

5C's Series

Scaling Cloud Infrastructure for Millions of Devices

 #5CsDevOps

aws

nDimensional

nclouds

5 C's That Changed the Future

CI, CD, Containers, Cloud & Culture

Case studies in creating sustainable systems that empower the business to deliver innovation faster, with predictability.

- **REPLAY - Prodea/Arrayent - CI/CD, Containers & Culture**
- **REPLAY - nDimensional - Cloud Infrastructure & Culture**
- **Tue, May 15 - LendingHome - Cloud Migration & Containers**

**SAVE
THE
DATES**

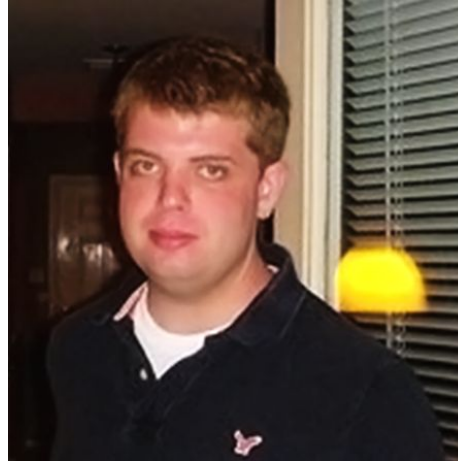
Join us for the series, and bring your team!

Scaling Cloud Infrastructure for Millions of Devices



Dr. Rakesh Chalasani

VP Technology, nDimensional



Doug Cliche

Solutions Architect, AWS



JT Giri

CEO & Co-founder, nClouds



nDIMENSIONAL

- Pioneer in building machine learning applications to solve industrial-scale challenges for nearly 30 years.
- One of a select few end-to-end platforms for operationalizing machine learning in real-time, production settings.

Client Use Cases

nDimensional



Detecting issues and determining root causes in monitoring and diagnostic centers.



Detecting credit card fraud.



Optimizing fuel efficiency, emissions and availability of electric power generators.



Predicting bankruptcy.



Authorizing radiology services for insurance companies.

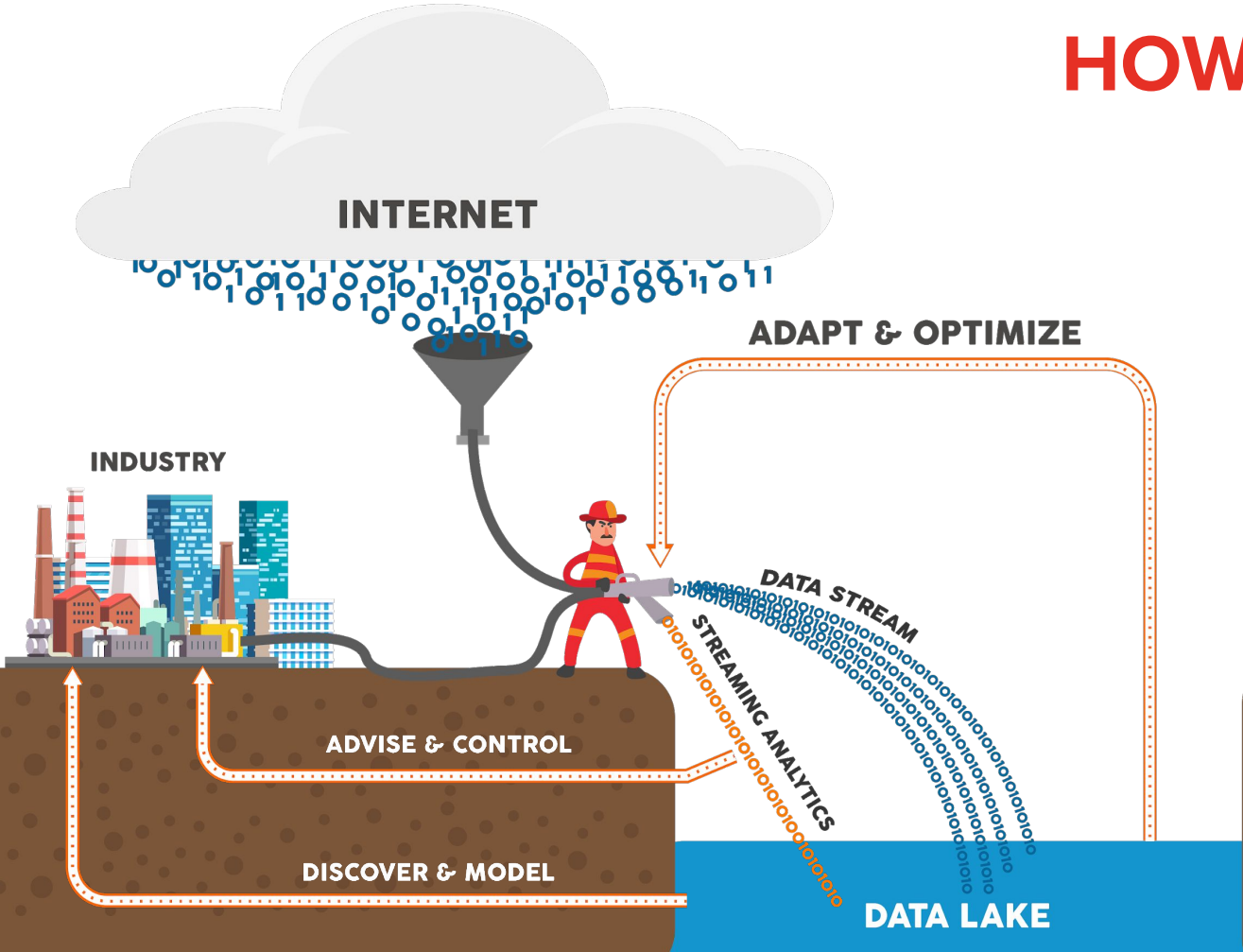


Using satellite imagery for mapping forest changes.



Predicting sports injuries and player performance.

HOW WE DO IT



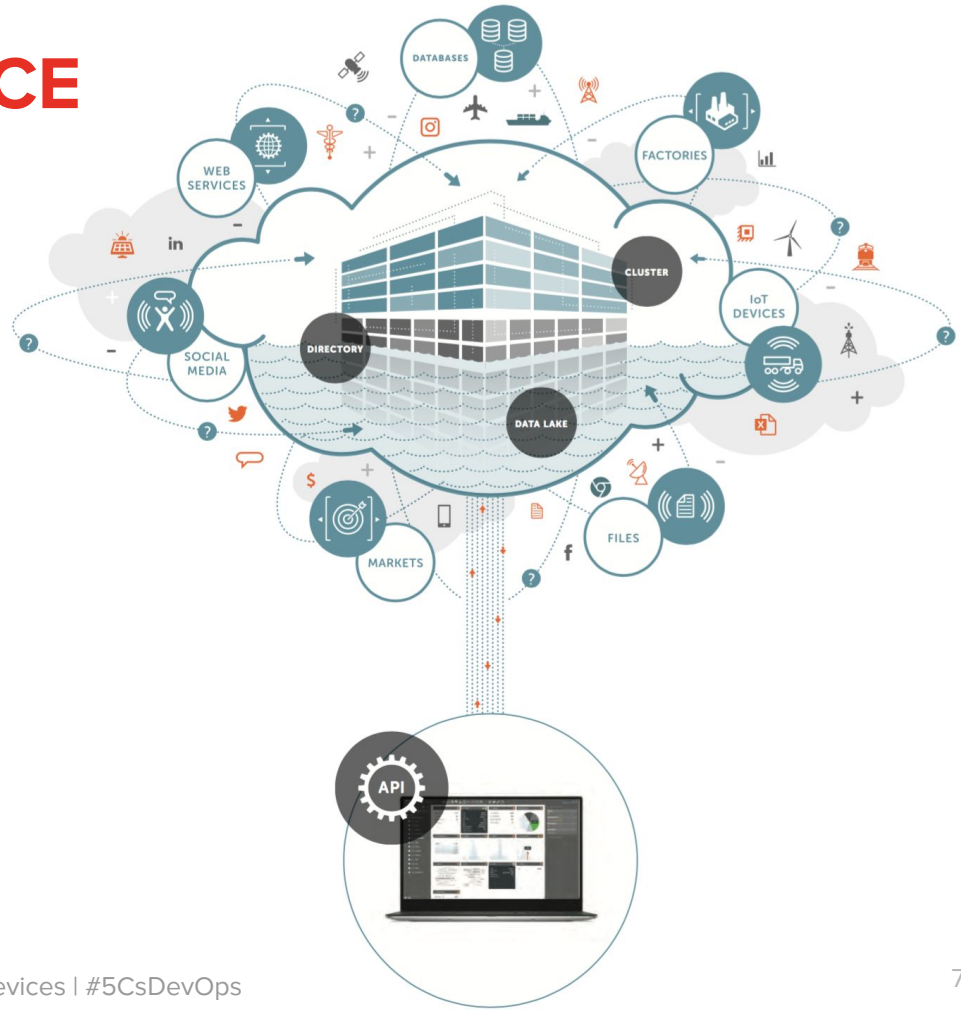
SOLUTION FRAMEWORKS

- **Monitoring.** Leverage data and sensors to **detect** anomalies and known events.
- **Diagnostics.** Quickly **classify** the root cause of operating events and anomalies.
- **Forecasts.** Efficiently **estimate** key operating events and conditions before they can be measured, or **predict** them before they occur.
- **Dashboards.** Continuous KPI reporting to **discover** patterns and **advise** strategic decisions.
- **Optimizations.** Closed-loop **control** of key business objectives within operating constraints.



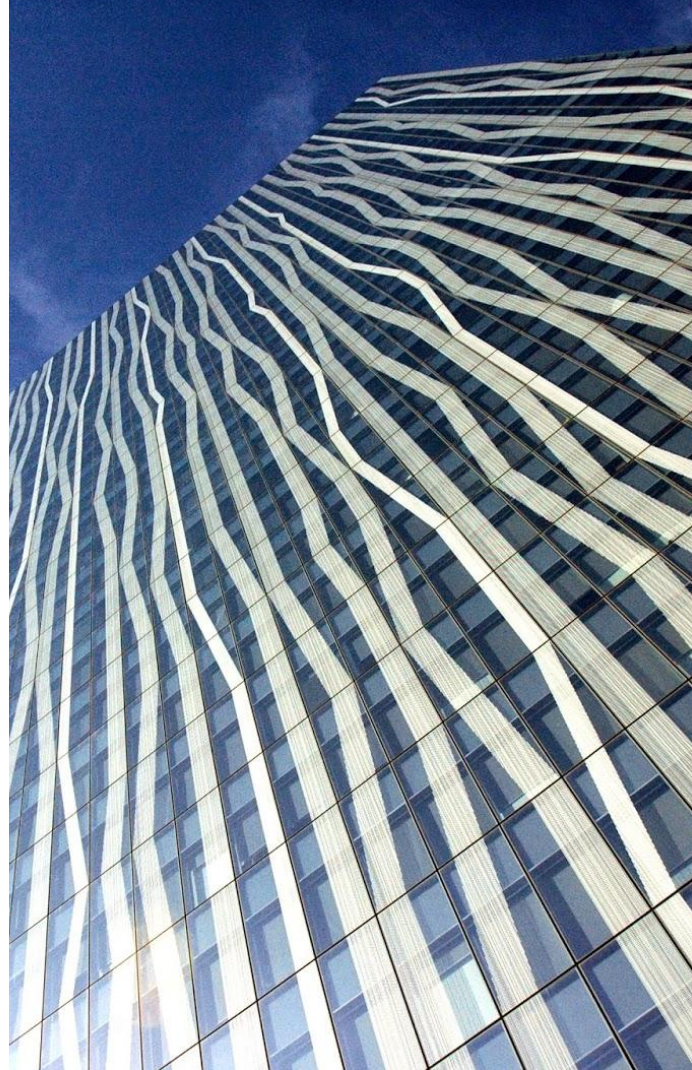
PLATFORM-AS-A-SERVICE

- **Full stack.**
 - Visualizations
 - Advanced analytics
 - Machine learning
 - Application development
- **Consumer-grade.**
 - Code-free
 - Natural, intuitive & concise
- **Enterprise-grade.**
 - Cluster backed
 - Data lake
 - Real time analytics
 - Full API



CURRENT STATE - LATE 2016

- Pushed cloud-native application to production.
- Grew from a few thousand to hundreds of thousands of sensors.



CHALLENGES

- **Stability.** Latency (data must be current), and scaling up and down clusters.
- **Downtime.** 5-6 hours of downtime -- for a 24/7 alert system with SLA of less than one hour.
- **Security.** No VPC; governance; access.
- **Monitoring.** No monitoring of the cluster to automate response to failures.



SOLUTION

- **Scalability.**

- Automated pipelines for push-button ability to add/remove nodes to cluster (Chef, CloudFormation, OpsWorks).
- Built redundancy and auto-scaling features into the infrastructure.

- **Redeployments.**

- Automated build process and separated from redeployments.
- Enabled deploy using best practices with proper VPC setup and private and public routes.
- Streamlined deploy process with 0 downtime and automated build process; enabled blue-green deployments.

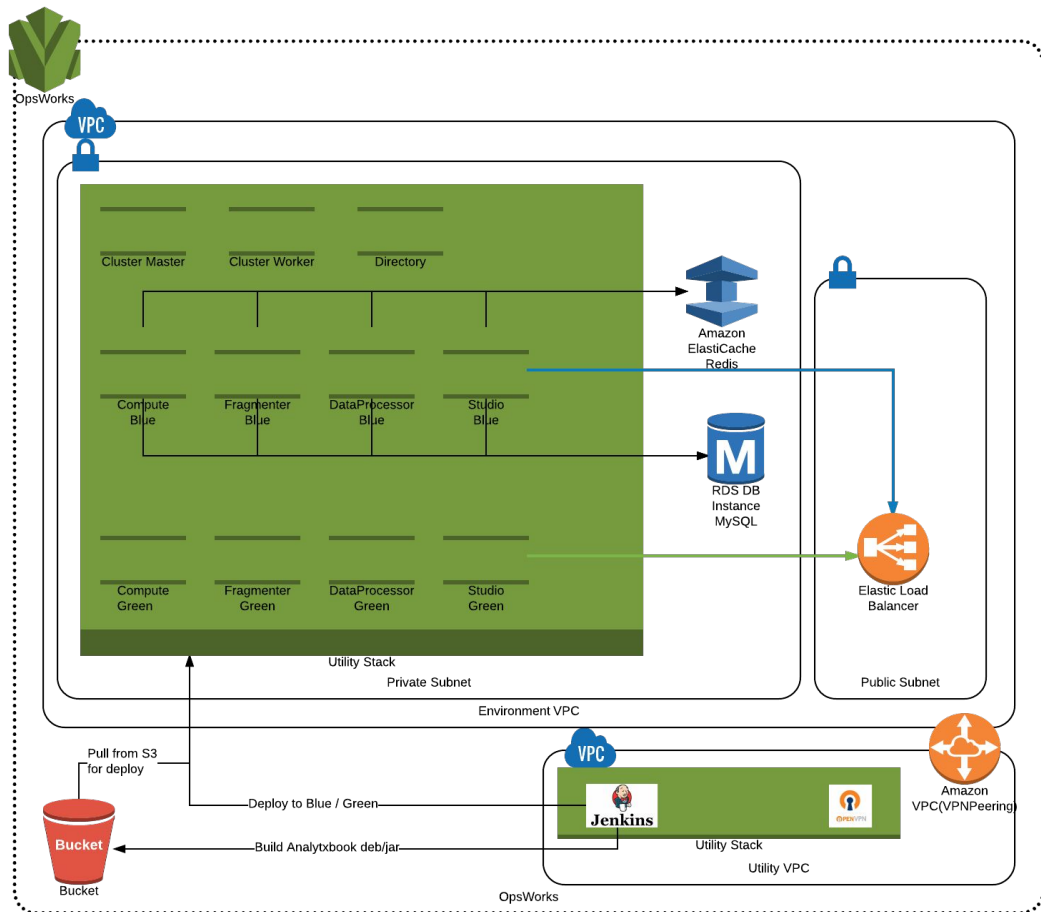
- **Security.**

- Rebuilt VPN and VPC.
- Separated production to add security.
- Compliance.



SOLUTION ARCHITECTURE

- Separate VPCs
- OpsWorks
- OpenVPN
- VPC Peering



SOLUTION - TOOLS & SERVICES



RESULTS

- **Culture.**

- **Improved responsiveness.** 24/7 monitoring & support streamlines comms with customers; 15-minute SLA demonstrates responsiveness.
- **Innovation focus.** nClouds maintains runbooks and responds to customers so nD engineering team can focus on new functionality & streamline roll-out of new features.

- **Faster innovation.**

- Redeployments containing new features reduced to less than 30 mins (vs. 2-3 hours).
- Increased frequency of new feature releases to weekly/bi-weekly.

- **Faster scalability.**

- Reduced time required to add nodes to cluster to 15 minutes (vs. one hour).

- **Improved security.**

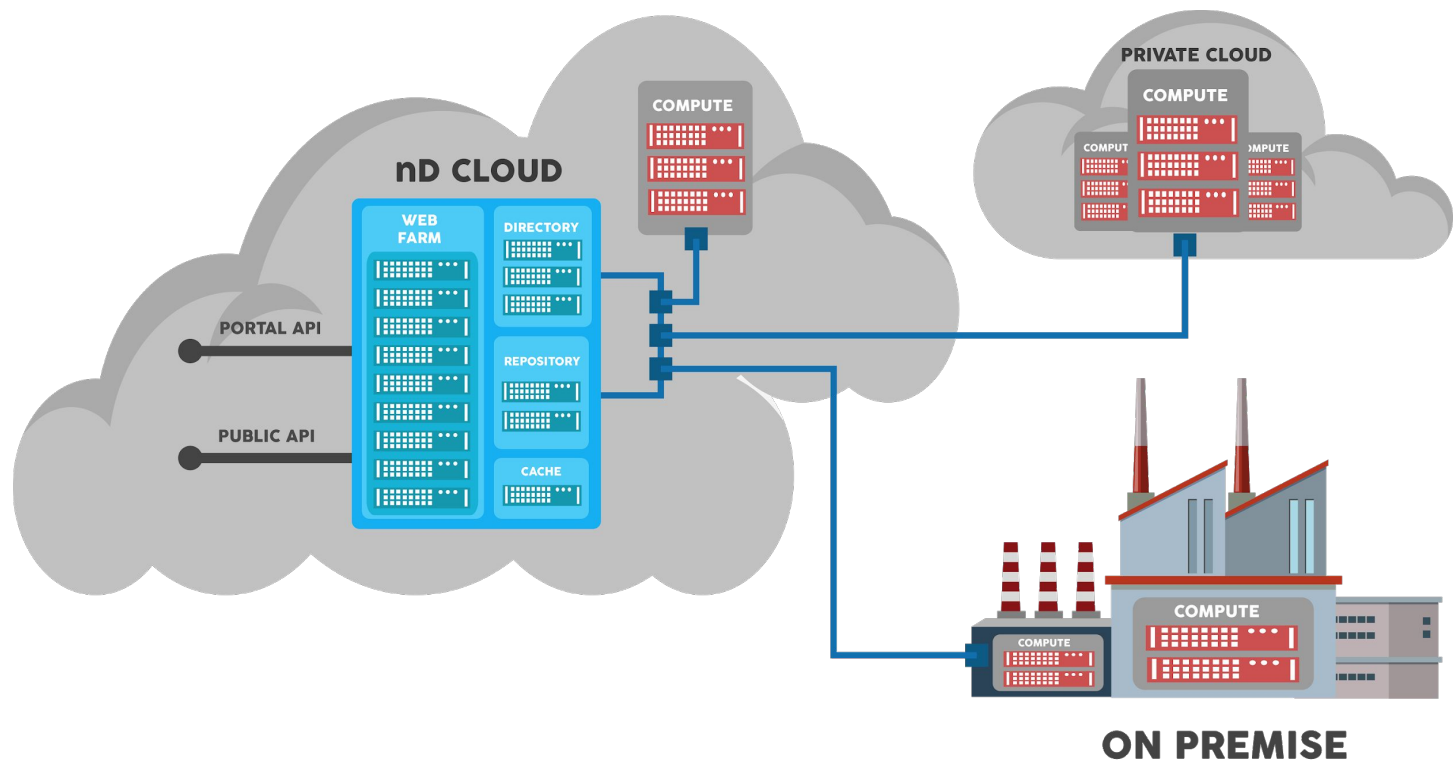
- Infrastructure setup following industry best practices with security built into the automation.

WHAT'S NEXT?

- **Scalability.** Auto-scaling.
- **Architecture.** Add to native public cloud support for multiple private clouds (data migration efficiencies) and on-prem (security, geo location).
- **Data.** Sub-second data processing; re-architecting the way data is processed.



SOLUTION ARCHITECTURE - TARGET



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that empower the business
to deliver innovation faster,
with predictability.



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Q&A - Scaling Cloud Infrastructure for Millions of Devices

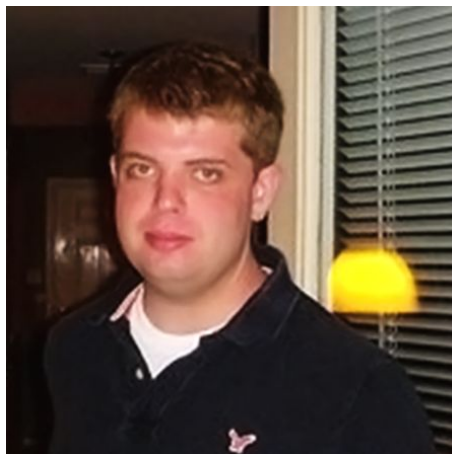


Dr. Rakesh Chalasani

VP Technology, nDimensional



For more than 20 years, nDimensional technology has been used to optimize business and physical processes in real-time across numerous industries.



Doug Cliche

Solutions Architect, AWS



For 11 years, Amazon Web Services has been the world's most comprehensive and broadly adopted cloud platform.



JT Giri

CEO & Co-founder, nClouds



*CIOReview named nClouds to their "20 Most Promising DevOps Solution Providers - 2017."
AWS Advanced Consulting Partner, MSP, DevOps*

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