



Platform as a Service

John Wetherill
February 13, 2013



ActiveState®

The ActiveState logo consists of the word "Active" in a bold black font and "State" in a bold red font, with a registered trademark symbol (®) to the right of "State".

Code to Cloud: Smarter, Safer, Faster™





Platform as a Service

John Wetherill
Developer / Evangelist



Code to Cloud: Smarter, Safer, Faster



Intro / Background

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Agenda

- The “Cloud”
- “aaS” Convergence
- PaaS
- PaaS Landscape

The Cloud

- “Utility Computing”
- CraaS (Computing Resources aaS)
- On demand
- Self service
- Scalable
- Measurable

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Cloud Advantages

- Reduced cost
- Better utilization
- Automated
- Flexible
- Agile
- IT efficiency

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Software as a Service

Platform as a Service

Infrastructure as a Service

Hardware

Software as a Service

- On-demand software
- hosted in cloud
- thin-client (browser)
- move burden to provider instead of licensee

- operations
- including storage
- hardware
- servers
- networking components
- utility billing
- admin automation
- dynamic scaling
- desktop virtualization

Platform as a Service

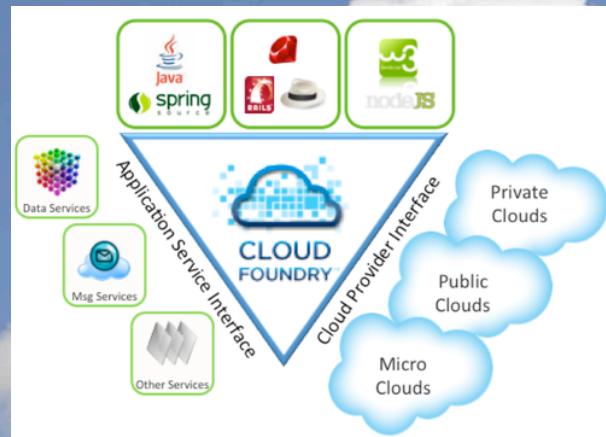
- For Developers
- Multi-tenant
- Automated app hosting
- Services / Frameworks / Runtimes
- Polyglot

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PaaS examples (the pioneers)



Cloud Foundry and Polyglot PaaS



Open source platform for multi-language, multi-framework, multi-service cloud hosted applications
Created by the Cloud Foundry team at VMware (now Pivotal Initiative)
cloudfoundry.com and several Public PaaS variants





PaaS Features

PaaS Model



Multiple Languages (Polyglot)

- Java
- Ruby
- Perl
- Python
- JavaScript
- PHP
- .Net
- Erlang

Multiple Languages (JVM)

- Scala
- Clojure
- Groovy
- JRuby
- Jython

Frameworks

- Spring
- Play
- Django
- RoR
- bottle
- Sinatra
- Lift
- Grails
- Node
- flask

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App Servers

- **Tomcat**
- **JBoss**
- **Spring**
- **Node**
- **NGiNX**
- **Apache**
- **wsgi**
- **gunicorn**
-

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User/Resource management

- Users
- Groups
- Resource Limits
- Permissions

Services

- **DB:** MongoDB, MySQL, Postgres, Redis
- **Message Brokers:** RabbitMQ, ActiveMQ
- memcached
- Filesystem

Service /Resource Management

- DB config: replication, sharding
- Bus tuning
- IaaS integration for metering/billing

Scaling

- Load balancing
- App monitoring
- Notifications
- Limits

Autoscaling

- Monitor resource utilization
- Call underlying infrastructure to spawn new VM instances
- Notifications, limits

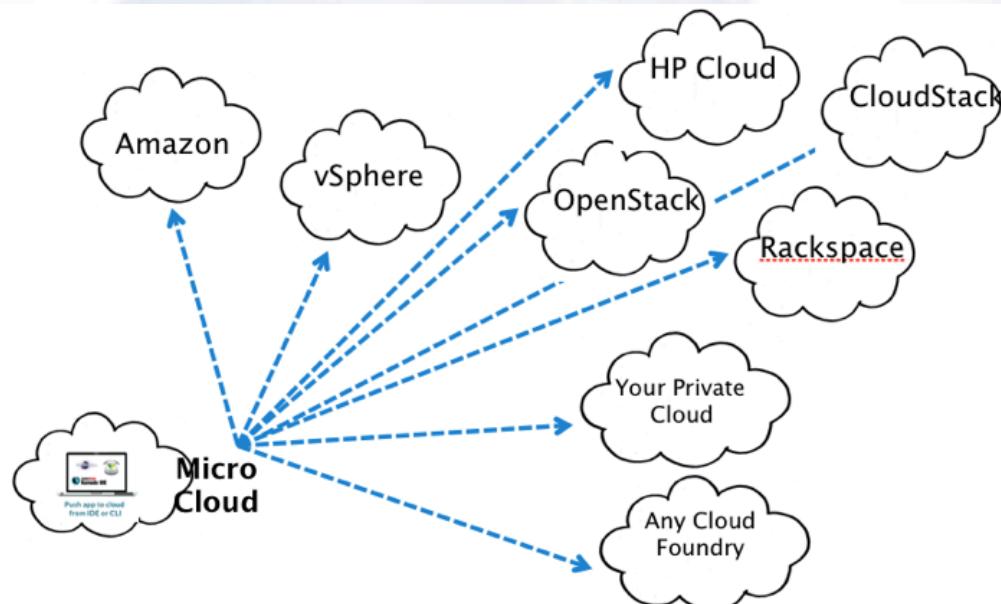
Logging Integration

- log4j etc
- Loggly
- Loggify
- Splunk
- Graylog2

Infrastructure Agnosticity

- VMWare • OpenStack • CloudStack
- XenServer • KVM • HP • AWS
- Private, Public, Hybrid Cloud

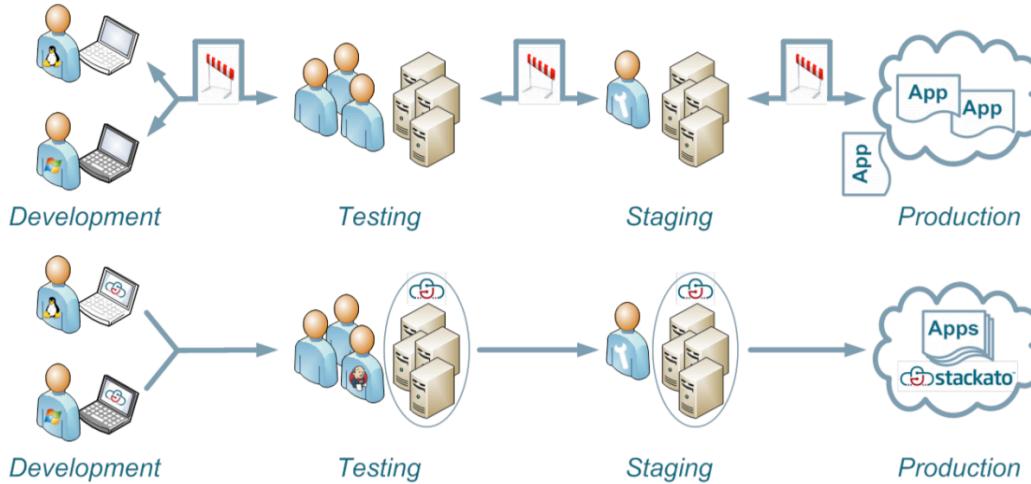
Deploy to any cloud



workflow

- Checkout and work on code (any SCM)
- Create a config YAML file (or "wing it" interactively)
 - Specify runtime/framework
 - Request Services
 - Add packages
 - Set resource limits
- Target a Stackato "API endpoint" with the client and authenticate
- 'stackato push ...'

What this workflow is meant to solve: You get the same application hosting environment at all stages in the application lifecycle.

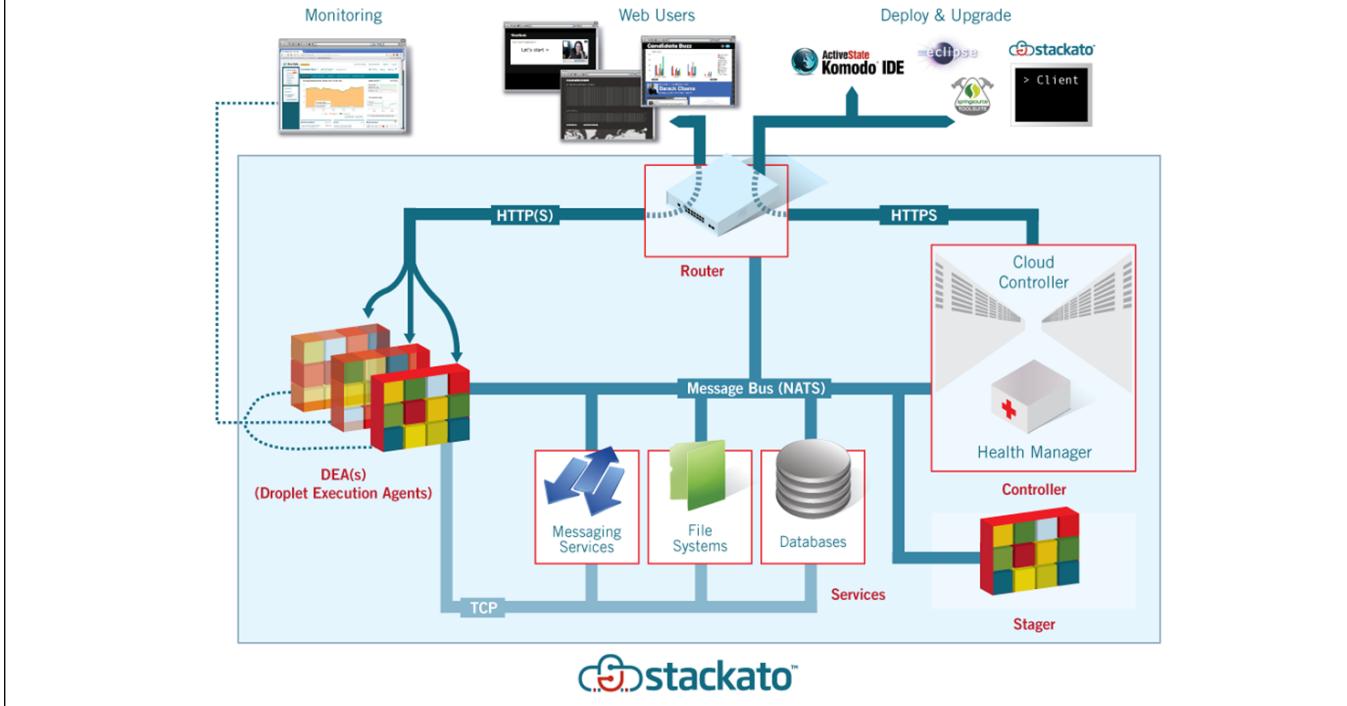


If it works on the Stackato Micro Cloud, it will work on the production Stackato PaaS

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The Stackato Architecture





Cloud Convergence

- DaaS
- SaaS
- PaaS
- IaaS
- EaaS
- MaaS
- HaaS
- CaaS
- LaaS
- CaaS
- EaaS
- JaaS

Data
Software
Platform
Infrastructure
Communications
Email
Mashups
Desktop
Storage

Malware Crimeware

Platform as Service

- Foundation for**

Software Creation

PaaS



Why?



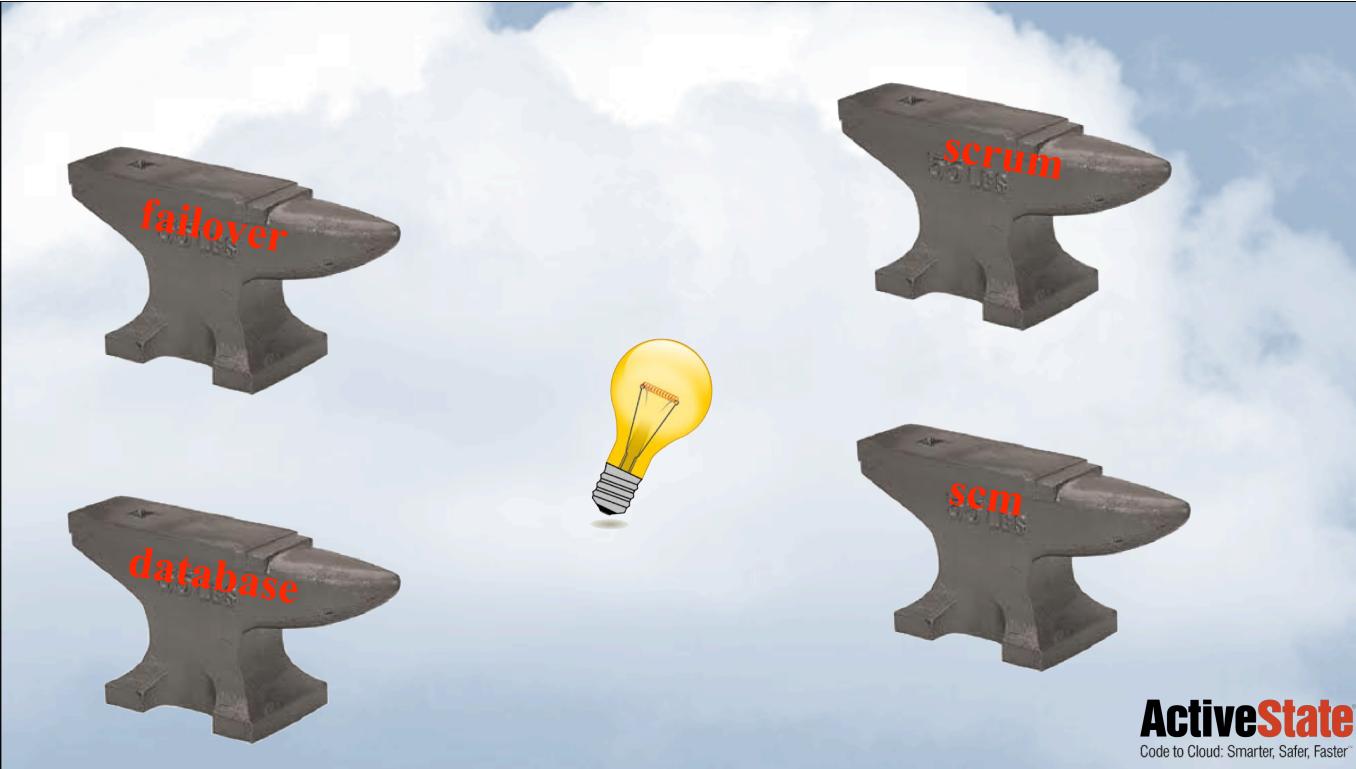
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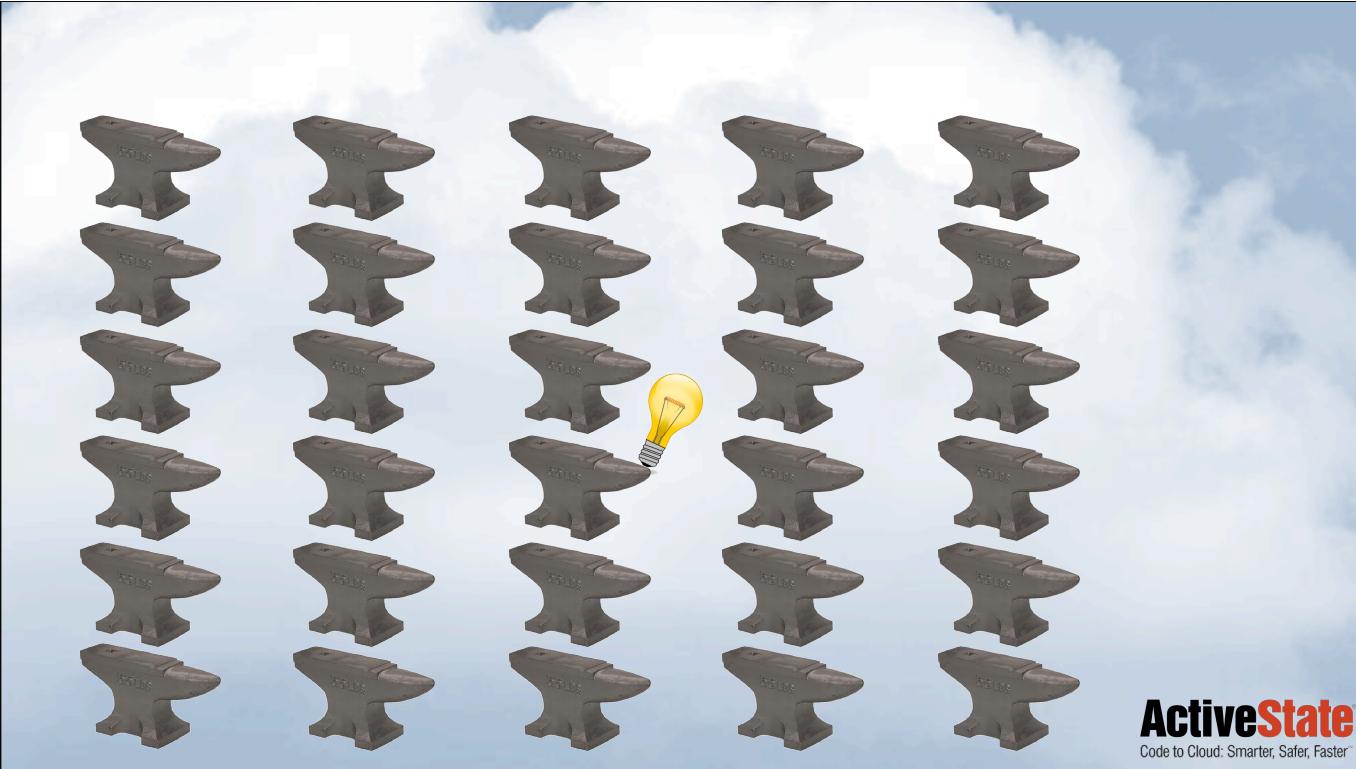
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- 🔨 disaster recovery
- 🔨 scale
- 🔨 performance
- 🔨 methodology
- 🔨 database
- 🔨 bus
- 🔨 scm flow
- 🔨 CI
- 🔨 code reviews
- 🔨 testing
- 🔨 blogs

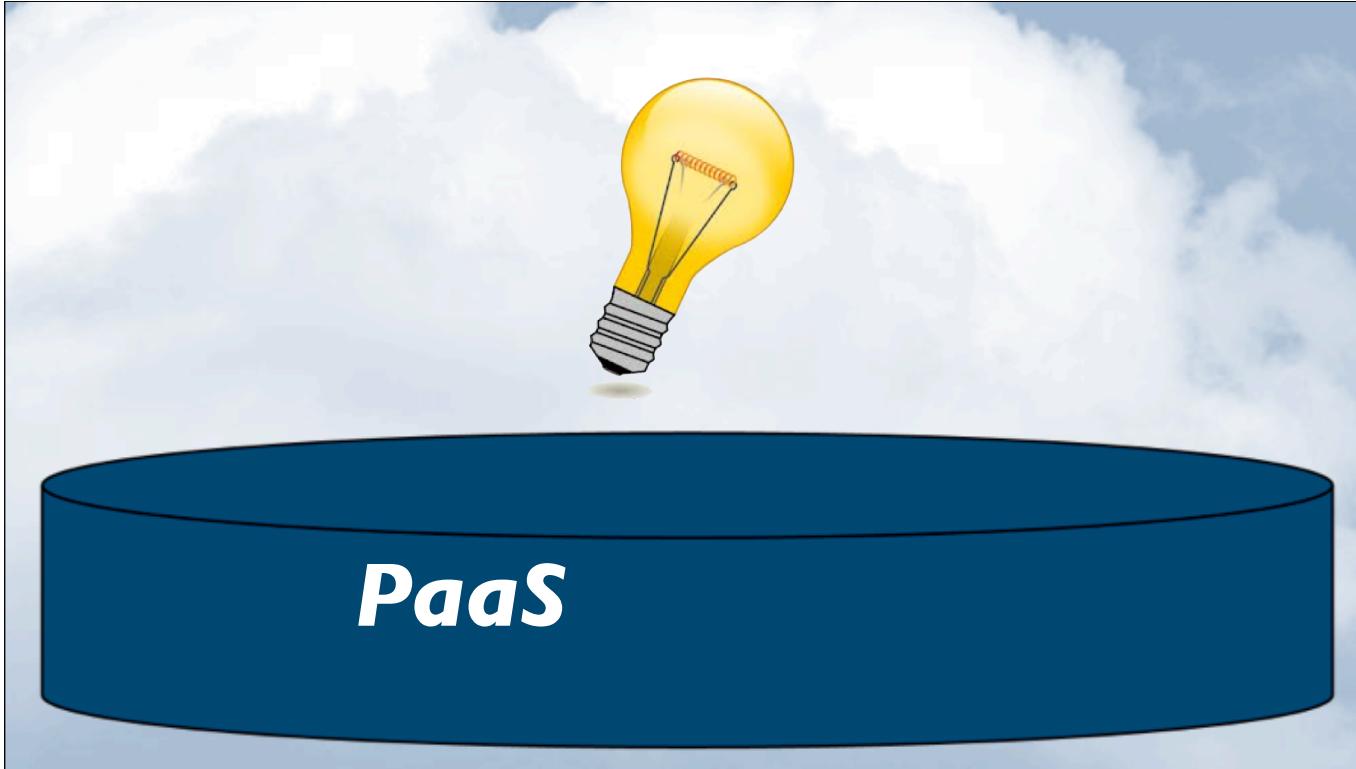
- 🔨 docs
- 🔨 wikis
- 🔨 security
- 🔨 logging
- 🔨 integration
- 🔨 team
- 🔨 i18n
- 🔨 accessibility
- 🔨 bug tracking
- 🔨 backups
- 🔨 HA

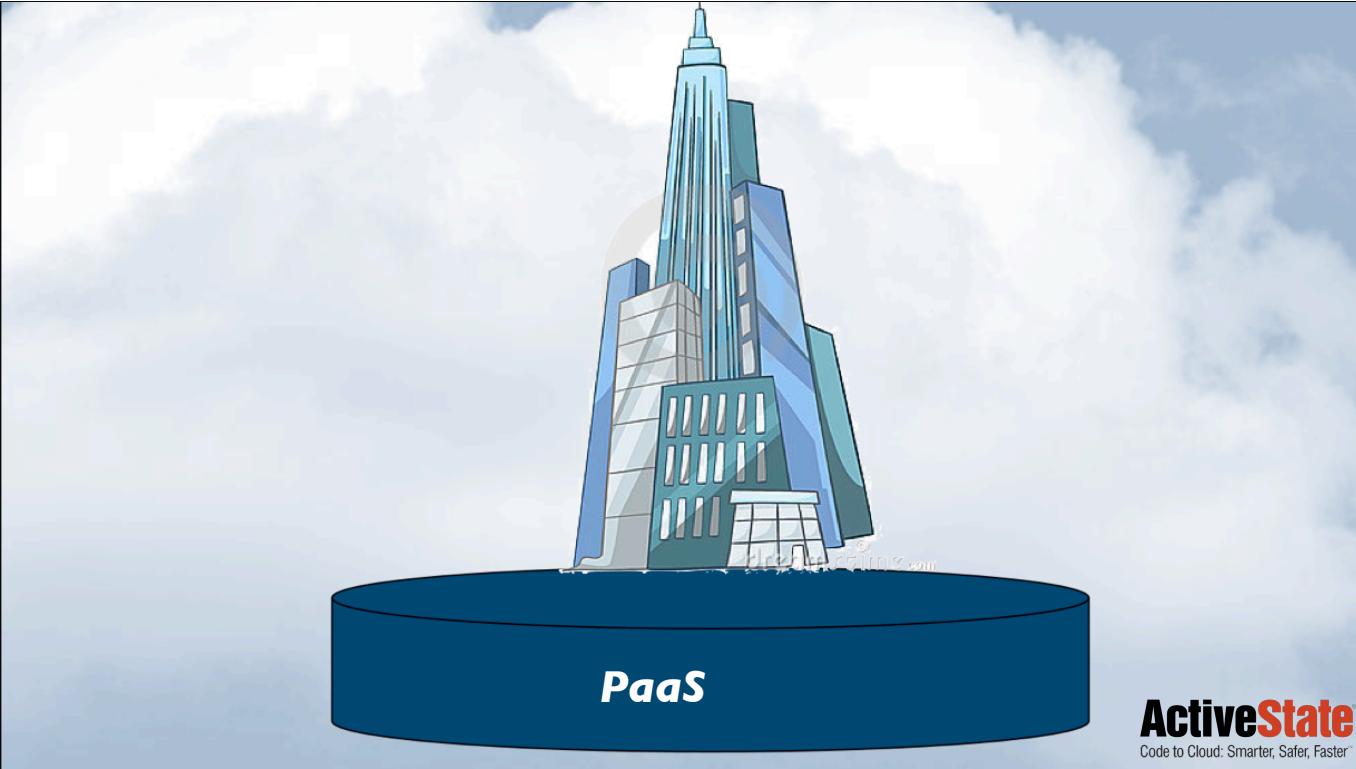
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Foundation for Enterprise

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Every programming ecosystem has its own collection of best practices and antipatterns.

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**Decades of advances in
software engineering and Best
Practices**

Converging

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**Decades of advances in
software engineering and Best
Practices**

Converging

with

PaaS

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PaaS Features

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Frameworks

- Spring
- Play
- Django
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- Sinatra
- Lift
- Grails
- Node

Containers / Servers

- Tomcat
- JBoss
- Spring
- Node
- NGiNX

User/Resource management

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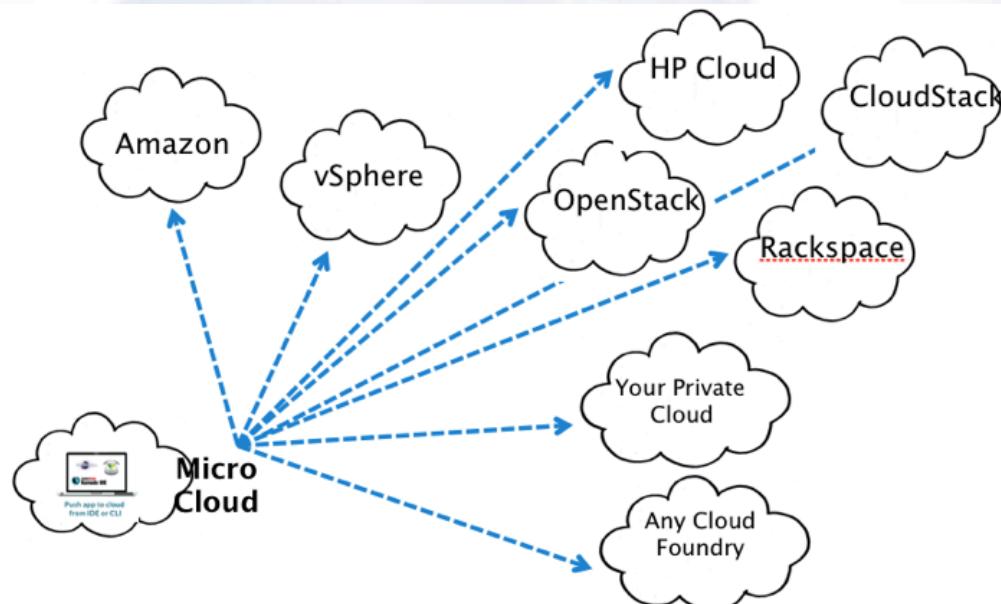
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Infrastructure Agnosticity

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Deploy to any cloud



User Interface

The screenshot shows the Stackato Management Console interface. The left sidebar has a navigation menu with the following items:

- Overview
- Users
- Groups
- Applications** (selected)
- Services
- Features
- Cloud Events
- Cluster Admin
- Status Graphs
- App Store
- Settings
- Support

The main content area is titled "Applications" and shows a table of running applications. The table has columns for STATE, APPLICATION, FRAMEWORK, SERVICES, OWNER, ACTIONS, and FILES. There are two entries:

STATE	APPLICATION	FRAMEWORK	SERVICES	OWNER	ACTIONS	FILES	
STARTED	harbornate	java_web	1	johnw@activestate.com			Logs All
WARNING	Test1	standalone	0	johnw@activestate.com			Logs All

Below the table, it says "Showing 1 to 2 of 2 entries". At the bottom right of the main area, there are buttons for First, Previous, Next, and Last.

At the bottom of the page, there is a footer bar with the text "© ActiveState Software 2013. All rights reserved. Terms of Use Agreement" and the ActiveState logo.

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Other Clients

- **via REST**

Multiple Clients



Spring Tool Suite



Komodo IDE

A screenshot of the Stackato Web Console interface, showing a list of running applications. The table includes columns for Name, Revision, Status, and Last Run. Applications listed include 'spring-mvc' (status: up), 'oscar' (status: up), 'env-test' (status: up), 'env-play' (status: up), 'bulletpack' (status: up), 'php' (status: up), and 'env-dev' (status: up).

Name	Revision	Status	Last Run
spring-mvc	1	up	2012-07-17 17:17:58 UTC
oscar	1	up	2012-07-17 17:17:58 UTC
env-test	1	up	2012-07-17 17:17:58 UTC
env-play	1	up	2012-07-17 17:17:58 UTC
bulletpack	0	up	2012-07-17 17:17:58 UTC
php	0	up	2012-07-17 17:17:58 UTC
env-dev	node	up	2012-07-17 17:17:58 UTC

Web Console



CLI Client



More

- HA
- Debugging
- DNS
- Multitenancy
- Security/Isolation
- SCM integration

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Application Provisioning

The screenshot shows the Stackato Management Console interface, specifically the App Store section. The left sidebar includes links for Overview, Users, Groups, Applications, Services, Features, Cloud Events, Cluster Admin, Status Graphs, App Store (which is selected), Settings, and Support. The main content area is titled "App Store" and displays a list of applications:

Icon	Name	Description	Memory Required
	Ace Editor	Node.js 0.8 + Node.js Ace is a standalone code editor written in JavaScript, used by Cloud9 IDE.	128MB Memory Required
	Bugzilla	ActivePerl 5.14 + Perl / MySQL A bug tracking system for individuals or groups of developers.	256MB Memory Required
	CakePHP	PHP 5 + PHP / MySQL The Rapid Development Framework for PHP	128MB Memory Required
	ClojureSphere	+ Buildpack Browsable dependency graph of Clojure projects.	512MB Memory Required
	Currency Converter	ActivePython 2.7 + Python / Redis Currency converter using Python bottle framework	64MB Memory Required
	Django CMS	ActivePython 2.7 + Python / PostgreSQL Activate Stackato Sample Applications	128MB Memory Required

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PaaS Providers

- ActiveState Stackato
- Amazon AWS
- Heroku
- Cloud Foundry
- RedHat OpenShift
- lots more

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Private PaaS



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Private PaaS

- Integrated services behind Firewall
- Data Security
- Privacy
- Control
- Data Ownership - for all of time



Antipattern: Environment Mismatch

dev

QA

test

demo

sales

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Antipattern: Environment Mismatch

dev

QA

test

demo

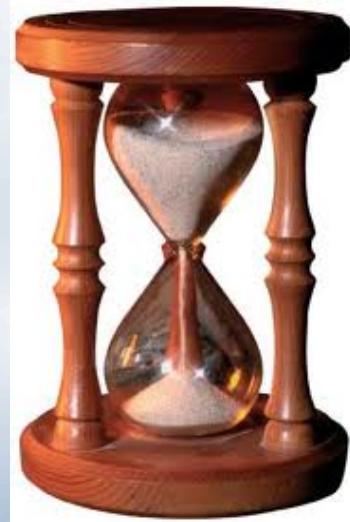
sales

customer !

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Antipattern: Long Resource Delays



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Costs

Time

Momentum

Interruption

Morale

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PaaS

Spin up entire stack in minutes

No third party intervention

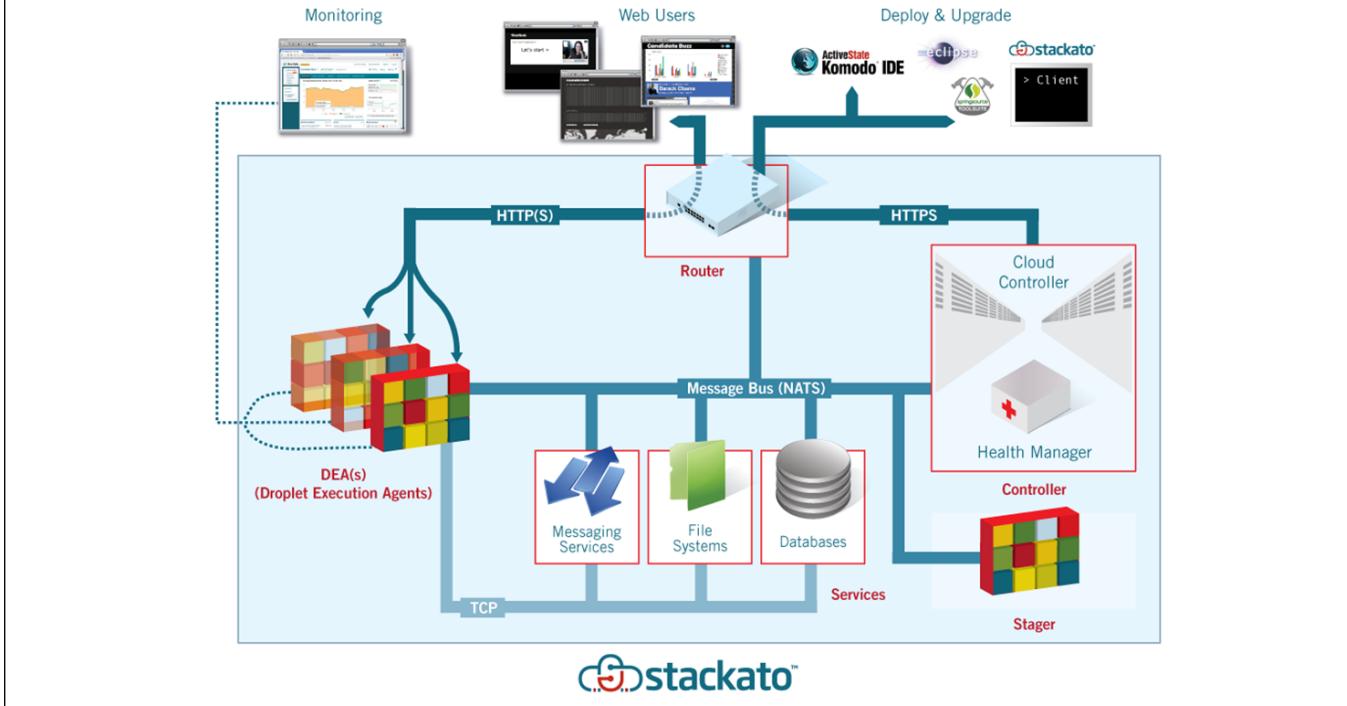
No tickets

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The Stackato Architecture



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Application	Type	Memory Required	License
Jaspersoft	Java + Web / MySQL	3000MB	Unknown
Jenkins	Java + Web	1054MB	Unknown
Kitchensink	Java + Enterprise Edition	512MB	Unknown
Movie Fun	Java + Enterprise Edition / MySQL	512MB	Unknown
Pet Catalog	Java + Enterprise Edition / MySQL	512MB	Unknown

Each application entry includes a small icon, an "Install" button, a brief description, and a "More Information" link. At the bottom of the list, it says "Showing 1 to 5 of 5 entries (Filtered from 44 total entries)". The footer contains the ActiveState logo and the tagline "Code to Cloud: Smarter, Safer, Faster".



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Questions?



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