EHR HEALTHCARE

6M22 Project – Group 4
(Phase I)

Source: https://services.google.com/fh/files/blogs/master_case_study_ehr_healthcare.pdf

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WHO IS EHR HEALTHCARE?

- EHR Healthcare is a leading provider of electronic health record software to the medical industry.
- Electronic Health Record (EHR) provides its service (Software-as-a-Service) to multi-national medical offices, hospitals, and third-party insurance companies worldwide.
- The Company aims to leverage on Google cloud platform (GCP) to fulfil future business growth demands.

BENEFITS OF EHR HEALTHCARE

Generate better patient care

Better Clinical decision making

More effective communication

More accurate automated document processing

Increased productivity

Improved efficiencies

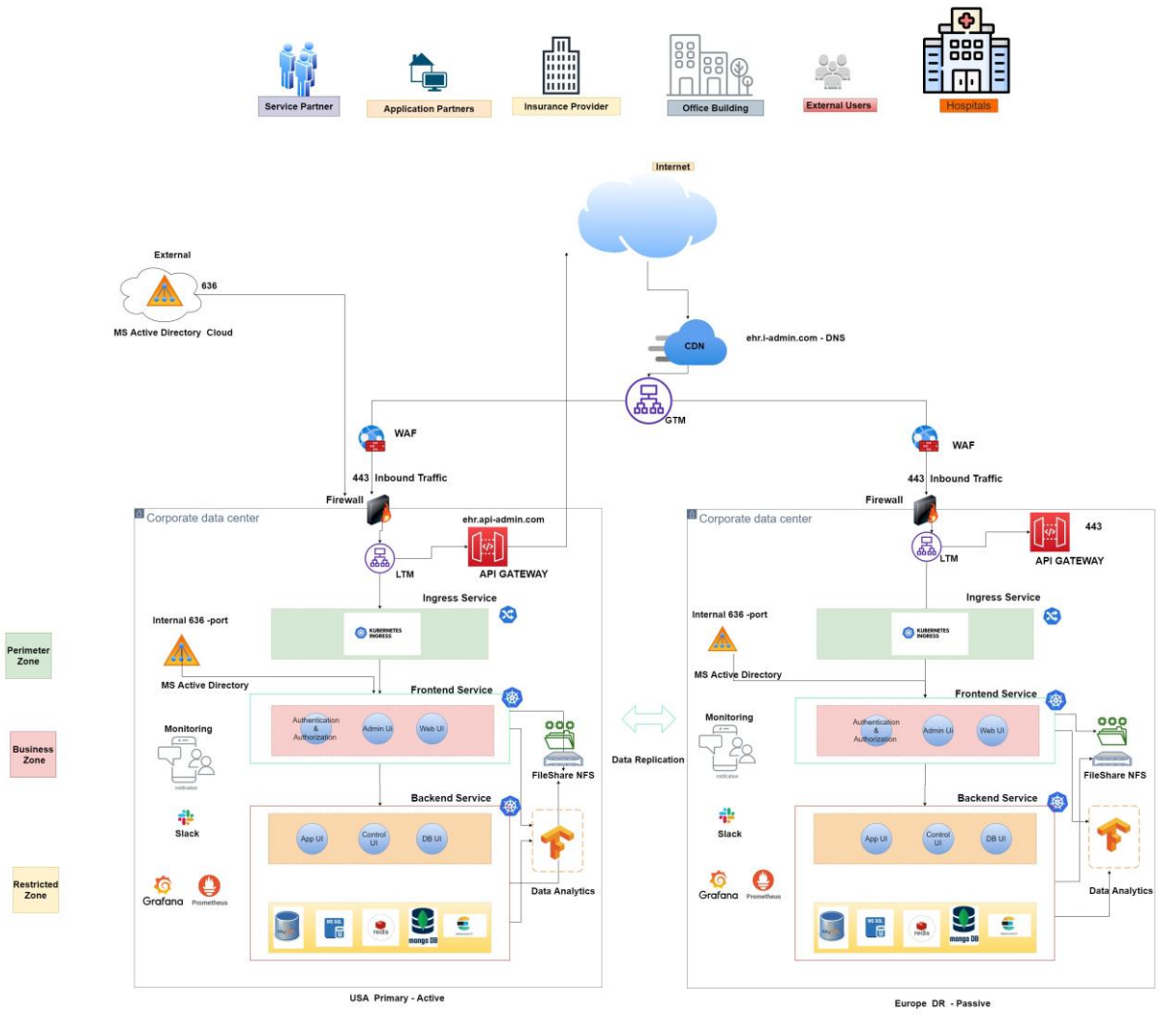
Enhance security

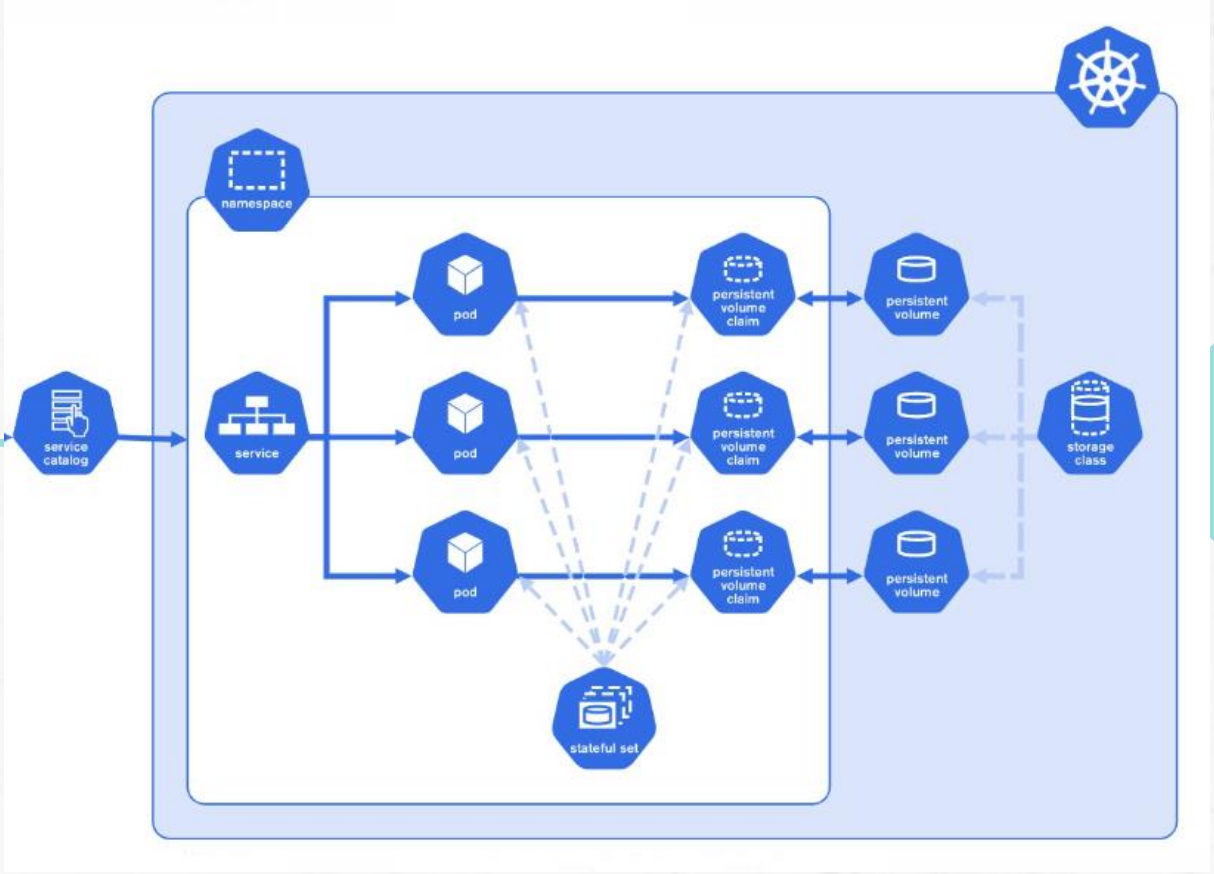
Lower healthcare cost

EHR TECHNOLOGIES

Languages	Python, Swift, C++, Java, Ruby, Kotlin, JavaScript, C#, PHP
Frameworks & libraries	Django, Angular, React, jQuery, Vue.js, Node.js, Bootstrap, Laravel
SDK's	iOS, Android, Flutter
Databases	MySQL, PostgreSQL, Redis, MongoDB
Webserver	Apache, Nginx
Messaging	RabbitMQ, ActiveMQ, Apache Kafka
Analytics	Apache Spark, Tensorflow
Payment gateway	PayPal, Stripe, Skrill, ACH Payments
Utilities	Kubernetes, ELK Stack
Hosting	On-prem Datacentre
Monitoring	SMS, Slack, Prometheus and Grafana

CURRENT INFRA DIAGRAM





K8s Service Diagram

EXISTING SETUP

EXISTING ENVIRONMENT	THINGS TO NOTE
EHR's software and data is currently hosted in multiple colocation facilities.	Lease is about to expire in one of the data centres. Might have a tight migration timeline.
EHR is currently hosting several legacy file and API-based integrations with insurance providers on premise.	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.
Customer-facing applications are web-based and many have recently been containerized to run on a group of Kubernetes clusters	Containerized apps, apps must be run in cloud with integration with on-prem systems

EXISTING SETUP

EXISTING ENVIRONMENT	THINGS TO NOTE
Users are managed via Microsoft Active Directory.	Active directory does not provide the ability to easily monitor AD usage across an entire AD forest. Difficult for admins to determine which users are doing what in AD, and how much bandwidth is being used.
Monitoring is currently being done via various open-source tools. Alerts are sent via email and are often ignored	OS tools might bring about some compatibility and security issues or come with hidden costs. Solutions for any problems that arise come from the community instead of experts.
Data is stored in a mixture of relational and NoSQL databases (MySQL, MS SQL Server, Redis, and MongoDB).	Decentralized, require more times and resources to manage

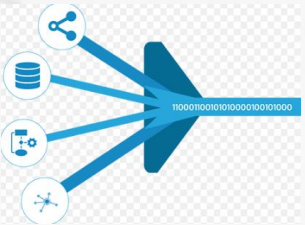
BUSINESS REQUIREMENTS

Rapid Scaling

99.9% availability
Uptime

Latency

Data Analytics



Ingest & process data
from new providers

Regulatory compliance

Monitoring

Cost Efficiency

TECHNICAL REQUIREMENTS

Maintain legacy interfaces to insurance providers with connectivity to both on-premises systems and cloud providers

Provide a consistent way to manage customer-facing applications that are container-based

How do you automate application configuration/deployment?

Secure and high-performance connection between on-premises systems and Google Cloud

Logging, log retention, monitoring & alerting

Dynamically scale and provision to new environments

DISADVANTAGES OF RUNNING INFRA ON-PREM

THE MAJOR INVESTMENT OF TIME

MONEY FOR TRAINING THE TEAM

THE COST INVOLVED IN DIFFERENT SYSTEMS, MANAGING AND MAINTAINING A DIFFERENT SET OF ENVIRONMENT

A LOT OF OUTAGES OCCUR, DUE TO HUMAN ERRORS WHILE CONFIGURING THE SYSTEM

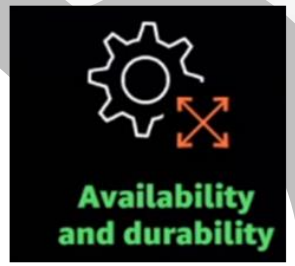
SCALING CANNOT BE ACHIEVED DURING SPIKES IN TRAFFIC BECAUSE OF INADEQUATE CAPACITY

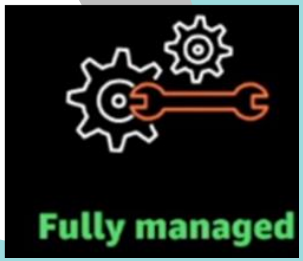
PRIMARY CONCERNS

- Growing exponentially
- Scale their environment
- Disaster recover plan
- New continuous deployment (CI/CD pipeline)
- Replace colocation facilities

ADOPTION OF GOOGLE CLOUD

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.





THANK YOU

Do you have any questions?