Pipeline
Knowledge Is Power

www.pipelinepub.com Volume 4, Issue 6

The Five Dimensions of Telecommunications Competition: Identifying the Emerging Battle Fronts

by Joseph J. Kestel and Craig M. Clausen

As an industry, telecommunications is vastly different today than it was just a few short years ago, let alone when compared to before the '96 Telecom Act. New providers have come and gone, old carriers have gone and (sort of) resurrected themselves, and new technologies—notably of the wireless and high-speed varieties—have changed how most of us get our information and communicate with each other. And the industry continues to evolve, creating a shifting landscape for customers and providers alike.

In this article we examine five crucial dimensions defining the emerging competitive fronts of the telecommunications marketplace war. Each dimension also illustrates how the market is evolving and will help focus service providers' attention on the most relevant competitive dimensions. These dimensions and their primary "characteristics" are identified in Table 1 below.

Table 1:
Telecom's Competitive Dimensions

Competitive Dimension	Characteristics
Connectivity	Quantitative + Overt
Bandwidth	
Geography	
Customization	Qualitative + Covert
Security	

The first three constitute telecom's "quantitative dimensions:" Connectivity (how wide), Bandwidth (how fast), and Geography (how broad). These are marketplace dimensions that are generally known and easily measured, permitting an "apples-to-apples" comparison of services by customers. The remaining two—Customization and Security—are qualitative dimensions. These marketplace dimensions, in contrast, are more subtle and less easily measured, obscuring comparison of competitive offerings. Service providers are competing along each of these dimensions, and customers in both the business and residential markets should anticipate how they can capitalize—and select their provider(s)—on improvements in each dimension.

Dimension 1: Connectivity

The first dimension, the one providing a major impetus for change across all sectors of telecommunications, is *connectivity*, by which we mean "access" in all its forms.[1] There has been exponential upward movement along this dimension—thanks first to the proliferation of communications via wireless handset[2], then by the development of Wi-Fi hotspots and, more recently, public Wi-Fi networks—creating armies of laptop-toting road warriors, students, and coffee shop denizens that can turn almost any urban location into an office or study carrel. Next on the horizon are commercial broadband wireless services (3G, 4G, *etc*.) that will make "broadband everywhere" more than mere rhetoric.

Connectivity also connotes general participation in the "wired world," as well as the concurrent rise in an "always-on(line)" lifestyle. At least two of every three Americans access the Internet from home, and a growing majority of those subscriptions are broadband connections. Among younger users—the so-called "Echo Boomers" and the "Internet Generation"—non-stop connectivity via SMS, instant messaging, and MySpace pages is practically assumed. Likewise, the introduction of Research in Motion's BlackBerry device and "push email" technology plugged business users into their inboxes on a 24/7 basis, leading to countless stories of users addicted to email and an unending flow of information. More recent advances in handsets and wireless networks have at least one prominent player promoting "one web"—the ability to view a website anywhere, whether via wired or wireless connection.

In the evolving world, being out of communication range—not only voice communication, but also data and the nearly infinite expanse that is the Web—is tantamount to uprooting for a life on Walden Pond. Past distinctions between "wired" and "wireless" may not disappear entirely, but functional differences will

[1] Generally, we use the term "access" to mean those methods/technologies permitting users to connect to any network.

[2] The CTIA estimates that in 2006 there were more than 230 million total wireless subscribers in the United States—meaning that as many as three in four Americans utilize wireless services.

blur as "fixed-mobile convergence" solutions bridge the gap. The strategic emphasis that telcos have placed on their wireless portfolios in recent years is well-founded, but overall connectivity, however delivered, is the real end-game. The providers that succeed will offer service combinations that leverage traditional broadband, 3G and 4G wireless, shared Wi-Fi, and picocells to satisfy demand for always-on connectivity.

Dimension 2: Bandwidth

The second dimension of telecommunications services is bandwidth. Hand-in-glove with the always-on lifestyle is the insatiable demand for more content delivered faster. Just as broadband, DSL, and cable modem services replaced dial-up service, higher-speed and burstable broadband services are becoming widely available. Telcos are rolling out services capable of 50 Mbps and more, by deploying fiber to the home (*e.g.,* Verizon's FiOS) and pulling fiber deeper in their networks (*e.g*. AT&T's U-Verse). Cable MSOs are eyeing comparable feats by using DOCSIS 3.0.

Moore's Law famously described that the exponential increase in computer processing capability and optical bandwidth has exhibited a similar penchant for doubling and then doubling again.[3] The advent of dense wave division multiplexing (DWDM) equipment has enabled service providers to squeeze more beams of light onto a single fiber strand, increasing overall network capacity by an order of magnitude or more.

The implications for "big pipe" services are obvious: today's GigE and 10-Gig circuits will soon be 40 and 100 Gbps, while aggregation links will similarly see proportional growth. Perhaps even more dramatic will be the revolution already underway in SMB and branch office bandwidth, as Metro Ethernet and copper bonding technologies enable these customers to cost-effectively obtain service greater than the one or two T-1 level, rendering the "metro bottleneck" obsolete.

In rural and other underserved areas, municipal and commercial fiber initiatives, as well as the array of broadband wireless technologies soon coming to market, will make these bandwidth gains more universal. The "NFL cities" will continue to be fiber rich compared to smaller markets, but a majority of users will find world-class bandwidth commonplace, stoking expectations for further speed gains. As video, especially HD video, becomes a critical piece of providers' bundles, and as adoption of interactive and collaborative applications picks up, minimum bandwidth requirements and demand will continue to increase.

Dimension 3: Geographic Breadth

The third dimension of telecom competition is the *geographic breadth* of telecommunications services. Recent history has illustrated the inherent advantage of a broad service footprint for both wireline and wireless services. These behemoths benefit not only from economies of scale on the operations side, but also from the perception of greater value among users—such as the network effects of "free mobile to mobile" calling on wireless plans and single-sourcing WAN access for

[3] Similarly, Gerald Butter (Bell Labs) proposed his own "Law of Photonics," postulating a doubling in the throughput of fiber optics every nine months.

multi-site businesses.

The most conspicuous examples of the strategic importance of geographic breadth have been the consolidation of much of the old Bell System by AT&T and Verizon. The "new" AT&T has tied together the former regional incumbents in the Southwest (SBC), Midwest (Ameritech), Southeast (BellSouth), West Coast (PacBell), as well as the backbone network of the "old" AT&T and former joint wireless venture (Cingular). Similarly, Verizon has incorporated the network assets of the regional LECs in the Northeast (NYNEX) and Mid-Atlantic (Bell Atlantic), as well as the long-distance and international network of former MCI. Prior to the post-bubble wave of consolidation, trans-regional enterprises had to rely on one or more regional LECs for access, an IXC for long-haul services, and a cellular provider for wireless services. Increasingly, the surviving RBOC giants can do it all.

What really proves the rule is the activity that has occurred further down the dance card. Reacting to the national strategies of the top RBOCs, competitive carriers in 2006 and 2007 have merged with or acquired similar providers to create supra-regional networks. An early mover on this strategy was **Level 3**, which has acquired several regional access providers in the East and Southeast to complement its existing backbone network, a veritable "lite version" of the RBOCs' national strategies. **One Communications** joined three carriers (Choice One, Conversent, and CTC Communications) into a network stretching from the Northeast to Wisconsin and Illinois, thus bridging the Verizon and AT&T LEC territories. Similarly, **PAETEC**, a predominantly northeastern carrier, merged with US LEC, a southeastern CLEC, and recently announced plans to buy McLeodUSA, a carrier with operations in 20 states across the Midwest, Southwest, and West. There are other examples of comparable import, and many more among even smaller carriers.

As end-user demand for faster wireline access continues to grow exponentially and the rollout of broadband wireless services increases the bandwidth needed for cell site backhaul, the strain on backbone networks—and costs for acquiring this transport from other carriers—will also increase significantly. Providers that provide a given service, whether wireline or wireless, while minimizing third-party expenses, will have a distinct advantage. Future consolidation is likely among all types of competitive carriers and network operators, and successful providers will keep up with customers' demand for on-net access within a region or major national (and international) commercial centers.

Dimension 4: Service Customization

The fourth dimension of the telecommunications market is *customization*, which is exemplified by content as well as the design of the services themselves. In a "Web 2.0" world characterized by dynamic, collaborative applications and the almost unlimited ability to modify and share content—even stubborn Google now offers the option of using a customizable "iGoogle" portal—a one-size-fits-all service portfolio cannot long survive.

In the current market, key systems and PBXs connected to channelized telecom services are being replaced by smart routers and dynamically-allocated bandwidth that optimizes network access. In place of the rigid structure of the traditional T-

carrier system, business customers are increasingly turning to scalable (and more attractively priced) metro Ethernet solutions. The combination of Ethernet service level agreements (SLAs) and MPLS backbones enables class of service differentiation, guaranteeing gradations of service levels based on multiple types of a customer's traffic. What's more, providers are rolling out bandwidth-on-demand functionality, enabling customers to change their service level in hours or even minutes. Coupled with online reporting and service management portals, customers can obtain a level of control unheard of even a few years ago.

Providers will compete by offering options to customers on multiple levels, giving them the power to employ the services they want, when they want. Install intervals for many services are shrinking—which makes it all the more important that carriers meet and exceed them. Service providers are also giving customers the option to bundle in other services. On the residential side, this takes the form of triple- and quad-play services; on the business side, this can include managed services, data storage, and disaster recovery services. Success will be defined by how well providers meet a wide variety of needs and how easily customers can modify services as their needs change.

Dimension 5: Security & Availability

Security is a competitive dimension of increasing interest to consumers, businesses, and service providers alike. For consumers, email spam continues to be a chronic headache—Symantec reports that 65-70% of all email is spam, and other sources estimate the percentage could be higher still—that leads many users to switch email providers. Worse, so-called "phishing" scams that mimic legitimate businesses have become increasingly sophisticated, leading to billions of dollars in direct theft and a similar amount of damage to the mimicked companies' brands in the form of damaged customer relationships and public image.

At the same time, communications networks have become increasingly mission-critical to all businesses. Transaction-based and financial institutions are obviously dependent on their systems, as are businesses with call centers (which are often distributed or offshored), suppliers and logistics companies that rely on EDI to communicate with customers, news and other content businesses, and even mom-and-pop eBay storefronts. Keeping a business' network secure and available is as important to success as raw materials, building security and employee health. Public corporations and businesses facing legislative regulations, like the Sarbanes-Oxley Act and the Health Insurance Portability and Accountability Act (HIPAA), now require high levels of network security and data availability from their telecom partners.

For service providers, network security and resiliency has become a service differentiator and a highly competitive service component. IP-VPN services have enabled businesses to cost-effectively extend LAN/WAN access to small offices and even telecommuters, a shift from costlier frame relay and private line networks. MPLS networks and VLAN tagging on Metro Ethernet services enable such secure networking functionality further still. Similarly, following the experience of man-made and natural disasters, network resiliency strategies have been a top priority for enterprise and government customers. Services and features like offsite

backup, route diversity, and emergency network switchover to high-capacity fixed wireless technology are no longer luxuries.

Implications For Service Providers

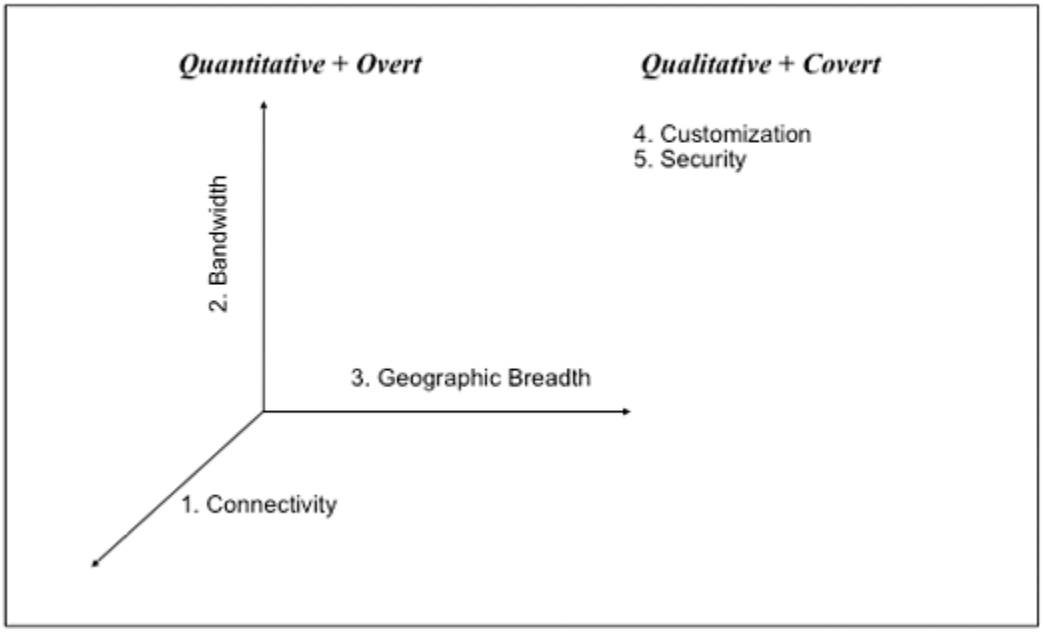
The telecommunications market today is characterized by increases in each of five dimensions: increasing **connectivity** to satisfy an always-on lifestyle; growing **bandwidth** to support new forms of content; expanding **geographic breadth** and scale to maximize the proportion of services provisioned on-net and persuade customers the network itself is a value-add; more **customization** of services to meet specific customer needs; and improved **security** that ensures data is protected and the network is highly available. To succeed, providers have to scale up their networks and add new services, such as wireless options, while simultaneously offering breakthrough levels of fulfillment, customization, and security. It's a tall order, to be sure, but carriers and their partners have raced forward impressively in each of these dimensions already this decade, and market leaders are poised to continue that success.

Table 2:
The Five Dimensions in Practice

Competitive Dimension	Once Meant…	Now Means…	Service Provider Implications
Connectivity	Tethered to desk	Flaming your discussion group nemesis while poolside in Cabo	Integrate wireline/wireless services seamlessly
Bandwidth	Downloading text documents at 56 Kbps	SportsCenter highlights startle you and cubemates when you boot up	Offer big pipes and scalable bandwidth in "mid-band" range (*i.e.*, above T-1) … or someone else will
Geographic Breadth	One provider… for each region and service	Looking more and more like the old "old market"	Serve a region or top US cities, else risk losing enterprise customers
Customization	Any color… as long as it's a T-1	Incremental bandwidth on demand, SLAs to order, Classes of Service, customer portals… Web 2.0, baby!	Give customers the power to select the bandwidth, quality, prioritization, and management tools they want
Security	Physically distinct, private circuits—where available	Go with a basic VPN… or an encrypted network over MPLS with route and carrier diversity, distributed data storage, and wireless links for backup	Build robust networks and offer secure services, or you'll pay for it in lost business

Source: New Paradigm Resources Group, Inc.

Chart 1:
Telecommunications' Five Dimensions



If you have news you'd like to share with Pipeline, contact us at editor@pipelinepub.com.