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Round Table Session IV
LSO hath charms to soothe a savage beast

Chaired by: Manek Dubash

Editorial Director
NetEvents

Panellists:	
Kevin Vachon	Chief Operating Officer, MEF
Gint Atkinson	Vice President, Network Strategy & Architecture, KVH Colt
Amit Sinha Roy	Vice President, Tata Communications

Manek Dubash - NetEvents

Back in 1697, a playwright called William Congreve wrote as the opening line of a play, "Musick hath charms to soothe a savage breast". Well, we've stolen a bit from that and modified it a little and the session is called, "LSO hath charms to soothe a savage beast", which isn't quite the same thing, but never mind.

So I'd like to invite the panel for this session to come and join me here on the stage. I'm going to give a quick presentation just to set the scene. Kevin and company, please come on down. Thanks, Amit and Kevin. Gint will join us shortly.

So here's a slide from the Vertical Systems Group, from Erin Dunne, and this slide focuses on Ethernet and IP VPN service networks, where the ultimate objective is to upgrade existing proprietary architectures to more flexible open source platforms as we've been talking about earlier on in this event. And in this new environment as we know with SDN and so on the control and data planes are separated, network control is logically centralised and service functions are enabled through software applications.

So what this slide does is it takes a quick look at a recent survey that Vertical Systems conducted of Layer 2 and Layer 3 network service providers and the question was

what do your deployments look like for SDN and NFV within the Layer 2 and Layer 3 environment.

And as we can see here, about a third of the service providers are currently using SDN and NFV in their Ethernet or IP VPN service networks or they're planning to do so this year in 2015. And about a half are planning or considering SDN and NFV deployments further out in 2016 or later, while the remaining 15% or so have no plans to deploy SDN and NFV, and I'll ask Kevin later why that is.

So the bottom line is that SDN and NFV benefits are enticing but the challenges are considerable. And with that I'd like to invite Kevin Vachon up on stage to come and tell us more about what the MEF is doing about it. Kevin.

Kevin Vachon - MEF

Thank you, Manek.

I want to talk about some of the drivers for lifecycle service orchestration. Some of you have had a briefing already yesterday so we've gone through what that is and some of you will have that today. But there are a number of drivers.

Firstly, SDN inherently drives the need to have more complexity and sophistication at the software layer and less at the hardware layer. So as compared to traditional networks where you had a lot of smarts in the hardware, some smarts in the software, SDN is the opposite.

So all of a sudden, you see this sophistication requirement as compared to traditional proprietary networks flipping around, much more sophistication in software. And SDN is happening. You saw the Vertical slide and those operators that currently have no plans, they will obviously have plans to implement SDN, it's just a matter of time.

The second major driver for the need for a very substantial service orchestration capability is what we're seeing in terms of market demand for on-demand and agile services. So businesses want to have bandwidth on demand. They want to get network as a service. They want to be able to buy a network capability. They want to be able to get it quickly, they don't want to wait three months.

They want to have self service portals. If you're going into a portal to change the characteristics of your service, you can't have an army of people in a back room making those network changes on the fly on a live network. There has to be automation.

And the same principle applies to cloud. Cloud is happening in a huge way and if a cloud application or a cloud service needs to change the characteristics of the network, perhaps allocating more bandwidth for a certain type of traffic to a different kind of datacentre right now or overnight, that has to happen in an automated fashion. Again it's not people that are going to make those network changes.

So again it's the demand for flexible type of network service and certainly a sophistication of management software to make those network adjustments and change.

So number one, SDN requires more sophistication at the software level. Number two, just the trend of what customers are looking for and what operators want to offer in terms of features require sophisticated software to deliver.

And the other thing is even if there was no SDN and there was no NFV and there was nothing new happening in this industry, you simply have service volumes which are driving automation. When a particular type of offering goes from early stage to mainstream adoption, you have the volumes.

The TATAs are selling and Verizons are selling huge volumes of Ethernet/IP services. And when you get beyond early stage, you can no longer configure these services in a manual fashion because it's not scalable and you can't make money if you do that. So service volume's a very simple, basic driver. Ethernet services is currently close to a $50 billion global market. There's a lot of services being provisioned every day and you can't do that manually and scale and make money. So that's the third major driver.

So in looking at why LSO is going to happen, we think it's a perfect storm. I should have pointed out that not only are the service volumes big, they are global.

We now have in Verizon, great examples of service providers in the room, Tata. You're selling services to multinational companies and you're delivering services around the world, you have to work with many, many partners. And if that remains a manual process, it is going to be very time consuming, very slow to time to get the revenue and much of that ultimately over time has to be automated. So the LSO function will provide inter-operator orchestration.

So the volumes are big and they're going global. The innovations require software control as I pointed out and the SDN and NFV need greater software control.

And lastly, it's no surprise to me in that the industry is moving in the cloud direction. Cloud services, cloud applications cannot realise their full potential if the network fabric underneath is not dynamic and agile and automated and so on and so forth.

I'll make two additional points.

One is that we do some of our own internal surveys. We have 130 service provider members and one of our recent surveys regarding the capabilities of OSS systems, operational support systems suggested that 60% of those that responded said their OSS systems are really not ready for the challenge. There's a little bit more text there, but they are going to need implement improved implementations to meet these demands.

And we are for the first time seeing analysts starting to report on the LSO space. There's a new sector that's being defined here and I think if we're up here 12 months from now on a similar time you'll probably see six or seven different analysts reporting on the LSO space. So stay tuned, it is going to happen.

So with that, we have the setting of the stage for the next discussion.

Thank you.

Manek Dubash

So thank you for that. So I'm just going to ask them a few questions, but please do stick your hand up if you've got some questions or thoughts you'd like to ask.

First of all, just to put the whole thing in context here, one respected journalist who's well known to many people who have been to NetEvents before wrote recently that SDN and NFV are yesterday's acronyms and LSO is the brand new buzzword in the service provider industry. And of course lifecycle service orchestration. So is he right? And if so, what does that mean in the real world? Kevin.

Kevin Vachon

We appreciate the support. It's a bit of a stretch to think that -- I guess if you're on the leading edge of technology now you think that SDN is done now, that it's all figured out we're moving on to something else. But of course, implementations are only starting to occur now with the service providers and so on. I think those terms are going to be around for a long time.

Manek Dubash

Any thoughts on that, Amit?

Amit Sinha Roy - Tata Communications

I clearly think that the evolution is in play. And we have been talking about cloud orchestration for a while and it's proven there's cloud automation and cloud orchestration. It's wonderful to see the similar level of focus coming in on the network and perhaps next year we shall be talking about a combined orchestration across cloud and network. And I think that's where the industry is headed.

Manek Dubash

Can I ask you what -- just to make it a bit more real. First of all, just get down and dirty. What kind of services are we talking about that lifecycle service orchestration will help to automate and presumably make cheaper to provide?

Amit Sinha Roy

So it's across the lifecycle of the relationship that a provider has with a customer. So starting from provisioning the service itself, going through to the control, the performance, automation, usage, monitoring, even managing security, pushing policies. It's across the entire lifecycle. And I think I was watching Nan Chen's video on YouTube, he mentioned cradle to grave for this service. I think that captures it brilliantly.

So right from the start of the service, the relationship through managing the service and then even switching it off. That's the entire lifecycle that LSO would help manage.

Manek Dubash

Are there some types of services that are particularly susceptible to being difficult to set up and easier to automate or more expensive to run? Can we categorise those? Kevin any thoughts on that?

Kevin Vachon

Yes, Gint can probably speak from a practical perspective, but the MEF's focus in that first phase is to be able to orchestrate connectivity services that are sold to businesses Layer 2. But I would suspect that if an operator is going to invest in that capability, they would extend the same capability probably at the same time to a Layer 3 or Layer 1 type connectivity service as well.

So our focus in the short term is at the Layer 2, which is where MEF has historically played, but there's no reason why the identical functionality couldn't be portable up or down.

Gint Atkinson - KVH Colt

So I think if we just use Layer 2 as an example and I think Steve mentioned an MEF stat which was some massive proportion of Ethernet ports are going to be sold in the cloud. So let's just use that as an example.

So what does that mean? Minimally, on an E-line as the MEF is laid out, going from AWS Direct Connect to the connectivity into the datacentre to somewhere else, all the way to the user's datacentre, their private cloud and then all the way back into a branch office, we have many Ethernet segments inside there, each one separately provisioned and then orchestrated.

Now that Layer 2 connectivity into AWS is kind of problematic. You really need to do some more work and set up the Layer 3 services so configuring the virtual router and that's maybe something a service provider can come in, but that's done right in the context of end-to-end lifecycle orchestration.

Then the customers realises that they're having some security issues or that the majority 60% of the traffic because this is a gaming provider inside AWS and at the opposite end we have mobile users playing the game, a huge slice of that capacity, not only network, but CPU capacity, is being chewed up by dirty data.

So maybe now someone in that service chain wants to spin up a security service and Wedge Networks can come in with their NFV and this gets spun up all in orchestration. And we keep going on.

It's not just a security function, I'm going to have dozens of other functions that I want to spin up over time. But I really can't do it now quickly and easily because I don't have lifecycle orchestration. So this is where MEF is stepping up and driving the standard is critical. And as I mentioned yesterday, SDN is not the bleeding edge any more, it's leading edge. And the same thing with NFV, it's not bleeding edge any more.

And to really maximise the value out of these capabilities and make new service mixes and a new experience for the users of cloud connectivity, we need lifecycle orchestration.

Manek Dubash

So both KVH and Tata presumably have bought into the whole LSO. You've bought the Kool-Aid presumably.

Gint Atkinson

We're making it.

Manek Dubash

So what are the challenges? What are the practical challenges involved?

Gint Atkinson

In the simple -- the first use case, I shouldn't say simple, the problem to get solved, everyone knows how great -- or I shouldn't say great, how functional and how well adopted the Amazon APIs are. But Google's APIs are different, Azure's APIs are different, SoftLayer's are different.

This is the perfect place for orchestration vendors to come in and build the adaptors and take over those interfaces. And that's exactly what's happening is we're having orchestration vendors stepping in and saying, where we don't have industry-wide standards, we'll take care of it.

Manek Dubash

Is that consistent with box or is that something that's consistent with software into the --

Gint Atkinson

It's OSS software essentially. So you're going to have this orchestration software that's talking to your network, to the management plane on your service platform and it's at the OSS level/BSS level. So it has to be aware of your orders, has to be aware of your service catalogue, has to be able to send messages that turn into direct messages on the network management plane or ultimately into the control plane, through an SDN controller or through the management plane.

Manek Dubash

And how does that work on a live network?

Amit Sinha Roy

So going back to my presentation of yesterday, if we look at what we are doing with IZO across multiple service providers, I think this whole requirement gets multiplied many-fold. To be able to actually traverse across different service provider networks

and be able to provide the quality of service, the latency, the response time, these are areas where clearly the orchestration requirements, the standardisation requirements are critical in order for a group of service providers to be able to provide an end-to-end guaranteed SLA to the end customer. So absolutely it is a requirement that would span across networks as well.

Kevin Vachon

Just to build on what the other gentlemen are saying here, I think one way of looking at it is there are two types of challenges. There's the technical challenge which you've articulated and that involves defining many different interfaces between an orchestration capability and SDN controllers working with a bunch of different standards organisations and getting all of that out to the market and so on and so forth.

But the other thing that's, I think, not highlighted by the technology community as much is the issue of business process standardisation. If you're dealing with the wholesale scenario, you can't automate processes across networks or across operators, if they're not defined. How are we going to exchange orders, what does my order form look like versus your order form and so on and so forth.

So there's a lot of that kind of -- lifecycle orchestration implies that there is a lifecycle. So the lifecycle has to be defined in all of the different piece parts. And so again we've talked about this in some of the briefings that we've already done. MEF has been focused on that kind of lifecycle definition over the last couple of years. We've really accelerated over the last 15 months or so which is then an enabler for the automation piece to kick in afterwards.

Manek Dubash

And then differentiation is obviously higher up the stack somewhere. So there are benefits to you as service providers in terms of automation. But if I'm an end user what do I see? Is that something you sell to the end user at all or is that just sort of it's invisible underneath the surface?

Gint Atkinson

So one of the end users in this scenario are content providers, gaming providers, over the top players. So I imagine as in the previous session like with Wedge Networks, there is -- you want to focus on that customer segment directly seeing the impact.

Now if we go on the other end, the mobile users may not realise the benefit as much. They're secure, the network is cleaner, they're benefiting from a back-end network function. So that community may not be as vocal in their needs for certain types of network capabilities to get orchestrated. But they definitely will see the benefits that they could maybe go and ask for another capability on their service package or improve their user experience by pushing on some dials.

However, it's the cloud provider customers. They're going to directly have explicit KPIs, explicit network functions that they're going to package up into their services. So how does this all get tied together? It's the service orchestration.

Amit Sinha Roy

I would just like to add on to what Gint mentioned in the sense that and I mentioned this earlier, the cloud, in the cloud service stack, orchestration in terms of stability, in terms of being able to scale up, scale down, based on customers' business requirements, that's been the selling model and that's been the business model.

And this is now also coming over to the network stack. So it becomes to an end-to-end deliverable to the customer, not just on the cloud in terms of compute storage and application layer, but also the connectivity layer. And that makes it an end-to-end deliverable.

Kevin Vachon

Actually I'm glad you brought that up because I was going to comment on that. And some of you know that the OpenCloud Connect Group is affiliated with the MEF and that increasingly becomes very strategic because for orchestration, the MEF has this reference architecture and we mentioned the cloud drivers and you were just referring to that.

What OpenCloud Connect is doing is defining their interfaces to connectivity services in parallel with the MEF defining orchestration. At some point, that's where there's a marriage that occurs and the cloud servers can trigger the connectivity service orchestration. And that's happening in parallel and those will come together over the coming months. They have a reference architecture that's published. MEF is working on its reference architecture for the service orchestration layer and that'll be a natural marriage.

Manek Dubash

I was going to ask you how advanced that is, the whole sort of --

Kevin Vachon

Actually it's quite advanced. In terms of at a high level, all of the major functional components have been defined. The interface requirements have been defined. They have been vetted with other organisations that are critical to this becoming reality such as ETSI NFV, ONF. We're working with OpenDaylight now, starting work there. We've been referencing information models from the TM Forum, a lot of joint workshops.

And now, we move now to actually starting to write code for some of those interfaces soon or have members contribute open source code that could be written on an OpenDaylight platform or something like that. It's going to play out in a number of different ways.

Manek Dubash

Who are you seeing as the early adopters at the moment?

Kevin Vachon

Well, I'm not sure that I would point to one provider or another. At KVH, you've provided some interesting examples of what you're doing on the orchestration side. At the Gen14 event last year we had Tata partnering with Allstream out of Canada showing automated service. Maybe it wasn't called LSO at the time, but it was nevertheless showing a service being triggered by, I think, a customer portal in that case, by a Canadian customer across Tata's network.

There's all sorts of proof of concepts. Next week we're showing a proof of concept at TM Forum Live in France, involving Axtel of Mexico with PCCW and Oracle software, all sorts of this stuff going on. Some of it was happening before it was kind of encapsulated into the LSO sort of sub-sector that's been defined here.

Manek Dubash

Sorry, are there any questions now? At some point somebody is going to pull out a spreadsheet or whatever and say okay, here's the ROI, here's the business case for this stuff. How do you do that and what sort of return and when do you expect to see that kind of return?

Gint Atkinson

Way under two years. More like if you do it right, 12 months or less. There's a huge amount of framework code. Like you can use OpenStack – service independent, it has all of the framework for building orchestration, but it doesn't know what an Ethernet service is. It does know what compute services are, it does know what storage is, so people automatically think that some of these open source frameworks, they're coming with a default service model but they need to be extended.

So all of this infrastructure is ready to go. That means you can go straight down to the wire and define what your services look like, what the resources look like and extend the resource model. OpenStack as an example is so broadly used, and in every single release it's rapidly improving. So that means that vendors that want to go in this space, if they choose to adopt that infrastructure, they can really focus in on orchestration. The vendors that are going to do cloud connectivity they can zoom in on that.

So this drives down the cost of development and consequently the licensing cost for the service providers. So the ROI should be extremely, extremely fast and remember when you look at service providers' margins, there isn't too much room. You have to make a really, really big difference and you have to enable something new like service bundles and rapidly putting service bundles together and letting the customer drive bundles of service features and so forth.

So if you drive down the cost infrastructure and you create a new opportunity for service packages and your customer experience, now you're creating value and now you can get into that somewhere around twelve months ROI.

Manek Dubash

What's interesting is that open source is a key enabler for that, whereas previously -- is there anybody doing these proprietary expensive off the shelf stuff?

Gint Atkinson

I'm sure Oracle is going to use proprietary. I'm sure Ad Box is going to use proprietary. Let's go down the list of legacy players. But the IT guys and the cloud guys and the guys in the datacentre, they're using -- anything that's common infrastructure, they just have the philosophy this should be open source and everybody needs it, what's my secret sauce.

Amit Sinha Roy

I'd just like to amplify the message around the cost and the ROI. Whilst every product that we release in the market has to have the basic ROI and the business case, but it's also about being able to deliver higher customer value. So the whole story that we have around IZO in many situations can deliver up to 30% cost reduction to the end customer and that actually helps in terms of being able to get larger market share and also be able to drive more value for the customer for the service. And then of course the flexibility in terms of being able to turn on, turn off services and being able to have a wider coverage and reach. So all of these are also benefits which would ultimately come back and help drive better ROI.

Nikhil Batra - IDC

I'm Nikhil from IDC. Kevin, your last slide spoke about a lot of service providers having a OSS/BSS system indicating that they are outdated or probably not ready for SDN NFV. So I'm just wondering what kind of OSS/BSS functionality we're talking about here they're lacking. Or what are the challenges in this aspect for service provides for adoption of SDN NFV to some extent?

Kevin Vachon

There are obviously many OSS functions, but if you just use one simple example would be a provisioning system, activation of provisioning. There's probably an opportunity for leapfrogging in the industry, some of the service providers, the larger ones have invested quite heavily in because of the sheer magnitude of services they have to deliver.

I've personally talked to a lot of service providers that are saying we do a lot of things manually, so they just have then taken their current OSS environments and adapted them to deliver Ethernet services to instantiate and activate whatever you want to use in an automated fashion, even if it's only the provisioning and not the full lifecycle orchestration.

So a lot of it is still done with an engineer going into the network, into the device through a command line interface and turning some of these services on or with some

home-grown tools that are semi-automated maybe using an element management system or a network management system.

So I think there's just a lot of investments that haven't been made yet and in those cases, there's probably an opportunity to leapfrog and move to a more modern approach.

And also keep in mind too that orchestration, lifecycle service orchestration has many different functions and not all of those need to be implemented right away. For example, there's a service assurance piece where you might be looking at taking data from the network and doing analysis on that. You don't necessarily have to have that piece in place.

We're starting to hear about autonomic networks coming back again. To have that type of capability implemented would imply that there needs to be sophisticated orchestration going on and that would be smarts that would be added later on.

Manek Dubash

A final one for the two service providers. What do you want the MEF to do next?

Gint Atkinson

I'm having a little bit of a hard time because as of over the last year and a half with the third network and with LSO, the standards and the vision is all on track. And we worked with the MEF to come to Japan and to help promote adoption of MEF standards for Carrier Ethernet services and we had a reinforcing experience. The Japanese market is extremely challenging, if not recalcitrant on adopting non-Japanese standards.

So the MEF has been very, very successful globally. I think the Japan market is the one place we would like to interface and peer and partner with NTT and KDDI in a much more standardised way. So to get off-net we use services from KDDI, NTT and SoftBank. Every one of them is a totally different thing at the Ethernet layer.

Then interfacing at the order level, LSO would solve the problem. Probably SoftBank would be the first one to adopt that standard and implement it, but the other part of the oligopoly I don't see them embracing this type of inter-working.

But across the rest of our global footprint, we're really seeing everybody adopting it. When we have another operator we're working with, I'll use in APAC, PLDT. They have so much expertise on staff. They have so many people, engineers certified. We have lots of partners now that are all getting MEF registered. So it makes easier for us to partner.

I think really the LSO is the big thing and now working out how the architecture reaches into cloud connectivity. So -- and a lot of work has been done there, but there's a lot of stuff on cloud connectivity that's still emerging. So we're looking towards MEF's leadership there.

Amit Sinha Roy

I think Gint's said it all. So it's about standards, driving the adoption of standards and then extending the frontiers of LSO into new areas such as cloud. And perhaps even application layer interfaces, APIs to give an end-to-end solution for a customer and a service provider.

Kevin Vachon

The biggest challenge we have to make this happen in a timely way is to get the resources to come into the MEF and do the work because historically we've had network engineering and network architecture professionals that were helping us define these services and build these technical specifications. And now we need OSS experts and SDN and NFV people to come in and do this new work.

We still need the network engineers. And we get them from three different sources. You get them from software companies. So we do have the Oracles and the Amdocses and the CNEXes and all of the software companies who are involved in this space have been getting involved and that's going well.

And then we have, increasingly we have the software management people from the vendors that are stepping. So the former Tail-F people within Cisco for example have been very active in MEF. So we need the vendor management gurus. And then we need the OSS people from the service providers.

So you can't get them involved unless you go out and really sell this concept and let them what you're doing, who you're working with because your resources are thin. You can't be working in every different form. So that's a big challenge over the next six months is to get the critical mass of resources to move it forward. We're doing fine in that way, but certainly we have a lot of work to do.

Manek Dubash

Gentlemen, unless there are any further questions, I'd like to thank you very much and let's go and get some coffee.

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