

NETEVENTS 2015 CLOUD INNOVATION SUMMIT

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CLOSING GUEST SPEAKER PRESENTATION Cloud Innovation - What's in it for the enterprise?

Arpit Joshipura

VP Strategy, Product Management & Marketing, Dell Networking

Okay, so when NetEvents asked me to do this closing keynote, they said do two things. Give your view of the market disruptions and also summarise the two days. So there's a twist to both of those.

The first twist to the -- my view is, you know I work for Dell, so there'll be a little bit of Dell, but I'll try to keep it out. And the twist to the second part is for those who were not paying attention to any of these panels, now is the time to wake up so that you can relate to what they were talking about. That's the general consensus.

So what I'm going to talk about are five disruptions that change the thinking of enterprise and carriers forever.

Alright, number one. We all heard this and you saw tons of examples. Software defined enterprise is here to stay. Now what does that mean? It is all about IT convergence and I talked about, in one of the panels yesterday, that there are like three layers. There's the infrastructure layer; then there's everything in the middle and then there are services. I'll make it very simple for you.

This is a more complicated diagram, but you can see the bottom layer of the diagram is the infrastructure service, storage network and the software that goes inside it. Then there's the thing in the middle and then there's applications on the top. And then they somehow are glued together and things like that.

The great news about the infrastructure and about the application is we're now for the first time hitting multi-rate 100 gig speeds on the network. We started with the lowest of the low speeds and now we are multi-rate, 1, 10, 25, 40, 50, 100, you name it. Getting very close to 400 in the next five years.

And then we're moving to a compute-centric infrastructure where things are happening close to an X86 kind of an architecture.

So with that said, what does it mean? It means that all your workloads and applications, whether it's productivity, big data, security, traditional workloads, new workloads like VDI, software defined datacentres, VMs, containers, all of those things fall in three buckets.

There's the software defined compute bucket, software defined network bucket and in this conference we've not talked about software defined storage, but that's an integral part of the software defined datacentre, where storage technology moves closer to the compute and can be run on an X86 infrastructure.

And this was quite well discussed at the second debate with Brad where he talked about the agility being the driver as opposed to cost and it was also discussed by Sean in the other panel where he basically believed or the panel believed that the infrastructure, the private cloud, it's all ready. People challenges remain. So that's kind of a summary of those two, in the context of the first disruption, which is software defined enterprise is here to stay.

Well, software defined carriers now with NFV are another angle that's very interesting. The entire black box and proprietary infrastructure is moving to an X86 compute platform in the carrier network. That includes telco as well as cable industry.

What does that mean? Black boxes, more to a horizontal layer shown on the right. Some of the analysts' numbers have come out. The PAM on the carriers are going to be as big in ten years as the enterprise IT PAM. And I think we heard yesterday by 2020, 40% of the servers will be in the service provider market and as you know this was covered quite well by the panel yesterday on NFV and SDN.

Disruption number three. Let me tell you a story on this before I get into the actual architectures.

So in the last six months, I've visited almost 50% of the top 25 carriers myself. And in the four hour, eight hour meetings we have with all of them, I want the CIO and the CTO and his teams in the same meeting. And we've had lovely conversations, whether you take Asia, you take Europe, you take US. Wonderful meetings.

Guess what? The CIO/IT side of the house talks about workloads, they talk about business continuity, they talk about agility on business. But the technology side of the carrier talks about services like mobile broadband, 4G, LTE. They talk about carrier grade, talk about service agility. Completely different vocabularies -- completely different vocabularies.

But the underlying infrastructure is also very interesting. If you look at the left hand side, you see an enterprise-centric view or an IT-centric view where datacentres are at the heart of everything and you have campus and remote office and then all these carrier things, as small clouds on the middle part of the diagram.

On the right hand side, the same view is from our carrier colleagues on the CTO side. Where you see the datacentre is a really small thing and then they've blown up the rest

of the cloud with metro access, carrier Ethernet, edge routing and core routing. Completely different mindset. It's a matter of perspective.

And this was done again in debate one, where it was set up where SDN, NFV, how do we see these things.

Disruption number four and we've talked about this for the last two days. Organisations are in turmoil. Who will win? You see the picture on the left, I call it the hotdog model. It's a hotdog model. Now I know we are before lunch, so let me spice it up a little bit. And we move to more of a lasagna model that I was talking about layered horizontally in a software defined IT world. So when the silos break down with software defined, who's in charge?

So here's your side by side picture. On the left is your enterprise IT, horizontal layers; on the right is the carrier, horizontal layers. The guys that are running the show on the left hand side are server admin, storage admin, network admins, converged admins, you name it -- security admins. The guys running on the right hand side are either the carrier's CTO or the CIO.

This is a fundamental discussion that as I talk to these customers, they are having. And it's not a question of just retraining. So you start off with the organisation. First of all, can they come together and talk about common tools and processes? Then can they come and talk about who's in charge? Will the IT side of the carrier host NFV? If they do, they know how to run this, they know how to run a standard datacentre with IT.

But if the network guys are going to procure, deploy and buy the IT equipment, they have not seen that. They are used to the Ericssons and the Alcatels and the Ciscos and the Junipers and the Huawei's and the typical black box proprietary solutions. So do they retrain or do they work with the carrier colleagues? That's the discussion that is happening this year. So this is a very important disruption.

But I will tell you one thing. It has very common traits and common DNA. So it's a solvable problem. That's the number four.

Number five, who will win? In my mind and I've always believed that, proprietary technologies are good enough to get started to show differentiation and innovation, but it will never hit mass market. It will never reach the global scale. At the end of the day, open and disaggregated will always win.

Now there are ways to get to open. You can do open source and that's faster. But eventually, open standards are long lasting. So in my view, when you take a black box and you start separating the layers, the silicon layer, the hardware layer, the OS layer, the software layer, the control layer and the application layer and you let each of those evolve at their own speed, that's when the innovation kicks in.

20 years ago, when mainframe was broken down into an X86 architecture, none of us knew that a server could be used as a load balancer. The load balancer guys figured out hey, why don't I take this and write software that gives it a personality. That's what we want to do with the switch because you want to give the personality of these things in an open environment.

So in my view, again three layers, trying to keep it simple. The infrastructure layer, completely disaggregated and you have a whole bunch of open source and open standards and OCP, ODL, OPNFV, ONF, [FC] this that, you name it. It will happen.

Then you have the middle layers, the middle layers with API, software orchestration. There's various lines and I don't even want to list them down. And then you get your services that get standardised on the top. And then we have to figure out how to interwork that, but if the layers are disaggregated at the right APIs, we're good. So that's the fifth disruption.

Then what's next? What's next is security. We've talked about enough in the previous panel and the one before and it's a very simple thing. Technologies will come and go. You need to look at it holistically from end to end, not just at a firewall or at a point in the network. You've got to look at it holistically. And you have to do it in a proactive manner. So that's kind of key.

We've talked about IoT with the previous panel. It's coming. What do we need to do? You need to get ready. The infrastructure and all three layers need to get ready. The middle layer, services and the infrastructure, we need to get ready for IoT.

It's very different. Devices don't come on a network and stay on the network forever. Some of the use cases are millisecond. They need to be on the network, registered, data taken and then brought out, a millisecond and you're done. You're not going to sign a 4G contract with a carrier and get out in days, forget months. So the usage pattern is very different, so you have to account for that in all the three layers.

And I think as a summary I still believe that more of open, more of breaking the proprietary barriers and walls will come down. We've got vendors like Dell and others that are supporting this big time. We've got the whole ecosystem behind this phenomena. And you have customers asking for it, which is the best part of it.

I don't know if you guys know but OPNFV which is an open source kind of carrier-led consortium, the requirements document for OPNFV is written by 25 engineers from the carriers. We don't even have a say. Vendors don't even have a say. We kind of do, but we don't. So I love that because that's what they're saying. You've got to be open, here's the requirements.

So with that said, I want to quickly wrap it up and get JB here and we can have discussions and questions. Thanks.

Q&A Session & On-stage Interview with Jean-Baptiste Su, Forbes

Jean-Baptiste Su - Forbes

Thank you, Arpit for summarising the key disruptions happening in this industry. Personally, I learned a lot also today, actually during the past couple of days, about SDN, NFV, open compute, open this, open that. So it was very, very interesting.

So just for a quick introduction, I'm Jean-Baptiste Su and I write a column on the tech disruptions and disruptions also in the investment community for Forbes.

And as you know Arpit, what we like to do at Forbes, we like to talk about business, about how we can make actually money from all those technologies. So if you could talk a bit about how these disruptive technologies are going to impact the market and the market as a whole, the SMBs, the web companies like Yahoo, Facebook and so on and the enterprises and the carriers.

Arpit Joshipura - Dell

I think that's a very good question. So we have not talked about the market and there are some very bright analysts in the room who know this cold. So it'll be a little bit of repetition. But just to put things in perspective, at the end of the day there are four types of markets that we look at and I think it's fairly well known.

And the first is -- and the reason I'm segmenting them, not by verticals like healthcare and finance, but by behaviours.

So the first one is what we call the web and the cloud. These are the hyperscale guys. The attributes of that market are very smart people. They hire engineers. They know what they're doing. Their applications and workloads are very simple and it's all about scale to them. Scale in terms of throughput, scale in terms of deployments, scale in terms of size, scale in terms of the entire infrastructure as well as programmability and accessibility to data. That's what they do, yes.

Amazon, Facebook, Microsoft, Google, you name it. Different kind of challenges, different kind of problems. In a way I would make a case that even before the three letter acronym, SDN was invented, they were already doing this. That's their bread and butter. They just didn't call it SDN. That was proprietary. They wrote tools and they managed it. So that's market number one.

Market number two is the large enterprises and they have multiple verticals, banks, retail, financials etc. Their challenge is they have to look at their traditional workloads and their business and transform to software defined.

Now their problems are different. They also have an IT staff, so that's good news. They have a large IT staff because they are a large organisation. So they're adopting SDN quite nicely. They're getting retrained. The server teams, the converged teams are getting training on several things, a lot of cross-collaboration and things like that.

So the whole SDN and open networking and things like that, that market is adopting it quite well.

Then you have the carriers, and as I said with the third prediction, the whole NFV virtual services that has happened, that market is in fact moving at a much faster rate in terms of action. Now they always take long to deploy, but in terms of action with NFV and pretty much we can't just keep up with the requests that they are asking. So it's very good exciting things happening on the software defined carrier front.

And then our SMB and mid market, that's one of Dell's sweet spots, so I would just say they just don't care. They're like give me something. My business is selling shoes. You just make connectivity happen and everything happen and I don't have more than two people to do it.

So you can see that these disruptions are impacting the different people differently.

Jean-Baptiste Su

One thing you mentioned earlier in the presentation is that proprietary technologies actually cannot go mass market. And I was just -- when you were saying this, I was thinking about Apple, Cisco, and they're pretty much mass market. So can you perhaps elaborate on that, what you mean by -- I understand open and closed, but --

Arpit Joshipura

So there is again, just like cloud, I think the next two years, we'll spend on defining open. There is a -- I look at open as to the three markets. So there is a closed, meaning only I can do it. If a customer comes to a vendor and says I need this feature, if only the vendor can do that, that's a closed ecosystem.

From that there is the middle ground which says, it's my ecosystem, I'll set it up for you. You come on in, you can play with this ecosystem. That's kind of where the Apple thing is. Where developers can do it, you can write apps and things like that and there is the place for that.

And then there is the open ultimate open which is more of the Android where -- and that's why Android has the 75% market share today.

And then when you look at technologies like Ethernet and you can go physical layer all the way or power or standardisation of HDMI, anything -- we don't even think twice before we plug an Ethernet cable. But will it work?

Jean-Baptiste Su

So just to make sure I understood, what you characterised just with the three different types of closed, semi-open and open, it's pretty much Cisco, HP and perhaps Dell and others.

Arpit Joshipura

Dell and others right.

Jean-Baptiste Su

Sorry, just to make sure.

Arpit Joshipura

Now remember, I'm not going to put the Dell view here, but that's an example.

Jean-Baptiste Su

So with networking becoming more open and open source, open this or that, you have now new entrants like even the web companies, the Google, the Facebook and just this week even a chipmaker like, if I get it right, Freescale started selling networking gears. So in that context how can Dell and the other networking companies can stay relevant in that market?

Arpit Joshipura

Okay, I think there's a couple of things happening. If you look at my horizontal lasagna model, let's start with the chips itself, the ASICs. They are the fundamental things that make up the networking gear. You're saying we need a choice. Now how do you open up the die of a chip that goes on a motherboard. That's very difficult. You're not going to just -- it's not like a power adaptor where you can just put in a Broadcom or a Freescale or a Mellanox or Intel or whatever. You just can't do that. But what you can do though is separate the silicon from the application software.

So what we have done is, as an industry and Dell led this as well, is we contributed to something called a SAI layer, Switch Abstraction Interface as part of the OCP program. And what that does is it's a layer of API where if the OS is [cored] to that layer, the silicon abstraction just happens. So those are kind of the things that we want to promote and propagate.

And then what you do is -- to your second question, how do you then differentiate, you differentiate by providing superior services, providing as many choices to a customer, being that single point of contact for customers and making the complexity of that middle layer go away.

Fundamentally, I don't expect customers -- like we heard from the CIO here, there's too much complexity. I don't expect them to understand why VMs should house a container and how the V-switch will connect it and if I move to open stack what happens. I don't want them to. The middle layer will take care of it. You plug in your applications, move to the next gen, you should be fine. That's where we can add value.

Jean-Baptiste Su

If there are any questions, just raise your hands. I think we have a few more minutes.

So last week, there was quite a big announcement when AlcatelLucent and Nokia announced their merger and actually they're not at this event for good reasons. What's

-- how do you -- what's your view on that and on the market consolidation and perhaps the challenges or opportunities that that brings?

Arpit Joshipura

So again I cannot speak for either Alcatel or Nokia or Ericsson as a matter of fact. The fundamental shift that is happening in the marketplace is that people who don't migrate to open and don't have enough of a scale, will need to look at alternate ways. That's the fundamental thing.

You acquire for two reasons or you partner for two reasons. You either acquire for technology and then build on it because you see a disruption or you acquire for market share because you're behind. It's one of the two reasons why. I've personally acquired tons of companies myself. I've sold many companies myself as well to larger companies and those are the common themes.

Now in this scenario, I think what's happening is with the whole software defined, with the whole shift to the next generation of mobile, next generation of cloud, beyond 4G where IP is a fundamental building block, it's a great way to consolidate and start to -- the long tail of an industry. All industries have long tails, discs, long tail and then what ends up happening is you have the three to four companies that survive. This is well written in the business book.

Jean-Baptiste Su

That reminds me of what John Chambers of Cisco told me a few years ago that he never believed that a merger of equals could actually succeed. We saw that all the way from 3Com and US Robotics, Synaptics and Wellfleet and then Nortel. So it is going to be a big challenge to bring two very different cultures and not talking about the regulatory issues where China has to approve it, the US has to approve it, Europe has to approve it. So it's going to be [hard].

Arpit Joshipura

And I can sense from the French accent that you're interested in this right?

Jean-Baptiste Su

It's approved by the French president, but I think it will go beyond that.

Arpit Joshipura

But let me tell you one thing right. As Dell, we have acquired about \$15 billion worth of companies in the past five years to move from a standard PC server company to an end-to-end solutions company. All the acquisitions have been about technology and disruptions, not market share.

And so what ends up happening is then you can nurture the technology, build it as part of your overall solutions and then you get the momentum of the next disruption. Because buying for the current disruption, you're already too late.

Jean-Baptiste Su

I'm very impressed and I've been covering Dell for almost 20 years. And I remember when the R&D spend at Dell was less than 1% of revenues and pretty much everything was done by Intel and Microsoft. And now things are -- how many people do you have in Silicon Valley?

Arpit Joshipura

So Silicon Valley we have about 2,000 engineers, all of them from the acquisition companies. So a big hub of 237.

Jean-Baptiste Su

That's impressive. Questions?

Arpit Joshipura

So I did not have 40 minutes of slides just because I knew you would ask questions.

Jean-Baptiste Su

Any questions? So I have one while we wait for the crowd. I know it's lunch, but you're going to have to wait a little bit.

So how do you see the incumbents, let's say, talk a bit more bluntly, Cisco for example. They're a bit late in that NFV open networking. Right now, open networking, that's Dell, HP and Juniper. But Cisco is doing well financially so.

Arpit Joshipura

So this is no different from the mainframe era when IBM was dragging their feet. So it's kind of history will repeat itself. I respect what they do. It's a question of will we be able to adapt as an industry to this open era and if so, you'll start seeing a lot of dollars put in. And they have survived enough disruptions, so time will tell.

Jean-Baptiste Su

Okay. So I have one on -- about IoT and when I talk to companies like Dell and Cisco, a lot of you guys are telling me that what's driving the build-up in this new infrastructure is the Internet of Things, so the connected everything. Connected cars, connected smartphones. Is that what you're seeing as well or are you seeing other drivers?

Arpit Joshipura

Not entirely true. That's a bunch of marketing guys making slides up, so not entirely true.

Jean-Baptiste Su

Tell me again what do you do?

Arpit Joshipura

I'm in marketing, I know. I'm in marketing.

Jean-Baptiste Su

Yes,

Arpit Joshipura

No, the point here is a sensor that's sitting in a remote office is not going to generate the amount of traffic that requires a new build up, let's be very clear.

Jean-Baptiste Su

But when you have a 100 billion sensors?

Arpit Joshipura

It doesn't matter right. I think that's not -- it's not all, let's put it that way. There are certain ones -- let's start with the easy ones to understand. The one that we all know in the enterprise is the HD surveillance, video cameras. They're not Internet of Things, they're just another devices. But there aren't billions of those but those will drive traffic. Connected cars, yes, they will drive the mobile traffic because what happens is just like Ford, you put up a Wi-Fi inside a car, guess what kids are doing. They're downloading YouTube. Those things do.

But the specifics of the industry and which sensors, all of them, they can be multiplexed and load balanced. And if you do the right way, and if it's software defined, you can spin off enough real time infrastructure to get to a point where it's not a [model].

What is driving the build up is these workloads within datacentres, the requirement of enterprise and users to reach the cloud and back and all the data that goes back and forth between disaster recovery sites and things like that. So in my mind it's still a traditional driver of data for the next couple of years, three years.

And then comes the IoT making noise about oh my god, this infrastructure is not good. That's why in my last slide, I had, let's all three layers, services layer, infrastructure layer and the middle layer wake up.

From the floor

A couple of weeks ago I read an interview with Pradeep Sindhu from Juniper and he was stating that Moore's Law was now after 50 years coming to its end. The CPU speed probably around 3 gigahertz, the number of cores is at the maximum, the bandwidth of the buses is at a maximum. And unless you are able to make a 3D memory in a chip it's unbelievable that in that area, progress can be expected at least in line with what Moore's Law has been doing. Does it mean that the performance of ICT is coming to an end, or do you see different solutions?

Arpit Joshipura

You mean performance?

From the floor

Yeah, the performance of PCs was growing because they were faster, they had bigger buses, they had more cores. But it seems that we are now reaching the limits of what's possible with these chipsets, so you have to find different ways to improve performance.

Arpit Joshipura

So that's actually a very good question and --

Jean-Baptiste Su

We just celebrated as you said, the 50 year of Moore's Law and I hadn't heard that it's stopped yet. But yes.

Arpit Joshipura

So I think the way I look at performance is in three dimensions. There is the compute, there is the memory and then there's I/O. And at any given year, one of them is the [bottleneck] because it's like -- it's the lines you draw and you have a line and how do you make it smaller. By drawing a bigger line next to it. That's exactly what happens. Today network might be the bottleneck, I/O, tomorrow processing might be the bottleneck.

So as a system that you need to look at from a scaling perspective, you have to look at it as a full three dimensional problem. Now if you double click and go into the specifics of compute, storage as well as the I/O, each of them can scale differently. So you don't need to pack and keep making bigger and bigger and bigger machines. You can go multi-core [SymCLI]. And then if you go multi-core SymCLI can you put a flash next to it so that my DDR -- I'm going a little bit too technical here, but you can have those speeds go straight so that now the storage is right, hot storage right next to compute and also some -- your I/O is not the bottleneck.

So there are different ways to solve the problem. To give you an example, at Dell Research, we have a whole big research arm here, we were able to show [inaudible] standard servers to about 10 gigs of throughput with data plane acceleration and some clever technologies on where to place the workload, we were able to show 240 gigs of throughput. Now how do I get it in and out of the servers is a whole different debate. But just from a raw processing part, we've been able to do it from an X86 perspective.

I think now if I take a step back and look at where the comment came from it's always the debate of will proprietary ASICs have a place or will commercial silicon. And my view is innovation is always outside. When you have 20 people developing commercial silicon, you're not going to win. I may be the smartest in my whole company, but I'm like 5% of the innovation. There's 95% outside the company that do innovation, you've just got to foster it.

Jean-Baptiste Su

So off the shelf is -- most of Dell products are off the shelf.

Arpit Joshipura

We have believed that there is more speed and power and efficiency you can get by going commercial, open commercial silicon.

Jean-Baptiste Su

One last question.

From the floor

On the topic of IoT, isn't IoT more of a people problem than it is a technology problem? We've made a lot of headway in terms of building the right technology solutions and cloud was built for this. The on-demand scalability it works for the economics of cloud and Amazon and Google are building those compute engines to do just this.

The question is how do you get enough data scientists who can actually look at this data and leverage it to solve an actual business problem. And it seems like there's a lot of upstarts and a lot of capital flowing to these analytics software companies. But when you talk to all of them, it seems like the problem is how do we get enough people that can actually do something with the data.

Arpit Joshipura

That -- I will never disagree with that statement. The retooling of people skills because of software defined, the retooling of people's knowledge even to get to that analytics is absolutely the right concern. That's a good comment.

Jean-Baptiste Su

But I think just to follow up on that, I think it's yes, it's a peoples problem and there there's several ways to look at it. It's yes, in analysing the data, in maybe privacy but also it requires a re-architecture of the network where you don't want 10,000 devices just bursting all that data at the same time in the network. Perhaps you want to cash some of that locally and then send it.

Arpit Joshipura

There's always a technology angle which is what I was trying to point out and all three layers have to get ready. But I think to make them ready you need a different mindset.

Jean-Baptiste Su

That's all the time we have.

Arpit Joshipura

Very good.

Jean-Baptiste Su

Thanks a lot, Arpit.

Arpit Joshipura

Thank you very much.

Manek Dubash - NetEvents

Thanks JB and thanks Arpit. An interesting discussion and I suspect that could go on for quite a while. But I hear the rumbling of bellies. Lunch is imminent, but first I'd like to say don't forget this afternoon to come back because we have the meetings between the press and the vendors.

I'd like to say thanks to everyone who's come. We've had a terrific conference. We've covered a lot of ground. And we have some events coming up in the next -- in fact, next month in Singapore and hopefully we'll see some of you there. That would be great. And we've got a further event in Rome, I think it is, coming up later on this year and another one in Thailand at the beginning of next year. So do come and join us then. It'll be fantastic to see some of you there.

But I think that's all we have now for the full plenary session of NetEvents here in sunny Tiburon. Yes, it is sunny and you can see the city over there. So thanks very much for coming along and hope you've enjoyed it, hope you've found it useful and see you next time. Bye.

[End]