

NETEVENTS**GLOBAL PRESS & ANALYST SUMMIT**

Debate VIII - Next Generation WAN Services Empower Customers — But Will Value-Added Services Add to Carrier Profits?

Chair: Erin Dunne

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Panellists:

Glenn Ricart, Founder & CTO, US Ignite

Michael Wood, VP Marketing, VeloCloud

Mike Kozlowski, VP of Product, Windstream

Erin Dunne

Welcome. I'm just going to say a few - can you just flip to the next slide. Thank you. So the first thing is I did an analyst thing here for you guys, which is just throw a whole bunch of stuff up there because I had no idea which way this conference was going to go, so I can talk about anything here. So just to let you know that was by design.

First of all, I'm Erin Dunne. I direct the research practice for Vertical Systems Group, and this - the conference has shaken out in a really interesting way, which is we started yesterday and I talked to a couple of the NetEvents folk but they didn't do it by design. They just looked like they did it by design, which we started way, way, way up here with security, analytics, drones, OTT, IoT, you name it, and we sort of over time have worked our way down from, you know, into the last panel where they actually talked about networking and how stuff fits together.

So we're here to even kind of get one level lower, and I just want to start by saying - and kind of doing a level set. First of all, the more stuff we talk about from all day today and all day yesterday, the more important the network becomes. Whether it's wireline, wire less, it doesn't matter because - I think the gentleman just at the last

session said - you have an \$800 brick or you have an \$800 super computer in your hands, depending on whether it can connect or not.

We're here to talk about how the service providers and how the industry connects now and what the next generation of wide area network is going to look like, and whether or not we can make any money doing that. So that's what we're here to talk about. But I want to give you a couple of level sets.

First of all, we hear about the TDM market, the emerging fibre market, the Ethernet market, all that kind of stuff. It's all out there. There's still two million T1s out there in the US. You know, those little - the 1.5 ones that my FitBit takes up the entire bit of bandwidth, there's still two million of them out there, and the growth of them is flat, meaning that for everyone that gets disconnected, someone else makes a decision to install a T1, still. The reason is, is because that's what they can get and they have to connect. So that's the first.

Second of all, you've got Ethernet, you've got VPNs, you've got all that kind of stuff, layer two, layer three, you name it, and it's growing and it's growing fast. There is lots of bandwidth out there and that's growing fast. So we need networks that can take care of that. So you're going to hear from our panel about these emerging networks: SDN, SD-WAN, if that is truly the way we're going to go. I think so. You're going to hope so, right? Yeah, yeah [laughs], and we're also going to hear from Glenn about some interesting newer style digital cities and digital metros, which I think is very interesting.

So that's where we're going to start. So what I want to do is have each of them spend a moment, who you are, what you do and what your company or association does. So why don't we start with Glen. I also want to make sure that Mike at the end - because I did have a couple of discussions with some folks - he's also going to hit and spend a little bit of time on what an SD-WAN is, actually both of the Mikes can do that, and why they're important to us. So let's start with Glenn.

Glenn Ricart

All SDNs should have somebody named Mike, right?

Erin Dunne

Everybody should have - every panel [unclear 4:17].

Glenn Ricart

Indeed, indeed. So my name is Glenn Ricart and US Ignite is a non-profit organisation that works with corporations, many of the corporations in this room, and with cities and with the research community to go and push forward new applications that are made possible by these advanced technologies.

So I love to talk advanced technologies because they allow for new applications, new low-latency applications, new high bandwidth applications, new software-defined applications. So that's who I am.

Erin Dunne

All right.

Mike Kozlowski

I'm Mike Kozlowski, I'm the vice president of product for Windstream Enterprise. Just some background, as we're participating in conferences like this. Windstream's the sixth largest fibre operator in the United States. That's pretty much where we operate. We do provide VPNs through other partners throughout the world but that's basically where - our strength. We operate in 150 offices domestically. Generally, we're clustered more towards the north-east and the south but we've got a presence across the United States.

Just one perspective on SD-WAN, and I'm sure Mike's going to be pretty excited about this, we view that this is definitely a solution that's going to take hold in the market. I think it's pretty clear there's good investment and it's happening. We view it as an enrichment of the existing VPNs.

As Erin mentioned, there is access technologies that are present throughout the US and there's technologies that are coming online, such as 5G. There's a huge presence at DSL that our customers can take advantage of through our assets as well as partners. We see this as a way to enrich the existing VPN experience to meet some of the target solutions that our customers are trying to grow into, and I'll talk a little bit about that in a second. That's about it, so we'll get to the other points later.

Erin Dunne

Oh yeah, we'll get the questions for you, don't worry.

Mike Kozlowski

Yeah.

Mike Wood

So I'm Mike Wood, VPN marketing for VeloCloud Networks. VeloCloud is a Cloud-delivered SD-WAN company. We were founded back in 2012 with the mission of producing an SD-WAN solution for both enterprises and service providers, and that's what we do today.

SD-WAN I would say probably have five components to it. The first is that SD-WAN is really an overlay technology, a WAN technology, that allows businesses, enterprises and service providers to literally use broadband internet as an enterprise-class wide area network. So it's probably the first order of piece. That overlay, though, must incorporate a business's existing wide area network, so if it happens to be a CenturyLink MPLS network that's running out to each of the sites, it should be able to incorporate that also. That's why carriers are also very interested in working with VeloCloud on SD-WAN.

Secondarily, SD-WAN really drives down the cost of what is traditionally considered to be wide area networking. It does this in a number of ways. One way is that it leverages more commodity-type hardware. So think x86 based hardware in each branch office location, that can really reduce the costs, you know, away from more customised hardware, customised routers. In addition to that, the idea being zero-touch and having automation built in so that there's very little-to-know IT expertise that's needed out of branch offices. So that's as I say, is a second piece to all this.

The third piece to SD-WAN is really bringing the Cloud, incorporating that into being part of a network. VeloCloud believes that the Cloud is the network and Cloud services, Cloud applications, Cloud storages are becoming more pervasive now, and businesses, enterprises, absolutely must be able to take control, deliver performance and quality and reliability for those applications as part of their wide area networks. So that would be probably a third piece.

A fourth piece is all about business policy, the ability to take business policy and abstract that at a very high level, at an orchestration level, and have that propagate down into the network and be able to move away from things like classes of service and DiffServ Code Points, all the complexities that we've been faced with in the past around a point wide area networking, and really driving the quality of service, quality of experience based on the applications that are important to you in traversing that network.

The last piece, the fifth piece...

Erin Dunne

Five.

Mike Wood

Five.

Erin Dunne

Number five.

Mike Wood

Number five, thank you.

[Laughter]

Mike Wood

...is really SD-WAN needs to have true multitenancy. That's why folks like Windstream and others are very focused on deploying these type of technologies, because they need to be able to support thousands, or tens of thousands, of customers, like Windstream has today.

Erin Dunne

Thank you. The reason I wanted Mike to walk through that is because I had a couple of conversations with folks here that said I don't really know what SD-WAN is, even though I've heard about it. So I wanted to make sure that there was a level set there because we are going to hit on a little more during the conversation.

But as you also can see, up here on my slide, I want to start with what do enterprise customers want. I could simplify it very easily but we're going to talk to Mike from Windstream also because he's living this every day. But they want the best of the old with the best of the new, right. Most of these folks they love their MPLS, they love the reliability of their TDM, the ubiquity of the TDM. They also love the bandwidth of Ethernet but they want some flexibility, they want some cost saving. They want lots of Cloud access, whatever it might be, and that doesn't truly exist in a cost effective manner in most cases.

So we have service providers and we have different organisations - Glenn will talk to us about some of [unclear] also, that are trying to bring that best of the old and best of the new through their enterprise customer base, because quite honestly that's what they're asking for. They're saying to their service providers I want you to do it and if you can't do it, I'm going to go somewhere else.

So we've had another couple of interesting drivers that have happened to allow this next transformation to happen. The first is the access network is getting better. The access network from the beginning of time - you all know this - has been in this business for a long time, has always been the bottleneck. The bottleneck used to be (unclear). Now the bottleneck might be 100 [meg], it might be a [gig]. It doesn't matter, it's still the bottleneck. It might be wire less and it might be wire line. It might be over fibre, it might be over any of these other technologies but it's still an access network that is a bottleneck.

So we need to work through those type of things and get so - to get us to that next generation network. All right, so now we can get there but [laughs] what do we have to offer. So I want to start with Mike here from Windstream and start with what are your customers looking for, because I know they're telling you if you can't do it for me I'm out of here.

Mike Kozlowski

Yep, so just to kind of frame up what are our customers asking for, typically our Windstream business, we support customers in all the classic verticals to enable our fibre strategy, [help/health 11:52 care, professional services, government, financial, you know, all the familiars that we as network based service providers go after. We also generally go after or support customers in the mid-market range, which is usually the span just like 5000 to 100,000 a month in IT collective spend. Those are smaller companies, they usually have a director or possibly at the higher end of the spend range it has a VP.

The concerns that they go through are like I need a network that's reliable, I need it to have a managed service component because I am not typically big enough that I can

operate and kind of aggregate it. Generally, my staff is small. They want visibility into the network. They want to see what the help is so they know if things are not working right they can proactively get involved in how the network is routed. They want the layer three experience but perhaps not to the point that they want to manage it.

Erin Dunne

Right.

Mike Kozlowski

The last part is what's driving - is they always want to reduce cost and increase bandwidth at the same slope, so it's a lower cost per meg. When you go across the verticals it kind of comes out in different manifestations but that's why - and I'll go into that a little bit. Really, some of the stuff that Mike's resonated is that with the customer profile, it comes out in spades in terms of what customers want and how they're enriching their VPN experience.

We view this as kind of a continuation of a trend that's already happened, right, around the hybrid when customers are starting to offload their traffic to the internet and leverage a private network. Now it's getting much more intelligent and it's packaged in a much tighter way that can be consumed by our customers.

Erin Dunne

All right, thank you for that.

Mike Kozlowski

Yeah.

Erin Dunne

Glenn, I want to - do you have something to add before I jump over here?

Glenn Ricart

No, I'd just say I think everything Mike said was spot on. I think, you know, other drivers are just Cloud services...

Erin Dunne

Cloud services [unclear].

Glenn Ricart

...the [unclear] migration Cloud.

Erin Dunne

Right.

Glenn Ricart

It's almost - a lot of these businesses come to SD-WAN because of the Cloud but then they stay because the costs are much lower, they're running more applications, video [unclear]. They want to drive those - you know, get more bandwidth to drive that out to branch offices.

Erin Dunne

Right.

Glenn Ricart

A lot of them are looking to their carriers, like Windstream, to deliver that for them. They've heard about SD-WAN and they want the benefits but they still love the relationship they have with the Windstream or [unclear].

Erin Dunne

Sure, absolutely, and it's entrenched there, and talking about a hybrid network, which is you can bring a [your style 14:33] network access via SD-WAN to maybe your remote or some of your far flung locations. You can start slowly and integrate them with your existing MPLS or existing Ethernet metro network. So that's what we're calling a hybrid WAN, which is - is the word hybrid up there? I think I got all the words up there - that we're seeing a lot of enterprise customers look to.

Glenn Ricart

True.

Erin Dunne

So I want to talk to Glenn about your digital cities, which we - I am saying this right, digital cities?

Glenn Ricart

We're working with a number of cities to really take what they're talking about in terms of software-defined WANs within a city, and interconnect them with each other. So if you're on all Windstream or if you're all on AT&T or something, you have a pretty good product. It works pretty well. These folks are doing a fantastic job with that. While we're software-defining it, can we software define an interconnect between carriers and to do that within a city.

So our model is kind of the chamber of commerce, or maybe the rotary club, the people who work together for the benefit of the city. Can we bring the healthcare providers together in the city, can we provide the education institutions, which may be signed up with different local access providers, together within the city. So we're looking at a way of having a software-defined city interconnect, and we call that the digital town square. The digital town square is where the town's digital economy meets in that city. You don't have to go off to some other city in some peering point in the internet, it stays

within the city. That means the city is self-contained, it's more resilient, it is keeping its digital traffic, it's keeping its capabilities in the [unclear], and it's providing for a real meshing between the people in that city and the technology that serves them.

We think that this is going to be very important in the internet of things, and as things go forward, to be able to have this difficult town square where everyone can exchange that local traffic. It's good for the long distance carriers as well, because they would like to get rid of the traffic that's off net as soon as possible...

Erin Dunne

Sure.

Glenn Ricart

...which means in the same city where it originated, and they would also like to deliver traffic at the last point - sorry, everyone who wants to receive traffic wants to receive it at the last chance possible, which is in that city. So by having the digital town square in that city, we make all the tier one carriers happy and we have an ecosystem of the local carriers that is going to be much more robust and resilient.

Erin Dunne

Sounds great.

Mike Kozlowski

Yeah, and as someone who [unclear] a passenger of a driverless car, I'd like that information to be local.

[Laughter]

Erin Dunne

Yes, you would.

Mike Kozlowski

I wouldn't want it to be routed across the US to make a decision.

Erin Dunne

Right, and have to do a U-turn somewhere at some peering point, correct.

Glenn Ricart

But the state of Alaska schools hired an Iowa organisation to do their state testing online. A backhoe cut in Iowa took down the entire state of Alaska testing program.

Erin Dunne

During the test?

Glenn Ricart

During the test, so they had to cancel it. They cancelled all the tests in Alaska.

Erin Dunne

[Laughs] It's an amazing thing. All right, so maybe that's an interesting segue here that I have. Anecdotally, my office building, we have [unclear]. It got hit with an outage just this last week. So my office building also has [unclear], so I walk downstairs and I knocked on the door and I said are you guys up? Hey, we're up. I thought if I had an SD-WAN solution at my organisation, because I would have files coming in this door, I would have contest coming in this door, I would have redundant connectivity that's balanced between the two off - and now I can access all of my stuff, because now I have an entire office that's a brick, right, because what else are we going to do.

So things like that, when you talk about the redundancy, you also talk about some of the cost effectiveness that could be handled with a couple of broadband pipes versus many T1s, you're looking at an interesting solution on the access side.

So I want to see if there's any questions out here before we move into another topic. I thought I saw people rustling around there. Anyone have a question for [unclear] - yep, so two over here.

Audience Q&A

Libraene Hseih, Network Magazine

Hi, I'm Libraene from Network Magazine, Taiwan. I have a question for Glenn. In Taiwan, carriers are very positive to [unclear], the IoT technology [and] help to monetise the [unclear]. But [unclear] still has the standard completion right now, like from the [LT] and the WiMax [unclear] already has the [unclear about that]. So do you think is it the right time for carriers to choose what kind of IoT technology they want to use?

Glenn Ricart

Well first of all, Taiwan is one of the country's that I think is really doing very important work, and it's one of the countries that US Ignite is working with closely in a liaison because we think that some of the ideas developing applications for resilient cities in Taiwan, and also in Japan, are probably some of the leading examples of those kinds of resilient cities in the world. Of course, we want to learn from those international locations, so I think that's entirely true.

In terms of your question, and in terms of how can we actually make sure that you're going to receive the application benefits that you're looking for, from that infrastructure, we think it's going to be a period of time where new investments will provide for the ability to do things like short circuit a digital town square to provide more local

resilience, that new technologies will be inevitably more software enabled but not software defined going forward.

So it's only a matter of time and reinvestment, and that investment will be made because the internet of things and other growth areas are going to cause growth. So we have to put in new things everywhere in the world. Everybody has to be increasing capacity, and that new capacity I think the world has decided, is going to be software enabled. The ability that these gentlemen have to take the existing infrastructure and software and enable it provides a pathway forward for everyone.

Erin Dunne

Right

Gabriela Chavez, CNN Mexico

Hi. My name is Gabriela Chavez, I'm from Mexico City for CNN Mexico. My question is about these digital town squares. What is your perspective of adoption of this model in [contras] in Latin America, and your perspective on time and when this can happen in a more broad way?

Glenn Ricart

We're doing it experimentally in the United States right now. We have 15 cities slated to receive these. We have two cities in which this is just beginning to work right now, so it's too early for me to know. I do not know of any other cities in the world which are implementing a digital town square. So treat this as a sort of advanced research, a prototype. We're going to see if it works. I'm convinced it's going to make a big difference but, of course, we want to see actual results. Ask me in a year.

Erin Dunne

Right. So you're US only, right, Windstream, so what are you seeing inside the US or maybe outside of US? Are you seeing any difference in how service providers [ill continue to partner with you or maybe even from the enterprise side?

Mike Kozlowski

Yeah, it certainly seems that in North America there's been a sense of urgency in deploying SD-WAN in particular. The next region of the world that seems to be hot on its tails is Asia Pacific, that entire region. You've got to sort of remember that there's a bit of a model here where a lot of times traditional WAN [unclear 22:46] can be relatively expensive, depending on where you are because of the last mile access. So Asia Pacific, we're seeing even more about an arbitrage there, and then I would say Europe and Middle East and Africa, you know, are following. But in terms of partnerships, that's been the order that [unclear 23:04].

Glenn Ricart

Do you think it's because of the growth rates of those economies? I mean, the areas which seem to be doing this are areas where the economies are growing the quickest, and I think probably making investments?

Mike Kozlowski

Yeah, I think you're spot on with that. Certainly, definitely, North America and then even Asia Pacific. I think also there is an interest in driving down the costs for them, also, which is - I think it's a balance between both. Then certainly Europe, you know, there are some things going on there that are maybe making this not as compelling...

Erin Dunne

Sure.

Mike Kozlowski

...immediately right now but...

Glenn Ricart

It's only a matter of timing, right?

Mike Kozlowski

Absolutely

Erin Dunne

Right.

Glenn Ricart

Only a matter of timing. Everyone will go that way.

Erin Dunne

Is there another question somewhere before...

Tony Chan, CommsDay

Hi, Tony Chan from CommDay out of Australia. I have a question for Mike from Windstream. In terms of your adoption of SD-WAN and the fact that you're selling it to your customers, what is the kind of - I mean, there's obvious cannibalisation between that and your traditional MPLS service. I mean, if you have a customer when you purchase [unclear] would you rather sell them an MPLS circuit or would you rather sell them SD-WAN, [or/on] maybe somebody else's broadband connection?

Mike Kozlowski

Yeah, great question, so...

Erin Dunne

That is a great question. That's going to segue into my how do we make money, right.

[Laughter]

Mike Kozlowski

That's right, so...

Mike Kozlowski

So just philosophically, we're going to always do what's best for the customer because ultimately that's where we'll go anyway, right. So the way we view SD-WAN is we are - we're a private networking company, we make investments in private assets and we get returns. We put higher rate of services on them and we sell it to the mid-market. That's the formulaic equation that we go with.

We view that SD-WAN is going to be a way to enrich both the public and the private networking app services within our portfolio, and we're going to allow our customers basically to drive us to the best solutions that meet their need. Now as we - I'll jump ahead now because Erin's going to ask the question...

Erin Dunne

No, do it. Please, I'm going to ask it. You know I'm going to ask it.

Mike Kozlowski

...how are we seeing it in the verticals and how is it playing out. We see certain customers that put a high emphasis on costs, right. Those [unclear 25:18] coming out right now [unclear] early adopters that are driving the business around retail, where they have fixed overhead, fixed cost. They need to compress their expenses to meet the margin requirements for their companies.

We're going to work with those customers to make sure that they have the right solution that meets their needs. As I think Mike mentioned earlier, you know, the perfect application is - or actually, sorry, Erin mentioned earlier, the office that she works in, it's like [unclear 24:58] that it's almost like a remote office...

Erin Dunne

Mm-hm.

Mike Kozlowski

...where customers, you know, you have employees in the office, you are running maybe some just basic office applications but not the critical stuff that requires the private networking solutions. So for those remote offices, maybe those diverse internet pairs that she mentioned and aggregating with an SD-WAN, that's the right solution.

It provides enough diversity, it provides enough reliability, it provides enough remote management for where the centralised resources are to watch it and make sure it's

healthy. Now, there's other applications where you're going to be connecting to a data centre, you're going to be running high volume. You need an even lower latency than what SD-WAN can provide, and that's where there's going to be nodes on the ring that are going to be more intended for fibre.

That kind of plays out in various mixes among verticals and risk tolerances of how they're looking at it, as well as security requirements if you're running HIP or PCI traffic across that LAN.

So it's kind of like the best way to say it is we're going to let our customers drive us the solution because ultimately they're going to get there anyway. But we think it's going to be a mix based on the applications of the customers we're trying to solve.

Erin Dunne

Right, thank you for that. I need to wrap up here. But I mean the title of this was The Emerging WAN and can there be a profit there, or can we make money there. As Glenn said, it's pretty much a given, especially if you see the output of this conference, that an SDN or an NFV based solution moving forward is where this industry is heading. You're seeing the service providers, those ones that you all are paying a monthly bill to in order to provide services, implement that in many different ways. Sometimes you see it as customer facing, sometimes it's just in the back end and you, as the customers, don't see that but they certainly do on the OpEx side.

So we're seeing all of those different installations of SDN. We're also seeing service providers, new service providers, whether they're doing this inhouse as an overlay or as a partnership, start to implement because, as everyone said here, this is what their customers are asking for.

So with that, I'm going to wrap up, thank you all, thank our panel for your time and you're very [unclear].

[Applause]

Erin Dunne

Thank you.

[end]