

DevOps on the AWS Cloud



Speakers



Brian Knotts As Chief Scientist & SVP, Applied Research at Ellucian, Brian works with product management and IT services to assure that solutions are aligned with common technology architectures and processes. By designing a global architecture to support our products and services, Brian and his team help Ellucian bring the right solutions to market faster and help all of our customers build a better unified digital campus.



Sri Vasireddy is a leader in cloud computing security, solution architecture, and investment management. He has advised several government agencies and commercial organizations about their cloud computing strategies involving cloud migration, optimization, security, and compliance. Early involvement with federal cloud computing initiatives led him to be the first solutions and security architect on the AWS worldwide public sector team. Since leaving AWS, he has worked closely with financial services and public sector customers, such as Medicaid, to secure their AWS environments.



Michael Ruiz Mike Ruiz is an AWS Solutions Architect with more than 20 years of industry experience spanning healthcare, enterprise, public sector, hybrid cloud, and extreme scale mobile/gaming verticals. Mike is a passionate technologist who currently focuses his energies on the technical enablement of AWS partner network members ranging from garage based startups to Fortune 100 companies, driving higher quality solution delivery and superior customer experiences through the use of AWS Cloud technologies.



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What is DevOps?

“DevOps is the combination of cultural philosophies, practices, and tools that increases an organization’s ability to deliver applications and services at high velocity”

<https://aws.amazon.com/devops/>



AWS CodeCommit
Store Code in Private
Git Repositories



AWS CodeDeploy
Automate Code
Deployments



AWS CodePipeline
Release Software using
Continuous Delivery



**Amazon Elastic
Compute Cloud**
Amazon EC2 – Virtual
Server Hosting



**Amazon EC2
Container Service**
Amazon ECS – Docker
Management



**AWS Elastic
Beanstalk**
Deploy and Manage
Web Applications
in the AWS Cloud



Amazon API Gateway
Secure API's at
any scale



AWS Lambda
Deploy and scale web
applications and services



Amazon CloudFront
Global Content Delivery
Network (CDN)



AWS Config
Resource Inventory,
Configuration History
and Change Notification



AWS CloudTrail
User activity and AWS
API call recording



Amazon CloudWatch
Monitoring, alarms, and
dashboards

...and more than 40 other services.

DevOps for Business Transformation at Ellucian

Presence:

USA: Herndon, Philadelphia, Los Angeles

India: Udaipur, Hyderabad



About Ellucian

We provide technology solutions and services that remove barriers, helping higher education institutions achieve student success. It's been our total focus for more than 40 years. Our passion speaks for itself. We serve:

2,400



Institutions

18M



Students

40



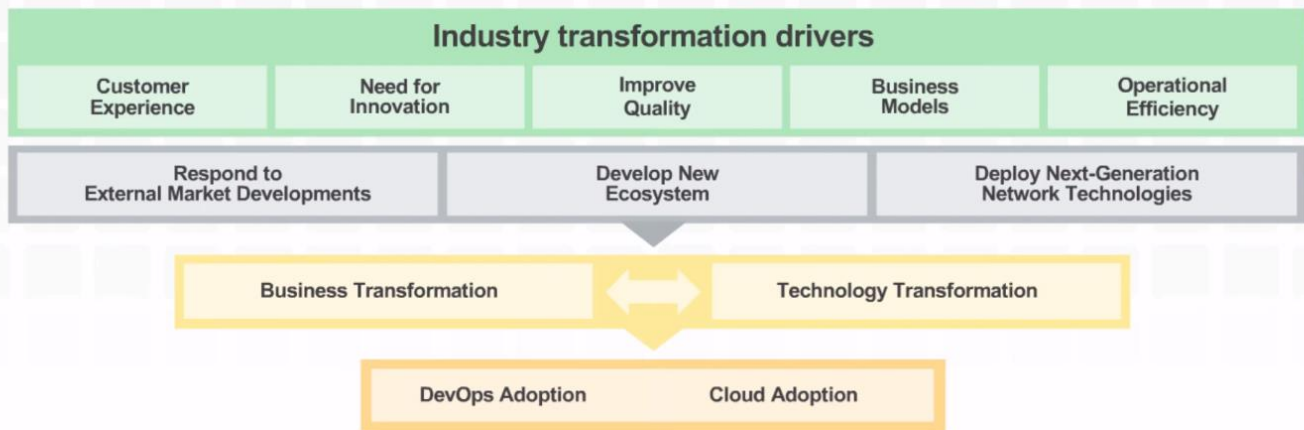
Countries around the globe

REĀN & Ellucian Relationship

- Ellucian began working with REĀN in mid-2014 with the our expanded cloud strategy
- Ellucian continued the relationship in early 2015 with the beginning of our DevOps journey
- REĀN helped Ellucian evaluate the core technologies of our DevOps toolset
- REĀN continues to help Ellucian build out pipelines such as Ellucian Ethos Mobile, Banner and Colleague and others

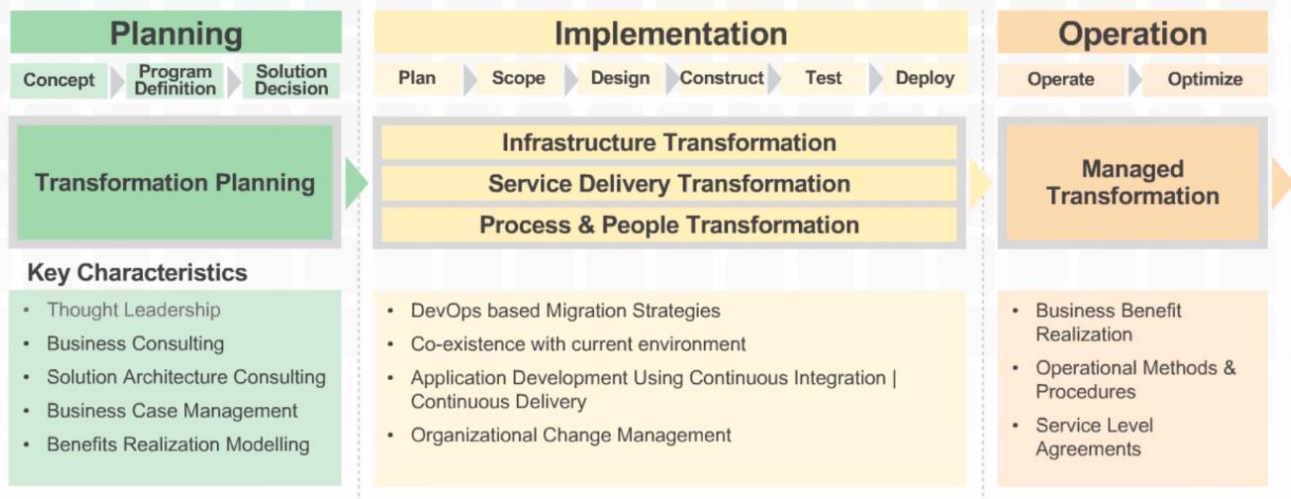
Ellucian DevOps Transformation Drivers

It is commonly agreed that “Transformation” programs are triggered by strategic drivers, are sponsored by executive management, and involve business and technology changes



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The Different Phases Of Transformation



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REAN Organization Profile



Established: 2013

Presence: USA and India

Number of Employees: 150

AWS Certifications: 80+
(including 8 Professional
Certifications)

- Management team consisting of executives formerly from Fortune 500 Enterprises - AWS, Amdocs, Merck, and Cognizant with deep AWS cloud computing experience
- Recognized by TechTarget as the top AWS Partner providing innovative DevSecOps services
- 24x7 follow the sun model with offices around the world with continuous operations in multiple time zones - EST, PST, and IST



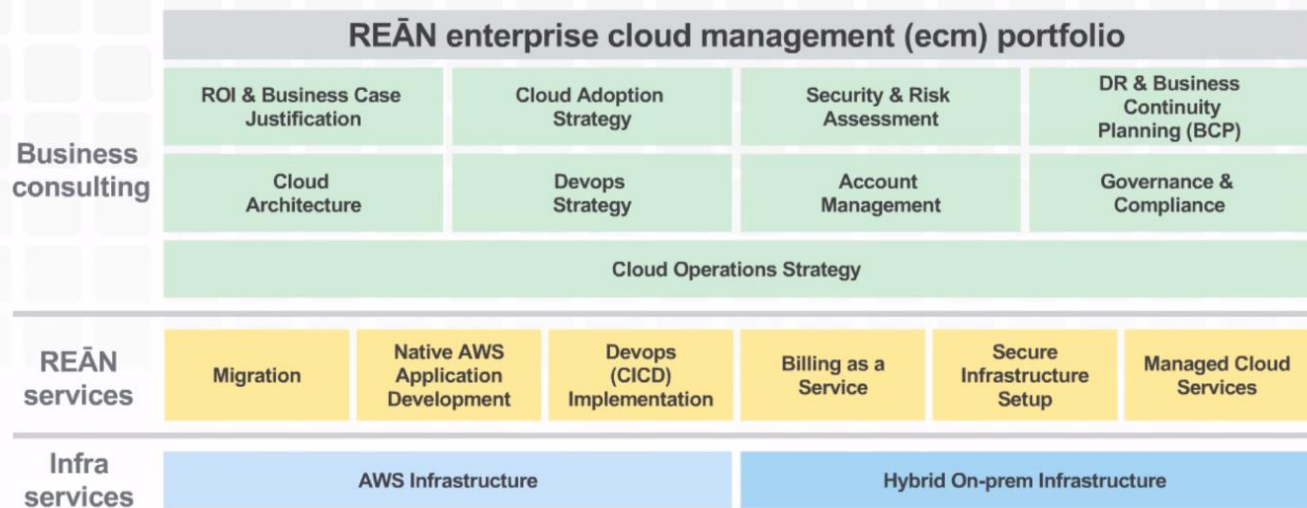
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AWS Premier Partner w/ DevOps Competency



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REĀN Service Offering



DevOps Facilitates Measurement and Visualization



- Automates build, test, and deployment across environments
- Helps measure and visualize throughput and stability

DevOps Measures

- Throughput Measures
 - Deployment Frequency – How frequently organization deploys code
 - Deployment Lead Time - Time required for changes to go from “code committed” to code successfully running in production.
- Stability Measures
 - Mean time to recover (MTTR) -Time required to restore service when a service incident occurs (e.g., unplanned outage, service impairment, etc.).

High-performing IT organizations deploy 30x more frequently with 200x shorter lead times; they have 60x fewer failures and recover 168x faster.

Source: Puppet Labs - 2015 State of DevOps Report



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Qualities of High Performing Orgs

- High performing organizations such as Amazon, Google, Facebook, Twitter, Netflix demonstrate:
 - Reliability
 - Stability
 - Security
 - Customer responsiveness

Processes and techniques followed by these organizations have come to be known as DevOps

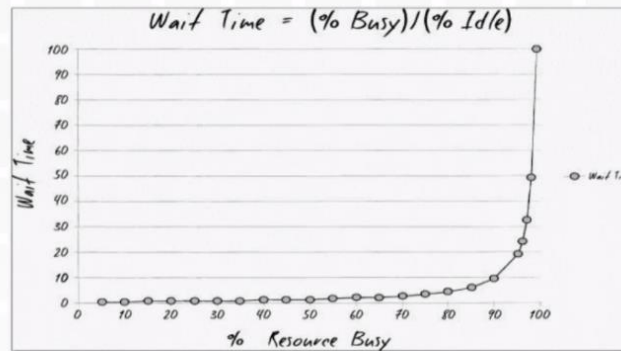
Source: The Phoenix Project: A Novel About IT, DevOps and Helping Your Business Win



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Opportunity at Pre-DevOps Orgs

- People
- Process
- Technology



DevOps helps free resources and avoids bottlenecks in the organizations

Metrics from High Performing Orgs

Company	Deploy Frequency	Deploy Lead Time	Reliability	Customer Responsiveness
Amazon	23,000/day	Minutes	High	High
Google	5,500/day	Minutes	High	High
Netflix	500/day	Minutes	High	High
Facebook	1/day	Hours	High	High
Twitter	3/week	Hours	High	High
Most Enterprises	Once every 9 months	Months or Quarters	Low/Med	Low/Med

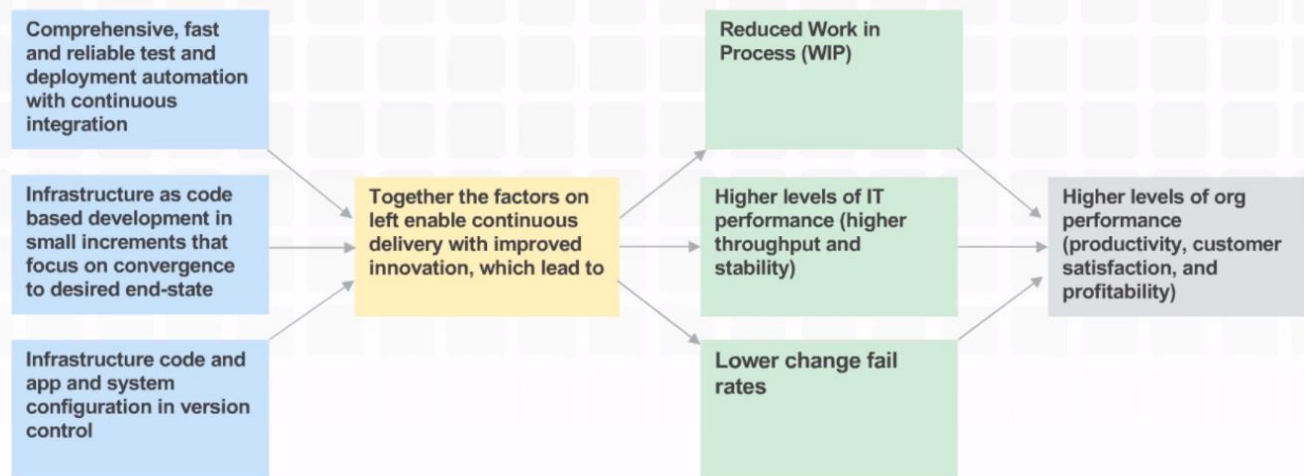
Source: The Phoenix Project: A Novel About IT, DevOps and Helping Your Business Win



DevOps Myths

- DevOps Replaces Agile
- DevOps Replaces ITIL
- DevOps Means NoOps
- DevOps is Only for Open Source Software
- DevOps is Just Infrastructure as Code or Automation
- DevOps is only for Startups and Unicorns

Successful DevOps Framework



Source: Puppet Labs - 2015 State of DevOps Report



Cloud Enables DevOps



No Up-Front
Expense



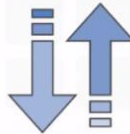
Low Cost



Pay Only for
What You Use



Programmatic
Deployment



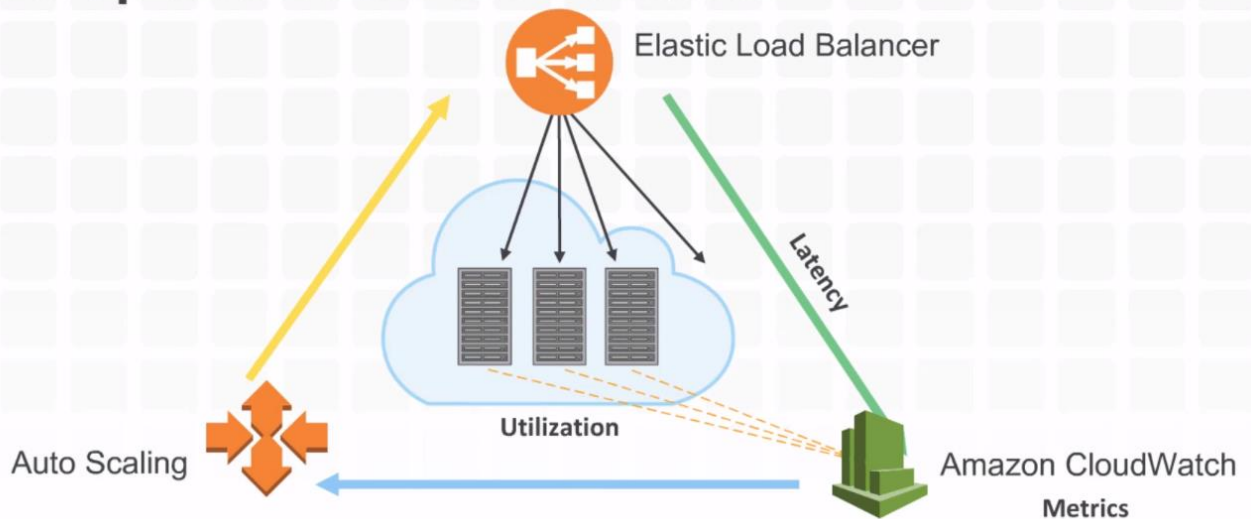
Scale Up and Down
On-Demand



Improve Agility &
Time-to-Market



Scale Up and Down On-Demand



Cloud Provides High Reliability

The diagram illustrates a multi-availability zone architecture for high reliability. At the top, a **Load Balancer** is shown with blue arrows pointing to two **Availability Zones**: **Availability Zone - A** and **Availability Zone - B**. Each zone contains an **EC2** instance. The EC2 instance in Zone A is labeled **Ephemeral** and is connected via **Network IO** to an **EBS Snapshot**. The EC2 instance in Zone B is also connected via **Network IO** to an **EBS Snapshot**. A central **Auto Scale** box is connected to both EC2 instances and the EBS Snapshots. Below the Availability Zones, the region is identified as **US East**. At the bottom, **Amazon S3** is shown, which is connected to the **EBS Snapshots** in both Availability Zones. The entire architecture is enclosed in a dashed box.



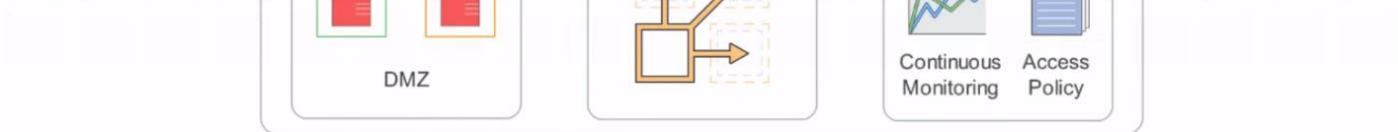
Source: Amazon Web Services



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REAN Secure Virtual Private Cloud

The diagram illustrates the REAN Secure Virtual Private Cloud architecture. It shows a central 'Internet' cloud. On the left, a 'Mobile Client' (represented by a smartphone icon) connects to the Internet via an 'IPSec VPN Connection' (indicated by a green line and a key icon). On the right, 'Users' (represented by two people icons) connect to a 'Browser' (represented by a web page icon) via an 'HTML5 VPN Connection' (indicated by an orange line and a key icon). Both connections lead to the Internet cloud. Below the Internet cloud, there are two main cloud service providers: 'AWS' (represented by an orange cloud icon) and 'VPC' (represented by a blue cloud icon). The AWS cloud contains two server icons, each with a red padlock icon, indicating encryption. The VPC cloud contains two server icons, each with a red padlock icon, and a document icon. To the right of the VPC cloud is a 'Corporate Data Center' (represented by two server racks) and 'Administrators' (represented by two people icons). A 'Disk Encryption Key' (represented by a green key icon) is shown between the Corporate Data Center and the Administrators. The entire architecture is set against a background of a grid of squares.



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DevOps and Cloud at Ellucian

DevOps

- Git for source code repositories
- Artifactory for binary repository
- Vagrant Development Environments
- Jenkins Continuous Integration Server
- Ansible Playbooks for server bootstrapping
- Automated build, testing and reporting for unit, security, load, performance

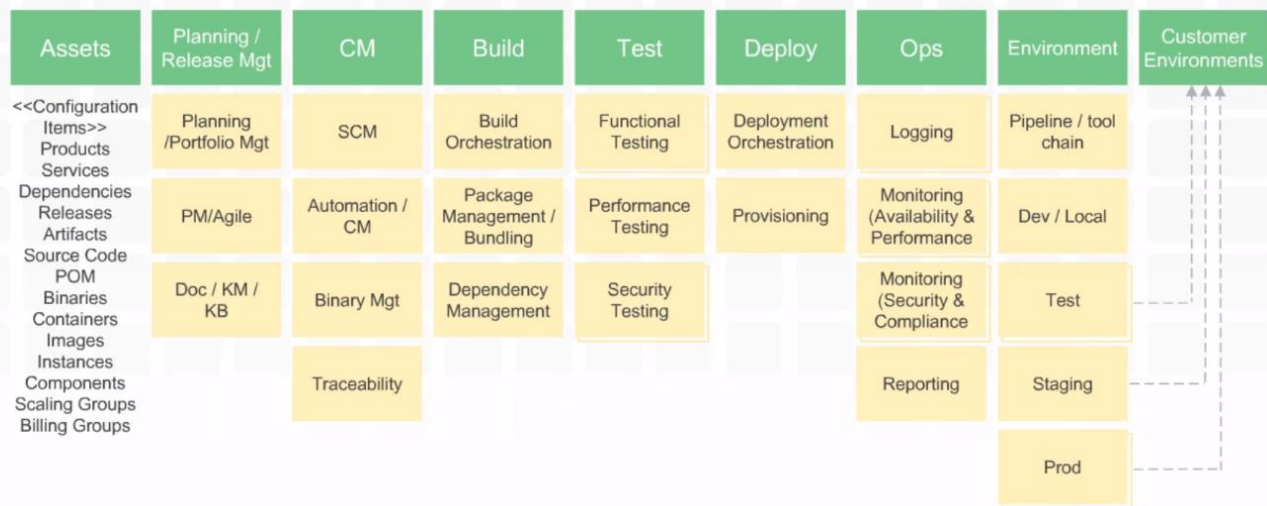
Cloud

- Multi-Region for Global Presence
- Auto-Scaling
- Spot-Instance Enablement
- Auto-Scheduling
- Docker for application containers
- Terraform for multi-cloud deployments

DevOps Transformation Benefits

Before DevOps Transformation	After DevOps Transformation
Product teams practicing continuous integration not continuous deployment	Product teams leverage DevOps in their SDLC
Manual deployment processes that took days/months	Automated deployment process that takes minutes
Inconsistent deployment cycles that depend on tribal knowledge, guess work and persistence (prone to error)	Consistent deployment cycles that leverages knowledge codified as jobs
Deployments would require teams from multiple locations	Deployments depend upon code repositories and Jobs executed on a pipeline

DevOps Actors and Components



Ellucian DevOps Next Steps

- Move Banner to RDS Oracle
- Make Banner elastic and highly available (multi-AZ support)
- Reduce license cost
 - Move from WebLogic to Tomcat
 - Run Tomcat on CentOS
- Replicate sessions on Tomcat instances to hold sessions during scale down
- Game changing

Cloud + DevOps = High Performance Orgs

- Embody experts knowledge into playbooks to eliminate bottlenecks, increase innovation, and reduce time to market
- Create ephemeral/immutable infrastructure to keep your costs low
- Infrastructure that scales up and down on-demand to offer reliable service to customers

Key Take Away

- Take advantage of the benefits Cloud offers to enhance your DevOps strategy
- Leverage DevOps in your organizations to increase reliability and improve customer outcomes for the services you offer

Purpose

- Core principles of leveraging DevOps to transform business
- What is DevOps and how Cloud enables DevOps
- How Ellucian leveraged DevOps to transformation their business

Exclusive Promotion for DevOps Webinar Attendees

REAN Cloud will provide a **FREE** DevOps migration for one application to the first 5 prospects that contract* with REAN Cloud services.

This is approximately a \$20,000 value!

To redeem promotion, you must email: DevOps@reancloud.com

*Restrictions may apply



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Questions & Answers