Speakers

RAMESH KARRA

Ramesh Karra is a marketeer with 20+ years of experience. Post 10 years as a consumer marketer working with brands like J&J and eBay, Ramesh was an EdTech entrepreneur working on enabling learning through devices in the hands of students. He now drives strategic GTM initiatives at BYJU'S

PRASHANTH BN

Praz worked at Nokia R&D and later at Babajob before starting Wyzebulb. Looking at the challenges faced by teams at Babajob, he realized that the problems can be avoided if there was a SaaS solution that could integrate these teams. This led to the founding of Wyzebulb. Wyzebulb was acquired by BYJU'S. Activities related to business-processes are all handled by the Business Process Tech team which Praz leads.

AKASH MAHAJAN

Akash led the cloud transformation of the BYJU'S BizOps with the primary mandate of Data Security. He loves working with CTOs on security monitoring of their cloud-native stack using cloud native services to solve cloud security problems. CKA | OSCP | Author - Security Automation using Ansible

B BYJU'S

· The BYJU'S Story ·

2011
India's most loved teacher Byju Raveendran and his team founded BYJU'S

R&D started to create a product to help school going students experience an **engaging and personalised way of learning**

2015
LAUNCHED
BYJU'S - The Learning App, the hallmark shift from offline to online

BYJU'S The Learning App

2016
BYJU'S became the first company in Asia to get an investment from **Chan - Zuckerberg Initiative (CZI)**

2017
A YEAR MARKED BY MILESTONES

Harvard Business Review
Became a **Harvard Business Review** case study

Partnered with Shah Rukh Khan to celebrate the curiosity of young minds and the importance of loving what they learn

2018
BYJU'S becomes the **world's most valued Ed-tech company**

2019
BYJU'S acquired Osmo
US-based learning platform to create inroads for a global revolution in education

Osmo

Disney · BYJU'S Early Learn
LAUNCHED
Disney · BYJU'S Early Learn

Disney

Headed to becoming the **world's largest Education company....**

Present in 8 countries

India, USA, UK, Australia, Netherlands, New Zealand, UAE

Over 70 Mn Users

India is our largest market - where we are on a mission to democratise education

- India has the largest school going population in the world with close to 260 million enrollments, but we still rank low in major global assessments. Core problem - Lack of access to high quality content & teaching
- Increasing smartphone and internet penetration in India - an incredible opportunity to impact learning outcomes of students across India.
    - The affordability and ease of use have made smartphones a household device
    - Smartphones also reduce the disparity among students - by providing them with equal and personalized learning opportunities along with access to the best teachers from around the world.

BYJU'S

Apr 2020, an unfortunate but seminal moment

- India went into a nationwide lockdown to control the pandemic. All schools were shut - students stuck at home
- BYJU'S decided to step in
  - Made the App completely free for everybody
  - Launched BYJU'S Classes, a comprehensive after-school learning solution for students across the country, which allowed children access to scheduled online classes from India's best teachers
  - Additionally, we made our learning programs available in almost every vernacular language in the country

Massive growth in demand from consumers. Meanwhile the entire BYJU'S org is confined at home. **Huge challenge for** all the stakeholders in organisation - especially for **DevOps**!

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BYJU'S

THIS MEANS MILLIONS OF STUDENTS BEING ONBOARDED

3 PILLARS

So we embarked on transforming how we delivered value by embracing the 3 pillars

DATA SECURITY

DEVSECOPS
- Data Security
- Access Control
- Security Alerts
- Prepped for IR
- Automated Response
- Secure Defaults
- Compliance, Benchmarking

CONTINUOUS DELIVERY

STANDARDIZED
- Automated build
- Automated deploy
- No human intervention
- Centralized logging
- Dockerized

CONTINUOUS INTEGRATION

AUTOMATED
- Staging secured
- Approval based merge
- Semantic versioning
- Artefact based deploy
- Verifiable release
- Performance monitoring

BYJU'S

RESULTS
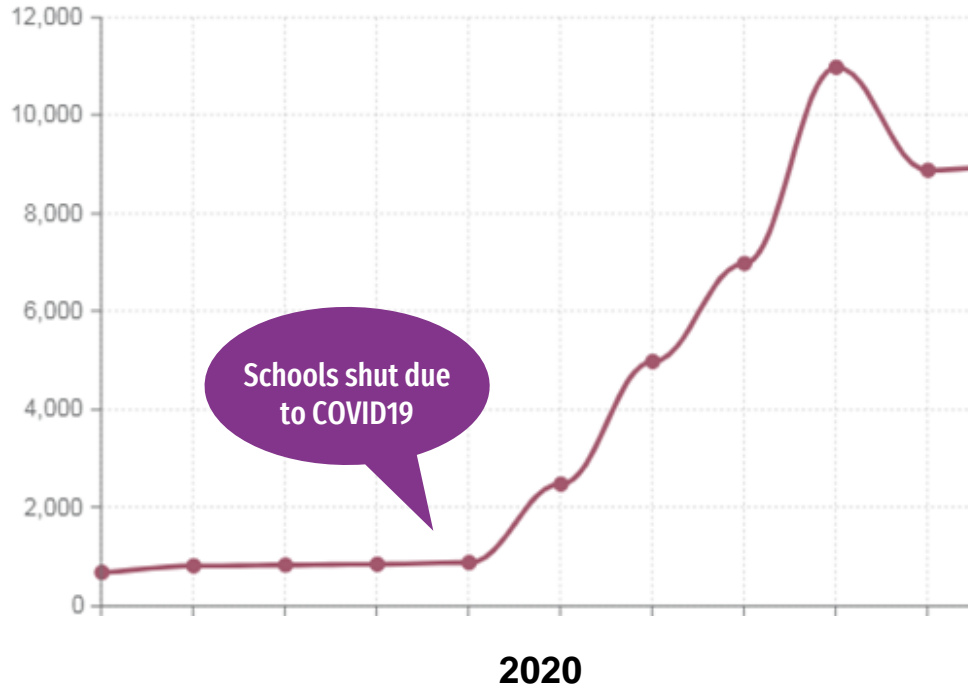
Live classes using video stream during the pandemic.

At its peak, simultaneously 12,000 students took advantage of Live classes

WE WERE PREPARING FOR

WHEN THE WEATHER WAS
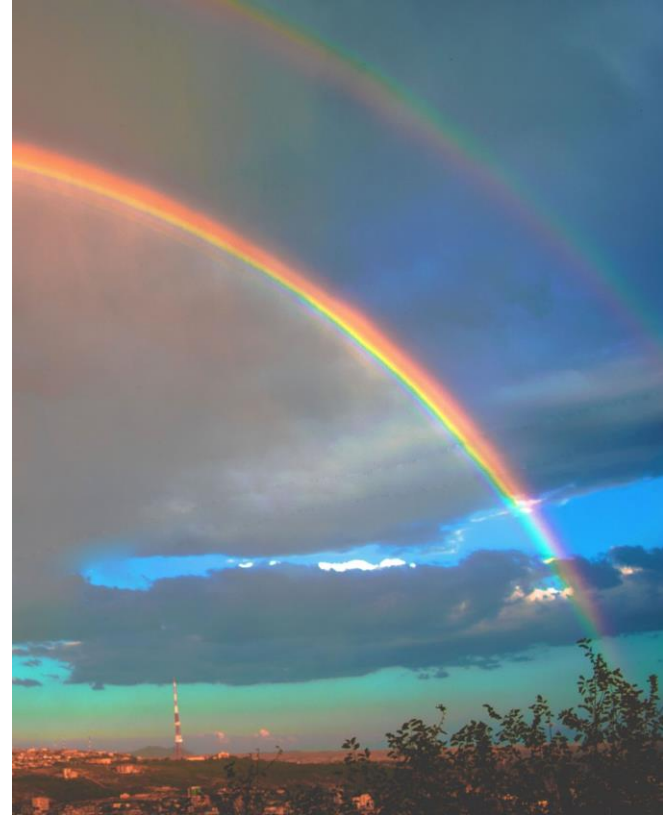
BUT THIS HAPPENED

WHAT WE WERE NOT PREPARED FOR

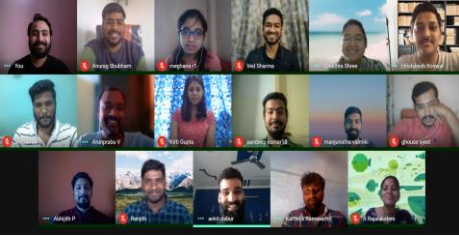100+ Engineering team went fully remote

12,000+ Sales team went fully remote from feet on street model

2,000+ Business operations team had to use digital tools

BYJU'S
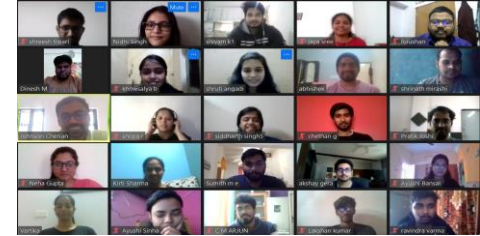
PRINCIPLES FOR ENABLING DEVOPS TRANSFORMATION

1. Secure coding standards (OWASP)

2. Cloud configuration standards (AWS well architected framework principles, CIS)

3. Pipeline based approval process to push code to production

4. Hard boundary between production and the rest

   ○ For e.g, No prod access by default for human operator

5. Standard operating procedures documented in shared Knowledge base

KEPT THOSE PRINCIPLES IN MIND TO DESIGN THE PIPELINE
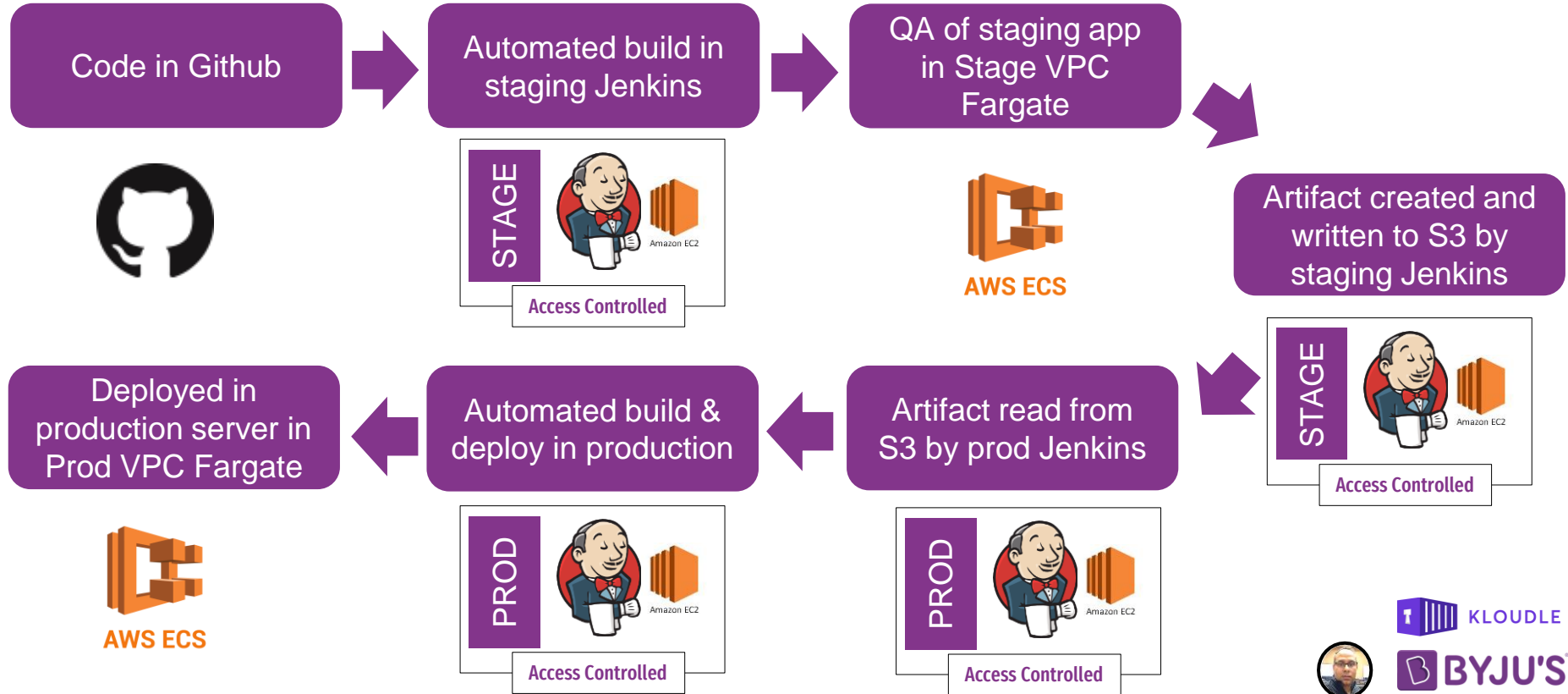
Automated Build and Deployment

Secrets added by pipeline during a job →

Source Code	CI Server	Staging Artifact	CI Server	Container in Prod

AWS Secrets Manager
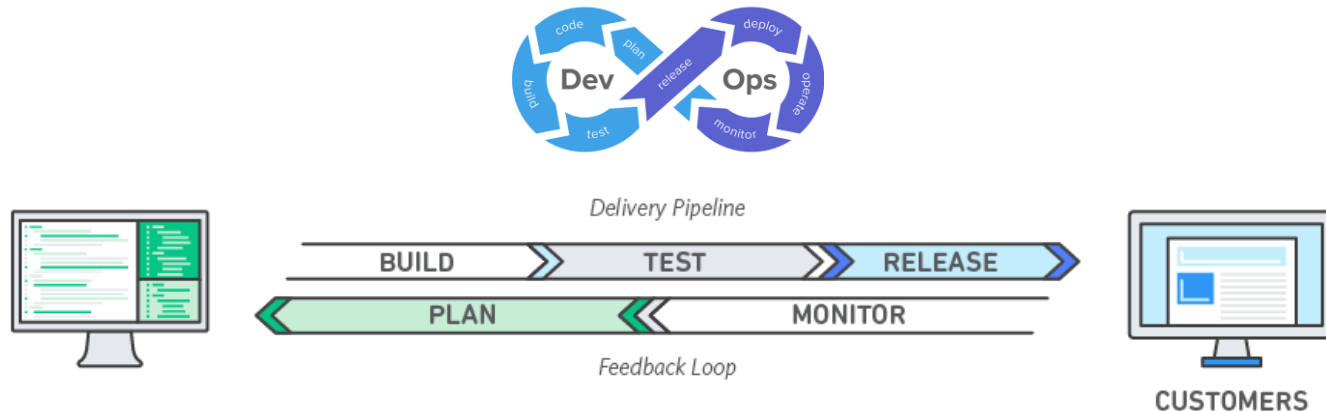
Dev/Test Secrets

AWS Secrets Manager

Prod Secrets
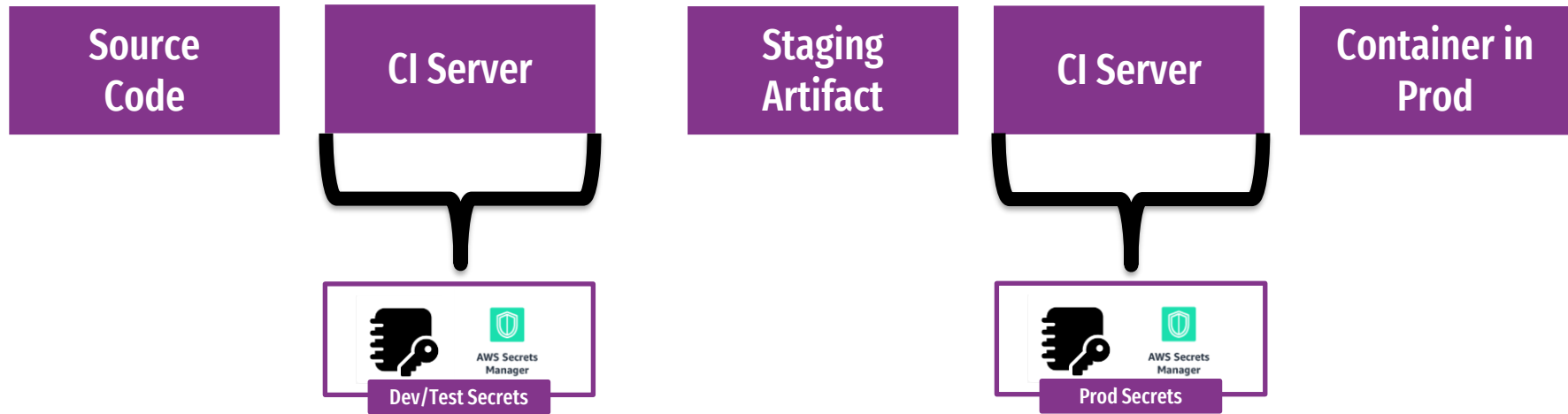
BALANCED INCREASING LOAD BY FOLLOWING CAMS

New business initiatives

- Remote first
- Scale massively
- Scaling Live classes
- Scores of new business applications

Triumph of shared culture

- Automation first
- Built-in efficiency
- Continuous monitoring
- Enterprise wiki for KB

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EMPLOYEES EXPERIENCED HUG♡PS

Imagine 100+ engineers who are solving a higher purpose of education for all:

- Well rested

- Secure in their homes

- Enjoying building for the future

- Not getting bogged down by the toil usually introduced as security measures or half done DevOps transformations

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Cloud Transformation Secured

- Covid has been and continues to be a massively difficult time for everyone. This has stress tested the best of security focussed orgs

- While many due to working remote from insecure networks etc. fell prey to attackers, BYJU'S bizops was already matured in their cloud security transformation done as part of tech DevOps and DevSecOps

For example if someone logs into SSH on production, this triggers a RCA process

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WELL RESTED EMPLOYEES PERFORM BETTER

> **"** Kloudle monitored our entire cloud-native infrastructure and provided a full view of security; they enabled us with critical alerts that required our immediate attention. Our engineering team grew 10X, but we still follow the straightforward GitHub release patterns while the security magic happens natively.
>
> **Prashanth BN**
> AVP, Technology, Byju's

There is a correlation between staying secure and the amount of stress people responsible for data security may experience

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SECURITY TEAM AS AN ENABLER

- Continuous monitoring and data security processes done with automation ensured that it didn't matter where the admins were sitting while doing the work

- Based on the continuous stream, when issues get added to the tracker, this reduces toil

- Within slack, when build status gets updated on its own, this reduces toil

CONTINUOUS SECURITY MONITORING OF CLOUD NATIVE SERVICES

Do all EBS have encryption?

Regular security audits of 3rd parties
Security scans of cloud perimeter
Access analyzer for IAM

Are we ready to face security incidents?
Is our process based on NIST?

No EC2 without SSRF protection

Do we get alerted if a dev disables 2FA?
Do we get alerted if a public S3 bucket is found

Disable console access of user if no 2FA
Make public S3 bucket private if no tags found

UNIQUE CONSTRAINTS REQUIRED NEW THINKING

- Teams were scattered over 25+ states with varying levels of Internet access and quality of access

- Using old fashioned jump hosts, multi-hop bastions that may required proprietary software and support wasn't an option

- Wireguard was deployed using Infra as Code whenever there was a need to provide controlled access

- Sometimes for multiple teams separately and sometimes for specific team members

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BYJU'S

OUR UNIQUE SITUATION

- Growing biz

- The massive scale

- DevOps and the way to work

- With automation first approach

TRANSFORMATION DUE TO DEVOPS

This has taught us that this is a movement that is truly transformational. We are able to support the incredible goal of education for all, while a lot of people are in need and crisis is around us.

Q&A

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