Shruti Koparkar (00:00):

Hello everyone and welcome back to the official AWS Podcast. My name is Shruti Koparkar and I will be your host for today's episode on all things hybrid cloud and edge. At last year's Hybrid Cloud and Edge Day, we showcased how customers are using these services to innovate at the edge and support workloads that need to run in their on-premises data centers or edge locations. Today we have a special episode [00:00:30] where we will chat with one of these AWS customers. I am joined by Subhashish Bhattacharya from Athenahealth to learn how they are transforming healthcare. Welcome, Subhashish. Please tell us a little bit about yourself and your role at Athenahealth.

Subhasis Bhattacharya (00:47):

Thank you so much for inviting me for the AWS Podcast. Very excited to be here. As you said, Shruti, I'm Subhashish Bhattacharya, executive director Athenahealth best out of [00:01:00] Athena's Boston office. In my current role, I'm involved in digital transformation at Athenahealth and I'm very excited to share some of our hybrid cloud journey to your listeners.

Shruti Koparkar (01:12):

That's great. Okay, so can you tell us a little bit more about Athenahealth and the customers that you serve today?

Subhasis Bhattacharya (01:20):

Athenahealth is one of the leading healthcare technology companies at Boston, Massachusetts, caters to 20% of the US patients [00:01:30] and offers several healthcare technology services. So the chances are some of your listeners are utilizing Athenahealth services today. Let me go through a scenario explaining Athenahealth services that might help to better understand the business process. Let's say I would like to visit my primary physician. In usual case, I would like to pick up the phone and call and stay on the hold, but if [00:02:00] primary physician is using Athenahealth Service, I can go to online and schedule a appointment with my primary physician.

(02:10):

Now, let's say my appointment is done, it's appointment day and I walk into the clinic. The first thing is that I'll reach out to the check-in counter and the individual in the check-in counter will ask my name and date of birth. What that individual is doing, actually, is logging to Athenahealth [00:02:30] service and then extracting my information, validating the information, and then ask me, "Okay, would you like to sit down?" So I sit down, I wait for the nurse, but in the meantime, the service actually routed the request to the back office where nurse sees that and then checks me in. And then I follow the nurse, I go inside, nurse checks the vitals, and enters into the system that also [00:03:00] is handled by Athena service. And then a doctor comes in and again, pulls all my details through the system, asks me where the medicine is going to be in or outed to, so the entire operation is handled by this technology technology.

(03:18):

Now, let's say I'm done with that. I come back home and I would like to see what my vitals were because I forgot to ask that question to doctor. I can log into my [00:03:30] patient portal and I can see all the vitals, and if I have a question, I can pose that question. It'll go to the service provider, they can answer the question directly. Once you go to the doctor, you start getting multiple bills. Athenahealth services has a medical billing as well. It'll handle the bill and it'll hide all the complexity behind the scene.

(03:54):

Now, let's say I'm a good mobile user. I'm not laptop, I don't use my laptop. [00:04:00] We have an app which the mobile user can use that as well. So in the web scenario, we covered couple of services, for example, electronic health record, revenue cycle and the practice management, patient engagement services. But there's few additional services. For example, telehealth service, which got very popular during COVID time, mobile service, then population health services, platform services, marketplace and [00:04:30] advisory services.

Shruti Koparkar (04:32):

That's excellent. I mean, it really does cover the end-to-end patient experience in many ways. And also from the care provider side, they're logging into the same system, essentially, on the backend. That's really great. Now, let's go back to the beginning of your cloud journey on AWS. What was your on-premises architecture like and why did you start using AWS hybrid and its services? What were you looking to solve?

Subhasis Bhattacharya (05:00):

[00:05:00] Athenahealth's take modernization journey started a few years ago, and out of the services I mentioned, several services are already migrated to cloud. But some of the core stacks, which has got heavy dependency and tightly coupled with the databases, they are running on Athena, we call it private cloud. And due to the low latency requirement, if I dig a little deeper on the low latency requirement, let's [00:05:30] say in the above scenario, I go to the doctor and doctor has a laptop and try to get my access information. At that time, you cannot have doctor waiting for the information to be populated on the screen and it'll not be good experience for me if I'm sitting in for the doctor. So the low latency is absolutely necessary for us.

(05:52):

In order to address that, we didn't want it to wait 'til migrate everything to the cloud. We wanted to have an option [00:06:00] where we can bring the cloud to our data center. And Outpost provided an excellent option. It gives all the services, several services AWS provides in a packet within the Outpost box, low latency, and also utilizing some of the cloud feature. We decided to go for Outpost and we brought Outpost to our data center and it helps us to quickly fire up EKS clusters pointing [00:06:30] to our databases in very low latency infrastructure. That worked extremely well. That was the first step towards having the best of both world. We have the cloud infrastructure, low latency running in our data center. Some of the stuff about the Outpost was covered by one of our senior architect, Anusha Dharmalingam during re-invent, I would say year before.

Shruti Koparkar (06:59):

Oh yeah, [00:07:00] that's great. We are always looking for customers to tell their own experiences. We find that our customers benefit a lot from hearing from their peers in the industry. So you started with Outpost because you didn't want to delay your modernization process too much further. How did you decide what edge services best met your needs? Both Outpost and then I believe you went on to adopt several other AWS services as well;

Subhasis Bhattacharya (07:27):

Yeah, so Outpost worked extremely [00:07:30] well. It helped us to bring Cloud to our data center quickly. However, Outpost is one of the limitations we faced was that we had to do the capacity planning, we had to get the Outpost boxes in our data center. We were looking for the solution which can help us to do the burst capacity to the cloud, so best of both worlds. Again, hybrid cloud

architecture, extending it further. [00:08:00] So we looked at Local Zone, which is Boston Local Zone, the latency between our data center and the Local Zone in sub milliseconds. And we paired up Outpost, which is running in our data center with Local Zone, which is running in AWS data center at Boston, which helped us to burst capacity to Local Zone on demand. So now we have indefinite scalability attached to the Outpost [00:08:30] and bursting to the Local Zone.

Shruti Koparkar (08:32):

That's excellent. Now, tell us what your approach to modernization was in terms of your application architecture, so on and so forth.

Subhasis Bhattacharya (08:42):

One of the approach we have been following is scale performance at cost. The hybrid cloud fit very well, because in the data center we can have the sustained capacity. Now, mostly in the healthcare business, you must have seen that [00:09:00] morning few hours is the busy time. If you go to healthcare provider, the line is probably the longest during the morning hours. So that is really our sustained capacity, and what we could do is use that sustained capacity in our data center and the burst additional capacity to the Local Zone or to the cloud. So that gave us compute on demand as well as on low latency as well as processing, [00:09:30] maintaining the sustained demand in our data centers.

Shruti Koparkar (09:35):

And I think in one of our discussions, Subhasis, I've heard you talk about an interesting term, which may be unique to Athenahealth, which is the macro service strategy. Can you tell our audience a little bit about that and how you went about thinking about that architecture and why it made sense for Athenahealth?

Subhasis Bhattacharya (09:55):

Each application is different. You have one hand monolith, which is everything [00:10:00] is one big application and sometimes could be difficult to maintain. In another hand, you have microservices where everything is... It has its own data store, and at very minute level. We wanted a solution which is practical and fits our requirement very well. We created an architecture which called macro services, which helped us to take advantage of both connecting to the [00:10:30] larger vertical scalable databases. At the same time, having granularity at the Kubernetes clusters, the flexibility and horizontal scalability. So the macro services kind of help us to get the best of both world.

Shruti Koparkar (10:49):

That's awesome. That's awesome. And love that innovation to come up with hybrid solution or pun intended for this episode. Okay. I think you've talked about this a little bit already, but what [00:11:00] are some of the challenges you faced as you to this modernization work stream?

Subhasis Bhattacharya (11:06):

Especially if we talk about hybrid cloud, one of the challenges we had, was that since we're using infrastructure in multiple places, so we have in our data center, in AWS, we have to make sure we get a solution where there's no code impact. The code can run seamlessly across multiple infrastructures, otherwise [00:11:30] the maintenance would be really hard. In this case it would be Outpost and Local Zone. But AWS done a fantastic job in making sure that the same code is a 100% compatible between

the Local Zone and Outpost. So we could have the same Kubernetes container, without any code change, we can burst the capacity from outpost to Local Zone. So that worked out extremely well.

Shruti Koparkar (11:56):

That's great. The way Outposts and Local Zones are [00:12:00] built and that code being 100% portable, your modernization process was much more efficient. It was faster. You didn't have to refactor code or rewrite any code. It was just seamless across both those services. So modernization is one thing, of course, but ultimately it is towards the end goal of delivering delightful experiences for your customers. Can you maybe tell us a little bit about how this modernization has allowed your team to innovate [00:12:30] and add net new features to your application?

Subhasis Bhattacharya (12:33):

Yeah. One of the thing was that we could quickly utilize the AWS services without sacrificing any of the advantages we have in our data center, which is running big databases in vertical scalable architecture, and we could pass that benefit to our customer. Now we can deploy EKS clusters, which is on demand, which is highly [00:13:00] scalable, and we can provide that benefit to our customer that there's no performance issues anymore. We can horizontally scale. There is one additional benefit we had with this infrastructure is the cost benefit. Usually if you're running on your data center, you have to really plan for the peak capacity, but here we are not planning for peak capacity, we are planning for sustained capacity and we are really [00:13:30] using Local Zone to burst our capacity. So that way, it's a huge step towards utilizing the cost effectively. The frugality is built into the entire design. That's what helped our team to not worry about too much on the capacity constraint in either side. We can have code developed without thinking about how to scale it across [00:14:00] the organization to provide that scalability to our customers.

Shruti Koparkar (14:06):

And I can imagine that once you remove these sort of worries around capacity, developers can really focus on the innovation and they get a certain amount of energy to just go do what they think is right for the customer, so that's awesome. What are some of the early outcomes your team has observed through this journey? I mean, you've talked about cost savings, you've talked about scalability and availability. Just would love [00:14:30] to hear it as a good sort of recap of your experience.

Subhasis Bhattacharya (14:34):

Yeah, that's a great question. There's some tangible stuff, we talked about scalability and cost saving. There's some intangible, which is developer experience. Every developer, they want to get their hands on latest and the greatest technology that excites people, that brings some great energy, as you mentioned. We know that the cloud, [00:15:00] AWS is, the strength is really in agility. It can be agile. We can fire it up new services in minutes notice. With that, it's a renewed interest in our developer community. We are not bogged down, we are not limited by what's available. We can really go and expand what is the best technology we can utilize to delight our customer.

Shruti Koparkar (15:28):

Awesome. Well, [00:15:30] thank you so much, Subhasis, for joining us and sharing your story with our AWS community. For everyone who is listening, if you want to learn more about how to use AWS wherever you need it, please check out the link in the show notes and get more information on the services for hybrid cloud and edge. And until next time, keep on building.