Q&A with Nokia's Sandra Motley

How Broadband Enables New Consumer, Business Opportunities

BROADBAND COMMUNITIES recently talked to Sandra Motley, president of fixed networks at Nokia, about how the company helps large and small providers make the most of their fiber-based broadband deployments. She also shared her vision of fiber-based broadband and the ways broadband can enable new education and employment opportunities.

As president of fixed networks at Nokia, Sandra Motley oversees a critical player in the burgeoning fiber broadband industry. The division offers emerging XGS-PON networking hardware and software, which enables providers to offer symmetrical 10 Gbps fiber broadband services. But hardware and software are just one part of Nokia's broadband vision. The company has been a vocal advocate for the 25G PON standard, which can address consumer fiber-to-the-home (FTTH) broadband and business and wholesale services such as wireless backhaul. In addition, the vendor works to help its customers take advantage of the nearly $100 billion in funding sources made available by the U.S. government. Under Motley's leadership, Nokia partnered with Broadband.money. Nokia will provide tutorials, blueprint network designs, grant expertise, and equipment planning tools for the Broadband.money portal.

Following are highlights of the conversation.

BROADBAND COMMUNITIES: *Dell'Oro's latest report revealed $4.5 billion in PON equipment sales. Let's start with how you see the PON and broadband market shaping up this year and beyond.*

SANDRA MOTLEY: As you highlighted, advances in PON technology have been

Sandra Motley

growing. Many customers are deploying 10G solutions. We see that new services allow for going beyond FTTH to what we call "fiber for everything" because of the higher speeds and capabilities. It also means more money for operators to reduce the total cost of ownership. Providers can

consolidate networks into getting single solutions because, with advanced PON technologies, they can do mobile backhaul and take advantage of several other features and capabilities.

BBC: *XGS-PON has become the technology of choice for residential and SMB broadband fiber deployments. How is PON evolving?*

SM: XGS-PON is the dominant technology for FTTH broadband, and we see that across Nokia's customer base. We're also starting to see deployments with 25G PON. Specifically, EPB in Chattanooga deployed 25 Gbps more broadly. That's another solution and capability providing higher speeds for rural operators. If I think about Nokia's fiber-for-everything business case, I can build networks for today and use these solutions for tomorrow. The beauty of fiber is that it's a long-term solution, and it will grow to 100 Gbps and beyond.

BBC: *You mentioned EPB, an early adopter of 1 and 10 Gbps and now 25 Gbps. Though 25G PON is still early in the deployment cycle, is EPB's deployment validation of this new technology?*

SM: What's important is that this 25G PON solution opens the game for enterprise services. It allows service providers to offer solutions and services that expand the network use for EPB and others outside of typical broadband. This is important for the region, and EPB is pushing the boundaries. What's also important is that EPB can provide 25 gigs, and Nokia's solution allows it to provide 10 and 25 Gbps on the same card. A service provider can also offer multiple end-user gigabit solutions to the home or enterprise. Nokia sees multi-gigabit solutions in the U.S. with many customers. In addition, U.K.-based competitive provider CityFibre is conducting a 25-gig trial with plans to use it for mobile backhaul.

BBC: *XGS-PON is the next step for providers' fiber broadband plans,*

> Nokia is helping shape the 50 and 100 Gbps standards. The 25 Gbps solution, available now, reduces latency and critical features required for time-sensitive, mission-critical networks.

but there's still a large installed base of GPON. How can Nokia help providers with GPON investments gracefully transition to XGS-PON?

SM: Everybody will be at different stages of the technology evolution. Nokia now leads the market in XGS-PON OLTs and ONTs. However, other solutions are required for every customer. Nokia line cards have multi-PON answers: 10G XGS-PON or 25 Gbps PON. This helps Nokia customers deploy these solutions because they can upgrade in a way that makes sense for them. Nokia offers this 25-gig solution on its 10 Gbps card because optics can support that and provide additional services, such as wireless backhaul. Nokia is helping shape the 50 and 100 gig standards, but 25 Gbps is here now. The 25 Gbps solution also reduces latency and critical features required for time-sensitive, mission-critical networks.

BBC: *PON is a big part of FTTH deployments. How can it be applied to wholesale and business services?*

SM: Many Nokia customers have deployed a GPON network and are now upgrading to XGS-PON. These providers plan to use that same network to support 5G backhaul. Service providers could use that same network to connect small cells and build their 5G networks on the same fiber. They don't need to make another network. Instead, a wireless operator could use its existing network capacity. We're seeing some customers plan for that. These providers are placing small cells consistent with where the PON network is today.

BBC: *Cable MSOs are on task with DOCSIS 4.0 to migrate to 10G,*

but many will build out FTTH in greenfield deployments. Do you see more cable operators adopting XGS-PON and last-mile fiber overall?

SM: Some cable companies are enhancing their cable networks with fiber because they see how it can augment what they have for DOCSIS in terms of speed capabilities. Also, less equipment is required in the field. A provider can put an OLT in a central office and run fiber to the home; cable operators are splitting fiber nodes with DOCSIS. Some cable providers don't have to put as much equipment in the field and could help enhance their cable networks.

BBC: *Electric cooperatives and municipalities represent another emerging market segment in fiber-based broadband. What's driving that momentum?*

SM: A lot of new players want to deploy fiber networks, including electrical companies and others that want to provide additional services. Municipalities are also looking to deploy fiber networks. Also, Nokia is seeing net-neutral providers deploying networks. These players could implement slicing capabilities for municipalities or service providers. After initially beginning in the Caribbean and Latin America region, the net-neutral trend is now worldwide. New investors and new network builders are laying the foundation for fiber networks, which could share the use across many customers.

BBC: *The multiple-dwelling-unit (MDU) market is another area of broadband growth. Fiber is being used in greenfield deployments, but*

G.hn, G.fast and MoCA also are showing utility, particularly in older buildings. How do you see these playing out in the MDU market?

SM: Nokia likes to keep many solutions in our bag to support customers in the way that makes the most sense for them. If a provider can't bring fiber to every apartment, we have a G.fast solution that can deliver high speeds on copper. We see it as an extension of the fiber networks. That's one solution that can be deployed very quickly. We don't have to run fiber to every apartment or to multiple dwellings because we could already use the copper network. We have the ability now to deliver speeds up to a gigabit.

BBC: *Given the broadband plans providers have, there will be a need for a more considerable labor force. What is Nokia doing to enhance the broadband labor market?*

SM: We see it as part of our responsibility to share our knowledge on Nokia's Fiber Techzone website. Through our partnership with Broadband.money, we can help educate and support providers that want to offer broadband services by providing education and blueprints so that providers don't need all the expertise around building and designing networks. There are tutorials that provide expertise regarding grants.

Developing talent is crucial for the effective implementation of government funds. Nokia has many internships and partnerships with universities. We hired almost 800 university students to help develop broadband solutions. It's not just about us getting more innovative but also about helping the industry and operators, so talent and expertise are critical and required.

We also continue to invest in Bell Labs, one avenue for developing technology and advancing knowledge in the industry.

BBC: *You mentioned Broadband.money. How does this website enable Nokia to help customers trying to take advantage of the new funding for broadband?*

SM: The U.S. government has committed significant funds – almost $100 billion – for broadband deployments. A lot of that money will go to construction and equipment. The focus is on providing broadband networks to the unserved and underserved. Local broadband service providers and U.S. communities can use the Broadband.money platform to research, develop and submit broadband grants. The platform also provides tutorials on blueprint network designs. It allows us to help our customers get through the process faster, from submitting applications to deploying networks.

Nokia has already received about 800 leads for customers or consultants interested in learning more about Broadband.money. We have an exclusive relationship with Broadband.money, at least for now. Deployments probably won't happen quickly, but money is starting to be distributed, so we knew we needed to act fast. Our partnership with Broadband.money was a way for us to help the community and do things much more quickly than we could by ourselves.

BBC: *Industry watchers call the new round of funding a once-in-a-generation opportunity. Do you agree with that assessment?*

SM: I see this as equivalent to when railroad systems and electrical networks were first built. There's an analogy with fiber networks. The past few years, when people were working and attending school from home, showed that there were many broadband gaps. The vision of Nokia's fixed networks division is to create a sustainable gigabit world for all. Some don't have the capability, and people must have digital services no matter who they are and where they live. This is tied to what the U.S. government and other governments and agencies are trying to do.

BBC: *Today, any discussion about broadband must address supply-chain issues. Has that been a problem for Nokia?*

SM: The situation has been challenging for all high-tech companies in the sector. It's beginning to ease, however. There will continue to be some effects into 2023, but Nokia has great relationships with its suppliers. It's not just about relationships with suppliers but also with customers, who typically plan 12 or even 24 months out in some cases because of the long lead times for supplies. That's given us an advantage because we're able to plan with suppliers and customers so we are able to ease some of the burdens of the supply crisis.

Customers have told us that we have done better than some of our competitors, and our growth shows that we've had success even in this challenging time. It's something we'll have to work on, and we'll have to keep our eye on it in 2023, but we see signs in some areas that it is easing. Some customers told us that they selected us because we were able to deliver. We've had double-digit growth, so I guess that is a result of working through it reasonably.

BBC: *As we look forward to 2023, can you share any expectations for the coming year?*

SM: Nokia expects to see the fiber boom continue going forward. As I said, 10G PON is becoming the dominant fiber broadband technology. Every quarter, we see more and more customers drive to that solution as they see the success in the industry with this solution and fiber deployments. We'll continue to work with our key large customers and with our small customers. We've provided a solution in a box: We've put aside several fiber solutions for small customers – OLTs, ONTs – so they can access materials. They're able to build out their networks very quickly. This prevents them from being impacted by supply-chain challenges. We expect to see things continue to grow. Services and capabilities continue to offer new abilities on top of the fiber networks we're starting to deploy to provide broadband to more people worldwide. ❖