Stratos
Open Source Platform as a Service

Paul Fremantle
CTO and Co-Founder
www.wso2.com

paul@wso2.com

Paul Fremantle

- Working in Apache since 2002
- Apache Member and Committer
- CTO and Co-Founder of WSO2
- VP, Apache Synapse
- 10 years at IBM ending as STSM in WebSphere Development
  - Led the IBM Web Services Gateway team

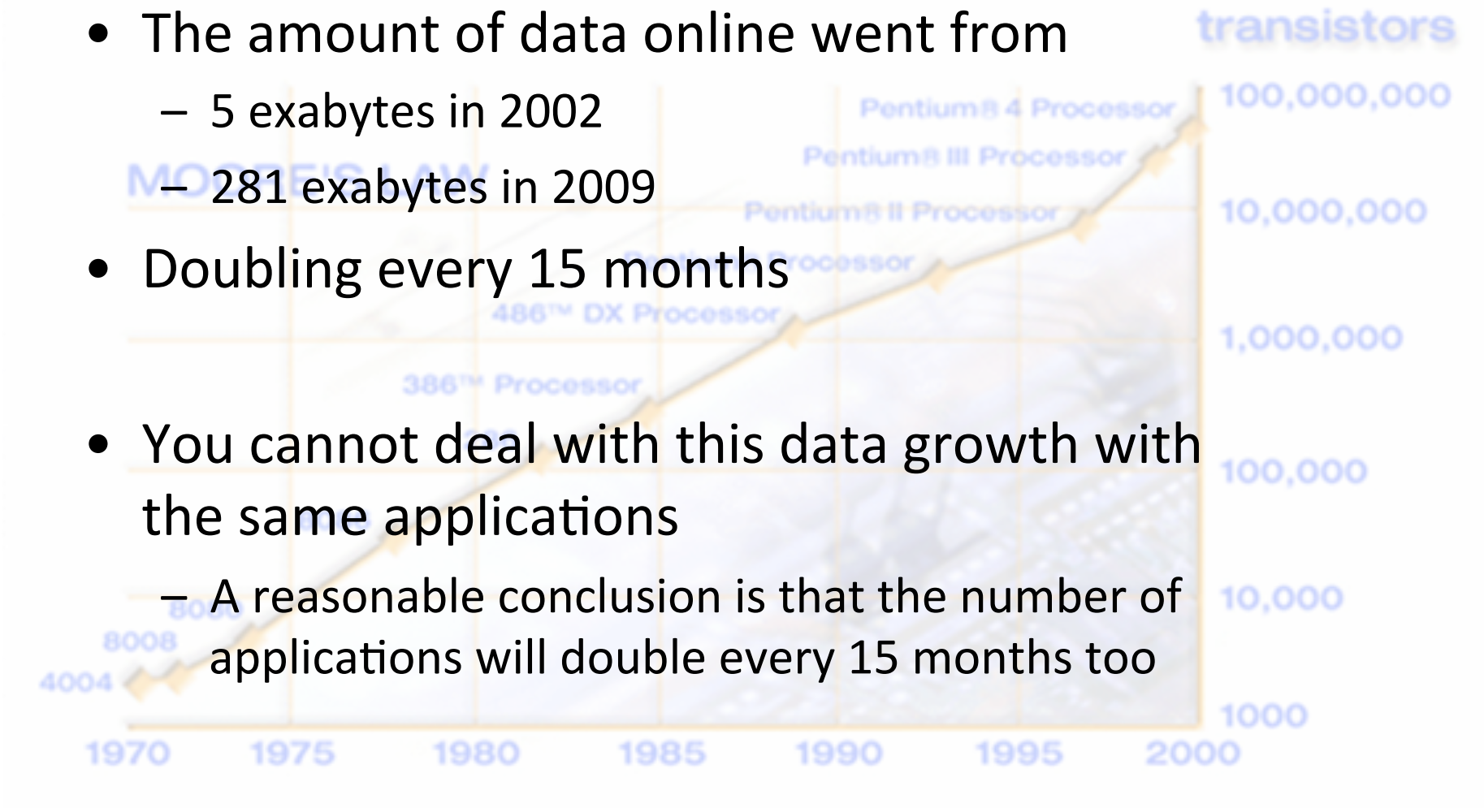
- I also play the Tin Whistle

What should you take away from this presentation?

- What exactly is a PaaS?
- Why is an **Open** PaaS important?
- What are Stratos and StratosLive?
- How can I try out Stratos?
  - On the Web?
  - On your machine?
- What services does Stratos/Live provide?
- Where can you get more information?

Moore's Law for Data

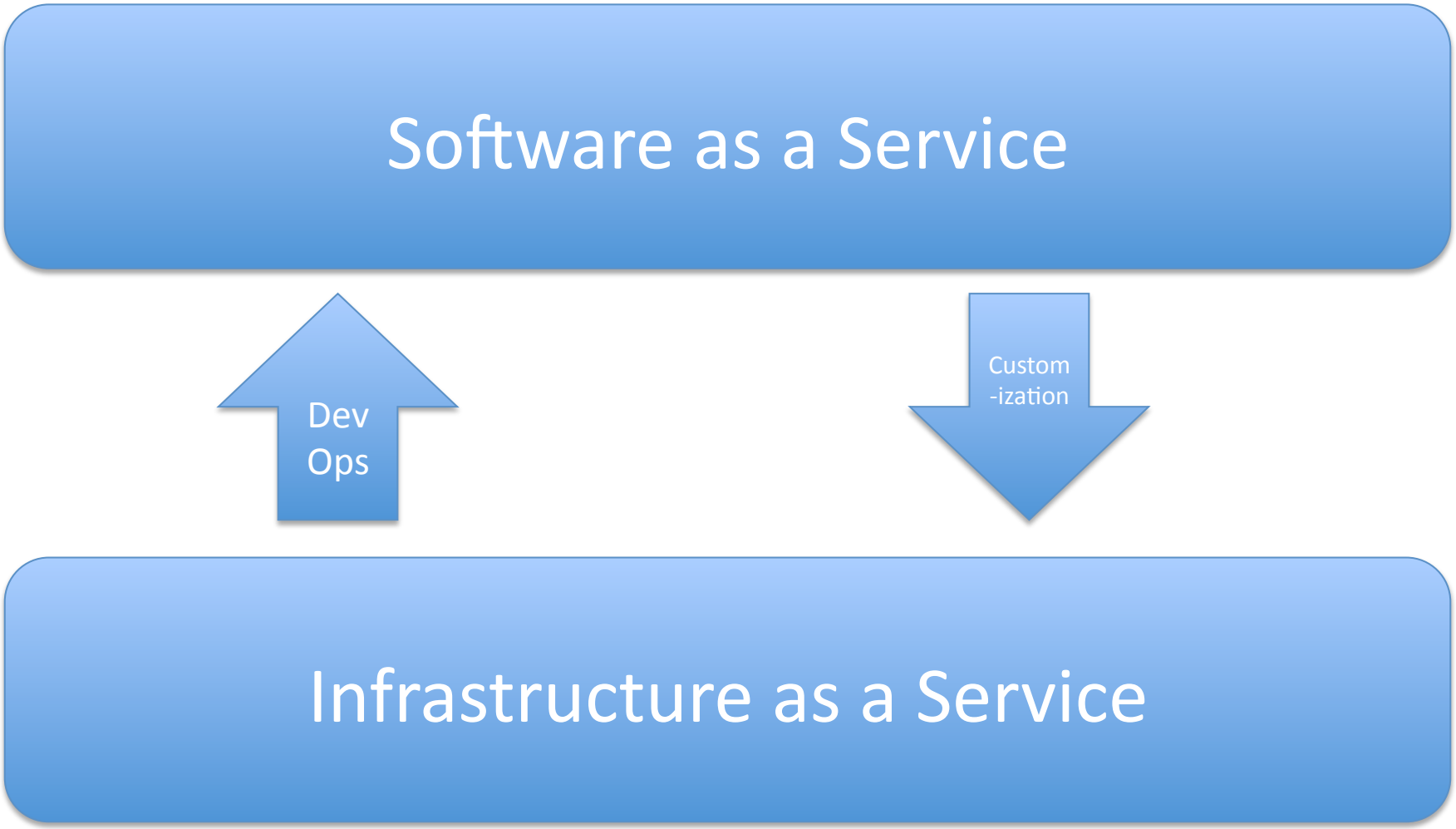
- The amount of data online went from
  - 5 exabytes in 2002
  - 281 exabytes in 2009
- Doubling every 15 months
- You cannot deal with this data growth with the same applications
  - A reasonable conclusion is that the number of applications will double every 15 months too



What do you think Cloud is?

- Depends who **you** are
  - **Anna** -> iCloud (my music in the cloud)
  - **My mum** -> gmail (my email in the cloud)
  - **Lavi** -> Salesforce (my prospects in the cloud)
  - Me?
  - **Sysadmin** -> Amazon/Rackspace/etc
    - (my machine in the cloud)

PaaS is…
what is left between IaaS and SaaS



Cloud Native

- **Distributed/Dynamically Wired** (works properly in the cloud)
  - Supports deploying in a dynamically sized cluster
  - Finds services across applications even when they move
- **Elastic** (Uses the cloud efficiently)
  - Scales up and down as needed
  - Works with the underlying IaaS
- **Multi-tenant** (Only costs when you use it)
  - Virtual isolated instances with near zero incremental cost
  - Implies you have a proper identity model
- **Self-service** (in the hands of users)
  - De-centralized creation and management of tenants
  - Automated Governance across tenants
- **Granularly Billed and Metered** (pay for just what you use)
  - Allocate costs to exactly who uses them
- **Incrementally Deployed and Tested** (seamless live upgrades)
  - Supports continuous update, side-by-side operation, in-place testing and incremental production

Apply those concepts to an enterprise architecture….

- Web apps

Apply those concepts to an enterprise architecture….

- Web apps
- Portal
- Queues and Topics
- Databases
- Registry / Repository
- Rules / CEP queries
- Integration flows
- Business processes

What are the dimensions to evaluate a PaaS?

- Which languages and APIs does it support?
  - (Are you locked in?)
- Is it available to run on a private cloud?
  - (Are you locked in?)
- Which services does it offer?
  - (Are you locked in?)
- Is it Open Source?
  - (Are you locked in?!)

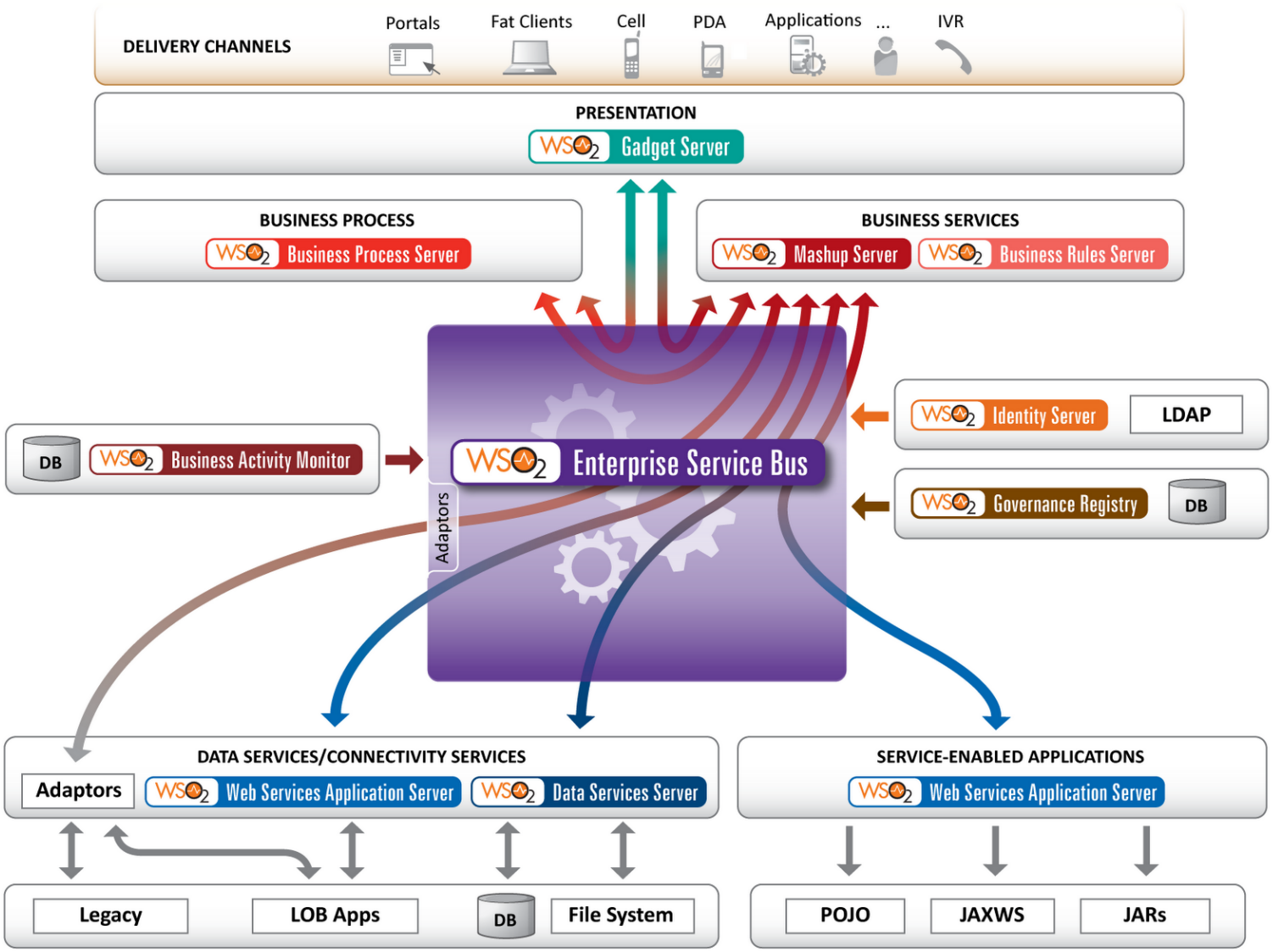
Who are the other players in the PaaS market?

- Those without a Private PaaS
  - Force.com and Heroku
  - Google App Engine
  - Amazon Elastic Beanstalk
- Those with a Private / Public PaaS
  - Tibco
  - Microsoft
  - Cloudbees (private runtime is in request only beta)
- Those with an Open Private / Public PaaS
  - SpringSource CloudFoundry – micro-edition
  - WSO2 Stratos – GA code and service
  - Redhat OpenShift – promised to be available OSS / on-premise

Stratos Overview

- **Stratos** – an Open Source project / product
  - A full middleware platform available as a service, with self service
    - Fast provisioning
  - Based on OSGi
    - Modular, componentized, standard
  - Multi-tenant, Elastic, Metered and Billed
    - Effective and powerful
  - Available under the Apache License
    - Open Source, Open License, Open Development
- **StratosLive** – a Platform-as-a-Service
  - Stratos running in the cloud with various plans
    - Including a free demo plan

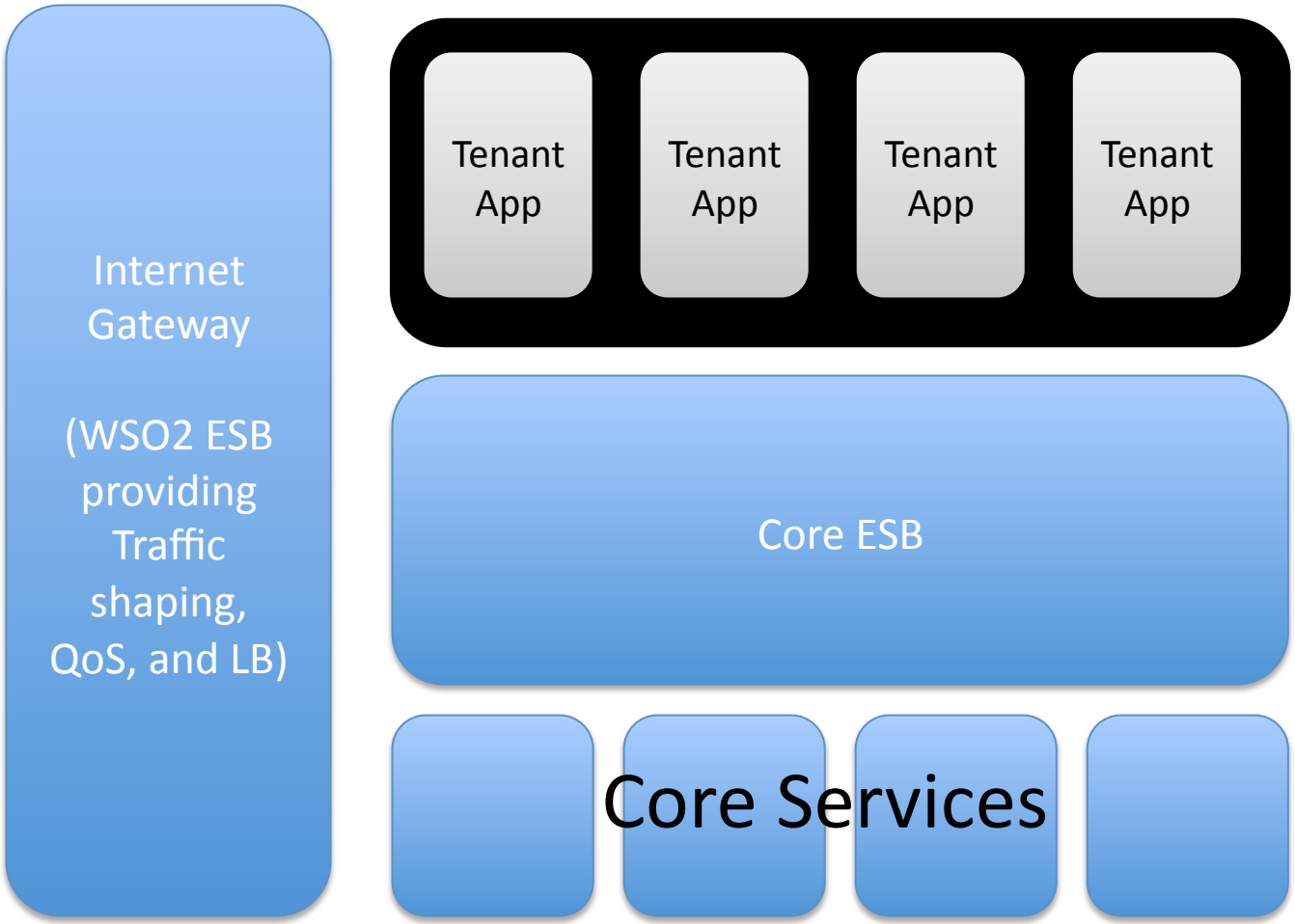
Private Cloud Middleware Platform



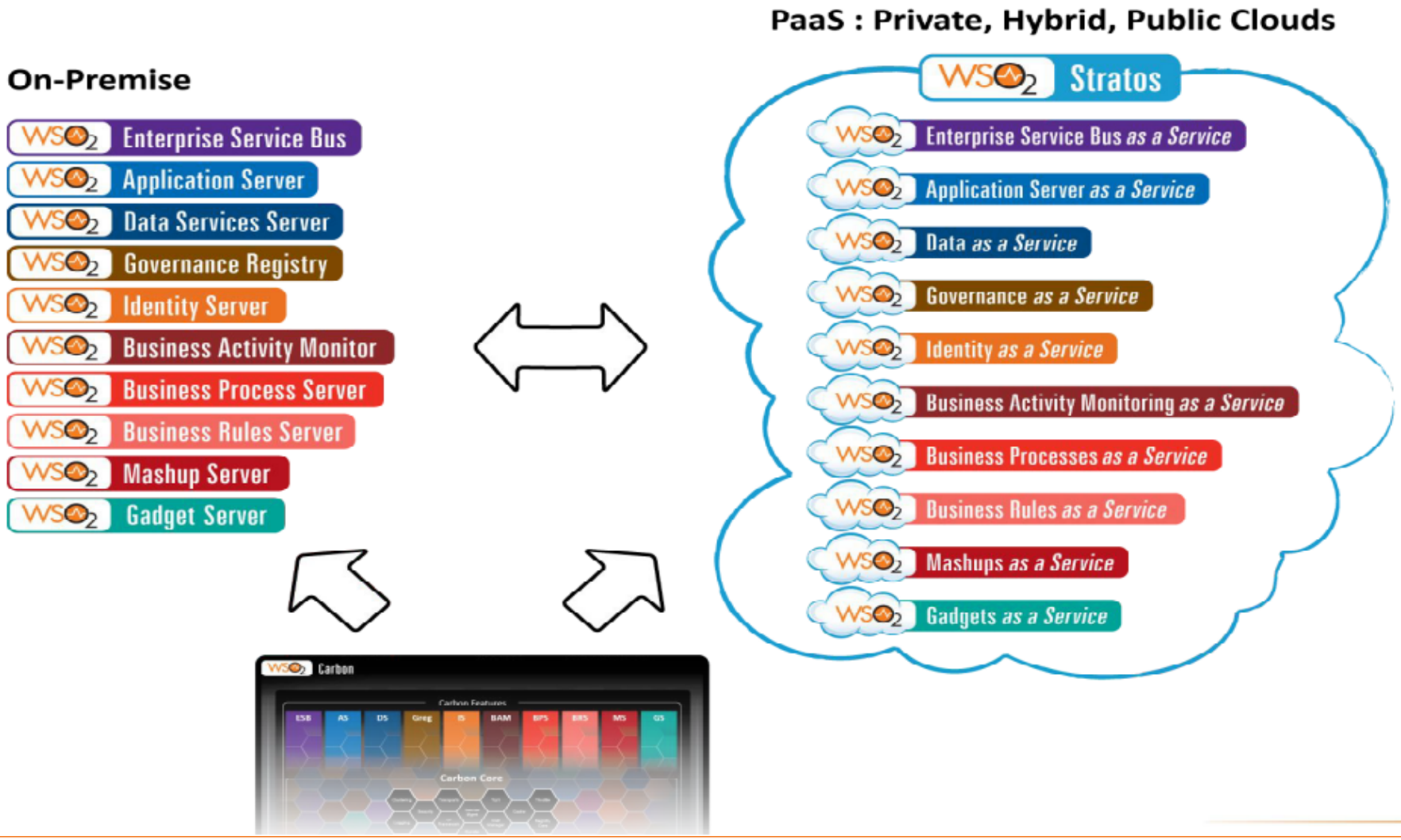
Examples and Case Studies

- System Integrator
  - Currently running Stratos for internal projects
  - Examining the use of Stratos for customer projects and SaaS
- Home Loan Bank
  - WSO2 runs a private deployment of Stratos
  - Developer sandbox and test environment
  - Currently apps are then deployed internally in Carbon
- Ecosystem PaaS
  - Combination of cross tenant services / APIs
  - Allow each tenant to deploy / customise the logic
- Mobile PaaS
  - Building a PaaS environment for a mobile telco
- SaaS-enablement of legacy applications

ESB and PaaS example



WSO2 Carbon & Stratos



Stratos resources

- Running on the web
  - http://stratoslive.wso2.com
- Stratos SVN
  - http://svn.wso2.org/repos/wso2/trunk/stratos/
- Stratos-dev list
  - https://mail.wso2.org/cgi-bin/mailman/listinfo/stratos-dev
- Blog on how to build / install
  - http://yumani.blogspot.com/2011/06/setting-up-wso2-stratos-in-personal.html

Installation options

- 1. Full installation (like StratosLive)
  - Pre-reqs
    - IaaS – Eucalyptus, vmWare, Ubuntu or Amazon
    - MySQL & Perl & JVM
    - Ability to run a number of VMs (one per service)
- 2. Laptop/Simple install (on my laptop)
  - Pre-reqs
    - A machine with lots of memory (4Gb min, 8GB preferred)
    - JVM
    - MySQL & Perl

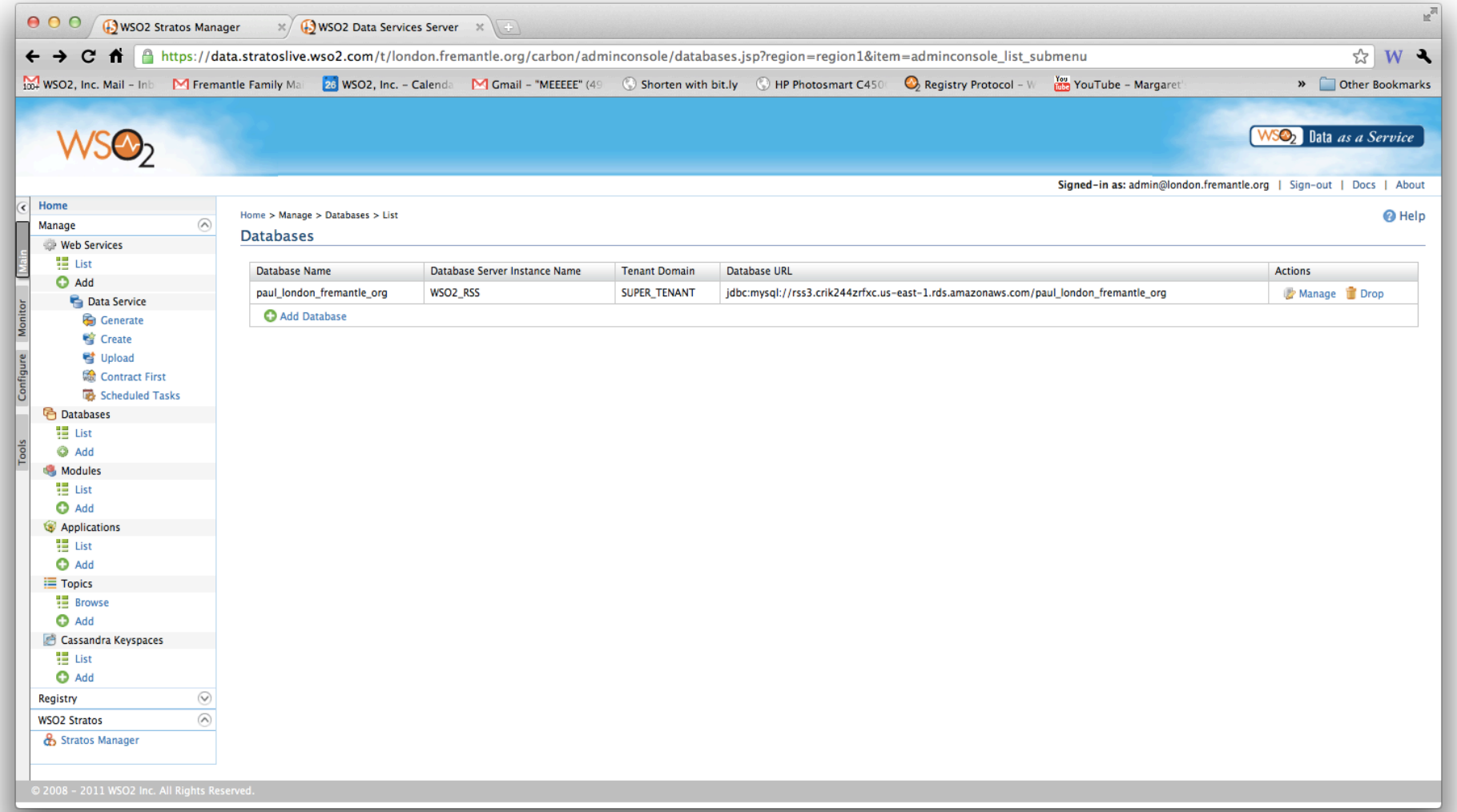
Installation of Stratos 1.5.1 pack

- Config mysql
  - max_allowed_packet = 16M
- ulimit –n 65000
- Unzip the distro
- cd stratos
- ./stratos-setup.pl
- export STRATOS_DIR=`pwd`/deploy
- cd deploy
- ./stratos.sh start all

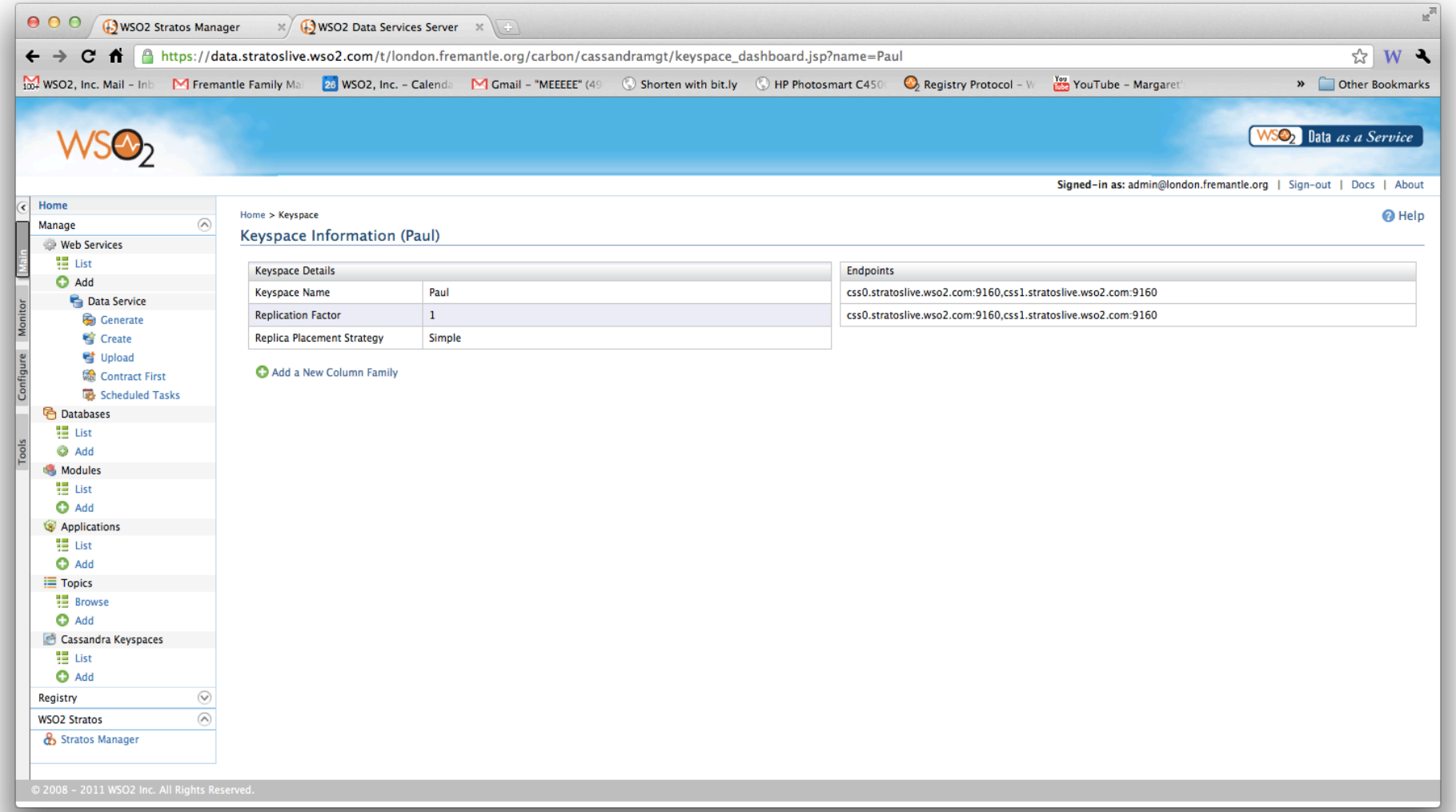
Deploy a webapp

http://stratoslive.wso2.com

JDBC in Stratos



Cassandra in Stratos



Hector API

```
/**
 * Insert a new value keyed by key
 * @param key Key for the value
 * @param value the String value to insert
 */
public void insert(final String key, final String value) throws Exception {
  execute(new Command(){
    public Void execute(final Keyspace ks) throws Exception {
      ks.insert(key, createColumnPath(COLUMN_NAME), bytes(value));
      return null;
    }
  });
}
```

Available Services in Stratos (a selection)

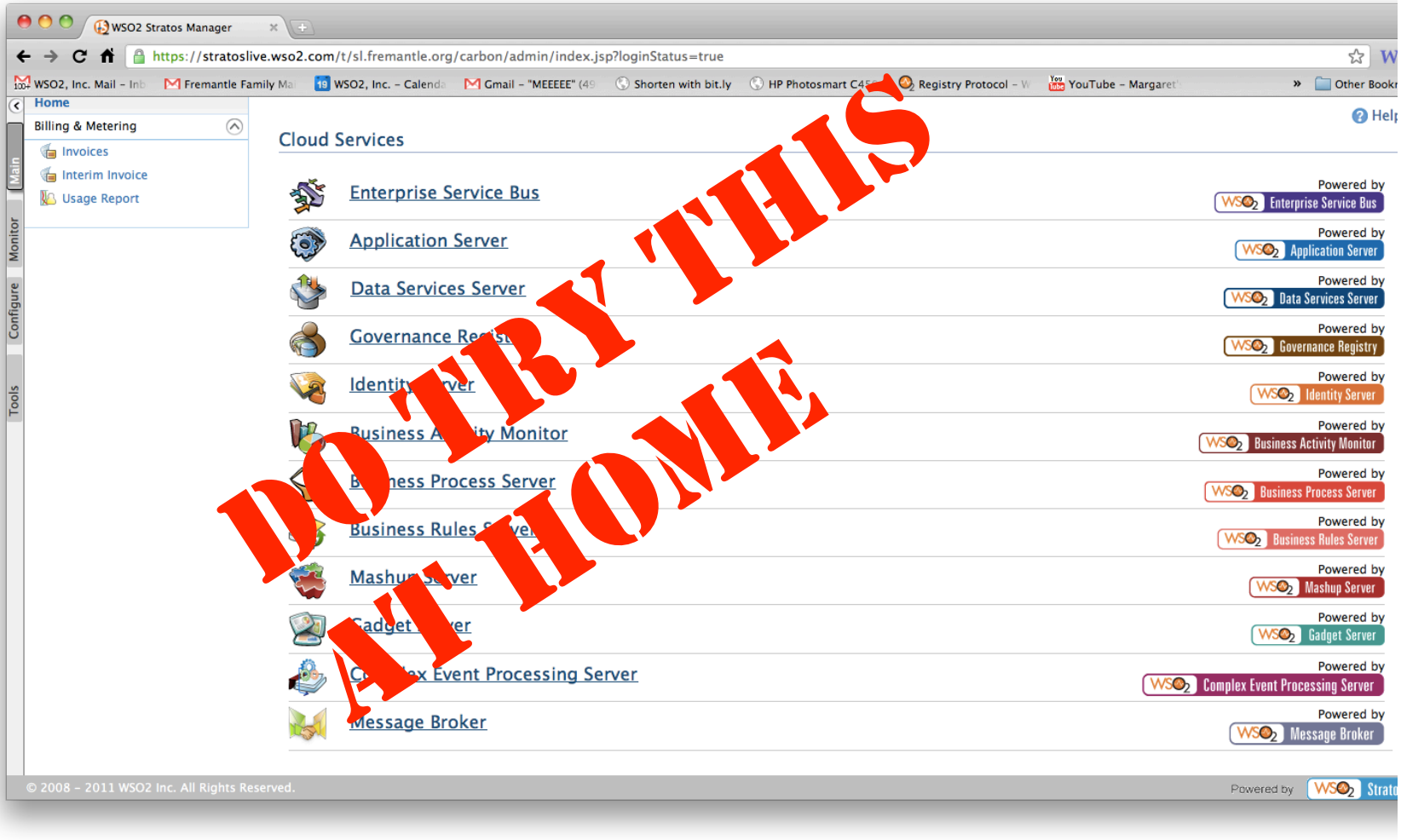
Every Service has a network API

- All admin functions and all the low level services are available as SOAP APIs
  - Full SOAP support, REST in some cases
  - Always possible to bridge into REST using the ESB
- Why?
  - Clear SOA design
    - Allow mashups, BPEL and ESB integration
  - Automated provisioning
  - **Support hybrid multi-tenancy models for legacy software**

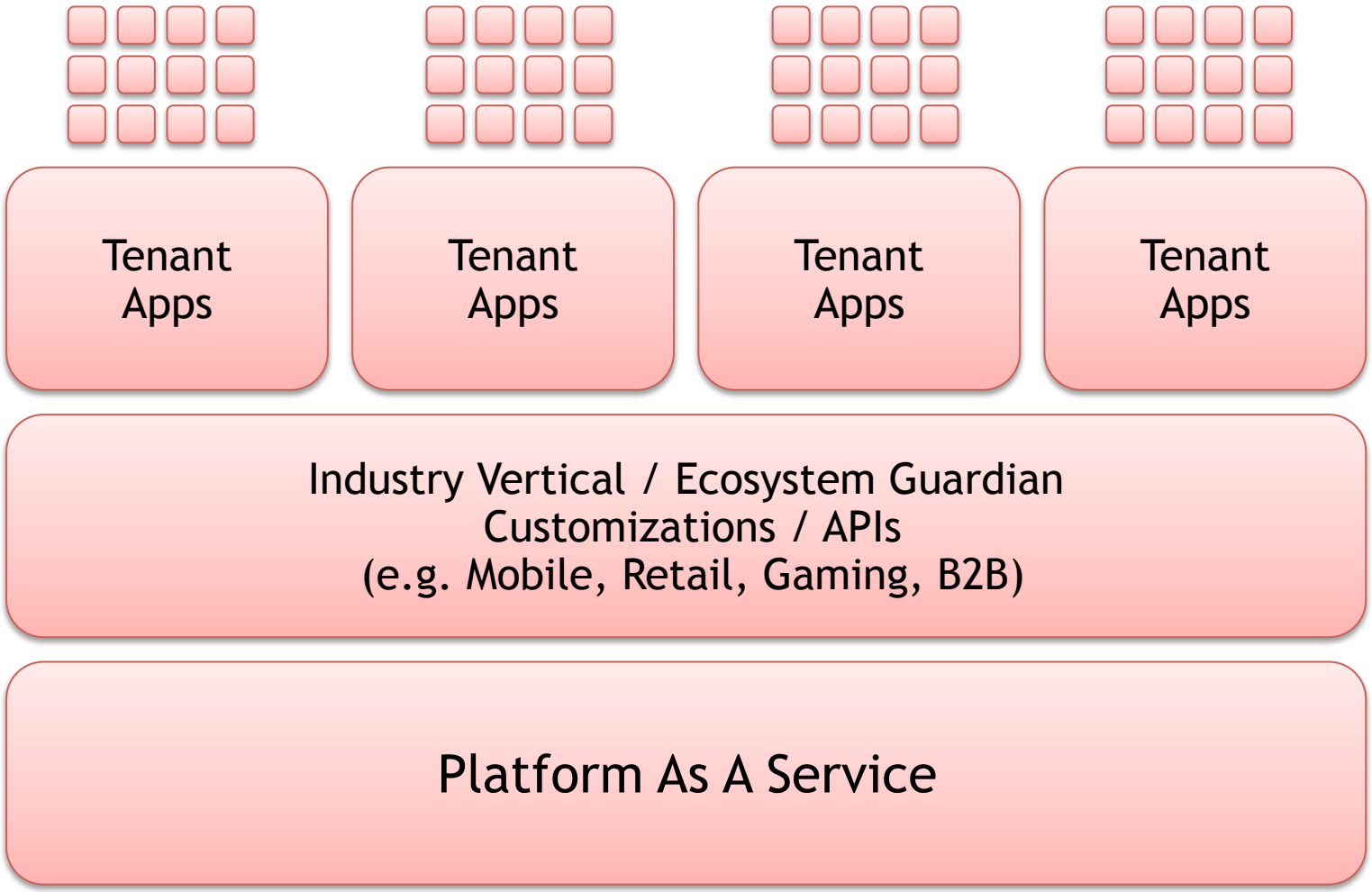
Multi-tenancy

- Every service can support multiple tenants in the same container
  - Higher efficiency, lower resources
  - Can be split tenant per-VM using the MT-aware Load Balancer
- Isolation includes classloaders, code signing and Java security policies
  - Cross-tenant sharing is via the network (REST, SOAP, etc)
- Every tenant has all services by default but they can be turned off
- You can deploy webapps that are available to all tenants

Stratos 1.5.2 Services



“Ecosystem PaaS”



Beyond Stratos 1.x

- Simplification of the Cloud Programming model
  - DSLs for Data definition, appdev (including mobile) and integration
- SVN and development workflow integration
- Improved Mobile and API management
- Vertical industry initiatives
- Pure VM deployment and management
- Super-scale shared nothing
  - Based on NoSQL Cassandra and elastic load balancer
  - Multi-tenant HDFS-as-a-Service
  - Hadoop support

Questions?

http://www.flickr.com/photos/oberazzi/