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MATT MURPHY

CLIENT: Digiclarity

PROJECT: Case studies

OBJECTIVE: Compile an enterprise-customer case study to demonstrate Digiclarity's expertise with Amazon Web Services as part of its submission to become an AWS Partner Network consultant

SUMMARY: After successfully securing AWS Consulting Partner status with the help of a landmark case study, Digiclarity retained me for additional case studies, web-copy development for its corporate site, and POV work for a customer board presentation

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CASE STUDY #1

As part of its solution for troubleshooting major telephony issues at Hilton, Digiclarity broke new ground for migrating service-agent call centers to Amazon Connect at scale

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Setting the Standard for
Call Center Migration at Scale

How Digiclarity built a custom solution to transition Hilton's entire global agent base to the Amazon Connect platform with unprecedented speed and efficiency

Challenge

In Need of Modernization, Hilton Turns to Digiclarity

In 2017, Hilton Worldwide Holdings Inc., one of the most respected international hotel and resort brands, found itself facing a series of telephony issues. While its competitors had integrated newer technologies such as voice recognition and AI bots into their systems, Hilton had yet to innovate beyond push-button DTMF. Updating this older system required coding support from its call-center provider. Unfortunately, disruption to the provider's services at the time reduced the necessary technical support for making this change. This not only impacted Hilton's ability to drive business requests, it also jeopardized the speed with which any sort of change could go to market.

As a trusted partner since 2012, Digiclarity was retained by Hilton to address its urgent telephony needs. We were tasked with extending our successful track record with its business by ushering the company's worldwide call-center infrastructure into the modern age as quickly as possible.

Client

Hilton is one of the world's largest hospitality providers offering 5,800+ properties and 939,000+ rooms across 17 brands in 114 countries

Timeline

January 1 – December 8, 2018

Challenge

Transition Hilton's global call center to Amazon Connect at scale

Solution

Sequoia – custom Hilton Reservations and Customer Care software

AWS Services

Amazon Connect, Kinesis, DynamoDB, Aurora, Redshift, EKS, AWS Lambda

Results

5,000+ global call-center agents speaking 13 languages on 6,500+ inbound phone lines transitioned; Migration in under 1 year; $430,000 in annual cost savings

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Approach

Digiclarity Taps into the Power of Amazon Web Services

Hilton's need for a change in direction coincided with AWS's release of Amazon Connect. The cloud-based service utilized the same call-center platform used by the online retailer's own expansive customer-service team. We immediately recognized this as a strong potential solution for Hilton's 5,000+ call-center agents around the world.

Our methodology for migrating such platforms follows a logical sequence designed to cause as little disruption to the system as possible:

- **Identify MVP Functionality:** We first determine the minimum viable product with the necessary complexity for a full test. This lets us operate more nimbly and with less risk than if we were to dry run with larger teams or departments.
- **Onboard the Help Desk:** As employees adjust to any new system, they will naturally have questions about capabilities and need help troubleshooting unfamiliar issues. By immediately training help-desk support after sufficient testing, we create a safety valve for all agents and therefore smooth the transition significantly.
- **Migrate at Scale:** After a successful test case and training session with the organization's help desk, we scale the migration across the organization. This can include thousands of employees around the world depending on the business.
- **Automate and Analyze:** Having fully scaled, we then move into automation, data analysis, machine learning, and AI. At this point we are able to offer numerous benefits, such as customer profiling for easier desk routing based on call history.

Following this approach, we partnered with Hilton on a pilot program to evaluate the speed and effectiveness of Amazon Connect integration. Hilton chose its Owners Desk for the pilot given the wide range of requests the desk received relative to its small size. Its requirement that agents be all over the globe also allowed us to test audio latency and response times. We were therefore able to sufficiently determine the system's capabilities while keeping the transfer limited in scope as a test run.

The program was by all accounts a major success. Migration of the Owners Desk onto Amazon Connect improved reporting and offered a phone panel specifically tailored to the desk's needs. Most importantly, back-end administrators and developers required no niche technical training thanks to Amazon Connect's user-friendly graphical interface.

Hilton subsequently green-lit conversion of all call-center desks worldwide in 2018. Given the exponential leap in migration size, this required a brand-new tool for the job.

Solution

Unable to Scale with Existing Technology, Digiclarity Breaks New Ground

With Amazon Connect in place as the core service, Hilton required a go-to-market solution quickly in order to onboard global operations. However, migrating thousands of phone numbers and agents would be too cumbersome and time-consuming using the platform then in place.

Recognizing that ad-hoc modifications alone would not meet Hilton's needs, we removed this obstacle altogether by developing new technology fit for purpose. Our custom software solution, Sequoia, extended Amazon Connect's capabilities and facilitated rapid development.

Sequoia's next-gen call-center software was the ideal platform for Hilton by providing the following features:

- **Advanced Routing:** Amazon Connect's standard routing abilities through its graphical IVR were strong, but they would have created a repetitive process for Hilton's various teams and desks. By leveraging back-end storage in Amazon RDS and a user-friendly interface, Hilton Reservations and Customer Care (HRCC) was able to inject routing rules into Amazon Connect at any time.
- **Amazon Connect Sync:** To create these custom rules, we needed to integrate deeply into Amazon Connect. This required full syncing of phone numbers, queues, prompts, agents, and all other related items. Such integration allowed for even larger customization of object metadata.

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- **Special Handling:** Sequoia set special handling rules configurable at any level. This helped block such issues as fraudulent numbers and prank callers.
- **Special Configuration:** Users were now able to set specific properties on phone numbers, queues, etc., opening the door for dynamic transfer of data back to Amazon Connect. We also integrated Sequoia into Hilton's other external systems such as its custom Salesforce CRM and its Property Information Manager (PiM), which provides hotel details to agents via screen pops and agent whispers.
- **Click to Call Me Configuration:** Users can now enable and disable callback functionality on the Hilton Support site, as well as configure dropdown menu items and assign them to their relevant call flows.
- **Greater Prompt Customization:** Leveraging Amazon Polly and SSML tagging, we provided Hilton with a way to craft speech closely resembling real audio recordings. Non-technical users can load these prompts and play them back before committing them to the system, freeing up telecom resources for more complex tasks.
- **User Security:** We offered granular security granting access to preview configurations or make changes to specific settings. This allows limited access for non-technical users while maintaining flexibility for power users.

Results

Sequoia Migrates Hilton at Record Speed with $400k+ in Annual Cost Savings

Sequoia effectively rewrote the playbook for scaling up Amazon Connect call-center systems to the cloud. For a process that typically took up to two years, our new solution accomplished this on a global level in less than 12 months. By allowing users to make routing rules, it minimized programming and IVR changes that would have extended the timeline through lengthy approval processes required for a large enterprise.

Not only was Hilton able to go to market far sooner than anticipated, but this time savings translated directly to cost savings as well. Sequoia's ability to re-route calls two hours earlier along with its elimination of two full-time call-center resources resulted in savings of $430,000 per year.

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Hilton also benefited from an array of other improvements across the board. These included:

- Automated builds and deployments using Amazon EKS and Docker
- Contact Control Panel (CCP) tailored to each call center via localized preferences
- Fine-grained control over After Call Work (ACW), with preferences controlled by Sequoia
- IVR developer focus on building new features instead of repetition
- Reporting and integration with call quality and analytics vendors

Learnings

Continuous Improvement Enhances Sequoia's Competitive Advantage

We initially custom-built Sequoia to scale Hilton's call-center migration to Amazon Connect. Given its landmark success with the Fortune 500 hotel chain, we now use this dynamic software to inspire similar initiatives for other clients. Each challenge affords our team the opportunity to innovate even further, and our solution is now being used to improve real-time user data, call-record search, sentiment analysis, and a number of other important functionalities.

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CASE STUDY #2

Digiclarity developed an innovative new Google Chrome
extension to help monitor Amazon Connect for changes in
VoIP call quality within Hilton's Tokyo network

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Troubleshooting Connectivity Through Next-Generation Innovation

How Digiclarity developed new technology to overcome critical call-center issues within Hilton's Tokyo network

Challenge

Facing Telecommunications Obstacles in Japan, Hilton Reengages Digiclarity

In a landscape as competitive as the hotel and resort industry, outstanding customer service is paramount. So, when Hilton Worldwide Holdings Inc. suddenly experienced numerous call-center problems within its Tokyo network in 2019, it became a chief concern for executives. Poor quality and dropped transfers were negatively impacting the customer experience. Not only that, but these issues also had internal repercussions as call-center employees were resigning out of frustration.

A longtime Digiclarity client, Hilton once again turned to its trusted partner for support. We were already intimately familiar with Hilton's system on the Amazon Connect platform, having recently built custom technology to migrate its global call center at an unprecedented rate. Our new task was to determine the source of Tokyo's network issues and quickly implement a solution that would return customer service to previous levels and reduce employee attrition.

Client

Hilton is one of the world's largest hospitality providers offering 5,800+ properties and 939,000+ rooms across 17 brands in 114 countries

Timeline

3 Months

Challenge

Identify and resolve Hilton's call-center connectivity issues in Tokyo

Solution

MOS Chrome Extension

AWS Services

Amazon Connect
ElasticSearch
Kibana
Custom Dashboard

Results

Reduction in dropped/missed calls
Improved MOS scores
Resolution of multiple network issues

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Approach

Digiclarity Leverages WebRTC Expertise to Conduct a Full Network Analysis

We immediately tapped into our deep experience with Web Real-Time Communication (WebRTC) APIs. Partnering with Hilton's senior network engineers, we performed a technical analysis that evaluated, among other things, various packet captures. We discovered that Tokyo's call-center complications were completely random and exceptionally hard to catch. Without being able to spot problems as they occurred, we would not be able to diagnose their root cause.

Adequate tools for sourcing quality and transfer issues in real-time unfortunately did not exist. Therefore, as with Hilton's global call-center migration, we brought in our engineering team to develop the necessary technology to solve our client's urgent challenge.

Solution

Digiclarity Introduces a Brand-New Way to Track MOS

The key to ongoing stability would be the capacity to monitor Amazon Connect for changes in the Mean Opinion Score (MOS) of VoIP call quality as they took place. Our solution was to build an extension for Google's Chrome web browser with that exact functionality. This solution, the MOS Chrome Extension, featured a number of capabilities:

- **Score tracking:** Real-time MOS scores were recorded and presented statistically as well as in graph form charting each call's changes over time.
- **Call review:** The extension's panel included a History option that allowed users to revisit quality metrics at any point after the call.
- **Data export:** For convenience, data captured by the extension could be exported as a CSV file for further review offline.
- **Dashboard:** The extension offered agents a live Dashboard to track any and all calls under their oversight.
- **Troubleshooting:** An automated Troubleshooter option made it easier to address issues related to making or receiving calls.

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Using our MOS Chrome Extension during working sessions with Hilton's network team, we followed numerous dropped calls in real-time. The tool ultimately traced the issue to a particular form of antivirus software consuming all ports in network address translation (NAT) tables. The software prevented Amazon Connect from gaining a solid connection, resulting in Tokyo's call-center difficulties.

Results

MOS Chrome Extension Offers Long-Term Call Center Peace of Mind

Our new tool became an invaluable asset for Hilton's call-center agents. From then on they were easily able to spot a quality issue and alert network engineers, who could then quickly begin packet capture and check the system's firewall. MOS scores improved significantly thanks to fewer dropped and missed calls. The tool's versatility allowed us to isolate and resolve other issues within the network as well, elevating MOS even further.

Given our initial successes with Hilton, we have since applied the MOS Chrome Extension to other clients experiencing related network issues. Our tool has become a best practice for call centers operating on VoIP platforms, including Amazon Connect.