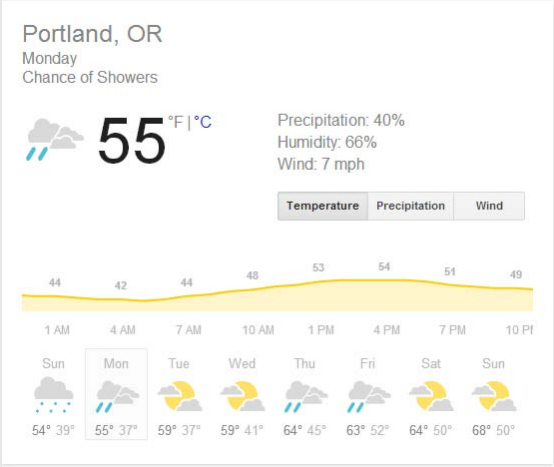
Application Deployment in Hybrid Cloud

Openstack Grizzly Summit, Portland

Pascal Joly - April 15th , 2012

Agenda

- User story
- Tooling and Deployment Architecture
- Service Modeling with HP Cloud Service Automation
- Interactions with Openstack Public Cloud
- Best Practices: Performance, Flexing, Security
- Future opportunities
- Q&A

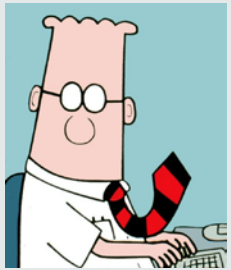


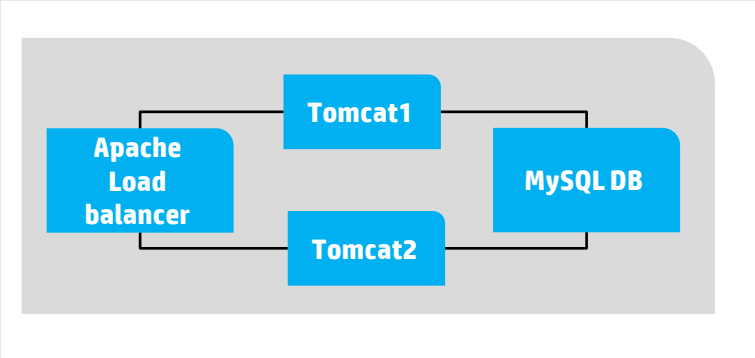
Initial deployment to private cloud

Peter in marketing needs to launch a new product sales campaign

- Hot new company product
- Outside vendor app for demo and orders
- Expecting large customer response
- Needs it yesterday

He calls Stan in IT





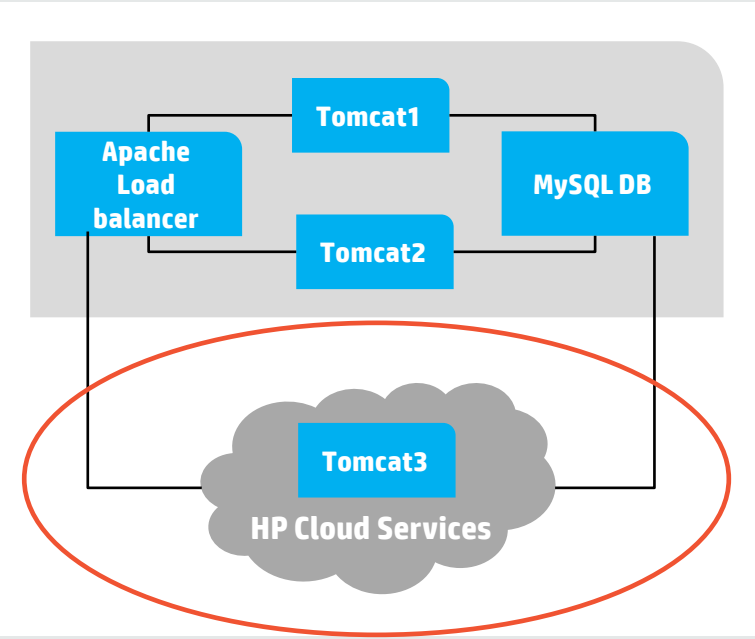
Marketing App – private cloud

Bursting to public cloud

A few weeks go by, and Monitoring reports tell Stan that Peter's new app is beginning to hit it's thresholds

- Customer demand is through the roof
- Web servers are becoming heavily loaded
- No in-house resources are available

Time to add capacity… NOW!



Very Well but…

How do you make your solution reusable for another application? Other types of infrastructure?

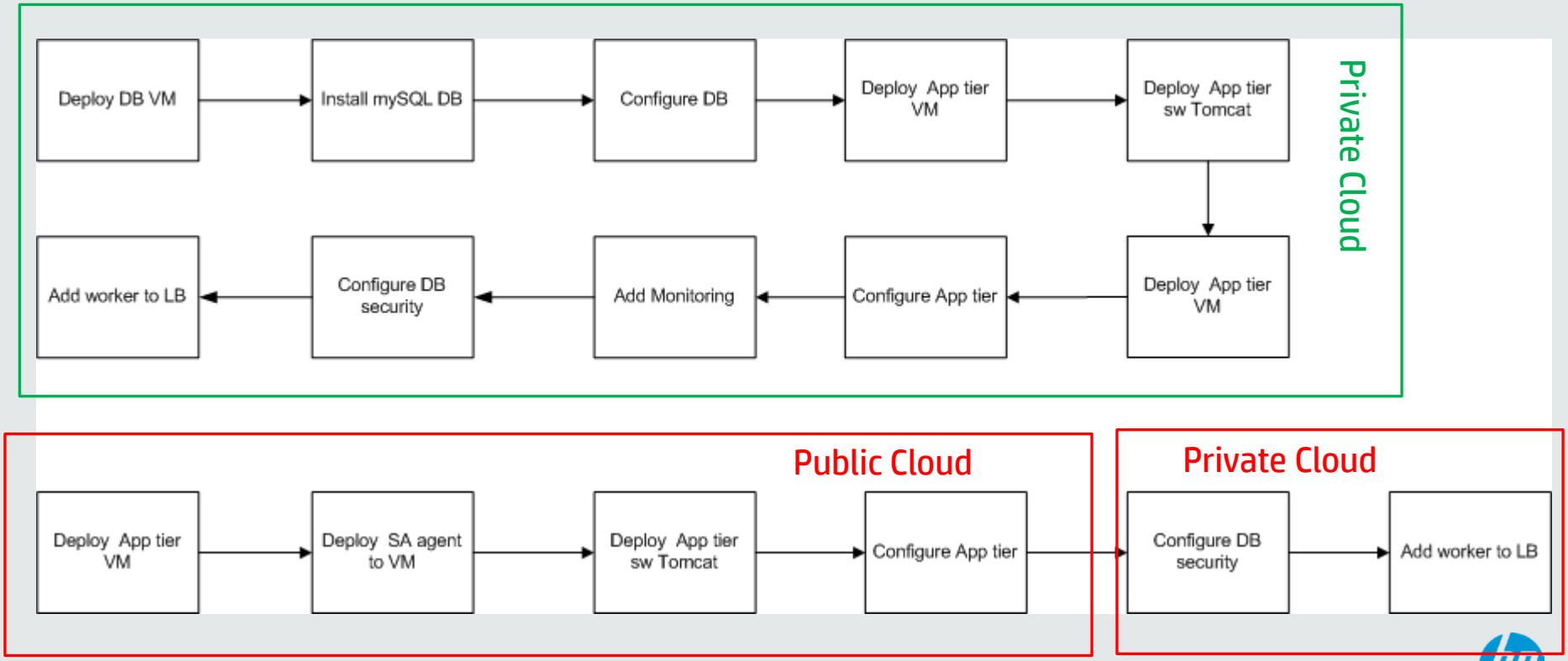
What about performance issues? How do you build a scalable solution?

How do I manage the security of my application?

How do I control my resource pool? When should I flex?

Application Delivery architecture: process flow

Step by step initial deployment and bursting



Solution Architecture

Tool ecosystem interaction

Service portal

Service Design

Orchestration engine

Software deployment and configuration

Hypervisor Private cloud

Openstack Public Cloud

Monitoring

CSA

CSA

CSA

SA

Sitescope

EUCALYPTUS

puppet labs

Cloud Services

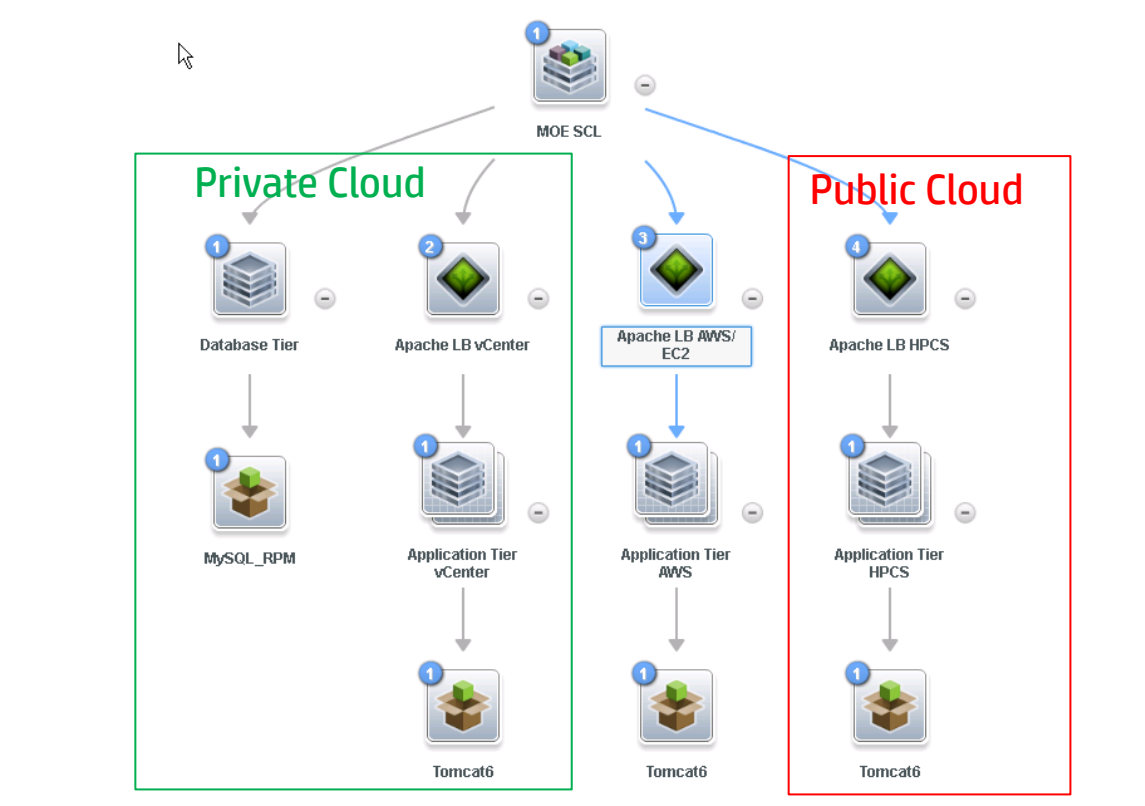
Nagios®

Hp Software Components:

- CSA: Cloud Service Automation
- SA: Server Automation
- Sitescope: agentless Monitoring

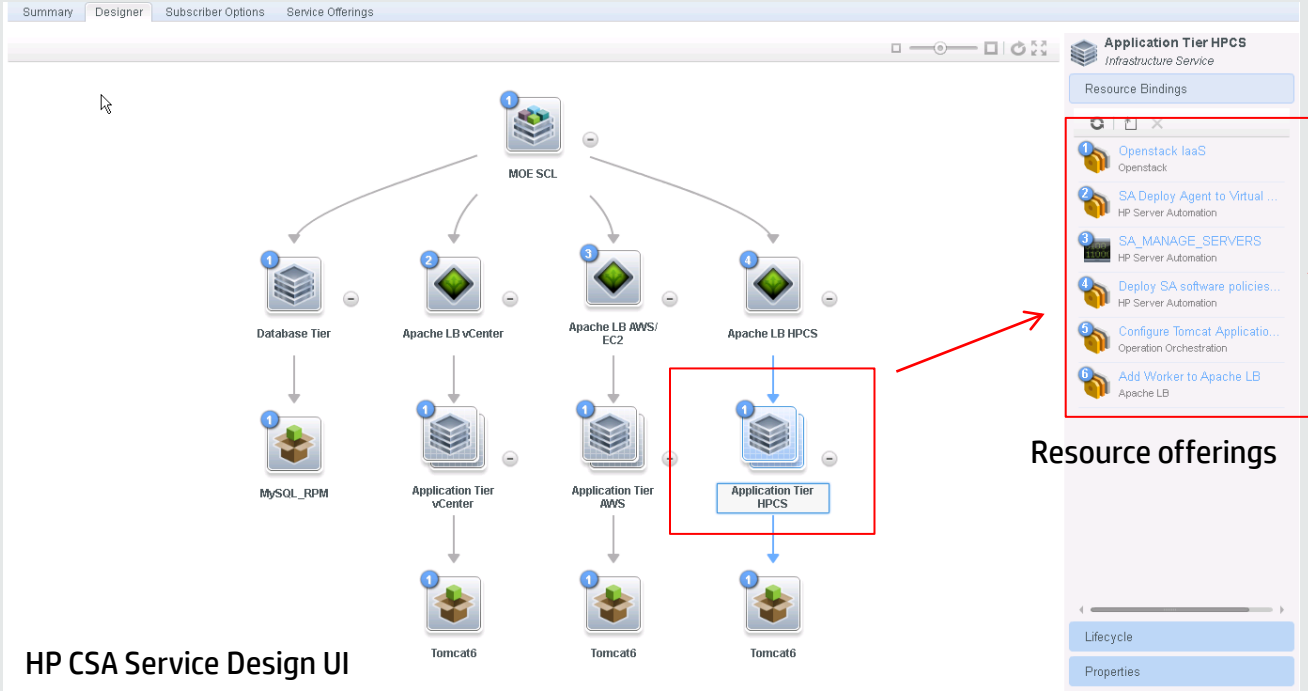
Application Delivery architecture: service modeling

HP CSA service design interface



Service execution

Deploy an Application component in the public cloud



HP CSA Service Design UI

Resource offerings

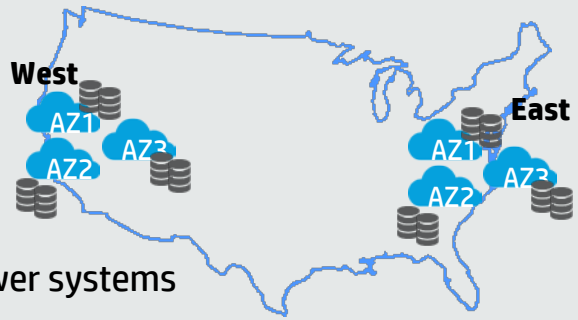
Resource Offering Interface

Openstack Nova API

HPCS

Interaction with Openstack instance

HPCS public cloud IaaS



- **Regional Architecture**
  - Designed with **N+1 power redundancy** made up of **three independent** power systems
  - Contains a **minimum of 3 physically separate** availability zones (AZ)
  - **Each Availability zone …**
    - Is fed by two **independent power** feeds from separate **substations**
    - Has a minimum of **two network drops** at **separate ends** of the facility
    - Contains **redundant power to each rack** and **diverse cabling** to eliminate any single points of failure
- **Compute:**
  - Shared images, security groups, and floating IPs
  - HA across availability zones and regions
- **Security**
  - Hardened with Fortify
  - ssh key management

Interaction with Openstack instance

Lessons learned

Key storage and management

Zone/region/geography selection (nova)

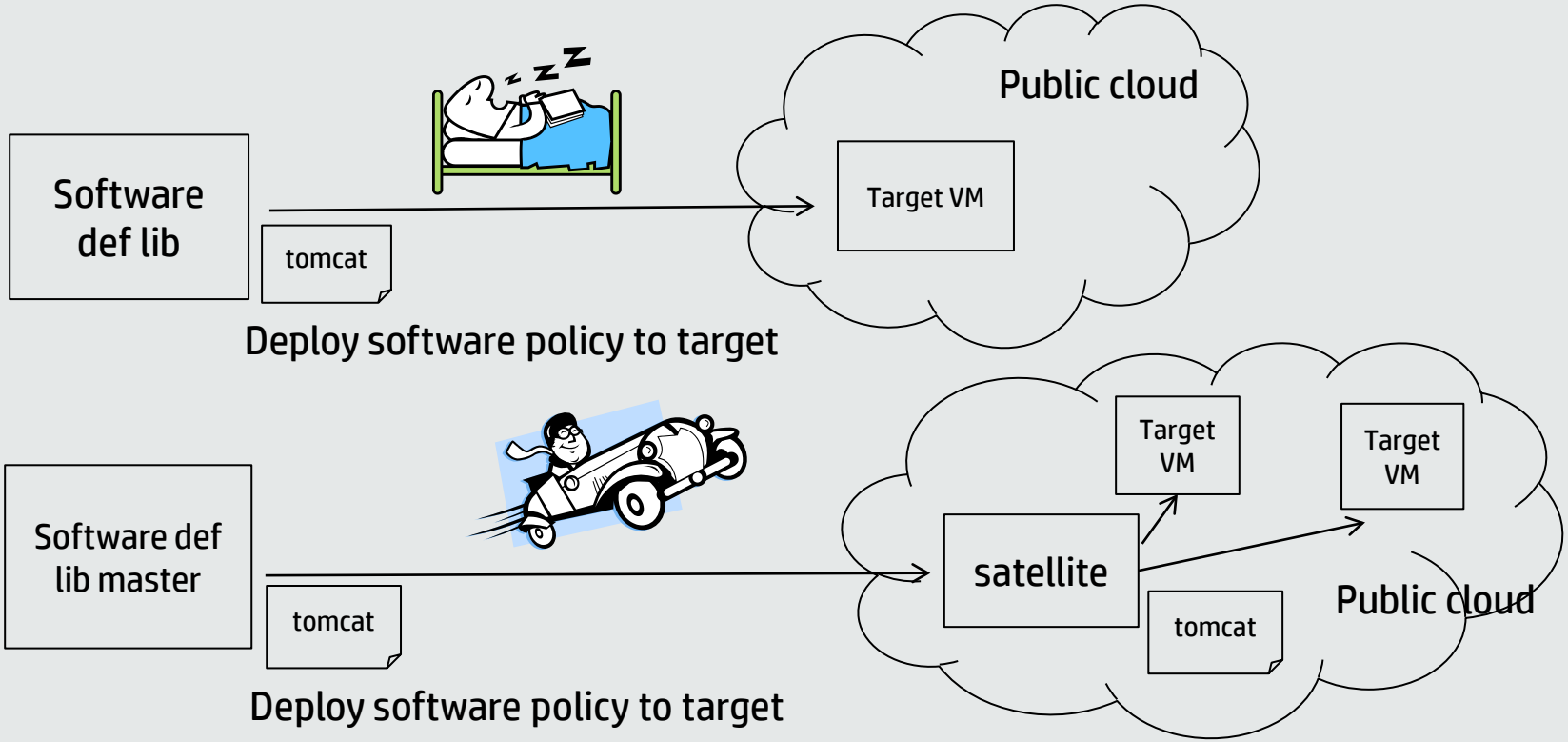
Error checking and reporting (input properties vs. provider properties)

Debugging using python Nova client

```
nova boot novaserver7 --flavor 100 --image 1233  --key_name
pj-2 --security_groups frontend
```

Performance

Optimizing the application dynamic provisioning



Flexing

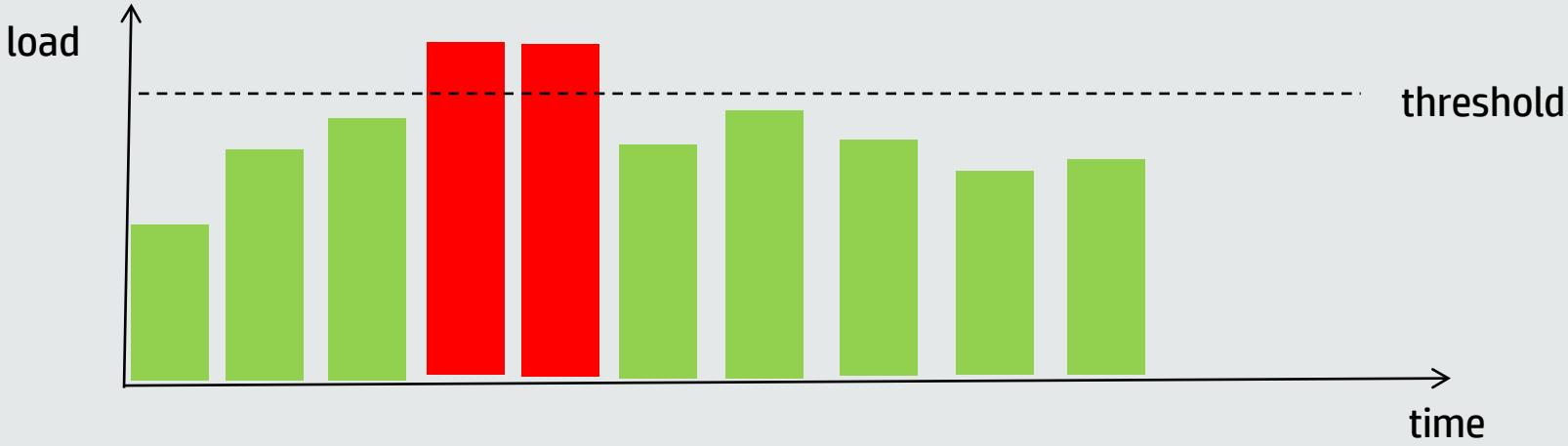
When and How much?

Quota and capacity allocation to control resources (by tenant)

Manual vs. Scheduled vs. automated based on threshold

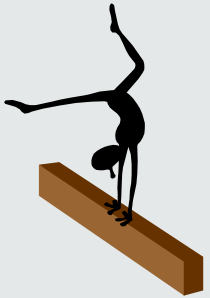
Trigger threshold considerations: business driver and application health

Change Management (approval/notification/CMDB)



Security

a Balancing Act…

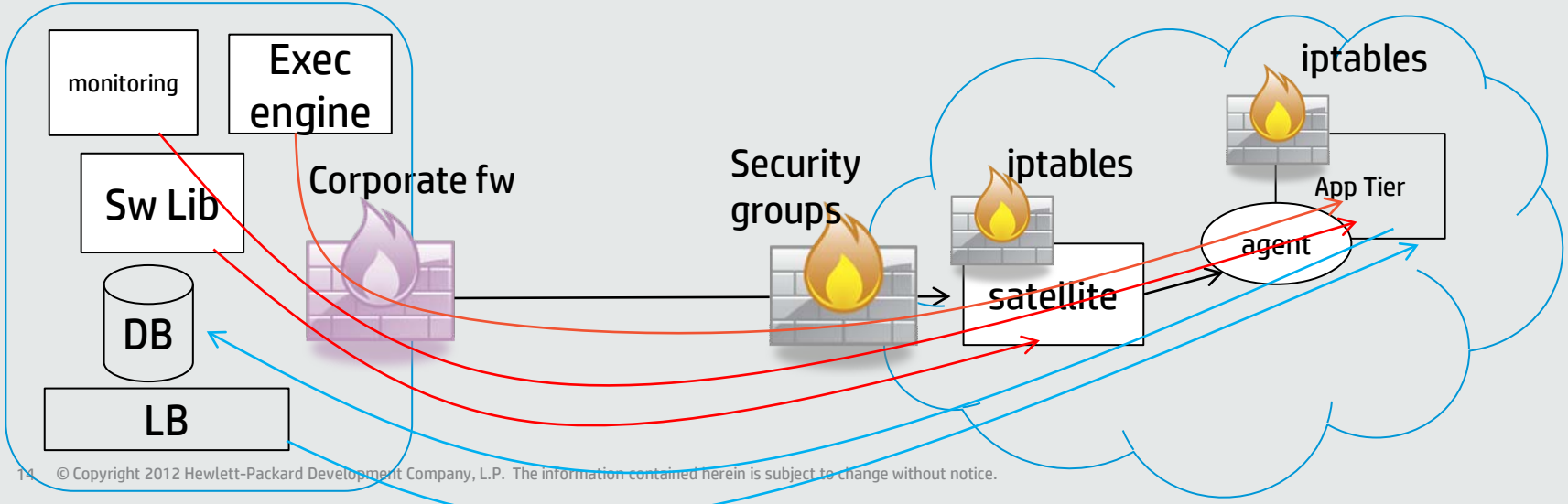


Data privacy concerns

Application security

Security rules to allow management and application flow across firewalls

VPCs: create isolation within target public cloud.

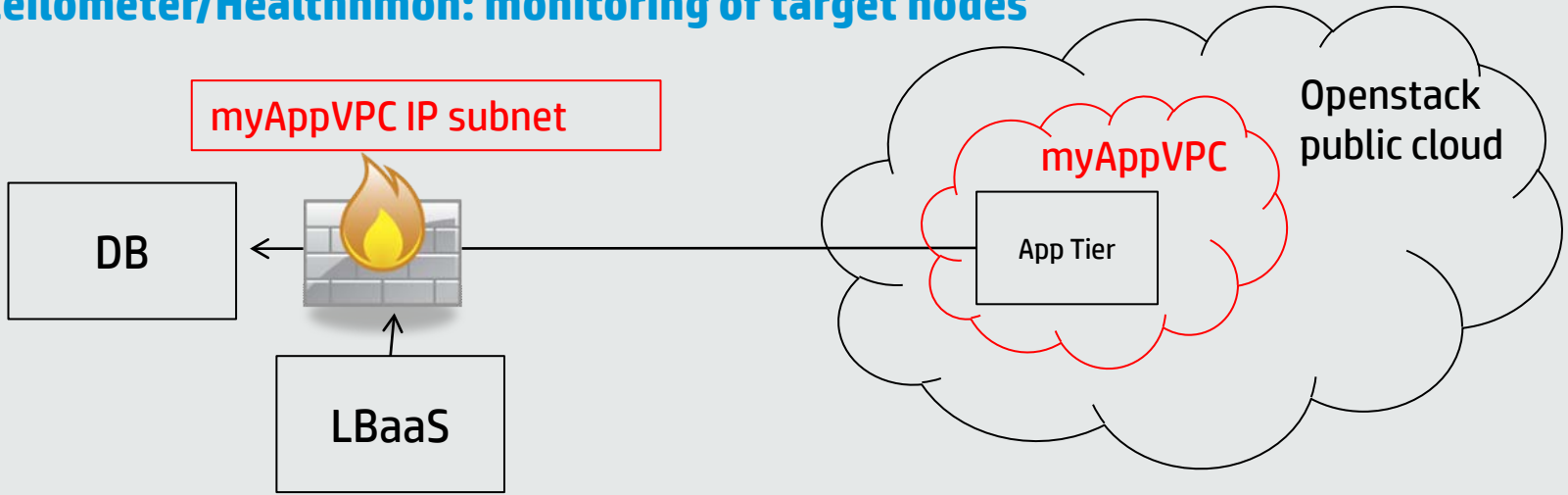


Opportunities with new Openstack projects

Provide additional security layer to isolate application tier within Public Cloud (VPC with "Openstack Networking")

Using Load Balancing as a service (Atlas)

Ceilometer/Healthnmon: monitoring of target nodes



For More Information

Attend other presentations during the week

Stop by the Hp booth

Learn more about HP Cloud Service Automation:

http://en.wikipedia.org/wiki/HP_Cloud_Service_Automation_Software

http://www8.hp.com/us/en/software-solutions/software.html?compURI=1172051

Any Questions?