embotics
the cloud automation company

The App Architecture Revolution: Microservices, Containers and Automation

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Welcome!

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- Former VMware EUC CTO & Chief Data Center/Storage Architect
- Founder, President, CTO of Virtual Iron Software
- 17 Patents for Virtualization, Storage, Clustering, and EUC technologies
- vExpert 2015, 2016, 2017

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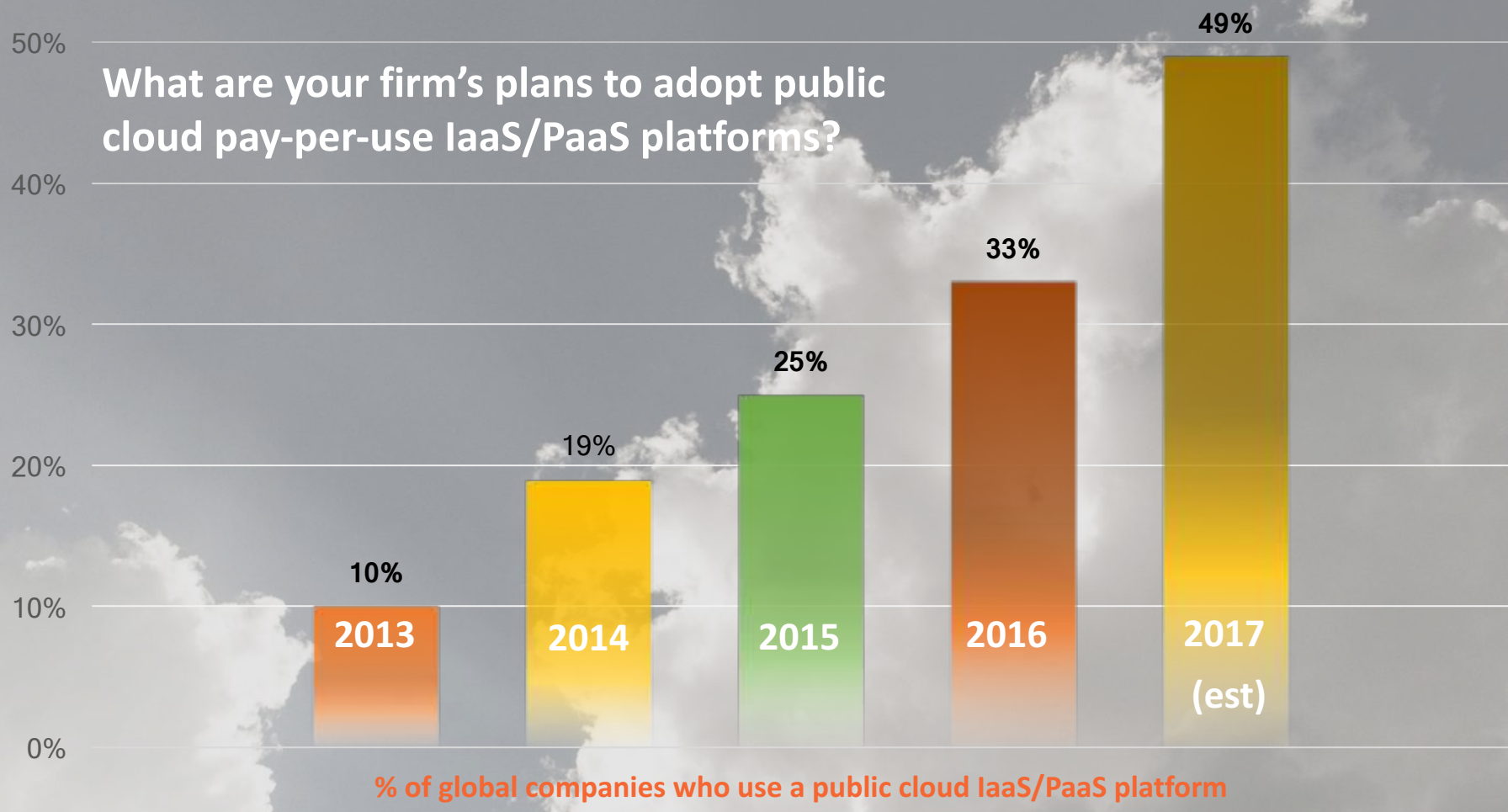
Public cloud adoption is in hypergrowth



Sources: Forrester's Forrsights Hardware Survey, Q3 2013 (n=1253);
Forrester's Global Business Technographics Infrastructure Surveys [2014, N=3190; 2015, N=3592; 2016, N=3503].

The 5 broad trends that will shape cloud in 2017

1. Modernization of **complex enterprise apps**

2. **Containers everywhere** shake up platform foundations

3. Serving **two masters**: cloud-native *and* digital transformers

4. Cloud Service Providers find **app, geo or industry niches**

5. **Hybrid IT is here today** and someone's got to manage it

Modernizing Complex Apps
Traditional business ops move to SaaS

- Reasons to Move to SaaS:
  - Save Costs:
    - Maintenance
    - People
    - Datacenter Facilities
    - Datacenter Hardware
    - Time
- Reasons Not to Move to SaaS:
  - Strategic Investments
    - Competitive differentiation
      - Service you sell

Containers Dominate Cloud Native Landscape

Shake up cloud platform and management strategies.

Frictionless Application Portability

Microservices & Cloud Native Synergy

Better suited than VMs to application building blocks & PaaS

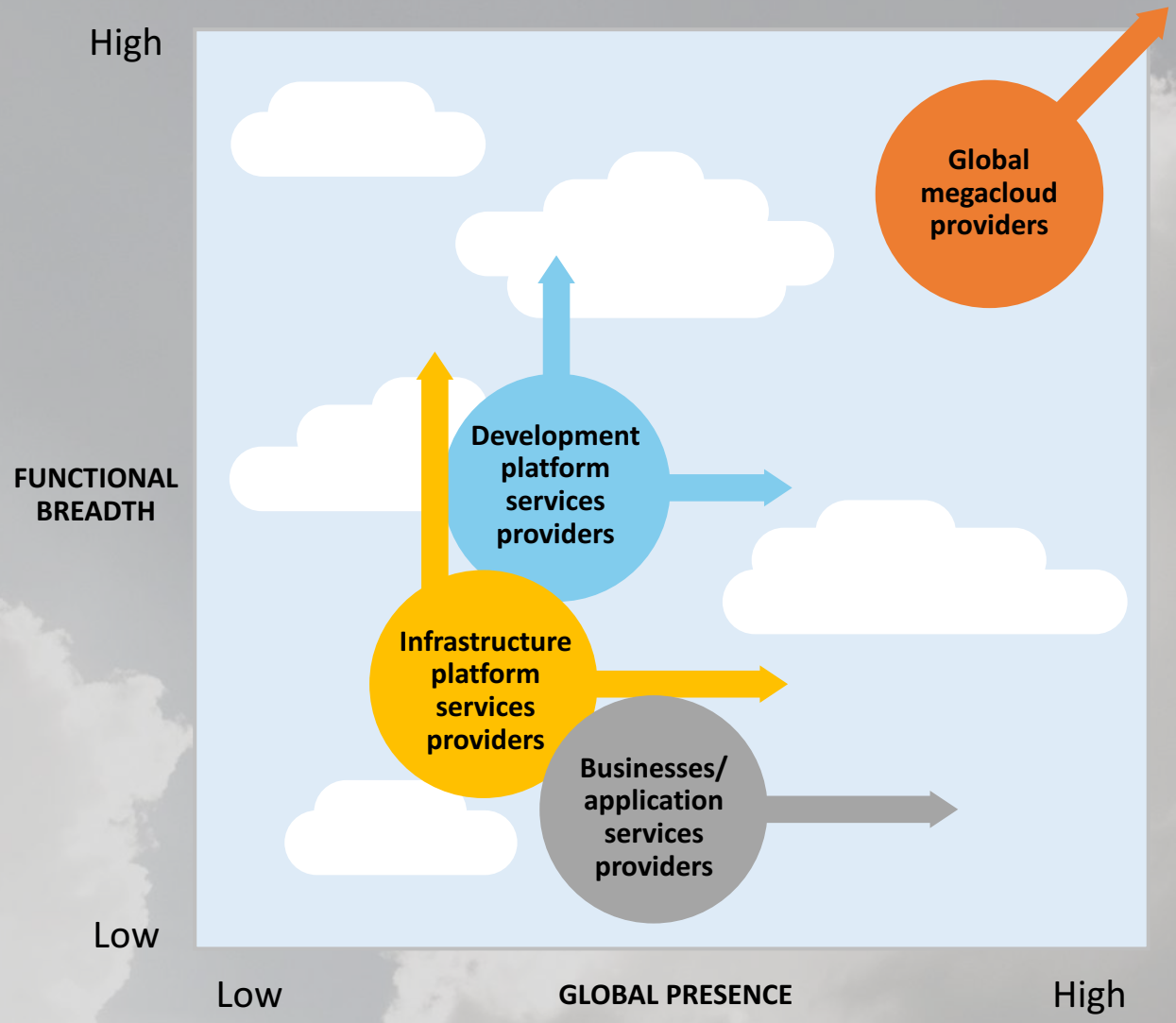
Serving 2 masters - “bi-modal” IT

Think Marathon Runner

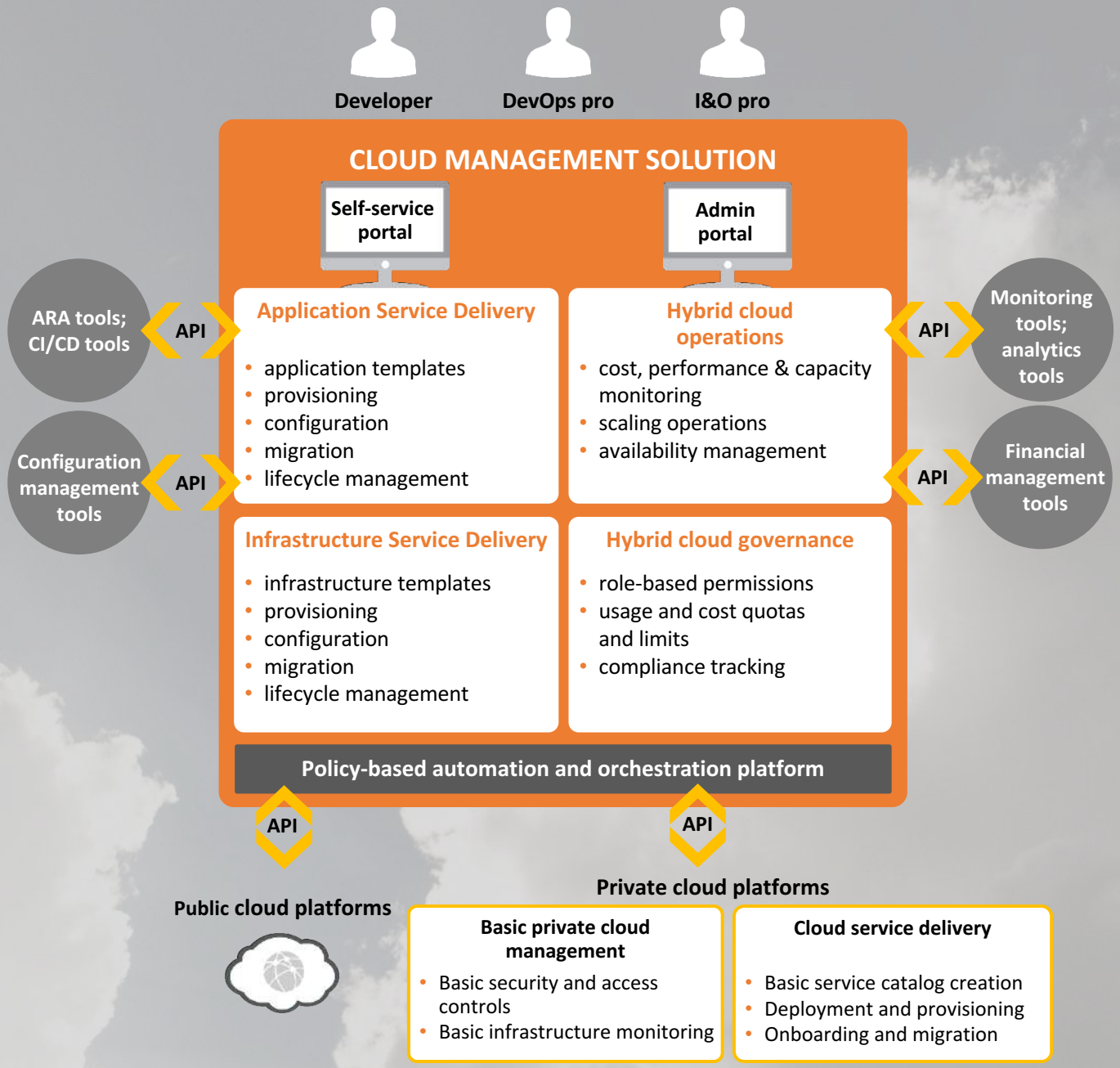
Traditional Apps		Cloud Native Apps
Reliability	**Goal**	Agility
Price for performance	**Value**	Revenue, brand, customer experience
Waterfall	**Approach**	Agile
Plan-driven, approval-based	**Governance**	Empirical, continuous, process-based
Enterprise suppliers, long-term deals	**Sourcing**	Small, new vendors, short-term deals
Good at conventional process, projects	**Talent**	Good at new and uncertain projects
IT-centric, removed from customer	**Culture**	Business-centric, close to customer
Long (months)	**Cycle Times**	Short (days, weeks)

Think Sprinter

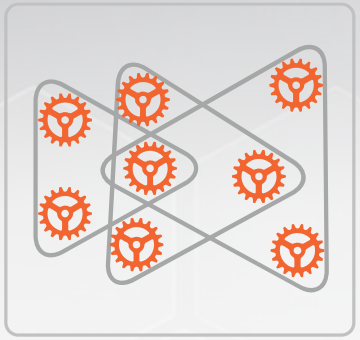
Cloud Service Provider Landscape
Differentiated Niches



Hybrid IT Management Landscape

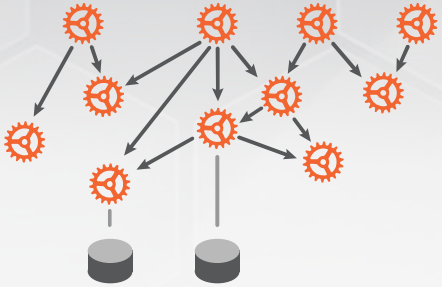


The world of applications is changing dramatically !



1990s
Pre-SOA (monolithic)
Tight Coupling

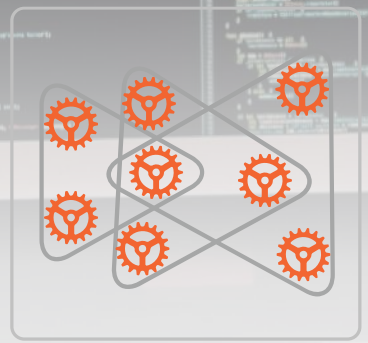
2000s
Traditional SOA
Loose Coupling



2010s
Microservices
Decoupled


Innovation & Standardization

Microservices and Cloud Native Applications



1990s
Pre-SOA (monolithic)
Tight Coupling

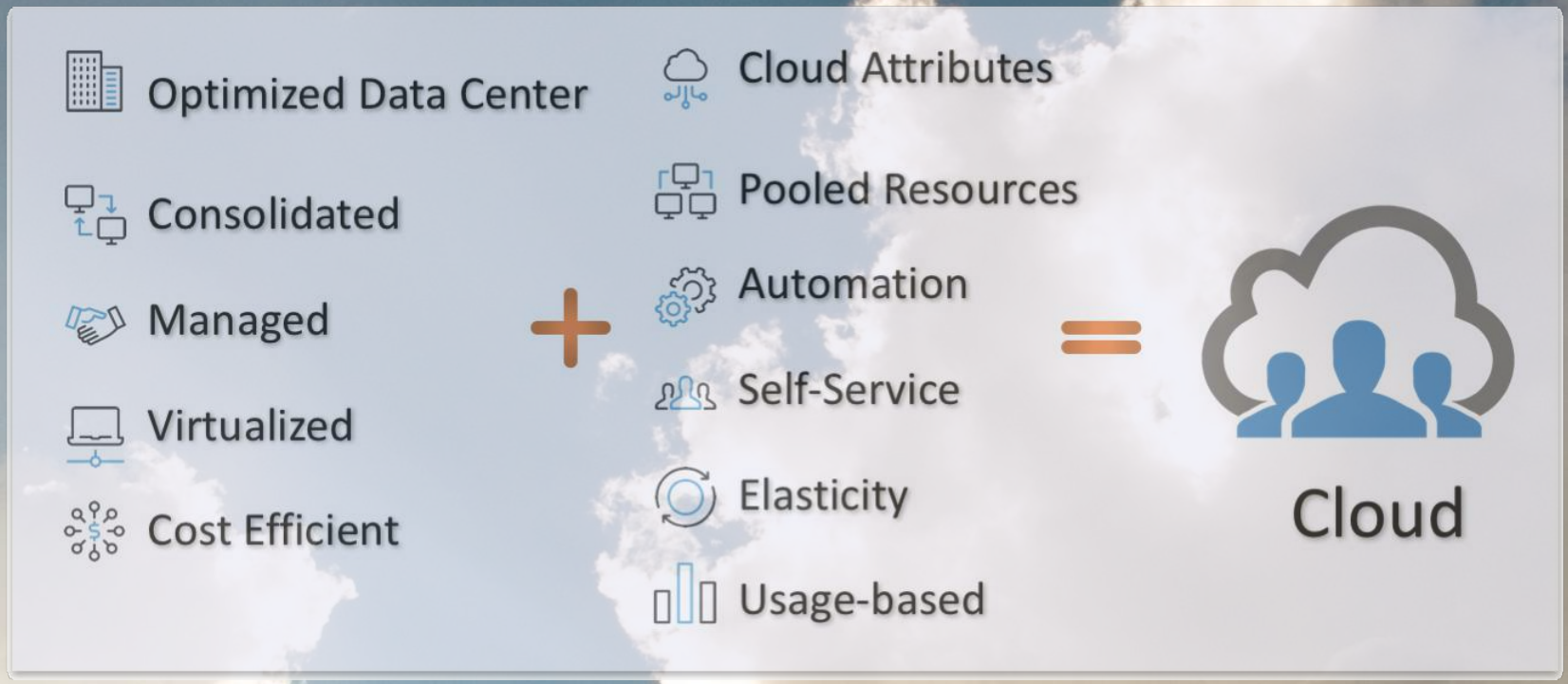
2000s
Traditional SOA
Loose Coupling

2010s
Microservices
Decoupled

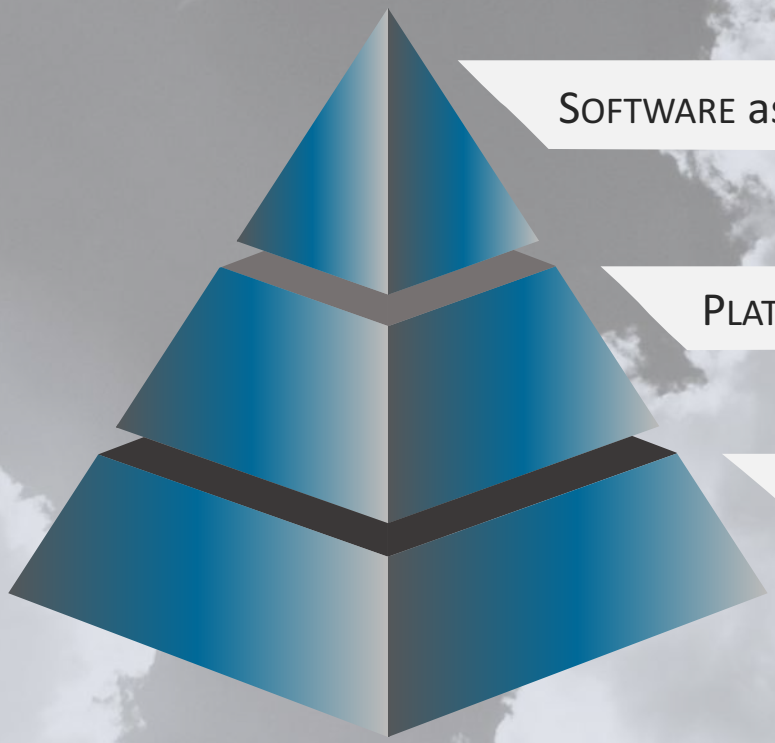
History Lesson

- Value of Virtualization
  - Capex
  - Business agility
- SDDC
  - Virtualize Everything
- Public Cloud
  - Outsource Everything

Cloud is more than virtualization



Cloud Stacks

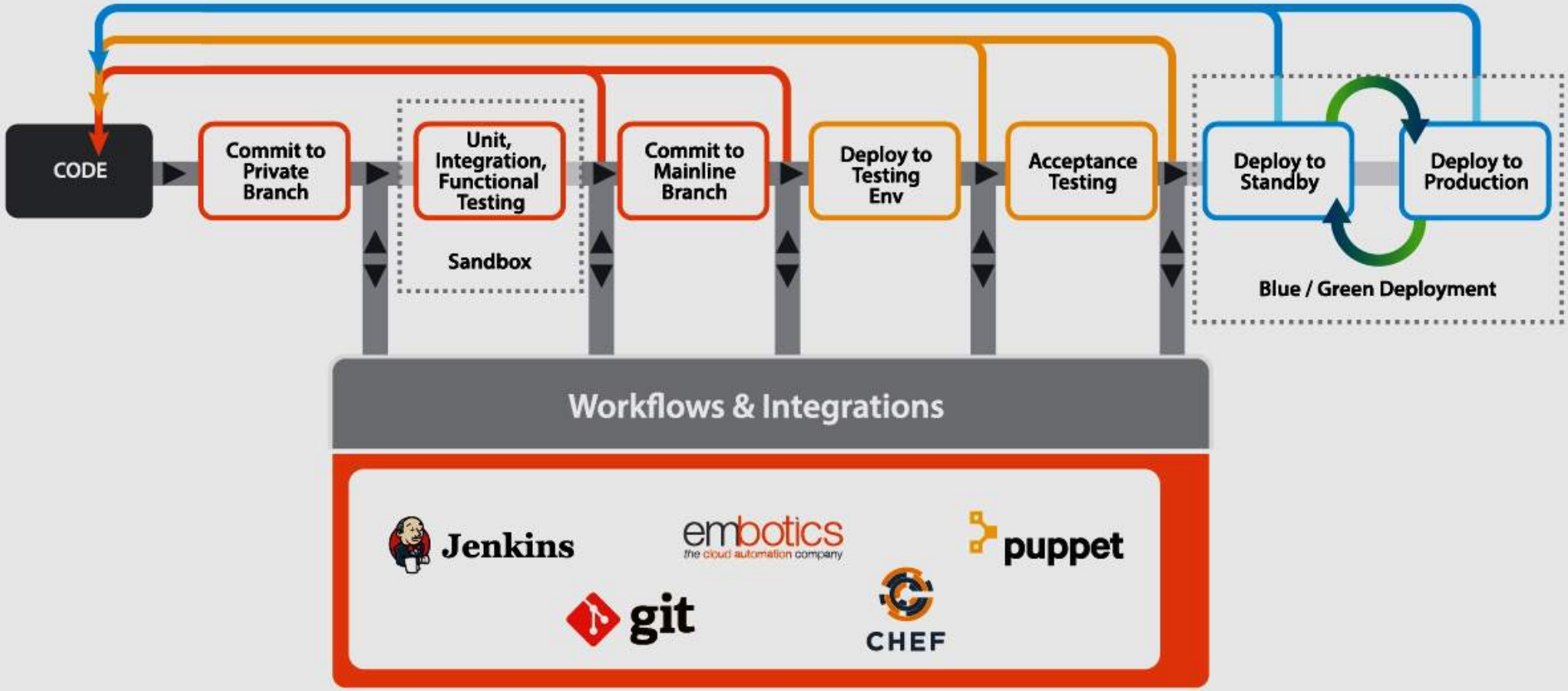


SOFTWARE as a SERVICE (SaaS)

PLATFORM as a SERVICE (PaaS)

INFRASTRUCTURE as a SERVICE (IaaS)

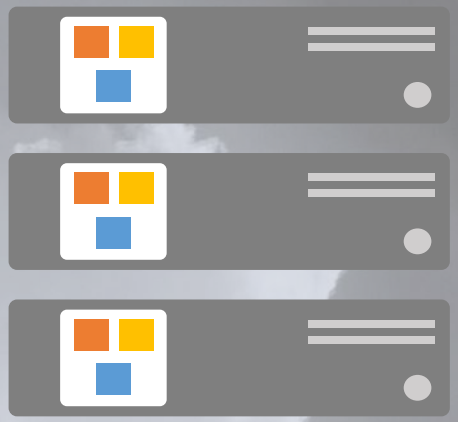
The DevOps Pipeline



Microservices Architecture

Traditional Approach

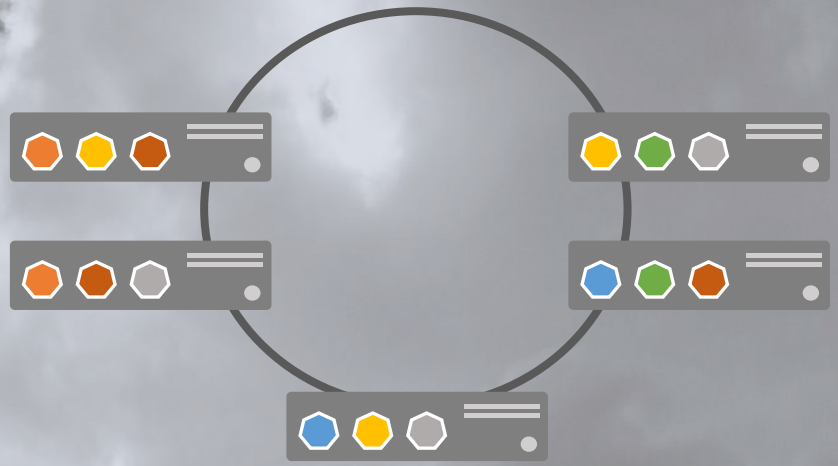
- A traditional application made up of a few monolithic components (web app or 3-tier service)
- Each component has many interrelated functions within a single process
- Scales up by re-hosting the app on larger servers/VMs



VS

Microservices Approach

- Segregates functionality into small autonomous services
- Scales out by deploying independently and replicating these services across servers/VMs/containers



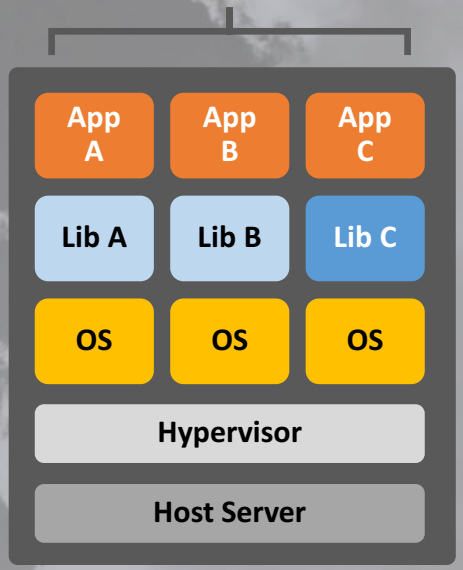
Source: Microsoft MSDN Magazine - December 2015

Microservices are symbiotic with Containers

- Enable small, self-contained teams
- Small, functional building blocks as output of development process
  - Well-managed, versioned interfaces
  - Enforced execution and data isolation
  - Immutable
- Reduce dependencies & complexity of their management

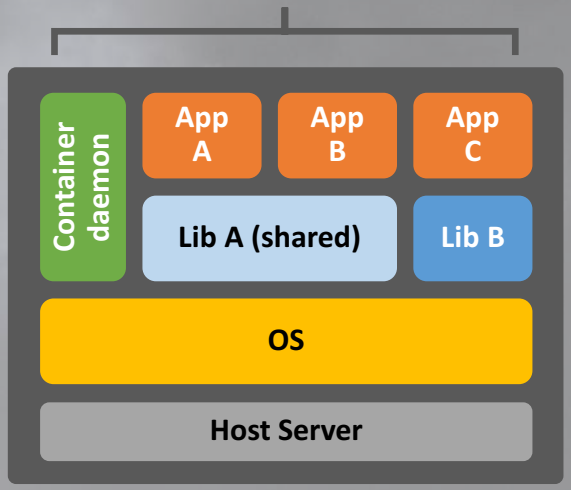
Virtual Machines

- Self-contained
- Isolated / secure
- IT/Admin.-focused



Containers

- Lightweight
- High density
- Developer-focused



Some signs you are not at Microservices level yet

- Different services do coordinated deployments
- A change in one service has unexpected consequences in other services
- Services share a persistent store
- You cannot change your service's persistent store without anyone caring
- Engineers need intimate knowledge of the design of other team's services

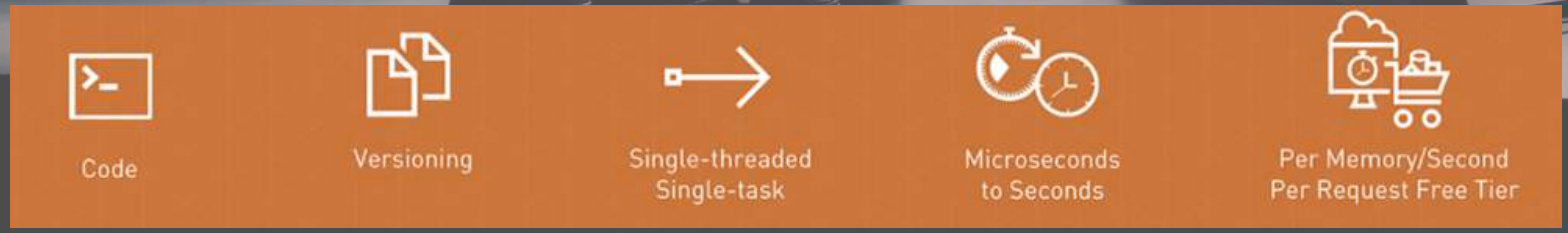
[1] Tom Killalea "The Hidden Dividends of Microservices" ACM Queue 2016

Which brings us to… Serverless Computing

"No server is easier to manage than not having a server at all…"

– W. Vogels

- aka Function as a Service
- Ephemeral containers per API call
- Offloads container management, scaling, HA to the Cloud provider



Containers & Serverless: Well suited to Microservices

Technology	Time to Deploy	Average Life Span
Physical Servers	1-3 Months	3-5 Years
Virtual Machines	Minutes to days	Weeks to Months
Containers	Milliseconds to seconds	Minutes to days
Serverless	Millisecond to seconds	Seconds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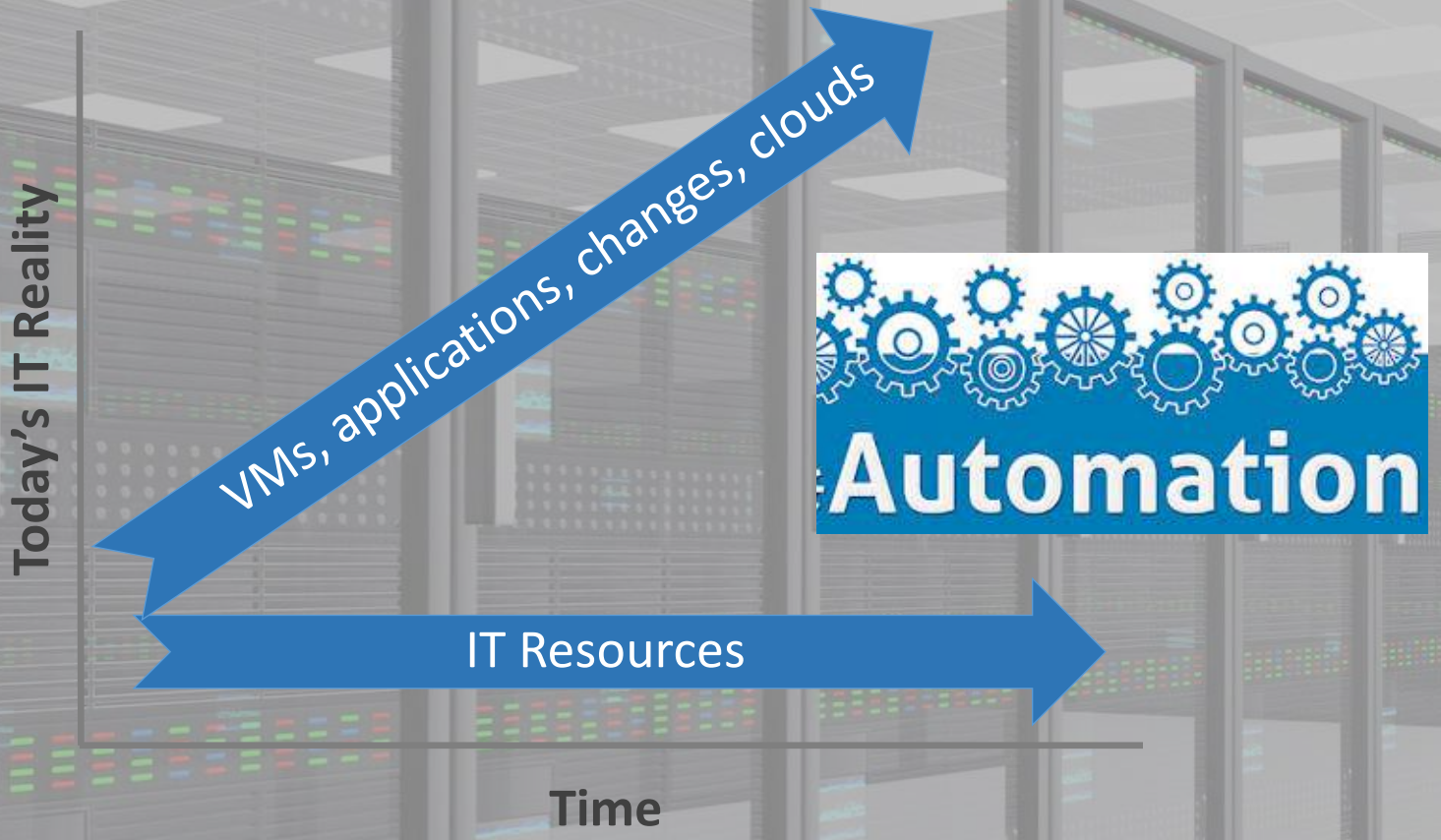
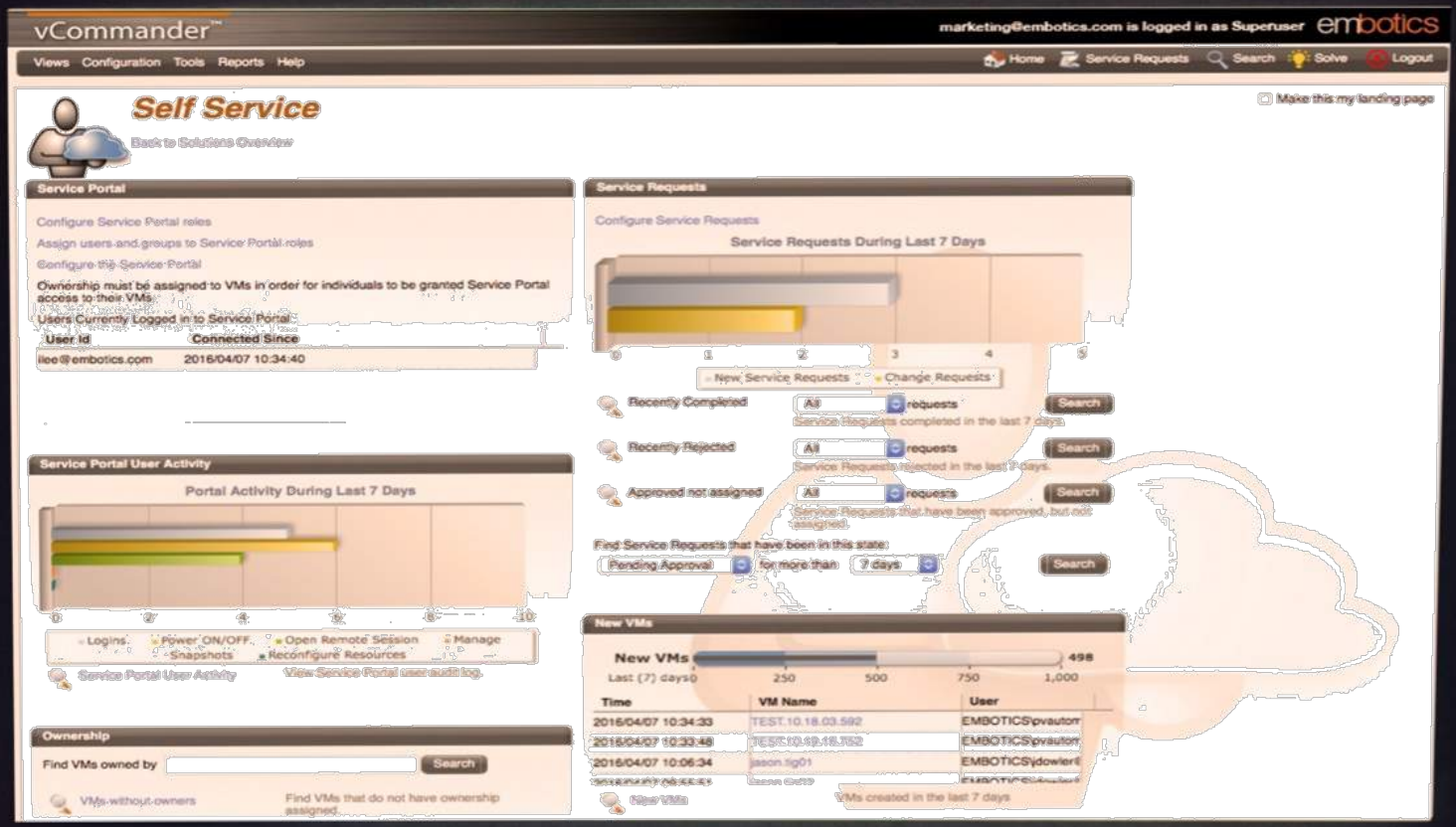
Current IT Environment

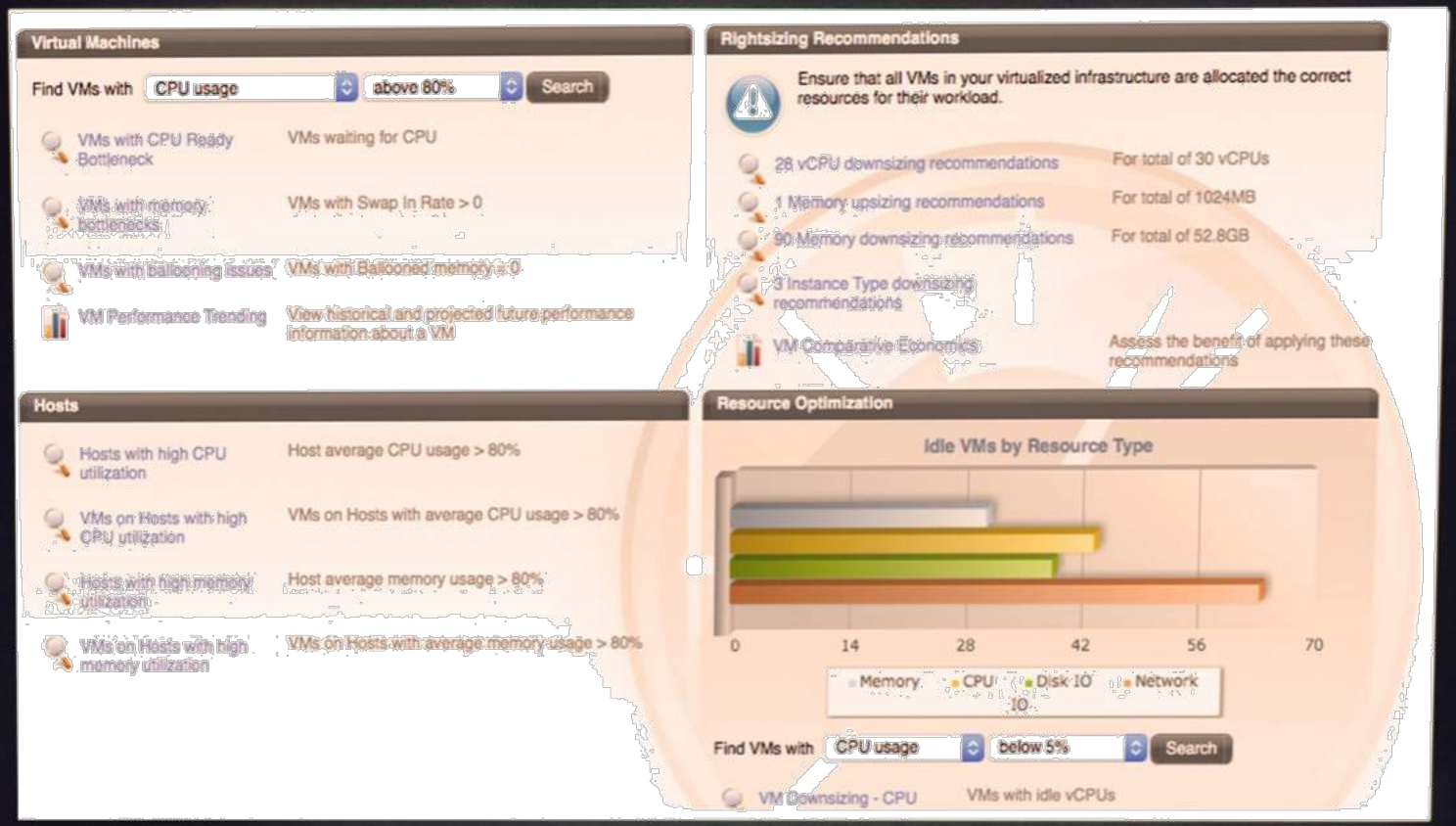


Automation: You'll be more successful with an incremental approach

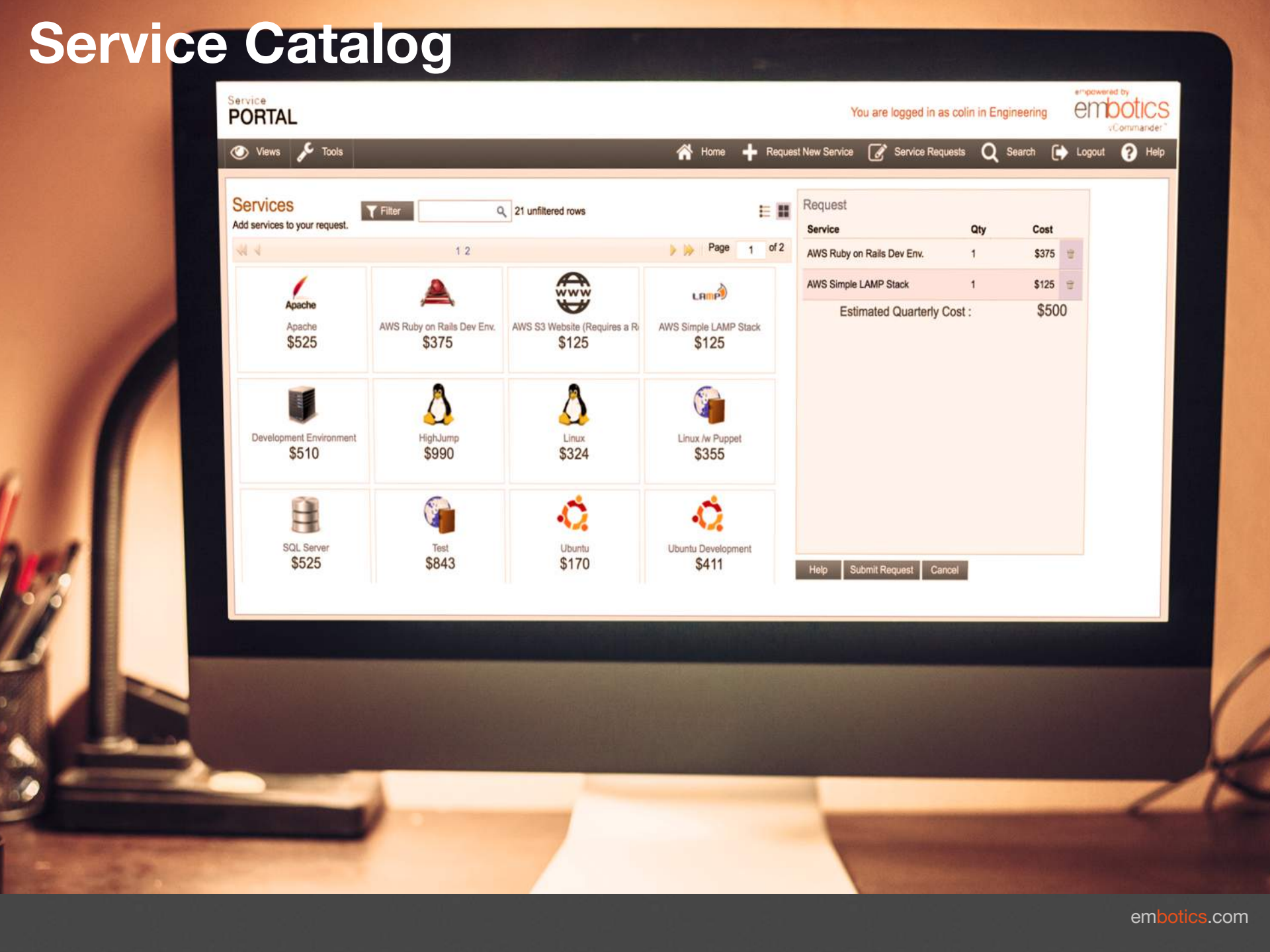
Self-Service Portal



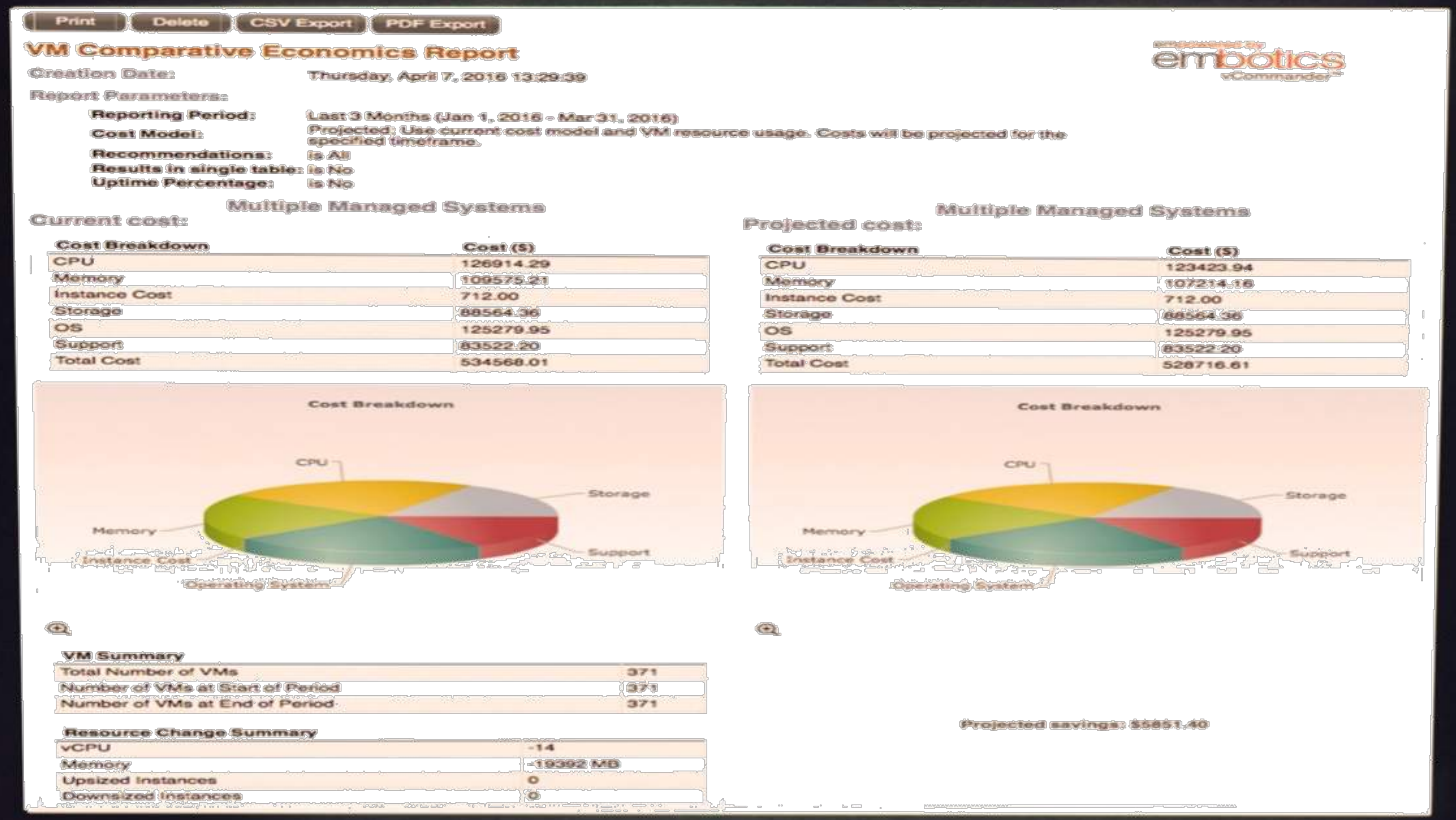
Rightsizing Recommendations



Service Catalog



Comparative Costing Reports



Print | Delete | CSV Export | PDF Export

VM Comparative Economics Report

Creation Date: Thursday, April 7, 2016 13:29:39

Report Parameters:

- Reporting Period: Last 3 Months (Jan 1, 2016 - Mar 31, 2016)
- Cost Model: Projected: Use current cost model and VM resource usage. Costs will be projected for the specified timeframe.
- Recommendations: is All
- Results in single table: is No
- Uptime Percentage: is No

Current cost:

Multiple Managed Systems

Cost Breakdown	Cost ($)
CPU	126914.29
Memory	109575.21
Instance Cost	712.00
Storage	88564.36
OS	125279.95
Support	83522.20
Total Cost	534568.01

Cost Breakdown

Projected cost:

Multiple Managed Systems

Cost Breakdown	Cost ($)
CPU	123423.94
Memory	107214.16
Instance Cost	712.00
Storage	88564.36
OS	125279.95
Support	83522.20
Total Cost	528716.61

Cost Breakdown

VM Summary

Total Number of VMs	371
Number of VMs at Start of Period	371
Number of VMs at End of Period	371

Resource Change Summary

vCPU	-14
Memory	-19392 MB
Upsized Instances	0
Downsized Instances	0

Projected savings: $5851.40

NORDSTROM

peak 10

NASA

Pega

careerbuilder

Bell

kinaxis

informatica

SUNGARD

FANATICS

BD

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Technology—Powered by People

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Canada

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fiserv.

SMART

CABLEVISION

JABIL

BDO

OdysseyRe

ALLIANCE

CONNECTRIA HOSTING

AVISTA

SERENA

anthelio
A higher aim. A newer standard.

ROPES & GRAY

CBC television

UNIVERSITY OF BIRMINGHAM

Hawaiian Telcom

LOCKHEED MARTIN

actix

FORCEPOINT
POWERED BY Raytheon

Embotics vCommander – Product Capabilities

- Multi-cloud and multi-hypervisor management
- Economic comparisons & intelligent placement
- Complexity free installation and configuration
- Extensive out-of-the-box reporting & analytics
- Provisioning automation and orchestration
- End-user IT self-service portal delivery
- Infrastructure cost visibility - Chargeback / Showback
- Resource planning and rightsizing analysis


Overlays seamlessly across your existing infrastructure

The lasting value of the cloud

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Q & A