Deloitte.

For cloud Professionals, part of the On Cloud Podcast

David Linthicum, Managing Director, Chief Cloud Strategy Officer, Deloitte Consulting LLP

Managing a multi-cloud environment
Join host David Linthicum and guest Vasa Vishveshwara as they discuss the challenges and opportunities of operating in a multi-cloud environment. Vasa provides his take on how organizations can manage multi-cloud complexity and successfully navigate operations, automation, security, and provisioning to take advantage of the flexibility and power multi-cloud environments provide. He also discusses the need to develop a sound migration strategy and team-based management practices to help multi-cloud implementations fulfill their promise and provide an agile, powerful infrastructure.

Duration: 0:19:58

David Linthicum:
Welcome back to the podcast, and we have our special guest, colleague of mine Vasa, and Vasa has really been quite the king of the podcast because I get more comments on his being on the podcast, last time he was on than any other guest that we had. So Vasa how are you doing and catch us up with what you've been up too lately?

Vasa Vishveshwara:
Yes definitely, so recently I was talking to multiple CIO's and CTO's and one of the key things they keep asking me about is "multi-cloud Management" and how they go and they do it.

David Linthicum:
So ultimately if multi-cloud is about leveraging more than one cloud brand, and by the way let's define multi-cloud for listeners, so a lot of people define it as Public cloud and Private cloud, which is of course a hybrid cloud, but multi-cloud is typically plural Public cloud, you're dealing with Amazon, Microsoft, Google those sorts of folks, so what other the kinds architectures kind of lead to the definition of multi-cloud?

Vasa Vishveshwara:
Yes the definition of multi-cloud is a little bit more broader than just Public clouds. Everybody in the enterprise if you look at it, they already have Salesforce, which is a CRM cloud, and they probably have some kind of marketing cloud from other vendors along with public cloud, along with their private cloud internally per their datacenter. So you have to look at all these clouds together to assume that how the multi-cloud works in an enterprise.

David Linthicum:
So going forward when we deal with multiple clouds, we're dealing with more complexities, so we have software-as-a-service systems that are there, platforms-as-a-service systems that are there, infrastructure-as-a-service systems that are there, and we are building systems on them, and then we are trying to make them work and play well together, so that they really kind of add to the value of the business. In other words, we're trying to get into a configuration where were moving ourselves from the complexity and therefore we are able to kind of build solutions. What I like to say at the speed of need, basically the speed the business needs us to do it. So, what advice would you give to folks who are venturing into a multi-cloud world, which pretty everybody is, and in terms of understanding the processes, the procedures, and the methodologies, and then how would have them look at the tool sets that are out there right now like cloud management platform, cloud service brokers, cost management and things like that?

Vasa Vishveshwara:
Yes let's start with through the enterprise view perspective right? So, if you look at every enterprise without knowing by themselves they're already leveraging multiple clouds, and they never thought about, "How do I manage all the aspects of multi-cloud," and then they already introduced some of their applications into it. So, if they were starting, or if they want to rethink about how they want to do it, having a clear definition of where they want to go, and how they want to go in the multiple clouds is going really help. They need to think about not just a solution perspective, but an overall organizational perspective. How do they do business management in this multi-cloud world? How the service management and operations will work between these different cloud providers, also how does the automation work when they'll start using CRM for one cloud and some applications going on public cloud like AWS or Google, and then some applications are going on the platform-as-a-service. So they need to think about automation part as well. So the way I would articulate it is that when this cloud thinking from the enterprise applications aspects of it solving the business problem, there are five different layers they need to think about.

So the first one is about obviously the "account services." Where and how are they provisioning accounts for the users both in the enterprise as well as external, or the contractors, partners, and then how are they managing the full lifecycle of account management. That's one aspect to make sure that they have a single view or a single identity across all the clouds, so it's a good experience for their customers and employees.

The second one I articulate as "network services" when you have these multi-clouds in different regions and different geographies, how is your network configured to make sure that a data can flow securely and with low latency; they need to think about that aspect of it. The next one is "infrastructure services" if they are provisioning new instances in salesforce or they're creating a new sandbox in Workday or AWS, how is the underlying infrastructure going to work with that, and the other two are about security compliance, and then as full end-to-end automation, how do they do it when the agility is key to go after? So that's why I divided this into five different sections it's easy for them to observe and then go after managing the full multi-cloud.

David Linthicum:
So I like that; so let's drill down on a particular aspect of that. Let's drill down on ops, and so what special needs is multi-cloud when we are dealing with operations and dealing with automation, so what kind of tools are thinking about and what kind of training and organizations are going to be able to leverage, be able to manage multi-cloud the best, and how do we transform the organization from the existing as-is, state when they have lot of on-premise systems typically existing in the database to the to-be state where they're dealing with on-premise systems as well as the addition of multiple clouds?

Vasa Vishveshwara:
Yes, it's a good question. If you look at it the reason the enterprises are going towards multi-cloud is they want to have best of all the worlds, right? They want best of CRM, best of applications, best of platform. The other aspects they are thinking about is how do they manage risk if one vendor goes down, don't have a vendor lock-in, which they saw the problems before. When they look at those two aspects of it and then tie that to your operations later, you need to make sure that the operations team understands the concepts about each cloud and how they monitor, how do they do day-to-day operations for it, so the first aspect of it.

The second one you touched on is the organization change management or org model. In the old world enterprise model, they have one infrastructure team which manages entire infrastructure and there is application team, but in the new world, because they are going with the best of the worlds, they need to have a product management team. It's not about infrastructure, but it's more about the features they need and how they're going to leverage that. And then obviously product management team needs to be tied with a specific set of pods or a specific set of scrum teams how they structure so that they continuously build and deploy new features into this multi-cloud world.

So definitely it's a complete mind shift change as well as how the new roles are getting created and old roles are going be deprecated, because of this big change that's happening. The other big factor is about "cost management." When they look at operations between multi-clouds, if they don't have a robust way of managing the cost then suddenly the feedback we hear is that, "I thought I'm going to pay for less for cloud but then I'm paying way too much then I thought." The reason is because they didn't plan for proper operations around cost management. We have a few examples where one client implemented, without proper planning and strategy, just went ahead and implemented it, and their cost doubled in two years, and another client where they clearly thought about it for a few weeks, not more than that, a few weeks they thought about it, and they worked with vendors, partners having a clear understanding on how they're using those clouds, and it really helped them to create those operations, and then they were actually reducing their cost year by year, just having the clear strategy and planning upfront.

Vasa Vishveshwara:
In the current enterprise, the automation is focused on a small set of tools; they finalize those tools; and then they use those tools for automation. But in the multi-cloud world you need to have little bit broader team based on different skillset so that you're taking the best of both worlds and leveraging it. Otherwise if you try a common denomination of one set of tools applying to multi-cloud, then suddenly you will end up with a lot of limitations, and rather than taking advantage of this multi-clouds then you end up constraining yourself.

David Linthicum:
So let's take data as a instance, and I wrote a blog about how we're not necessarily dealing with data complexity and data modernization as we are moving into the cloud, and that becomes kind of an exponential issue if we're moving into a multi-cloud world because we're spreading the data between on existing on-premise systems, some of the systems we can't find cloud based analogs for, therefore can't move, and we're dealing with multiple cloud brands and typically native databases that are into this cloud brands DynamoDB and on the Google side, they have their own database systems, so I mean that seems to be the mother of all problems to solve when it comes to moving into kind of a multi-cloud world, so what advice would you have to DBAs that are maintaining a Global 2000 Company that are actually migrating into a multi-cloud world as far as modernizations, what paths to pick, how to deal with integration, I mean that seems to be the $64,000 question right now?

Vasa Vishveshwara:
Yes definitely, the data is the big part, and especially when you're dealing with enterprise petabytes of data. Recently we did a

study and then we advised one of the clients about how best to leverage, and then how do they transform from enterprise thinking to cloud thinking? In that scenario we came up with a few patterns. The first one is about the source of truth. Identify your master data and keeping the source of truth in one cloud; that's going to really help thinking through about, okay where is my source of truth for employee data? Where is my source of truth for my partner data or customer data? Keep all that, anything with the source of truth, in one cloud, then send that data updates on a regular basis to other clouds as the replication agents. That way you have clear definition and the process to update the source of truth.

The next one is about okay, "How I do I send this data to multiple clouds without worrying about data integrity or paying too much per egress and ingress cost?" So we came up with a couple of other integration patterns about Pub/Sub, or event-driven architectures. Whenever there are some updates happen to the source of truth, then you want to make sure that particular data is spread across all the relevant downstream systems quickly and efficiently, without costing too much. So in those scenarios, Pub/Sub will be the best option where you have all these other systems, the downstream systems, whoever wants to have the dataset – having a subscription to this primary source of truth, then that way the team which is maintaining the source of truth continue to maintain it and update it then the subscribers will subscribe to the data and receive the data and update their systems. That way it's not a one place and one team managing it entire dataset; it's a decoupled and also a highly scalable architecture.

The other architecture is about event-driven architecture, where if there is an order placed, then you want to send events to other systems, and notifications to it, in those scenarios if the data becomes the trigger of some of the events then an asynchronous, event-driven architecture is highly scalable, especially in the multi-cloud world, if you want to send notifications through different clouds, and also make sure that data is synchronized between the clouds, then generating events and processing those events, based on the business process, is going to really help them scale faster, and at the same time maintain the data integrity. So those are the couple of examples on how to think about data and then how do you replicate the data into multi-cloud.

David Linthicum:
So, let's talk about security in reference to multi-cloud, and it seems to be the fact we're create kind of layer above all the existing brands of clouds that we are leveraging and perhaps even the on-premise systems and the private clouds, if one's around and the virtualized systems things like that. So, there is no one single product that we can leverage that is going to span all of the existing systems where we have to deal with different encryption subsystems, key management systems, identity access management systems, things like that, so what are the emerging best practices, and let's not even get into the technology for now but just thinking about how we approach the security problem with multi-cloud?

Vasa Vishveshwara:
Yes, so that's another again big concern for the CIOs and CTOs and having the clear definition of what clouds are approved for the enterprise and creating a early path for their applications as well as employees and partners accessing those systems, this really helps in the early stages and avoids lot of breaches or lot of security, vulnerabilities which are always there. So, the one way to think about is when we move the data between multi-clouds, it always needs to be encrypted. One aspect of making sure that encryption is enabled and it's working whenever you move the data.

The second option is about creating dedicated connection. If an enterprise large enough to create a dedicated connection between the multi-clouds, though there are multiple variations from Google through Amazon, which provide direct connections and other features creating those connections or lot more secure than going through the VPNs or public internet with encryption, those are little bit more robust and provide more scalability than compared to other solutions. The third thing about user provisioning and making sure that there is a clear workflow about who has accessed through what data in what cloud and when the employee leaves we are promptly removing that user from that particular cloud, because obviously anybody can access these systems from anywhere because they are publicly accessible with the right set of credentials, so having a strong user management and user provisioning and de-provisioning features. Think through early on and put those in place before the particular cloud is rolled out for the enterprise. Those are some of the key things they need to think about and implement those.

David Linthicum:
So where can we get multi-cloud training, and so in other words, the ability to kind of, because multi-cloud by definition means

we are dealing with multiple brands AWS, Microsoft, Google and lots of different technologies and different securities and different governing systems and different cross management systems, and it goes on forever dealing with the very complex environment, so I'm going to turn my cloud team loose and I want them to get the best skills that they can, what are the best websites, training they need to go through? Obviously we know the best consultants to call, but who are the resources out there that they can leverage that kind of get the most bang for the multi-cloud buck?

Vasa Vishveshwara:
Yes the way I would think about it is the reason they're going with multi-cloud is because they want the stuff all at once, and the clouds continue to change. What was six months ago on what is the best for AWS cloud, Google Cloud, or Workday or Salesforce, they're little bit different today, so I am always more leaning towards understanding the vendor-related trainings, and on how to manage best, rather than going within separate tool which manages cost factor across clouds, so that's how I'm leaning more towards and recently we observed that having cloud management from different cloud providers into one central location maybe helps you in generating a simple reporting structure. That's definitely a possibility, but getting the skills, it's easier to rely on the vendors than going a specific tool, because now we are adding one more variable to manage the cost factor to it, or one more variable to train the team, and do overall operations at automations to it.

David Linthicum:
So Vasa, it's great talking to you about multi-cloud; obviously you have very lot and great knowledge about this so where can we find some of your writings on the web? I saw your Deloitte blog this morning and actually pushed it out on my LinkedIn feed, but you have other stuff out there, other things you're working on right now you want to tell the audience about?

Vasa Vishveshwara:
Yes, definitely we when we think about cloud is changing so fast, you'll continue to find me on more podcasts and in a Wall Street Journal articles which we are publishing, and also the "Tech Trends 2019" is coming now, so I think that's going to be opening up more views into the enterprise. I'm looking forward to that too.

David Linthicum:
Yes, me as well. Vasa thank you very much for coming on the podcast, we'll have you on again real soon for a third time, how's that sound?

Vasa Vishveshwara:
Sounds great.

David Linthicum:
Cheers

Vasa Vishveshwara:
Thank you David.

Operator:
Thank you for listening to On-Cloud for cloud Professionals with David Linthicum. Connect with David on Twitter and LinkedIn and visit the Deloitte On cloud blog at www.deloitte.com/us/deloitte-on-cloud-blog. Be sure to rate and review the show on your favorite podcast app.

Visit the On cloud library

www.deloitte.com/us/cloud-podcast