babysense™

Learn How Cloudride helped Babysense create a zero downtime environment.

INTRO

The company was founded in 1991 and thereafter developed the world's first non-touch breathing movement monitor, medical grade, for the detection of respiratory cessation (apnea) in infants, known under the trademark – Babysense. Since then, the company has gained solid expertise in developing and manufacturing quality health monitoring solutions, meeting the stringent requirements and needs of global markets. All the products are based on proven and reliable technology, certified medically in Europe, Japan, Australia and Israel, which helps protect millions of babies worldwide.

THE CHALLENGE

The Cloudride solution (resources and architecture):
Cloudride designed a cloud-based solution, which suits Babysense's needs.

High Availability

GDPR Compliance

"We found exactly what we need, a commando team to support us on our journey from MVP to full multi-region production environment"

Itsik Binyamini,
CTO, Babysense

THE GOAL

In the beginning, we implemented a solution consisting of five pipelines.

- Microservices pipeline, which is a two-sided pipeline, information received from the hub, which is then processed and transferred into the Database. In case an end user needs to be notified regarding an issue, a notification is sent using sns, in order to notify the end user. In addition, information received from the users goes through the same pipeline.

- Real-time notifications and streaming, of course, when you hear real time you think of kinesis. However, AWS offers a real-time graph service known as appsync, which can work in a pub-sub form. This is being used to update the end-user, perform real-time analysis, and much more.

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- Data visualization and analytics, to generate data visualization and analytics we used Kinesis firehose to transfer the data into an S3 bucket, from there to AWS glue which is the right service for data integration. We defined a crawler that collects the data every 5 minutes and transfers it to the database. We use Athena to transfer the data into AWS quicksight for visualization and analytics. Moreover, we transfer data from the IoT devices to IoT timestream after being processed by a lambda function. The same data goes to quicksight as well.

- IoT all of this could not have been achieved without IoT services, mainly IoT rules which integrate into IoT things and AWS services such as lambda easily. Many of the pipelines depend on that service.

- CI-CD with AWS lambda, which acts as 90% of Babysense backend, we wanted to devise a no-downtime deployment. Since issues with downtime can generate devastating results. We utilized a simple yet magnificent solution of AWS. AWS has lambda versions and aliases. When you call the arn/activate the lambda it automatically activates the latest version of the lambda. However, an alias can be defined to use specific versions and when activated will activate those versions. Apart from having a dev environment to develop and test their needs, they wanted to further test it in a fully operational environment. Thus, lambda alias provides this quite easily, it has weighted traffic. For example, we have a lambda function that consists of two versions, version one, and version two. However, version two was not tested in the production environment, so we want to only route 10% of the traffic to this version (two) and 90% to version one. This couldn't be easier with a lambda alias. With this solution, we can update and test a specific lambda without even affecting the environment.

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- It would be a sin not to mention the amazing tool that enabled the automation, creation, and duplication of the fully operational environment terraform. Terraform is an IAAC tool that enables the creation and management of a fully functional environment only through code. Just for illustrating we created over 300 resources in AWS alone. We can in full confidence say that duplication, management, and modification of such an environment can cause issues that later manifest as the rising cost of AWS account, still environment, fear of making changes, and more mistakes that can have their separate blog. However, with terraform modification, duplication, and management of an environment couldn't be easier, we consistently test our code with tools like steampipe, terraces which. Which steampipe deep-dive into the code and point out any security features and compliances flaws in our code. While terraces test the functionality of the code.

- Future plans,
  1) Use timestream integration with sagemaker in order to run ML algorithms and models on the data from the timestream.
  2) Utilize AWS kinesis video and audio streaming service to run and analyze video and audio in real-time.
  3) Implement Rules engine for automated management of all connected IoT devices in the nursery environment.

We followed AWS best practices, no role has more permissions than it needs, encryption is our default, and much more.

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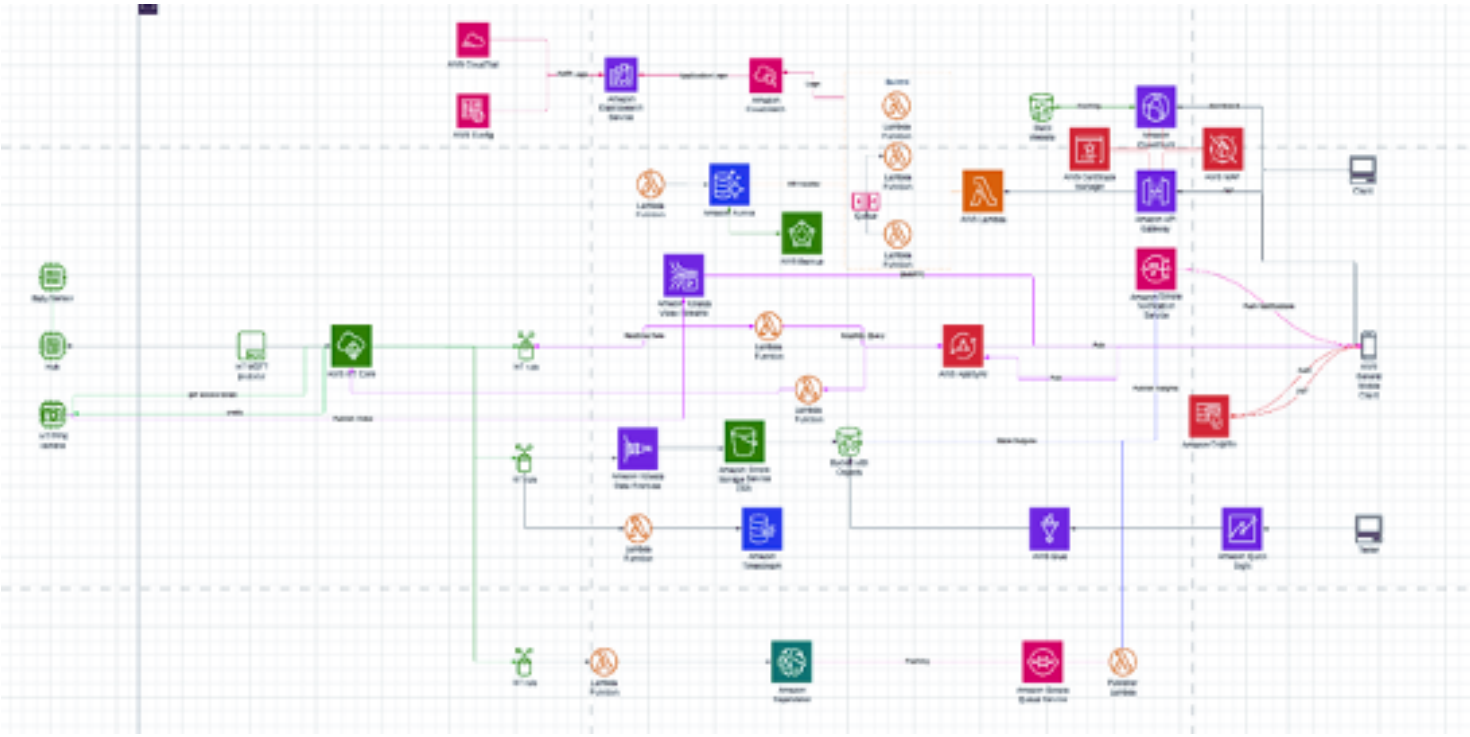
THE RESULT



“It’s been a blast working with Babysense (Hisense Ltd.). As a certified Amazon partner, and with the importance of facilitating an optimal user experience, we worked closely with Amazon from the very beginning, in close collaboration, supporting planning, deployment, and ongoing optimization".

Danny Lev Ran
CEO, Cloudride

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