

Transcript

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Hello all, welcome to an episode of 'This is My Architecture.'

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My name is Ayesha, and with me today I have Brian joining us from ResMed.

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- Hi, Brian. - Delighted to be here.

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Brian, can you tell us a little bit about ResMed.

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Absolutely yeah.

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ResMed is a med-tech company which specializes in sleep apnea therapy.

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So we build medical devices and digital solutions.

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Recently, you underwent a major migration,

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where you migrated your on-premises monolithic architecture

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for your product, myAir, to a completely serverless environment on AWS.

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Can you talk a little more about that?

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Yes, myAir is our patient engagement platform.

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So this consists of mobile apps, website,

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a medical device, and our back end system.

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And this allows our patients to engage and track their therapy.

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Okay, so you brought your architecture with us, let's dive straight into it.

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Absolutely yeah.

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So the first thing, though, is this is a fully serverless solution.

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And that's direction we wanted to go with for low operations costs.

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So for any user here using our mobile app,

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the communication is over Graph QL, M2 AppSync.

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AppSync and manage Graph QL server.

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We wanted to take advantage not just of Graph QL,

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but we also wanted to take advantage of the synchronization infrastructure

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that comes out of the box with AppSync.

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We didn't want to have to rebuild this.

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Any requests that come in here, they'll basically go through something called VTL,

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which is a velocity translation language.

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So this then basically writes it to a particular Lambda,

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we have multiple Lambdas.

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And then these Lambdas call into DynamoDB, to either write or read,

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and they execute a bunch of business logic.

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Okay, this slide there seems like a very robust architecture.

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Can you talk a little bit about how you scale for this?

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Yeah, absolutely yeah.

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So these are all managed services, which really helps on the scaling side.

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So we have about 60 million Lambda invocations every day.

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And at peak load, we're hitting about 4000 Lambdas, concurrent Lambdas.

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So it's incredible to see it in operation.

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That's definitely very impressive.

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Can you talk a bit about how does this IoT device right here fit into this architecture?

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Absolutely yeah.

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So we have our own EMM solution currently,

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within them within ResMed which handles IoT.

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The difference with this project is, is we now write this data,

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and we publish this data real-time into Kinesis.

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There's little bit of transformation, we get this data,

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and then we write this into DynamoDB via Lambda polar,

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which does a bunch of statistical analysis.

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Okay, so it seems like DynamoDB right here,

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is acting like a centralized repository,

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not just for users pulling in data,

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but also any data that you collect, based on their performance from the IoT device.

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Is that right? That's exactly correct.

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Okay, so how does SNS fit into this?

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Yeah, so as soon as this data arrives in here,

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we're taking advantage of DB Streams.

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And what we're doing is we have another Lambda here,

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and which essentially interrogate the data that's just been written,

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to understand what is the most important information that we need to tell the user

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about how they slept last night, or any issues they were having.

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This then puts it onto an SNS topic.

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And then this gets sent out to the user,

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either as a push notification, or we can send an email off to SES.

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Okay, so not only are users tracking and monitoring their health performances,

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but they're also getting notified in real-time

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based on any anomalies or any important information

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that they need to know about their health.

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Absolutely yeah, correct.

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And was there any performance improvement

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that you saw with this kind of deployment right here?

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Yeah, so obviously, the database access is incredible, incredibly fast.

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The data that comes through the system from the medical device.

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So what happens when someone wakes up in the morning,

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that's when we send up the data to the cloud.

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Typically, in the past, it was taking a few minutes for this dataset to arrive.

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So it was measured in minutes.

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So right now, this data is less than 10 seconds to make it all the way to our system.

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That's impressive.

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And finally, I see CloudFront and S3 here.

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So what are these two components doing here in this architecture?

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Yeah. So within here, we have a lot of static content,

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that we basically stored in here.

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This static content is things like videos, images, and any other assets, which drive the mobile applications.

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So we support currently, right now we support about 30 countries and 20 languages.

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So potentially, any asset in here

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could be represented 600 times based on that matrix.

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So when a when the app calls in, we have CloudFront in front of S3.

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So we have a Lambda@Edge here.

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And this Lambda@Edge interrogates the headers within that request,

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and determines what language, what country?

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And it has a lookup table, which then basically tells CloudFront here,

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this is the URL within S3 that you need to call,

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and it calls that.

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And then this reduces instead of having the 600 potential assets, we have about 60.

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So 10X reduction, so for maintenance, that's very, very beneficial.

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That's very, very impressive, Brian.

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So I can see that you have users across 30 countries across the globe.

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So anything that he wanted to talk about the global scale of this architecture?

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Yeah, well, I mean, it scales incredibly

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and a lot of it is out of the box because it's serverless.

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So we didn't have to do too much tweaking on that,

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and to be able to hit these numbers, it's just amazing.

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Okay, thank you for sharing this with us, Brian.

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No problem at all.

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Thank you for watching, 'This is My Architecture.'