Jason Lopez:

This is Tech Barometer, Cloud Coverage. I'm Jason Lopez. We thought it was interesting to see an announcement that you Udacity is offering a cloud native Nanodegree, a four month track comprised of four courses called cloud native application architecture. It's being done in collaboration with SUSE, a company which helps other companies with their cloud operations. Sarah Whitlock is the global head of the SUSE and Rancher community. She's been in academia, having pursued a PhD in engineering from Stanford, but left to work in Silicon valley during the dot com boom. and since then has had a career in the industry, with an ongoing interest in education. We talked to her about the nanodegree program and why "cloud native" has gone beyond training sessions into a university-level curriculum.

Sarah Whitlock:

Yeah, that's a, that's a great question. Getting to cloud native, it's a journey. It's not something that just happens overnight and it's more than just about technology. There's a lot of change management, a lot of cultural change that's involved, but if you just focus on the, on the technology part, there's this fast technology landscape, it's something that, you know, you really actually need to understand it. There's a lot of choice in this landscape and is rapidly evolving. It's just constantly changing. It's innovating, which is great. But from a technology point of view, if you're kind of coming into this, it can be quite daunting to get started, right? Like where do I start? What do I choose? What do I do? but at the same time we have all of these companies, I think there's about like 60% of companies report that a huge portion of their mission critical it services are built on, are served up in some way using cloud native architectures. But at the same time, a large number of hiring managers say that they can't find the people that they need to do the work that needs to be done. I was looking at this four 51 research voice of the enterprise survey recently, and it said something like 85% of organizations report deficits in cloud expertise. And, you know, you've got universities, they're not able to teach this stuff. They've got enough on their plates. just getting that foundational material that every graduate needs much less trying to tack on this latest, greatest tech that's coming out, you know, at an ever increasing rate. So there's this ever growing skills gap and an overwhelming need to prepare our global workforce to be more cloud native literate. So that's why we need this.

Jason Lopez:

Yeah. You know, it, it's kind of interesting as I talk to technologists, it's not necessarily that all roads lead to AI or all roads lead to big data, but it does seem like all roads are leading to cloud in some ways.

Sarah Whitlock:

Yeah. Without a doubt. I mean, the cloud brings a lot of things to the enterprise and there's a lot of great promise to it. Of course, that hasn't yet been realized. but yeah. Cloud is cloud, is it?

Jason Lopez:

Yeah. So I imagine that's one reason why SUSE decided to invest in a partnership with you Udacity to offer these courses to students. I wonder if you could elaborate on that?

Sarah Whitlock:

Yeah. Well, when you look at this global skills gap, right, and you think about what does SUSE do as, as a company. So we have this leading edge, innovative technology, but none of that is useful if you don't have the people who are properly trained to know how to use it. And I'm not talking about product

training, I'm talking about skills training. So what we're trying to do is be part of the solution here, what we're doing with you Udacity simply put it's about helping people get the skills that industry is telling us that they need.

Jason Lopez:

So Sarah, what is cloud native, if you were to define it and how does it impact the delivery of applications?

Sarah Whitlock:

Yeah. that's a great question. I'm not sure that there's one simple statement that encapsulates everything about what cloud native is. I tend to think in terms of business outcomes, in the sense of business outcomes, cloud native is a way of developing and delivering applications so that companies can innovate faster. They can respond to feedback from their customers and ultimately bring a better experience to their end customers. Now in the cloud native world, applications are typically deployed as microservices. So rather than having one big monolithic application that has all of your business logic and all of your functionality into it, instead, you kind of break that apart into these microservices, these bits of workflow of, of logic. And then each of those pieces is packaged into its own self contained entity called a container. And then those containers are dynamically orchestrated or are they're managed by Kubernetes to optimize resource utilization. So really what ends up happening here by having all of this architecture cloud native allows developers to build truly amazing and awesome applications that serve their customer needs faster and better. So it's kind of like this continuous innovation cycle with continuous feedback from the customer. So you deploy, you get feedback, you pivot, you take that feedback, you do something with it and improve. And it's just this ongoing iterative process

Jason Lopez:

I gotcha. And when did you start becoming aware of these sorts of practices that you're calling cloud native? About when did this start happening?

Sarah Whitlock:

Well, I entered into the cloud in the Salesforce days. I was an early employee at Salesforce. So I was working on business applications, you know, CRM in the cloud. Salesforce had a really interesting platform that essentially abstracted away, a lot of the complexities of how you build applications and how you get them to the cloud. Like they kind of took care of a lot of that. So that was my introduction to the cloud really only a couple of years ago. And I came to SUSE when I kind of went down into the infrastructure layer. That's when I started to embrace more of this cloud native way of doing things, because now I was faced with some of that complexity. That's under the covers that was abstracted away on that one particular proprietary environment. and that's, that's when I started to learn, well, I guess even actually at SAP, I was there as well. You know, SAP was making the transition to Kubernetes as well. And I was starting to learn this and go, wait, what does that strange word? What does that mean? Right. So even for me, it's relatively recent.

Jason Lopez:

Yeah. It's really interesting how we're in the middle of seeing a thing, becoming a practice rather than just an idea. And now we're starting to see it to the point where we have coursework that people can pursue in order to become competent in this area. What are some of the classes that are offered in this Nanodegree program?

Sarah Whitlock:

Yeah. So let Me tell you a little bit about the overarching Nanodegree program. First. I want to describe it as more than just the courses. So it starts with a free online course that introduces some basic skills to develop and deploy cloud native applications. So that's where it begins, but then there's also this full online Nanodegree program. that's three additional courses. Each of them comes with projects where you get hands-on practice using the concepts that you learn, but a really important part of the whole Nanodegree experience is also a community for the learners. Think of it as like scaffolding, extra support that offers some extended learning opportunities, some mentorship, some fellowship as you go through the program. I think we all learn better when we're able to bounce ideas off of others and go through experiences together. So it's more than just the courses. It's, it's that scaffolding as well. The whole program consists of four courses and a capstone project. And like I said, each course has a project that goes with it. First course is cloud native fundamentals. This is where you, you simply learn to structure and package and release an application to a Kubernetes cluster and then use an automated CICB pipeline. So kind of some basic stuff, second course is on message passing. And this is where the students actually learn how to refactor the monolithic application into microservices and then learn how to have those microservices communicate with each other, via message passing. Then the third course is on observability. So this, this is a really important part about any distributed application knowing how to monitor and respond to the health and the performance of the app that's running on these Kubernetes clusters is, is quite key. So students are gonna learn how to collect system performance using pre-media still collect app tracing data using Jaeger, and the note visualize results using they'll build a dashboard using Grafana. And then the final course is on microservices security. And so this is where the students will learn about threat modeling. They'll explore what the attack surfaces look like in a microservices architecture. And then they'll use some industry standard, open source tooling to learn how to monitor the application. So they'll ultimately deploy a runtime security monitoring service so that they can look for security signals and learn how to respond to any issues there. And then finally at the end of it, there's a capstone project. It kind of brings everything together. So the students will refactor an e-commerce online shop and they'll deploy it on Kubernetes. And so basically they just, they're taking all the things that they've learned and applying them to this real world example problem. And so at the end of this whole experience, you know, this multi-month experience, they'll actually have a portfolio of projects that they can show to their current employers or prospective employers to say, look, this is what I know how to do. So it's actually pretty cold. It's pretty comprehensive in that regard.

Jason Lopez:

Does this form, the basis of an ongoing curriculum? You're going to build on this in the future?

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I'm not sure that's a great question. I don't know, but I do know this, this is just the beginning of the journey for someone who is stepping into cloud native and we've done what we've done here is we tried to, to put the focus on the developer aspect of this because you know, about a, about a year ago when we were embarking on this project with you Udacity we, we set out to, to fill a void in the current landscape of cloud native educational resources. and that was the focus on, on the developer. so, so this program puts the focus on what developers need to know to take full advantage of all of the great things that microservices, containers and Kubernetes bring to modern application delivery. but at the same time also introduce a fair amount of complexity for developers. I hope that this is the first of many of these kinds of initiatives that we'll do, but I don't know yet what let's see how successful this one is.

Jason Lopez:

You know you've had a career as an engineer, you're still an educator. What's the story of your educational path?

Sarah Whitlock:

Yeah. I was thinking about this the other day, my, my first real professional ambition. I'll, I'll ignore the part when I was a kid and I wanted to be an astronaut. and then I quickly, I quickly learned that my

Jason Lopez:

That's actually a pretty cool fact.

Sarah Whitlock:

Yeah. It was neat. My propensity toward motion sickness kind of eliminated that as a, as a viable job alternative for me. Although at one point I did actually work at NASA, so that was fun, but not certainly not as a test subject an astronaut, but yeah, my first real professional ambition was to be an engineering professor. I went through my bachelor's master's and PhD courses without having a single female professor in any subject. And I thought that it might be a good idea for me to contribute to the critical mass of women in academia. Plus I grew up in a college town where most of my friends, parents were professors. So I thought I knew what that job was. So I went down that path for a little while. went to Stanford, you know, started on my PhD, but as, as the time came closer to actually realizing that career ambition, there started to be this coalition between the, the romantic notion of what it meant to be a professor in a research environment and the realities of the job. So I, I realized I didn't want to spend 80% of my time writing research grants and essentially begging for money to do my work. And I actually really enjoyed teaching. And what I could see around me was professors were deferring a lot of their teaching responsibilities to graduate students so that they could focus on bringing in more research money. So I ended up jumping ship to high tech and I, you know, I happened to be living in Silicon valley and I was, I was in the bay area@thetimewhenthe.com bubble was expanding, expanding, expanding, and I, I was quite timely and that I joined the.com train the bubble, whatever right at the moment before it, when it burst. So I was in one of those startup companies that was a shooting star for a moment until it wasn't. and then, you know, we pivoted and that sort of thing, but I, you know, I quickly one of those engineers, I was an application developer and I became one of those engineers. I was recognized as one who could talk so I could explain things to people. And so I pretty quickly pivoted into training roles and sales engineer type roles and technical evangelism type roles. So the kinds of things where you, your core focus is to essentially flatten the learning curve for people to help them understand what this new or different thing is and why it might be valuable to them and then help them be able to embrace it. So I I've had multiple jobs in high-tech I think I've never had the same job twice, but always there's been this kind of red thread of education or simplifying or making things accessible to people that were previously not accessible to them.

Jason Lopez:

Well, it sounds like SUSE has the right person involved with this Udacity program.

Sarah Whitlock:

Yeah, I sure hope so. And we're really excited to be working on this. I couldn't be happier with the partnership that we have with you Udacity.

Jason Lopez:

Well, thank you, Sarah, for joining us today to talk about this Nanodegree. It was really fun.

Sarah Whitlock:

Yes. Thank you. I appreciate the time

Speaker 3:

Sarah Whitlock is the global head of the Susan and rancher community. The SUSE and rancher community is a place specifically for aspiring and accomplished cloud native practitioners. It's at community.suse.com. And you can find out more about the you Udacity nanodegree program, cloud native application architecture. At udacity.com. This is tech barometer, cloud coverage. I'm Jason Lopez, check out more podcasts and stories at theforecastbynutanix.com.