

# Java Applications on Google App Engine

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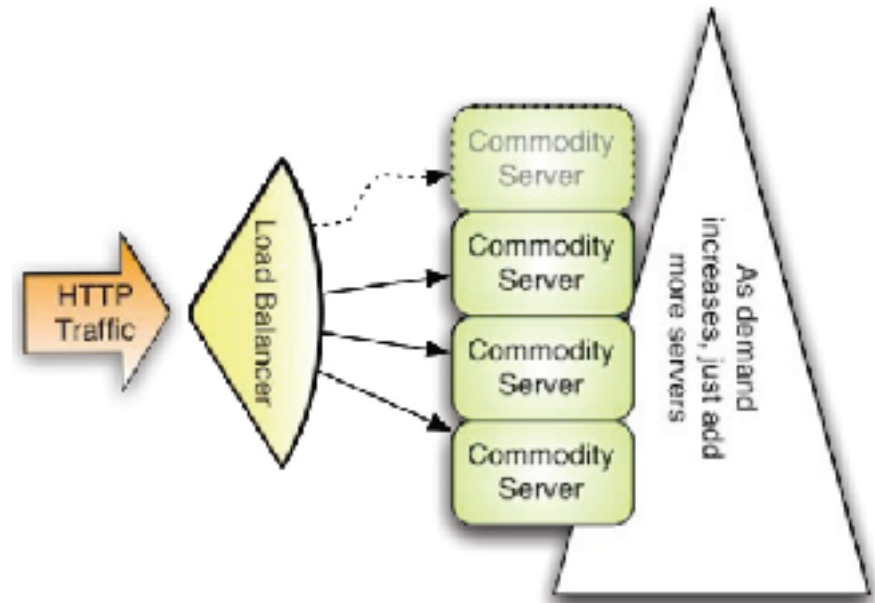
[www.xebiaindia.com](http://www.xebiaindia.com)

Easy to build, easy to maintain,  
easy to scale



# Current Web Application LifeCycle Management

- Prepare
- Deploy
- Scale
- Maintain / Monitor
- Upgrade



*Difficult and Expensive*



*Google App Engine ?*

# What is Google App Engine

- Yet another Cloud Computing Platform
- Hosts your Web Applications on Google Infrastructure
- Formally launched in April'08 with Python
- Java Support enabled in April'09



# Java on Google App Engine

- Platform as a Service (PaaS)
  - Hardware, Connectivity
  - Operating System
  - JVM
  - Servlet Container
  - SDK
  - API's for accessing Google Infrastructure Services

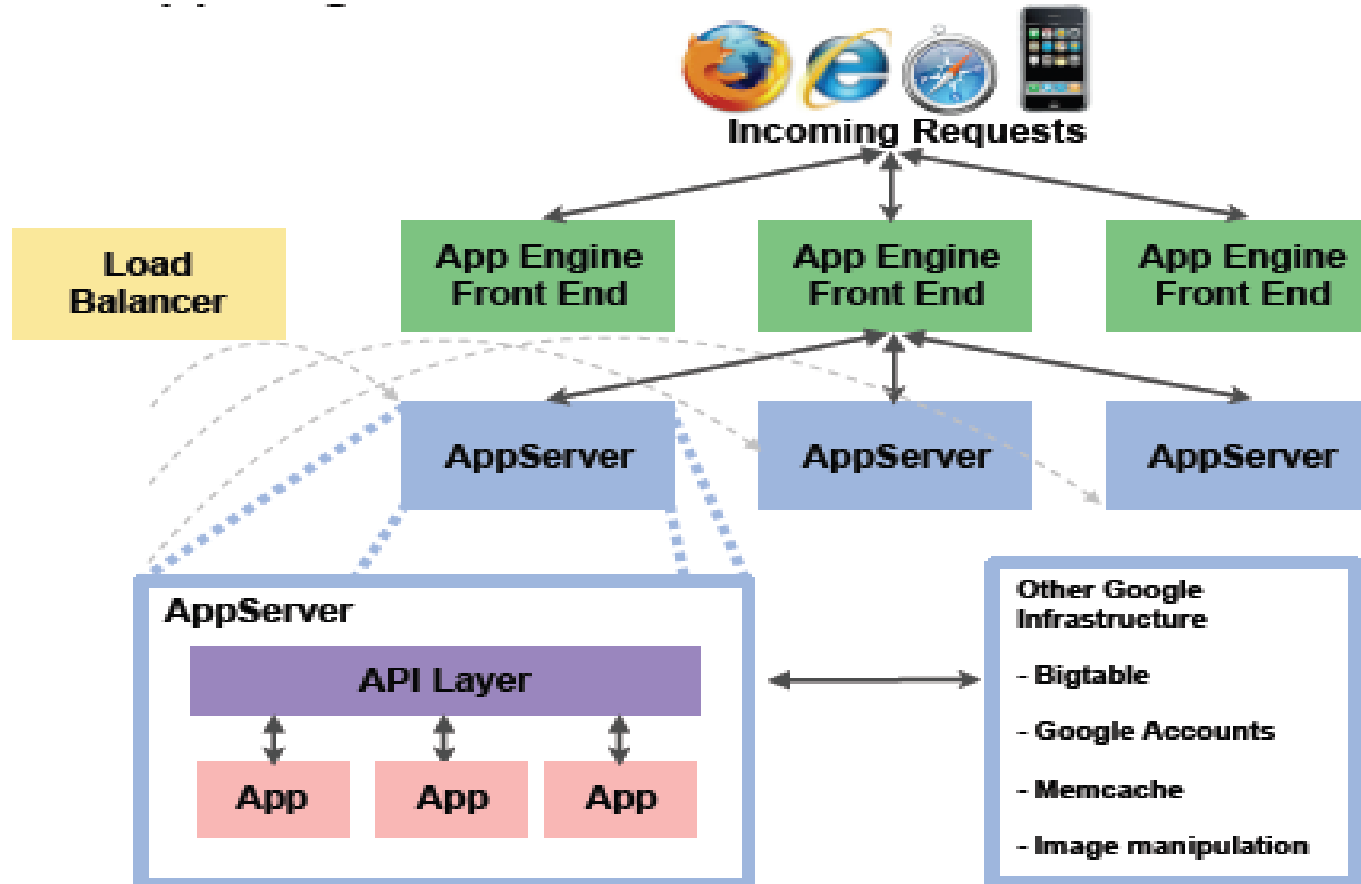


# Key Features

- No need to install or maintain your own stack
- Scaling on Demand
- Google's proven infrastructure for you
- Pay as you Go, Free to get started

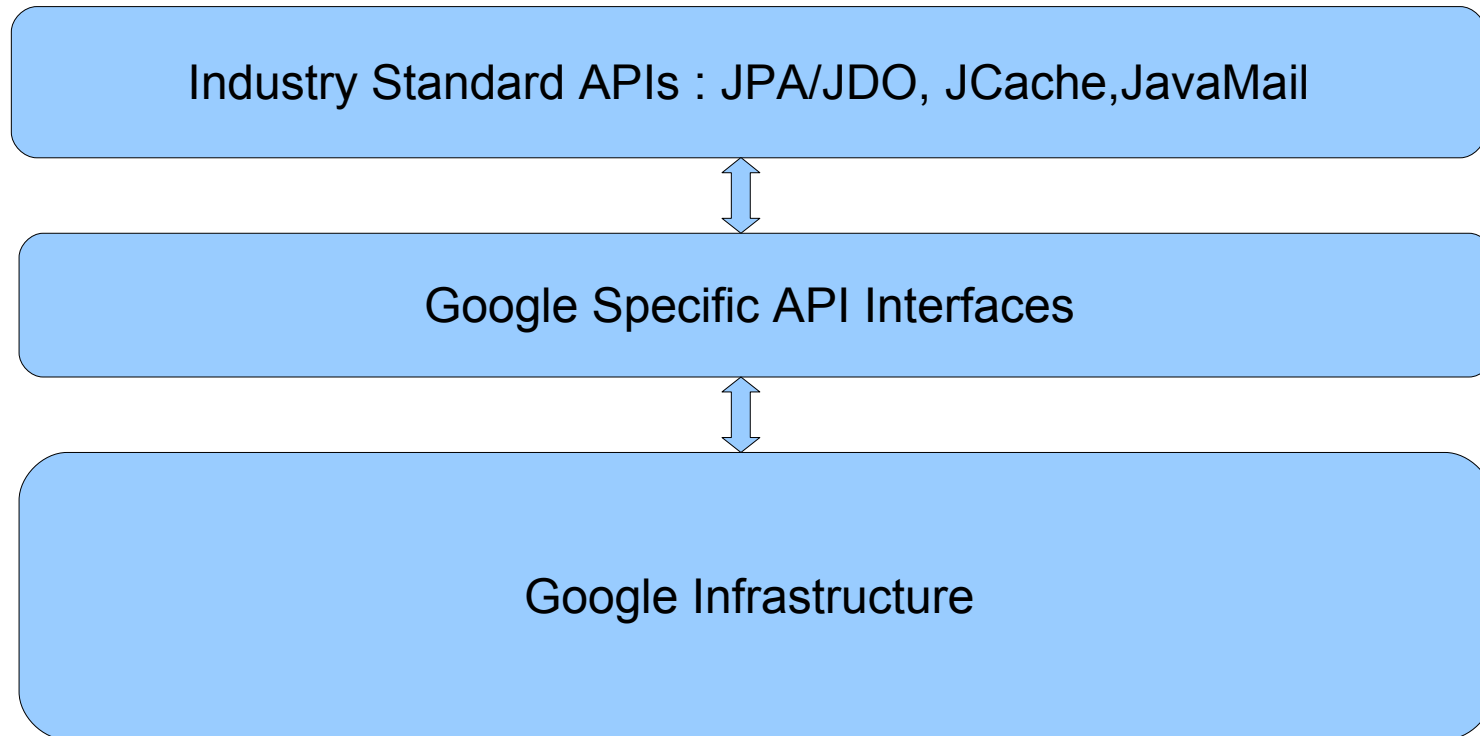


# Architecture





# Typical Application Building Blocks



# Platform

- JVM 5 or later
- Servlet 2.5 Container, Jetty & Jasper (*can change*)
  - HTTP Session
  - JSP
- SandBox Environment
- Google Services API



# Getting Started

- Google Account & Mobile Phone
- Download and install SDK
- Plugin for your IDE / Command Line



# DEMO OF HELLO-WORLD

# Summary

- SDK includes
  - Dev AppServer
  - Disk based version of DataStore
  - Simulation of Google User Service
- Deployment
  - <https://appengine.google.com>
  - Application hosted at `<app-id>.appspot.com` or Custom Domain



# Configuration

- appengine-web.xml
  - Application Name and Version
  - Logger
  - Static Files
  - Resource Files
  - System Properties & Environment Variables
  - SSL
  - Session
  - Inbound Services



# Data Manipulation

- Underlying Storage is BigTable
- JDO *or* JPA *or* DataStore API
- JDO & JPA implementation by DataNucleus Access Platform
- jdoconfig.xml or persistence.xml
- datastore-indexes.xml

*Let's try with a simple scenario*



# Data Manipulation Constraints

- Max 1000 rows per request
- Not Allowed while Using JPA
  - Owned Many-to-many relations
  - Join, group by, having...
- Only JOINED and MAPPED\_SUPERCLASS during Inheritance
- Restrictions on Queries





# RDBMS vs DataStore

RDBMS	DATASTORE
DataBase	DataStore
Table	Kind
Row	Entity
Row ID	Key
Column	Property

JPA	JDO
@Entity	@PersistenceCapable
@Id	@PrimaryKey
@GeneratedValue	@Persistent
find(...)	getObjectById(...)



# Other Google Services

- URL Fetch
- Memcache
- User Service
- Mail
- Image
- XMPP



# Additional Services

- Cron
- AOP Like Interface
- Task Queues



# Managing & Monitoring

- Dashboard
- Reporting
- Manage different versions
- Logs



# Developer's Toolkit

- IDE Plugins
- Ant supported, Maven *on the way*
- Testing Facilities
- XML Validation



# Quotas & Billing

- Billable Quotas & Fixed Quotas
- Per-minute Quotas
- Resources
  - Requests
  - CPU
  - Bandwidth (In/Out)
  - Google Services



# Current Pricing

- Very Generous
- CPU : 6.5 hours / day, \$0.10 / hour later
- Bandwidth In/Out : 1 GB / day, \$0.10/\$0.12 GB later
- Stored Data : 1 GB
- Emails : 2000/day



# How to Manage / Monitor Costs

- QuotaService
- Profiling Tool
- Application behaviour when Resources are finished
- AdminConsole





# Constraints

- Restricted JVM
  - Threads
  - File System Writes
  - ClassLoader, JNI,...
- Read Only File System
- DataStore : Only choice for persistence
- Requests limited to *max* 30 seconds



# Limitations

- No Server Push
- Request & Response Size Max 10 MB
- Max Files < 3000
- Max Size of Application Files < 150 MB



# Supported Languages & Frameworks

- Groovy & Grails
- JRuby on Rails *(with some build and config modifications)*
- Scala & Lift *(no Scala Actors)*
- Wicket
- Blaze-DS
- Struts,...



# Powered By Google App Engine

lingospot

 Walk Score™

 EZ asset.com  
BY STRONGTECH

buddy poke

pix  
verse

 GIFTAG pick anything

 LifeAware™  
Where is your life?

CloudStatus  
powered by HYPERIC

 GigaPan

# Competitors

- SaaS / PaaS / IaaS
- Azure Services
- Force.com
- Amazon Web Service





# References & Credits

- Of-course Google  
(<http://code.google.com/appengine/>)
- Google IO 2009 Sessions
- Dzone RefCardz

