CHALLENGES IN BANDWIDTH AND TARIFFS*: One Approach For Exerting Downward Pressure on Cost and Accelerating Global Connectivity For The Educational, Scientific and Healthcare Sectors*

Curtis T. White, Esq.
President, Allied Communications
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Thank you for the invitation to appear this morning and share some of my thoughts on the twin issues of bandwidth and cost – particularly for content providers in the educational, scientific and healthcare sectors. The good news (in a phrase) is that the regulatory environment is undergoing liberalization and change. The bad news is that the change is moving at a pace far beyond that initially expected or projected. The really bad news is that the gap between the industrialized and developing nation sectors is widening even as teledensity disparities are being reduced.

In our few moments together -- at least in this setting -- I would like to focus on a few basic points:

First - the distance from whence we have come (i.e., what has occurred in the global telecom sector over the last couple of decades), and emerging patterns in the global community to increase teledensity, and the accompanying telecom initiatives;

Second – the regulatory morass and how the present level of confusion affects (often negatively) tariff structures and costs; and

Third – how these factors inhibit the reach of the Internet, particularly in the targeted sector (especially for this community and among your global colleagues/partners in the developing and emerging nation sectors).

Finally, I would like to discuss one approach for possibly exerting downward pressure on overall costs in the near as well as longer terms.

Historical Context

The idea that access to information promotes or otherwise opens doors for economic and social development in not a new concept. In 1984, the Commission for Worldwide Telecommunications Development (headed by Sir Donald Maitland) published its *Missing Link* Report. That watershed document highlighted the lack of telecommunications infrastructure in the developing country sector and, in doing so, explained how the absence of such capacity and infrastructure slows economic growth. While the report ultimately became a guidepost in the push for global network expansion, it was limited (unfortunately) to the issue of access to telephones (voice access), as opposed to today's wider perception of information communications technology (ICT).

The International Telecommunication Union picked up on this theme and, in 1994, initiated its "Right to Communicate" project, which broadened the access concept laid out in the Maitland Report into one

encompassing the Internet. Now regarded as the NEW *Missing Link,* emphasis in this effort is on the expansion of Internet connectivity (and broadband throughput) which, coincidentally, serves as the centerpiece of the upcoming World Summit on the Information Society (WSIS) slated for 2003 (Geneva) and 2005 (Tunis). (*See www.itu.int*)

It is probably helpful here to review some of the global statistics that helped persuade the ITU (as well as the earlier Maitland Commission) to highlight the disparity in telecommunications access, and see what trends we can glean from the last 10 years of development. Benchmarking the period 1991 – 2001, we are able to observe the following:

Total Lines (Wireline and Mobile)

1991	49 per 100 developed nations
	3.3 in emerging nations
	1.1 in least developed countries
2001	121.1 in developed nations
	18.7 in emerging nations
	1.1 in least developed countries

Key: **Developed** Iceland, Norway, Switzerland, Canada, USA, EU, Japan, Australia, New Zealand, Hong Kong, Rep of Korea, Singapore, Taiwan-China. **LDC** refers to 49 least developed countries. **Emerging** refers to all other countries

If we are guided by the earlier Missing Link assessment (Maitland Commission Report), one could argue rather persuasively that we are narrowing the teledensity (voice) gap. However, upon closer inspection, we find it instructive to focus on two opposing facts, viz: (i) while there is a substantial *decrease* in the gap between the developed and emerging countries in access (from 15/1 to 6/1) (voice services); (ii) there is a corresponding and significant *widening* of the gap between emerging nations and least developed countries (from 12/1 to 17/1).

In sum, although we are advancing in one respect, we now find that the majority of the global community is falling farther behind in the new standard of information access. Moreover, the *Missing Link* (voice access) described in the Maitland Report has resurfaced in another form: the Internet Digital Divide (especially with respect to quality Internet connections throughout the global community). It should also be noted here that this new Missing Link is inherently more difficult to tackle, and one considerably more time sensitive.

How Did We Tackle Reforms And What Are The Consequences (The Regulatory Morass)

Competition in telecommunications is a buzz word (or phrase) that seems to have been around forever. Not so. It was barely more than 20 years ago (January 1982, in fact) that the bellweather event that triggered telecom competition (the AT&T consent to break-up) was

hammered out. The Decree itself achieved formal legal status – with Federal District Court oversight – in 1984, or less than a 20 year period from where we are today. So – the time has been short, but the journey has been fast-paced, and one often clouded with a maddening swirl of events.

Shortly after the Consent Decree (AT&T Divestiture) took effect, the U.S began to study (seriously) the possibility of auctioning telecom licenses, which (with Congressional approval) culminated in its first auction in 1995 (for narrowband and broadband PCS) – a first in the global community.

For those of you who are Supreme Court Watchers (or if you simply had occasion to read the paper a couple of days ago on the Court reversal of the FCC's $4.6 Billion NextWave auction dispute) you will know we are still trying to "Get It Right". [NextWave explained]

Almost immediately after auctions commenced, the U.S. Congress passed the 1996 Telecommunications Act (sometimes affectionately known in the Washington area as the Lawyer's Relief Act), which contained, among others, a provision directly relevant to any discussion of global internet costs and connections, viz: Interconnection (or attaching to an Incumbent's Network). This is the area of the law that has spawned considerable angst, arbitration and litigation, and – as with auctions – many problems persist.

Let's examine a scenario to highlight the interconnection problem. Country A decides to dissolve what we, in the past, called the PTT, and sell licenses to new entrants. These licenses carry certain rights and responsibilities, such as the right to handle inbound and outbound gateway (international) connections for specific services (satellites, landing rights, etc.), as well as domestic services. As is often the case, the PTT transforms itself into a private (competing) entity, with certain rights and customers set-aside for it, along with certain obligations such as extending the primary network and capacity. Particularly significant for our discussion here is the fact that the initial ISP as well as the Internet Backbone Provider (IBP) are generally established and controlled by the incumbent. A second company (new entrant) appears, and typically purchases a wireless license via some auction process. That license may or may not include gateway rights, but where it does such rights are likely delayed for some period of time (3-5 years). The license for the incumbent (old PT&T) typically carries "sun-set" provisions that are designed to automatically terminate certain rights of exclusivity it may have been granted. Once the liberalization process is completed, competition (in theory) is to ensue, with the public then reaping the natural benefits (higher degree of access, competitive pricing, accelerated deployment, new technology services, and a movement over into the information society).

Great script – but the reality of implementation paints a more sanguine picture which (unfortunately) contributes to the growing Internet gap and, in particular, the artificially high rates and tariffs incurred by you and your end users in the targeted sectors.

Underlying this kind of licensing scheme is the faulty notion that (i) competitors can and will find common grounds to resolve their differences in such areas as cost of network elements, earth station (or cable) rights, bandwidth and (ultimately) establish level playing fields (i.e., the leasing party will pay no more than those costs incurred by the incumbent for using the same part of the network); or (ii) where common ground(s) cannot be found, the regulatory policies and governing bodies (or courts) will provide quick resolution. Need I say this simply is not the case.

Two additional points. First – the U.S. model of interconnection -- just as it was done in auctions (and often without a determination of appropriateness) -- has become a general standard. Second – the WTO accord of 1997 (on Basic Telecommunications Services) adopts the U.S. approach as the global model for interconnection). Yet here in the U.S. (the source of the model) we are still in the throes of seeking solutions, which now involves all three branches of our government (legislative, judicial and executive (via our FCC, the responsible regulatory agency).

In a phrase, how can we reasonably expect countries wrestling with liberalization and new competition (and overburdened, newly established regulatory bodies) to fare any better than we have managed to do in this complex, highly muddled regulatory area?. The short answer, of course, is that we should not.

Pricing Considerations For The Internet

All of you have "cost" points in your collaborative exchanges. This includes, but is not limited to, ports and local loops, IBP services, gateway transit and interconnection interface in recipient country(ies). These costs may be bundled or priced separately, and your foreign partners face these and, perhaps, even more charges on their end.

Many of you may be familiar with the Internet pricing study commissioned by the UK Government (its Department for International Development) in 2001, which focuses on the cost of the Internet in the developing nation sector (there covering both Emerging and LDC categories). Although the countries treated to detailed analyses or case studies were from regions outside the America (i.e., India, Nepal, South Africa, Zambia, Cambodia and Uganda), the authors nonetheless used global data in arriving at their findings. (*See* Antelope Consulting DFID Internet Cost Study) www.clairemilne.btinternet.co.uk/telecommunications_development/DFID).

A number of factors are particularly relevant to our discussion here, and I would like to share a sampling of some as a springboard for our Q&A session. First, however, the study was conducted on certain predicates and/or concerns, including:

1. Whether competition (where it exists) functions adequately for low volumes of Internet transit traffic.

2. A widespread belief that one of the key barriers to Internet connection is the high cost of access and, in developing countries, is well above that in the developed world (and prohibitively high for most potential consumers).

3. A consensus on the need for liberalization of telecom markets in the developing nation sector.

Some Findings From the DFID Study

A. ISP costs generally account for under half of end user costs, with TELCO CHARGES (especially for higher bandwidth users) comprising the greater portion.

B. International connectivity is generally in the range of 20% to 35% of overall ISP costs;

C. ISPs usually purchase global connectivity (ultimately provided by international backbone providers), bundled with international leased

circuits needed to reach the IBP's network access point. NOTE: Most did not know, or were unwilling to say how the price paid was split between those two elements. But evidence available to the authors suggested that global connectivity usually accounted for less than 10% of the total price.

D. There were categories of access, i.e., local and national. For local services, the calls were generally consistent with those in other developing countries. However for national call access, and business users with dedicated lines, the costs vary widely and are subject to significant overages. NOTE: This overage reflects historically high levels of charges for domestic leased circuits and the continuing telco domestic fixed network monopolies (or near monopolies).

E. Dial-up users outside main cities often pay for LD charges. Before tariff rebalancing, such rates can be very high, and this element is likely to dominate the user's bill.

Interestingly, cybercafe prices tended to be among the lowest of all in-country Internet customers (due apparently to high utilization even with high output costs).

Now For Some Trends (again Based on the Study)

1. The rapid consolidation in the market (along with the implosion in the DotCom world) is widening the distinction between IBPs and ISPs.

2. Internet Agreements are becoming increasingly more complex and likely to include provisions for mutual compensation or "settlements", highlighting the industry-wide move from peering towards paid transit. This is unfortunate since, as the study points out, peering is cost effective, distributes the costs and benefits equitably with the geographic coverage of the peering agreement, promotes similar network infrastructure with respect to both geographical coverage and network quality, facilitates flexibility in changing terms; requires the development of similar protocols, filters for non-registered routes, default routes of last, and a requirement to announce only their own customer routes.

3. There is increased concentration on certain international routes, dominated by a few large IBPs, where the cost of international leased-line connectivity remains high.

4. There is potential abuse of market power by dominant backbone operators in the transit market. (This is heightened by the fact that peering agreements (where they exist) are kept private and, if shared, the sharing partners are likely required to sign NDAs).

5. Finally, with the move towards paid transit, there is a greater need for transparency and guidelines for interconnection in the industry.

Even with this litany, the good news is that Internet markets continue to grow and – as competition takes hold – prices are expected to fall.

The authors also suggested policy changes they believed would help reduce costs and accelerate connectivity, including:

1. Sharing of revenues paid by users between carriers and ISPs (such as settlements that apply in the international voice market).

2. Liberalizing of telecom regulation, with a special focus on transparency, independence and effective competition for both international and domestic leased circuits, and permitting IP Telephony.

3. Developing alternative, lower-cost technologies, with a focus on wireless and cheap terminal equipment; and

4. Monitoring the competitive situation for the supply to developing countries of international bandwidth, and promoting competition by helping developing country ISPs obtain best available buys (another form of aggregation).

OK – so now all of us know what you have been discussing this entire conference – that we need to develop mechanisms for addressing artificially high rates of interconnection and transit, and guaranteeing your future ability to sustain broadband connections with your foreign user groups and partners.

While I believe the DFID suggestions are timely and accurate, they will require long term commitments by governments, their advisors, international organizations and even consultants at the grass roots level.

Put differently, they are likely too cumbersome for those not in the business of providing such advice and counsel – probably most of you who are engaged in other full-time pursuits. BUT – the educational, scientific and health care sectors do have a role in this play which could yield early benefits if it is done as a team effort.

SPORTS ANALOGY – There is some little team up the road called the Tampa Bay Something (probably not too popular in this part of the State). At any rate, that team emphasizes (apparently above all else) a Team Plan and a Team Effort. That is precisely what we should do – *Plan the Work and Work the Plan,* i.e., not wait for the regulatory problems to sort themselves out; nor should we wait for the market to settle down from its present level of consolidation before seeking solutions. Rather – you should take a proactive stance, and develop a plan that is creative, and one highlighted by CLARITY, CONSENSUS AND COOPERATION.

Query: How many of you are familiar with the Universal Service Fund (which, of course, existed long before passage of the 1996 Act, but gained its present notoriety as a result of that legislation).

In a nutshell, it led to the creation of the USCA (Universal Service Administrative Company). USCA maintains and administers the USF for Schools ($4.85 Billion) as well as the Rural Telehealth Program ($400 Million). [$388 Million left].

In preparation for this conference (and because of licensing efforts in which we are involved) I had conversations with a couple of wireless carriers regarding transport. The questions related to coverage (which was generally known) and whether they had humanitarian rates (or, more precisely, E-Rates). The Carriers (Intelsat and Boeing) did not have such rates, but have not summarily dismissed the idea of some form of discount.

What are the likely practical outcomes if such a tariff is considered and adopted? At least two, and both are positive: (i) it could reduce (substantially in some instances) international carriage, thus reducing front-end costs for all partners, and (ii) perhaps of greater importance, it could aid in the establishment of a similar in-country rate, which would reduce (again substantially) the costs incurred by your foreign partners. This is not far fetched for at least four reasons.

FIRST – The ITU is actively promoting Universal Service as part of its vision of the "virtual" future, and is aggressively seeking solutions that portend to narrow the "digital divide".

SECOND – This concept has probable relevance for in-country regulatory authorities, regional telecom organizations and the international community (all potentially supportive of the concept).

THIRD – it is the type of issue that permits (no – it Requires) leverage and work on both sides.

FOURTH – it is do-able in the sense that it merely requires the consent of a few partners.

Bear in mind that even if the effort proved unsuccessful, you would yet reap benefits since (i) the effort would forge a closer working relationship between you and your foreign partners, and (ii) the collaboration may lead to other solutions that are more country-specific or localized in nature.

And Finally – we (at Allied Communications) have such confidence in the concept that we have begun to pursue such an approach in one of current licensing projects. We urge you to consider this or some other proactive approach to accelerate broadband connectivity to your partners, and to do so at reduced and competitive rates.

I thank you for your time and attention, and look forward to our discussions throughout the remainder of the conference.