VIVIDCLOUD CASE STUDY

VividCloud Helps Turn Evolv Express Into a Smart, Connected, IIoT Product

Executive Summary

The Evolv Express system is a free-flow weapons-detection system that can screen 3,600 people an hour. The initial release of this groundbreaking product was standalone devices, installed at customer sites.

However, Evolv has a much broader vision for the product that includes data analytics, machine learning, and data fusion. The original architecture that relied on embedded processing, local data storage, and a UI/UX attached to each freestanding system limited the growth in capabilities for this product.

Supporting customers globally was also a challenge for the Customer Support organization. The loosely connected freestanding device architecture meant that devices at each site location had to be monitored and supported individually, a difficult scenario as Evolv's shipments scaled.

Evolv and VividCloud both saw these challenges as an IoT migration opportunity.

evolv

Evolv offers a secure and seamless weapons detection and screening experience for public and private venues.

Their products make it possible for venues of all kinds to keep visitors safe from concealed weapons, public health threats and intruders.

Key products include Evolv Express and Evolv Edge.

Founded in 2013, the company is headquartered in Massachusetts, and where their products are designed and manufactured.

Industry: Security

Location: Waltham, MA

Service: Lorem Ipsum

Website: evolvtechnology.com

VividCloud's Solution

By turning the Express system into a network of smart, connected, Industrial IoT devices, a much more ambitious roadmap of new and expanded features became possible.

The first application targeted by Evolv to be migrated from the embedded device was the UI. VividCloud rearchitected the legacy software into a Progressive Web Application (PWA) in Angular to improve the UX and allowing it to be used immediately on Android and Windows devices. As a PWA, could be run on a variety of other platforms, including MacOS and iOS, should Evolv ever have the business need.

The second application to be migrated and enhanced was the legacy application that could only display usage and performance data on the Express systems screen. To support this and other applications to follow, VividCloud architected a multi-tenant system on AWS to store usage and performance data from Express systems deployed globally. The implementation included development of data pipelines to capture, process, and store the scanner data for all systems on AWS.

A dashboard application was developed allowing users to view the status of all Express systems deployed and manage those systems through a set of IoT Jobs. The monitoring solution also provides an analytics dashboard providing users with several Tableau visualizations of the scanner data.

To meet security standards including tenant data encryption, a strict separation of environments was implemented to avoid exposing production data to lower security environments. VividCloud implemented an AWS Account Landing Zone leveraging AWS Control Tower.

The Landing Zone consists of amongst other core components three AWS accounts that host multiple sandbox environments for daily development as well as a staging account for demonstrating different versions of the product and a production environment.

Deployments to AWS have been fully automated leveraging Gitlab CI/CD pipelines, Ansible Playbooks and AWS CloudFormation.

AWS Services

- **AWS Route 53** hosted zones, and DNS records to provide access to theuser/administrator

- AWS **VPC Security Groups**, **IGWs**, **NATs**, **subnets**, and **route tables** to provide asecure networking environment

- AWS **ELBv2**, **Target Groups** to route traffic to the Tableau Server Cluster

- AWS **Certificate Manager** to terminate HTTPS on the ELBv2

- AWS **Auto Scaling** Groups to scale the Tableau cluster based on usage

- AWS **Lambda** to perform IoT based workloads as well as proving endpoints exposed via API Gateway

- AWS **API Gateway** to expose a Rest API endpoint used primarily by the UI

- AWS **CloudWatch Logs**, **Metrics**, and **Alarms** to simplify monitoring

- AWS **DynamoDB** to store customer related information

- AWS **IoT Core** to run jobs on scanner hardware as well as receiving scanner datafor analytics

Results and Benefits

The Evolv AWS platform was deployed on schedule and operational with every Express system.

About VividCloud

VividCloud is a software development company focused on cloud and IoT. AWS is our cloud platform of choice, and we are an Advanced Tier APN Services Partner. We bring fully managed teams that free our client s from day to day oversight responsibilities.

VividCloud is based in Brunswick Maine, with 100% of our people onshore in the US.

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