six nines
Cloud Responsibly™

AUTOMATING CADENCE'S HPC WORKLOADS ON AWS FOR GREATER SPEED AND AGILITY

HPC
HIGH PERFORMANCE COMPUTING

OVERVIEW

cadence® Cadence Design Systems is a software development company and manufacturer of chip design software used in the electronic design automation (EDA) industry.

CHALLENGES

Cadence was looking for a way to augment the compute needs of their software developers and provide greater agility and consistency. With everyone working out of a single environment, a common server farm with thousands of machines, different workload types and users competed with each other for resources.

> *"Jobs were delayed and didn't run in a consistent manner. What might take 45 minutes one day could take six hours the next."* — Mike Stanton, IT Director, R&D Solutions for Cadence

SOLUTION

Cadence turned to Six Nines, a premier Information Technology consulting company specializing in helping businesses move to Amazon Web Services (AWS). Following the discovery phase of the Six Nines Cloud Adoption Framework (CAF), they isolated the Cadence internal software development group as a great DevOps automation candidate. The workloads primarily consisted of High Performance Compute (HPC) clusters doing regression testing. The requirements for the project were that the clusters had to be rapidly deployed, scaled and drained in an automated fashion.

Cadence needed a mature, highly scalable and feature-rich cloud provider. The core of the Cadence infrastructure is Amazon Elastic Compute Cloud (Amazon EC2) instances in a Amazon Virtual Private Cloud (Amazon VPC) utilizing Advanced Networking features and utilizing Amazon Relational Database Service (Amazon RDS) and Amazon Simple Storage Service (Amazon S3). Beyond the compute, networking and storage platform, Six Nines utilized AWS CloudFormation for documentation and Auto Scaling. In addition, Six Nines configured Ansible for configuration management of the Compute Instances and Open Lava cluster manager and worker nodes.

RESULTS

> *"What took one group 4-8 hours to run a single regression now takes less than one hour. Test results are received much quicker and multiple iterations can be run."*
> — Mike Stanton, IT Director, R&D Solutions for Cadence.

OPERATIONAL EFFICIENCY

• **Cost Management:** To help Cadence eliminate the challenges with manual tracking of expenses and chargebacks as well as provide actionable reporting and resource management, Six Nines provided and configured CloudHealth, a cost management and optimization tool by CloudHealth Technologies.

• **Productivity:** Automation frameworks reduce the time that a team spends configuring and deploying infrastructure, providing a substantial gain in efficiency.

DEVOPS AUTOMATION, AND TOOLING

• **Infrastructure automation:** The infrastructure was defined and assembled into AWS CloudFormation templates, where it can be easily versioned and replicated for scaling rapidly and provide a blueprint for future deployments.

• **Deployment automation:** The customer's code deployment process is integrated with cloud-native tools like Ansible, improving both deployment velocity and reducing manual errors.

• **Self-healing, auto-correcting, and self-monitoring:** The right monitoring tools and configuration management scripts catch and resolve anomalies or misconfigured resources.

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aws partner network

Premier

Consulting Partner

DevOps Competency

Microsoft Workloads Competency

Solution Provider

WHY SIX NINES?

Six Nines IT is an AWS Partner Network (APN) Premier Consulting Partner and AWS Solution Provider specializing in helping businesses migrate to the cloud responsibly. A member of the APN since its inception, Six Nines has successfully migrated hundreds of customers across all industries to the cloud and offers an unparalleled combination of speed, agility, experience, and proprietary solutions to deliver accelerated solutions and a rapid time-to-value. The Oakland-based company combines old-school, on-premises IT roots together with deep expertise and a laser focus on all things AWS – including a core concentration on High Performance Computing and Microsoft Workloads (AWS Microsoft Workload Competency and AWS DevOps Competency) – to deliver bespoke solutions that are individually tailored to meet customers' unique needs throughout the cloud lifecycle.

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