

# CloudComputing

Business in the Cloud: Opportunities and Challenges of Cloud Computing



*brought to you by*  
**Reuven Cohen**  
Founder & Chief Technologist, Enomaly Inc



## About Reuven

- - **Developer of over 500+ websites since 1996**
  - **Founded Enomaly Inc 2004**
  - Focused on Open Source Virtualization & Cloud Computing Software Products
  - **Customers:** Intel, Verisign, France Telecom, Rackspace, Cisco, Amazon, John Hancock, Best Buy, Business Objects, Alliance Films
  - Creator of Enomalism Cloud Platform and ElasticDrive
  - Vibrant community: 40,000+ downloads, 12,000 Email List, 1,000 beta testers



## A Brief History

- Original idea for Elastic Computing 2004
- Created Enomalism 2005
- Originally a Xen Management Dashboard
- First to use a RESTful API
- Open Source Stacks were hard to scale
- VM's are easy to manage



## A Brief History : Amazon EC2

- Invited into secret beta early 2006
- Launched August 2006
- First to Create “Persistence Storage” a.k.a ElasticDrive
- First to Create “Windows on EC2” using Emulator
- EC2 Integration and Migration into Enomalism
- Consulting projects including NBC/Universal



## A Brief History: Intel

- Initial engagement early 2007
- More with Moore
- Private Content Delivery Network
- VT-d (I/o Hardware Virtualization)
- Green API



## What is Cloud Computing?

- Internet centric software
  - API Driven
  - Virtualized
  - Paid per use
  - Multi-tenant
  - Multi-platform
  - Multi-network
  - Global

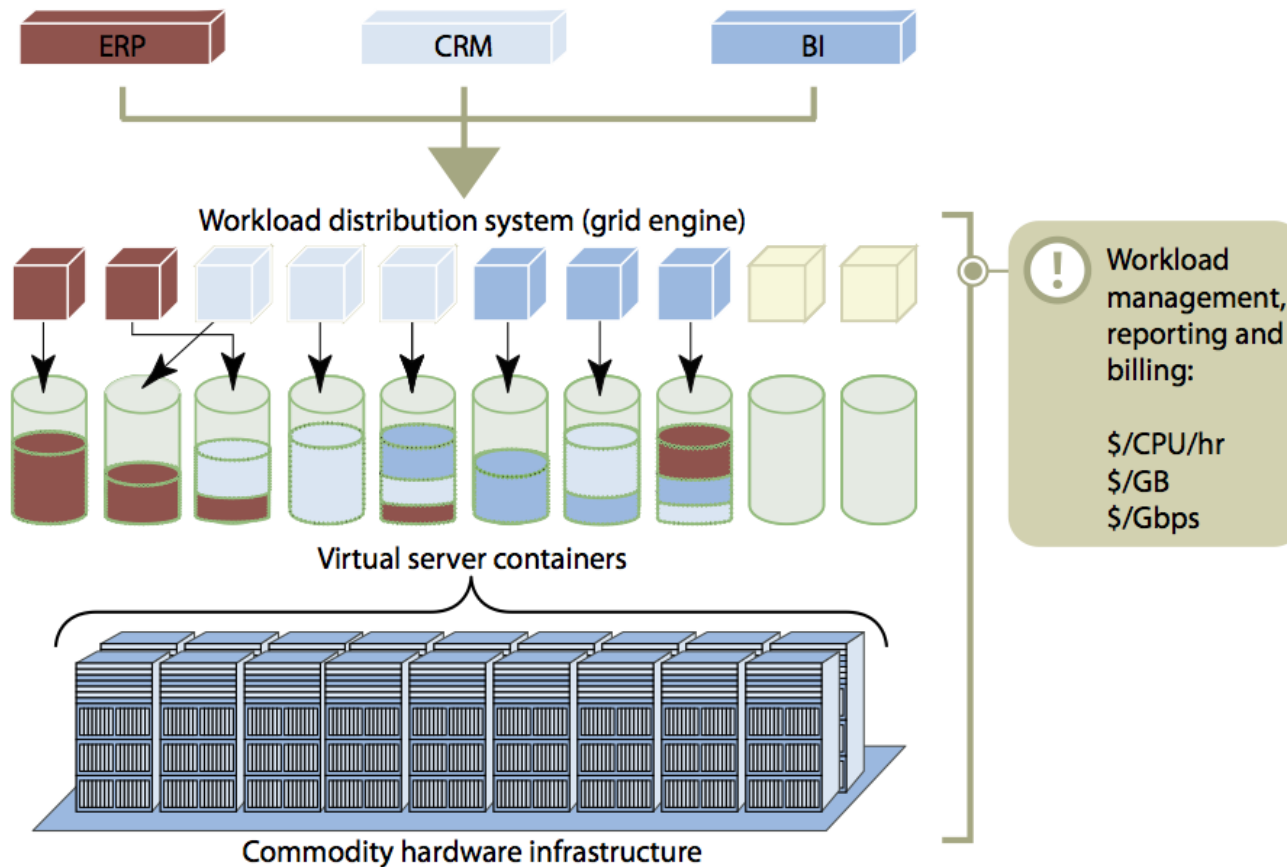


## Infrastructure Vs Platform

- Infrastructure as a Service
  - Amazon, GoGrid, 3Tera, Flexiscale
- Platform as a Service
  - Google App Engine, Joyant, Mosso, Salesforce, Microsoft
- Hardware Vendors
  - IBM, Sun, HP, Dell, EMC



## Cloud Fundamentals





## Cloud Computing Challenges

- Cloud computing presents enterprises with significant cost and agility benefits that IT will struggle to leverage due to security and control constraints
- If IT doesn't provide business units with easy access to inexpensive cloud services, they will engage with external providers themselves, bypassing IT policy and control
- **Enterprise IT wants Control**
- **Business units want flexibility**



## Enterprise Barriers

- Data Security & Privacy
  - Regulatory Control (SoX, HIPPA, etc)
  - Lack of Audit, Governance & Accountability
  - Questionable Reliability & Performance
  - Lack of Management Tools
  - Lack of Integration with Internal Infrastructure
  - Lack of Regional “Clouds”
  - Lack of Turn key cloud platform solutions
  - Understanding of “*what is cloud computing?*”



## Benefits of the Cloud

- Cost savings – leveraging economies of scale
  - Pay for what you use
  - Resource flexibility
  - Rapid prototyping and market testing
  - Increased speed to market
  - Improved service levels and quality rules
  - Self-service deployment
  - Reduce lock-in and switching costs
  - Enhanced customer experience
  - Constant Application & Data Availability



## Virtual Private Cloud (VPC)

- An IT solution platform that integrates local and commercial cloud infrastructure under a single management and governance layer enabling secure policy based utilization of the most appropriate and cost effective infrastructure available for any IT service.
- A VPC is a method for partitioning a public computing utility such as Amazon EC2 into quarantined virtual infrastructure. A VPC may encapsulate multiple local and remote resources to appear as a single homogeneous computing environment bridging the ability to securely utilize remote resources as part of an seamless global compute infrastructure.



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## Enterprise Datacenter

### Virtual Private Cloud Solutions

P2C, V2C

- Innovation Lab Solution
- Test Lab Solutions
- DR Solutions
- Media Cloud
- Overflow Capacity
- Data Archiving
- ITSM Integration
- CDN/Caching solutions
- Virtual Desktops

### Characteristics

- Secure
- Audited
- Available
- Accountable
- Manageable
- Portable
- Policy-based
- Self-service

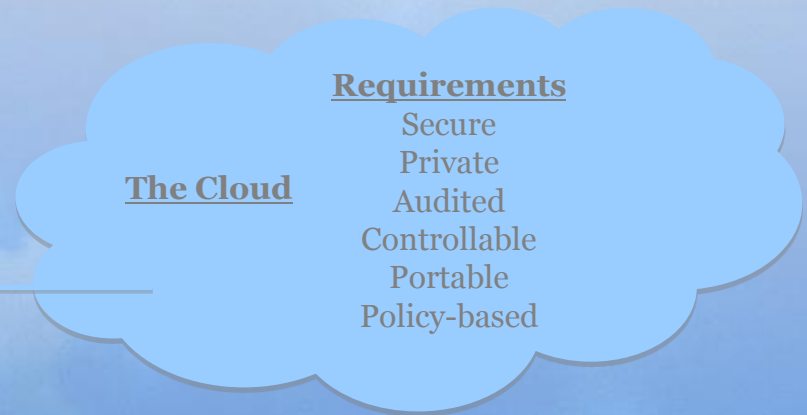


Internet

### Requirements

- Encrypted
- Virtualized
- Audited
- Redundant
- Secure

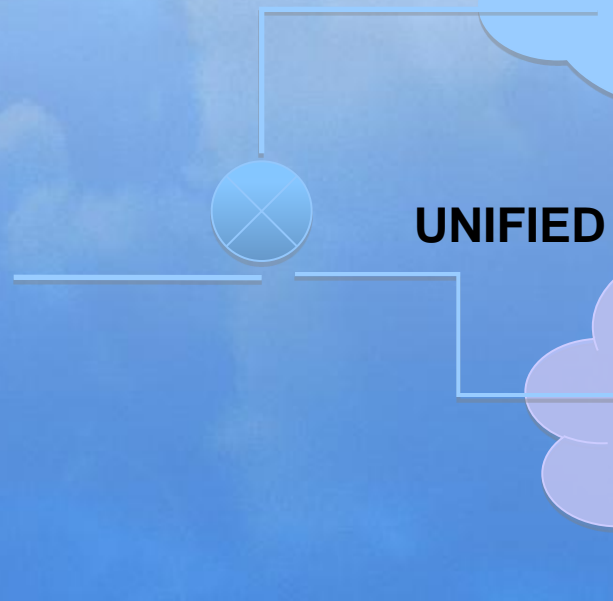
## Commercial Clouds



The Cloud

### Requirements

- Secure
- Private
- Audited
- Controllable
- Portable
- Policy-based



**UNIFIED**

Alternative Cloud Provider



## Regional Clouds

- Geographical Cloud Computing
  - Response based scaling on a regional basis
  - Regional Scaling and Monitoring
  - WAN optimization
  - Data Replication
  - P2C and D2C Migration



## The Offline Cloud

- What happens when you lose connectivity?
- What happens when your infrastructure goes down?
- Failure as a Service
- Fault Tolerance
- Decentralized Management (XMPP)



## Enomaly's Cloud Platform

**ENOMALISM** ELASTIC COMPUTING PLATFORM

Dashboard Virtual Infrastructure Repository Admin Users/Groups Monitoring Selenium

INFRASTRUCTURE ELASTIC VALET

**Clusters** Summary Default Cluster

start stop pause restart delete

VIRTUAL MACHINE SEARCH Enter Search

OS	NODE	VM URL	CONTROLS	CPU Total	RAM
	enomalism-mini-1 [UID:b4e8774e-83e2-11dc-8f8c-0018f39d2047] This dom0   Address: 192.168.1.210, Private: NA,	Physical Machine		0.000S	0M
	VNC No Worky [UID:ec31851e-aa39-11dc-8915-0016cb4e46bd] Powered On   Address: 127.0.0.1, Private: NA, Parent: enomalism-mini-1   XML	qemu:///system		598.920S	128M
	test kvm on khaz2 [UID:b1e7654c-eb2c-11dc-a0f5-0016cb4e3a3b] Could not connect to server.   Address: 127.0.0.1, Private: NA, Parent: khaz-mini-2   XML	qemu:///session		No Data	NA
	khaz-mini-2 [UID:b417c0ec-3c79-102b-8152-0018f39d2047] Could not connect to server.   Address: 192.168.1.211, Private: NA,	Physical Machine		No Data	NA
	e1bcdbba-e775-11dc-a854-001cb3b2b37d [UID:e1bcdbba-e775-11dc-a854-001cb3b2b37d] Off   Address: 127.0.0.1, Private: NA, Parent: enomalism-mini-1   XML	qemu:///system		0.000S	128M

Enomalism allows customers to create and run any application without worry of infrastructure failure. It is a cost effective way to setup your infrastructure as a scalable world wide utility.



## Platform Overview

 **enomalism elastic control panel** (Customer Interface, User Access, Utility Billing)

 **Virtual Private Network** (Switching, Firewall)

 **Geographic Load Balancing** (Monitoring, Metering, Analytics)

 **Local Compute Cloud** (Virtual Servers)



 **Regional Compute Cloud** (Amazon Ec2, etc)



 **XMPP Decentralized Command & Control**

 **Distributed Storage Array** (Local & Remote)

 **Platform API** (REST,JSON,SHELL,ETC)

 **enomalism elastic computing platform** (System Provisioning)

## End to End Cloud Solution



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## Summary

- Market Opportunity
- Technology
- Community
- Partners
- Customers
- Experience



## Questions?

- ### Contact Information

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