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Round Table I: The Best New Models for Wide-Area Networking and Service Provisioning

Introduced & Chaired by

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Panellists:

Philip Griffiths	Head of EMEA, NetFoundry
Atchison Frazer	Worldwide Head of Marketing, Versa Networks
Rik Turner	Principal Analyst, Ovum

Scott Raynovich

Thanks, everybody. Welcome to another NetEvents. I don't know how many this is for me, but maybe like nine or 10. It's great to see everybody. Great to see everybody in sunny Portugal, so we're going to kick this off with one of the hotter topics, right, the WAN, the edge, where everything - all the devices are connecting to the network, which as many of you know is one of the hotter areas right now. So I'm going to give a brief introduction to talk about some of my thoughts on why this area is gaining so much interest and why everybody wants to make their play in the WAN, so to speak, and maybe I will address whether MPLS is dead or not.

So this is a - this is something I don't know about, but maybe that's what you're talking about. There's me. So anybody who doesn't know who I am, I'm Scott Raynovich. I've been in this industry about 25 years, first as an editor and a writer, and then later as an

analyst, and I run Futuriom, which is an independent analyst outfit, and we basically focus on technology trends in any kind of virtualised network. So whether it's cloud, infrastructure, service provider networking, enterprise networking, all the way out to the edge and IoT, we focus on how all these new, exciting things are connected.

So why are we hear, talking about the WAN? Why are we talking about software-defined WAN? Why are we talking about AppWANs? Why are we talking about all these new virtualised ways to connect things? Well, the reason of course is technology is always seeking a solution to a problem, right, and there's enterprise IT managers, especially, are struggling with quite a few problems.

They have this influx of cloud applications, and they have lots of bandwidth constraints. They have rising security concerns that of course members of the press are writing about every day. Somebody got hacked. Somebody's hacking into your network. Yet everybody wants more access to cloud applications, more access to the Internet, and now we have this new thing called multi-cloud, right? Connecting clouds within clouds, and then as all these applications run across the cloud and across the pipes, of course, there's performance challenges. How do you make sure everybody can run these applications at high performance and when they have to access their CRM system, it's there, so these are many of the challenges.

This slide is just showing how the applications are migrating to the cloud, right? We're something - this is Goldman Sachs saying we're between 10 to 15 per cent of enterprise IT spending, but as we all know, it's increasing all the time and many people expect cloud to become greater than 50 per cent of the IT spend in terms of applications. So it's not going to stop any time soon. This is going to continue for the next decade.

So what is the cloud doing to the WAN? It's flooding it with traffic, right? We have more people trying to hit those applications in the cloud every day. More people are using broadband to access enterprise applications. The corporate WAN is therefore becoming a bottleneck, and you have these legacy private networks that Manek alluded to, MPLS or private circuits, that are becoming a bottleneck.

So the IT managers, they want a faster and easier way to mitigate these challenges, to have multiple ways to get people to their applications, to alleviate the bottlenecks on the Internet broadband or the private circuits and supply all the security and bandwidth that people need to access these applications. These are - this is just some more of the challenges I talked about. How do you build these virtual multi-cloud networks that are secure, deliver performance and third of all, can be automated quickly and easily with a click of a button instead of waiting for a truck to arrive.

I always talk about the cable television dilemma. Everyone's had the waiting for the cable truck to arrive thing. You don't want that, right? You want to be able to press a button and then your cable TV is on. You don't want to be sitting there waiting for a technician to come with his tool bag and show up late and have the dog bark at him, right? Because that's disruptive. So that's basically the enterprise is going through the cable TV guy problem.

So how do we gather our research? Well, I focus on end users, so I try - I obviously talk to vendors all the time as well, but I try to go and get the opinions of the end users and find out what they're doing about these challenges. I'm quickly just going to show you a couple slides. I'll be going into more detail on this with everybody in the individual sessions, but an overview of a survey we just did, that was sponsored by NetFoundry, actually, that we talked to people about VPNs and security and we talked to - we had over 200 respondents. They were all managers of IT or above, and this just shows their role, so another thing I'll say, a trend about IT these days is people's roles are changing.

It used to be silos of you were an app developer, you were a network operator. As we move to the cloud, these roles are becoming a little messier. You have application development people that need to know about networking, and then you have vice versa. So this is how the roles were distributed, but basically, everybody had expertise in application development, networking, security and DevOps. One of the things we asked them about are issues with VPNs, and it was pretty popular to say that they had issues with performance, 63.5 per cent, and pretty popular to say they had issues with security.

There were other issues too, of course. Management, 34 per cent and configuration, 36 per cent. So it's clear from this to me that the existing IT managers are not happy with existing VPN technology. They find it possibly hindering performance of the applications and the network and then they're certainly concerned about whether there's enough security.

This was another one. We asked if traditional VPNs are not the best solution for industrial IoT, so it's a little bit reverse negative. Sorry if that's confusing, but we asked them if it's not - traditional VPN is not a solution for industrial IoT. Over - a majority, 54.5 per cent, agreed with that statement, and 9.5 per cent strongly agreed, so you had almost - you had almost 70 per cent there that were saying that they didn't see VPN as a solution for industrial IoT, which makes a lot of sense if you think about it. Because industrial IoT devices were machines and they weren't really - VPN was first rolled out as a consumer app, so it doesn't easily fit into the IoT bucket, so that's an interesting problem to solve.

Then when we asked them if they used VPNs for extranet, B2B or connected supply chain use cases, but they're seeking a better solution, 75 per cent said that that was true. So to me, it's obvious from the data and just talking to end users that they're frustrated by certain things in the WAN, especially on the security side, and they want to find an easier way to quickly network things with high performance and with security, whether that's an IoT device, a machine in the cloud or whether that's a person on broadband in an office somewhere.

So what's the heart of this problem? Well, personally, I think it's routers. Hopefully we don't have too many Cisco people here, but I don't think we do. Routers are just really a pain in the neck to configure, and it's very manual, and this is the enterprise network was built with routers. So this is the kind of expertise you need to configure a routing network with security, and this is what people want to get away from. They

want to get away from very heavily - very heavy manual configuration of devices. They want it to be automated and they want it to be clean, right?

So this is why we have something called SD-WAN, and this is a versus view of SD-WAN, and SD-WAN, the simplest way to look at it, really, is like an overlay network that can automate some of this provisioning. You have these boxes in the cloud, whether it's a headquarter or a branch, and they're connecting through the Internet or MPLS - it can go either way - and having an intelligent overlay over the manual network to provision some of the stuff faster and have the intelligence to move things around based on what it's seeing in the network, if the SAS connection is not working, why, and can we reroute it to a different way. So think of the SD-WAN as an overlay that can automate more of this box management, if you will.

So why are people going to these SD-WANs? Well, that they've found is they can massively reduce the cost of managing all these branches. So why is that? Well, the SD-WAN box is typically a cheaper box, so it's based on x86. It's a standard industry-standard box with the software on top, and then say you wanted to roll out to 100 branches or 200 branches. You can provision that through the cloud, right? You don't have to have the cable guy rolling the truck all the time to configure the devices. So the savings can be on both the OpEx side and the hardware side.

So this is why it's an attractive area and why it's so hot right now. Another example is an AppWAN, something that NetFoundry's talking about. What's an AppWAN? Well, I view it as an application-based version of an SD-WAN, so instead of going from boxes, box to box, it's going from application to application, so it's - and this is a - I know it's sometimes hard to understand. But I had my graphic guy try to depict this in a slide, which this really sums up everything that's going on. People have MPLS networks, they have the Internet cloud, they have cloud services, they have their legacy datacentres, and they need to connect all this stuff and they need to find new ways to connect it.

So if you look at the SD-WAN is connecting all of these things. It's acting as a hub to connect things with a virtual overlay of branch to the corporate HQ or a branch to cloud services, and then the AppWAN would be going from if you see the light bulb directly to the cloud. So picture an AppWAN connecting an IoT device directly to a cloud circuit on a secure overlay.

So we're basically taking this spaghetti of networks and building these new overlays that are more intelligent and secure and can negotiate their way through this traffic jam in a more automated fashion. I'm sure Philip will talk more about this, but here's just an example of NetFoundry using an AppWAN to build a higher-performance network for Watson Voice, and they're doing this by using cloud gateways to create these secure AppWANs.

So I'm already over time, so I'm going to go straight to the panel, but this is just our view of why SD-WAN is growing so fast, and it is growing very fast, and we confirm it all the time with end users, as well as the vendors. It's going to be reaching to the billions of dollars. This year, actually, we project it into 2019, crossing over into 2020,

crossing over into that $1 billion mark of technology that's being rolled out to solve some of the SD-WAN problems.

So we're going to talk more about this on the panel, so we have Philip Griffiths, who's Head of EMEA for NetFoundry and Atchison Frazer with Worldwide Head of Marketing and Rik Turner, Principal Analyst with Ovum, so if gentlemen could come up here and we'll get started.

Are we supposed to dance? Great, so welcome, everybody. I'm going to start out by this slide, which I was frantically working with my graphic artist to try to describe it to him. As everyone knows, graphic artists aren't necessarily keen to the intricacies of MPLS networks, so if you were to critique this or improve it, what would be some of your commentary? We have a good cross-section of people here. Atchison, you have background from the traditional networks, and now you've moved to the SD-WAN side, and Philip, you're doing AppWANs, which is a little bit of a different spin on SD-WAN. Is this an accurate view of what's going on or how do you look at the world when you're trying to connect all this stuff? Let's start with Atchison.

Atchison Frazer

Is that better?

Scott Raynovich

Oh, hello.

Atchison Frazer

The voice of God.

Scott Raynovich

Well, if you weren't awake, now you are.

Atchison Frazer

The God of SD-WAN. Wow, that's a lot of gain there. There we go. That's better. So I think this is pretty accurate. One thing that I would point out in your presentation is - which I think this diagram is representative of, is one of the core concepts of SD-WAN or what Gartner would be calling WAN edge, is the notion of it's not MPLS. It's not just ISP. It's not just LTE. It's any and all above aggregated together, so that essentially you have one conduit for all of your remote locations, all of your branch offices, your datacentre, your cloud instances. In the case of Versa, at least, all of those show up and look the same as any other node in a traditional network.

The difference is we can allocate bandwidth based on any range of factors, whether that's congestion, whether that's jitter, packet loss, and we're looking - in our case, we're inspecting every single packet for performance and security, by the way. So we actually do care about what's the payload that's inside the packet and the efficiency of the transport of the packet. But the key point here is that I think in most cases this is true - we are deployed as an overlay.

MPLS is a $15 billion installed base that is not eroding very quickly, certainly not as rapidly as some of our other competitors projected. So the ability to reduce the cost of traditional private line MPLS with all the equipment and the overhead and the overhang associated with that by integrating commodity Internet and LTE, wireless, other kinds of connectivity into the mix of your overall traffic helps reduce the cost, because Internet bits are at least 80 times cheaper than MPLS bits.

Notionally, the other point is that MPLS really was never designed - it's enterprise-class connectivity, point to point, pretty good at voice, although that's degraded over time as well, unfortunately. The larger the nodes that you try to connect, the more at risk you are of having a brownout. We've had some customers that were running MPLS only and the New York office is down for three days. In this day and age with SaaS and business-critical apps, your voice, your [UCAS], your videoconferencing, Office 365, et cetera, that's just not an acceptable SLA.

So now you're able to say I want to reduce costs between legacy MPLS. I want to introduce commodity Internet into the mix a little more. I want to segment traffic. I still want to route business-critical real-time apps through MPLS, perhaps, subordinate, bifurcate traffic that is less business critical, but I don't mind it going through, but I'd rather use commodity Internet for that. Resiliency of every single connection now, it's determined through the controller, the central controller, so one person can essentially provision, manage, have an SLA and determine zero-touch capabilities for thousand sort of locations.

As Scott mentioned, the legacy - just take routing alone, 85 per cent of changes to the traditional IP router are still done manually. What you have now is you have inbound congestion from multi-cloud sources. You have SaaS applications that are distributed to the edge. You have mobility and wireless that's putting additional pressure on each one of those edge locations. The idea that that's sustainable is really out the window, so that's part of what SD-WAN is driving as well.

The endgame, however, and we start to serve this probably more in the midmarket right now, where companies are acquiring - through M&A they're growing to a certain degree and they acquire companies with very low-quality branch offices in remote locations. The endgame is essentially to eliminate the need for the plethora of devices required to support MPLS.

Today, your average WAN, you probably easily could find four, five separate devices all from separate vendors. They don't really talk to each other. They're very static.

Scott Raynovich

Yes, let's talk a little bit more about the MPLS thing, and I'd like to get Rik's opinion next, but Manek asked about this MPLS thing, which of course everyone always asks me. CenturyLink had a call last week, or no, it was earlier this week. I don't know what day it is even, but they talked about their new SD-WAN services, and there were a lot of questions on the call. Well, are you going to cannibalise your MPLS? Because MPLS is a multi-billion-dollar market for these service providers, and they said

something interesting. They said that their new SD-WAN customers weren't tearing down their MPLS circuits, they were using them to augment it.

So I think it goes back to that thing that you were talking about. You have this new thing where you can get for pennies on the dollar and you can boost the performance. Often, Internet broadband can be better performance than MPLS, and so they're adding these new SD-WAN circuits to augment. But, Rik, do you think MPLS is going to die any time soon or how do you think this will evolve?

Rik Turner

I definitely think that reports of its death are massively over-exaggerated. Clearly, it's not going away any time soon. It will clearly not grow at the rates that it could have done if SD-WAN had not come into the market, inasmuch as it will be slowed by SD-WAN, because essentially what you're doing is you're enabling people to prioritise the traffic that absolutely must go over the MPLS link, and then whatever they can, they will put over the other links that they have available. It's like the old networking guys used to talk about switch where you can and route where you must.

I suppose to some extent it's MPLS where you must and broadband, LTE or whatever else you've got wherever you can. So I think it's going to be here for a long time. It's here to stay for many, many years. It certainly won't enjoy the rates of growth that you had in years past or certainly won't - it will slow, and use of the MPLS links will be more conditioned by the absolute requirement to do so. Where you can get away with it, you'll avoid the MPLS, and so therefore you'll reduce the demand overall within the enterprise for it.

Scott Raynovich

Right, right. What do you think - I write about this quite a bit. What does this mean for router vendors? You see Juniper and Cisco trying to talk an SD-WAN game, but the bulk of their business is selling routers.

Rik Turner

Absolutely. Yeah, no, they have to be - obviously, they have to get into the SD-WAN market as a market, which, if it is not exactly going for the jugular of MPLS, it is certainly constraining the MPLS market to a degree. So clearly, they have to be in that business as well, I suppose rather like a lot of the broadcast TV folks now have to start thinking about having something that they can stream directly to your TV as well, because you're not necessarily going to be taking everything on broadcast channels, as well, so they have to have an Internet offering as well.

Scott Raynovich

So you're saying SD-WAN is the Netflix of the network?

Rik Turner

That's a reasonable analogy. I think even more clear for me in that sense is that we were talking at breakfast in fact about this, and now the community of vendors who have moved into SD-WAN virtually as a survival mechanism are the WAN optimisation guys. Because obviously the WAN optimisation folks - I don't think there's anybody here from Riverbed or Silver Peak or anything, but this is my opinion, anyway, of what you're all up to.

But clearly, they came up and made their money and became successful by enabling you to do more efficient usage of your corporate WAN. Now, if that corporate WAN, i.e., predicated on MPLS - if that MPLS link is no longer being quite so required or at least the requirements of it are more now conditioned by what other alternatives are available in the enterprise, then the rate at which you are going to need to buy or more companies are going to need to buy WAN optimisation technology similarly will slow. So clearly, you can see that all of - well, the three companies that still are standalone WAN optimisation vendors have all become SD-WAN vendors.

Scott Raynovich

Yeah, you're seeing the functionalities being collapsed.

Rik Turner

Of course, when you speak to them, they will always say, but of course, on the MPLS link, we can do all this wonderful…

Scott Raynovich

But on the other hand, I don't want to be too hard on the WAN ops guys, because Silver Peak, for example, has done a very good job of changing the story.

Rik Turner

Yeah, yeah, absolutely.

Scott Raynovich

...to router replacement, saying we're helping you replace your routers faster. Sorry, we're here in Portugal I should say routers shouldn't I? I have no idea how to say router in Portuguese.

Rik Turner

You say router and I say router, that's fine, yeah. But yeah, no, absolutely so. It's - I agree with you, and it's eminently sensible that they should have moved into it. They were the first ones, really, Silver Peak, to move into the SD-WAN space, followed by Riverbed and Infovista as well.

Scott Raynovich

Yes, so Philip, we're talking - I want you to get a chance here. You guys, is any of this alien to you, because you guys are all software? You don't even touch any of this hardware, so tell us how that works with your customers and the discussions that you have about configuring devices versus software in the cloud?

Philip Griffiths

Yeah, so for us, it's we have that same story on that slide that you had up there, where there's these two different worlds, and there's Internet and then MPLS. For us, it's more about looking at the picture on top of that and then all of the edge devices. Going to what Rik was saying, MPLS is obviously here, because there are use cases where you're static and you've got mission-critical data and it needs to be sent.

On the other hand, you've got these new use cases, such as IoT, SaaS, mobile, where it's completely distributed, and it's being distributed due to the digital transformation and businesses getting into developing their applications to get value from the data explosion that's happening, and in this world, the best model is to have the application-specific network that allows you to connect these distributed applications with a much higher level of simplicity, agility, performance and security than you would otherwise have.

I really like the use case that you had up about the IBM Watson one. This was a situation…

Scott Raynovich

It's behind you now.

Philip Griffiths

Fantastic. So this is a situation where we were pulled into a proof of concept where they needed to connect call centre in Lima, Peru, to IBM Watson in Dallas in order to do real-time translation of telephone calls, and obviously that's time critical. At the same time, it was incredibly expensive to get an MPLS and it would have taken months, and this was proof of concept, so they said, well how can we do this really quickly? So they used our software to deploy into the contact centre, into the IBM datacentre, spun up a network in the day and they were able to get an average of 200 milliseconds over the public Internet from those locations, which is pretty much the speed that you'd get from MPLS, due to the optimisation that we can provide over the public Internet. Which going back to your slide of these two diametric worlds of where do I send my critical applications on MPLS and what can I send as non-critical on the public Internet, you can start asking the question, can I use the public Internet to run most of my business applications if I can provide that performance enhancement in order to meet the performance and reliability requirements I have, whether it's 50 milliseconds or 100 milliseconds or whatever it is?

You can then start saying, okay, more and more of these distributed applications can just use the Internet natively and only use the fixed, static MPLS lines where they are

full required, such as a day trader or someone doing financial transactions. Clearly, they need the fastest speed of light, but do you need it for your other applications?

Scott Raynovich

Right. So one thing that comes up a lot is you guys have an AppWAN and there's SD-WAN and people approach me and say, is that SD-WAN or is that SDN or is that NFE? We have all these - I tend to - my eyes roll back into my head at that point. I say, it's all just virtualisation, right? We have all these jargony terms and people, marketing gurus like Atchison trying to position where are we. Does it really matter whether it's SD-WAN or AppWAN? Let's talk about the jargon, and maybe some of our members of the press, they have trouble differentiating an AppWAN from an SD-WAN from an SDN. How do - let's start with Atchison. How do you see this alphabet soup and does it matter when you're talking to customers?

Atchison Frazer

Well, that's - application intelligence is also one of the driving forces behind SD-WAN. This actually - this use case was the original use case for SD-WAN.

Scott Raynovich

You're talking about the Watson Voice.

Atchison Frazer

Any kind of voice. In our case, at 200 milliseconds, we're probably switching that traffic to a better [MOS score]. For voice, between 50 and 80, you start to lose packets. So we can tell you - we can show you every single packet for your voice from ingress, egress, the MOS score against that, which transport it was on, what link was the best link. There's all kinds of intelligence. We have over 3000 signatures for applications.

Scott Raynovich

I've got your slide up there.

Atchison Frazer

So application intelligence is absolutely key and core to the SD-WAN concept, as it is AppWAN.

Scott Raynovich

So you're talking about now having the intelligence at the application layer but also being able to talk to the underlay at the same time.

Atchison Frazer

Absolutely, right.

Scott Raynovich

So would you use an AppWAN on top of Versa? How does that work?

Atchison Frazer

I don't know that much about NetFoundry, so I'd have to defer on that. We just announced - I'll give you a good example. We just announced a partnership with a company called Mode.net. Mode.net runs what they call SD-CORE, which is using intelligent algorithmic routing capabilities developed out of Cornell University that essentially is an overlay on top of the Ericsson Universal Network, Global Network.

So they have a backbone on top of a backbone, if you will. We're an over the top service on top of Mode, even though we're leveraging - so when you run Versa on top of Mode, you're going to see all of their bandwidth capabilities, all of your MPLS links, all of your ISP links. That essentially is a service running on top of the Ericsson network. So we're, by the way…

Scott Raynovich

So they're SD-WAN for SD-WAN.

Atchison Frazer

So they run a core overlay network…

Scott Raynovich

Core for SD-WAN. SD-CORE for SD-WAN.

Atchison Frazer

Exactly, so we run as a service. We're pure software as well, although every SD-WAN functionality requires a hardware device on customer premise somewhere. In our case, it's a white box or bare metal. We can run in the cloud. We can run on any hypervisor of choice, so we give the client that flexibility. But in our case, our software was really designed - you mentioned CenturyLink. CenturyLink has $1 billion worth of installed MPLS and associated devices.

They're going to be - over the next few years, they're going to be churning those devices in favour of a hybrid SD-WAN powered by Versa, so their CEO in their earnings call responded to that question, and he did reveal that. So that's a huge opportunity for us, as well.

Scott Raynovich

So, Philip, do you have to explain this stuff to customers when you're having a meeting to close the big software deal? Do you have to explain the difference between an AppWAN and an SD-WAN, or are they just thinking in more practical terms? How do you speed up my network? How do you secure my network?

Philip Griffiths

No, we definitely have to go through that educational story. We tend to three slides - I should share them with you. You can talk about why it's happening, what the benefits are and then how to actually look and to get to that level where you can say normally you have this, this traditional underlay, and obviously SD-WAN is an abstraction on top of that. But we're then going the abstraction level above that where you're connecting applications via the AppWANs. What's the most important bit about that is it allows you to drive towards the security requirements that we're seeing to come out, which was the second big thing on your survey, where you can start building zero-trust networks, which predicates on connecting resources based upon any device, any location, any cloud, which is integrated into your identity access management system. So you can have things such as [harder reach] trust or providing trust that enables you to only access certain applications based upon micro segmentation, software-defined perimeter, so it's only the resources that you're allowed to with least-privileged access.

To your thing about the acronyms, what that then starts to look like is you've got your environment where the applications are, your software-defined network, which has virtualised your east-west world, and then you're able to build the AppWANs as the north-south connectivity using the public Internet so you can have a complete zero-trust application-based connectivity across the whole enterprise, which starts giving you the tools that enables to deploy complete infrastructure as code, which includes everything.

Obviously, there is an infrastructure layer underneath, but once that is there and it can be any infrastructure - it can be a Raspberry Pi, it can be a microcontroller, it can be a container cluster - you're then able to build that application-driven architecture with zero trust, with the performance that the business requires.

Scott Raynovich

Interesting, so yeah, so I guess we're getting into more detail here about overlays and overlays of overlays. It sounds like there's many types of virtualisation technologies that can work together. Rik, how does Ovum see this world? Do you guys have different buckets you put things in?

Rik Turner

Well, certainly, we do look at both SDN and SD-WAN. We think of SDN as essentially a datacentre technology, and it seems to be growing more slowly than SD-WAN, I think for a variety of reasons. Firstly, because SDN is more difficult to do. I think it's more complex to re-architecture datacentre, probably more enterprises are loathe to approach that.

SD-WAN, there are obvious actual financial benefits of it, and everyone who's got a branch network can see the benefits of it more quickly, and it's an easier proposition I suppose in that sense. So yeah, we do look at those two.

Scott Raynovich

The two are starting to come together.

Rik Turner

Yeah, SD-WAN was the easier one to dip one's toe, I guess. Now once people start getting into it, then you can maybe think about rolling it back into the datacentre and doing stuff that was [private network] in the datacentre as well.

Scott Raynovich

I was talking about VMware buying VeloCloud and then integrating it with…

Rik Turner

Oh, absolutely. It's eminently sensible that VMware would buy one and Cisco would buy the other, two of the big SD-WAN vendors.

Scott Raynovich

So, Atchison, does that mean you guys are going to have to look for a partner in SDN? Who's going to buy you, or are you holding out to buy everything?

Atchison Frazer

Well, we're building a company for long-term value, and we don't…

Scott Raynovich

Yeah, that's what we all say.

Atchison Frazer

…worry about it too much, but I would concur with what Rik just said. SDN and SD-WAN are very similar concepts, right? It's being able to automate and program the functions of traditional networking devices. They have in common the concept of a controller, so everything, all your policies, provisioning, management, SLAs, are done through that software layer.

And as Rik said, even with - I was talking to [Greg] last night about this. He has a really good spin on this, but the notion that Cisco was going to allow its $150 billion legacy installed base to be reprogrammed by an industry standard controller at the datacentre level I think was just fantasy. The thing with SD-WAN, however, is as I was saying, the endgame could be forget about the overlay network. You can actually run the entire Versa fabric for routing, for WAN optimisation, for SD-WAN, for security. Who's coming after us now? It's Fortinet. Fortinet's our biggest threat, not Cisco, not even VMware.

We never actually - we hardly ever see VeloCloud. Viptela, Cisco, obviously because of the installed base, and Fortinet. Why? Because Fortinet has a very flexible licencing program where they can go in and say, oh, you need to refresh your firewall estate, and oh, by the way, why don't you add a little bit of SD-WAN on top of that? So they're - we categorise them as a pivot vendor, so I would say if there is - if there is M&A in this space to be had, and there are 60-plus vendors that Gartner's tracking now. There will

be less than 20 in the Magic Quadrant when it comes out any day now - it's probably going to be the big security vendors.

We work with a lot of them. We work with Symantec. We work with Palo Alto. The thing with us is our software was designed as an NFB platform from the beginning, where we service chain our own applications. We can service chain third parties, but everyone else has to do it. Greg.

Unknown

So you talk about security [unclear]. You talk about - you talked then just about security companies are entering the SD-WAN market, so we're seeing firewalls become the edge. You talked about MPLS not dying. I think SDN, one of the things that people don't know is 200 million years ago, when a dinosaur died, it actually took over six weeks for the body to completely stop functioning, because the body was so large that the organs took literally weeks to shut down, and that is MPLS.

MPLS is actually being eaten by SD-WAN on one side, and then it's got a cancer at the other side called optical, which is breaking MPLS. MPLS is dead, and it's just a matter of time, and we can have a lovely argument about when. So a wireless I have around your SD-WAN and MPLS is, if we see security vendors coming in and adding SD-WAN functionality to their devices and we see the traditional router WAN acceleration companies coming in and adding SD-WAN functionality, we've seen Meraki add it to their toys using a really amateur - using [protobus], sending out probes out of protobus from a direct Java library.

So the question is, if SD-WAN can be done by anybody and everybody and effectively proving that there's no barrier to entry, competitors can enter this market with zero barrier to entry, because there's nothing, there's no moat, where does that leave customers who have to make a choice? It's very - the confusion in the marketplace means 60 SD-WAN vendors. Palo Alto's going to come in, we've got Fortinet, we've got Cisco doing SD-WAN in like five different ways last time I checked?

There's one for service provider. There's two for the enterprise. There's one for - it's incredibly confusing. How does that settle out? How do customers make a choice there?

Atchison Frazer

So as a start-up, we're venture capital backed, obviously. Sequoia Capital, which is well known in the valley, but we also have strategic investors, Verizon, Comcast and others, and the way the market is breaking down is pretty classic. It's the do-it-yourself enterprise segment, which is still somewhat prominent in the US, although that is rapidly flipping, and here in Europe, its managed service is the overwhelming consumption model. Because our founders came from the service provider world, they were the team that built the Juniper MX platform - our CEO ran the service provider business at Cisco, and the architecture, the secure cloud IP architecture, was designed as an NVF platform for people like CenturyLink and Verizon and Singtel to very easily and rapidly consume our entire stack as a service.

We chose - we chose to go the route of essentially enabling the service providers, and we have over 65 agreements signed worldwide. We have over 150,000 VNF licences transacted through service providers, primarily. We're the only ones really doing that. Now that Cisco has acquired Viptela, they're part of that, but almost everyone else, the Talari, the Silver Peaks, the pivot vendors, really are on the DIY side of the fence.

So you'll have to see which - are we going to be the alligator that survives over time. The market will shake that out, so yet to be determined.

Scott Raynovich

Greg, you bring up a good point. It came up for me - I post a lot of my stuff on Reddit. I don't know whether it's I'm a masochist or what, and then people just tear you to shreds, and I was talking about certain technology the other day. I posted something on Reddit, and it's a really good resource. I don't know if you guys…

Atchison Frazer

No, it's excellent.

Scott Raynovich

Some super-techie guy came up and just destroyed the technology that the vendor was hyping, because he said it didn't' work. That's the problem analysts always have, we have our slides and our quadrants and our PowerPoints, but when the customer gets it in the branch and they plug it in, the real question, oh, it looks great on slides, but does it break? So I think the differentiation is going to be clear.

It's going to come down to - it's going to come down to the does it work when you plug it in, which is actually really hard problems, right? There's bugs. Everybody's had problems with a bug on their Internet service provider. Think of the bugs on a massive, 300-branch network. Then you have the cost. Okay, once you install all of these branches and you evaluate the cost, how much money are you really saving? Then you have customer service, right? If you do have a bug or you plug it in, it doesn't work, who picks up the phone and how fast do they solve your problem? Which is - you talked about the DIY, which is why a lot of these people want to go to the managed service from CenturyLink, because they can call CenturyLink and say deal with that.

Not only that, but with the service providers, you get the scale of the debugging. They can debug the - they can test and debug your platform for you. So it seems like to me that customer service will become a big differentiator.

Philip Griffiths

For me, this is where the differentiation comes in, because that can be the strategy of SD-WANs, that when it comes to application-specific networking, because your connection applications - your strategy is less sell direct to the enterprise. Yes, you still do those activities, but a bigger part of your play is who do I partner with? Who can I work with in order to build an IoT cold-chain solution where we can inherently solve challenges that we see in industrial IoT around security and performance, around

connecting these highly distributed, very large amounts of sites with much higher levels of security, where previously they were just completely unconnected, protected perimeter.

You develop these partnerships in order to solve those challenges inherently, so that the customer instead of buying a network is buying a solution that solves their business problem that comes with the network inherently embedded, so that we can get to this world where we've all been in sessions where you draw architectures on a whiteboard and everyone goes, yeah, the connectivity, it's as simple as a line. Because of all the problems.

But we want to get to the point where it is as simple as a line, and for us, it's very much demonstrated through the local and global partnerships that we build up. Just yesterday, we were announced as a partner with Microsoft for their virtual WAN offering and how we can help them onboard into the Microsoft MPLS in order to connect to their different applications more effectively, because their customers care about Office 365 and their original cloud, not what's my network?

Scott Raynovich

Great. I think we had another question over here.

Roz Parkinson, IDC

Yes, hi, Roz Parkinson from IDC. So thank you for the presentation and from the panel so far. I had a question, which I think Philip has now partly answered for me, but we've been doing a lot of work on SD-WAN and doing end-user surveys. Although the cost benefits of using SD-WAN used to come up as a very - that was why people were interested in SD-WAN, we're seeing simplification of the network and ease of us coming up more and more as being the reason why people are looking to SD-WAN, as they're in a more - as the demands of the network has changed because of cloud use, because of IoT, et cetera, and yeah, that kind of simplification story didn't seem to be mentioned that much.

We were talking more about cost savings on the panel, so I just wondered if anyone had any comments.

Atchison Frazer

I can take that one, and you're absolutely right. That, and it's probably two sides of the same coin, but it's simplify everything that I've been doing for the last five years and enable my enterprise to be a digital and cloud-centric enterprise, so it's the digital transformation as well as simplify everything while you're doing it. In our case, when you consume our service from CenturyLink, for example, you're getting one SLA that includes your circuits, that includes your high-availability uptime for every single branch, and the end user actually doesn't see a lot of that.

It's an operator model. So the simplicity is removed by the way the software was architected. So you can run Versa simply as a router. You can run as an SD-WAN solution. You can run as a next-gen firewall UTM, or you can run the entire stack. It's

how the operator goes to market and some of them have bands of services that they deliver.

But the idea is, I don't need to run a Fortinet piece of hardware at every single branch. Maybe I reduce that footprint by 50 per cent through a combination of SD-WAN and security. In future iterations, you'll see us simplify that even further, where we're going to create a cloud version of our controller, essentially. So you'll be able to provision every instance of Amazon or Azure and make that look like any other node on the traditional network.

You'll be able to connect Azure clouds to AWS clouds to your branch, to your datacentre, so the simplicity and cost savings are a by-product of that, but that's probably the number one driver for us in the enterprise world.

Scott Raynovich

Great. Thanks. Do you guys want to way in, Phil?

Philip Griffiths

Yeah, I was just going to say, simplicity is one of those things where there's a global cloud provider, where I think it's 34 per cent of their tickets come from customer VPNs and it takes them two days to figure out it's the customer VPN and go, actually, this is your problem to solve. That can be solved with an SD-WAN when you have 200, 300 branches.

When you start talking 40,000 endpoints for IoT and I've got a customer who's doing this, can you imagine having 40,000 VPNs. You'd need 100 people in India managing them the whole time. So the ability to predicate your connectivity from one application to another on harder-reach trust or some cryptographic identity so that you can deploy a gateway into a location and it - all you need to do is to share a key via HSIM on the back end so that it auto-deploys into your device-provisioning service and then enables you to manage and integrate it with minimal intervention. If you need to make any changes, rather than having to go into your network tool, use Terraform or Ansible in order to manage all of that is where it's going.

All of a sudden, how we manage VPNs at the moment, in five, 10 years' time, people are going to be, did we really do that? That was archaic.

Rik Turner

I'd just add that you're right. That simplicity is once folks have got their heads around - perceived the cost savings, then they start thinking about the simplification, and that is definitely more of a driver as people get into the whole space. Of course, you find that first there are even cases - I've spoken to folks when they first deployed an SD-WAN, they were still backhauling their branch office Internet connectivity through HQ. Fairly quickly, they realised they could just do direct to net, which is a direct simplification.

Of course, then, the issues they start having - they need security, and so this is really why my take on SD-WAN is to try and look at what's going on in SD-WAN security and the potential new challenges that that raises.

Scott Raynovich

Yeah, yeah, so got another question.

Unknown

We finally getting onto the point in the last two comments, which is…

Scott Raynovich

Finally, huh?

Unknown

It's all the nomenclature, the naming conventions are irrelevant, right? So optimisation's been around for 30, 40 years, right? It's the same concept, overlay networks, yadidadida. The key thing I think is what is it that you're optimising now in terms of what is the actual architecture? Because if you look at the Riverbed model that Gartner killed overnight a few years ago, which was very much enterprise, a bespoke branch office head office to branch office, MPLS or otherwise, right? Without thinking about the cloud coming on, so if you can imagine your enterprise coming, you would have basically provisioned 10 private networks 10 years ago, but now you're going to say, well, I'm going to outsource all of that.

Certainly, as a vendor providing optimisation technology, you're not selling to 1000 enterprises. You might be selling to three cloud service providers instead. Now, their architecture is very, very fundamentally different to 100 enterprises, so it's more a case of stopping talking about whether it's SD1 or SDN or NFV or [one op], but actually in terms of what you're actually doing in terms of applying that technology to a particular architecture.

So AWS is a very different beast to optimise compared to 100 enterprise networks, right?

Philip Griffiths

Well, this is why I think you need to go to the application level, because that's what people actually care about. That's what runs our business. It's connecting the applications and enabling the performance and security between those and that you are able to connect them based upon any architecture, whether it's an EC2 or a virtual machine or however it looks. You're able to overlay that connectivity on top of it.

Unknown

Does that apply to in-house applications, given that there's still a huge percentage? Yeah, because…

Philip Griffiths

Actually, we signed a partnership with a company I think it was last week. We were at an event where they've developed an application and we provide connectivity between it regardless of where it's located. It's like it's private rooms, basically, for doing due diligence, where they need very secure connectivity between these rooms, so whatever application…

Scott Raynovich

It's amazingly complicated, though, when you get down to it. It's not like an either-or for many of these technologies. You're talking about - you're talking about a cloud application like Watson Voice, obviously NetFoundry has a specific technology that can improve the security and performance of the application in the cloud, right? But at the end of the day, there are people that have to connect to the physical network somewhere.

So if a gas station chain is rolling out 400 new gas stations, they need to make the decision, are we going to have routers in these gas stations with a CCIE that's on call to go, [network num], are we going to buy the Versa box and just put it in the back of the closet and then manage it through the cloud. So there's all these endpoints that have subtleties without even - we haven't even talked about connected cars.

How are you going to secure the - I imagine there's a play for NetFoundry there.

Philip Griffiths

Very much.

Scott Raynovich

How are you going to secure the connected car endpoint? It's amazingly complicated, all this stuff, and since we're running out of time, it's a great question. You can't always put things into a neat bucket, because there are some very specific technology problems that have to be solved in different areas. But okay, one more question, and then we'll wrap up. Sir.

Unknown

[Unclear] Economy amongst others. I'm just wondering where the edge datacentre movement affects this whole question, with people using - we're talking about 5G and fibre and all the rest of it, how does that mix things up over the next couple of years?

Scott Raynovich

Yeah, so central office is the datacentre. So, Atchison, you talk to a lot of service providers, maybe you have - probably have a lot more insight into what they're thinking about how SD-WAN plays into the central offices of datacentre.

Atchison Frazer

Well, typically, you do have - an SD-WAN typically, you're going to have a hub and spoke model, right? The controller and the brains of the mesh are sitting in the datacentre. Then you connect every branch through that one location. In our case, you don't actually have to do that, because we can also enable direct Internet connection. We eliminate the need to backhaul, which is actually amazingly a huge issue in service provider. They love it and they hate it. They love it because they make money off it. They hate it because it actually is quite inefficient to backhaul all of your traffic to the datacentre for security or Internet connectivity. So that's one thing that we eliminate.

Scott Raynovich

Rik, do you have - or, Philip?

Philip Griffiths

We see no problem with it. Effectively, edge architectures and virtualised, whether it's appliance or small datacentre or an IoT use case where you've got a few bare-metal devices, if you can build the virtualisation lounge off that - in fact, next week, we've got a partnership in and out with a partner that does that. They stretch the edge virtualisation environment to these edge use cases, whether it's 5G or IoT, you're effectively creating those environments where you can connect to applications and therefore you can connect to that same mesh network at the application level to those as that environment is able to host your software-based agent and run the connectivity through whatever automation we've got.

So as long as you can build that approach using your compute storage and platform abstraction and virtualisation, you can then incorporate the network into that to make it seamless for the end user.

Atchison Frazer

I should have addressed your 5G question as well. In the SD-WAN world, it's additional bandwidth and a link that you have to absorb. All of the service providers are talking about that, but I think you'll see - you'll continue to see wire line, 10G, fibre and 5G in dual mode, because the type of traffic segmentation that you need to do - you think of retail for example. I want my Wi-Fi - guest Wi-Fi separate from my point of sale and maybe my voice over IP. But really, to get back to the digital transformation, AR and virtual reality type applications, where you're going to need that kind of FG, a 5G capability, are going to drive the enterprise to that market a lot faster I think.

Scott Raynovich

Great. I'm told we have time for one more question. This gentleman over here.

Unknown

Hello? Yeah, an early NetEvents topic was whether we should have application-aware networks or network-aware applications. Have we got an answer to that? Is overlay networking an answer to that? I'm not sure where we are.

Philip Griffiths

Yeah, I was going to say, I think it's a bit of both. I think the application should be aware of the network that it's given, but it should be a virtual private network for itself, and then the network below that provides the abstraction, so that from the application perspective, you don't have to care about what is ultimately at the bottom. From the network perspective, it's able to manage that complexity. So from the perspective of the application developer and the DevOps people, they have a seamless experience so that they can go away and innovate and not be handcuffed to the previous approach, where you have to call someone up - whether it's a firewall change or provision a network or do that. They can just do their job seamlessly.

Atchison Frazer

I would say that application-oriented networking is not a new concept. Back in my Cisco days, we actually had something called AON, Application-Oriented Networking, where we actually tried to provide visibility to the network layer in terms of specific applications. It never quite worked, but in the case of SD-WAN, it's all about the application. In our case, we're showing - we're giving you an SLA for a specific application, specific transport and the quality of the traffic and responsiveness of that application. We're doing that at a per packet level, not a session level. We're not pinging. We're not giving you roundtrip data. It's real time, and I think that's where you're going to see the battleground in the future is around that concept.

Scott Raynovich

Excellent. Well, thank you, gentlemen. Very interesting panel. Thanks for the great questions and wrap it up here.

Atchison Frazer

Likewise, thank you.

Philip Griffiths

Thank you, everyone.

[end]