By Hunter Newby

Physical Limitations

We're already a few months into 2007 and it seems that the same old obstacles challenge service providers far and wide. Besides the obvious and daunting challenge of rapid technological change and the fear and associated financial risks that come along with making a bad decision, the more obvious challenge is quite simply — awareness. Yes, that's right folks, if everyone in network planning and architecture knew what had already been done to near perfection by someone else before them we would all be much better off and further along than we are. Sounds funny, right? Just think of all of the mistakes that would have been avoided and the time and money saved.

It seems quite logical to approach issues in this way no matter what they are. Collective thinking and reasoning, the conveyance of knowledge to any and all that plug in to it. In a very specific way, Wiki's are helping to build this collective of information. It's not all there yet, but it has begun. A big part of the ability to share information is not just the gathering of it, or the knowledge of where to put it so that others can access it, but the existence of the network itself. It is because the network exists that it is used. The irony is that it takes a shared network, the Internet, to learn that the key to quality and security for business-class VoIP is to build your own private IP network.

Building a private IP network sounds like it may require digging up the streets, but it does not really mean that. It may also seem like an extreme thing to do to solve the problems of quality, security and congestion, but actually it is not. It is very low-tech and simple. More importantly, it is happening today, right now and it works great. Private IP networks are those that use IP over inherently secure Layer 2 (transport) circuits such as Ethernet, clear-channel TDM, or even wavelengths. The point is that businesses buying wide-area services want quality and security and this is the best way to deliver it. If you are a VoIP service provider looking to sell VoIP as a service, build your network in this way and you have a no-brainer value proposition. If you are a hardware vendor looking to sell gear to businesses, or service providers you have a similarly strong value proposition. Recommend a private IP network design in your proposal and you too can leverage the built-in benefits without having to go to great lengths presenting software and application-layer security as the only solution to the public Internet threats. If you are an enterprise CIO, or network manager and you need to hit these points, then think low in the stack, stay out of the cloud and your issues will clear up considerably.

As a matter of fact, in the not-too-distant future, video applications will totally clog the public sewer of the Internet and force users to acknowledge the issue and find an alternative. There's nothing like a good old-fashioned clog in the pipes to raise the awareness of a problem down the line. The ISP backbones of today were built to handle the low bandwidth applications of email and html on the web. Now we have P2P video and there goes the neighborhood. In a similar way back in 1997 when AOL really took off, they did not have enough dial-in ports for all of their subscribers. This led to busy signals, getting "kicked-off" the Internet and a rather slow experience while online due to the congested backbones of the day. In 1997 it was a big deal to have a fully meshed DS3 network. Today 10 Gig isn't enough on the major routes. AOL solved the problem by getting thousands of numbers assigned to them by MFS (And in return WorldCom's John Sidgmore — who was really Mr. UUNet — got to buy ANS from AOL).

One thing is for sure, it can't be stopped. We must adapt just as they did, but there is an even greater awareness that needs to be derived from all of this. Below the transport, below the access, there lies the physical path itself. The real threat to a prolonged service disruption is a cut that can't be repaired. If you're a service provider and this happens you're out and your customers may walk. If you're an enterprise your business will take a huge hit and if the network is your responsibility you will probably get fired. Do not think that this can't happen. It just did in Southeast Asia as a result of an earthquake that took out several undersea cables and the after-effects are still being felt. Just to recap: in many places in Southeast Asia there was no Internet access, no international calling, no ATM (bank machines) and other financial transactions — for weeks.

Many carriers share the same trenches around the world due to shared costs savings and moratoriums on building new cables in certain places. This may have been convenient, but it is very detrimental for all of our futures if we do not pay attention to it. This is not limited to undersea cables, but also applies to fiber and copper that is single-threaded into and out of buildings all across the world. When thinking about what your network plans are for 2007 make your first order of business the first layer in the stack — Layer 1. Just ask two simple questions. Where's my path? Where's my backup? Ask your carrier and demand an answer. If you are a carrier you had better go find out. If you have physical diversity you are in business and worlds away from your competitors who are not. In order to take advantage of that competitive information you just need to be more aware. **IT**

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