



Multiple Broadband Connections To Your Home/Business

By Bruce Bahlmann, CEO ■ *Birds-Eye Network Services*

It used to be that if you had a single broadband connection to your home or business you were the talk of the town. How times have changed. Today our reliance on broadband has reached the point where a single broadband connection may not be enough. What are the options available to people who need a readily available broadband service... and more bandwidth too? Learn how to build your own multi-broadband capable home.

Currently, broadband service providers have their hands full just trying to maintain service levels, as the costs to drastically improve service quality and reliability are prohibitive. As a consequence, the overall quality of their service has begun to slip. Although few people other than power users have noticed a change in their service quality, availability or reliability, the trend of broadband service providers has been to gradually ratchet down their service levels delivered to their subscribers. These changes have quietly taken place over time such that today few guaranteed features actually differentiate the two leading broadband services (DSL and cable). Basically, what you see is what you get and there are absolutely no guarantees.

In fact, it's kind of scary to think that if you fully take advantage of what your broadband service provider gives you, then they may come back to you and the end of the month and charge you a usage penalty or possibly terminate your service. For example in the TimeWarner Cable service contract it clearly states the following:

"Subscriber acknowledges and agrees that Road Runner and Operator shall each have the right to monitor

"Buying more bandwidth will not continually deliver you more bandwidth rather just the opportunity to access additional bandwidth when it is available."

Subscriber's "bandwidth consumption" (i.e. aggregate volume of data that may be sent or received) at any time and on an on-going basis, and to limit excessive bandwidth consumption by Subscriber (as determined by Road Runner and/or Operator) by any means available to Operator or Road Runner, including suspension or termination of the Road Runner Service."

Need more bandwidth? Surely your broadband service provider would love to sell you more (at an additional cost to you) but can they really do that? Meaning, can broadband service providers really deliver continuous tiered bandwidth services to your home? The correct answer is "it depends" but generally the answer is "no".

Buying more bandwidth will not continually deliver you more bandwidth rather just the opportunity to access additional bandwidth when it is available. Since this additional bandwidth all comes with no guarantees, why buy more bandwidth? Consider the return on your investment if your service bandwidth is outside your control (dependent on network congestion among other things) and you don't have any reliability.

Reliability = Diversity

It is unlikely that any single broadband service provider will deliver a highly reliable service to your home or business. In fact all broadband service providers use

multiple Internet suppliers themselves. So if you're heavy into online gaming, stock trading, or telecommuting you're basically at risk of losing your broadband connection at any time without warning and without much (if any) recourse. The only way to achieve reliability is to seek at least two different broadband connections from two different providers using two different physical connections. Today, an increasing number of US homes have the capability to receive broadband services from one or more service providers beyond their cable or telephone company. Some examples of these companies include:

Satellite: StarBand (www.starband.com)

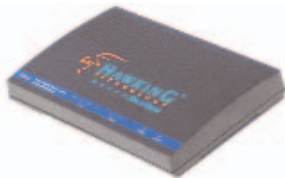
DirectWay (www.directway.bz)

Wireless: Usurf (www.usurf.com)

While each of these providers are generally no better than the broadband service provided by telephone or cable, they do serve as important alternative connectivity options which will be discussed later. Innovation is also hard at work with respect to creating new ways to deliver broadband connectivity. For example, using power lines that provide electricity to your home is actively being pursued as a transmission medium for residential broadband service. Healthy competition will allow broadband data service to become more of a commodity rather than a luxury where by lowering prices for bandwidth and allowing consumers to realistically exploit multiple connections into

their home.

How can one exploit two connections today? A new series of consumer routers (also called residential gateways) are currently available that provide at least two Wide Area Network (WAN) ports. These products are listed below:



Model: **FR24** (Buy NOW)
Hawking Technologies
6A Faraday
Irvin, CA 92618
888-662-8828
info@hawkingtech.com



Model: **Pro800turbo**
Nexland
1101 Brickell Avenue, North Tower -
2nd Floor

Miami, Florida 33131
888-639-5264
info@nexland.com

Such devices allow you to connect two broadband modems to your home network where by enabling your personal computer(s) at least two different paths to its desired destination. The first option (FR24) gives you basic reliable connectivity and the other option (Pro800turbo) does everything the first option offers plus load balancing. Load balancing is important as it allows you to exploit the power of both connections increasing your overall bandwidth capabilities and improving your experience. The Pro800turbo allows you to essentially turn two low tier (least costly low bandwidth) broadband services into a single reliable high-speed service—all for a price competitive to a higher tier non-reliable service.

It is likely that it won't be long before residential gateways provide "route intelligence" software capabilities. Route intelligence software (or route control) can continuously measure round trip times to your frequented destinations and then select which broadband service provider (or ISP) to use based on shortest/quickest path—a terrific feature for stock traders

and online gamers who desire the lowest possible latency service at all times.

Route intelligence will also become useful as broadband operators seek to charge by the bit instead of their current service-pricing model that sells you flat rate bandwidth service with an increasing number of constraints and conditions. "When" broadband service providers move to a charge by the bit model, high bandwidth subscribers must be prepared to move to a smarter residential gateway that has at least two WAN ports. In a pure charge by the bit marketplace, the cost of bandwidth will be priced in tiers by time of day, day of the week, and even day of the month. These prices will greatly vary from one operator to the next - especially among local, state, national, or global bandwidth suppliers. The route intelligence software will maximize the cost efficiency of subscriber's bandwidth use allowing subscribers to exploit each ISP's pricing plan.

Essentially, route intelligence will allow the residential gateway to rate each possible path and then make a decision to route the data to a particular WAN connection based on which is the least cost alternative. Route intelligence could even consider multiple criteria before making a routing decision. Such a capability could simultaneously consider such things as price, required latency, or minimum necessary bandwidth, etc. before routing data. It's the same technology that large Internet Service Providers (ISPs) use to reduce their transport costs and soon it will be in the hands of residential consumers allowing them to lower their overall bandwidth usage costs.



Figure 1.0 Dual WAN Setup

If you're seriously considering adding a second broadband connection to your residence you may find Figure 1.0 useful. Figure 1.0 shows an example dual WAN



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setup - everything within the dotted box resides within a subscriber's home. In this setup there are two different modems connected to two different service providers. In this example, one broadband service provider is DSL and the other is Satellite. The importance of using Satellite over for example cable is the fact that cable and telephone typically traverse the same utility poles. Thus, if something catastrophic happens to a utility pole, both telephone and cable services will likely be affected where as Satellite would be unaffected. To achieve maximum reliability one should consider complementary broadband services that not only work similarly but also take drastically different physical paths in connecting ones residence. The outputs of each modem are connected to each of the WAN ports on the dual WAN router. All routers provide some number of switch or hub ports that will accept connections from one or more personal computer(s). The last com-

ponent shown is an Uninterruptible Power Supply (UPS). Ideally, a UPS should provide power to both of the modems as well as the router. In this way, even if power is lost, your broadband connection will remain available.

Building a reliable Internet connection to the home also opens up an endless number of service possibilities. For example, with this type of connectivity your not forced to take email services from your Internet provider rather you can get this elsewhere from any provider that will guarantee something like an email address that will never change or provide you the best possible SPAM protection, custom web hosting, voice over IP service, etc. A reliable connection isolates you from a dependency on any one broadband service provider and allows you access to an open market for any Internet delivered service you desire.

With at least two sources of Internet connectivity you'll soon find your need

for premium levels of services from any one broadband service provider is eliminated. When each home reaches a point where broadband data services are reliable and cheap many things will change with respect to a customer's need or dependency on the last mile provider for anything more than physical connectivity. Again, nearly all-residential broadband service is "best effort" and even those providing Quality of Service (QoS) will balk at the network reliability issue. Therefore, if you're looking to upgrade your service don't rule out the possibility of diversifying rather than upgrading. It works, it's reliable, and best of all, it's fast... ■

About the Author

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