

# nClouds Client Story

## Cirrent

How nClouds helped Cirrent build a high-availability, containerized architecture that is scalable and secure, and an automated CI/CD pipeline.

### About Cirrent

Cirrent is a leading provider of software and cloud services for IoT products including appliances, home entertainment, home security, and smart home devices. Cirrent focuses on helping companies deliver products that are easier to use, more reliable and more secure.

Cirrent's solutions help companies solve issues throughout the connected product lifecycle, whether they are launching a new product, releasing a new app, updating firmware or monitoring existing products in the field. To learn more, go to <https://www.cirrent.com/>

### Benefits Summary



Faster  
time-to-market.



Improved scalability  
and high availability.



Enhanced  
security.

### CHALLENGE

**Cirrent needed a high-availability, containerized architecture that was scalable and secure, plus an automated CI/CD pipeline.**

Cirrent required containerization to bring consistency across their environment, deliver the necessary scalability for their fast-growth startup, and enhance security. Plus, Cirrent needed an automated continuous integration and continuous delivery (CI/CD) pipeline to enable zero-downtime deployment of code changes and provide high availability.



**Cirrent**

#### Industry

Cloud Computing, Information Technology, Internet of Things

#### Location

San Mateo, California

#### Challenge

Cirrent needed a high-availability, containerized architecture that was scalable and secure, plus an automated CI/CD pipeline.

#### Featured Services

CI/CD pipeline, containerization, Amazon VPC, nOps



As our customers are IoT product manufacturers, it's critical to have low network latency to enable consistent connectivity of IoT devices. We turned to nClouds for help, and were impressed with their expertise in containerization and security to support these requirements and grow our business."

— Lalit Raju,  
VP of Engineering, Cirrent

# Why AWS and nClouds

Cirrent turned to nClouds, a Premier Consulting Partner in the Amazon Web Services (AWS) Partner Network with AWS DevOps Competency, to build a scalable CI/CD pipeline. nClouds helped them to containerize all their applications and provided Cirrent with 24/7 on-call support.

Serving as Cirrent's DevOps and support teams for the entire company, nClouds partnered with them as an extension of their team, sharing their goals and focusing on their success. Based on their excellent experience with nClouds, Cirrent later asked for additional help in the data and analytics space.



## Cirrent leverages several Amazon Web Services:

- **Amazon CloudWatch** - Monitors applications, responds to systemwide performance changes, optimizes resource utilization, and provides a unified view of operational health.
- **Amazon Elastic Container Registry (Amazon ECR)** - A fully managed Docker container registry integrated with Amazon ECS that makes it easy for Cirrent to store, manage, and deploy Docker container images.
- **Amazon Elastic Container Service (Amazon ECS)** - A web service that provides Cirrent with secure, resizable compute capacity in the cloud.
- **Amazon Machine Images (Amazon AMIs)** - Provide the information required to launch an instance.
- **Amazon Relational Database Service (Amazon RDS)** - Enables Cirrent to easily set up, operate, and scale a relational database in the cloud.
- **Amazon Route 53** - A highly available and scalable cloud Domain Name System (DNS) web service, to provide a reliable and cost-effective way to route Cirrent's smart products to the Internet.
- **Amazon Simple Storage Service (Amazon S3)** - A flexible way to store and retrieve data, providing Cirrent with cost optimization, access control, and compliance.
- **Amazon Virtual Private Cloud (Amazon VPC)** - Enables Cirrent to provision a logically isolated section of the AWS Cloud where they can launch AWS resources in a virtual network that they define.
- **AWS Application Load Balancer (AWS ALB)** - To support content-based routing and applications that run in containers.
- **AWS Auto Scaling** - Monitors Cirrent's applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost.
- **AWS CodeDeploy** - A fully managed deployment service that automates software deployments to a variety of compute services, making it easier for Cirrent to rapidly release new features, avoid downtime during application deployment, and handle the complexity of updating applications.
- **AWS Fargate** - Enables Cirrent to run containers without having to manage servers or clusters.
- **AWS Identity and Access Management (AWS IAM)** - To control users' access to AWS services.
- **AWS Lambda** - Enables Cirrent to run code without provisioning or managing servers.
- **AWS OpsWorks** - An application management service for DevOps users with scripted configuration to reduce errors, automation to reduce costs and save time, and fine-grained permissions to improve control.
- **AWS Secrets Manager** - Enables Cirrent to protect secrets needed to access their applications, services, and IT resources.
- **AWS Systems Manager Parameter Store** - Provides Cirrent with secure, hierarchical storage for configuration data management and secrets management.

## Cirrent's solution stack also includes additional, essential third-party tools and services:

- **DataDog** - A monitoring service providing visibility into Cirrent's entire environment.
- **Docker** - An open-source container platform to build, ship, and run distributed applications.
- **Docker Compose** - A tool for defining and running multi-container Docker applications.

- **GitHub** - A development platform to host and review code, manage projects, and build software.
- **HashiCorp Terraform** - An infrastructure-as-code (IaC) tool that allows Cirrent to create, update, and version its AWS infrastructure.
- **Jenkins** - An open-source automation server written in Java, to support CI/CD.
- **Node.js** - An open-source, cross-platform, JavaScript runtime environment that executes JavaScript code outside of a browser.
- **nOps** - A SaaS cloud management platform that enables Cirrent to optimize cost and manage security and compliance for their AWS resources continuously.

## nClouds Solution Architecture for Cirrent

In the AWS environment resides Amazon ECR, Amazon CloudWatch, AWS Secrets Manager, AWS Lambda, Amazon Route 53, and an Amazon VPC.

A scalable CI/CD pipeline connects to GitHub repositories, with isolated builds for each repository to enhance security. The CI/CD pipeline setup is scripted without any manual configuration.

The Amazon VPC provides advanced security features, such as security groups and network access control lists, to enable inbound and outbound filtering at the instance level and subnet level. In private subnets within the Amazon VPC reside AWS Fargate, Amazon Aurora, and AWS OpsWorks

- AWS Fargate provides a fully managed container system within an Amazon ECS cluster that enables Cirrent to scale-up quickly.
- Amazon Aurora clusters guarantee a quick response from the backend side.
- AWS OpsWorks provides scripted configuration to deploy services and set up auto scaling, automation to reduce costs and save time, and fine-grained permissions to improve control.

We containerized Cirrent's various APIs to create microservices written on Node.js.

### Containerization:

- Packages code with the configuration files and dependencies it needs so that it can run consistently in any environment.
- Isolates processes to improve resource utilization.
- Enables Cirrent to scale quickly.

### Microservices:

- Shorten development cycle times.
- Enable flexible scaling of each service.
- Facilitate CI/CD to accelerate time-to-market.
- Provide reusable code.
- Strengthen an application's resistance to failure.

# The Benefits

Teaming with nClouds, Cirrent has enhanced its architecture and implemented an automated CI/CD pipeline. The project has yielded numerous benefits:



## Faster time-to-market.

An automated CI/CD pipeline and microservices facilitate updating code and trying out new ideas (because it's easy to roll back, if necessary). AWS CodeDeploy automates software deployments to compute services. The result: Cirrent can rapidly release new features and provide consistent uptime to their customers during application deployment.



## Improved scalability and high availability.

Containerization, microservices, and AWS services enable Cirrent to scale quickly.

- **AWS Lambda** enables Cirrent to run code without provisioning or managing servers, resulting in running and scaling their code with high availability.
- **Amazon Route 53** provides a highly available and scalable cloud Domain Name System (DNS) web service to route smart products to the Internet.
- **AWS Auto Scaling** monitors Cirrent's applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost.
- **Amazon RDS** enables Cirrent to easily set up, operate, and scale a relational database in the cloud.



## Enhanced security.

Cirrent's security is enhanced by:

- Amazon ECS, providing secure, resizable compute capacity in the cloud.
- Amazon VPC's security groups and network access control lists that enable inbound and outbound filtering at the instance level and subnet level.
- AWS IAM's control of users' access to AWS services.
- AWS Secrets Manager protection of secrets needed to access applications, services, and IT resources.
- AWS Systems Manager Parameter Store's secure, hierarchical storage for configuration data management and secrets management.
- nOps' continuous management of the security and compliance of Cirrent's AWS resources.

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## About nClouds

nClouds is a certified, award-winning provider of AWS and DevOps consulting and implementation services. We partner with our customers, as extensions of their teams, to build and manage modern infrastructure solutions that deliver innovation faster. We leap beyond the status quo.

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