MIGRATING CRITICAL SERVICES

Summary

The customer wanted to shorten release cycles and improve application deployments for their web services. These services supported a life critical monitoring system, which leveraged a complex cellphone/telecommunications setup.

Prior to FP Complete's involvement, the customer had transitioned their services to AWS. Unfortunately, the initial method they had used to handle the AWS deployment was inadequate for what they wanted to see for long term use. It was also proving to be difficult for them to maintain and new deployments were becoming increasingly costly and time consuming to perform. FP Complete was therefore brought in and tasked with helping update the system - the primary goals being to make it easier to scale to increased user demand, and more reliable to deploy, test, and optionally roll back new versions of the software.

Corporation Type: Connected Health
Industry/Sector: Cellular health and safety products and wireless services
Project Type: Infrastructure migration and improvement
Technology Used: AWS, Terraform, Packer, Puppet, CentOS, Windows Server 2019, MQTT.

Project Requirements

- Migrate the customer's current AWS setup to one that is easier to make changes to over the lifetime of the system. The new setup should be able to quickly scale and handle new user demand.
- Integrate tooling to speed up the process of deploying new versions of the customer's software.
- Train the client about the new setup and best DevOps practices.
- Create a setup that readily allows for the customer to test new deployments and switch between them in the event of failure.
- Provide the ability to maintain parallel deployments at different versions for hot standby.
- Ensure the new infrastructure interoperates with existing tools.
- Replace DevOps tools with better alternatives to ensure higher efficiency and long term tooling support.

The Solution

- FP Complete worked to migrate the customer's existing setup (which was based on CloudFormation) to one based on Terraform. We worked closely with the in-house team to make sure that throughout the migration process they were familiar with what FP Complete was implementing and were satisfied with the new setup at each step in the process. In addition, FP Complete trained the customer's in-house DevOps team on how to use Terraform and worked closely to inform and instill best practices they should follow with that tool.
- FP Complete designed and implemented a Blue Green deployment system. As mentioned before, the customer's AWS infrastructure was already separated into stages

(Development/Testing/Production) but the client wanted to be able to handle a Blue Green deployment strategy within each of these existing environments. FP Complete created new tooling and software to make switching between the Blue Green deployments easy and straight-forward.

- The new infrastructure setup was tied in with existing tools that the customer wanted to continue to use. This primarily consisted of the customer's Puppet code base that they used for server and instance management.

- Due to a customer buy-out, there was a major network overhaul that was necessary. This occurred during (and in addition to) the work FP Complete was brought in and tasked to do. FP Complete helped the customer not only make the change to meet new corporate standards, but codified it in our declarative infrastructure so that future modifications would take a fraction of the time. As part of this work, FP Complete worked closely with the customer's network operations team to ensure the new systems VPC's and Transit Gateway Networks aligned with the network setup that the customer was using across their corporate network. This network setup was integrated and set up to work smoothly with the customer's corporate WAF and DNS.

- FP Complete brought in and deployed modern DevOps tools like Packer. Packer in this case enabled the customer to pre-build server images well ahead of deployments. Doing so allowed them to greatly reduce the amount of time that was needed to initialize and set up new servers and overall speed-up the turnaround time on new deployments.

New Challenges for FP Complete

FP Complete was already familiar and well versed with building out new hosting platforms that apply the industry recognized best practices and approach for AWS products, including: EC2 instances, Autoscaling Groups, Application Load Balancers, VPCs, Security Groups, S3 buckets, Route53, Elastic Kubernetes Service (EKS), IAM, and Lambda.

But even with smart people and good engineering, it takes time to design and establish these platforms when the goal is to migrate and maintain vital aspects of an existing legacy system. In this case the legacy system was a critical piece of infrastructure with human lives on the line. The need to modify and modernize the system was there, but it was it was important to approach and execute this task in a way that did not jeopardize the system.

The strategy here was to leverage FP Complete's DevOps experience and design knowledge to work around common pitfalls with the tools used in the implementation. At the same time FP Complete needed to closely coordinate with the in-house teams in order to gain the contextual information needed to explain the existing legacy system and its structure.

In this case a successful outcome required FP Complete being able to work hard and consistently deliver the best implementation for the client - while simultaneously coordinating with the client in order to shift their existing system over from the legacy setup.

Conclusion

Any situation where a delicate and vitally important legacy software infrastructure setup needs to be migrated can seem daunting and fraught with risks. However, pairing the right approach with

the technical know-how to execute the task will ultimately make the process graceful and successful. To be able to do this requires teams that are methodical, detail oriented, and capable of thinking through and designing solutions for large problems.

FP Complete was able to deliver not only because it has that experience and knowledge, but also because it was able to work closely with the in-house team and listen to make sure what FP Complete was building aligned with their goals.

By working in close collaboration with the customer, FP Complete was able to define, design, and implement a resilient and modern platform for running their life-critical business systems on AWS. We integrated new DevOps tools while maintaining existing tools the client wanted to use in order to support and run the platform across multiple deployments. This culminated in a successful all-hands migration of the production system to the new production environment and a modern and maintainable infrastructure setup for the customer.