

DSM Desotech
Broadband Properties “Designed for the Future” Executive Roundtable Summary
April 27, 2010, Dallas

Fiber-All-The-Way: The Next Frontier

Achieving the nation’s goals for wide-spread, high-speed broadband will require dialogue and compromise among competing interests, viable public/private partnerships and standards for broadband network performance and reliability. Fiber-all-the-way is the best network approach to achieve 100 MBPS connectivity, but there is no one-size-fits-all solution for the nation. These were the consensus views of a diverse group of telecommunications leaders that participated in the “Designed for the Future” Executive Roundtable, hosted by DSM Desotech on April 27, 2010 in Dallas Texas.

The roundtable, which took place in conjunction with the 2010 Broadband Properties Summit, brought together executives and leaders representing broadband service providers, solutions providers, fiber manufacturers, policy leaders, industry analysts, and media. Participating organizations included: ADC Telecommunications, Adtran, AT&T Connected Communities, Baller Herbst Law Group (national Broadband Coalition), Bandwidth Consulting LLC, Broadband Properties, Connexion Technologies, Corning, FTTH Council, Georgia Tech Enterprise Innovation Institute , NEO Fiber, Occam Networks , Outernet Communications, Parks Associates , Pennsylvania Regional Development District, Pennsylvania State University, Peregrine Consulting, Rural Telecom Congress , RVA LLC, University of Tennessee’s Institute for a Secure and Sustainable Environment, and Verizon.

The roundtable theme: “Fiber-All-The-Way: The Next Frontier,” invited discussion on key challenges the industry has faced in bringing FTTX to fruition, with particular emphasis on the MDU environment and rural deployments. To set the stage for discussion, Rob Crowell, VP of Fiber Optic Materials for DSM Desotech, shared key broadband industry indicators that reflect the current enigmatic state of broadband deployment and adoption in the U.S.: Demand for high-speed Internet services continues to grow with more than 5.3 million households across North America now connected directly into high-speed, high-bandwidth fiber networks. Fiber to the home is now being deployed by more than 750 service providers across North America, with most of those being small, independent telephone companies. There is a national mandate for 100 Mbps connectivity everywhere. On the flip side, however, the U.S. is ranked 19th in broadband speed, there is no real agreement as to whether 100 Mbps can or should be delivered to US households, nor on how best to do this, nor on what role government should take in stimulating broadband investment.

Seven areas of conversation emerged as the key topics of the evening:

- The National Broadband Plan needs to reach farther and drive real value for consumers, communities and the industry
- Municipal networks can help fill gaps in broadband expansion, and local leaders, businesses and the telecommunications industries must look beyond self interests to form viable partnerships
- Broadband competitiveness must become a national priority
- Demand will be driven by consumer awareness and acceptance of broadband as an asset
- Broadband expansion can drive economic development in rural communities, but there is no one-size-fits-all solution
- Innovation in fiber optic technology is driving higher performance and lower capex for service providers, but standards must ensure that networks will perform across a 20-30 year lifespan.
- Like it or not, Google is changing the game

The National Broadband Plan Needs to Reach Farther and Drive Real Value for Consumers, Communities and the Industry

The National Broadband Plan is pointing the country in the right direction, but it has multiple layers and multiple factions with diverse and often opposing agendas. The industry view is that to stimulate broadband growth, government should encourage investment and avoid excessive taxation of network services. Further, broadband deployment to remote communities should not be a losing proposition for network operators. Viewing the state of deployment empirically, we are exactly where we need to be, and in terms of the Broadband Plan's goal of connecting 100 million households by 2020, the industry is almost there. 100 million homes can likely be connected in four years under current broadband build out schemes in metro areas.

The Broadband Stimulus Plan has helped by setting goals for deployment outside of the metro cores, and by opening the possibility to forge alternate path to achieve these goals. While there is little appetite for a national network operated by the Federal government, local deployments by new market entrants and municipally-owned networks are of interest, fueled by the belief that competition is good, and that smaller communities should have options.

Municipal governments must ensure that they do not inhibit competition or create inefficiency by denying rights of way or by issuing permits based on immediate need, in a fashion that fragments network installations. Education and awareness is another key challenge for successful municipal-operated networks. Many local officials do not understand the value broadband can bring to their communities. More education is needed about the services and the economic development opportunities broadband can enable.

Municipalities need strategic plans and a comprehensive network overlay to guide fiber and other broadband deployments. They must also strive to find win-win public private partnerships or find ways to provide incentives for private sector operators to build broadband access into communities. Lafayette, LA is an example of a municipal network that has embraced this approach. The city has completed a fiber network build out and has convened a team of experts to look at how to best use its bandwidth to serve communities.

The consensus view is that there is need for more discussion, information sharing and education. The National Broadband plan needs to develop a broad vision among public and private leaders and consumers as to what The US could achieve with broadband expansion. At the same time, it must establish a credible framework for measuring the real benefits of broadband expansion; and most importantly, who pays for infrastructure, maintenance, support and future development.

Broadband Competitiveness Must Become a National Priority

In spite of advances in high-speed broadband deployment, there remains a deep concern over U.S. broadband competitiveness. Given advances in broadband innovation outside the US, and the country's lagging global position in broadband speed and capacity, the nation needs to be united in the goals of returning the U.S. to a competitive position. Competitive concerns go beyond speed, because broadband availability is driving social and economic development particularly in critical sectors such as education, healthcare, social services and commerce. The challenge is not simply to connect and provide services, but also to educate, and drive economic opportunity. Government, private sector and end-users need to embrace broadband as a competitive asset and no one entity should shoulder the entire burden of getting the job done.

Demand Will Be Driven by Consumer Awareness and Acceptance of Broadband as an Asset

Consumer demand for content and services (streaming movies, interactive gaming, online TV, etc) is driving the market. Broadband innovation is also a key driver. A useful analogy is that consumer demand is “fruit on the tree,” while innovation is the root that keeps the tree growing. Given that both factors are vital to industry success, it is not enough to simply build the network. People need to understand what broadband can do, and experience it firsthand, to realize its benefit and potential. Industry and government should seek creative and aggressive ways to promote trials of high-speed broadband services and continually work towards educating consumers about broadband in order to reach the “tipping point” - where consumers come to recognize the value of broadband access and it becomes an economic asset. Future demand is another consideration. The industry cannot overlook the fact that more than 100 million young people - the “i-generation”- will take 100mbps connectivity for granted and expect everything to be available, interactive and fast.

Rural Deployment: If You Don't Build It - They Won't Come

A principal issue in achieving broadband saturation is how to serve very low-density and remote populations. Showing ROI in rural deployments has been elusive, but it is clear that the opportunity cost to rural communities of not having broadband can be significant.

This is evidenced by the real economic development being fueled by broadband expansion. In North Carolina, the Cherokee tribe has developed strong tourism and gaming business, supported in a large way by broadband. In Appalachia, major global automotive manufacturing and distribution has relocated to rural communities because of lower land and labor costs. Broadband availability was a requirement to attract these businesses. In both cases, an absence of high-speed connectivity would have meant the absence of economic opportunity.

It is important to acknowledge that there is no “one size fits all” solution for rural deployments. Population density and proximity to larger markets vary greatly. Policymakers and the industry must wrestle with the fact that and most rural communities are not ready for FTTH. In communities that are remote or have very low population density, wireless may be the best strategy for broadband access. For example, the Sacred Wind project for the Navajo tribe in Arizona is using fiber in the backhaul and wireless (4G LTE, WIFI) for last mile.

Innovation in Fiber Optic Technology is Driving Higher Performance and Lower Capex for Service Providers, But Standards Must Ensure That Networks Will Perform Across a 20-30 Year Lifespan.

As the nation moves to expand broadband access and regain a competitive position in broadband speed, long term network reliability, durability and performance must be addressed. Countries like China, Japan and South Korea, in which government owns or heavily regulates broadband, have achieved impressive speed. However, quality issues are emerging due to the absence of performance standards for optical fiber and other network components.

On the technology innovation front, newest generation fiber coating technology, among other innovations, are enabling the reduction of fiber densities by up to 30 percent, allowing for more compact cable designs. In addition, today's bend-insensitive fibers are sufficient to reduce attenuation by up to 5mm bends. These technology breakthroughs are lowering CAPEX for network operators - particularly in MDU environments.

A key question is whether incumbent, 20-year old fiber networks can meet new bandwidth requirements. One opinion is that old fiber networks are inadequate due to the noncircularity of fibers, Polarization Mode Dispersion (PMD) and 40Gps requirements. A counterview was that PMD compensation and

improved electronics can draw more performance out of old fiber. A consensus opinion is that the industry should continually evaluate and update performance standards to address future bandwidth demand. The challenge is how to do this in a way that minimizes deployment costs for network operators so they can deploy maximum FTTx networks.

Like It or Not, Google is Changing the Game

Regardless of how one views Google's Fiber for Communities initiative, it is undeniable that the company is stimulating national and local interest in broadband. Google's "give away the network and make money on the data" business model presents an intriguing alternative to the traditional revenue from services model. Google's success could open the door to other new entrants that are more interested in how broadband expansion can fuel their businesses than in charging fees for access and use.

Google's involvement in broadband has the potential to increase its (broadband's) perceived value, which in turn would boost demand and motivate network operators to accelerate FTTX buildouts. Google's federated approach to building a network - approaching existing small internet service providers and paying them to advertise their products - adds an interesting new texture to the broadband landscape - one that will be worth watching and assessing its impact on the marketplace

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About DSM Desotech

DSM Desotech is the world's leading developer of UV-curable optical Fibre coatings, a critical component of high-speed optical Fibre networks. With more than 40 years experience in Fibre coatings development, the company holds more than 120 U.S. patents in UV-curable technology, with other patents in Europe, Asia-Pacific, Australia and Canada. DSM Desotech operates globally, with research and manufacturing facilities located in the U.S., Europe, China and Japan. It is headquartered in Elgin, Ill., USA. DSM Desotech is a business unit of DSM Resins, based in the Netherlands, and is part of the global DSM family - a world leader in life sciences and material sciences. More information can be found at: www.supercoatings.com. More information about the company may be found at: www.supercoatings.com

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