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For Cloud Professionals, part of the On Cloud Podcast

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Title:	Cloud 2021: what's coming, why, and how we get there
Description:	Cloud adoption has clearly accelerated in 2020, driven in large part by the COVID-19 pandemic. However, as the pandemic eases, cloud adoption won't stall; it will continue to accelerate. In this episode, Deloitte's David Linthicum, Mike Kavis, and Ranjit Bawa sit down to discuss Cloud 2021. Their take is that companies will be looking to cloud to supercharge their business, but those efforts must be driven by emphasizing Ops, focusing on the strategic aspect and business case for cloud adoption, and getting to market faster with cloud. Effectively using data, user and customer experience, and edge computing will also be key themes for 2021. Finally, they also answer perhaps the biggest question for 2021: will the cultural changes we've seen in 2020 stick around?
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Operator:
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David Linthicum:
Welcome back to the On Cloud Podcast, your one place to find out how to make cloud computing work for your enterprise. This is an objective discussion with industry thought leaders who provide their own unique perspective around the proper use and pragmatic use of cloud-based technology. Today on the show you'll be hearing from Mike Kavis, my good friend and also the other side of the On Cloud Podcast with our good friend and colleague Ranjit Bawa. We'll discuss what's happened in 2020 and what we can look forward coming up in terms of cloud computing and where things are moving into. How're you doing, Mike?

Mike Kavis:

I'm doing pretty good, Dave. *[Laughter]* The only time I see you is the end of the year when we wrap these things up, we're so busy.

David Linthicum:
We don't even see each other anymore.

Mike Kavis:
Yeah, I know.

David Linthicum:
How're you doing, Ranjit?

Ranjit Bawa:
Doing well, Dave.

David Linthicum:
[Laughter] So, let's go ahead and kick it off because we've got a lot of stuff to talk about, and ultimately this was a unique year. In 2020 we had the COVID-19 pandemic, and obviously people were wondering how that was going to change the adoption of cloud computing. It actually accelerated the adoption of cloud computing. People kind of moved to cloud as more of a safe harbor as they realized some of the vulnerabilities they had with some of the on-premise systems. So, ultimately what is the impact of the pandemic? And will the patterns of cloud use change next year? Mike, I'm going to go to you first.

Mike Kavis:
Well, it definitely generated a lot of change, right? Everyone's working remotely. We have to change the way we interact with customers, with employees. We had to change the way we work because we all can't huddle in a room anymore. It changed a lot, and from the cloud perspective, we're seeing a big push, as you said, for more cloud adoption, but we're also seeing people starting to ask about what our new operating models look like, right, because not only are they moving to the cloud, but they're working differently. So, people are starting to look beyond the tech. Now we see a lot of incoming requests about upscaling and about operating models and kind of new ways of working.

David Linthicum:
Ranjit, what do you see?

Ranjit Bawa:
Yeah, most certainly, right? I think in general our clients have started to really look at cloud as a material way to supercharge their business, but also be more recession-proof and be able to handle these kinds of unwarranted or unpredictable events better. Certainly, a couple of things that have really emerged to the top, one – for sure there's been an increased focus on multicloud I find this year. I also see there's an increased level of involvement in how do we use cloud not just for hosting and technology itself, but also how we can leverage relationships with the hyperscalers for more front office engagement and things of that nature in terms of new channels, new markets, new ways to be able to partner with them on go-to-market strategies.

David Linthicum:
So, I think next year's going to be the year of Ops. I think ultimately we're migrating as quickly as we can to the cloud. In some ways we're going to have to alter those migrations into some more cloud-native capabilities, things like that. But moving forward if you look to the announcements from Amazon and Google and the other hyperscalers that are out there, moving forward it's really operationally focused. In other words, keeping things up and running for the long term in some sort of a viable and repeatable way. And so that's why in 2020 we saw the rise of AIOps tools, even though – AIOps tools even though we're dealing with the pandemic stuff.

And then moving forward into next year we're looking for things such as intercloud orchestration, the ability to facilitate Ops, the ability to kind of take DevSecOps to the next level, and integrating all these various Ops tools within the DevOps tool chain. If you're looking for one theme, what 2021 and I think also maybe 2022's going to be is really not necessarily focused on migration, even though migration is going on, but focused on the successful operations of cloud computing. So, Mike, ultimately what are we looking at in terms of technology changes and innovations that are coming up in 2021?

Mike Kavis:
Well we're fresh off Andy Jassy's keynote, and I kind of recapped this a week or so ago, but we're moving up the stack here, right? You're starting to see – we've moved from compute as a service, and then we moved up a little higher in the stack to more PaaS-like service. But now we're talking about business processes as a service, right? Call center – complete call center solutions out there – Google has healthcare APIs. We're starting to see business process and solving business problems as a service. Amazon released a whole stream of services around predictive maintenance in manufacturing and stuff, and all the cloud providers are doing that.

So, I think you're going to start seeing people rethinking their multicloud strategy, and instead of trying to be cloud-agnostic and have workloads that can move anywhere, they're going to pick the right cloud for the right job and take advantage of those higher-level business services so they can get stuff out the door faster, and leverage these commodity-type services for speed to market less to operate as you would say because it's there for you, and then focus on building their core competencies on top. I think it's going to be slow. I'm seeing it, but I think a lot of companies – there's going to be pioneers who are going to go that route, and then over the next couple years I think you're going to see more and more right-cloud-for-the-job versus being totally agnostic.

David Linthicum:
What are your thoughts, Ranjit?

Ranjit Bawa:
Yeah, I agree with everything Mike said here. What I would add, though, Dave, to the conversation for next year, I believe that a lot of our clients will start to look at cloud for building new solutions more aggressively than they have over the last few years as well. We did – and you were closely involved with this as well – a quick solution for Broadcom to help their workers get back and be productive through the COVID pandemic, and it was done in a matter of

10, 12 weeks. And we were able to enable close to – over 5,000 people and over 13,000 users globally to be able to work pretty quickly, right? So, that's the promise I think of natively building on the cloud. Even the way some of our clients have stood up a new digital bank or they've looked at a new insurtech on the cloud in a matter of months and quarters versus years has really become the promise of building natively quickly. So, I think we're going to see a lot more of that.

And also, to that end and with that view in mind, we also made an acquisition recently which was all about product development and product engineering on the cloud natively. And, certainly, we think that is going to accelerate next year and in the coming years.

David Linthicum:
Yeah, absolutely. And me as really kind of sticking to the Ops theme, I think we're going to look at automation of prebuilt corrective behaviors moving forward. So, standing up AIOps systems, they have to basically build the knowledge over time, which is going to understand operational patterns and really the ability to get to root cause analysis and do self-healing capabilities. Well, it's going to take a year or two to build up those knowledge bases. And what if we're able to in essence link into a centralized brain in terms of how we're going to operate these systems so we know how to identify network servers going down and route around them?

We know how to look at application performance issues and suggest a root cause analysis and correcting those things. So, it's more of a tactical solution, but I do think of it being hugely impactful for people that are trying to move into cloud computing as quickly as they can and not having to wait for these human being capabilities, talent to show up and build up, but have this stuff in some sort of an automagical way.

So, ultimately we're looking at the mass movement that's causing cloud issues in 2021 that some did not expect, and what's happening is we're seeing everybody moved in a tactical and some sort of a panicked way to cloud, and understanding that it's a safe harbor and the ability to kind of remove some of the vulnerabilities of having things on premise. Now we're dealing with an impact of that. If you move too fast, you're not doing the architectural planning, things like that. In 2021 we're going to have to loop back and fix those things. What are your thoughts on this, Mike?

Mike Kavis:
I agree, and it's not just from the technology standpoint, right? They bring their old tools and processes to the cloud and they create issues that didn't exist when you had physical infrastructure. So, there's a lot going on there. I see a lot of companies asking for advice on reliability engineering, and it's not just SRE. It's just infrastructure reliability. So, I think a lot of companies have moved to the cloud and they've experienced less nines, per se, than they were getting on prem, and it's not really a cloud problem. It's how they rushed everything to the cloud. So, I see a lot of focus, to what you were saying, on Ops, but specifically on reliability.

David Linthicum:
Do you think it's a cloud-native problem and leveraging cloud-native capabilities out of the box? They're doing lift and shift capabilities, re-platforming, things like that, and not necessarily paying attention to leveraging the unique capabilities of public clouds?

Mike Kavis:
Well, that's part of it, but part of it – even if you use cloud-native capabilities, when something breaks you have to create a ticket and throw it over a wall to the same team that's managing infrastructure – you have the gift of moving really fast on the cloud, right? You can provision stuff in minutes, but you're still using like incident management processes that take weeks to go through, right? You have to create a ticket to this team, and instead of being able to solve the problem right there. So, a lot of times it's like, hey, I don't have access to logs to solve my own problems. The old process was, create a ticket and let this team look at it and they'll shift the ticket to the next team to look at it and eventually it'll make it back to me. And we're kind of moving more to the self-service model, you build it, you run it. But in a rush to get to the cloud, a lot of times we just focus on moving the tech from point A to point B and we don't rethink org structures, business processes. We don't rethink change management, deployment management. So, stuff's still taking a long time and it's still clunky whether we're building cloud-native or just building straight java code without treating as a datacenter. We've still got the people-process divide that you have to rethink.

David Linthicum:
Absolutely. So, Ranjit, do you think we're going to be fixing things next year?

Ranjit Bawa:
Yeah, most certainly, right? And I think to underline Mike's point, most of our clients are still in this hybrid world and will be, of legacy infrastructure running with cloud. And so, there'll be a fair amount of fixing and integration across them because this isn't a once and done thing. I think we're going to be in this state for the next five, seven years. So, during that time if you don't bring the two together, be able to create at least a singular view across both the worlds, the greenfield world as well as the brownfield world, to be able to really deliver to the promise of cloud, I think it won't deliver on that promise.

David Linthicum:
Absolutely. So, moving forward businesses have a tendency to look at cloud technology, or any technology for that matter, as tactical technology, in other words something that's going to enable them to solve a particular problem that has a particular end state that has a particular value. And ultimately the industry is trying to get these businesses to look at the strategic nature of cloud computing, the ability to understand that it's transformative technology that you can build your business upon. All I have to do is look at the major startups out there that are leveraging technology as a force multiplier. They're in essence technology companies first, and the ability to in essence automate an industry second. And so, the ability to kind of look at this strategically is going to be a game-changer moving forward for many of the businesses. However, in many instances that hasn't arisen yet. Mike, what are your thoughts on this?

Mike Kavis:
So, clarify that for me one more time. So, is that why are they not looking at it more competitively or is that –

David Linthicum:
No, I'm looking at it as a strategy. In other words, we're dealing with technology as tactical things. In other words, we're automating an inventory system. We're migrating a logistics system into the cloud to solve a particular instance of a problem. But looking at technology as something as the way it should be

looked at, and Ranjit talks about this all the time, as something that's strategically important to the business and we're going to build the business around the technology.

Mike Kavis:
Yeah, so I think a lot of the early moves to cloud were for the sake of tech, right? Hey, let's move to the cloud. Hey, let's consolidate datacenters. Hey, let's do compute cheaper. And I think what we're seeing now is a lot of use cases around, hey, how do we leverage this IoT solution to do predictive maintenance? We're looking more at business model and business use cases now. And when you start thinking it from a business problem, you start to leverage the cloud more strategically. I just think a lot of the early ones were more about how do I get out of a datacenter, and that's more of a lift and shift or let's consolidate workloads. And I just think especially companies that have been on the cloud for a while, the longer you're on the cloud, the more you move up the stack and move up towards those managed services, business services, the more you start seeing it as a strategic play.

David Linthicum:
What are your thoughts, Ranjit? I've heard you explain this better than anybody I know.

Ranjit Bawa:
Well I think the answer really, Dave, is an "end," right? Not all of our clients have the luxury of standing up a new business or standing up a new unit altogether, because when they do, they can certainly build it natively on the cloud or even spin off a new company altogether and build it. Most of our clients have large portfolios with millions of customers and a large number of products and services that they deliver. For them the next-best option really is to look at it at a product level or an application level, and that's where your use case discussion comes in. Most of our other clients are still looking at how do we release a new loan processing application? How do we think about an IoT solution that helps us optimize our supply chain better? And they're using those use cases to build around the cloud.

But over time, every time there's a significant event, whether it's a divestiture or entering a new market or launching a new product line, those are great opportunities for them to be able to build natively on the cloud. So, I think we're going to see more and more of those as clients continue to look for those opportunities. What I think will be criminal, if there's an opportunity like that and they don't leverage cloud architectures, cloud thinking, and look at this more strategically, and still revert to a more traditional solution on how to achieve that benefit, because then they will lose – miss a big trick. And I certainly believe this year we'll see a lot more of those events that will help stand up new businesses, leverage cloud strategically, not just for the business but also as I mentioned earlier, in driving more and different go-to-market channels, leveraging the power of data from a cloud hyperscaler differently as well to enrich their services and their products.

David Linthicum:
So, moving forward I'm even a bit more aggressive. I mean, I wrote an article a couple of years ago – it's on Deloitte.com – called "The Brandpocalypse Coming," and the ability to understand that if you're in business today it doesn't matter if you're a large business with billions and billions of dollars in revenue, or if you're a midmarket business with say something – maybe a half a billion dollars in revenue, ultimately you're going to be disrupted. And so, in other words, you're either going to be a disrupter or you're going to be disrupted, and so which one do you want to be? And those who are the disrupters I think are going to move forward with their technology in the market space, and those who are going to be disrupted are going to find that their market share is actually going to be whittled away, because by the time you're disrupted, it's very difficult to get your technology aligned in some sort of a strategic way to battle the disrupters.

And so, moving forward, this has to be something that needs to be a priority, and looking at technology is something that is a true force multiplier that we can leverage its core to our business, not just solving tactical problems. And so that end, also there will be themes of next year, in 2021 around cloud computing, and these are kind of the ways in which you define the market. In other words, if, Mike, you look at the AWS re:Invent and you pick a few themes that you saw kind of emerging as common patterns that we see in that particular conference. So, in 2021, what do you think those patterns are going to be around cloud computing?

Mike Kavis:
I think a lot around AI machine learning data. I mean, really it's coming down to data and what you can do with data. So, some of it is the operations themes, or how do we leverage machines to help us operate better, right? We're moving from physical infrastructure to virtual that goes up and down and we're getting very distributed, so it's hard for humans to track all that. Let's use AI there. But then on what Ranjit was talking about, is those business disrupters, these new opportunities to build something new in the cloud. There's lots of use cases where we're leveraging data, whether that's better one-to-one communication with customers knowing their preferences, whether it's better use of production lines, whether it's predictive maintenance – all those things are driven from data. So, I think data is kind of the gold – new gold going forward. I kind of think we've been saying that for 20 years. But several years ago, everyone was talking big data but they didn't have the use case, but everyone was running out buying solutions and putting data in data lakes and doing nothing with it. Now I see people acting on all kinds of new initiatives focused on data, AI, machine learning, all that kind of stuff.

David Linthicum:
Everybody's predictions over the last 30 years as the next year being the year of data is finally coming true, Mike?

Mike Kavis:
I hope so because I just predicted it. *[Laughter]*

David Linthicum:
Ranjit, what are your thoughts here?

Ranjit Bawa:
I think so, too. I think it's high time we did more with the data. But in addition to that, I think there are two other things, Dave, that I would hazard a guess that we will see a lot more focus on, even coming out of the pandemic. One is on user experience and client experience, particularly as our clients look at engaging and retaining and enriching that experience. And then the second part is how do they build a faster car, because a lot of these ambitions around data and UI/UX, and client experience, et cetera, are still constrained by the factory itself and the ability to be able to drive innovative services and products

quickly to the frontline. So, I think there will be – going back to your theme about operations and operational improvements and excellence, if you don't fix the engine room and the car itself, our clients will continue to struggle with being able to put innovation at the hands of the frontline fast enough and be able to take advantage of all that's coming down the pipe.

David Linthicum:
Yeah, absolutely, and I think it is going to be the definition of the success of technology, is the ability to enhance the customer experience. Those are the systems that are going to win moving forward. So, Mike, edge computing – we're been hearing about that for some time. Will 2021 be the continuation of growth of edge computing? And if so, what problems do we need to solve?

Mike Kavis:
Yeah, definitely, and one of the biggest problems you need is that connectivity, right? Whether you're doing edge computing out in the middle of a cornfield someplace or out in a windmill farm or underwater, there's all these connectivity issues. So, you're seeing more and more processing and more and more intelligence out on the edge with no opportunity really to connect back to a datacenter or a cloud. So, those are problems we've got to solve. The latency – how to deal with distributed architectures with low latency – funny, hmm, we used to do that 20 years ago, too. And all those types of things, so there's different architectural models. In some cases, there is connectivity with the cloud where you'll do stuff on the edge, you'll trickle data back to the cloud and do that data mining and send new instructions back out to the edge, but in others you have to make those decisions real time. I just had a webcast on that, on talking about machine learning out on the edge. There's no opportunity to go – it has to be real time. There's no opportunity to go back.

So, there's a lot of complexity. I know you write about complexity a lot. There's this marriage between edge and cloud. Sometimes you can trickle stuff back. Sometimes you have zero opportunity to talk back. There's a lot of solutions where they're putting, like, mini-datacenters in what looks like those pods like when you move, like little semitrucks that are out in the middle of nowhere. So, there's all kinds of new approaches to this. It also introduces hybrid opportunities where sometimes you're doing the computing fully connected in a datacenter or in a cloud, and sometimes you have to do similar computing out on the edge, whether it's on a cruise ship or a device hanging off a windmill. So, it's early days, but I think that we're at the edge where we were with cloud about eight years ago, I think.

David Linthicum:
What are your perspectives, Ranjit?

Ranjit Bawa:
Yeah, I think that's right. I also see this here, that we will start to see the emergence of more standard reference architectures, to the point Mike was making about how does the edge interact with the cloud and what is the right, most efficient architecture around supporting edge compute but at the same time taking advantage of what's at the center and be able to have that data find a faster start to where it needs to be acted upon. So I certainly think we are going to start to put some of those reference architectures and standards out there for people to react to, and they may even be built by domain or by industry, depending on how we think about some of the regulatory requirements around that, be it in life sciences, or think about even the government and things like that where there are a number of use cases that have direct applicability to edge solutions.

Mike Kavis:
Yeah, and I think that speaks to Dave's point at the beginning where – AI and Ops, right? I mean, it's hard enough to manage a bunch of servers in your datacenter; now you're talking about devices all over the planet, right? You can't. Humans can't scale to do that.

Ranjit Bawa:
Exactly, exactly.

David Linthicum:
Yeah, I think moving forward the big architectural challenge is figuring out the partitioning aspect of it. And so in other words, if we're going to edge computing because we're removing some of the latency, and how much knowledge engines power the intelligent-edge-based trend that's starting to emerge and how much data do you put at the edge, and how you're able to in essence reabsorb that data into the mothership that's in the cloud. I think if I see people who are rolling out edge-based systems, they're making that mistake nine times out of ten. They're either putting too much data and too much knowledge and too much processing out at the edge, or not enough. And to the point that you guys just made, ultimately this becomes a configuration management challenge, an operational challenge at the end of the day. If edge devices are going to have a one-to-many relationship between one cloud to many edge devices, we have to have some way of updating the firmware, of dealing with security, of dealing with governance, of dealing with compliance – all these sorts of things. And I don't think the industry has thought through that yet. And I think we'll continue to grow, but we have some significant problems to solve.

Okay, final question, and this is probably I think the most important question that we should be talking about. Will the new normal of working at home around the pandemic and really kind of a cultural change moving forward continue to accelerate cloud? Mike, I'll go to you first.

Mike Kavis:
I think it will, and I think one of the reasons is because I don't see an end to working at home for a very long time at least through the summer, probably most of next year. So, the environment that we work and live in is kind of becoming the new norm, and I think it's going to continue to accelerate it.

David Linthicum:
What about you, Ranjit? I bet you have thoughts about this.

Ranjit Bawa:
Yeah, I also agree very much with that, Dave. I mean, two or three things have been proven now, right? Some of the silver lining if there ever was one to this pandemic is that finally it's proven that we can be just as productive if not more productive – certainly for knowledge workers from remote places. It is also proven in many ways that the technology was already here; it's just about applying it and being able to leverage it effectively. And I think for many folks it has also driven a work-life shift, and certainly for folks that like us are consultants by trade and tend to travel a lot. This will bring a much-needed balance as

well, and especially since our clients are seeing that there's no productivity dip. I think this is here to stay for multiple reasons, and I think our people and broadly knowledge workers will embrace that.

David Linthicum:

Yeah, I think it is going to be a huge productivity gain moving forward, and it's going to be a gain of efficiencies as well. We don't have to rent as much business space real estate to house workers. People can work where they want. We have the technology to make it happen. And I think it's more of a cultural shift than anything else. I mean, to your point, Ranjit, I think we've always had the technology to work remotely and be effective as mobile computing workers, and there's too many times that I had in my career where I had to get on a flight to Europe to attend a one-hour meeting and then fly directly back to attend another meeting in the States. And ultimately getting that time back and getting that productivity back, and also I guess removing some of the greenhouse gases that we're putting out into the air and all this traveling stuff – I think ultimately it is a good thing. And I think that moving forward we're going to learn some great lessons.

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