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EDITED TRANSCRIPT

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PRESENTATION

Mike McCormack - *Nomura Securities - Analyst*

Okay, I think we're going to get started on our second session. Just again as a reminder, lunch at 12.30 downstairs. Very pleased today to have Tony Melone with us, Executive Vice President and Chief Technology Officer of Verizon. Tony is going to start out with a slide presentation, 10 to 15 minutes, then we're going to go to Q&A.

And again, for questions we can either just pass the mic around or we have little cards on your desk in front of you, you can pass them to the outside and we'll have people collecting those throughout the session. So, with that I'm going to turn it over to Tony.

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Thank you. Good morning. So first, before I start let me just bring your attention to the Safe Harbor statement. So what I thought I'd do is take, as Mike said, 10 or 15 minutes or so to give you some context in terms of what we're thinking in the business and then obviously we'll answer any questions you have and I think we'll have a productive discussion this morning.

First, I think it's important for you to get a sense of when we look at the many trends that are out there, and there are many, there are four that I look at and say, you know what, we have to address these trends, they impact us. And you might say they're threats, you might say they're opportunities and, quite frankly, in my view they're neither or they're both.

We have considerable growth in IP traffic -- we all see that, we all know that, that's not news to anyone and obviously being a company that's in the middle of this IP traffic, both wireless and wireline, we think this is a very important trend for us to seize upon.

Growth in over-the-top video is one that's -- no question that will continue and no question that we will have to address that in our networks. But also in the apps and device side, the ecosystems that have evolved are not service provider dependent. And again, it's something that we need to just acknowledge and address and understand what the implications are for us.

And then the cloud is essentially decoupling services from the network. And again, some might view that as a threat for an operator, but a threat, opportunity -- again, it depends on how we address and how we prepare for this. So just as a backdrop I thought I'd start with those trends and then say how do we go about addressing those trends.

In our business we really start in the center, in the core and those are four foundational platforms that our business is built around. And not surprisingly, our 4G wireless network is one of those, but also our global IP network, our global backbone is very important.

And then the optical network -- our fiber, the FiOS platform is built upon our fiber-to-the-home network, our passive optical network, the many names we call it. Those are the three key network based foundational platforms and then, as you know, we've added a fourth with our acquisition of Terremark for cloud data centers. And we'll talk a little bit more about how these four work together, how they fit and how we build our business around these.

So let me just give you a flavor on the first with 4G LTE. Obviously first and foremost is expanding it, building it out and we'll be about 260 million PoPs by the end of the year and we're continually expanding our device lineup. So continuing to drive this and ultimately virtually blanketing our footprint by the middle of next year.

But it is a technology in its infancy. So we're also spending a lot of energy and a lot of time advancing the technology with our suppliers, more and more capabilities, in addition to providing multi-band support so we can utilize not only 700 megahertz, which is where we launched the network, but also AWS as well.

And then there is additional revenue opportunity with things like our Home Fusion product where fixed wireless in areas that might be under served where LTE is a great opportunity to provide broadband services to communities that don't have a wired alternative, VoLTE, rich communication services as well.

As well as leveraging this for some of our enterprise services like private IP where LTE now provides an alternative access to those for some of the lower speed requirements where it's amazing how much low-speed access there is to private IP still and LTE is a great alternative to that.

When we look at the global broadband, a lot of it is about enhancing what we have, modernizing what we have, scaling what we have, etc., so in a number of areas. We have a number of global IP networks that have been built over the years, the former MCI public IP network was built and then the FiOS on the consumer side had its own IP network. Those two were converging.

Today our access ramps, our customers are on one but where their destination is on another. So we have to build inter-network links to get from one to the other, again converging those, and that project was started a few years back and we're virtually complete on that.

We're also converging MPLS cores; we have multiple cores in the network that have been built over time. As each of those needs to scale up for capacity it's obviously much more efficient to build one 100 gig MPLS core, build that network out and let all these Edge networks ride on the same MPLS core.

And also investing and transitioning away from SONET, more and more ROADM technology that we have in the network, expanding that, going to optical switching as well. So again, investment in different layers of the architecture and our broadband and obviously leveraging 100 gig optical in our long haul.

We will likely have close to 10,000 route miles of 100 gig ultra long-haul this year and over the next couple years expanding that to 25,000 route miles, so that's extremely important.

And then finally Ethernet access, expanding our ability to get to our customers with Ethernet access, it's more efficient, more cost effective for us, as well as provides our customers the kind of interconnection that they're desiring.

Then when we look at FiOS, again, we're continuing the build out, heading towards our ultimate plan to build out our LFA obligations of close to 19 -- a little over 19 million PoPs over the planning period. But right now we're close to 17 million PoPs covered and we'll continue to build out as we have communicated in the past.

But in addition to that, we're doing a lot in the in-home architecture, leveraging the nature of IP, the ability of many consumer electronic devices to leverage IP and IP video. And by doing that we can take our costs in home and set-top box costs, etc., and leverage that through implementing a media server in the home and then having everything inside the home from that media server speak IP to either IP clients or to consumer electronic devices that already have a built-in IP client utilizing HTML5.

So this is not only a tremendous cost savings in set-top boxes, but also allows us to provide services that otherwise wouldn't be capable. And it also allows us to continually exploit QAM technology into the home which is very efficient but then on top of that, be able to put IP channels as well. So we get the best of both worlds.

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Finally, the fourth foundational platform of cloud data centers -- strategically when you think of our business and a connection company, networks, etc., and things migrating to the cloud, it seemed to make a lot of sense for us to have an investment in what people -- what our customers were trying to get to.

We're a service oriented company, we provide services on our network. If services are moving to the cloud shouldn't we be in that space? If customers wanted to get to the cloud they need our network. Can we do something leveraging both? And that's our strategy around that and we believe that we're in a unique position to do that.

In the cloud environment you obviously have a number of different levels that you could support services all from the base level of co-location all the way up through cloud applications, and we plan to play in each of those and we can be successful in any one of those. The cloud services is not the Holy Grail. If we can leverage that great.

If we have partners to leverage that, that's great as well. But fundamentally the network, the cloud storage, the services, etc., it all works well together. And we can package them together and provide services across both layers that some of the pure play cloud providers can't do.

The other thing we can do with our cloud is, again, as more and more services move to the cloud, there's nothing that says that our network-based services, the things that we've built on special-purpose hardware that over time the technology doesn't also allow us to move some of those capabilities into the cloud.

And we're doing a lot of work with our suppliers to do just that. And again, it improves our cost structure, gives us flexibility to be able to move some of the more traditional network services into a cloud environment as well.

So finally, when we build on those, we have those four core platforms, it's very important to leverage those through building horizontal platforms that leverage all four of those, things like our cloud services, or VoLTE, or machine to machine, etc., there's a number of different horizontal platforms that can leverage those that we can build upon and then on top of those vertical services.

So foundationally we think we can be very successful in a lot of these different areas going up the stack, but we also know that at our core we have to support these foundational elements, we have to be extremely competent in the area of foundational elements. Without that solid foundation what we do in the horizontal services, what we do in the vertical services won't sustain us. So we're building from the center out.

Obviously efficiency is very important. Our business is built around scale. Technology and scale is really what drives us and what allows us to be successful in the marketplace. And a lot of the programs I just talked about allow us to continue to further that efficiency and scale.

Having one IMS core and IP convergence and things I talked about all allow us to meet the demands of our customers, to meet the demand -- these growing demands in a way that we can do it in a profitable way but also meet our customers' expectation as well.

So you'll see a lot more of leveraging that happens in our future, again, between the wireless and wireline business, between different networks, etc., between cloud and the network, again, exploiting these assets to their fullest.

So just a quick little summary. Again, foundational platforms, enhancing them, driving scale, leveraging across the business, innovating on top of that for ourselves and with partners, those are the ingredients that we think will allow us to continue to be successful as our environment evolves and technology evolves around us. Okay?

So hopefully that gives you a little bit of a flavor of philosophically what we're trying to do in the business from a technological standpoint and I'd be glad to take questions. Thank you.

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QUESTIONS AND ANSWERS

Mike McCormack - *Nomura Securities - Analyst*

Thanks, Tony. Maybe I'll just start at a higher level looking at capacity, and you talked about the ultra long-haul network. But thinking maybe more holistically across wireless and wireline and spectrum is obviously a hot topic right now of debate, just how much every carrier needs. And then we'll circle back on a wireline discussion as well. But maybe just start on the wireless side.

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes, so, we're -- obviously spectrum is a limited resource, spectrum is something that's always been near and dear to us in terms of our strategy and we've always had a healthy spectrum strategy. And this is something that we feel is a very important to plan ahead because there is no right or wrong spectrum.

But what is important is that you have a plan that you can work towards in terms of what spectrum do you think you're going to have and utilize in your network and you build accordingly. We believe we're in a good position with the SpectrumCo acquisition. Hopefully when that goes through we think we'll be well-positioned to be able to grow the capacity in our network that our customers need for the foreseeable future.

I mean, spectrum is only one piece of the puzzle, technology will be a tremendous asset. What we can get out of each portion of spectrum continues to increase. What we can do with small cells, what we can do with cell splitting, etc., all of those need to be utilized holistically. And we feel that we're in a good position to be able to continue to meet our customers' expectations despite the growth that we perceive.

Mike McCormack - *Nomura Securities - Analyst*

I guess the one question that I get consistently and it's sort of across the different carriers, when do they run out or when do you have a problem or an emergency situation? And I don't think there's a right or wrong answer to that, but maybe you can frame it. If you based upon current expectations versus subscriber growth, what do you think about it timing wise?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Well, again, as we said even prior to the SpectrumCo deal, we felt we were in good shape for the next few years. We have AWS spectrum in the eastern part of the country, we had 700 A and B. So in the near term we weren't in a situation where we were desperate.

But with that said, we knew that down the road we needed spectrum and AWS in the western part of the country was important. AWS was going to be in our devices, so the opportunity with the spectrum -- with the cable companies came up and it fit our plans and it's something that will give us good growth beyond those next two to three, four years.

It's hard to put a time line on this. Again, we will have pockets where we have constraints, but those pockets can be addressed in different ways and we will address them if we --. But at some point spectrum is a requirement and it's hard to exactly predict when that will be. And you just can't afford, given the time lines to acquire it, given the time lines to build it out, you just can't afford to wait too long in order to acquire it.

Mike McCormack - *Nomura Securities - Analyst*

We'll probably end up bouncing back and forth between wireline and wireless, but I think a lot of this crowd may have been up in Boston last week. And you mentioned over the top briefly which, in some circles in this room, might be a bad word.

But thinking about Verizon's capability in the wireline side, and clearly FiOS is a world-class network. But as we frame the debate on can I actually deliver an IP-based television system to a home, and we talk about Xbox's and iPad's and smart TV's, it just seems like when you add it all up you

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have, potentially with a family of four or five simultaneous streams of, what, 6, 7, Meg, you know better than I do, you start to chew up numbers very fast. And then you multiply that by the number of homes in the node.

So, just explain to us how Verizon is positioned. Whether or not you can use the broadcast network potentially to deliver the video product and free up IP capacity and how you sort of frame that discussion?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes, so, we've been utilizing IP in the FiOS network from day one. All the video on demand is on IP. But let's face it, the QAM for broadcast -- the QAM technology that existed then was really the only choice at the time for the large-scale type of deployment that we had.

The capability of FiOS and PON architecture today, it's 2.5 -- GPON is 2.5 gigabits per second down. XG-PON goes to 10, next-generation PON goes to 40 gigabits -- there is enough happening on technology with a PON architecture that I believe we'll be able to sustain the kind of requirements you're talking about, whether it's IP or QAM plus IP.

If we were -- if someone is building a new network today I think you'd build it in an all IP infrastructure if you had fiber. But you can withstand the type of capacity. Now there's also multi-task capability with IP which is what we're building.

So again, you're not transmitting that same stream to multiple homes all the way to the source, you're bringing it out, you're caching it at one location and then you're streaming it to the legs. And a FiOS PON architecture supports that very well.

So I think one of the things we did when we went to FiOS and PON was just the future proof nature of it. And I think over time that will continue to be an advantage for that architecture.

Mike McCormack - *Nomura Securities - Analyst*

You bring up an interesting point on it would be all IP in a perfect world today and yet at the cable show I thought we heard consistently that it would be awfully nice to do that, but the realities are quite different and you can't just flash cut a broadcast network over to an IP network.

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Right, absolutely not.

Mike McCormack - *Nomura Securities - Analyst*

It seems like you guys are potentially better positioned there.

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes, we are. And again, the architecture I showed on the slide with in-home, having a media server allows you to take the QAM signal in. In addition to IP, if you want additional channels beyond what you can support on QAM, you bring those channels on IP. And then from that media server into the house it's all IP. So you can get the best of both worlds. There's no reason that you have to force migrate away from a QAM infrastructure if you already have it in place.

Mike McCormack - *Nomura Securities - Analyst*

Yes one of the things that we've heard consistently from your wireline compatriots is that over the past let's say six to eight quarters there's been this rapid increase in last mile utilization. And I think they're equating that to the explosion of iPad's and HBO GO and other things that are sort of moving off of the traditional TV set.

Have you guys seen that same impact? And then thinking about that, is there a second leg to capital spending on the wireline side to meet some of those demands?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes, we have seen the growth. Again, with a FiOS architecture, from the splitter into the home, I mean that fiber -- that dedicated fiber can handle as much as that customer wants to utilize. So there's really no additional investment there. Really the investment is back northbound into the network.

And when you have the kind of scale that we have, the efficiency to be able to add capacity and support that growth, again, is -- we're able to do that in a way that doesn't impact our capital investments to any degree that some others with a smaller base, etc., might have to augment.

Mike McCormack - *Nomura Securities - Analyst*

What's required on that sort of as you move back up into the network? I'm trying to remember back the last time I got the data point it was something like 640 megabit into a neighborhood I believe (multiple speakers).

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes. So, no, so right now -- right now with GPON it's 2.5 gigabits into a neighborhood. So from the OLT, the line terminal in the central office, single fiber out to a splitter, 2.5 gig and then from that splitter you're going dedicated fibers out to multiple homes.

And it could be 32 homes, could be 64 homes, could be 16, that's how you engineer it. And with that type of bandwidth we can support all that customers need today. And again, over time that 2.5 goes to 10, it can go to 40. So you can imagine the kind of scale you have on that IP network.

Mike McCormack - *Nomura Securities - Analyst*

Can you talk a little bit about the underlying copper network as you build out FiOS? And I think if you look at the telephone ads on FiOS, it's been rapid number, much higher than the 200,000 roughly FiOS video and data subs you've been bringing in. Is that a process where you're just saying, all right, let's just try to decommission the copper plan? And then maybe secondarily, are you seeing the cost savings that you anticipated to run them?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes. So philosophically on copper, what we don't want to do is invest in copper or invest in replacing, repairing copper if we have FiOS fiber nearby. I mean, where you have a concerted effort where we have plant conditions that aren't meeting the needs of our customers or we have customers that require services that copper can't support to migrate those customers over to FiOS.

Copper in and of itself is not a problem, it's a question of what's the condition of the plant, etc., and can you provide the services that customers are demanding. And when we look at the two of those we conclude that investment in copper just doesn't make a whole lot of sense.

We're investing in FiOS, let's leverage it, let's migrate customers as quickly as we can. But by the same token it's just not cost effective to force migrate. So again, it's a balance, it's looking at conditions, it's looking at customer requirements for services and managing that over time.

Mike McCormack - *Nomura Securities - Analyst*

We'll switch back to wireless quickly. You talked about the SpectrumCo deal obviously. But what's your thought on the different spectrum bands and how agnostic is Verizon as you look forward?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes, there's no Holy Grail with spectrum. Again, there seems to be -- it's more about matching what you have. So depending on what you have certain spectrum can be very appealing or could not be appealing at all. So it's hard to put labels on an optimal spectrum or a non-optimal spectrum.

I think there's a couple basics -- lower frequency spectrum is better for coverage and we were very fortunate to bid on and acquire 700C for LTE and gives us a great coverage footprint. For capacity sometimes higher frequency spectrum is better because it's going to be more targeted; it might be putting too many low-frequency bands in the device could be challenging, etc. So for us 700C AWS was a good combination, but that's not the only combination as well.

I think as we all have a challenge that ultimately with roaming requirements, with different spectrums, our devices will ultimately have seven, eight, maybe hopefully over time can support up to 12 bands. So even with that you have to be strategic in terms of what bands you're putting in, who your roaming partners are, etc. and what spectrum has been deployed throughout the world to leverage that.

So with all that said, 700 in AWS is what we're targeting for 4G. Obviously our 850 and 1.9 spectrum where 3G resides today will also ultimately be used for 4G. Beyond that we'll see what becomes available.

Mike McCormack - *Nomura Securities - Analyst*

Can you just give us an update -- you mentioned VoLTE I think very briefly, but the process and maybe the timing around doing that, how complicated is it maybe from an equipment as well as a network standpoint?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes. It's a fairly big deal to have -- this will be the largest scale mobile VoIP network out there. And mobile VoIP is not -- there's some challenges in a VoIP and a mobile environment that we need to tackle carefully. And LTE provides us the tools to finally tackle it with low latency and quality of service, etc.

So we're optimistic and bullish, but we're not rushing it. We will enable it in 2012. So we'll have the capability in the network so we can really start testing it, etc. My view is there's no reason to force customers to it. Our 1X network is very efficient from a spectrum standpoint. Probably in 2013 we'll make it available to customers, but maybe not as their only voice solution.

We'll ease it in, we'll allow customers to have -- use VoLTE with a rich communication service in addition to their standard CDMA voice and let customers get comfortable with it. And some time later in 2013 or 2014 maybe we'll be ready to offer that as -- for certain customers as the voice -- the only voice solution on the device.

So that's how I'm thinking of it from a technology standpoint, from a business standpoint we may decide to modify that a little bit based on needs of the business. But there's nothing really compelling forcing us to make that move faster than the technology allows.

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Mike McCormack - *Nomura Securities - Analyst*

If you could talk about just general capacity limitations on the wireless network. I think a lot of people just jump to conclusions about I'm going to cut my broadband in my home and I've got this awesome wireless device that's going to stream whatever I want to stream to my multiple devices.

It seems like the reality is that's going to be somewhat challenging I think in the near term. What's the longer term prognosis on being able to get that level of capacity to really replace the wired broadband product?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Personally I think you never replace wired broadband product. Wireless is a great technology and where wired alternatives are not practical or not available, wireless is a great alternative. But wireless, if there's fiber available, just the spectrum challenges that we've talked about, I don't see LTE as being the solution that a customer would pick for significant broadband use.

Now if it's a customer that travels a great deal, if it's a customer that doesn't use the service at home that much, and -- then it's a perfect alternative to utilize it in the home. But traditional home use, high power watching videos, etc., and the things that most people do with home broadband today, I think wireless is a tool where alternatives are limited.

Mike McCormack - *Nomura Securities - Analyst*

I find kids have an amazing way of finding ways to utilize bandwidth.

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes, it's amazing. Well one of the -- obviously the capacity and limitations and pricing models also dictate on how that evolves as well. And if the pricing is such that it makes it convenient for folks to use a lot of it, then capacity might get strained. If pricing is such where people don't want to use it, then that's not a good thing.

So a healthy mix of good modeled -- pricing models that are -- work for the consumer, work for the operator are also a big factor that's going to impact how wireless is used in the home.

Mike McCormack - *Nomura Securities - Analyst*

I think I became a FiOS customer when my son scolded me for being too cheap on my broadband. So thinking about the 4G network today, and you guys have had a bit of a lead on the competitors, and there's been some data points regarding pretty impressive speeds. What's the update on what the customer experience is now that you're sort of loaded in the network in maybe a more meaningful way? And then also your thoughts on the hand-off between 3G and 4G and how smoothly that's going?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes. So on the speed, I think we're still seeing speeds in the 10 to -- we're saying 7-12 on average, but there are times where customers are experiencing 15-20 Meg in good coverage. So we're extremely happy with the performance. And again, we will engineer the network as customers as we load the network to be able to maintain the 7, 5, 7, 10 megabits per second range, that's kind of the engineering philosophy we're looking at.

In terms of the hand-off, what we're seeing there is similar to what we saw when we first deployed EV-DO in 3G. You have two things happening there. One is coverage, as you're building out you have hand-off locations and so you're going to have some of that. But then you also have algorithms that are built into the devices that never quite work the way you expect them to or in a lab.

You have the real world environment and each device is different, etc. And just like with 3G we're learning that in a combination of enhancement in the algorithms and software on the devices with continued buildout of coverage those two things are converging that make these hand-off challenges less and less.

So again, we had similar nuances with 3G and we expected them with 4G and we think they're manageable today, but they're quickly being reduced as we, again, improve coverage and also improve the performance of the devices and the algorithms that allow the switching back and forth.

Mike McCormack - *Nomura Securities - Analyst*

Can you talk a little bit about -- we talked about spectrum obviously, but potentially the other way to address capacity is through densifying the network, if you will, cell splitting. How much does that give you? How much runway does that provide to prolong the process of needing more spectrum?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Again, it's tough to answer those types of questions as definitively as you might like. It depends on the situation. If you have an area -- a square mile, a couple square miles of capacity challenge you can attack those with cell splitting, with small cells and buy yourself lots of time and, quite frankly, that's the preferred approach.

But when you start spanning a significant part of your network where you're in those pressure points, small cells are not as efficient as additional spectrum. And that's typically the trigger. So, it's a combination of both, it depends on the situation, but certainly cell splitting and small cells has a place, but also spectrum is important as well.

Mike McCormack - *Nomura Securities - Analyst*

I guess that leads into WiFi as well. Is that a platform -- I noticed when I first got my Verizon iPhone that it was roaming onto WiFi networks quite a bit until I decided to manage that myself manually. Is that a way to sort of off-load some of that capacity as well?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes, again we -- our philosophy with WiFi is that it's an effective tool, but it's a tool to be utilized in select situations. We believe in certain environments that are controlled RF environments, the home being one, large venues where we can build out WiFi where there's just not enough spectrum to deal with the masses are two places where WiFi works very well and we're deploying WiFi solutions in those situations.

When it comes to more of the macro environment, the mobile environment, we just think that WiFi, unlicensed spectrum, the lack of propagation, the security issues, the ping-ponging back-and-forth, it's just -- and the availability of spectrum that we have for 4G and 3G we don't believe that we can offer our customers a good experience utilizing WiFi in those areas. And we feel like we don't need to.

So, in essence, we don't view WiFi as a mobile macro alternative. But we do see it as a place in homes and large venues where it's a controlled environment.

Mike McCormack - *Nomura Securities - Analyst*

We've got a large audience; I want to make sure we have enough time for questions out there. As I said, if you have something you want to write down anonymously you can put them on cards at the outside or just raise your hand and there's a mic here. Okay, first question from the audience is what is the significance and future of different flavors of LTE? And then will there be LTE convergence in the future?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes, so, if I think of LTE, there's obviously FDD and TDD. I think there won't be -- I mean, that's a question of spectrum and what's available and if you're limited to TDD spectrum you're going to have TDD LTE. If you have -- if you're fortunate enough to have FDD spectrum then that's what you're going to utilize.

So you're not going to -- you're going to have each of those. In terms of convergence devices will be able -- again, as an operator you'll decide what you need to put in your device and you can have the capability to do both in a device so that you can leverage roaming if you choose to. Those are all trade-offs that an operator needs to make.

The other aspect of LTE is the -- and built into the standard was the flexibility of spectrum. And again, in terms of width, bandwidth, 5x5, 10x10, 20x20 or even less, again, that's a question of what a carrier has available to them. Obviously the wider bands the better -- you get more speed, more capacity, it's more efficient, more cost effective, etc. But we don't all have the luxury of having nice, clean 20x20.

Spectrum aggregation will be coming down the road where you can piece together noncontiguous spectrum to be able to provide some of the capabilities that today are only available with contiguous spectrum, so you'll see that. But those tools are all available to operators and there's complexity trade-offs in the device and the network to exploit it and each of us will make our own decisions on that.

Mike McCormack - *Nomura Securities - Analyst*

I'm glad our audience has excellent penmanship. And I'm sure you're used to multi-part questions, so here you have one. What's the outlook for machine-to-machine wireless data growth? What M2M applications or industry verticals are seeing the fastest uptake and what are the growth constraints?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

So, lots of -- I mean, we've all been saying lots of opportunity with machine-to-machine. There's a couple -- I think the devices and applications around exploiting machine-to-machine are an important factor. I think one of the things as an industry we want to do is make it as easy to add and delete and move devices on the network as it is or easier than humans, and that's not always the case.

So building platforms that allow this seamless on and off the network and in an elegant fashion with portals for our customers is something that all of us in the industry are working. So it's really limited by what applications and what solutions that we and our partners can come up with and some of the areas that we are spending a lot of time with that we think is ripe for opportunity is ones that are probably evident to most of you.

It's healthcare, we think there's an opportunity with healthcare devices, etc., that can play and utility and energy as well are two areas. Telematics has been a traditional one, but we think there's more and more that can be done with telematics, more than just safety and security but entertainment, etc.

So a number of different areas, but I don't think there's anything that's getting in the way. It's just a matter of finding elegant solutions that are easy to implement in a cost effective way. And we'll see the network being utilized just as much for machine applications as you're seeing today with human applications.

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Mike McCormack - *Nomura Securities - Analyst*

All right, we're going to continue -- oh, we've got a question up here in front.

Unidentified Audience Member

There was an article in the New York Times this past weekend discussing this computerized radio technology to rapidly share spectrum that a panel is presenting to the President next month. Are you familiar with this and can you discuss its potential feasibility to help solve the spectrum issue?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Yes, so spectrum sharing -- there's been a lot of work done on finding ways to share spectrum over the years. And as with any technology enhancements are made. It is not trivial, however. I think there are opportunities, I think what -- when you look at -- the best opportunity in my mind is being able to share spectrum that's utilized very differently by two or more different constituents.

So government use of spectrum with commercial use of spectrum, there's a possibility there that the differences in how it's utilized, how often it's utilized and being able to mitigate -- or not mitigate, but manage the two requirements is feasible and I think we need to do everything we can as an industry to find ways to exploit that.

Where it's hard to imagine it working is between similarly situated users. So two commercial operators using it the same way, no matter how you slice it you can find very sophisticated ways to try and manage it but there's always going to be a trade off. Someone is going to have to sacrifice performance and I just don't see how two commercial entities competing for the same airwaves are going to find a way to coexist in that environment.

So there are some -- there's significant technical hurdles that need to be overcome, there's business hurdles, etc. But I do think if we're smart about where we apply it that there are some opportunities for spectrum sharing that are out there that we need to exploit.

Unidentified Audience Member

Do you have a sense of timing?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

It's not something that will be -- that we'll see in practice in the next year. I think you'll see some trial work, but I think it's years away before you have commercial solutions that are sharing airwaves with -- whether it's a government spectrum or whatever it might be.

Unidentified Audience Member

Okay, I've got a question on VoLTE. As voice -- mobile voice becomes an application how do you keep the Verizon voice application differentiated and how long does that last, how does that work?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

It's probably a question that's best answered by our marketing folks. But I think there's a lot of -- a lot that we provide with security, with -- just interoperability that are very important to our customers.

Now whether or not that's compelling versus over-the-top alternatives, the marketplace and our own product folks that will be impacted by them. But we believe that there's a place for both. I don't think we're going to force that issue, but I think we do believe that our customers want us to provide an elegant seamless VoIP rich communication service on their device and we will do that.

If we're right then most customers will probably use that. If our customers decide that there's enough alternative solutions then we'll evaluate what that means to what we're offering. But from a business standpoint I don't think it matters. I think what matters is that our customer is comfortable with their voice solution on that device that we're supporting. And if the answer is yes then I think we're good either way.

Mike McCormack - *Nomura Securities - Analyst*

Tony, can you talk -- as we wrap up here just thinking about the enterprise marketplace. We just heard from AT&T and I think they outlined a plan that said if there's an opportunity here for an economic recovery we could start to see wireline margins benefit in a meaningful way.

But from your perspective what are the pieces that big enterprises are demanding right now? We obviously heard about cloud services. You guys have strong growth in strategic services. But what are the individual products that are really hot right now in the enterprise market?

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Well again, we can overcomplicate this, but our enterprise customers, they want bandwidth and they want secure, reliable, high-bandwidth services. That's first and foremost. That's table stakes; if you do that well then you have an opportunity for services on top of that. And that's where our play with Terremark and cloud-based services, I think, puts us in a good position.

On top of that, they really want security. They want confidence that their data, their services, etc., are provided in a very secure way. And in our position with managed security and our expertise in that area, again, also we feel positions us very well.

So to me those are the foundational elements, it's high-bandwidth, secure, reliable connectivity; it's secure, reliable cloud-based services; and then it's being able to manage software applications on top of that. Once you have those two foundations then they're going to trust you with other applications on their -- to support their business and I think then we have an opportunity to grow beyond that.

Mike McCormack - *Nomura Securities - Analyst*

Great. Tony, thank you. Appreciate it.

Tony Melone - *Verizon Communications Inc. - EVP & CTO*

Thank you.

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