



RED HAT
SUMMIT

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Cisco Delivers a Highly Available Platform using OpenShift by Red Hat

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Agenda

- ✦ Who We Are
- ✦ Business Opportunities & Challenges We Set Out to Address
- ✦ Our Journey
- ✦ Enabling High Availability via Multi-Data Center Deployment
- ✦ Looking Forward and Lessons Learned

Who We Are

Who We Are



Global IT Company

“Changing the Way We Work, Live, Play, and Learn”

Broad portfolio of integrated products and solutions

Q2FY15 Quarterly Revenue \$11.9 Billion

Over 70,000 employees

Who We Are



Information Technology

Line of Business IT
Engineering IT
Infrastructure
Data Centers

Global Infrastructure Services

IaaS: Compute, Network & Storage
PaaS: Apps, DBs & Integration

Application and Web Services

Domain Architect
15+ years at Cisco
micwhite@cisco.com



Tech Lead
8+ years at Cisco
skotaru@cisco.com



Cisco IT App and Web Platforms Support

- ✦ 5,000+ Developers
- ✦ 30,000+ Java Virtual Machine Instances
- ✦ 2000+ Applications: From custom apps to packaged ERP
- ✦ All deployments and environments (Dev, Stage, LT, Prod, DR)
- ✦ Over \$30B+ dollars worth of transactions annually
- ✦ 24/7 Global Availability

Lightweight Application Environment (LAE)

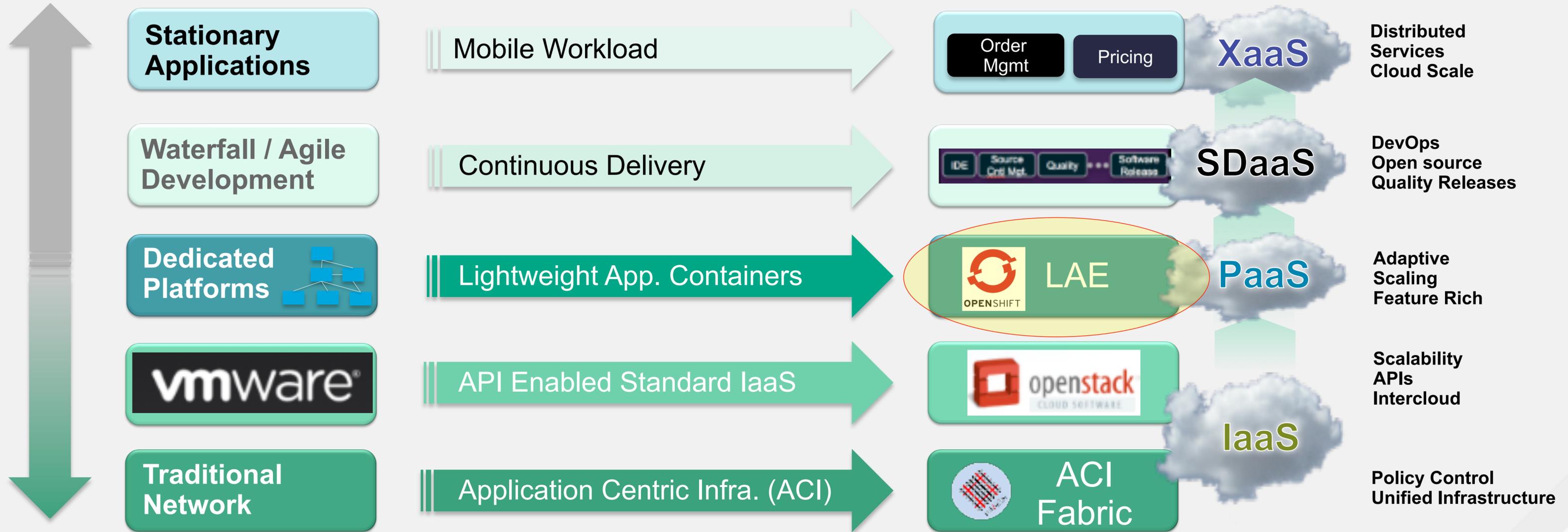
- ✦ Next Generation Platform as a Service Offering
- ✦ Built on Red Hat OpenShift
- ✦ Three years into our Journey
- ✦ One year + of Production Operations and Evolution

Opportunities and Challenges

IT Transformations @ Cisco

IT	Services Everything (2007 ...)	Data Center (2009 ...)	Fast IT & Continuous Delivery (2014 ongoing)	People Deal (2015 ongoing)
Focus	Transforms the fundamental processes of running IT	Transforms the data center environment and the services within it	Transforms the fundamental process of delivering services	Transforms the environment and the experience of our interactions
Outcomes	<ul style="list-style-type: none"> •Efficiency •Effectiveness •Accountability 	<ul style="list-style-type: none"> •Growth •Transformation •Resiliency 	<ul style="list-style-type: none"> •Iterative Change •Speed •Quality •Programmable 	<ul style="list-style-type: none"> •Connect Everything •Innovate Everywhere •Benefit Everyone

Application Centric Cloud for Fast IT



Key Capabilities and Benefits of LAE

Developer Experience

- Continuous Delivery Alignment
- Complete ALM Experience
- Rich Set of Open Source Technology Choices
- Easily Integrates with Enterprise Services
- API Driven, Multiple Client Interfaces for Managing the Applications

Flexible Infrastructure

- Adaptive infrastructure. Dynamic scaling of applications based on workload.
- True container multi-tenant isolation.
- Custom lifecycles to meet agile development requirements
- Vanity URLs
- Alignment with cloud tenant model.

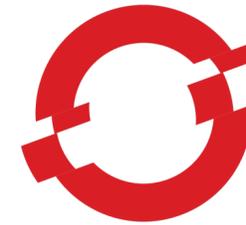
Future Proof

- Cloud-Native Platform
- Additional Technology enabled rapidly
- New capabilities introduced in LAE only (e.g. A/B stack for NZDT)
- Aligned with ACI and OpenStack Roadmaps

Cost Optimization

- Open source technology Saves License \$\$
- High Density Server Utilization
- Dynamically scale vs. Over provision for peaks

LAE Conceptual View



OPENSIFT

Core Runtime Platform

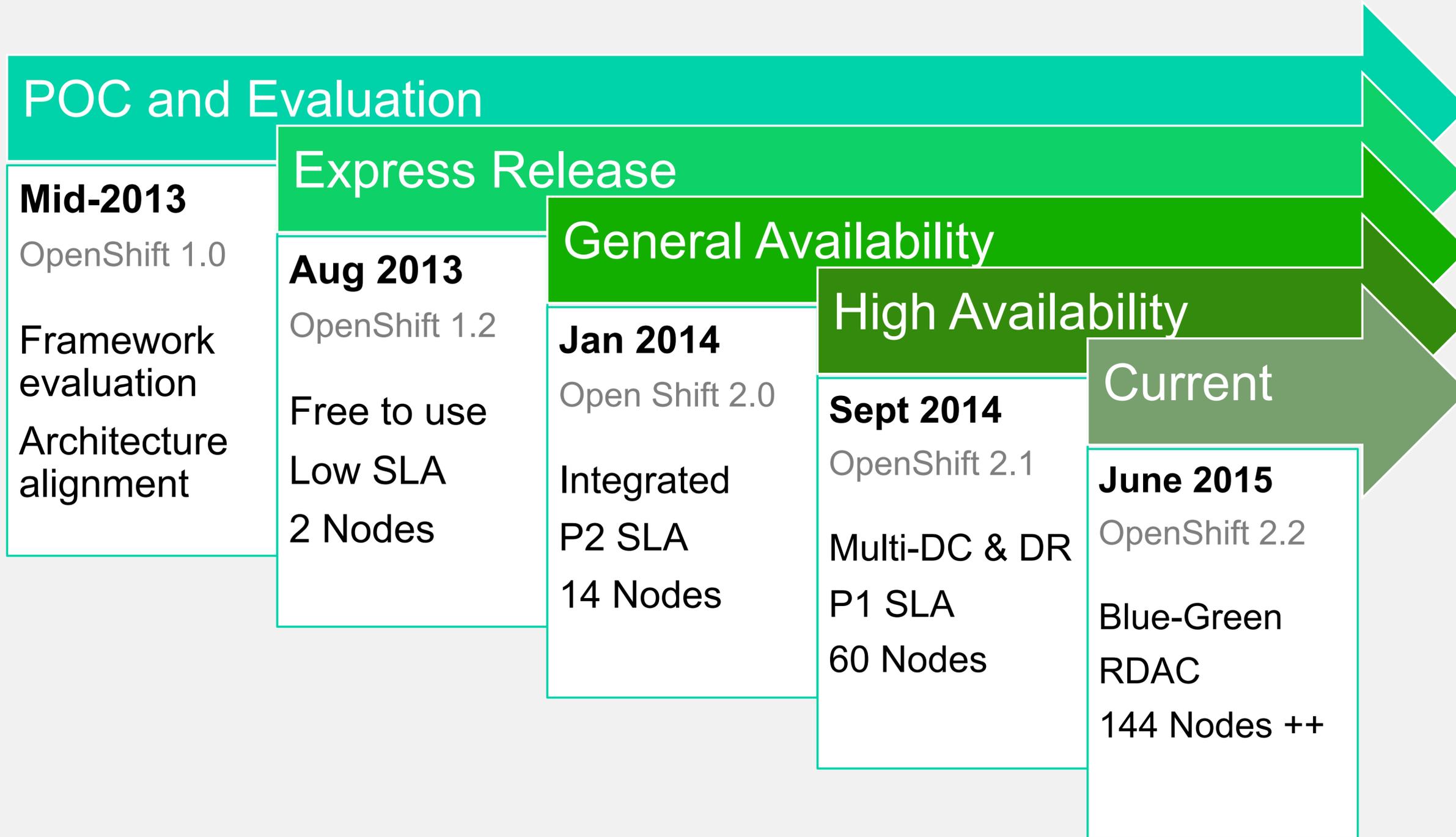
Custom Routing: DMZ, Multi-DC, Vanity URLs

Self Service Ordering, Automated Provisioning, Integration

Continuous Delivery and Ongoing Operations

Our LAE Journey

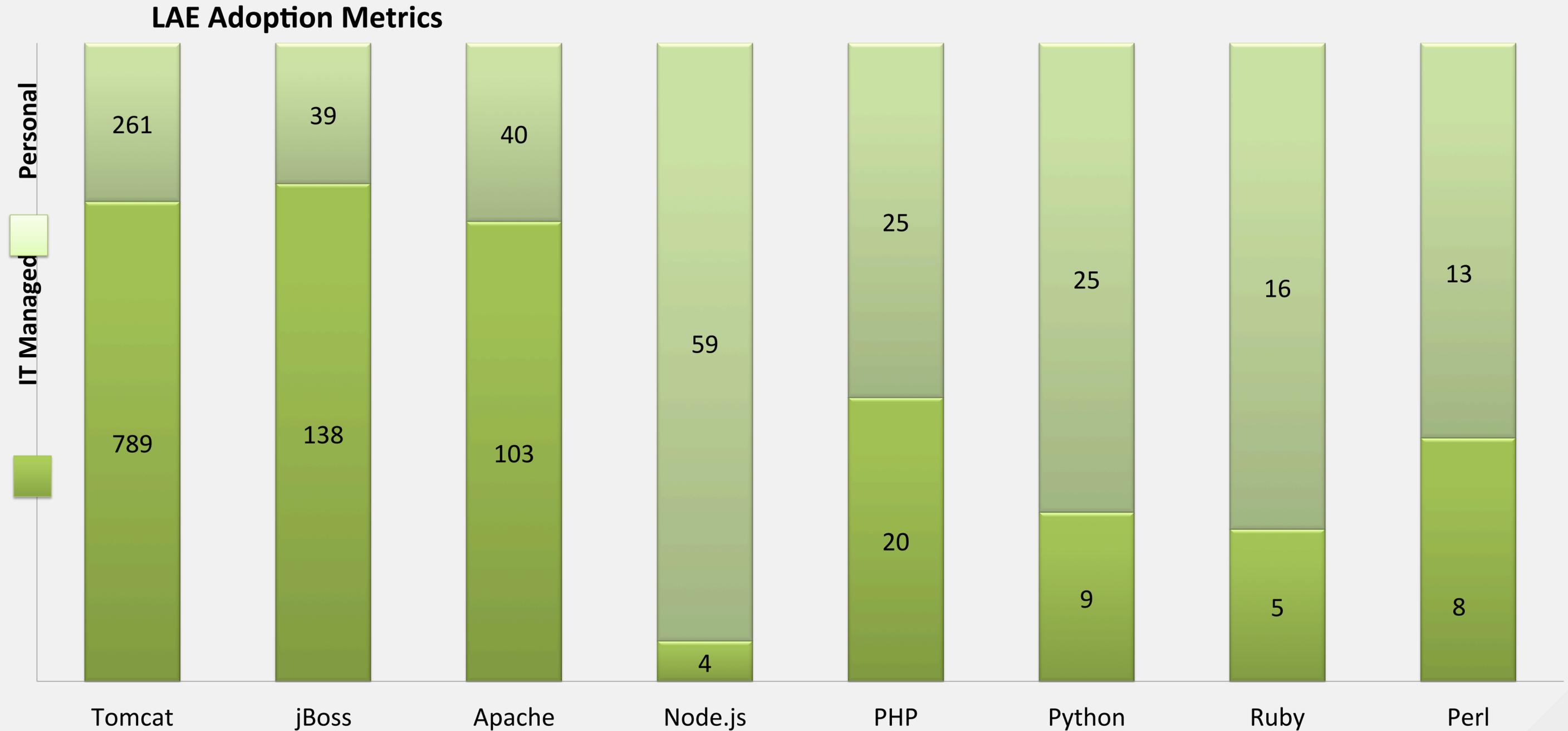
Cisco LAE Platform Evolution



Since We Spoke at Summit Last Year

- ✧ Active/Active Multi-DC capability introduced
- ✧ Active/passive DR site was added
- ✧ Two Platform-wide Upgrades
 - ✧ 2.0. → 2.1 → 2.2
- ✧ CI/CD Integration
- ✧ Capacity Expansion: From 14 to 144 Nodes and growing
- ✧ New Services Released
 - ✧ SSL Certificate as Service
 - ✧ Alias/CNAME as Service
 - ✧ Blue-Green Deployment (a.k.a Near Zero Down Time)
 - ✧ App Dynamics Cartridge for Monitoring
 - ✧ Restricted Database Access Control

Applications by Technology: 1554 Total



Enabling High Availability

Importance of High Availability

Resiliency & DR

Standard & Expected

Adoption & Migration



Customizations

Programmable Request Routing

Deployment of code to Multiple Apps



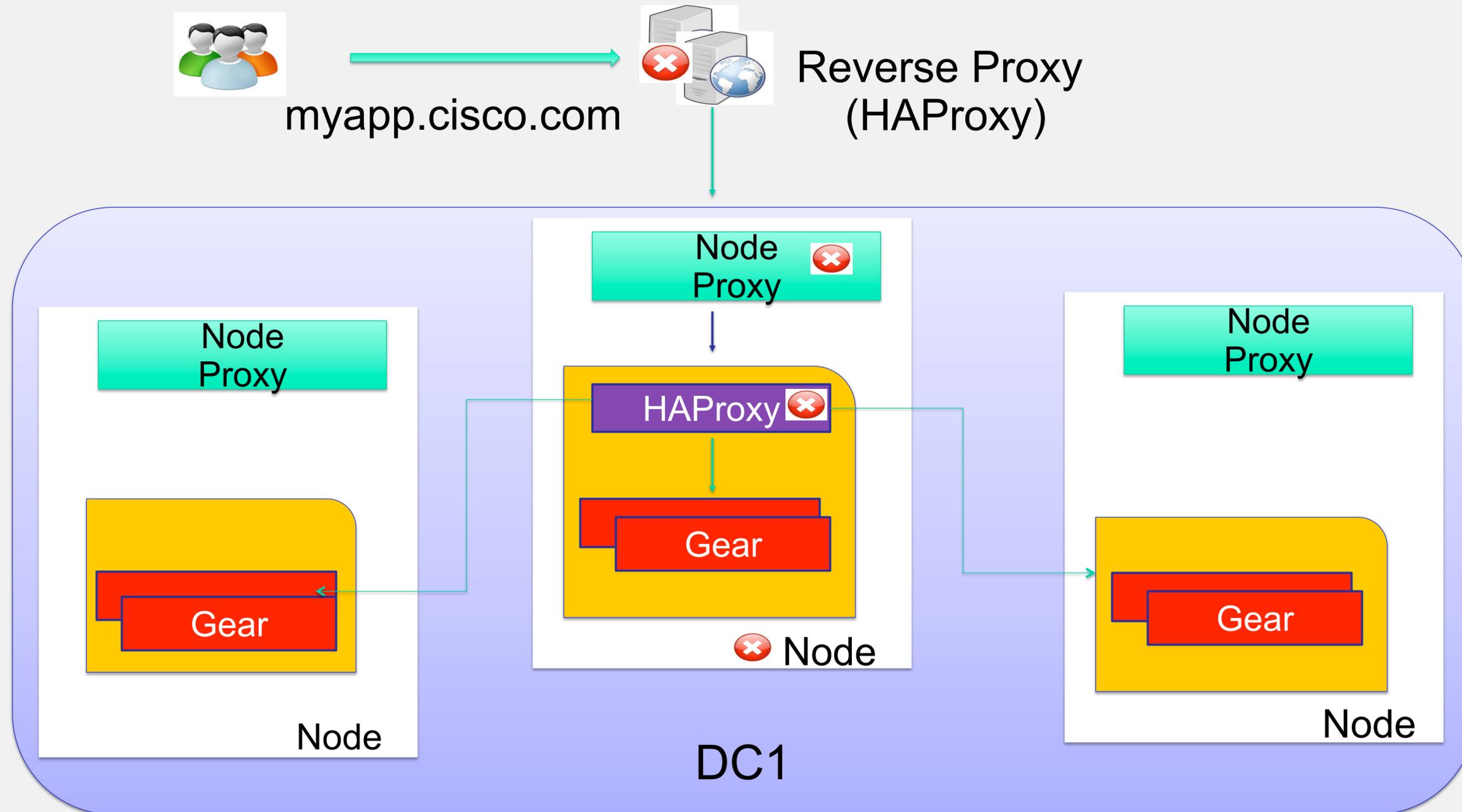
OPENSIFT

Version 2.1 Features

Availability Zones and Regions

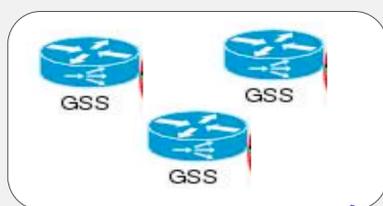
Multiple Head Gears per App

Single Points of Failure in Original Design





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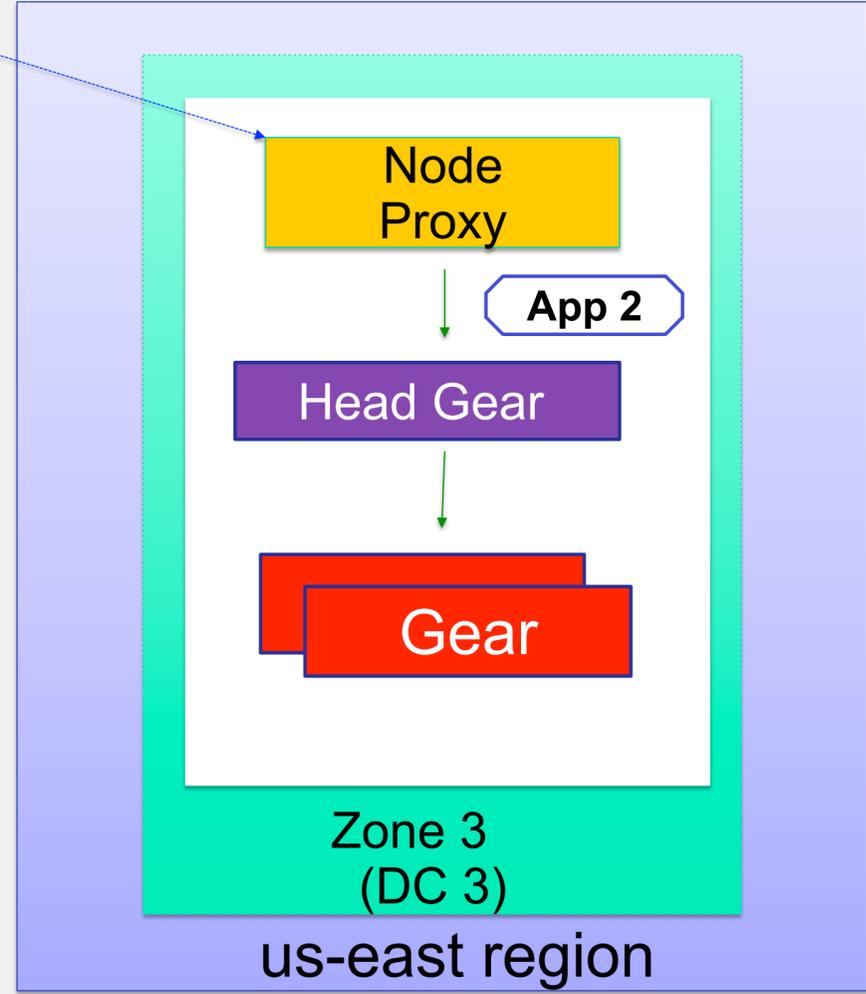
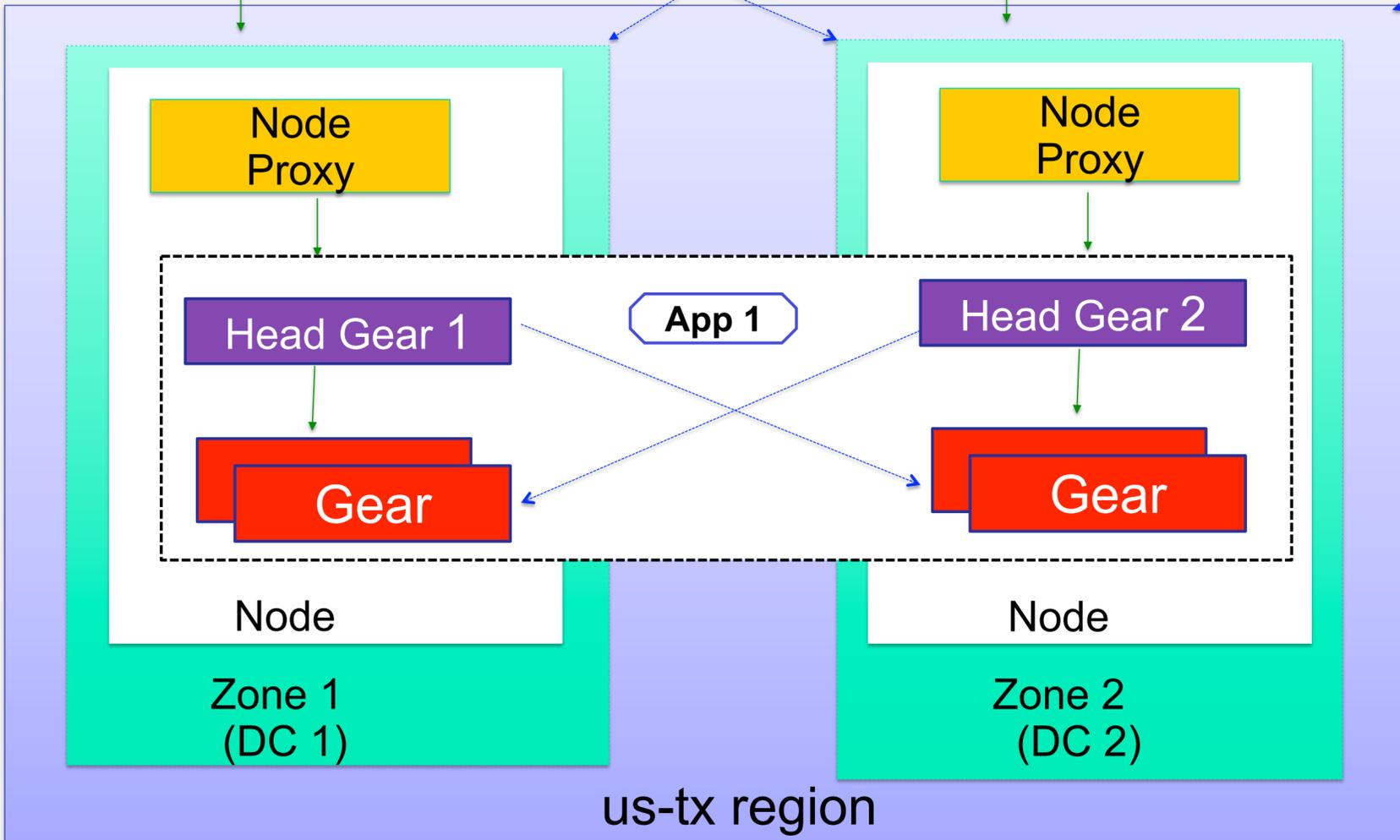
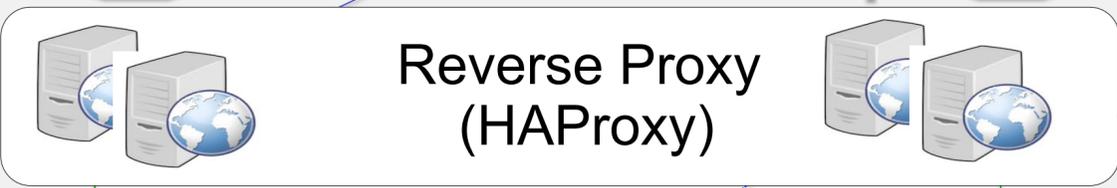
Cisco Global Site Selector (GSS)

Current HA Design

DC1

DC2

DR



Production Data Centers

Disaster Recovery Site (DR)



Additional Capabilities

- ✦ Leveraging the custom, intelligent routing layer and the deployment capabilities used for HA we are also offering:
 - ✦ Near Zero Downtime Deployments
 - ✦ A – B Testing
 - ✦ Multi-version Support

Video Demo (3:19)



Looking Forward & Lessons Learned

Looking Forward

- ✦ Continued Adoption and Scaling Out
- ✦ Deployment on OpenStack and Cisco ACI Network Fabric
- ✦ OpenShift Enterprise 3.0
 - ✦ Deterministic Definition of State
 - ✦ No Sized based districts
 - ✦ Add New Technology via Docker Images
 - ✦ Micro-Service patterns vs. Add-on Cartridges
 - ✦ Persistent Storage
 - ✦ Administrator API

Lessons Learned

Architecture

- OpenShift is Extensible...
- Align with your corporate standards
- Fit in with your architectural patterns
- Integrate with enterprise services

- Red Hat is a good partner to work with...
- Features we've requested have made it into the product
- Responsive Support Team

- You can run Production apps on OpenShift Enterprise

Implementation

- Upgrades can be challenging...
- This may be particular to Cisco based on choices we've made
- We detached from channel subscriptions
- All at once vs by district or DC
- Requires partnership between PaaS team and Compute, Storage & Networking

Adoption

- Culture and Mindset Shift
- Need to balance developer flexibility and enterprise control
- Green-field and Brown-field require different strategies
- Align with other major initiatives and form a cohesive story

Thank You!

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EXPERIENCE OPEN SOURCE.**