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Self-driving Datacenter: Automation

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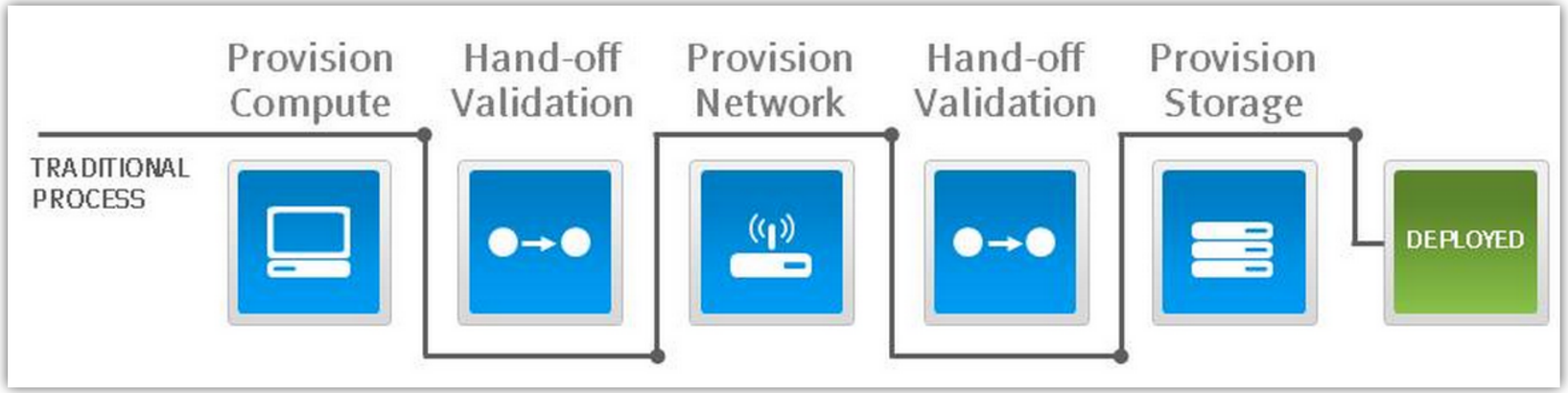
IT Challenge – Manual Provisioning

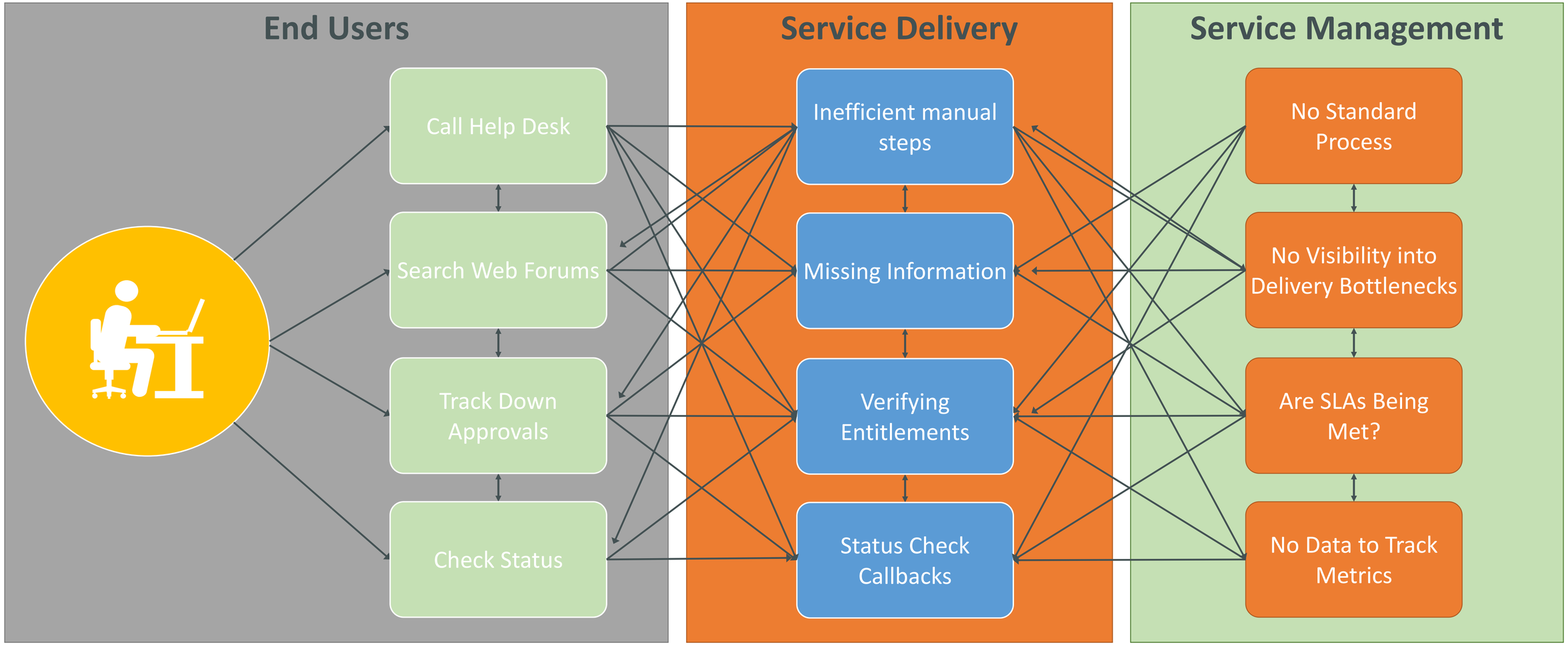
- Provisioning typically requires a member of the IT staff to manually configure a number of items in order to provide a service
- Each IT team must provision and validate each process and then hand off to the next respective team
- Most provisioning occurs on systems that are in production therefore further planning must take place
- Speed is sacrificed in order to ensure accuracy and reliability



IT Challenges

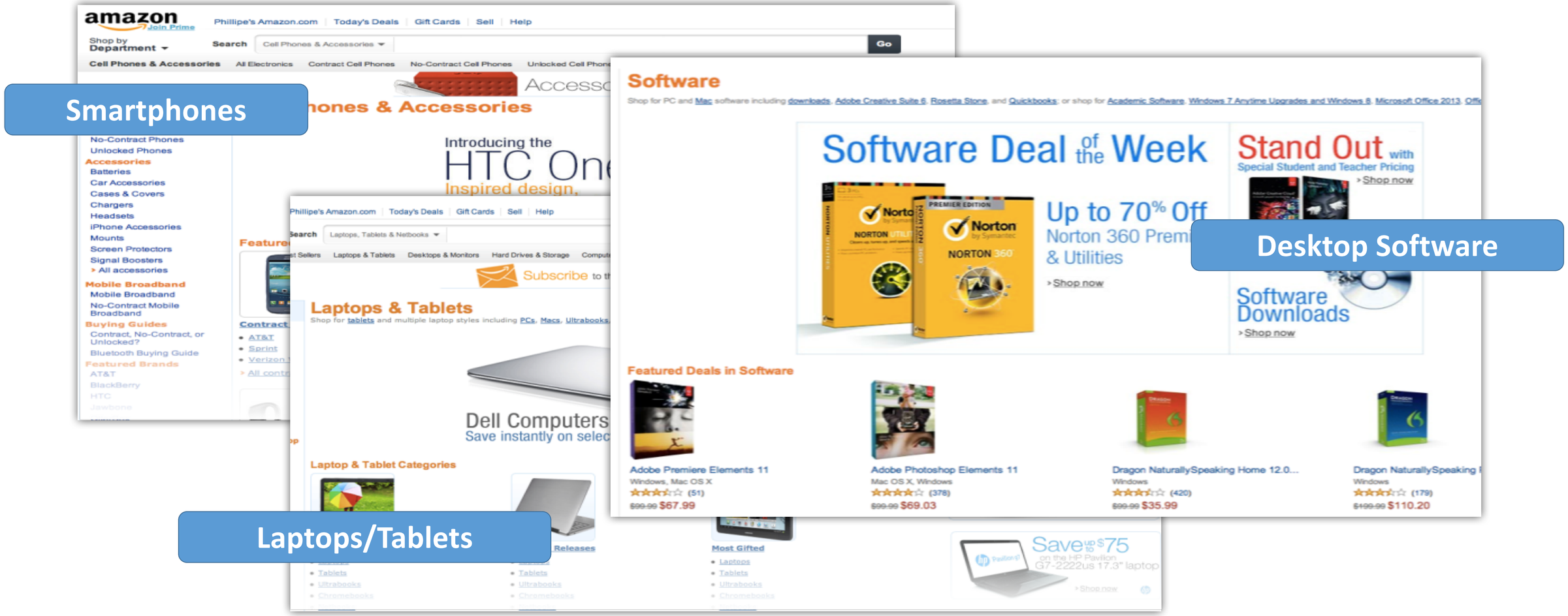
1. Pressure to deliver applications that give immediate business values
   - “IT is slowing me down”
2. Multiple data center and IT silos are becoming increasingly complex to manage
3. Business executives question the value of IT
4. Users have other options: Shadow IT is gaining ground
5. IT must deliver to business needs with agility, managing compliance, and lower costs
   - “I need to implement a cloud. What kind of cloud? What are my choices?”

State of Managing IT Requests



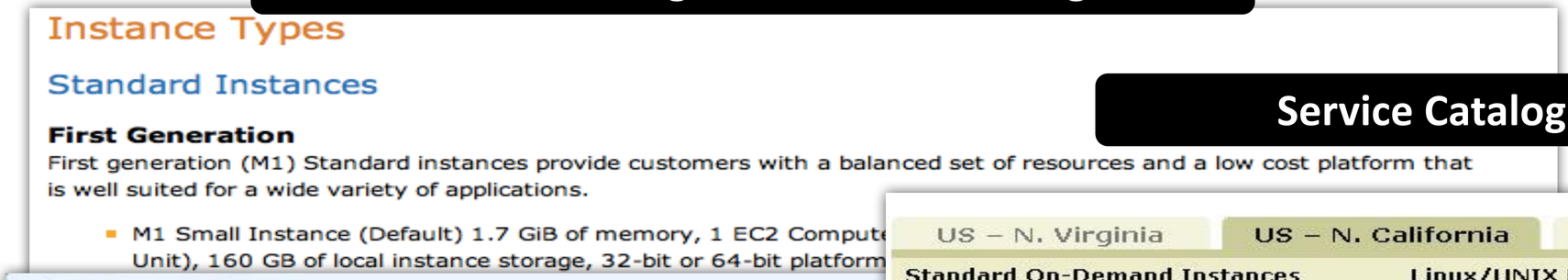
- **Slow, brittle, inadequate, and overly complex**

What if ordering workplace IT services was as easy as Amazon.com?



What if requesting IT infrastructure was as easy as EC2/AWS?

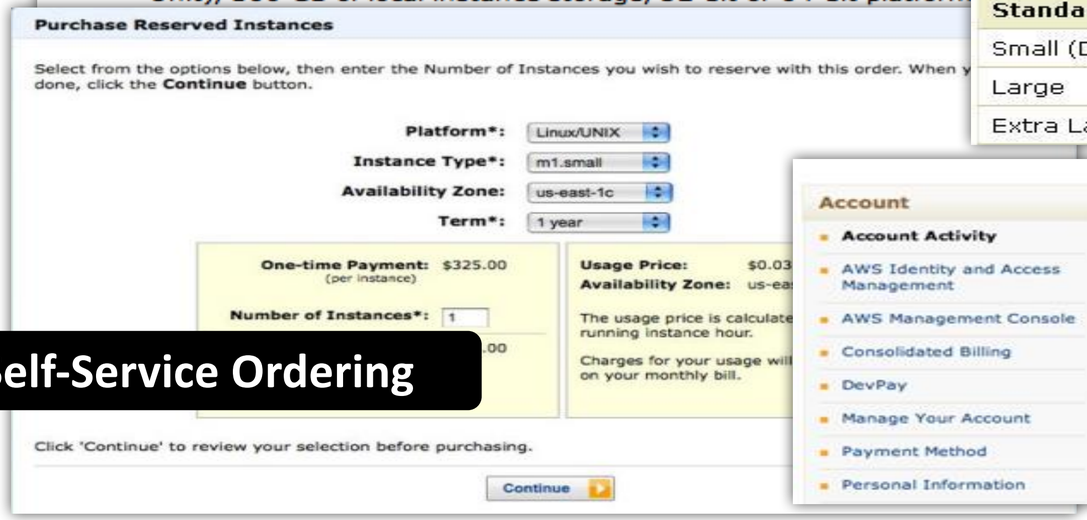
Service Catalog of Standard Offerings



Service Catalog with SLAs + Pricing

US – N. Virginia | US – N. California | EU – Ireland

Standard On-Demand Instances	Linux/UNIX Usage	Windows Usage
Small (Default)	$0.095 per hour	$0.13 per hour
Large	$0.38 per hour	$0.52 per hour
Extra Large	$0.76 per hour	$1.04 per hour



Self-Service Ordering

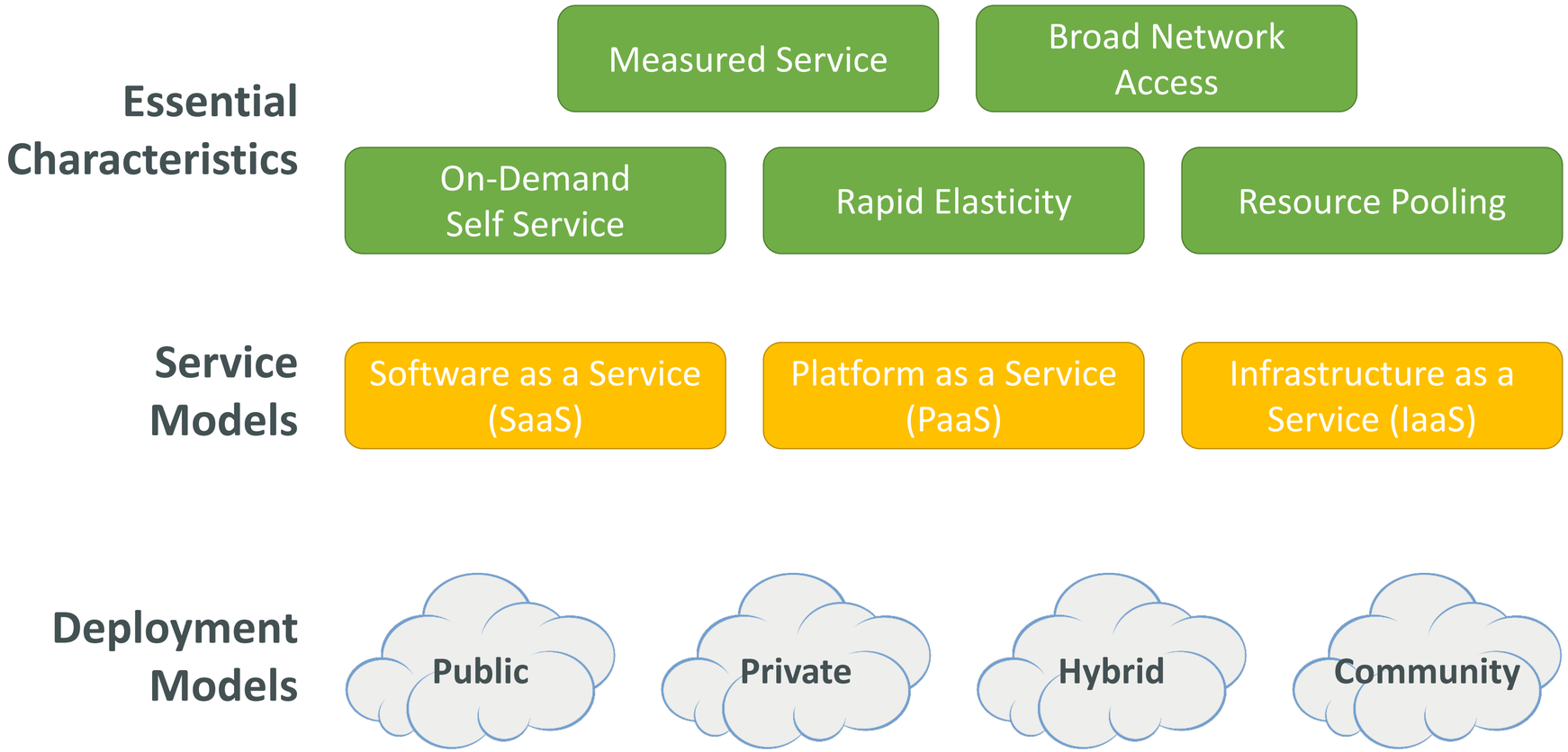
Lifecycle Management + Pay-Per-Use

What is Cloud

Ask 100 people, get 101 definitions

- **Consumers:** “storing and accessing data and programs over the Internet instead of your computer's hard drive”
- **Industry:** The idea that a company’s internal customers can order machines they need and they will be provisioned & available in minutes; billing is done by usage (no capex)
- **Amazon definition:** "Cloud Computing", by definition, refers to the on-demand delivery of IT resources and applications via the Internet with pay-as-you-go pricing

Cloud Defined – NIST Cloud Model



Reference: http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf

Cloud Example

- Users can request services for a catalog presented by a portal
- Approval processes are automatically initiated and once approved, the service provisioning automatically begins
- Provisioning is automated by an orchestration engine
- Service requests are tracked automatically
- Once service is ready the end user is notified
- Services are then measured for resource consumption and chargeback
- End user can either terminate services when no longer needed or policy can be enforced to terminate services after a defined period of time

Cloud by Example

I need to order new gear. Depending on lead times, I could start configuring it within weeks.

I need to order a few VMs through the self-service portal. I'll start **developing software** in 5 to 10 minutes.

Challenges with Implementing Cloud Successfully

Lack of end to end automation

Disparate IT infrastructure - complexity

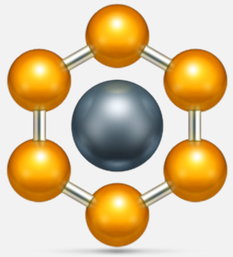
Lack of a systems approach:
Security, resiliency, SLA, physical & virtual

Infrastructure slow to adapt to application needs

Cloud Solutions Need to Deliver:

Comprehensive Automation Across Infrastructure

Automate physical & virtual across compute, network & storage



Self-Service User Experience

On-demand seamless delivery of services

Accelerate Application Development & Deployment

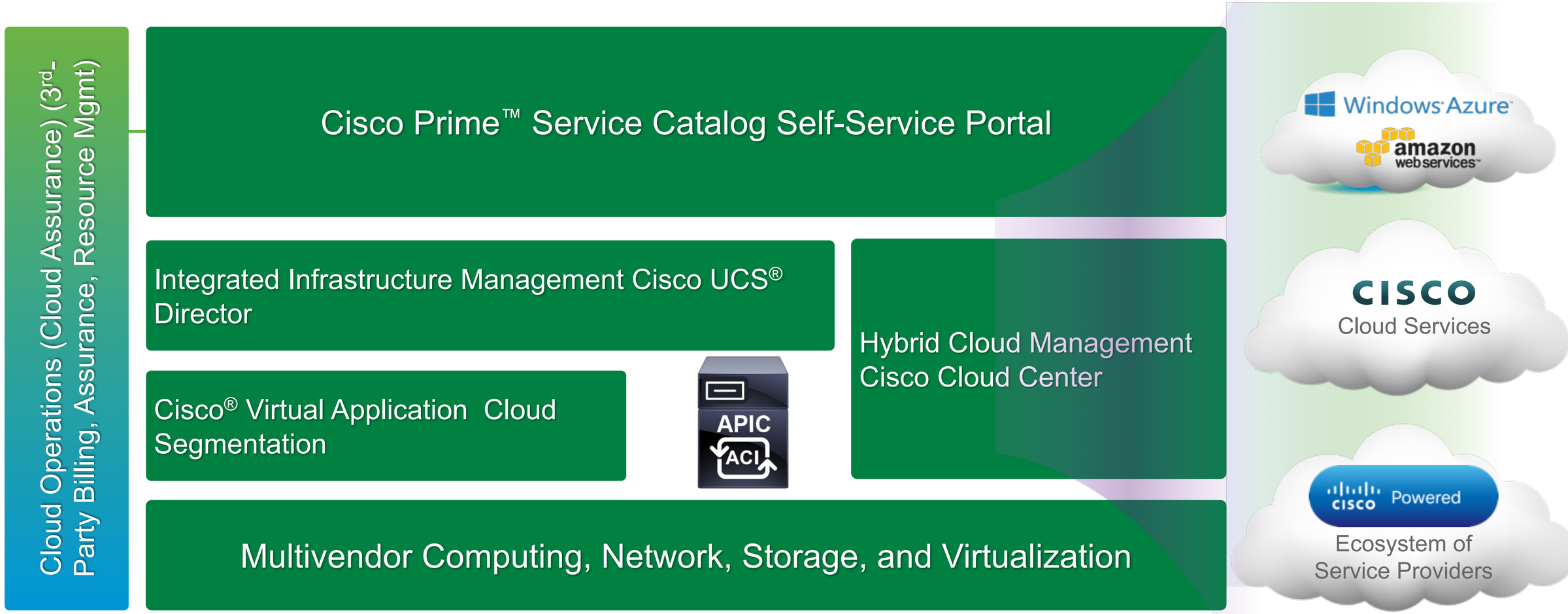
Design and deploy complete application stacks with a click

Hybrid-Ready Private Cloud

Secure connectivity to a “choice” of public cloud providers

End to End Governance

Cisco Enterprise Cloud Suite:
For Private and Hybrid Cloud Management



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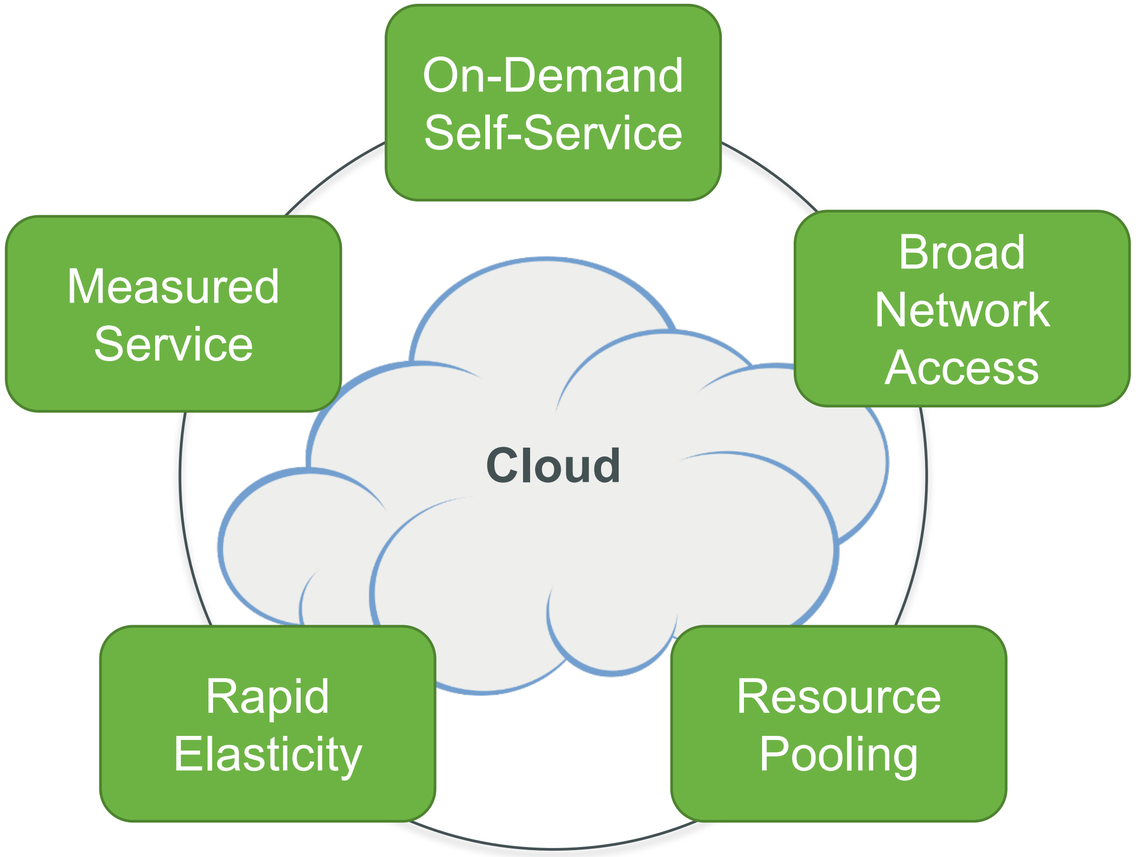
Private and Hybrid Cloud Management

Characteristic	CECS Component
On-Demand Self-Service	Prime Service Catalog
Measured Service	Prime Service Catalog / UCS Director
Rapid Elasticity	Intercloud Fabric / UCS Director
Application Provisioning	Cisco Cloud Center
Broad Network Access	Data Center Infrastructure*



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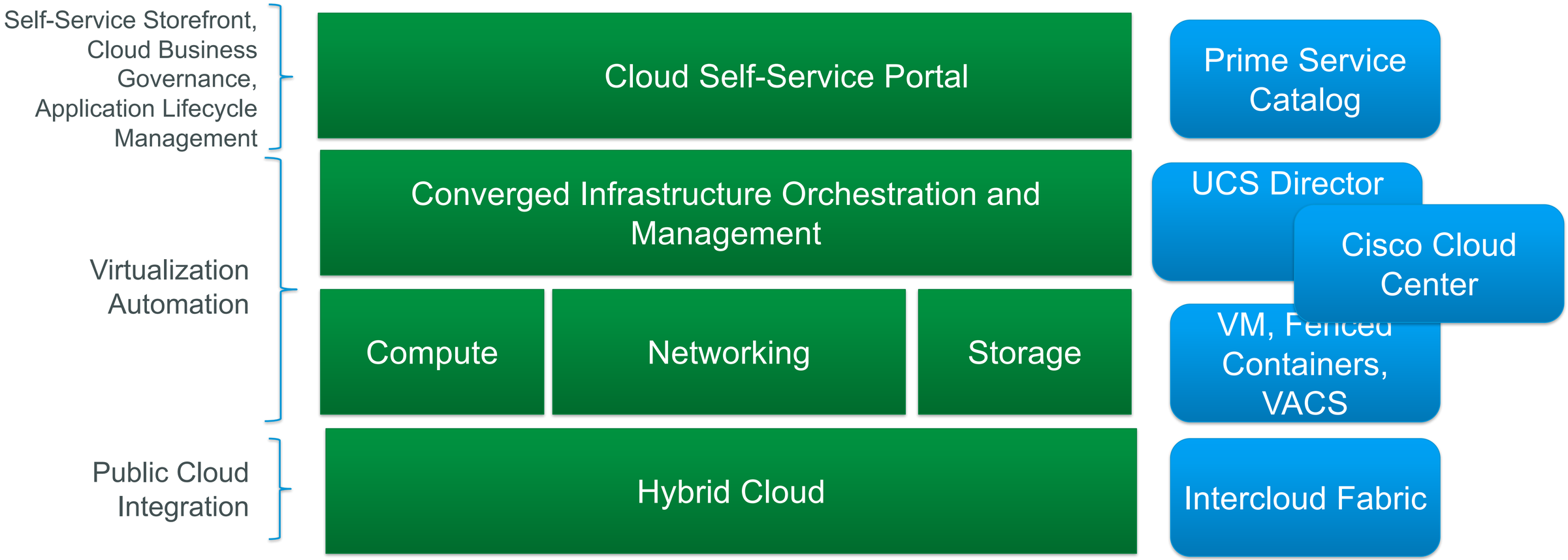
Cloud Stack Model / CECS Mapping

- IT Storefront self-service experience for UCSD standard catalog, fenced container, and VACS container



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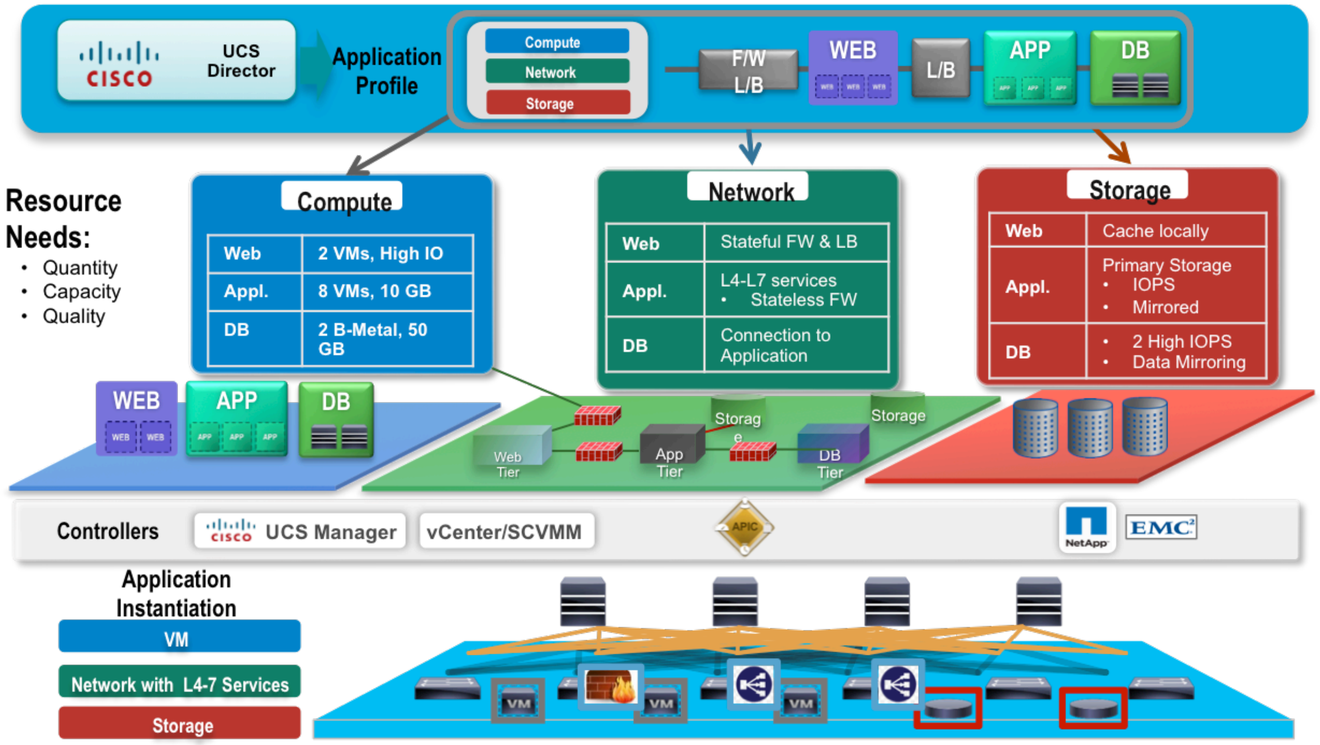
UCS Director for Converged Infrastructure Orchestration and Management

- Heterogeneous physical and virtual infrastructure automation across compute, network and storage
- Wizard driven rapid deployment of UCSD integrated infrastructure
  - FlexPod
  - vBlock
  - VersaStack
  - VSPEX
- Extensible REST API for integration with north bound orchestration systems
- 1800+ Out-of-box tasks for data center infrastructure allowing operations to quickly orchestrate IT provisioning processes



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Cloud Self Service Portal – Prime Service Catalog

- Easy and simple user interface for ordering services and lifecycle management of these service assets
- Seamlessly design and deploy complete application stacks
- Rich integration and automation APIs with support for custom branding and appearance

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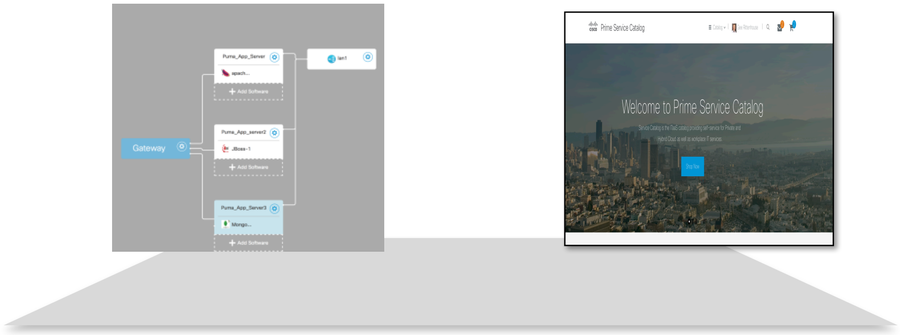
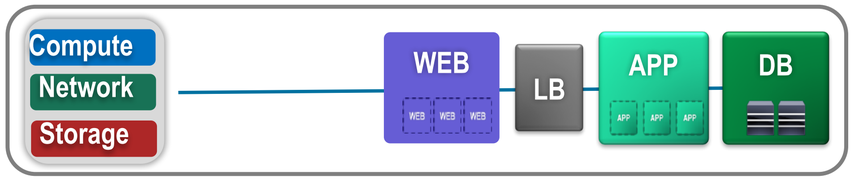
Accelerating Application Delivery – Prime Service Catalog

- Design and deploy application stacks from easy to use from a graphical user interface
- Dynamic template based provisioning of:
  - Virtual networking
  - Security services
  - Virtual machines
  - VAC
  - Fenced containers
  - ACI containers
- Over 25+ application templates allowing users to deploy enterprise application with a few clicks





Fenced/ACI Container

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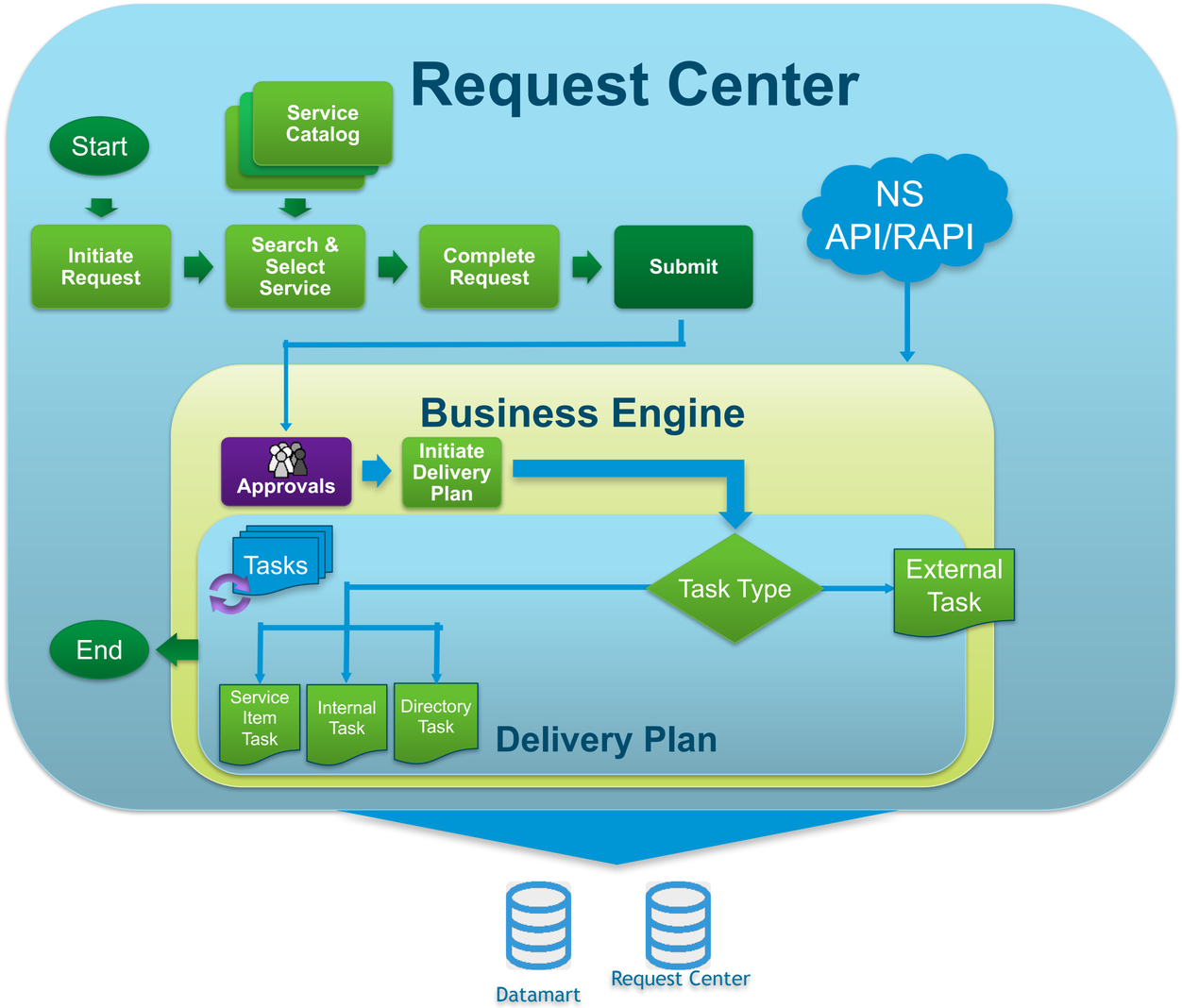
Cisco PSC Architectural Overview



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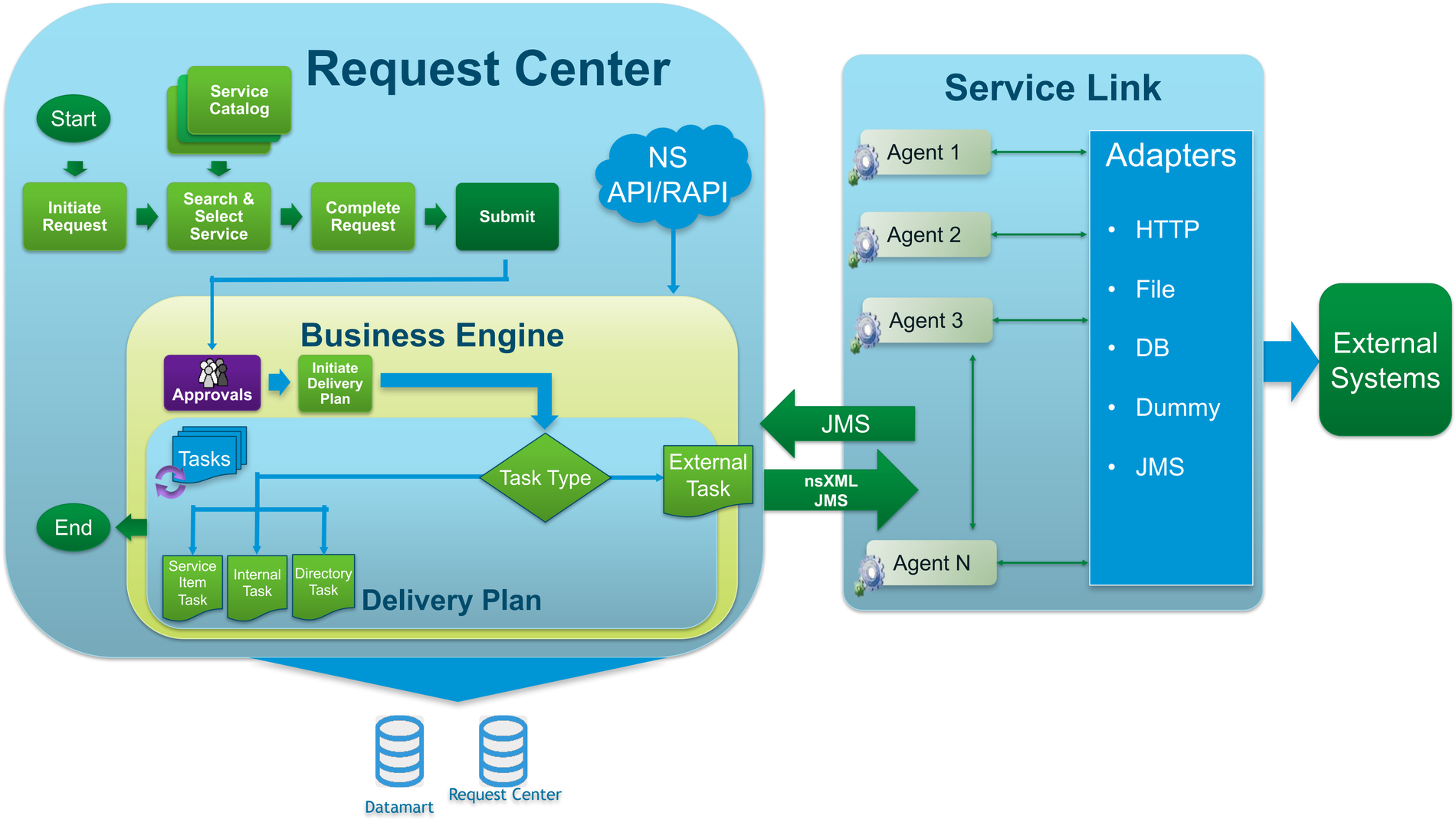
Cisco PSC Architectural Overview



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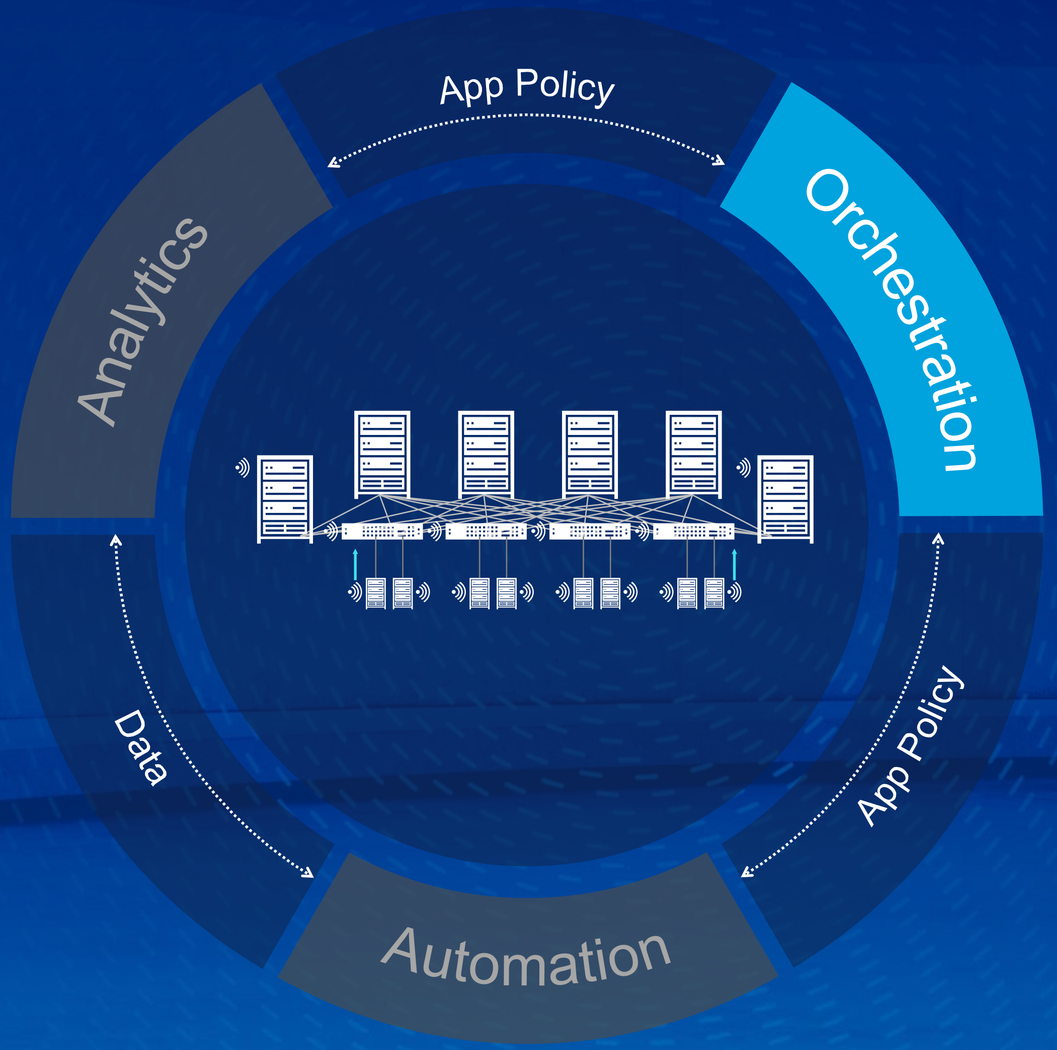
Cisco CloudCenter



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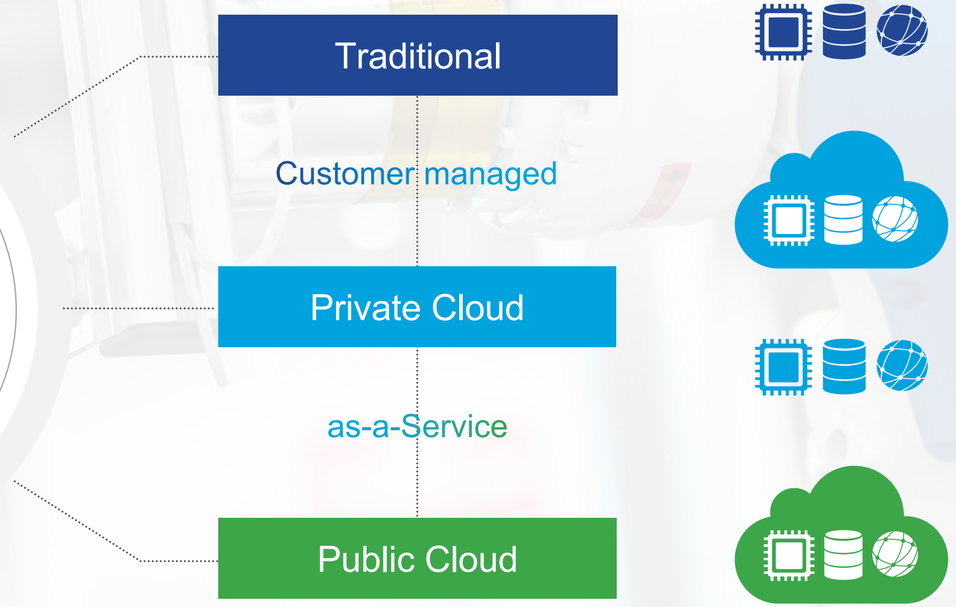
Growth in Applications and Infrastructure Choices



Cisco CloudCenter

Profile
Manage
Deploy
Model
Cisco CloudCenter

Traditional
Customer managed
Private Cloud
as-a-Service
Public Cloud

Single Integrated Management Platform
Full Application Lifecycle Management
Enterprise-Ready
Scalable
Secure

@ciscocloud

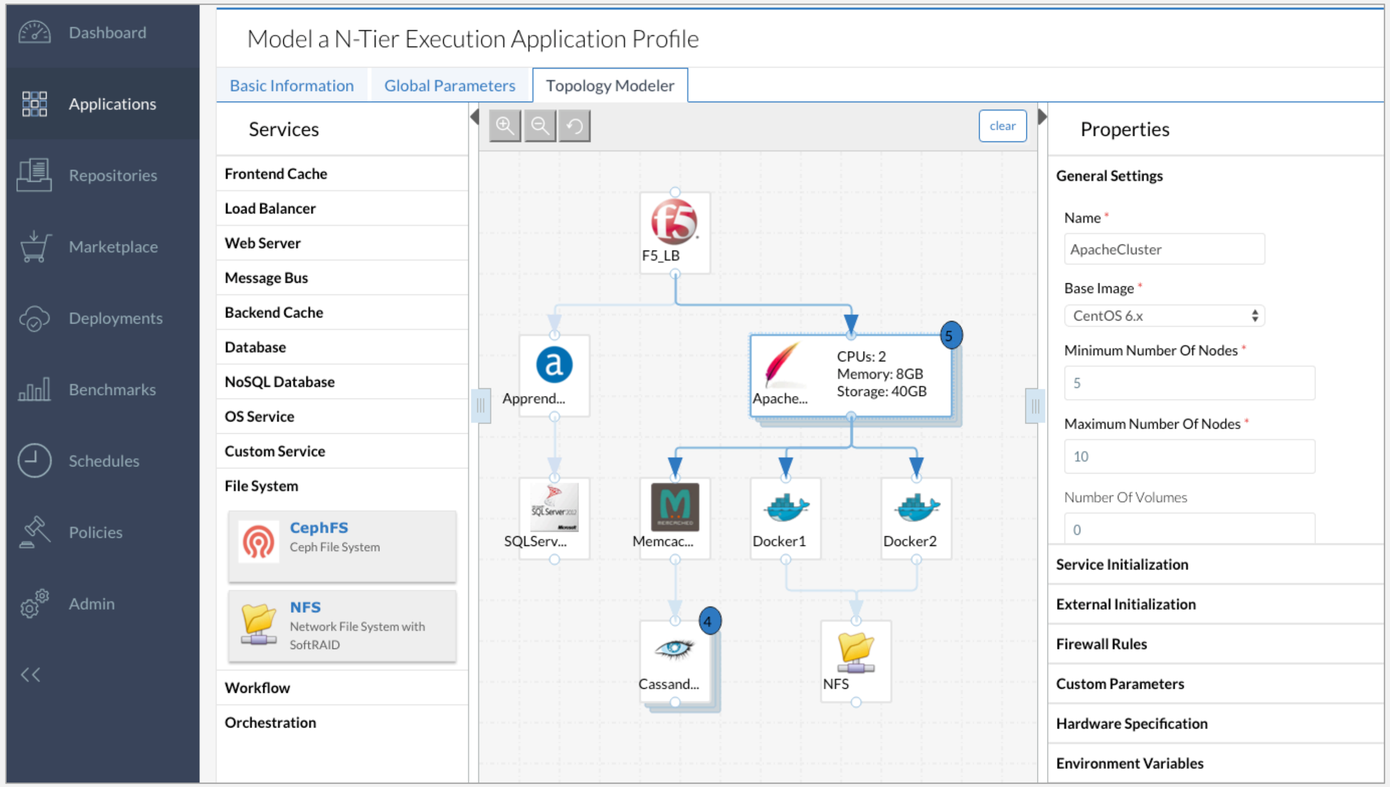
Profile Once, Deploy, Manage Anywhere

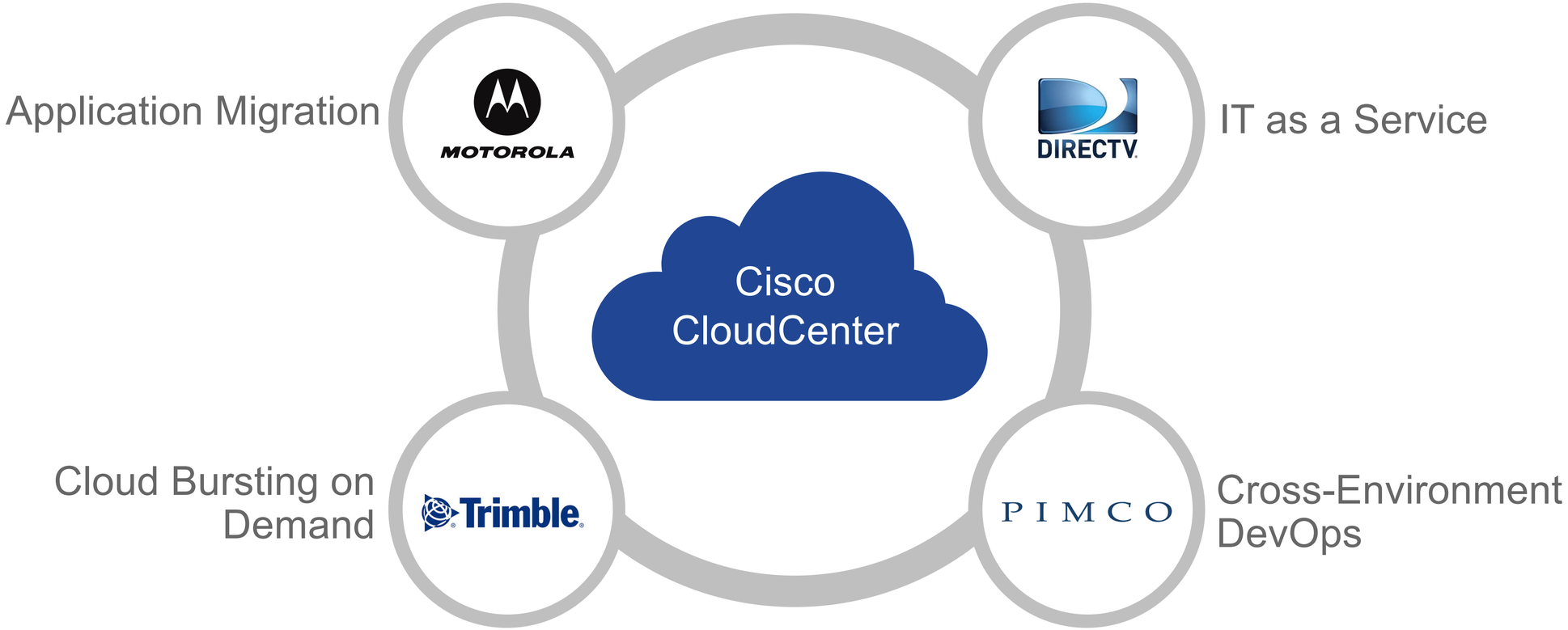
New or Existing Apps

Simple to Complex

Portable, Manageable

No Lock-in





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Feedback – Self driving Datacenter – Analytics & Orchestration

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