

# Pipeline

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[www.pipelinepub.com](http://www.pipelinepub.com) Volume 5, Issue 5

## QoS? Show Me the Value!

by Barbara Lancaster and Wedge Greene

*"Show me the money!"  
- the movie Jerry McGuire*

In a time when the world's attention is focused on turbulence in the financial markets, it might be good to look at financial strategies in telecom. We find reasons for traditional service providers (telcos and cablecos) to review their strategic plans for future revenue growth. It could be that too much reliance is being placed on charging extra for higher QoS and more bandwidth, at the expense of developing truly novel services. Are these providers headed for the same cliff as the big investment banks? Not yet – if the industry reacts intelligently. But this requires change in current strategic plans.

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## A Two-Sided Sword?

Some are hoping that profitability will flow from a strategy called the "two sided model." In this revenue strategy, one side is the Selling Enterprise wishing to sell its content, goods, or services via the internet, and the second side is the Consumer of those goods or services. The Sellers are charged for unique access (a plurality of

methods) to “owned” Consumers and for guaranteed QoS for access to the universe of consumers. Consumers pay for communications access and for the goods and services they consume. The service provider also expects to do the billing for these transactions and earn a transaction fee from the Seller for doing so. At first glance, the two-sided model put forward by Telco 2.0™ makes some sense: Seller through service provider to consumer: content product flows down the pipe, some dollars flow back up and enough get stuck in the middle for the service provider to thrive. Yet, so this story goes, this marvelous new income strategy is threatened by “evil” Over the Top service providers (OTTs) who are not paying their fair share for network traffic and valuable access to users. Really? Think this through a bit more carefully, and as our analysis shows, this so-called “two sided model” is just about indirectly raising the cost of access - and potentially alienating customers.



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From an external viewpoint, this revenue model appears as if service providers are imposing a special tariff; we find it hard to discover where value is added, which would merit those extra fees. Instead, some are making rather bald-faced threats: Pay more, or be subject to throttled access, poor QoS, or even blocked access to your site. Guarantees of better service at higher rates are simply a nicer way of saying you'll get bad service if you don't pay up.

### **The QoS Quandary**

QoS was originally a given in telecom networks. So charging extra for QoS is something of a quandary. Will the QoS tariff be perceived as (1) a fee for enhanced quality or (2) blackmail to avoid being throttled? How likely is it that tiered charging will provide long term sustained revenue? If every transaction is special, then nothing is special, once again adding no value to earn higher rates. Furthermore, the costs inherent in applying differing levels of quality to each transaction can be significant. Comcast attempted to use traffic throttling to police network quality when bit torrent traffic clogged their network. This practice was slammed by customers, market, analysts, and regulators. No way will the public and regulators let providers throttle “by kind of service” to stop distribution of movies, TV, and

music from competitive sources. Comcast is now turning to a charging model based on volume. We expect more of this and see this as a legitimate application of Pay for Use.

These OTT service providers could be the very biggest customers of telco, after all, they don't want to run networks, they want to sell their services. But this threat of degraded service, or even outright blocking of access to their web site, is pushing these "super large" customers to explore other options. In trying to figure out how to get out from under these threats, some will undoubtedly become competitors to the service providers.

It is not just predatory service provider practices (or should we say, their quest for revenue magic?) that are driving towards a potential crisis. Some is caused by the "Unintended Consequences" of the regulation of the Internet and, specifically, the hard to grasp concept of today's Peering arrangements. These also represent a loss of revenue for some service providers.

### Peering Inside Peering

There is a lot of misunderstanding about Internet peering and the establishment of tiers of peers. Tiers are not gradated levels of size in the Internet, even if there is a correlation of size and the tier one peers at. Tiers are groupings of equals or rather equivalents.

**"Peering** is voluntary interconnection of administratively separate Internet networks for the purpose of exchanging traffic between the customers of each network. The pure definition of peering is settlement-free or "sender keeps all," meaning that neither party pays the other for the exchanged traffic, instead, each derives revenue from its own customers." [Wikipedia]



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Networks are often illustrated as connection points with a cloud in the middle. For a very long time, the telcos owned pretty much everything in the illustration. In the world of the Internet, such a drawing is not network architecture, it is a misleading

cartoon. With the Internet, traffic enters via ISPs. It transits various elements in the access network until it reaches a peering point and then skips to a different network. It is not a cloud; it is truly a web of backbone lines between cluster zones where traffic is exchanged. The network as cloud in the middle is an urban myth.

"In [Internet] Peering: "like" carriers of Internet traffic interconnect without the exchange of fees, as long as the traffic in and out are equivalent. The "Tier Hierarchy" is used to understand political and economic motivations of networks in relationship with whom and how they peer. In theory, "Although there is no go-to authority which has defined the "tiers" of Internet networks, the most common definition [of Tier 1] is: A network that can reach every other network on the Internet without purchasing IP transit or paying settlements. By this definition, a **Tier 1 Network** is a Transit-Free network. But not all Transit-Free Networks are Tier 1 Networks. It is possible to become transit free by paying for peering or agreeing to settlements." [Wikipedia]

Most of these peering arrangements are proprietary and confidential, so it is difficult to determine who runs a transit free network. But the important distinction for peering, going back to NSFnet, is that of transiting traffic; bits go in one side and out to another carrier. Peering points become very important landscape. Location. Location. Location.

Peering is designed to be a partnership of equals. What actually happens is quite different. To understand this, one needs to track the history of peering and the Internet. Around 1995, a few companies (some telco's and larger ISPs) engaged in a race to build high speed, international, IP transit networks (AT&T, MCI, BBnet, UUnet, BT, NEC, etc.). They linked their networks at points established by ICAN – the original *peering hubs*. The remaining big ISPs eliminated their then significant expenses for international network terminations by merging with international telco carriers. These aggregate Tier 1 providers started laying lots of international fiber. This reduced their costs of leasing local access, and set them up to charge lesser ISPs (the Tier 2s and 3s) for IP connectivity to the rest of the world – a win-win in pre bubble times. At the height of the bubble, the big customers of the Tier 1 providers were lesser, regional ISPs. Now, post bubble, the telcos have eaten many regional ISPs who were their major customers. Thousands of other ISPs went bankrupt. Without the revenues from these smaller ISPs, being Tier 1 has become an economic burden.

Strategically today, becoming a Tier 2 provider probably is a more flexible economic position.

"Tier 2 - A network that peers with some networks, but still purchases IP transit or pays settlements to reach at least some portion of the Internet... Tier 2 networks are motivated to peer with many other Tier 2 and end-user networks. Thus a Tier 2 network with good peering is frequently much "closer" to most end users or content than a Tier 1." [Wikipedia]

Being Tier 2 gives flexibility and great opportunity to connect with many peers, provided you can keep your traffic on Tier 2 peer networks as much as possible.

This leaves Tier 3s, those surviving regional ISPs now joined by smaller specialty carriers, as the only carriers paying everyone upstream for access. They pay big bucks to get their traffic onto the "Internet backbone" run by the Tier 1s, transit fee free. The bulk of paying customers of the Tier 1's today are large businesses.

Increasingly, as they interconnect their private Intranets, large multi-national enterprises begin to look and feel just like those Tier 2s. Their huge appetite for telecommunications services often translates into massive private networks with many established interconnection points to major carriers around the world. When their communications volume becomes large enough, it makes sense to establish a direct network presence at major peering points to reach outward to the World Wide Web. They do this by putting big cluster routers at or near established peering points and backhauling these over their own network fiber to their data centers or service centers. This does two things: it gets them closer (by transit lag) to their customers; and it allows them to peer with Tier 2 providers at the same location. This peering means private, negotiated cost arrangements or free exchange of traffic, with many different peers – and it means more lost access revenues for the Tier 1 telcos.

This model of Enterprise as a virtual telco has been with us for a long time. Major institutions for many years had internal telco management departments (usually staffed with ex-telco people) who understood exactly how to design infrastructure to make cost-effective use of leased lines, point to point circuits, interconnected PBXs, and such. They had copies of the telco Product Handbooks and sent in their requests for service in perfect Telco-ese, down to the product codes and prices. Not surprising then that these same companies have seized the potential offered by the Internet, and Internet Protocol over private networks, to gain further economies and enhanced communication capabilities. While difficult to win back their traffic, it is not impossible. How would this happen? Enterprises move through a fairly predictable cycle of:

- Focus on Core Business,
- Expand to Control Internal Support Services,
- Return to 1: Focus on Core Business.

Given a collaborative attitude and fair pricing models, many Enterprise customers will entertain proposals from Service Providers at the right point in their cycle of Focus versus Expansion.

### **Access Life-Cycle**

We all know that traditionally service providers charge for connecting both ends of a service. That's another example of what is wrong with the Network as Cloud diagram. Egress exists too, hopefully in pretty much identical volumes as Access! Whether it was a long distance call between you and a friend, or an email to that friend, it was a connection between two points. Sometimes, you called a store and bought something. That was still clearly a connection between two points. Today's notion of the two-sided revenue model is driven by an (often unstated) belief that Internet transactions are three way: you, Google, and the store. Of course decomposed in this manner, there were always three parties in an old-fashioned phone call too: you, the dial tone provider, and the store. No one tried to listen in

on your call to determine if you, or the store, should be paying a premium. The same rates applied for a call to buy an order of groceries or a diamond ring. Similarly you pay the same rate per unit of electricity consumed. It doesn't matter whether it is used to power your hi-fi or video game or whether it's mundane stuff like running your refrigerator.

So why this insistence that companies who earn money from their internet presence are not paying their fair share? Partly because the need for new service provider revenues is high. Partly because being a Tier 1 ISP costs a lot of money and there should be some way to be compensated directly for that investment. Partly because those Internet connected (Web 2.0) companies are making a whole lot of money and they should share.

But providers are in part to blame for these lost revenues via irrational market practices. By charging access costs in excess of perceived value, the service providers drove the bigger customers into building networks. Now these companies are getting into the Peering game. They are building out their networks to the major Internet peering points. This is the resulting life-cycle evolution of big OTT service providers:

- Go to traditional SP for access.
  - Get bigger. Get much bigger bills for communications services.
  - Cost increases finally reach a tipping point when economies of scale lead to buying network and leasing fiber (which cost less than the escalating cost of SP bandwidth).
  - Build own network out to peering point.
  - Become a Tier 2 provider and thereafter peer for free, or at least far less.
  - Cancel most services from SP and "ride for free," or at least for far less.
- Brute force economics (not strategy) forces OTTS providers to become Tier 2 providers.

These lost customers include huge companies like Google and Microsoft. These companies now operate some of the most powerful transit stations at the peering points. Google ensures its independence by building even more huge peering points that now contain supercomputer-sized server clusters and BMF routers with sufficient capacity to transit much of the world's traffic.

Once lost, these companies are unlikely to come back to the service providers. Changes in peering rules may reverse the trend, as would a more collaborative attitude. (Sort of like that old cliché: you catch more flies with honey than vinegar.) Google appears to be particularly galling to some service providers. They own and operate a massive network (perhaps the ultimate definition of a multi-national we described previously). They have peering agreements to keep their costs in line, and while offering free service to consumers, generate tremendous revenues and enjoy a buoyant stock price. Of course Google is not free; it earns its money from advertisers – some \$5B each Quarter. They just don't bill consumers for surfing. Just as with our earlier examples of phone calls and electricity, the service provider has done nothing special that would entitle them to charge Google or the web surfer more money. They have added no value to the transaction.

As Google, Microsoft, and others provide traditional telco services (for example:

voice), free of usage charges to the consumer, it becomes progressively more difficult for service providers to charge for it and remain competitive.

So, how can traditional service providers earn money from these apparently lucrative Internet transactions? As we've described in previous articles, we see many services that are naturals for service providers to deliver, and that Internet businesses would happily pay for, because they do add value. Important services like Security, Authentication, Identity Management, Entitlement, and yes, Billing. These are services that appeal to Sellers and to Consumers alike.

We hope that service providers will yet find a way to partner collaboratively with these new giants of the internet. It's still possible, but it will take a change of attitude.

***If you have news you'd like to share with Pipeline, contact us at [editor@pipelinepub.com](mailto:editor@pipelinepub.com).***