Google Cloud

PROFESSIONAL CLOUD ARCHITECT

EHR Healthcare Case Study

Company Overview

sensitive data : Encryption :

EHR Healthcare is a leading provider of electronic health record software to the medical industry. EHR Healthcare provides their software as a service to multi-national medical offices, hospitals, and insurance providers.

Solution Concept

Due to rapid changes in the healthcare and insurance industry, EHR Healthcare's business has been growing exponentially year over year. They need to be able to scale their environment, adapt their disaster recovery plan, and roll out new continuous deployment capabilities to update their software at a fast pace. Google Cloud has been chosen to replace their current colocation facilities.

Existing Technical Environment

EHR's software is currently hosted in multiple colocation facilities. The lease on one of the data centers is about to expire.

Customer-facing applications are web-based, and many have recently been containerized to run on a group of Kubernetes clusters. Data is stored in a mixture of relational and NoSQL databases (MySQL, MS SQL Server, Redis, and MongoDB).

GKE

CloudSQL

MemoryStore

Cloud Datastore or File Store

EHR is hosting several legacy file- and API-based integrations with insurance providers on-premises. These systems are scheduled to be replaced over the next several years. There is no plan to upgrade or move these systems at the current time.

Anthos

Google Directory Sync - Identity

Users are managed via Microsoft Active Directory. Monitoring is currently being done via various open source tools. Alerts are sent via email and are often ignored.

Monitoring - Stackdriver

Lift-and-Shift Mindset

Business Requirements

- On-board new insurance providers as quickly as possible.
- Provide a minimum 99.9% availability for all customer-facing systems. Https LB
- Provide centralized visibility and proactive action on system performance and usage. Metrics Dashboard : Stackdriver
- Increase ability to provide insights into healthcare trends. BigQuery and ML (OLAP)
- Reduce latency to all customers. Caching - CDN
- Maintain regulatory compliance. DLP : Backing Recovery Auditing, well defined RTO/RPO
- Decrease infrastructure administration costs. Paas - App Engine or Serverless fully managed services, also SpotVMs
- Make predictions and generate reports on industry trends based on provider data. BQ ,ML, Gemini

Cloud Storage with Lifecycle management

Technical Requirements

- Maintain legacy interfaces to insurance providers with connectivity to both on-premises systems and cloud providers. GKE on prem
- Provide a consistent way to manage customer-facing applications that are container-based. Anthos : GKE and GKE On
- Provide a secure and high-performance connection between on-premises systems and Google Cloud. Google Cloud Dedicated InterConnect if > 10Gpbs or Partner

During migration and long-term connectivity

Use a standard Cloud VPN tunnel over the internet. It's encrypted

Suitable for low-to-moderate traffic or temporary

- Provide consistent logging, log retention, monitoring, and alerting capabilities. Stackdriver
- Maintain and manage multiple container-based environments. Artifact Registry
- Dynamically scale and provision new environments. Autopilot, Cloud Build, Cloud Deploy
- Create interfaces to ingest and process data from new providers. Pub/Sub, Dataflow both streambased and batch processing

Executive Statement

Our on-premises strategy has worked for years but has required a major investment of time and money in training our team on distinctly different systems, managing similar but separate environments, and responding to outages. Many of these outages have been a result of misconfigured systems, inadequate capacity to manage spikes in traffic, and inconsistent monitoring practices. We want to use Google Cloud to leverage a scalable, resilient platform that can span multiple environments seamlessly and provide a consistent and stable user experience that positions us for future growth.

Implementing pipelines :Cloud Build, Cloud Deploy for safe release