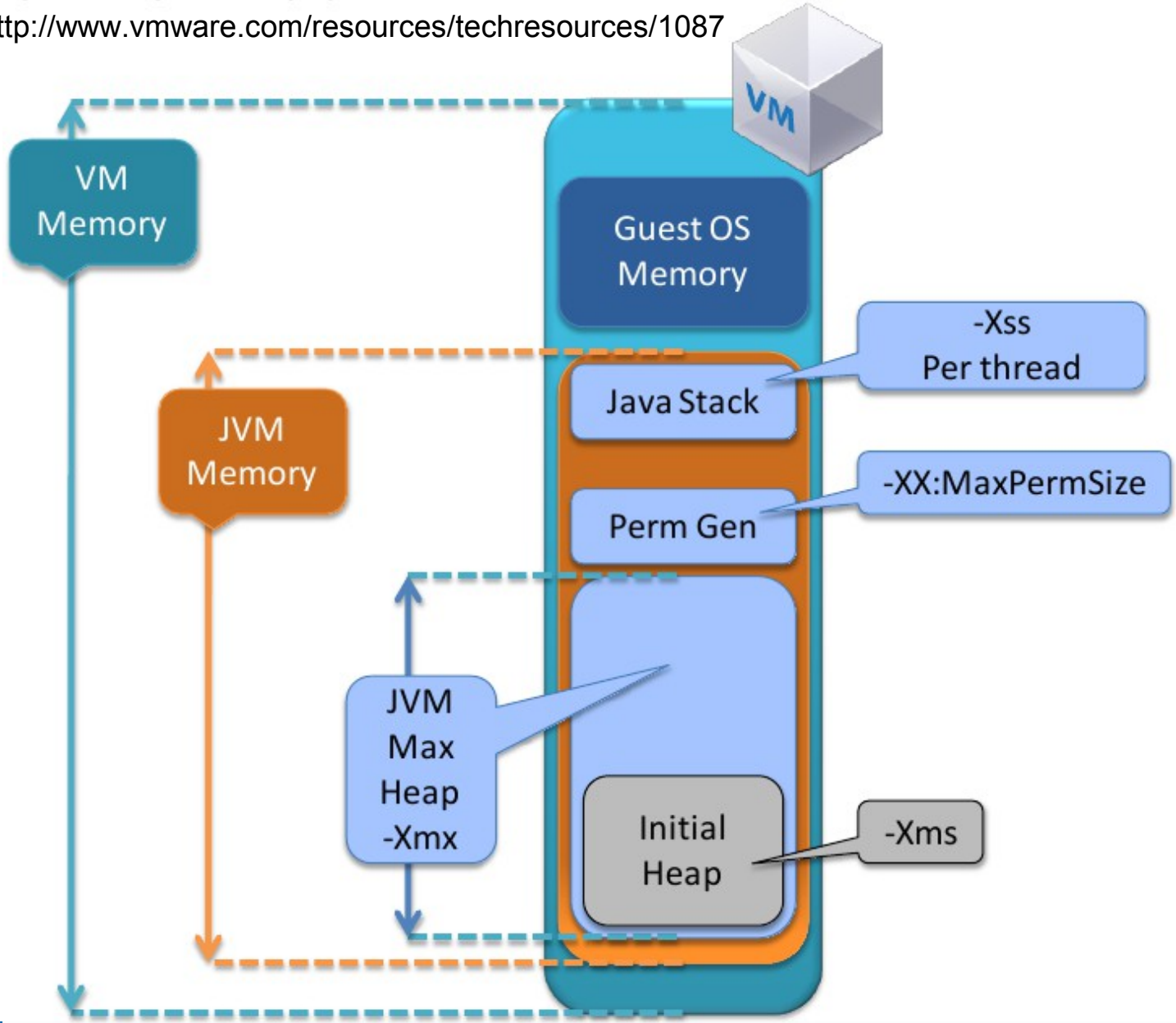
Virtualized JVM Tuning - Memory

- One (and only one!) JVM per server
- Use large page sizes
  - `XX:+UseLargePages`
- Swap memory is absolutely evil
- Use hot-add memory to your advantage
- Pick the right garbage collection algorithm
  - Mark and sweep
  - Multi-threaded

http://www.vmware.com/resources/techresources/1087



VM Memory = Guest OS Memory + JVM Memory

JVM Memory = JVM Max Heap (`-Xmx` value)

+ JVM Perm Gen (`-XX:MaxPermSize`)

*+ NumberOfConcurrentThreads * (`-Xss`)*

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Virtualized JVM Tuning - vCPU

- Reduce your interrupts
- Reduce real time clock intervals
  - `XX: +ForceTimeHighResolution`
- More vCPUs aren't always better
  - Context switching is now cheap in the JVM
  - Context switching is not cheap in some clouds

Virtualized JVM Tuning - I/O

- **One of the biggest differentiators between clouds is disk IOPS**
- Beware – are you being charged for internal network I/O?
- Should you use asynchronous NIO? Are threads expensive?
- Should you use synchronous thread pools? Are threads cheap?

What's Next?

The Cloud Is Not Mega-Cheap

…but it is more agile

No One Cares About the OS

The JVM becomes the hypervisor. Again.

Applications Are King

And developers roll in glittering gold coins

Thanks IndyJUG!

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