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PRESENTATION

Brent Bracelin - *Pacific Crest - Analyst*

Good morning. We will go ahead and get the next panel session started here. My name is Brent Bracelin. I am the IT systems and networking analyst at Pacific Crest. Very pleased to have a panel here that will be focused on a discussion around kind of next wave of networking. The goal of this panel is really to try to identify some of the key architectural shifts that are occurring in the networking space.

We have vendors here that have some specific insights on the service provider side, so we will spend most of the time focused around kind of service provider networks. We will spend a little time around kind of enterprise. Again, I think most of the focus today will be more around service provider environments.

From Allot Communications, we have Marc Zionts. He is the VP of Strategic Mobile Service Providers; from Procera Networks we have Jim Brear, the President and CEO. From Juniper Networks, we have Rami Rahim, Senior Vice President of Edge and Aggregation. Then from Infinera, we have Dave Welch, who is the EVP and Chief Strategy Officer for Infinera.

Before we kind of go into the background here, perhaps I will have each of the panelists give a real quick 30 sort of on the background and then the company real quickly.

Marc Zionts - *Allot Communications - VP of Strategic Mobile Services*

Excellent, great. My name is Marc Zionts and I joined Allot three months ago when my company, Ortiva Wireless, was acquired and I was the CEO there. I've been building companies for 25 years in the telecom space and happily have sold four and taken one public. So I'm glad to be a VP and not a CEO for the first time in 25 years. I have officially been demoted.

Allot focuses on the whole space of broadband traffic management. That includes the reporting and analytics, the traffic management, and the optimization.

Rami Rahim - *Juniper Networks - SVP, Edge and Aggregation*

My name is Rami Rahim. I run the Edge and Aggregation business for Juniper Networks. I've been at the company for 15 and a half years and done a number of different roles from engineering to product management and now it's running this business unit responsible for essentially the parts of the network that do service delivery and aggregation and connectivity to the end customer.

Juniper Networks, if you're not familiar, is the company that does -- that provides networking solutions for the top Tier 1 service providers around the world as well as the majority of the Fortune 500 enterprise customers.



Dave Welch - *Infinera - EVP and Chief Strategy Officer*

My name is Dave Welch. I am one of the founders of Infinera. Current role is running executive VP and running the chief strategy organization, which includes product line and advanced technologies.

Infinera has been a leader in optical transport and has through advanced technologies and for its photonic -- mostly known for its photonic integration utilization and its transport vehicles to a develop leadership role in high-capacity core networks and now we're moving into our next generation of 500 gigabit technologies and seeing a lot of traction from that.

Jim Brear - *Procura Networks - President and CEO*

Good morning. My name is Jim Brear. I am with Procera Networks, headquartered in the Silicon Valley. Procera similar to Allot provides technology to service providers focused around intelligence, control, and personalization. I have been with the company about four and a half years and thank you for having me.

Brent Bracelin - *Pacific Crest - Analyst*

All right, so before we go dive into the discussion here, framing the opportunity, you are talking a \$46 billion TAM network spend. This is a 90% kind of industry growing segment over the last five years. As we think about the next five years, we think this is going to be a \$65 billion TAM, 7% annual growth, relative to kind of to two segments of the market, service provider networks, enterprise networks, as we think about that if the current trends in the service provider side, we are really seeing this focus on adding intelligence to the network. It's moving beyond just plumbing and connectivity to now adding a lot more intelligence.

We are seeing those service providers rearchitect their networks for mobile, video and cloud workloads. Obviously you are seeing a focus on a reducing amount of capital intensity that is being required through kind of WiFi offload and LTE that is a more efficient infrastructure. Obviously the equipment spending has been pressured for most of the capital equipment vendors.

Margins are nearing peak levels so at some point these operators will have to invest again and we also are seeing this convergence on IP. We've talked about it for I think a decade now but we think it will be a multiyear shift. It won't happen in one or two years.

Enterprise saw very similar things. You are seeing a shift towards from conductivity to intelligence. Rather than mobile workloads, we see more of an architecture of the network on the enterprise side for virtual workloads, cloud video also. There definitely is a shift from CapEx to OpEx models on the enterprise side and then we also have this changing traffic pattern from east-west traffic, virtual machine generated traffic from north-south kind of client server traffic workloads.

I wanted to just start out the discussion today with talking about kind of the current state of affairs of the business, what's most surprising relative to the change in your business today versus kind of what you were thinking at the beginning of the year? Maybe we'll start with Jim.

Jim Brear - *Procura Networks - President and CEO*

Sure. Again what Procera does is provide intelligence in the network. I guess what has been most surprising is the speed in particular in the US for carriers such as AT&T and Verizon and others to start to move to a personalized services meaning going from an unlimited data plan to now a consumption-based model. You are seeing that already. The Olympics is a great example of where we will start to see new services created. I guess the speed to which that is occurring has accelerated much faster than ever anticipated.



Brent Bracelin - Pacific Crest - Analyst

Dave, what about your business? What do you say is most --?

Dave Welch - Infinera - EVP and Chief Strategy Officer

Well, what we see in the core is a continued adoption of high-capacity pipes. And the -- with our new technology we brought out was 500 gig and we are seeing that that is an ability to put in the largest chunks of bandwidth at a time that is really driving the network to higher in capacity. There is a continuous need for bigger and bigger units or units of bandwidth in the network.

Brent Bracelin - Pacific Crest - Analyst

Rami?

Rami Rahim - Juniper Networks - SVP, Edge and Aggregation

Sure, nothing terribly surprising. I would say there's certainly the fundamentals of networking are still there. Traffic is growing exponentially. Mobile device proliferation, the applications that people are using on their smartphones and so forth is driving traffic. We are operating in a cautious spending environment no doubt. They are all operating, they are taking a bit more risks and running their networks hotter.

One thing I would say is if I sort of look around our customer base around the world, we are seeing some signs especially from our large US service providers that the second half spend might be sort of mildly up versus the first half. If that were to happen that would be somewhat different than what happened in 2011 where it was essentially flat first to second half. So that would be an encouraging data point, if you will.

Brent Bracelin - Pacific Crest - Analyst

Interesting. Marc?

Marc Zions - Allot Communications - VP of Strategic Mobile Services

Yes, I will actually take the position that we are not too surprised. I think we had a vision years ago that services, personalization, monetization were going to be important so we are starting to see that dialogue really occur now. So I think it's kind of confirming a vision we had and positioned ourselves for a few years ago.

The other comment I will make though and I wouldn't again call it surprising but it's kind of confirming another point we had and that is LTE is not enough.

And so for the last couple of years many operators have been very focused on just building out the LTE network and now I think they are really coming into the realization that that alone doesn't solve their problems. It's not the silver bullet perhaps that they thought it was and there's a lot of other things you have to do to make their networks run well.

Brent Bracelin - Pacific Crest - Analyst

Interesting. Just to follow-up on Rami's comment around kind of the second half, Dave, are you seeing similar kind of trends relative to some of the customers and interest? Obvious it may be tied more toward a new product cycle launch but what's the appetite from your kind of standpoint in kind of deploying maybe capital a little more aggressively in the second half of the year?



Dave Welch - *Infinera - EVP and Chief Strategy Officer*

We are seeing a lot of take-up of our new product platforms. It's hard for us to determine whether that's a market shift or whether that's a market share shift that is going on. Our interest in our products in moving to a 500 gig platform certainly has a lot of value to the customers and they are picking up on that.

Brent Bracelin - *Pacific Crest - Analyst*

Great. The first kind of architectural shift that I'd like to focus on is really this concept of offloaded optimization. We are clearly seeing service providers look to deploy WiFi offload; again LT is not the silver bullet that some service providers had hoped. Clearly seeing really strong growth in those WiFi offload players, I think IBC estimates this is going to be a couple hundred million dollar market growing to \$2 billion in the next five years. You're also seeing optimization as an area where you are seeing very, very strong growth obviously both Allot and Procera are growing like weeds.

Maybe I will start with Allot here, Marc. What's your view relative to kind of optimization, amount of interest in it? Where are we at from a market penetration standpoint?

Marc Zionts - *Allot Communications - VP of Strategic Mobile Services*

I think if I use a baseball analogy, clearly we are in my view we are in the first inning. So there's been a lot of education in the past few years but now we are really in the first inning where people are saying okay, time to do something. We've got an issue here. It's not enough just to optimize our network but we have got to monetize as well. And I think as Jim pointed out, you're starting to see these new models coming out like around the Olympics and I think there's going to be a lot of thinking coming on about how do we monetize? How can we charge for these services? Because we are an unsustainable path where costs are exceeding the revenues in terms of the rate of the data growth on the network.

So we see it as -- it's not a nice to have. It's not kind of an option to think about. They've got to get the most out of their network from a cost perspective but that alone isn't enough. Now they've got to figure out how they then monetize as well.

Brent Bracelin - *Pacific Crest - Analyst*

Interesting. Jim, what's your view relative to being able to kind of grow as fast as you are growing in this environment, the drivers, how sustainable is the business? Again back to that kind of penetration question, where are you at with some of the customers that are kind of deploying the technology, is this deployed and used to monetize traffic in 10% of the environment or is it a third of the environment that customers are kind of deploying kind of DPI?

Jim Brear - *Procura Networks - President and CEO*

I can only speak for ourselves. We kind of see the global market that there's maybe 500 major carriers around the world. Of that 500, maybe 100 have used this technology so we are still in an early phase. And if I look at -- if we then categorize those 500, there's maybe 25 described as very, very large. Many of those have yet to really start to look at deploying personalization or new services, so we are very bullish on the opportunity.

Brent Bracelin - *Pacific Crest - Analyst*

Great. Rami, relative to kind of your view, obviously large customer footprint. How much interest are you seeing in customers asking for kind of DPI solutions? What is Juniper's kind of DPI approach? And then relative to WiFi offload, what is the monetary interest in that and your discussion there?



Rami Rahim - Juniper Networks - SVP, Edge and Aggregation

Sure, so DPI we view as a foundational technology element that has a lot of different applications and for us DPI is something that is sort of built into our Edge platforms. And so what operators are having conversations about is how do you leverage that either for optimization or for monetization? As important as that visibility that you get into -- with DPI is what you do with it, i.e. the policies that you enact on networking through that visibility that you have. And so this is part of a holistic solution that we offer at Juniper.

The interest is absolutely there from an optimization standpoint; from a monetization standpoint it's there but I think it's still a bit sort of in its early stages, if you will. The comfort level and using it for the purpose of monetization is not quite as strong as it is on the optimization side.

Brent Bracelin And when you say the interest in optimization, is that largely to reduce traffic loads or what's the primary use case that you are seeing out there on optimization?

Rami Rahim - Juniper Networks - SVP, Edge and Aggregation

Yes, it is to essentially -- different operators are going to be more comfortable than others in doing this but yes, essentially making sure that the few consumers that have the bulk of the balance in their network are somehow not able to gain that much bandwidth, if you will. So yes, it's essentially what you just said.

One other sort of thing about DPI is it's the heart of all our security products. All security products need to have that visibility, if you will, in order to secure the IP infrastructure, so it becomes an integral element of that.

On WiFi, I think WiFi -- this is just essentially one example of an offload of an optimization technology that exists in the industry. There are many today. WiFi is a great example of sort of offloading the 3G and 4G spectrum, but even things as an infrastructure provider we have operators that are looking for very, very tight timing characteristics in the network for their cell towers.

There are many reasons for this. One of them is just to avoid dropped calls but there are things for example increasing spectral efficiency in their 3G and 4G network where they need that sort of tight timing.

Brent Bracelin - Pacific Crest - Analyst

Dave, your view obviously as operators have embraced kind of WiFi offload, they are kind of putting that traffic burden on another provider to eventually kind of backhaul that traffic and get that to the core. Have you seen a change in customer buying patterns where some of the quote orders are going to be driven more by kind of wireline providers versus kind of the wireless providers? Just trying to understand, have you seen any sort of impact to your business as we think about --?

Dave Welch - Infinera - EVP and Chief Strategy Officer

In the core, about 80% of all the traffic in the core is fixed -- generated from fixed assets. The growth area of wireless impact is absolutely driving -- is getting to drive more bandwidth and the potential for much more bandwidth into the core on the network. Where we sit that gets taken care of very quickly in the Edge aggregation layer and then it just becomes how do I -- I'm not looking for -- I'm looking for intelligent networks to more deal with the optimization aspects of the network, how to get the most out of the assets I've paid for and less so than (inaudible) going through -- trying to drive sophistication and the inspection aspects of the routers in the core down more than trying to drive them up in order to drive the costs (inaudible) on consumption of the network down.

Jim Brear - *Procura Networks - President and CEO*

That sounds like an interesting debate there. Rami, what's your view relative to where that optimization or intelligence kind of resides? And obviously we've had this debate for years now but relative to what you are seeing out there, some customers obviously have been moving forward with MPLS. Others are clearly looking at OTN. So what is the Juniper view relative to where that optimization point should be or does it just reside at every equipment layer in the network and needs to be optimized?

Rami Rahim - *Juniper Networks - SVP, Edge and Aggregation*

I think different equipment layers are suited for sort of achieving different levels of connectivity and service delivery. You know, there is absolutely room and need for optical transport. There's also a need for electrical transport. Now whether that electrical transport is in the form of OTN or packet, we have a very strong view about this. We view that the majority of services that are being delivered today are IP-based services and therefore they are much more conducive to packet-based transport paradigms.

So we believe in a packet layer for transport and an optical layer for transport. We also believe in a very tight sort of integration, if you will, of those two layers to achieve the most optimal form of connectivity.

Brent Bracelin - *Pacific Crest - Analyst*

Interesting. The next architectural point I would like to make as a kind of talk about kind of this electrical optimization and optical optimization is really 100 gig and so we are currently at kind of the tipping point now of 100 gig. If you look at a year ago, I think Infonetics suggested there were probably two viable 100 gig optical platforms, Alcatel-Lucent and Ciena. As you look a kind of the number of 100 gig optical players by December of this year, you are talking about 10 to 12. Spending on 100 gig optical equipment could more than double to \$600 million this year, going to close to \$2 billion in five years.

So Dave, what's your view around 100 gig? It's been out there for a couple of years by a couple of suppliers. Now we are seeing critical mass. Are we at a tipping point and if so why? What's driving that?

Dave Welch - *Infinera - EVP and Chief Strategy Officer*

100 gig as a technology has been a demonstrated technology for I'll give it a year, 18 months in that process and in that early stages, there were people that were putting out 100 gigs where it wasn't working as well as they had hoped. I think you are in the number of waves shipped, 100 gig waves shipped in the past months frankly is a relatively small number from that.

As you go forward, I think it's really moving to the point where it's going to transition quickly. The economics are supportive of it. The demand for fiber capacity is in support of it. From a transport vehicle, things are moving to 100 gig or higher. Our argument is 500 gig is better than 100 gig as long as you can satisfy the reach requirements of the network and that.

So from a tipping point, it is certainly looking like 40 gig is going to -- is on the decline in the long-haul space. I think there is a different dynamic going on in the Metro environments but in the long-haul space, 100 gig is becoming the dominant I like to call it bandwidth currency. Those are the increments that you are going to buy. And I think the transition to where the total amount of bandwidth deployed and long-haul sort of new bandwidth deployed and long-haul new networks are going to be 100 gig-centric. When that exceeds 10 gigabits and from a unit basis, that's still probably another year or two out.

Jim Brear - *Procura Networks - President and CEO*

And then just the natural kind of analysts question here as I think about the market going with two suppliers to 10 to 12 is pricing. How aggressive is pricing out there and how important is pricing relative to getting broader spread adoption?



Dave Welch - *Infinera - EVP and Chief Strategy Officer*

So pricing is always important. What is interesting from your first question of what's different in the dynamics is surprising a little bit. I'm finally hearing the carriers come back and talk about total cost of ownership a lot more than they had previously. And I appreciate the impact the system can have on your operational expense. They spend far more on operational costs than they do on CapEx and that.

So the pricing is important. There will be a number of players that have 100 gigabit in that you've got to make sure to bifurcate the market into the long-haul and metro applications in that sector. But I still think at this point it's really a relatively small number of customers or companies that are going to be the dominant supplier or primary supplier in that long-haul space.

Brent Bracelin - *Pacific Crest - Analyst*

So let's fast-forward to 2013 now. Let's say [Vale] 2013, Rami what's your view obviously if those long-haul customers go from 10 to 40 gig to 100 gig, what does that architectural shift mean for kind of router vendors and what are you seeing relative to 100 gig router interface interest at this point?

Rami Rahim - *Juniper Networks - SVP, Edge and Aggregation*

It's definitely an opportunity for us. We for example with the MX platform, rode the wave of 10 gig in the industry in the carrier Ethernet space. 100 gig presents that opportunity for us as well. We are still in the early stages. We introduced our first 100 gig interface in the T-series at the end of 2010 but since then have added it to the MX and to the PTX and we have seen pretty good adoption.

From a router standpoint from like the cost of the electronics, we are pretty much there in terms of cost parity with a 10 by 10 but on the router optical interfaces, there's still a bit of time that's required in order for the optical interface pricing to actually go down and to make it more attractive for broader adoption.

That said, there are other factors that drive 100 gig adoption in the core and in the Edge to some -- and in the method to some degree, operators today tend to do these things called lag. They aggregate among multiple 10 gigs. They have the ability to do that in certain layers of network more than the others where there is a large amount of flow diversity like in the core for example, you can in fact lag. And so they might be able to put off their investments for a little bit but in the Edge and in the Metro, the flow diversity is not quite there and so you absolutely need to start to invest even ahead of where the economic starts to make sense.

So we are seeing it there. There is an opportunity for us. We see that the costs are coming down. We are still in the early stages and it's going to be a very important part of our business going forward.

Brent Bracelin - *Pacific Crest - Analyst*

Just to follow up on that optical interface pricing kind of being -- you see that being still a little bit of a hurdle you're going to have to overcome, why do you think pricing hasn't fallen there yet -- that interface between an optical? And is it a limited number of suppliers that you're dealing with there? Who are those suppliers and what's going to change there?

Rami Rahim - *Juniper Networks - SVP, Edge and Aggregation*

It's simply a matter of supply and demand. Eventually suppliers will align around a few number of optical interfaces and the demand will be such that it will cost -- drive the costs down through volume. There's also just quite a bit -- there is quite a bit of innovation that's going into the transponders and the optical interfaces themselves to cut the costs out of these things. So I see based on the innovation that is happening both within Juniper and outside that the costs will absolutely go down over time.



Brent Bracelin - Pacific Crest - Analyst

Dave, relative to your viewpoint around those optical interfaces as a hurdle to deploying optical equipment, what's your view on that and how soon can that change?

Dave Welch - Infinera - EVP and Chief Strategy Officer

So just one quick clarifying statement. There is a short reach 100 gig interface and then there is a long reach 100 gig interface and correct me if I'm wrong, a number of things that Rami was inferring to is the short reach interfaces are disproportionately expensive.

We are used to a world where the long-haul interface and the short reach interfaces -- I don't know what the right ratio is -- but the ratios are much higher than what you are seeing is the expense on the short reach interfaces that would connect box to box or 10 kilometer-ish type of distances being very expensive at this point in time. And the ratio of that to the long-haul is not consistent.

The 100 gig that we talked about earlier is long-haul bandwidth in which it is all being fed by a bunch of 10 gigs interfaces, the mucks bonder type of scenario in which case you don't get any of the aggregation benefits from a router or switch addressing that.

You will -- those prices due in 2013 from the optical interfaces for short reach or medium reach interfaces, they have come down. For us, it won't be as economical to go put router interfaces, interfaced on the boxes and that.

The long reach interfaces, which are enabling for the fiber capacity enabling multi-thousand kilometers type reach applications, they will also see cost pressure and cost evolution but they are two very different markets and technologies.

Brent Bracelin - Pacific Crest - Analyst

Interesting. Just wrapping up the 100 gig discussion here, as you think about kind of DPI and the role of DPI at 100 gig obviously will go to 100 gig in the core of let's say two or three years from now. What's the impact of 100 gig on DPI vendors and what's the opportunity? Jim?

Jim Brear - Procura Networks - President and CEO

Well, if you just look to the last two weeks, the Olympics, it has been shocking. We had this streaming which was very exciting but what we saw with our analytics across the world was the insatiable amount of bandwidth increase so you'd be streaming but we also saw social media go up at the same time. So it wasn't one versus the other. The amount of bandwidth is continuing to be gobbled up.

So from our perspective, you can't build enough bandwidth. It's just you build it more, more, more, so for us where we have launched a 100 gig platform and based on that, so in DPI, you can deploy it in different parts of the network. We do see that in the packet core. We see a requirement for standalone platform that has 100 gig interfaces that can drive hundreds of gigabits of throughput, so we have developed that. We are in trials now.

So as you said, the backbone is built up. We see that as all good news for us.

Brent Bracelin - Pacific Crest - Analyst

And then Marc, your view around 100 gig, is it still pretty early for kind of 100 gig dpi or is it starting to trickle interest?



Marc Zions - *Allot Communications - VP of Strategic Mobile Services*

There is certainly interest, and so it's something you are working on. We have certainly enough capacity for what our customers require. I think the important point that Jim made is this insatiable demand. And I guess that's one thing maybe to clarify is that sometimes when we quote optimize in a network, let's just say we free up an extra 25% of capacity, if you don't have the proper policy and control and monetization scheme in there, you actually don't save anything because it just gets instantly consumed because you just freed up people that were being blocked out of a network. So you still have to apply these other elements here.

And so I think it's very important that you can't just throw one lever here. You've got to do that WiFi also. You've got to do that (inaudible) sale. You've got to have a policy. You've got to have the monetization. You've got to have the understanding with the reporting and the analytics. These things are working in concert. If you switch one, there could be an unintended consequence.

Great. We optimized. Now we have more. We just filled it up instantly.

Brent Bracelin - *Pacific Crest - Analyst*

Interesting. Third shift I want to talk about and before I do that, we will definitely want to make sure we have participation as well too. Are there any kind of burning questions from the audience around kind of the architectural shifts before I go into kind of the mobility impact and LTE?

Okay, shifting gears obviously mobility is one of the major trends obviously impacting the networks more so on the service provider side than pretty much any other trend at this point. As we think about what the move to LTE means, Rami, could you just talk about how is LTE changing the network architecture and what are some of the expectations that we should think about?

Rami Rahim - *Juniper Networks - SVP, Edge and Aggregation*

At a high-level, LTE is an example of an architectural transition that's happening in the industry that is very much in favor of Juniper and the IP vendors because it's essentially moving closer and closer to a complete packet-based IP-based approach to solving what was essentially solved with legacy technologies in the past. So from that standpoint, it's a shift in architecture that's a good shift.

Now what does that mean? First, that results in much greater traffic. That puts pressure on spectrum. It puts pressure on the RAM so operators need to build that out. When they do that that then moves the pressure upstream into the axis into the mobile back haul into the Edge, the EPC and so forth. So we view this as an opportunity for us to insert ourselves. So ACX platform as a next-gen LTE optimized mobile back haul product is essentially equipped to capture that wave.

In the EPC space, when Juniper was first founded we were founded as a company that developed purpose-built silicon for -- to capture the wireline traffic explosion and today we are in a situation where the state of the art in (inaudible) I think could use the same level of innovation and we've done the same sort of thing with MobileNext sitting on top of a router-based silicon architecture in the form of the MX to capture the LTE wave.

The last thing I will just mention is that with that movement to all-IP comes great benefit but also comes threats. Now with IP comes malicious users that are trying to undermine infrastructure to compromise data, to compromise users, and so operators are looking for a way to secure that infrastructure and that sets us up for a great insertion strategy on the security side to secure users, databases, smartphones, and so forth, which is a big part of our LTE strategy.

Brent Bracelin - *Pacific Crest - Analyst*

Perfect. And just to try to drill down a little bit more from an investor standpoint as we think about LTE, we've seen a massive amount of investment in the RAM but we have seen service provider capital intensity decline. So it's kind of a I hear you on this claim that as we move to LTE, it is going to be great for the IP suppliers but we really haven't seen it yet.



So help me connect the dots and the disconnect between this massive investment in LTE and declining capital intensity for the operators and at what point do we see the benefits starts to arise? I know Verizon has been very, very aggressive deploying LTE last year. It looks like this year you are starting to see some orders from them. So is there just a one-year lag there? How should we think about that disconnect between LTE, the big promise of LTE for the IT equipment suppliers yet we really haven't seen any orders yet?

Rami Rahim - Juniper Networks - SVP, Edge and Aggregation

Operators are going to do this in phases and they will start with the RAN. That's the first phase that you have to start with what to offer an LTE offering. And that in turn again puts more pressure on different parts of the network upstream from the RAN over time. So what will happen is you will use your 2G, 3G-based backhaul infrastructure to solve the LTE connectivity problem but you can only do so for a certain period of time before you have to do something fundamentally different in terms of the capacity of your network.

The last thing I will just say is that over time LTE is actually going to pose -- could pose a pretty radical change to even the meaning of backhaul itself. We talk about backhaul from the standpoint of taking information from a cell tower, moving it upstream where the processing is done. LTE actually has as part of its architectural a much more flexible connectivity paradigm where you're moving the network down to the base station, where base stations can communicate with each other, where you can actually serve handsets from multiple base stations simultaneously.

So these are architectural shifts that talk to a network that's moving down to the base stations as opposed to backhauling up. Now are operators deploying and setting themselves up for that now? We are in the architectural discussion stage of that. This is stuff that's going to come over time after the RAN buildouts have happened.

Brent Bracelin - Pacific Crest - Analyst

Interesting. I know a lot in the past have said that in some cases people are deploying DPI that offer some of the LTE kind of expenses and burdens. Marc, could you talk a little bit about kind of LTE, the role of DPI in LTE and is this good or bad? How should we think about kind of DPI's role in LTE?

Marc Zions - Allot Communications - VP of Strategic Mobile Services

I agree with your comment about the fact that it kind of phases. Step one was clearly the radio phase, (inaudible) the RAM and then after that, now what do we need to do as we're moving forward?

As it relates specifically to kind of underlying DPI technology, and again I always use that word DPI technology because that is not a solution. The solution kind of it wraps around the DPI of what you are actually doing. But in the LTE architecture, they've actually just recently come up with a new term called TDF, which is traffic detection function. So under the 3GPP release 11 architecture, they have now said hey, there's a thing called a TDF where we are starting to break out the functions that are essentially done by Allot as a separate function.

And there was a big pushback by the big vendors to say no, no, we want that all put into our platforms. It doesn't need to be a separate box but the carriers were pushing to say that's really not going to work for us architecturally, scalability wise. So I think that there's been an industry recognition by the carriers and by 3GPP that the technology that Jim and our company are building and working with carriers on, this has a long-term role in the LTE architecture. And again, you will see in 3G or GSM architecture, they were calling PTEF often, policy control enforcement function, now you will see that vernacular switch to TDF, traffic detection function, services wrapped around that.

Brent Bracelin - Pacific Crest - Analyst

Jim, your view around kind of LTE and kind of what impact it could have in your business?



Jim Brear - *Procura Networks - President and CEO*

I agree -- I go back to the intelligent policy enforcement. We saw -- we were one of the first in a deployment of LTE (inaudible) and I think we were one of the first to deploy it and we love LTE. There's no really no positive or negative. At the end of the day, though, what we have seen is again what we do is we provide very deep analytics, visibility in the network. That is something that if in the core is done by a large router, they are going to have challenges from a scalability perspective. So I think what we have found and have benefited from is the carriers recognize that they can't do everything in a GGSN in that layer. So what they have said is this definition, if it's standalone, there's opportunities where there is integrated, there is standalone, but we have benefited from the new architectures in requiring a standalone platform based on the bandwidth consumption and the analytics that are required. You just can't do it all in a classic GGSN function or a PBM function.

Brent Bracelin - *Pacific Crest - Analyst*

Sure. Rami, your view on this standalone kind of function now that it's being taken out by the standards. Is that something that Juniper would like to pursue as well too, or what's your view around kind of the DPI function? I know obviously instrumental for security but relative to analytics and policy and policy enforcement, how big of an area of focus is this for Juniper?

Rami Rahim - *Juniper Networks - SVP, Edge and Aggregation*

I actually completely agree. I think that there is room for both standalone as well as integrated DPI functions and different operators are going to have different comfort levels with each approach. And certainly operators need to sometimes introduce DPI functionality into an existing network where DPI might not be offered, so there is sort of an example of where a standalone approach might be used.

More important than whether something is sort of a function that's physically integrated versus not integrated is the solutions that you build end to end that include things like the policy engines and what you do with that visibility that you have now into the traffic patterns that are in your network. These are the architectural discussions that are happening today with our customers and that is almost orthogonal to whether the DPI function is integrated or not.

Brent Bracelin - *Pacific Crest - Analyst*

That discussion, has it changed in the next last six months, 12 months?

Rami Rahim - *Juniper Networks - SVP, Edge and Aggregation*

I would agree with the speaker that there is a greater interest and a greater comfort level in deploying that sort of technology and quite frankly just a greater need for both the monetization standpoint but increasingly the -- sorry -- the optimization but increasingly the monetization standpoint.

Brent Bracelin - *Pacific Crest - Analyst*

Then, Dave, my last question here relative to the impact of LTE kind of on the long-haul optical market, does it matter? Is it just more of broadband access points that drives more traffic? Or how should we think about the architectural implications of LTE on the optical space?

Dave Welch - *Infinera - EVP and Chief Strategy Officer*

So LTE is just going to drive more bandwidth onto the system at the core level. The commentary here is actually interesting is listen to the need for more sophistication or more knowledge and more functionality at the edges of the network so there's two things happening. When I start driving up the core of the network, I also have to have driving scalability of that network which is not just bandwidth, it's cost. It's power. It's size.



You don't want to go out and build a whole bunch of new buildings to accommodate this. So driving things out to the -- sophistication out to the edges, creating an integrated converged network in the core that can meet the scaling of the bandwidth but also the scaling of the power in the space is how it ultimately impacts us.

Brent Bracelin - *Pacific Crest - Analyst*

Interesting. Shifting gears here we will move forward to kind of this whole SDN kind of discussion, which has taken a kind of new life here with EMC buying Nocera for \$1.2 billion through VMware, the division they have there. But as you think about kind of this software defined -- moving to a software defined kind of network world, how meaningful is this relative to the service provider environment? How active are service providers looking at moving towards an SDN type of architecture and what's your SDN kind of strategy? Maybe we will start with Rami and Juniper.

Rami Rahim - *Juniper Networks - SVP, Edge and Aggregation*

Happy to. So we have Juniper been talking about this vision of looking at the network as an open platform for years now, well before SDN became a really popular acronym in the industry. And the whole idea here is to provide open standards-based interfaces that give you the visibility and the controllability of the networking infrastructure to the application layer, so by doing that you make the applications better. You make the applications do things in such a way that they can guarantee user experience. I also think it's the other way around, the applications now makes the networking layer better.

So to the extent that SDN provides that standards-based API between applications and networks is great and it's very much in line with our strategy as a Company.

We are having conversations with customers both on the SP and the enterprise side and in particular in the data center side today, so certainly there is an interest level in it today. We have demonstrated certain technologies for example on Juniper equipment like the MX platform fulfilling a bandwidth calendaring application that moves large scale data from data center to data center with an SDN application.

So it's another architectural transition that I think we've done a pretty good job of predicting and getting ahead of by introducing the hooks into our system.

Brent Bracelin - *Pacific Crest - Analyst*

Is there a risk that SDN could disrupt the router business, you could take some of that BGP functionality and run it software-only and eliminate the need for kind of the Edge or core router. Or is that just from a throughput packet moving standpoint, you are going to still need kind of proprietary ASICs to get that job done?

Rami Rahim - *Juniper Networks - SVP, Edge and Aggregation*

From my standpoint, it's not even so much about the proprietary ASIC. I view this as an opportunity and ultimately what we are going to come up -- decide on or agree on as an industry is that there is going to be a meaningful balance of sophistication and services, if you will, that can reside in a central location and those that must reside in a distributed location.

Things like local repair and QOS and a slew of other things must happen close to where the action is that is in the network and the farthest reaches of network. You cannot replace that stuff with just sort of a cloud that sits on top of an open API. That said, there is definitely room for applications again with tight connectivity to the network that sit on top of an API, be it OpenFlow or any other API that provides that balance and sophistication that I think can add value.



Brent Bracelin - Pacific Crest - Analyst

Jim, all throughout the questions, you impacted SDN onto your business and interested customers that want to deploy kind of software-only on their own infrastructure.

Jim Brear - Procura Networks - President and CEO

We haven't seen any impact. It's really not a discussion today so I would say we're agnostic and its complementary in our position.

Brent Bracelin - Pacific Crest - Analyst

Okay, then Marc?

Marc Zions - Allot Communications - VP of Strategic Mobile Services

We make software, right? So if that gets virtualized or some things -- but I think the comment made by the panel about the fact that certain functions have different places in the network is very important. If you're dealing with latency-sensitive services, you are not going to want to have them necessarily all in the cloud. It just may not work from a mechanic's perspective.

So I think what happens is we in the industry, we hear a term like SDN and we all say what's the big impact or its cloud, what's the big impact? It's not all cloud. It's all not all network. In the end, it's some hybrid, certain functions are going to perform really well in a cloud base or SDN base and others are going to really need to be in the core of the network depending on what that function is, what that architecture is, and who that carrier is.

Right? I mean if you are a big American carrier, you can kind of view high-speed low latency links. It's free because you own this giant fiber backbone. Go to Europe, talk with an operator there even if they are part of a multicountry group, they may have a completely different perspective on the cost and value of those linkages. And it just may not make sense, so it's not going to be a one-size-fits-all either, here.

Brent Bracelin - Pacific Crest - Analyst

Dave, your view of SDN, does it have really any impact on optical?

Jim Brear - Procura Networks - President and CEO

Sure. What SDN is really is a statement is that I want to create more flexibility from my user in order to establish services over this multivendor technology. From a data plane perspective, I think it has very little impact. How do I establish what my pipes are and what my capabilities are? What it does say is that I need to -- the optical world 10 years ago was all about all-optical. You can't have an all-optical. You are not going to run an all-optical uniquely and be able to satisfy the aspirations of someone and be able -- wants to manage the control plane. You need to virtualize all that bandwidth down at the services that they can manipulate.

So our drive for layer of convergence for putting OTN and DWDM together today and ultimately MPLS together and that facilitates a more useful SDN architecture for that going forward. We are supportive of it and we are certainly -- it will help drive the overall efficiency on the network -- flexibility network.



Brent Bracelin - *Pacific Crest - Analyst*

I want to switch gears to the prediction slide here, but we will open it to the audience if there are any burning questions before we kind of go into predictions to wrap up the discussion here. Going once, going twice.

So let's do a short-term prediction and a kind of three- to five-year prediction. The short-term prediction is 2013. What do you think could surprise investors the most in 2013? And obviously what could surprise investors over the next three to five years that might not be kind of a consensus view? And we will start with Marc.

Marc Zions - *Allot Communications - VP of Strategic Mobile Services*

I think where we see certainly for 2013 and going onward is this focus on the whole notion of the services, the whole personalization and monetization of these services. It's table stakes to optimize and everybody needs that but they need more than that to run these businesses.

I think what could occur in 2013 and we're starting to see it right now is that people we are having a dialogue with at the carriers, it's shifting. So in 2012 the beginning of the year or last year, you are talking at a much lower level, network engineers and everything. Suddenly fee level people are wanting to have the same discussion with you and I think that offers perhaps an opportunity for more focus on this.

So the elevation of who is interested in this topic, we see that kind of shifting. To the extent that shifts a lot in 2013, I think that's very positive and so this is I think hitting the agenda of senior management in a really big way.

Brent Bracelin - *Pacific Crest - Analyst*

And then the three- to five-year kind of --?

Marc Zions - *Allot Communications - VP of Strategic Mobile Services*

I think the three- to five-year, who knows what the crystal ball brings. What I don't lose sleep about is the fact that there has been a shift in lifestyle to more data consumption, to wireless data consumption and that's going to have major impacts on our business in a very positive manner.

So it's not just that devices can consume more per device. It's not just that more compelling content is out there. We always talk about those. It's that people are becoming wirelessly connected more and more often, so that's what I see going on and I see that as a very positive impact on us.

Brent Bracelin - *Pacific Crest - Analyst*

Rami?

Rami Rahim - *Juniper Networks - SVP, Edge and Aggregation*

Sure, maybe I will just combine the two. I would completely agree with Marc's comments but I don't -- I think that the conversations with carriers has changed and the willingness to try different things to sort of maintain the health of their business is just there now to look for new revenue-generating opportunities and so forth is there and that makes them more conducive to these architectural changes that are happening.

I think -- I don't know about surprises because I think that the industry sort of moves in evolutionary rather than revolutionary steps. Even things like SDN where I said where I don't think the concept of open networks for programmability and controllability is a new concept, it's just sort of now wrapped it around a nice package are not that surprising to us at all.

One thing I would say is Juniper started out as a company where we forged the path for IP and MPLS into various different networking layers. We started in the core back when ATM was the rage and we pushed that into the Edge and to the aggregation. The next big sort of frontier for us, if you will, is the access and this is something that is new for us in 2013. We announced the introduction of the access. The ACX is all about bringing the value of IP-MPLS to part of the networks that has largely not seen it yet, which is the access layer.

So we will see how that pans out. I'm pretty excited about it. I think that we're going to -- we introduced it recently. We're going to ship it this quarter and we will see how it pans out over the next few years.

Brent Bracelin - Pacific Crest - Analyst

Dave?

Dave Welch - Infinera - EVP and Chief Strategy Officer

Yes, a couple trends in our space in the short term. One is the optical transport area has been previously defined as transponders. It's not moving in transponders so what you've heard here today is the interesting comments that the world is going to 100 gigabit on the line side but the economics for 100 gigabit on the packet interfaces are still out of sync with moving rapidly, so you've got this service problem of I've got lots of 10 gig services coming in but I need the 100 gig on a line side in order to get the capacities and the economics of the large pipe. That requires that you then have to have some kind of switching element in there.

So moving from a transponder or a [gray] optics to a long reach optic and said we are thinking about your network from a switched DWDM perspective is going to change. I think that's going to turn on and become integration of in our case -- OTN is going to become more important -- be viewed as more important in 2013.

I think the transition from 40 to 100 is going to happen very quickly. I think the visibility as to why 100 to 500 is going to become very important and that as we make these transitions to the next level of super channel, the super channels still have to operate over the same geometry talking about higher capacity channels that don't go long haul distances is -- isn't useful. You've got to have technologies that can deploy big chunks of bandwidth that can go long haul distances to be useful. Now that will pan out I believe over the course of 2013.

In the longer time, one of the interesting dynamics in our space is frankly vendor turnover. I've got a number of historic multinational companies that have participated in the long-haul space and that some are more healthy than others and I think there's going to be a certain amount of turnover in the course of five years. I'd be interested to see how that plays out.

That's going to create opportunities for the people that are successful in the space and that as the layer convergence comes together, it's also going to bring in more competitors into the space. So the who is the winner five years from now I think is going to be very different than who's the winner five years -- is certainly five years ago.

Brent Bracelin - Pacific Crest - Analyst

When you mention them, are you specifically citing kind of this anticipation of consolidation in the industry or potential players dropping out?

Dave Welch - Infinera - EVP and Chief Strategy Officer

Consolidations and some people that were stronger a few years ago aren't so strong now and I think that's going to change over.



Brent Bracelin - Pacific Crest - Analyst

Great. Jim, we will end with you. The same kind of the questions for you?

Jim Brear - Procura Networks - President and CEO

2013 is going to be very exciting year. I think as subscribers of whatever -- if it is your mobile device or cable device, this will be the year where these boring networks that we've been dealing with as consumers for 20 years, it is kind of very boring coffee is now going to convert into something where you may actually think about the network that you will decide I'm going to use AT&T or Sprint or others because they actually deliver something unique. And the reason is the alignment of the industry's occurring, it's the devices, it's the optimization, it's the ability for carriers to differentiate, creating a compelling service. You don't say I want to spend a few extra dollars for. That is going to happen next year here in the US. It's been a very basic service but I think if you look at all the technology we're talking about, they are all aligning from the devices, from the infrastructure, the ability to deliver this intelligence will inevitably provide this unique function where the carriers will be able to differentiate.

And I think that has really been building for the last five years and I would say 2013 is going to be a big year. We are going to see it in the US. You just started to see it with Verizon where they are copying the services. It is going to move to now hopefully over the next several years, they are going to provide services you are going to want to pay for.

I think that is going to be quite exciting next year. I think long-term for us in particular again, I think you're right, DTI is a bad word. What we provide is this level of intelligence and control. My bet is that what we provide will be in some form in every single network device in the world. It will be in your mobile phone. It will be in your router, your house. Intelligence is required. What you do with it and the control, that's still to be determined.

But over the next five years, it will be in every single device and if it's virtualized, great. If it's standalone, great. If it's integrated, doesn't really matter. We're now at a place where intelligence kind of meets an ability to deliver something that you will pay money for.

Brent Bracelin - Pacific Crest - Analyst

Very interesting discussion. I want to thank the panelists for joining us and I will preemptively thank you for joining us in 2013 as we see these predictions play out and we will assess who has the most accurate predictions. Thank you.

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