ClearScale Helps Medical Consulting Company Adapt to the Challenges of COVID-19

Executive Summary

Creative Practice Solutions (CPS) is a consulting firm dedicated to helping medical professionals optimize both private practice and outpatient operations. Over the past 30 years, the company has invested significantly in its technology to create better experiences for patients and physicians.

Recently, CPS reached out to ClearScale to partner on a third cloud project - this time to adapt to challenges created by the COVID-19 pandemic. CPS wanted to empower client physicians to conduct remote appointments and complete follow-on administrative tasks without requiring patients to download any new apps. Fortunately, ClearScale had the cloud expertise and resources to address all of CPS' needs during a difficult time.

The Challenge

CPS had to overcome several challenges to bring its vision to life. First, the company didn't have a tool that could simultaneously handle medical coding and telemedicine. Second, the existing tools were hard to use for non-technical audiences. CPS wanted the remote appointment application to be as simple as possible for patients.

CPS's telemedicine solution also had to be highly secure to protect sensitive patient information. Many of the teleconferencing solutions on the market aren't designed with healthcare compliance in mind. Finally, CPS wanted to make sure that any audio recorded during remote patient visits would get saved accurately for billing purposes.

Given the technical complexity of the project, the company needed a partner with extensive cloud expertise. CPS worked with ClearScale on previous projects and chose to bring ClearScale back in for a third engagement.

The ClearScale Solution

ClearScale wanted to design a solution that would enable physicians to conduct virtual appointments through the BugMD medical coding application the team had built previously using AI and machine learning technologies from Amazon Web Services (AWS). Besides, the new solution had to support patients' smart devices for remote visits without compromising HIPAA compliance. To meet these needs, ClearScale's expert developers implemented an array of powerful AWS services.
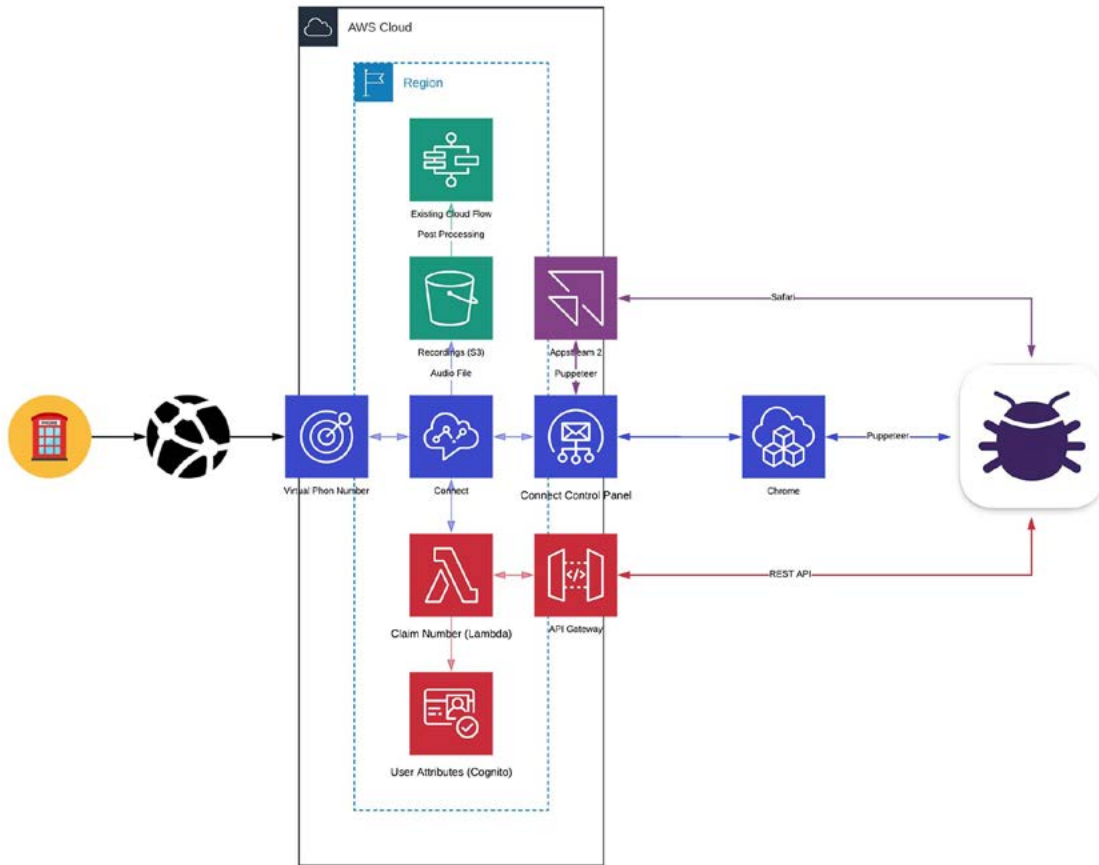
Virtual Appointments

On the virtual appointment side, ClearScale used Amazon Connect, a serverless contact center, as the foundation of the telemedicine solution, as well as Amazon AppStream 2.0 so that CPS could deliver its applications securely to any number of users.

Amazon Connect was key to bundling together the various services physicians need: medical billing, coding, and telemedicine. CPS physician users could now conduct virtual appointments through BugMD and interface with patients through their personal phones. ClearScale engineers made sure that Amazon Connect supported complete HIPAA compliance.

ClearScale also implemented AWS Lambda, a serverless compute service, and AWS Fargate, a serverless compute engine, to give CPS the processing power it needed for automated billing and video/audio streaming.

Architecture Diagram

Remote Appointments

On the remote appointment side, it was important that the solution could support multiple systems, including macOS, iOS, and iPadOS, to maximize accessibility.

For macOS appointments, ClearScale implemented a virtual audio device capable of automatic connectivity to Audio Graph to ensure private communication between physicians and patients. For remote appointments conducted through iOS and iPadOS, ClearScale integrated Audio Graph with BugMD using Theos tweaks and audio flows intercepted at the rendering level.

As a result, ClearScale was able to standardize audio format and quality between devices and ensure all communications were secure.

The Final Product

Together, ClearScale's updates made the workflow below possible:
- Medical appointments are recorded by BugMD and sent to the cloud
- Audio recordings are automatically enhanced, transformed into text, and translated (if necessary)
- Outputs are processed by Machine Learning algorithms
- Diagnoses, procedures, and prescriptions are automatically extracted for coding
- Results are available for review by physicians and then sent to insurers if accurate

Because of ClearScale's design and the power of the AWS cloud, the enhancing and processing steps above take no longer than 15 minutes, even for 8-hour recordings.

The Benefits

At a time when demand for telemedicine is skyrocketing, ClearScale helped CPS launch a new remote/virtual appointment solution through its existing BugMD application. The healthcare consultancy was able to adapt quickly to the times and add functionality to its platform that both providers and patients greatly appreciate.