Solving Business Problems using the Cloud

Chris Hendrick
Sr. Mgr., Cloud Engineering

EMC² RSA Labs
ENGINEERING OPERATIONS
SERVICES & SOLUTIONS

Agenda

- About EMC / Me / Our Team
- What is Cloud?
- Cloud Success Story – vLab
- Our Next Challenge – Engineering
- Q&A

ABOUT EMC

EMC Corporation is a global leader in enabling businesses and service providers to transform their operations and deliver IT as a service.

Fundamental to this transformation is cloud computing.

Through innovative products and services, EMC accelerates the journey to cloud computing, helping IT departments to store, manage, protect, and analyze their most valuable asset—information—in a more agile, trusted, and cost-efficient way.

Quick Facts:

- Since 2005: $20b invested in R&D & $16b in acquisitions of 75+ tech companies.
- Operates R&D centers in Brazil, China, France, India, Ireland, Israel, the Netherlands, Russia, Singapore, and the U.S., and has manufacturing facilities in the U.S. and Ireland.
- Ranks 128 in the Fortune 500 and had reported revenues of $24.4 billion in 2014.
- Employs approximately 70,000 people worldwide in 86 countries.

ABOUT Me

c8hendrick@yahoo.com

Married to my wonderful wife, Heather, for 11 years

Two beautiful children

3 cats, some fish, 16 chickens, and bees in the Spring

Soccer coach, den leader, Church School superintendent

Chris.hendrick@emc.com

At EMC for 4+ years

At Genzyme for 11 years before that

MSIT from Clark University

BA English / Philosophy from Colgate University

https://www.linkedin.com/in/christopherhendrick

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Cloud Engineering Team

- I work with a FANTASTIC team
  - Matt Coviello - The brains of the operation
  - Ed Jones - Fearless leader
  - Alexey Akopyan - Steers the development ship
  - Jason Thornbrugh - Architect extraordinaire
  - My Team
    - Vitaly
    - Vijay
    - Michael D
    - Vlad F
    - Mike C
    - Alex M
    - Tim
    - Stas
    - Len
    - Gabe
    - Kumar
    - Alex F
    - Edgar
    - Emmet
    - Ivan
    - Alexander
    - Alexey
    - Sai
    - Vlad T
    - Dmitri

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So what is "The Cloud" exactly?

- Resources or services publically available via the Internet

EVERNOTE

mozy

amazon

NETFLIX

ebay

- These are the public face of cloud, but there's more to it!

XBOX LIVE

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Different Cloud Models

EMC Service Provider Partners

Private (On-Prem)

Hosted Private (Off-Prem)

Public

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Pre-Sales Demos

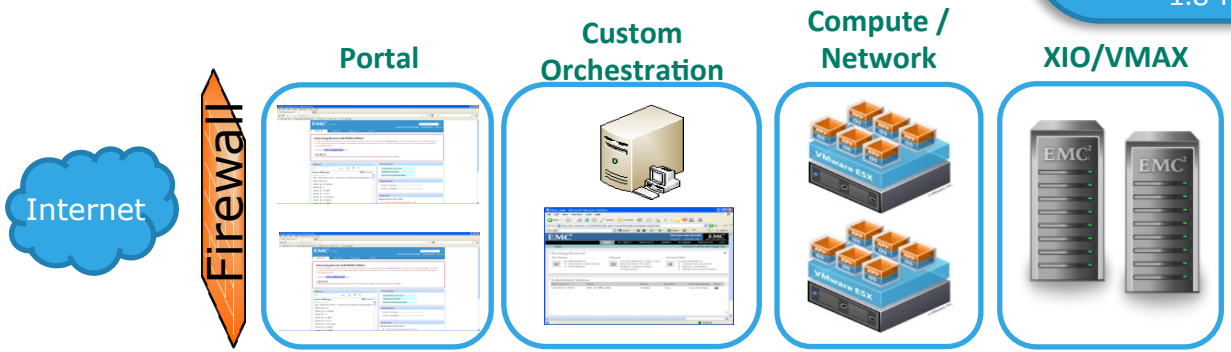
- The business problem:
  - Far too much time spent by SEs constructing demos
  - Little standardization of sales pitch / message
  - Too much equipment consumed in the field
  - Lack of repeatability / sharing amongst SE community
- This results in less time in front of customers selling product, inconsistent messaging, and inefficient use of equipment

EMC vLab - What Is It?

https://vlab.demoemc.com

- Self-Service, on-demand live demo labs
- Scripted, scalable and customizable
- Global availability, 24x7x365
- Product and Solution Demos | Training| Partners | Events

- Average Session = 3.9 days
- Average Session RAM = 32 GB
- Average VM/demo = 6
- Session Concurrency = 1,000 – 1,200
- 3,000+ new VMs provisioned per day
- Largest lab:
  - 16 VMs
  - 47 vCPU
  - 98GB RAM
  - 1.8 TB disk



- 5500 cores
- 200TB RAM total
- Capacity for 15k+ VM's
- 3 PB of XIO and VMAX
- VCD / ESXi 5.1u2
- Durham and Singapore

Demos delivered from vLab by year:

Year	vApps	VMs	TB RAM Days
2010	17,432	52k	500
2011	26,604	106k	1100
2012	54,708	273k	3250
2103	85,429	427k	8150
2014	95,714	574k	12000

2012 By the Numbers

EMC² vLAB

107% Growth	54,708 labs	Cost down 46%
+251% APJ	325,000 VMs	$3.8M in Efficiency
+146% EMEA	100+ new labs	~$150M++ Revenue*
12% Partner Volume	186 events 7,900 sessions	

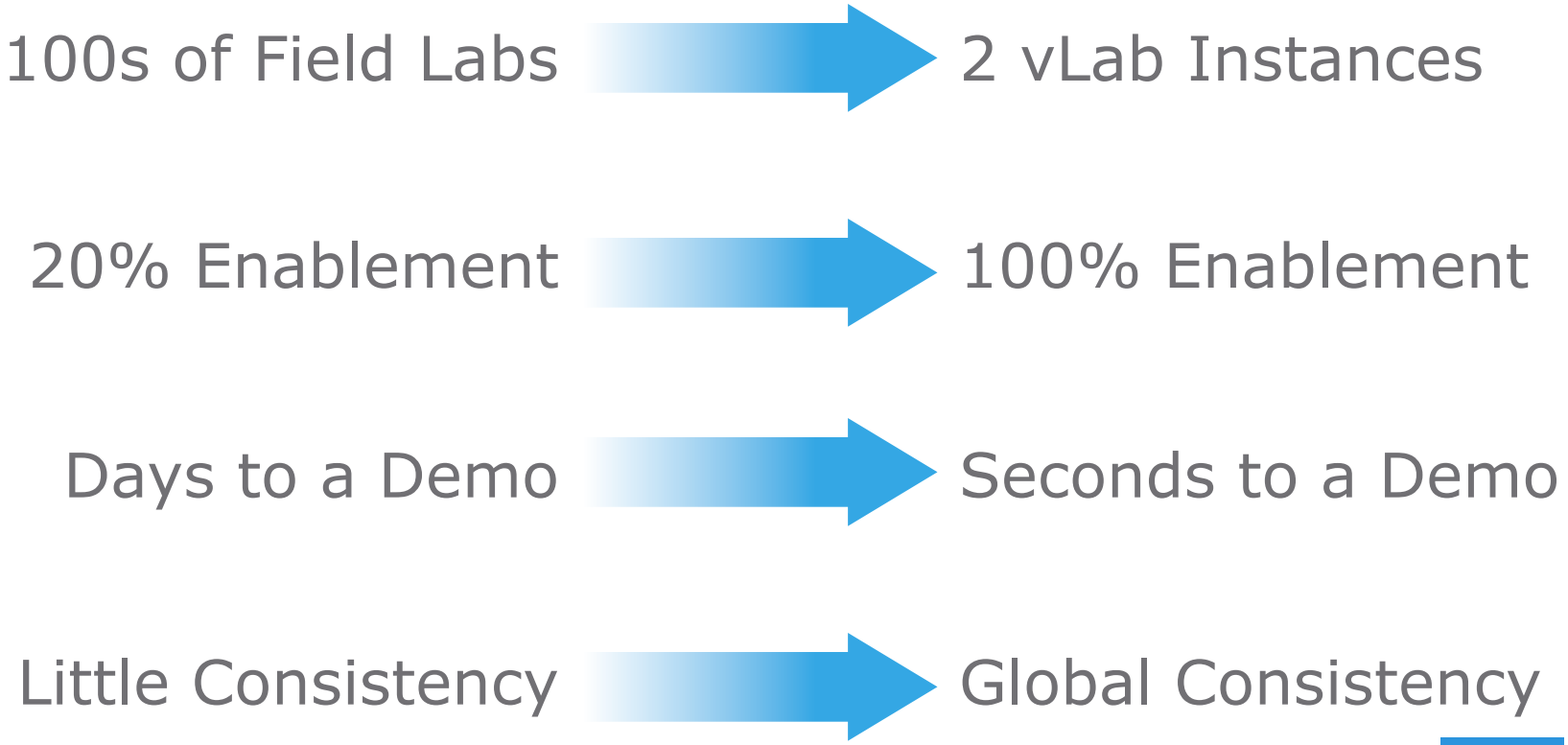
SCALE

GLOBAL

FINANCIAL

*Source: EMC Corporate Consulting (5% at $60k average deal size)

Business Value of vLab



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Situation

- 70,000+ Person Company w/13,000+ in Engineering
- $24b in Revenue
- In the 376 Engineering labs around the world we have:
  - 600,000 square feet space
  - 28,000 hosts
  - 8,700 switches
  - 8,800 arrays
  - And over 150 Engineering Tools (software packages)!
- And we would like to deliver products faster!

Complication

- Worldwide company (86 countries) that has executed on over 75 acquisitions in last 10 years
- This brought us 75+ Engineering teams
- Each new team brings with it their own set of processes and tools.
- We standardized the processes (we call this Regatta) but have never standardized the Engineering Tools!

Regatta - Product Life Cycle

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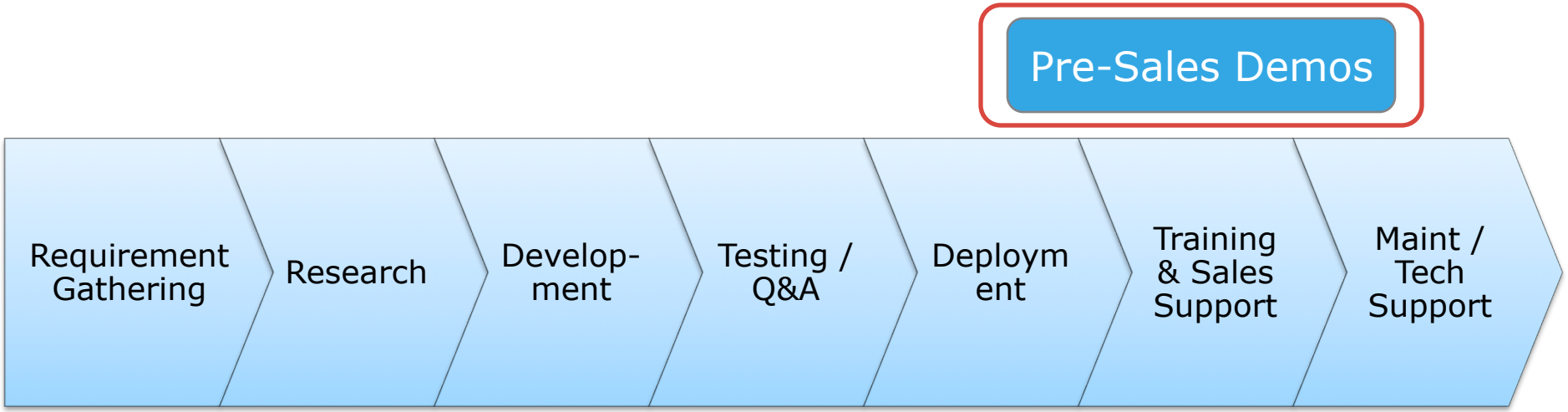
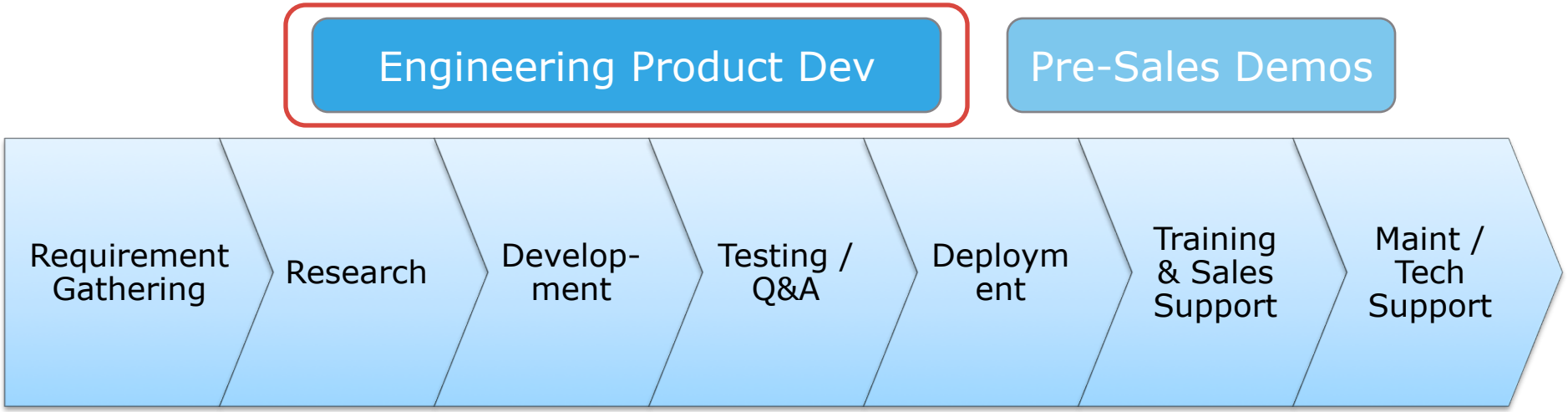


Regatta - Opportunity



Engineering Product Development

- Common Services
  - Source Code Control
  - Build
  - Artifact Management
  - Request Management
  - Defect Management
  - Test / QA
  - And more…

- The business problem
  - Each business unit provides these services separately
  - No standardization of process or tools
  - Impossible to rationalize security / access control
  - No portability of developers / code
  - Mostly manual processes / no automation

While the business units have been successful at delivering product, they have room for improvement. Inefficiency from a lack of standardization and a constant need for capital investment in hardware are areas of focus.

Engineering Product Development

- Why is this a fit for a cloud-based solution?
  - Done at scale – similar needs across all BUs
  - Desire for process standardization and automation
  - Both Temporary and Persistent workloads

- Hurdles to clear
  - Process standardization across large groups in large organizations is difficult, getting them to agree on a common toolset is similarly tough
  - Many, many stakeholders
  - Little initial funding (which is true a lot of the time!)

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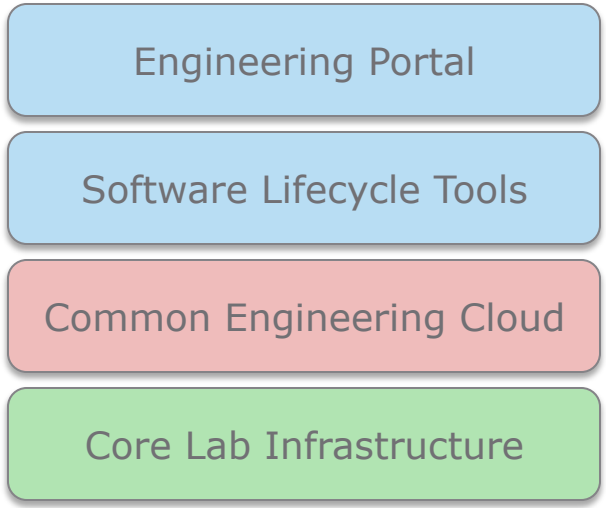
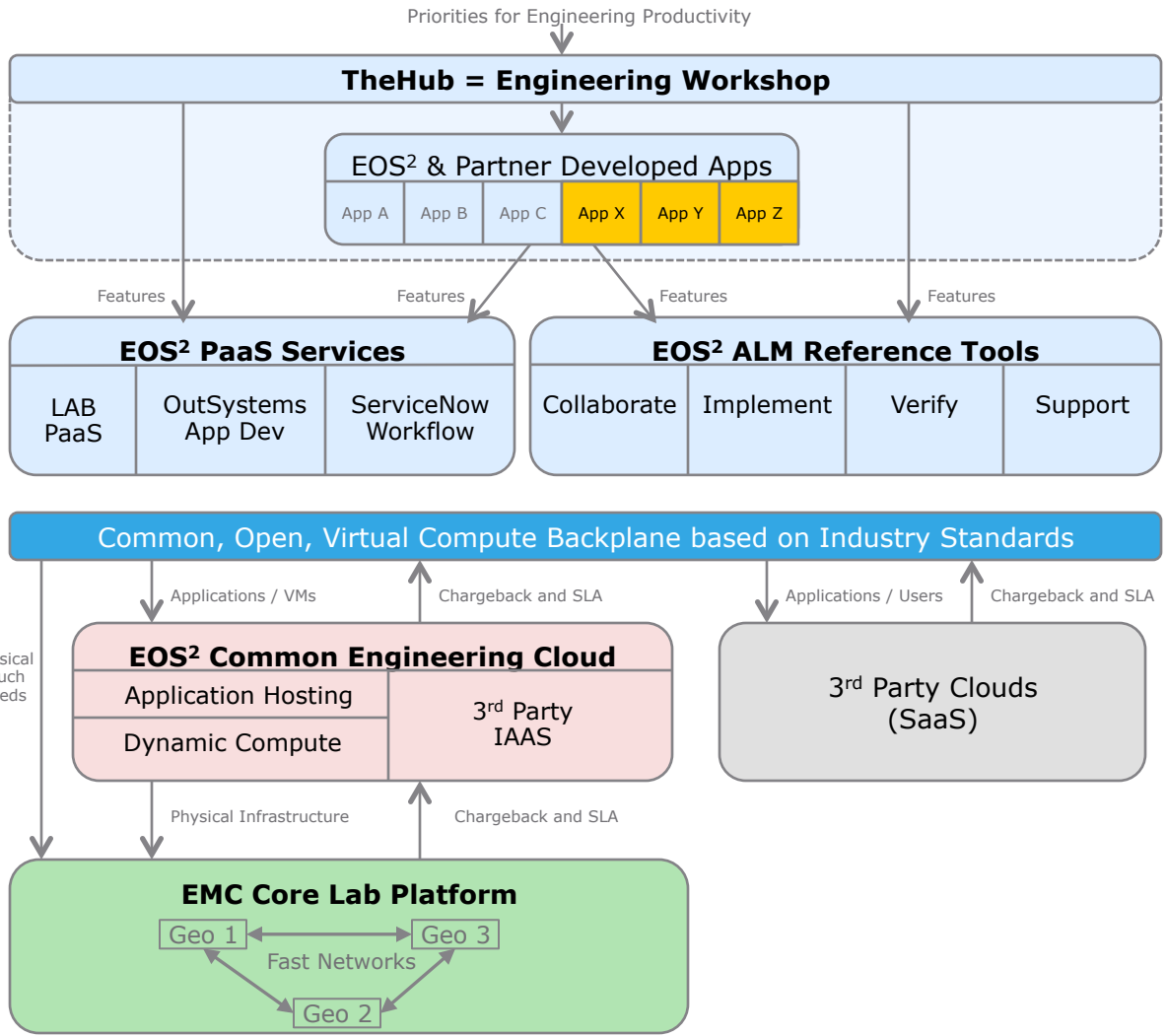
Engineering Product Development

- The solution
  - Product Delivery Platform - PDP
  - Engineering portal
  - Software lifecycle tools
  - Virtual and Physical assets
  - Available to all Bus

- Cloud technology plays a role in the solution but isn't sufficient by itself





Presentation Layer: Web and Mobile user interfaces to EOS² Services

EOS² App Layer: Engineering productivity applications that use our ALM and PaaS services. Provides orchestration between our standard tools and platforms. Written by EOS², BUs and partners.

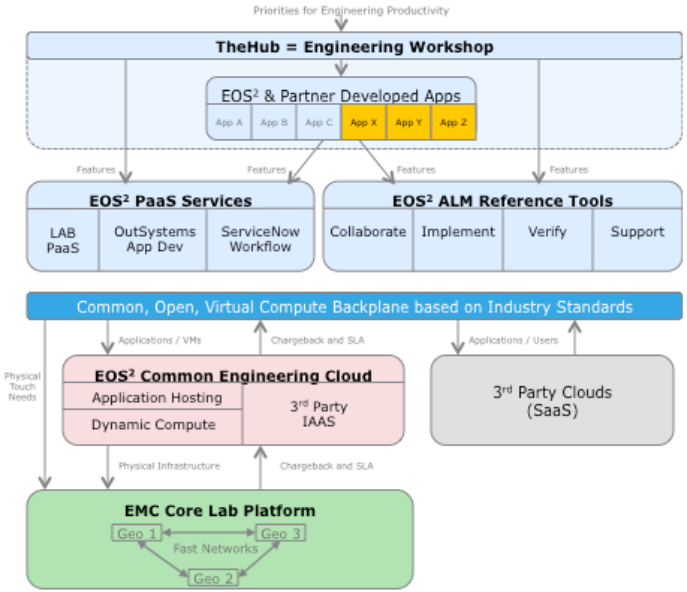
PaaS & ALM Layer: Requestable set of Engineering Platforms, App Dev Platforms, and ALM tools on which our services are built. Provides both services and APIs for integration.

Hybrid Cloud Layer: Private and Public Cloud Resources in which our EOS² platform operates – provides worldwide scalability and performance at market competitive pricing

Data Center Layer: Utilizes the IT/COE Core Lab Strategy to provide space, HVAC, Security, Networks, Business Continuity, High Availability, Disaster Recovery

Engineering Product Development

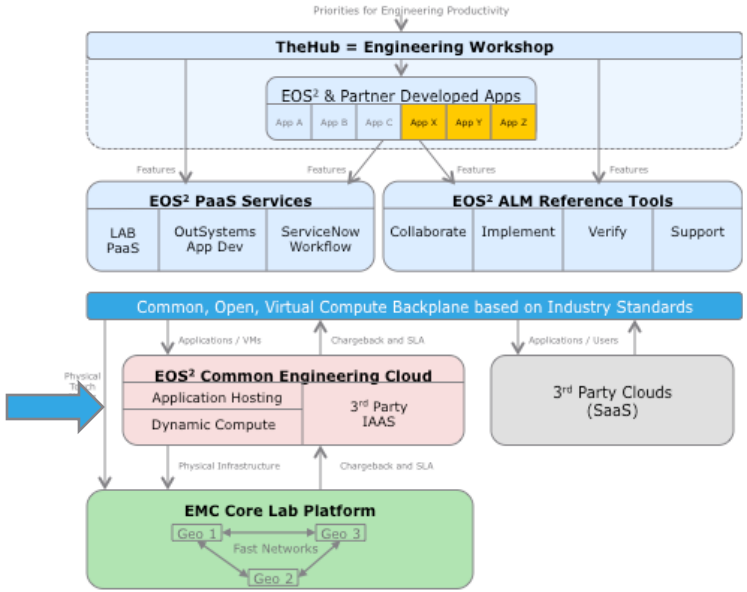
- Requirements from Engineering are far more varied than Pre-Sales
  - At least 5 global locations
  - Dynamic and Persistent workloads
  - Connectivity to physical equipment
  - High value assets (source code)
  - Established systems to be supplanted
- A single service will not be sufficient to meet the needs of Engineering. EMC vLab worked for Pre-Sales but will not completely satisfy this use case.



Common Engineering Cloud (CEC)

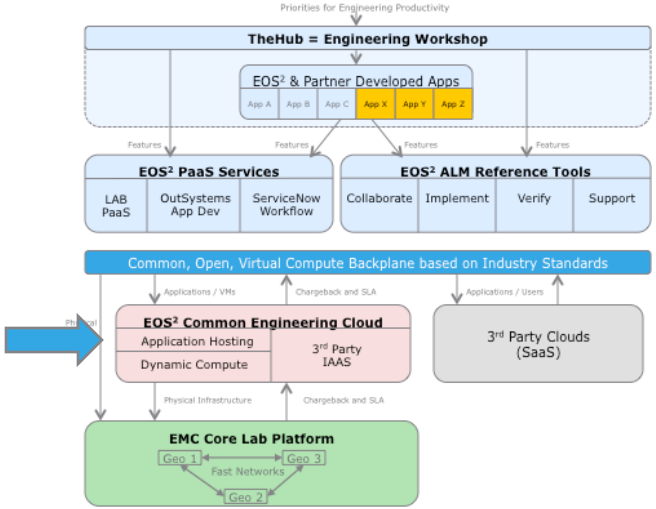
- Multiple service offerings
  - CEC-A – for hosting persistent workloads
    - Application hosting
    - User self service provisioning
  - CEC-D – for hosting ephemeral workloads
    - Largely automated by Software Lifecycle Tools

- Each service offering available at multiple locations
  - Hopkinton, MA
  - Durham, NC
  - Santa Clara, CA
  - Cork, Ireland
  - Bangalore, India



Common Engineering Cloud (CEC)

- Our experience from vLab gave us a good foundation
  - Using similar hardware architecture throughout
  - Using same code base for CEC-D
- Expanded the offering to include hosting
  - Monitoring
  - Backups
  - Patching
  - Anti Virus



Similar to…

Microsoft Azure

rackspace HOSTING

amazon web services™

…But for internal applications

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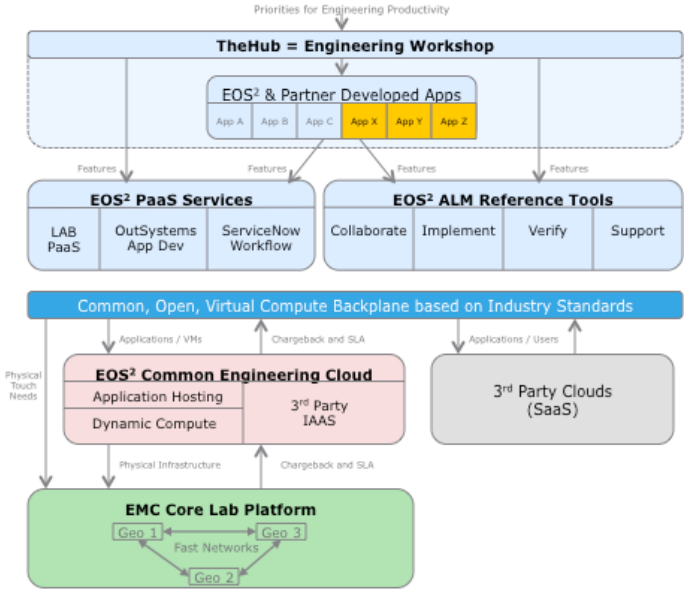
The Vision of the PDP

150+ Tools	→	Unified software tools
100s of Labs	→	5 Core Labs
Manual provisioning	→	Automated self service
Little Consistency	→	Global Consistency



- Solve customer problems quickly with elegant solutions!

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Contact Info

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EMC²

SCIPAB

Mandel COMMUNICATIONS Make Every Communication Count™ https://www.mandel.com

Great Tool that we use @EMC. Helps a lot in Engineering!!!

- **Situation**
  State what you know about your listeners' circumstances that is relevant to your discussion or presentation, e.g., current state of their business, technology, industry, or plans.

- **Complication**
  Identify the critical issues (changes, pressures, demands, etc.) that are impacting the Situation and creating problems, challenges, or opportunities.

- **Implication**
  Show the personal or business consequences of failing to act on the problems or opportunities described in the Complication.

- **Position**
  State clearly and confidently your opinion about what needs to be done to solve your listeners' problem.

- **Action**
  Help listeners understand the role you want them to play, or the questions you'd like them to consider, during your presentation or conversation.

- **Benefit**
  Describe how your recommended Position and Action will address listeners' specific needs. State the results clearly and quantifiably.

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