nClouds

nClouds | AWS Case Studies
Cirrent/Infineon

Benefits Summary

Faster time to market

Improved scalability and high availability

Enhanced security

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 life cycle, 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 infineon.com. Cirrent has been acquired by Infineon.

Industry
Cloud Computing, Information Technology, Internet of Things

Location
San Mateo, California

Featured Services
CI/CD Pipeline, Containerization, Amazon VPC, nOps

Need for a High-Availability, Containerized Architecture That Was Scalable and Secure, Plus an Automated CI/CD Pipeline

Cirrent required containerization to bring consistency across its environment, deliver the necessary scalability for its 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 Leverages Several Amazon Web Services

- **Amazon CloudWatch –** Monitors applications, responds to system-wide 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

- **AWS Auto Scaling –** Monitors Cirrent's applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost

- **AWS Application Load Balancer (AWS ALB) –** To support content-based routing and applications that run in containers

- **Amazon Virtual Private Cloud (Amazon VPC) –** Enables Cirrent to provision a logically isolated section of the AWS Cloud in which it can launch AWS resources in a virtual network that it defines

- **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 its applications, services, and IT resources

- **AWS Systems Manager Parameter Store –** Provides Cirrent with secure, hierarchical storage for configuration data management and secrets management

Why AWS and nClouds

Cirrent turned to nClouds, a Premier Tier Services Partner in the Amazon Web Services (AWS) Partner Network with AWS DevOps Competency, to build a scalable CI/CD pipeline. nClouds helped Cirrent to containerize all its 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 it as an extension of its team, sharing Cirrent's goals and focusing on its success. Based on its excellent experience with nClouds, Cirrent later asked for additional help in the data and analytics space.
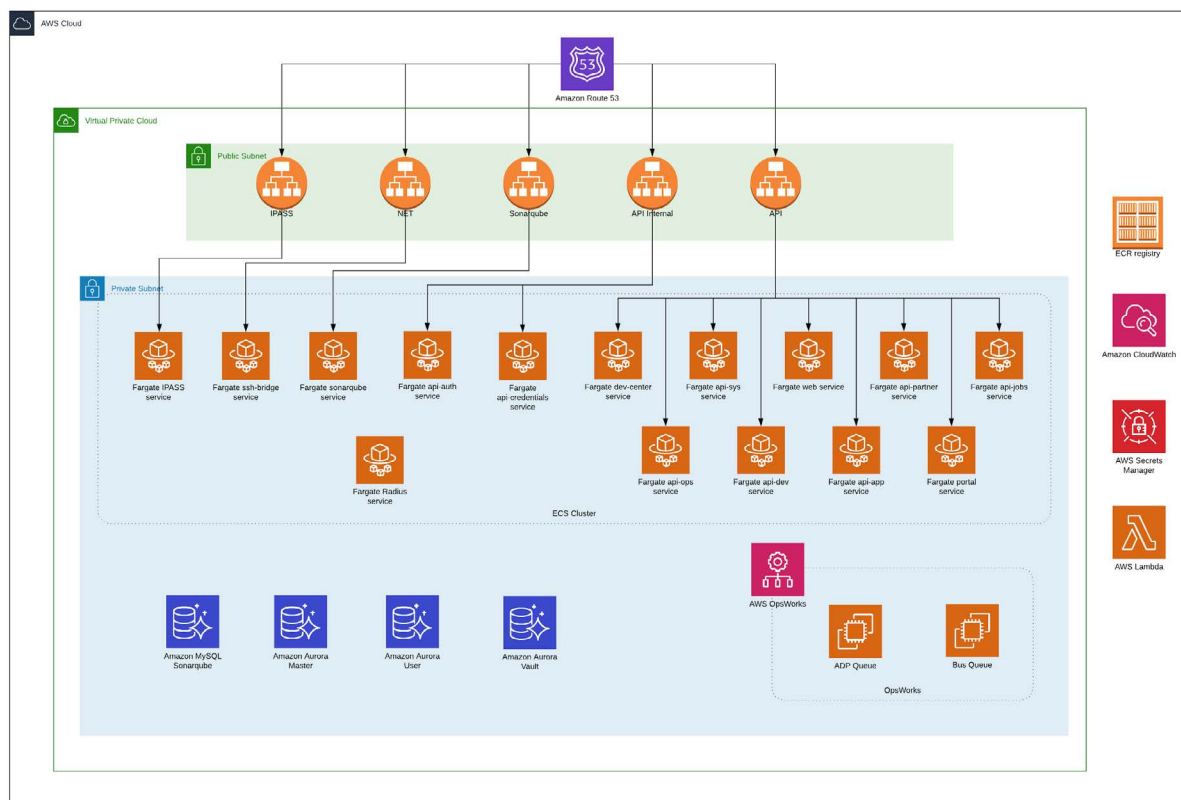
As an AWS Premier Tier Services Partner, nClouds has extensive experience and expertise in building and managing complex cloud environments on AWS.

High-Level Architecture Diagram

Interested in an AWS Well-Architected Framework Review?
Schedule a free AWS Well-Architected Framework Review with nClouds to see how you can apply architectural best practices to drive better business outcomes.

nClouds' Solution Architecture for Cirrent

In the AWS environment reside 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 autoscaling, 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.

Cirrent's Solution Stack Includes Additional, Essential Third-Party Tools and Services

- **Amazon CloudWatch –** Monitors applications, responds to system-wide performance changes, optimizes resource utilization, and provides a unified view of operational health

- **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 multicontainer 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 –** An SaaS cloud management platform that enables Cirrent to optimize cost and manage security and compliance for its AWS resources continuously

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

Increased Business Efficiency

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 its 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 its code with high availability.
- Amazon RDS enables Cirrent to easily set up, operate, and scale a relational database in the cloud.

- 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.

Enhanced Security

Cirrent's security is enhanced by the following tools:

- 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

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.