FOCUS On Broadband Wireless Internet Access
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Independent, Original, In-depth coverage of the trends and technology shaping the rapidly-evolving Broadband Wireless Internet Access industry
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--- * National Broadband - First National Broadband Wireless Internet Access / Fiber Optic Hybrid Service Provider ---

National Broadband (http://www.nationalbroadband.com) is (as far as I'm aware) the first company to attempt to provide semi-national service using a combination of fiber-optic network backhaul and Broadband Wireless Internet Access "last few miles" connectivity to its customers. While National Broadband has, on the surface, considerable potential, there are a number of troubling aspects lurking in the background. National Broadband was officially unveiled at the recently concluded Broadband Wireless World Forum 2003 conference in San Jose, CA in April, 2003, with an earlier "soft launch" at WISPCON III in Chicago in March, 2003.

Part 1 - The Rise Of The Stupid Network and The Paradox Of The Best Network

To really understand, deeply, the potential and the peril of National Broadband, a bit of background reading is required. From his seminal essay "The Rise Of The Stupid Network" - http://www.rageboy.com/stupidnet.html, David Isenberg - http://www.isen.com, has thought longer and deeper about what is the essence of the Internet than anyone else I'm aware of. Isen's premise (I STRONGLY encourage reading The Rise Of The Stupid Network, and not just once, but several times... but most won't, hence this summary) in TROTSN is that the Public Switched Telephone Network (PSTN) has grown so complex, extensive, and inflexible that for truly new services to be added requires that all the elements of the network be upgraded before any truly new service could be offered. Because it's no longer economically feasible to upgrade the entire PSTN, the PSTN is obsolete. Isen goes on to point out that the true genius of the Internet is that it is a highly simplistic (Stupid... in his parlance) network that at its core, does only one thing, and does it very well - routes packets from source to destination. New services can be added to a Stupid Network by creating them at the EDGES of the network - between as few as two users, or as many as an entire enterprise. Want to offer a new service? Post the software, users download it and thus equip themselves for the new service, and since it's "just more bits", the Internet / Stupid Network accommodates the new services seamlessly. The Rise Of The Stupid Network explains WHY services such as ICQ, Vonage, RealAudio, Peer-to-Peer file exchange can evolve so easily on the Internet, and will continue to do so in the future... dooming any hope of "stability", "standards", "installed base", etc. being nearly as potent an anti-competitive weapon by incumbents, as has been the case in the past.

The Rise Of The Stupid Network explains why the Internet is so good. The Paradox Of The Best Network - http://www.netparadox.com/ explains why it's going to be so hard to make money at the business of supplying Stupid Network services. TPOTBN is also highly-recommended reading, but to summarize, the Paradox is that a Stupid Network will be a very tough business because what you're providing is absolute COMMODITY services - "just route the bits... just ROUTE the bits... just ROUTE the BITS... (repeat). Not only is it a low-margin business (just ROUTE the BITS... remember the value-added services live at the EDGE of the network, and you're just ROUTING the BITS), but every competitor that comes into the market can take advantage of state-of-the-moment better, cheaper, faster technology courtesy of Moore's Law now being relentlessly applied to telecommunications. So, "Stupid Network Services" (now THAT's a gutsy name for a Internet Service Provider... but expect to pay a small royalty to Isenberg) is something of a race to the bottom; a relentlessly cutthroat

competition to provide the best bit/buck ratio, making the hypercompetitive disk drive and Dynamic Random Access Memory (DRAM) industries look like mere friendly jousting.

The only way to make money as a provider of "Stupid Network Services" is to provide value add where you can, inexpensively... like high reliability, open peering policies, good customer service, reasonable billing practices, and of course, lower prices. While that's some differentiation at the moment in a market dominated with wireline telephony companies whose core competencies can best be described as "service with a sneer" and "what-can-we-stick-you-with" pricing, soon enough those policies will be more the norm. The core competency of a "Stupid Network Services" provider will be to realize, accept, and INTERNALIZE that they are truly in a low-margin commodity business and to engineer the business around that reality. That means being relentlessly cost-efficient and proactive on pricing and performance. Most of all, a "Stupid Network Services" provider must be maniacally focused on JUST ROUTE THE BITS and not be distracted by "opportunities" (particularly when they're costly in time, manpower, or finances) or tempted to "lock in" the customer by implementing proprietary or special services.

Between The Rise Of The Stupid Network and The Paradox Of The Best Network is a blueprint for a new generation of infrastructure communications services. There won't be many that take advantage of such an "opportunity"; the essays make it clear that such a business will be a hard way to make money, and the money that there is to be made will be considerably less than other "opportunities" such as providing content, etc.

A number of entities - Municipal governments, rural electric co-ops, homeowner's associations, not-for-profit groups have decided that high-speed Internet access is, simply, the next utility service and should be provided essentially at cost - as is done now with electricity, water, sewer, etc. - vital services, but not much money (in some markets) to be made. Note that in providing Stupid Network Services, there is ample opportunity for value add by private entities; two examples are web hosting and email.

One of the most challenging aspects of a "Stupid Network Services" provider is connecting to customers. A "Stupid Network Services" financial model simply doesn't permit the luxury of payments to others for the privilege of connecting to a customer; if you can't connect with your own facilities, then they aren't a real customer.

Which brings us to yet another Paradox - let's call it "The Paradox Of Facilities-based Networks", which is that "Stupid Network Services" ONLY work when you're not paying someone else for the privilege of connecting to your customer... but it's near RUINOUSLY expensive to build your own Network.

Which is why those who've tried have almost all failed.

But there IS a way...

Where fiber has been installed AND is cheap and/or competitive (or can install it at REASONABLE cost AND REASONABLE timelines), use that fiber. Fiber that's installed and paid for (even if it was bought in a bankruptcy) is the very best, ever, bit/buck Internet connectivity.

But... where you DON'T have fiber, or cannot install it at REASONABLE cost or REASONABLE timelines, use Broadband Wireless Internet Access to bridge between the fiber and your customer (with preference for LICENSE-EXEMPT Broadband Wireless Internet Access.)

That last run-on sentence is a wrenching turn off the freeway of conventional telecommunications wisdom onto a narrow, rocky, fit-only-for-mules path of out-of-the-box thinking. I'm aware of only two companies who have semi-successfully combined Broadband Wireless Internet Access and fiber backbone... and many who've dismissed it as unrealistic fantasy or completely unworkable.

Part 2 - What's To Like About National Broadband

First, a disclaimer. I "call 'em as I see 'em." I've had a number of conversations with National

Broadband personnel. What I've learned in those conversations, now fully on the record (I was somewhat embargoed when I first learned of National Broadband in March 2003 during their "soft launch" at WISPCON III in Chicago) doesn't appear to completely mesh with what National Broadband is saying publicly - in public presentations and its web page. So, the following is written from MY perspective of what I understand of National Broadband's strategy and ultimate prospects.

National Broadband was founded, apparently in equal measure, on a shrewd purchase of fiber capacity, and in-depth knowledge of what Broadband Wireless Internet Access systems are capable of. The fiber capacity purchase was shrewd timing; a relatively modest-cost purchase of fiber pair on WilTel's (http://www.wiltelcommunications.com) semi-national (there are a number of states where WilTel does not have a presence) network during the time that WilTel was in or just emerging from "restructuring"... National Broadband had money, and WilTel needed money, so a deal was struck. The knowledge of BWIA came from James (Jim) Selby who, with a lot of help, built a much-admired BWIA network in Aspen, CO that included free 802.11b/Wi-Fi Internet Access throughout much of downtown Aspen.

National Broadband's overall strategy is to add BWIA equipment at selected Fiber Regeneration Huts and "Metropolitan Centers" to distribute Broadband Internet Access to communities that were previously underserved for Broadband Internet Access, or to deliver Broadband Internet Access at very aggressive pricing.

In general concept, National Broadband's strategy is workable and cost-efficient. If it could embody Isenberg's Stupid Network principles, National Broadband could leverage its relatively low costs of fiber distribution to "raise the bar" and offer Broadband Wireless Internet Access at cost/performance ratios that other Broadband service providers cannot touch. I was told that National Broadband's pricing would be as aggressive as $100/month/Mbps. Internet Service Providers will recognize that this is a startling price point considering that in non-urban areas, a T-1 line (1.544 Mbps) can easily cost $1200/month. At such prices, National Broadband or a reseller could easily begin to offer Internet connectivity of 10 Mbps or faster. Distribution of such high-speed connectivity is now relatively easy with current generations of Broadband Wireless Internet Access systems.

Part 3 - What's Wrong With National Broadband

As much as there is to admire about National Broadband, there are number of troubling aspects; enough so to cause serious concern as to whether National Broadband is truly a credible effort and whether it will be able to harness their funding, energy, and window of opportunity to be viable in the long term.

National Broadband's most fundamental flaw is that it is, at heart, NOT a Stupid Network. Because of the realities of investment funding, "big names" were needed as a "comfort factor" for investors. A spinout of Intel, with ongoing Intel backing, Tarari's (http://www.tarari.com) "Content Processors" will be installed at each National Broadband Point of Presence (POP) and be an integral part of National Broadband's network. The Content Processors are in essence acceleration systems to speed up network operations such as Secure Sockets Layer authentication, eXtensive Markup Language (XML) processing, and other such processor-intensive tasks. Microsoft added its name as "investor comfort", but its actual level of involvement in National Broadband is unclear. Microsoft was mentioned prominently in National Broadband's debut keynote speech at Broadband Wireless World 2003, but there is only passing mention of Microsoft on National Broadband's web page. In talking with National Broadband personnel, I received conflicting accounts regarding Microsoft's involvement. What I was told is that Microsoft content such as "Microsoft Update" images will be hosted on IBM Servers (rounding out the trio of big names / investor comfort) located at each National Broadband Point of Presence (POP), so that Microsoft customers connecting to the Internet via National Broadband will receive their "Microsoft Update" sourced locally, instead of that content traversing National Broadband's backbone. Tarari's, Microsoft's, and IBM's involvement in National Broadband is not gratuitous. National Broadband has a problem - their fiber network speed is 1 Gbps, and if their services prove to be popular, they could quite conceivably saturate their backbone. The Content Processors and "Microsoft Caching" (curiously, no content caching, such as Akamai, has been mentioned to date by National Broadband) will help stave off potential saturation - to some degree.

It remains to be seen if the added complexity and cost will ultimately prove to be more help than hindrance in the long run in light of Stupid Network / Paradox of the Best Network principles.

A second major point of concern about National Broadband is that their sales model is at best mixed, at worst badly muddled. National Broadband plans to sell to both wholesalers and end users. Wholesale customers will be established Internet Service Providers (ISPs) with an established customer base. In areas where there is no dominant ISP, National Broadband will sell Internet access directly to customers. It is very, VERY tough to make such a mixed strategy work.

A more subtle concern is that National Broadband personnel have made statements, including VERY public statements during the aforementioned keynote, and then contradicted themselves later. One case in point is that initial descriptions of National Broadband's capabilities were stated that "... we can offer Internet access at any one of our POPs" as soon as our radios are in place. Some time later, statements were made that revealed that the fiber that National Broadband purchased from WilTel is NOT "lit fiber" - it is "dark fiber" - the fiber that National Broadband bought does not have active repeating systems in operation. To activate ("light") National Broadband's entire network would require such regenerators (to be furnished by MRV Communications) at each of the National Broadband POPs. Not only does National Broadband have to install regenerators, it has plans to do so only in phases, lighting up segments of its available fiber on a highly selective basis. This reality is a vivid contrast to the "we're ready to start taking orders for bandwidth" posture that National Broadband initially promoted.

National Broadband offers hints on its web page, and more directly stated in conversations that it is unsatisfied with existing BWIA solutions and will be developing its own Broadband Wireless Internet Access technology, possibly in partnership with BWIA vendors to develop an OEM product to National Broadband's specifications. Having their own technology built-to-order is an audacious undertaking for ANY Service Provider... such an approach simply does not scale and presents far too much risk for far too little reward in a industry such as Broadband Wireless Internet Access in which new products are emerging every month (quite literally.) If one builds its systems to work only with proprietary solutions, it is in very serious trouble when a competitor uses off-the-shelf technology to compete on a more cost-efficient basis, and because of the proprietary solution you cannot use such new products. Referring to the earlier discussion of the characteristics of a Stupid Network, customized, proprietary equipment is in diametric opposition to the principles of a Stupid Network. BWIA vendors are pouring so much investment into the development of new BWIA systems that a service provider's only hope to remaining cost-competitive more than a few years is to position themselves to take advantage of new technology and price/performance points as they rapidly emerge. In short... however attractive in the short term it is for National Broadband to "get exactly the radios it wants, built to order"..., along that path lies ruin in the long term.

Summary

There's much to like and admire about National Broadband's approach. Its business model is relatively unique at the moment. If National Broadband begins to exhibit success, it could rapidly attract competitors; there is lots of dark fiber laying unused in conduits along railroad tracks, public highways, gas pipelines (WilTel's original distribution model), and off-the-shelf Broadband Wireless Internet Access systems grow more capable, cost-effective, and easier to deploy by the month. While it was a large leap to start the first fiber/BWIA Broadband Service Provider, it won't be nearly such a leap for the second... and fifth... and tenth. It will be interesting and instructive to see if National Broadband can capitalize on its early lead before the inevitable competition emerges.

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--- BWIA-related Events Of Note ---
* 802.11 Planet - June 25-27, 2003, Boston, MA - http://www.jupiterevents.com/80211/spring03/index.html
802.11 Planet is targeted mostly at "indoor" applications of Broadband Wireless. I will be chairing

a panel discussion on Disruptive Hotspot Technologies from 4:00 PM - 5:00 PM on June 27. My co-panelists are Phil Belanger, Vice President of Marketing for Vivato, Martyn Levy, Chairman and founder of RoamAD, and Wanda Posehn, VP Canadian Sales for Wi-LAN Inc.
* WCA 2003 - July 8-11, 2003, Washington, DC - http://www.wcai.com/event/03general.htm
This will likely be the defining event for 2003 for the overall Broadband Wireless Internet Access industry. It was inspired of the WCA to move their annual event to DC to be within easy commute range of lawmakers and FCC staff, and reschedule (it's traditionally held in August) it while Congress is still in session (DC largely shuts down during the month of August while Congress isn't in session). In the wake of seminal events in the Wireless industry last year and this year, such as last year's Spectrum Policy Task Force, introduction of bills requiring allocation of additional license-exempt spectrum, and increasing awareness of Broadband Wireless Internet Access in general, this event will likely be a huge success for exhibitors and attendees alike. I will be attending, but not speaking.
* Broadband Wireless East Conference & Expo - September 25 & 26, Baltimore, MD - http://www.scievents.com/bwwEast03/
Shorecliff Communications is extending their annual Broadband Wireless World Forum into a semi-annual, apparently bi-coastal event.
* WISPCON IV - October 27-29, 2003, Dallas, TX - http://www.wispcon.info/
Dates are tentative per the Part-15.Org WISP discussion list. Targeted specifically at the small-to-medium Wireless ISPs, this conference brings together those that are WISPs, those who want to be WISPs, and the equipment and service vendors who wish to aid and abet them in deployment of WISP services.

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FOCUS On Broadband Wireless Internet Access is founded upon the following tenets:
1. Internet technology is becoming the foundation for nearly all communications, commerce, and entertainment services;
2. For Internet access to be truly usable, always-on Broadband Internet access is required;
3. By the end of the first decade of the 21st century, Internet access will be ubiquitous;
4. In the ìlast mileî, wireline-based technologies and systems will generally prove to be insufficient or not cost-effective to provide ubiquitous, always-on, Broadband Internet to most homes and businesses;
5. In the near term, Broadband Wireless Internet Access in all its forms ñ Sub 11 GHz, Above 11 GHz, Free Space Optics, Ultra Wideband, Licensed, License-exempt has emerged as the most likely technology to provide cost-effective, ubiquitous, always-on Broadband Internet Access.

FOCUS on Broadband Wireless Internet Access is written in an informal, easy-to-read style, with an emphasis on clear explanations of why a particular company, product, or development in the Broadband Wireless Internet Access industry is significant. Each issue contains a number of original, in-depth articles and news stories. FOCUS is a just-in-time, short-lead-time publication, distributed via email.

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