EMEA PRESS SPOTLIGHT ON 'THE CLOUD'

Unedited First Draft

Debate Session 1
"Between the clouds" - the challenges facing datacenter interconnection

Emir Halilovic

Program Manager, Networking and Infrastructure EMEA, IDC

Panellists:

James Walker	President,CloudEthernet Forum
Mario Bianchetti	Senior Project Manager, Data Network Innovation, Telecom Italia
Kevin Vachon	Chief Operating Officer, MEF
Francois Tournesac	VP of Sales, EMEA, Telco Systems

The panel is already at the table. And I think that's what left for me to do right now is basically set the stage with a little bit of talk about how do we see this whole Cloud environment developing, and what are the requirements that that Cloud environment development is posing to the data centre interconnect in particular, and of course introduce the panel.

So, let me start off with a picture. What is a Cloud in effect? Is it -- but what it really is, not just a concept that we have been talking about I think in this conference too, and in many others, but it actually consists of things and those things usually are imagined as a physical object's server's storage networking element sitting at physical locations.

Well it hasn't developed that way. In fact the Cloud is becoming more and more abstract as we go. We are talking about hundreds of thousands, millions of server instances we are talking about dynamic workloads. And we are talking about very fluid environments that actually physical -- that actually are evolving to become an entity that is not related directly to a physical location.

But there is an obstacle there, and that obstacle has become networking, and the inadequacy of the current methods that we use to interconnect different physical locations, different data centre locations and to enable them to really support that flexibility that kind of fluidity that we have come to connect with the concept of the Cloud and the virtualized servers and the virtualized storage that has become, let's say that has given many enterprises and many service providers many ideas about how flexible and how great things we can do, how we can move workloads from location to location, how we can provide and require computing capacity on demand, how we can do the disaster recovery and failovers dynamically and almost instantly. But we actually cannot at this point. That is the message that I'm getting today.

So to discuss these issues with me today I have the panel, Mario Bianchetti from Telecom Italia, starting from the left, who is very much an architect for, let's say very much working with Carrier Ethernet in Telecom Italia. Then Francois Tournesac from Telco Systems who is the VP of Sales for EMEA if I am correct, who has been working a lot with MEF in the past, and also is an old industry hand well versed in the problems of Carrier Ethernet that has a raised a round of laughter here, Kevin Vachon from -- the President of MEF, and obviously James Walker who you have already seen from CloudEthernet Forum.

So to start off I would like to hear your opinion, and probably starting with James, on what is the state of the data centre interconnect today, because obviously James is not only a President of CloudEthernet Forum but a, let's say, industry personality, I should say very acquainted first-hand with how this actually -- how these technologies actually work.

James Walker - CloudEthernet Forum

Yes, so I think we see a variety of different approaches, we see customers at different levels of maturity for all what they are trying to achieve. There is a desire to make things as simple as possible that's certainly a unifying theme. Simple as possible means they don't want to have lots of different pieces of the puzzle interacting with each other in ways that they can't necessarily manage or look after. So, can we get something simple, can we have end-to-end visibility, can we have management in OEM I think all of those sorts of things are very critical in what we see.

We also don't see single provider environments, so no customer is coming to us saying everything end-to-end is the same vendor and everything end-to-end is the same network service provider same [inaudible] provider, so actually interoperability between lots of different platforms is a significant challenge that we see today. And I think also we have the very robust data centre interconnect concept where it relates to within a metro, but I think that once you start extending it beyond a metro and into a region or across a country or across a continent or between continents that has still got quite a lot of work to do, a lot of platforms are still very sensitive to latency and managing that latency storage is one in particular.

Emir Halilovic

And, Mario from your point of view as a service provider what are the practical issues that you face with regards to the data centre interconnect? And where do you think should most effect be spent in actually removing those obstacles?

Mario Bianchetti - Telecom Italia

Yes, just linking also the previous discussion and going to my expertise, that I am involved with Carrier Ethernet [Telecom Italia], I think that one point is that in the Cloud scenario you have Cloud Service Providers with a Data centre located somewhere [inaudible] and the Cloud Consumers, than you have the interconnect them [between]by means of the network. "The network makes [inaudible] the Cloud", so it's very important to address the networking.

And going to your question, within [China] our domestic environment we have a number of huge data centers, put in place since two or three years ago, and nowadays we are facing a couple of interesting projects on this concerning [inaudible] the flexibility of access to the [inaudible] data centres, we are talking about Data Centers Connectivity. In the whole we have some physical and huge data centre, let me say segregated per regional areas, and this possibly is not the best solution because everything is changing, the demand of our customers is changing, the request for typical application in terms of network [inaudible] performances is changing. So we are working on an evolution of data centre interconnection network. We call it [inaudible]VDCN, Virtual Data Center Network in such a way that you are not linked to a physical data centre but we seamlessly can go wherever the resources required for data processing [sources of data] are located [inaudible] to our [inaudible] Cloud.

On the other side we think that we must be more and more sensible to the application requirements in terms of Network Performances [inaudible]. There is a wide requirement for [those] some services and some application with crucial network latency, the other ones requires crucial Jitter or loss [inaudible]. So if you have a rigid positioning of [your] data centres it's difficult to accomplish this performance [target]. So what we are working on is to have some new data centres much closer to the end Customers [inaudible]. So balancing these two assets we'll provide a dynamic network that allows you to manage it peaks (*in traffic load*) and balance the investments in Networks and Data Centers in a way that [inaudible] we think we can offer better centres.

Emir Halilovic

Do you think that the CloudEthernet Forum is going to help you in your vision?

Mario Bianchetti

Well to be completely honest I am not involved in the CloudEthernet Forum, I work on the MEF Technical [abilities] Committee, and for sure the greatest target of this meeting [of the Forum] is to define the line between [inaudible].

Emir Halilovic

Well that's actually a very helpful cue for my next question which is -- which I'm going to ask and that is specifically Kevin, obviously MEF and CEF are seen as a

complimentary kind of [hidden hand] evolution, where is the demarcation line between the activities of the two, and how should we view how those efforts actually come together?

Kevin Vachon - MEF

Well you have to look at the drivers for MEF work. If you think about it the MEF services have been defined in a very general purpose nature, they -- and MEF, Ethernet services transport all sorts of different traffic types, the origins of the -- their usage was more along the lines of TDM replacement, getting rid of all TDM replacing them with higher speed more flexible Ethernet services. Originally for business services we had those drivers. More recently we've seen significant use of Ethernet and drivers do MEF work in the areas of 4G, Ethernet is used extensively. So now we have the emergence of Cloud and there will be very specific things that we need to do to Ethernet to support Cloud.

So MEF is -- our job is to kind of continue to evolve the service capabilities to meet a wide variety of requirements. So when you look at the Cloud requirements you have the CloudEthernet Forum, the MEF was already looking at alright what are we going to do in Cloud, how do we evolve our services with certain technical work that's started. So then you have a forum that comes along or a forum that wants to be created specifically looking at the delivery of Cloud to the end user within the data centre, between the data centres.

That to us becomes an ideal, to have them incubate, start up, focus on this topic then in turn drive our technical requirements to MEF that integrate these requirements with the broader set of requirements we have to deal with is kind of the way we see it. And there is, as we talked about before at the MEF Board level, there's details to be worked out over time, there will be new requirements which may end up creating work in the CloudEthernet Forum, could be in the MEF, one of the MEF technical committees. It really doesn't matter to us. It means what's good for the industry is to have these groups working together to the benefit, A of the end user, and B, all the stakeholders in the industry.

Emir Halilovic

And Francois, as a vendor in this situation, how do you first of all view these activities within MEF and CEF and what do you expect -- what kind of an effect it is going to have on your business and on the way that you architect the equipment that actually provides this data centre interconnect or serves in this capacity.

Francois Tournesac - EMEA, Telco Systems

Well from a Telco Systems point of view the MEF is a key element for our development strategies, we are following in fact the standard as a vendor in order to meet our customer requirements, and in fact enjoy the dynamic of the MEF for the last 10 years that have been articulating across multi standard bodies, in fact the focus in getting the Layer 2 services out. So as we are focusing on the services from the

MEF point of view the Cloud is a new service and the Cloud Ethernet should be considered as a new service.

So with regards to the technology whether it's under Ethernet, it's under MPLS, it's under [SDH] or whatever it doesn't really matter, what matters is that we have the elements in order to include them as part of the equipment and the software to go through this evolution. I wouldn't say that it's a revolution, but the Cloud is going to set new services in the service provider. We've been speaking a lot about the data centre to the customer, and this is [believe] the very common concept shared by most of the user of Google, because these are the ones that brought this concept.

But I think if we look at the service provider their usage for their customers is going to be slightly different. Most of the enterprise services are going to be using Cloud services in order to basically interconnect their big servers internally to their remote offices. And they want to have an internal private network among a shared network infrastructure from the service provider. So this demand is going to grow the bandwidth and basically it's going to create a dedicated network among a shared infrastructure with the statistical [inaudible]. And this I think is the key in order to see the evolution of the Layer 2 services.

I have been hearing from Mario the fact that he is looking at the monitoring, he's looking at the packet loss delay and jitter, these are fundamental areas they are OEM. They work differently on Ethernet than they work on MPLS, so from a vendor point of view he needs to ensure that his vendor is going to interrupt, like James says, very smoothly between each other so that at the end of the day they are going to be able to monitor the same thing across the end-to-end network and that's very important.

From a networking point of view, so what is important in the Cloud which has not yet been really said is this component which evolve into the service provider the software, software is now going to built in instead of built out or at the access. Most of the services today from the service provider point of view are built from the access and therefore it piles up the number of equipment with routers for [IP-VTN], with voice over IP, with some Layer 2 services etc. So these equipments are going to be virtualized at the aggregation, and the key function of the service provider is going to change dramatically.

And I think from a vendor point of view we are observing in fact this evolution, we are evolving our product to be not only hardware switching which have been the case for the last 100 years to be software ready. And I think this is certainly an evolution from our point of view that is very key. And then to separate the control from the data [plane] which has been also said, and then to basically bring virtualisation as part of the service in a much easier way so the data flows goes with the service, and this is going to be a tremendous evolution. But certainly Google has been pushed and promoted in the way they have been working on apps like we have on the various handsets that we are using.

Emir Halilovic

But as we know those applications do not always work as expected. And I think that James if we just look at how right now the Cloud service provider services actually work I think that there is a big gap between the expectation of the enterprises and how those services are actually provided. Can you illustrate a little bit that problem, like where do we see the issues when it comes to how those Cloud services are provided and how the enterprises actually use them. And what happens behind the scenes so to say?

James Walker

That's quite a big topic. I suppose what I would say is that we saw the early evolution of Cloud services as being still quite a lot like previous iterations of applications in that they were quite centralized. They might be virtualised once you got inside the data centre but they were still quite centralised. And so when you were signing up with a particular Cloud, so called Cloud service in fact it was being provisioned out of one location or one cluster of locations and that geographically might not be exactly where you wanted it to be, particularly if you're a long way away from that location.

So the evolution that's gone on from there is how do we get that data that compute that experience as close as possible to the end user, particularly once mobile devices come into play. And so this has in turn been what's driven a lot of work on how do I replicate an environment in one location, how do I [fail] it over to another location, how do I make sure that the data that exists in Europe is the same as the data that exists in Asia, all of those sorts of questions all start to get done.

And we are still at the very early stages of architecturally how you build such a complex environment and push that close to the customer. And so you see interim things like CDNs and so on who work to accelerate web content to users by pushing the content as close as possible to them, but the compute still stays centralised. So I think the big challenge is how do you properly distribute or properly meet what Cloud said it was going to do, so I think that's really the cusp that we sit on at the moment.

Emir Halilovic

So when it comes to that, let's say, architectural change where is the role actually of CloudEthernet Forum?

James Walker

As I said it's really -- our objective is to get barriers out of the way, it's not to create a new standard or to create a new paradigm that's not the object. But as a network service provider today I operate, and we are only a medium sized global operator, but already we have 1.6m circuits, and 1.6m circuits which potentially need different treatments, different classifications, different priorities, different routings all of those sorts of things.

So the sheer scale of that as that all transitions off SDH and towards more of an L2 service I need some way to manage all of that. And when I hand off my 500

customers 10,000 customers to a Verizon or a BT or an AT&T for delivery onto their network I need some standardized way to be able to do that to identify. If my customer has got a VLAN [numbering] scheme I've got a VLAN numbering scheme, AT&T has got a VLAN numbering scheme, Equinix has got a VLAN numbering scheme. There has got to be some way to pull all of that together just purely from a networking point of view.

And then -- so this is really what I said, it's about getting Ethernet out of the way of other things which need to happen all the things that happen at a higher level, [VX] [inaudible] all the other [SAT] whatever else it is you might want to do higher up still needs a transport to operate over.

And one thing that comes a lot from our members as well is they don't want to do all of this work at a orchestration or controlled plane level, they don't want to be doing all the STN, at an STN controller level. Because STN controllers today have a limited computational capability you can't get them to patch every single piece of behaviour that you want. So get that low level protocol stuff sorted out to the low level protocol and leave STN or whatever control plane they are using to do the higher order stuff.

Emir Halilovic

So there is a role if I understand correctly that obviously STN has to play to control plane, but there -- is there going to be some kind of complimentary or some kind of dialogue going on between CloudEthernet Forum and let's say Open Networking Foundation?

James Walker

Yes, of course, and we've already opened those doors. So in fact in the White Paper is a list of the organisations to which we see a link where we need to have relationships in place. So with the major ones that's already done and many of our members are already members of those forums as well, so that happens now, and then we need to continue to build on those.

But in fact my issue at the moment is to make sure that we have a strong focus on three to four main areas of activity as opposed to taking on the 20 or 30 themes that we've been asked to do, just remaining focused around some things which we can deliver. This market moves so quickly that if you take a year or a year and half to come up with a standard then it's too late, you haven't met the needs of your users.

Emir Halilovic

So we are supposed to expect results quickly?

James Walker

You certainly are yes.

Emir Halilovic

Okay. And Kevin when it comes to MEF as a wider body still than CloudEthernet Forum what is the feeling or what is the mood among the MEF wider membership with regards to the CloudEthernet Forum activities?

Kevin Vachon

I think it's very positive, I think firstly there is a recognition that there is probably a lot of work to be done and so there is a buy-in that this work has to happen and that strategically it -- James has mentioned some of the tactical things that we are doing here, the back-end office stuff and that, that's kind of secondary strategically, it just makes sense that we have this new driver entity with a close relationship with the MEF to make this happen.

I will say that the CloudEthernet Forum is prudently taking the time to properly explain why it exists, the problems it's trying to solve and an indication of the kind of work that would be going on in the form of the White Paper. So we do have a lot of our members that are waiting for this. They are saying they'd like to understand more specifically about what they are doing, whether they'd want to get involved and so on. But now that there is a baseline document out there you'll see a growth and interesting dialogue in the numbers.

Emir Halilovic

And when it comes to formalising the outcomes of the work we obviously have heard that MEF and the certification program have been very successful. Are there any -- that's a question for both Kevin and James, are there any plans to work towards some kind of activity in the CloudEthernet Forum too, something similar?

James Walker

Yes, I think there is, I've said it a few times before in other meetings, but really to me there are the three main chunks of activity the CEF takes on. One is quick to market which is things like best practices and agreements that can be done without actually creating new software or burning new silicon or anything like that so those are quick to market.

In the middle is something which is longer to market which does involve some change to a protocol or to a switch or it could be as simple as just making switches have more memory available to them or whatever it might be, so that's something which takes longer typically 12 months, 18 months might be this development cycle.

And then outside of that are the activities which need to be undertaken by other forums where the CEF will identify the need and represent its members and then take that to that other forum and then kind of follow it through and measure it. And that depends on the forum and the complexity of the task that needs to be taken on, so those are really the three, so the MEF falls into that later category.

Emir Halilovic

Okay. So since we are slowly closing to the end of the panel discussion I would like to ask are there any questions from the audience to our panel members.

Gerard Hall

[Gerard Hall] from [inaudible] News. I was wondering if the Telco or the mobile operators are quite different from the classical Telco if it could make a difference between them sometimes. So do you see any difference in your approach from the mobile operator on the others or do you see any split between them or everyone is [shared].

Kevin Vachon

I'll take this one. So there is a huge difference between the mobile operator and the fixed operator. In fact the mobile operators have already implemented software as part of their infrastructure. They are very advanced into this area. They have used [HTC] technology in order to basically provide standard based chassis and integrate CPUs from Intel and storage in order to compute a lot of the information that is coming from the mobile as the 3G but also on the LTE evolution this is the same principal. So the centralisation of the computing is done already in the mobile.

This is something that has not been done into the fixed and we've seen from the service point of view, because we need more looking at [slowing down]. The fixed issue is what has been pointed here is that it needs to be done but not only at the -- not really at the central level but more at the access level, and this is going to be a tremendous -- or at the aggregation level. So bringing software capability at the aggregation level is going to be a tremendous challenge because in the fixed the revenue is going down for the service provider and they need to reinvest, so it's a non-equation for service providers to basically go there. And therefore they will certainly continue by providing Layer 2 services at high-speed OEM and etc in order to overcome the fact that they need to invest a lot of money into this area.

In the mobile architecture what is very interesting is we are going to see now really the MPLS is going down to the access, so this is something that is not completely happening into the fixed depending on the service provider. In the mobile infrastructure the MPLS is going down because basically there is a lot of microwave into this infrastructure, and the microwave needs to lot of load balancing in order to increase the bandwidth and therefore there is going to be a lag functionality going down because these are only point to point as in the fixed area you have a lot of rings and some -- the protection is doing -- done somehow differently.

The mobile is very interesting because in fact the LTE gives an opportunity because there is revenue coming in and there is a [spending] that is basically allowed in order to increase the infrastructure. So most of the industry is now focusing on the mobile industry, the mobile industry is basically led by [sheer] vendors and this is where the challenge is a little bit difficult. But as the standards are growing in the MEF and other standard bodies are pushing the mobile infrastructure service providers are

seeing a benefit of buying product instead of buying a full service, so the industry is shifting towards -- and this is why the MEF is certainly playing a major role in this area.

And in Europe it's especially interesting because LTE was slower to penetrate than in the US, so the game is happening now. And we are seeing this evolution with several launches of mobile LTE, and so I think that's certainly a good area to look at from your point of view.

Emir Halilovic

Okay, so I think this concludes our time slot here. The conclusion obviously is that there are issues but there is work behind, not only behind but also on the scene at the moment to actually solve these issues. The data centre interconnect high on the priority lists of many, many players in the industry. So, with that, I think a round of applause to our panel is in place.

[End]