FINAL

Keynote Presentation:
Clear Sailing Ahead for Cloud Interoperability Standards

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Good morning, NetEvents. My name is Manek Dubash and I'm going to be your MC for the next couple of days.

Welcome some friendly old faces who have been coming along for, oh, 378 years, isn't it we've been doing NetEvents and a special welcome to those of you who have not been here before. Delighted to have you here. We have here press and analysts from all around the globe, from regions, 25 different countries, and different regions. We've really pushed the boat out on this one. So, if you want to meet anyone from whatever region around the world, we've got them here.

We're going to be talking about Cloud. Cloud innovation is the topic today and for those of you who have not been here before, let me give you a brief rundown of how this works.

This morning we're going to be talking about the issues of the day here in this room. We will be having some debates and I will be going into a little bit more detail about one of them in a minute and this afternoon the press and analysts will be meeting with the vendors where you will be able to find out more dig in to some of the things that they've been talking about this morning and tomorrow we repeat the process, repeat the format, and tomorrow afternoon, obviously, everyone goes home and hopefully you have all a great weekend.

I'd like to pull out though one particular session we're going to have this morning, the Clouded Leopards Den, which is going to be chaired by Bob Metcalfe who some of you may know as the inventor of Ethernet and who is also Professor of Innovation at the University of Texas at Austin. I think I've got that name right, Bob. He is going to be pitched by some people for some ideas on innovation. He is Professor of Innovation after all. This evening, at the dinner, we will find out a bit more about who has actually won the pitches. I think I've got that right, Bob. Good, yes. Sage nod from the man in the corner.

Good. So, without further ado I'd like to invite our first keynote speaker down. Where is he, Jim? There he is. Come on down.

Jeff Schmitz

Don't be alarmed, there is actually not a fire. Don't anybody yell it. Don't anybody run into the water. All is well. All is well.

I'm here to talk to you today from the perspective of the OpenCloud Connect which is a standard's-based group under the Metro Ethernet Forum and what I want to start talking about is how standards have evolved over the 20th century and into the 21st century and then talk about how that's going to apply going forward into the cloud.

So, I want to take you back. I'm going to take you back, you know, 100 years or so to February 7th, 1904 in Baltimore, Maryland and what happened on that date is that a significant fire broke out. Fire broke out in the downtown region and started spreading throughout the city and the local fire teams were called in to battle the fire and that began and it soon got out of control. The result was that they started calling in fire departments from all over the regional area, from Maryland, Pennsylvania, Washington DC and New York and Virginia and they brought in over 2,500 firefighters to try to dampen the fire down. They came in through all sorts. Mostly by rail, by the way. There is an interesting historical journey here. They came in by rail. They brought in their horse-drawn steam water pumps to pump water on the fire and they were working hard to get the fire put out.

Now, as all these additional crews got in, they started to try to hook up to the fire hydrants and as they began to do so they found out there was a problem. The problem was there was no standard for fire hydrants in the United States. The result was despite there being 35 years of attempts to standardise these fire hydrants so that as you called in other groups they could use their pumps and put out these kinds of fires, it really didn't make any progress and not surprisingly either, if you think about the way the infrastructure was built and there are some analogies here in the Cloud and that is when cities began to build their infrastructure, what did they do? Well, they went out and found a contractor. The contractor found a manufacturer to manufacture their fire hydrants and they started installing them. Now, interestingly enough, they ended up with over 600 different fittings for the fire hydrants.

These companies that built these fittings were saying, "Well, hey, look, you know, we've built this proprietary technology so we don't want to share, right". So, once you start building your infrastructure in the city of Baltimore, they had a monopoly. It was fantastic. In fact, they went so far as to patent most of these designs. It seems kind of counter-intuitive that you would patent this kind of technology, but that's in fact what happened. So, the early entrants ended up patenting these designs.

Well, what was the result? The result was the city largely burnt down and it burnt over two days because while they had all this equipment and people there, they couldn't put the fire out. They couldn't use the equipment. They couldn't make it happen.

What I found more interesting, and you'll see is this kind of started an entire attempt to normalise and standardise the infrastructure for firefighting and there is a number of codes, including Building Standards, but also fire hydrants. Now here we are 110 years later and about half the cities in the United States still haven't standardised this. So, hopefully we can do better than that in the Cloud.

So, let's look at some other examples through time of what's happened and how standardisation has worked and probably the next place to stop is I will fast-forward to the end of the 20th Century. This is about 1990 and what you have at this point is an explosion of the number of TV channels and ways of delivering television programming and there was a need to develop a standard how do we start from a carrier perspective it was how do I start compressing this video? How do I start delivering this? How do I take the spectrum I have if you're an MSO and cram more channels into that spectrum? A number of standards started to be developed in order to do that and, again, the primary purpose was to compress, but also we're moving towards HD so, it was adding more complexity. We ended up with eight standards and we compressed that time.

Now we're under 100 years, thank goodness, but we're still in the 25-year timeframe. Still a pretty long time for standardisation and I don't think that's the kind of speed that's going to allow us to really move the Cloud forward. So, that's in the late 1990s.

Now, let's move to the 21st century. Probably one of the better examples that started to get close to the Cloud and used the support cloud services today is the MEF. So, today, the group that I'm the Chairman of, the OpenCloud Connect, is under the wing of the MEF. The MEF stood up a carrier Ethernet business that very rapidly became relevant. A $10b business of services in about four years. In the graph, (I know it may be difficult to read), but the yellow graph is the actual carrier Ethernet services and the grey is the Ethernet equipment.

But, if you just look at the services, in four years we had a $10b business and approaching now a $50b business. I think this is a good model for us to look at as we look at the Cloud and there are a few key reasons that this standardisation process happened in a lot faster timeframe.

Here's one. The MEF was smart enough to take a look at things from the enterprise end-user perspective. What are the services that those end-users want? They defined the standards around those services that the end-user, who is paying, desired. It's a critical first step. If we had only done that in Baltimore and thought about the people whose houses were burning, maybe we would have solved that problem a little bit faster. So, a key differentiator in terms of how they went at the problem.

Secondly, we needed a common language. So, today, the currency of the enterprise for buying Ethernet services is carrier Ethernet and the different forms that it comes in. It makes it a lot easier just to communicate across all the entities that are providing that service. So, that's key point number two.

The third area that has really worked out well is global connectivity. So, this wasn't an individual country standardising, or an individual city. Now you're standardising across the globe. Everything from a certification and training programme. We have thousands of trained MEF carrier Ethernet people out there installing and supporting these services, but also a certification programme where you can get carrier Ethernet anywhere and I can connect from one country to the next relatively seamlessly and a lot faster than I could do before.

So, I think these are a few critical lessons that the MEF provided for any kind of standardisation and probably more importantly, to Cloud as we talk about that today.

Okay, so, I want to spend a little bit of time on this chart.   I want to take you through kind of a stylised simplistic view of the Cloud and the cloud services, at least the way that we look at them.

So, the most important part of any service is in fact the enterprise and that's those circles at the bottom. So, what kind of services do the enterprises want? Today, in some of the studies that we've looked at, today, most enterprises they already have 10 to 15 cloud services already. Right, so this business is scaling fast.

This business isn't a $10b business in a few years. This business is a $100b business plus already. So, scale is huge.

Secondly, when those enterprises try to connect their cloud services globally, so from an enterprise perspective they need to connect. When you look at the players that we connect with, a lot of them are the same that the MEF uses. We have service providers, but we have new entities like datacentre providers and cloud carriers. Great. So, the problem is getting a little bit more complex.

But, on top of that I have all these cloud service providers and oddly enough, some of them are following the same path we did with the fittings in Baltimore. If I'm a large infrastructure as a service, let's say provider, I can work with the service providers and make them use my standard, right, because they have a lot of business. You need to plug your network into me in this way. Okay, great, and the big guys can do that. Unfortunately, there is thousands of other cloud service providers and, as I mentioned,

these enterprises are using a host of these today. Well, how do they plug in in a standard way? How do they have a fair chance and a fair playing field to capture a part of that market?

I think we need to follow some of the same things we saw in the MEF and apply them here. So, one is let's start by defining the services. If I'm going to have a cloud service, yes, I need to know the bandwidth and the performance and the other things I need, but I also need to know the security. Depending on the service, I may need different kinds of security and I don't want to hop by hop have to figure this out if I'm trying to create a global connection. I want to do that very quickly.

Secondly, as I said, the problem is more complex. We have more players than we had today. There is more players at every level. There is more cloud service providers is probably the biggest difference and we need a common language. We need a common currency of cloud-based services and the thing we need to worry about that's been true in the history of standards is lock-in.

If you go down a proprietary solution, if I use my unstandard fitting to connect my cloud service provider into the network, I run the risk of getting trapped as an enterprise. Now, if I've built my whole infrastructure as a service, I'm one, giving cloud provider and I just said, "Well, that's not working for me for a number of reasons" and we've seen numerous examples of this happening. Particularly as things scale, sometimes it's not as cost effective once you get to a large scale. Sometimes it may be a conflict of interest. Maybe you're a retail provider and you realise that my infrastructure as a service provider is another retail provider I'm competing with. You may want to change. It gets more complicated when you don't use standards. Ultimately, I think all this ends up in very slow connectivity.

So, one of our member service providers today said when cloud services come into his network to be provisioned it can take a week of time just to figure out the jargon that people are using just to get started on making those connections. So, we need to streamline this. We need to streamline it significantly because we don't have 100 years, or 25 years, or four years. This business is already a $100b business.

Okay, I saw this and I'll admit that I stole this. Somebody posted this on LinkedIn and I reposted it because I thought it was intriguing. So, okay, that's great, I've got a lot of scale. I've got a lot of complexity. I don't have a lot of definitions around the services and the terms. Where do I go from here? Well, that's not the end of the problem. The next problem is speed. Standards are going to have to work at the speed of the Cloud and let's look how quickly things are changing with cloud-based services. I found this interesting.

Uber is just around five years old and they're already the biggest taxi company and guess what, they don't even have a single vehicle. It's amazing.

Facebook, the world's largest content provider, they don't create any content. Now, they've been around a little longer.

Alibaba, they've been around a little bit longer too. Here's the most valuable retailer in the world, they don't even have any inventory. So, this is the speed we're looking at.

Let's look at one last company that's less than five years old, Airbnb. Here's your biggest accommodation provider and they don't have a single room and they're less than five years old and they're huge.

So, if this is the speed we're going to have to react to we don't have 100 years, 25 years, or four years. We're going to have to do this a lot faster and I think what that's going to mean is we're going to have to do things a bit differently. So, what are we going to do?

If we're going to have to work at this speed and deal with a more complex problem, I think we're going to have to do a few things and one is we'll follow the model to the MEF where it makes sense and the first one is let's create a common language.

Now, in the OpenCloud Connect we've already done that and we've recently released our reference architecture and you'll see some press releases out actually today and we'll be showing that at Interop next week. So, how do we create a common language so we're not spending hours or a week figuring out just the common language to connect those cloud services to the cloud provider? We've already started this.

The second piece is let's go back to the user, right. Let's define the kinds of services that are needed to support those cloud services and let's build use cases. Again, this is an area we've already started in the OpenCloud Connect. We are going to be demonstrating a number of use cases next week, including connecting a cloud service provider in a secure fashion over a real network as one example. So, amongst others. So, you'll see that starting next week.

Lastly and maybe most urgently is we need to go towards more of a DevOp model, a more agile approach to standards. OpenCloud Connect is one of the players doing this. Other people are looking at proof of concepts and ways to expedite standards. We're using a DevOps model and what that means is we've already started in South San Francisco at a lab. We have real connectivity there, real equipment where we're testing out these use cases. We're not going to spend years typing out and writing out the perfect standard and then spend years selling it and trying to implement it. We're testing and seeing what works right now today. This is what we're doing today and then we're going to take it and leverage that information into actually building the interface standards themselves.

So, that's the different process we need to take and, again, the OpenCloud Connect I think is leading the way with the OpenCloud Project, but there is other people doing

that as well, and, again, you see a lot of these interop events with different standard defining organization. So, if we have any hope of working at this speed, we're going to have to do it in a different way than we've done it in the past because we don't want to relive the sins of the past, okay.

So, when I think about what's the world I'd like to see us live in, well, today we know and we use infrastructure as a service as an example, today I can very rapidly go out and provision whatever CPU and storage I want, put up my application and life is good. But if I want a secure, robust, high performance global network to support that, that takes in the order of weeks or sometimes months to provision. So, our vision at the OpenCloud Connect is hey, we'd like to empower the enterprise. Not to be stuck with one vendor, but to have a set of standards so we can very rapidly instantly provision the connectivity as well as the cloud services across a relatively complex environment in a very rapid way. That's our goal and that's what we're building our standards around.

I think we can avoid the disaster of 1904. If we go 100 years, and this is already a $100b business and the sooner we start working on these I think we can make a serious dent in this problem. And again, we are at Interop next week and we'll be showing some of these use cases there. I hope that you can make it. We'll also be talking in briefings later in the OCC of what we're doing and what the rest of the industry is doing and hope you can join us there.

My last point is we have today 28 companies, cloud service providers, service providers, traditional service providers, equipment manufacturers, test manufacturers like Spirent where I work where we're emulating the traffic that goes over these services, both legitimate and malicious traffic, and we could certainly use more help as we go after this very high value problem. We would certainly appreciate any help from people in the crowd who can help us move that forward. So, we're looking for more members. I will say we're very excited about what we're doing in the OpenCloud Project, our DevOps model because what we've done there is we have a greater than 50% of our members already actively participating. So, we have high energy around that and we hope it will really make a difference in the cloud area.

So, with that quick overview, and we'll be going through more details in the briefings, one, I want to thank you for your time. Two, I hope to see you later in some of the briefings. Three, I'm very excited about hearing more about the Clouded Leopards Den and Bob is going to be helping us as the top cat moving through and OpenCloud Connect is sponsoring that. I think it's a great way to look at some new technologies that are coming up and ones that are a little bit more evolved.

Lastly, from a Spirent perspective, I'm hoping to see those of you who have signed up for the regatta this afternoon. Me and the team from Spirent will be there as well and hope to visit with you there and talk more about this critical area.

So, thank you very much.

Manek Dubash

Ladies and gentlemen, Jeff Schmitz. Jeff, thank you very much.

Jeff Schmitz

All right. Thanks, Manek.

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