

NETEVENTS

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*Debate V : Who Will Win the Cloud Wars: Amazon,
Google, Microsoft, VMware - Or Traditional Carriers
Reinventing Their Business*

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Well, just for a moment, just think about the last 20 years and the questions that have come up over the last 20 years since we've been doing NetEvents. And one that's always stuck is how can the carriers get out of being just bit carriers while all the over-the-top players cream all the money. Well, you know what, I've seen quite a lot of carriers over the recent years actually starting to do just that. They are starting to move up out of their silo. But who will win the cloud wars? That's the topic of our next debate. I'd like to invite Mike Sapien from Ovum to come up, with his panel please, to discuss just that issue. Can the carriers really cut it?

Mike Sapien

Thank you very much. So we're going to get right into it. There's basically just a few slides here I want to go through. I just want to quickly go through a few slides here and most of these are really just kind of high-level slides, looking at what's happening with services overall. Here's just a slide where they [cut up 1:57] the managed services, ICT services as we call them, which includes obviously things like cloud services.

And then really what I want to take a look at is, we have seen -- and we track this with different providers, who's taking over what service. This was a look at what happened -- we shared with some of our clients what's happening with services overall. You can see on the bottom left the traditional telco services and what they provide. And then some thoughts about where they need to go to get into cloud, compute, applications etcetera. Some are obviously doing better than others.

But I want to go back to the higher-level question really about what really appears to be -- and I borrow this slide from Equinix so thanks to Equinix -- but it's really this idea about who all the players are. So I'm not going to go through these charts: I really want to get into the debate.

So I'm going to just basically say, you know, these are all the players at least known to us that are more the major players. There are many other players, obviously, and there are other infrastructure providers, like the Cisco's of the world and the Dell EMCs that are supplying many of these providers in different ways.

And so to tee up this idea, we have this panellist. And we have Michael here, not Paul. Let's hear from it from NetScout. So welcome Michael. We have Areg Alimian from Ixia, I'm sorry I butchered your name, and Pravin from Infinera. So here's what I'd like to do to tee this up. I would like to first start off with why don't I have them give a quick intro and that will give us hopefully just a two-minute quick intro and then we'll get into this whole discussion about cloud wars. So will you start first Pravin, first?

Pravin Mahajan

Thank you. Mike thank you and happy to be here and thanks for inviting me. My name is Pravin Mahajan and I'm the Director of Product Marketing at Infinera, responsible for solutions which cover long haul, subsea and also data centre marketing. And that's how we are related to the cloud services. So we have visibility into what's happening inside of the cloud from a networking perspective. And I'm looking forward to this discussion. Now we announced the Cloud Xpress, which is the next-generation of our data centre platform, just yesterday. Now some of you in the audience have the opportunity to take a preview of that in our headquarters, we are local based in Sunnyvale, and also we're a public company with revenues of just under \$1 billion. Looking forward to this discussion.

Michael Sapien

Thank you. Next Areg.

Areg Alimian

Hi Mike, Areg Alimian. I'm Senior Director of Solutions Marketing in Ixia. Happy to be here. It's a great panel and a great discussion. So Ixia is a global solutions provider for test visibility and security, hardware and software products, that help our customers strengthen their applications. What does that mean? That effectively means that the tools they deploy in their network infrastructure, we provide the critical data access in their virtual cloud and physical networks so that these tools can have the right data at

the right place at the right time. And our genesis is test network and security test solutions. Every one of our equipment manufacturers like Dell, Cisco, they use our products to test their infrastructure, to test their products as they design them and as they're deployed in production, we help them visualise and get the critical data access that these analytics and security tools need. And we also have security products and solutions that also help with the visibility side of the story, and we'll talk about that a little later as we we're discussing.

Michael Sapien

All right, thank you. Michael please.

Michael Segal

Yes, thank you Mike. Michael Segal with NetScout. I'm Director of Enterprise Solutions Marketing. And what NetScout does, NetScout is a leader in business assurance. We collect, organise and analyse smart data to give insight into areas of service assurance, performance management, cyber-security as well as business intelligence. And the way that this is impacting the cloud and the discussion that we're going to have today is in the sense of offering holistic visibility to enterprises and other users of cloud services, be it a CIO or a line of business, and enabling them to see actually what happens to a service, and all the interdependencies of this service on-premise, off-premise, public cloud, private cloud, end to end.

Michael Sapien

All right, thank you. Thank you Michael. So what I want to do is, we've seen a lot of stuff recently and we had an earlier discussion about -- I, for example, just came from Oracle World where Larry Ellison portrayed his position as a cloud provider. We saw a recent announcement this morning between Cisco and Salesforce which is kind of interesting that Cisco and Salesforce are partnering up to provide some services. And in the earlier discussion, obviously you heard from Tom Burns talk a lot about what he's doing and the new unit he just mentioned about service providers and helping them basically get cloud-ified, if I can say that. So with that in mind, I'm going to start off with the first question, that's basically just general impressions of -- since you are -- seem to be all part of the cloud wars, at least from an infrastructure perspective, who do you see as the current winners, or the current winners from what you can see. So we'll start with Michael, at the end.

Michael Segal

Yes. So definitely if you look at the market itself, maybe we -- I would like to frame this question in the context of digital transformation and market disruption that is happening today. So, for example, if you look at Airbnb, Uber, Netflix and others, so what you see is that when this market disruption happens, for example Uber disrupts the transportation market, and you see that all of a sudden the market capital of Uber is bigger than GM or Ford, then Ford needs to retaliate. And what Ford does is partnering

with [Link] for example, and as well as partnering with Pivotal and investing basically in the cloud.

And this is the relationship between digital transformation, the disruption that is happening and the cloud wars. And the impact is this, right, so if you look today at Infrastructure as a Service, obviously it's the biggest market after the Software as a Service, but it's bigger than Platform as a Service, but the growth is really happening in Platform as a Service market. So the Amazon with over 1 million enterprise customers, and the \$6 billion in revenue, is definitely undisputed leader in the IaaS market.

The question is what will happen when the digital transformation accelerates this transformation and creates disruption opportunities. And then you need to look at Microsoft Azure basically, who is now leading the Platform as a Service market, as a serious challenger to Amazon. And then also if you consider IBM, and their strategy of integrating solutions for multiple providers and offering compelling end-to-end services for IoT with Watson and others, so from that perspective they also can challenge Amazon.

Michael Sapien

Thank you. Thank you and now Areg?

Areg Alimian

Yes, To Michael's point, ultimately the silver lining here is all about the application experience. As enterprises make decisions to move their critical workloads to cloud infrastructure, they have certain expectation to deliver SLAs and quality of experience that their services run reliably, they perform and they're secure. If you look at a single VM, Amazon Machine for example or any cloud, Google and Azure instance, that VM is actually statistically less reliable than a top-tier on-prem virtual machine that's deployed at a private data centre.

So just by assuming that you're moving to Amazon you'll get that reliability because Amazon is so awesome, is really not entirely the case. You'll develop that level of reliability by building redundancy in your application. And that's very important; how do you achieve that redundancy? Well you effectively create multiple VMs and use the elasticity of the cloud so that you're effectively distributing the load and adhering to service requirements for your particular application. And that's very important.

What that also means is it brings inherent complexities in this mixed environment where you have on-prem applications, critical workloads, and data that still remains on-prem -- most financials are not comfortable moving their data to the public cloud -- and also have a lot of your other applications running in the public cloud. You have trends like micro-segmentation which uses virtualisation to add that additional level of security.

So what does that mean? At any given point of time, you don't know where your data is, because it moves constantly. So the idea of tracking a particular VM or IP address becomes moot. And ultimately how this translates to liability is that you need to have, to deliver that level of assurance to your internal and external customers -- and this is for the enterprise CSO and CIO and admins -- is that you need to ensure that you have

pervasive, end-to-end visibility from your virtualised data centre, from your branch office, to the private cloud and ultimately your public cloud infrastructure. And you need that visibility to provide the critical data that your analytics, security and forensics tools need at all times.

Ultimately I think the winning equation will lie, who will provide that level of reliability with this pervasive visibility, to ensure that you have your critical service infrastructure running at all times, provides a high level of availability, and remains secure.

Michael Sapien

Yes. Pravin please?

Pravin Mahajan

Yes so I'll simplify this; back to the question of who do you think will be the winners in the cloud wars. So I see that as being three plus two. So we all agree, Amazon, and that's right at the top, 32% market share in the cloud services; the clear leaders. So who are the other two? So it's Amazon, then Microsoft Azure and the third one I would -- it's really Google. They are -- so they have a pretty wide offering in the marketplace as well. The two other players which are also interesting in this space are IBM, with their SoftLayer acquisition and finally Oracle. You just mentioned Oracle; Larry Ellison publicly proclaimed yesterday or day before, earlier in this week that he absolutely intends to go after Amazon. So it's this three plus two that we see.

Now these three players have been pretty much with the same market share for the past three to four years. Now it's hard to see that change because the network effects are at play here. Once these companies reach a certain scale -- and I'll just refer to this term which Reid Hoffman, to quote him, blitzscaling, they've blitzscaled their way to this position. And it's hard to see them getting dislodged from this position of the top three; Amazon basically, Microsoft and Google and then of course you have IBM and Oracle.

Michael Sapien

All right. [Inaudible]. All right, well thank you, thank you. So let's -- there is a mention here about traditional carriers, I guess telco carriers, as having to jump in this game. And so I guess the next question is really about some thoughts about where do you think they lie. What I find interesting is in most of these sessions we've had with these same providers, they're trying to go in that direction. They're pointed that way. They're trying to enable -- both be cloud enabled as well as be cloud providers at the same time. So they're struggling and as Tom mentioned earlier, they're trying to put together their infrastructure, more software-centric based, more as an open platform, using things like OpenStack, Red Hat, things that most providers would never think of before.

But what I think is interesting is basically where do you think they are and your thoughts about can they get in this game or they have to partner? There's a lot of things going on with what they do with their services that generally they would normally say they take a little too long. And the second part is can they really make that shift and make a difference. So just some thoughts overall, I think, where you are. You obviously have

them as customers, so you have to be careful in naming names, but just in general, where do you think they are and do they have a chance? What do you think they need to do to even get close to being in the game. So again I'll start with you, Pravin this time.

Pravin Mahajan

Sure, happy to take that. So Infinera is -- provides solutions, data centre interconnect solutions, so networking solutions to the cloud providers as well as the traditional telco providers. And we see how they're evolving from an infrastructure standpoint. So, from the bottoms up, we get to see how their businesses are evolving.

To the question of what are the traditional carriers doing or how they are addressing -- so they are clearly pivoting to becoming more cloud-like. They are beginning to offer these services. They do see the success of these content providers and how they have almost ensnared this space. Now Verizon, for example, they had acquired, this was Terremark -- so CenturyLink with [Savos] acquisition, so they clearly had the strategy to invest in these data centre assets, go and build a cloud portfolio. But you also see these rumblings in the space that some of these data centre assets are not yielding the returns which they had forecasted. So it's tough, because they invest -- they're investing, but at the same time they're seeing this dynamic of these three players in the market who are well entrenched.

Where we see is that there's going to be some cooperation for sure. The traditional telecom players who are operating with these cloud providers -- because the traditional telecom providers, they have access to those end customers, especially from a mobile standpoint or from a cable standpoint. So where we see that it's going to be some cooperation there will clearly be winners, and there are winners right now. It's going to be interesting to watch the space and see the traditional telecom players, what they do with those data centre assets. Do they continue to invest and mine or do they have a shift in strategy.

Michael Sapien

All right, thanks. Areg please.

Areg Alimian

Yes. And I second Pravin's thoughts on this. So Ixia, the top global 50 service providers, 46 of these are Ixia customers; just some public statistics that you can see on our website. And we provide solutions for them to test our global network infrastructure as they're rolling out new advanced LTE, new services, as well as visualizing their network with our packet broker and tapping solutions.

We have good understanding of what's happening in the dynamic. And to Pravin's point, they're losing a lot of revenue. They're losing revenue because you've got these new digitised services that are using them as basically down-pipes and they're not getting revenue share for these new digitised services. So that cost in our pool is over \$12 billion to \$13 billion a year, if you look at some statistics.

How are they overcoming that is by introducing new digital services, integrating compelling content, adding new services like credit card-less billing because they have access to many, many subscribers. So the question is, how can I -- you increase the ARPU from the premier VIP business and consumer users and, by integrating those services, and then really adding that level of service agility.

But how do you get that service agility? It's really by virtualising a lot of your network infrastructure; that's why you have AT&T having adopted OpenStack in 30 plus of their data centres. And you'll often see that, as they're rolling out new services to geographies that don't have coverage, that don't have the type of data coverage -- because you need data coverage for streaming video, for gaming and so on -- you want to have the rapid ability to deploy infrastructure, and entire EPC infrastructure that's now become virtual, and do so with a data centre that you don't necessarily own.

So while these dynamics are at play and they're really looking to increase revenues by providing the differentiated digital services, you also have some of the leading cloud, pure-play cloud providers that are implementing true Platform as a Service, and I think that's -- they're actually several years ahead, where you may have heard of Amazon's Lambda service that basically attracts the user from having to provision their availability, locations, where their code is running, where it's located, what type of service requirements will it have, by basically saying give me a line of code and I will decide and I'll worry about patch management, I'll worry about load balancing. And I'll charge you for 100 millisecond increment of where that code runs. So that's actually really a true next-era of evolution of Platform as a Service, that the Amazons, Azure and Googles of the world will provide, that I think will be quite difficult for the traditional telcos to catch up with.

Michael Sapien

And Michael, last thoughts?

Michael Segal

Yes. So NetScout also is heavily invested in service providers. We are embedded in over 160 service providers worldwide. And what we see is a clear trend in which obviously optimising cost with initiatives such as NFV and SDN is very critical to the service providers that are trying to be, obviously, as efficient as possible. At the same time, just looking at the sheer economies of scale of Amazon and similar services, I think, just based on competing directly on the cost basis is going to be ineffective. In fact, if you look at CenturyLink that acquired Orchestrate a little bit over a year ago, and now what you see is that after this acquisition of this Platform as a Service provider, actually their cloud revenue is stagnant, right, as compared to about 30% growth in Platform as a Service, year over year for the entire industry.

What are the opportunities for the service providers to offer value-added services is actually based on the disruption associated with digital transformation. So one example I would like to share with you, if you think about the autonomous vehicles, right? So how would that change the way that the service providers operate. So imagine each vehicle communicates with each other, people that are basically commuting, utilising

these vehicles have a lot of time on their hand. So all of a sudden, there is, instead of entertainment, there is infotainment and this is a big deal, right? This is a big opportunity to generate a lot of revenue.

Now using 5G technologies is not really very efficient when you have this high volume of streaming video along the highways. So, in this case, it makes a lot sense to develop an infrastructure, WiFi infrastructure along the highways. And the service providers - - the telcos are natural candidates for this -- now if they have already this infrastructure, then it makes sense to develop also some kind of local data centres that are not hyperscale but offering certain capacity that can be utilised for specific industries such as the automotive industry and other IoT related industries. All of a sudden they have an advantage, right, they have, for computing for example, which is edge-computing, and it's important to do in real time in these geographically distributed areas. So this is one of the examples of the disruption that digital transformation will bring and opportunities to telcos to generate revenue.

Michael Sapien

Thank you, thank you. I would just like to maybe add a few thoughts, because you've made me think of a couple of things, real quickly. One is this idea that they need to increase their solutions set and value up to increase their revenue and ARPU. So that would suggest that they may have to partner, work with some of these OTT cloud providers and partner with them to help them build the bigger value-added stack. Or it could be a SaaS provider they team with, like a simple thing like they do now with Microsoft Office for example. But the other thing, and [I kind of] hinted that at even during Tom's speech, is the fact that they're going to have to embrace this idea of an open ecosystem, open up their network, so that many players could create some of those services you're talking about, Michael. But they can just plug into their network, if it were agile, if it were open, if it were easy to integrate with, if they had a set of easy-to-use APIs. So I want to argue there's that retail high value-add value as whereas to just basically turn their network into a platform. And they could be the Network Platform as a Service, if you can think of it that way.

So I'll stop there. I think we only have a few minutes left. So I don't know; do we have time to have a few questions? Yes? Okay. So I'm going to open up now because I think we've gone through this. Any questions that we have in the audience; we have a few minutes. Please. Thank you

Audience Q&A

Guy Hervier - Informatique News

Thank you. Guy Hervier, Informatique News in Paris. It's a question to, sorry, Areg Alimian. You said in the first presentation that VM is more -- is less reliable on the public cloud than it is on your own data centre. Where did you get this information?

And it's a general question to the three of you; why -- do you have any specific reason why Amazon is a clear leader with 30% of the market instead of they started earlier than the other one and they have done a very good job to be the clear leader. Do you have any specific reason for this?

Michael Sapien

Right. So Areg why don't you go first and then [inaudible].

Areg Alimian

Sure. So if you look at Netflix infrastructure, they have publicly stated that a lot of their infrastructure runs on EC2. They have an actual service called Chaos Monkey, okay, that within their own virtual private cloud, within the EC2 framework EU-US, goes and randomly kills AMI instances to ensure that other instances can recover with the same configuration and still provide the level of customer experience for their streaming application.

Why do they do that, because they don't want a single point of failure for any given virtual machine instance in the cloud. These VMs are ephemeral and what we have seen from a lot of our enterprise customers that are moving to the cloud, the less they have reliability on a given machine instance to deliver certain workload with certain quality of experience requirements, the more reliable their service is overall. So at a private cloud point of view, the amount of tools and monitoring infrastructure that do DPI and forensics and analysis on a per VM basis is simply higher. There are more tools that exist in the private cloud infrastructure that can isolate the point of failures, while that infrastructure and these tools haven't necessarily moved to the public cloud yet.

So from having a guaranteed performance and up-time and availability, that, on a per VM basis, not necessarily at scale, we see that the private cloud implementations give you that level of additional reliability.

Michael Sapien

And Pravin, would you like to take the [inaudible] question.

Pravin Mahajan

Yes. So I'll address the why Amazon is the leader. So they began in 2006. Basically they made it as simple as using a credit card to just spin up a service in the cloud. So clearly being first helped. And then the network effects; that came into play. And they used -- Jeff was obviously requesting a lot of patience for the investments which they have been doing over those many years since 2006, continued investment. And it was really kind of a -- if you looked at the economic data that Amazon used to provide, it wasn't really very clear how much they were investing, what were the returns. But he was saying just be patient. And to get to that, now in 2013 onwards -- or '14 I don't remember the year when they started sharing that -- it was a lot of patience, a lot of

investments. And that -- and they got the scale, made it very simple and now they're reaping the benefits of the platform which they had basically created.

Microsoft and Google, they are platforms in different spaces, but they can use the same network effects. And they're using that, again with their cash reserves, to enter and challenge Amazon, because no leader would have a monopoly in this system for a long time. But once these network effects come into play, it becomes really hard. We had seen this happen a century ago in the steel-making business as well, but that was more from the supply side. Here we're seeing more from the demand side, having all the users connected to those platforms, and then it becomes really hard to switch platforms. So that's one of the primary reasons why we continue to see this mix stay, those top three players.

Michael Sapien

Right. Michael go ahead.

Michael Segal

So very briefly, right, there are two very important concepts when we talk about different workloads that can be on-premise, off-premise, private cloud, public cloud. The first concept that I mentioned before is service, and the second is holistic end-to-end view, which we all know that it's a challenge in public cloud. So how is service different in application? It's different because service comprises not only of the application but also all the service-delivery components that support the delivery of this application to users such as the network, such as the server, such as the databases, DNS, authentication servers and all of them. And all these have interdependency. And if you want your service to be running smoothly, you need to understand what those interdependencies are.

And the other concept is how do you instrument environments that are not in your control. So if you're Netflix, right, and you want to see consistent service delivery and service assurance, you need to see the service quality, not only on your premise or at the customer site, also in the cloud. And that's basically what NetScout, when I said we have holistic visibility, we can instrument both the cloud, independent of the service provider or the cloud provider's support, and on-premise.

Now I think that one of the considerations for the cloud wars is that in the future cloud providers that will actually support this end-to-end holistic visibility at the service level, as opposed to the application level, they will have a much more compelling offering to their customers.

Michael Sapien

All right, thank you. I think we have to wrap it up; we're out of time. We have to move onto the next one. So thank the panel please for this debate. Thank you very much.

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