

Has High Tide Come for ISPs?

Bart Stuck and Michael Weingarten

There's little long-term future for a discrete Internet business. Why convergence will carry the day.

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The term Internet service provider (ISP) has become part of the industry vocabulary—on a par with local exchange carrier (LEC) and interexchange carrier (IXC). The growth of this segment justifies its cachet; as of June 1997, there were over 5,000 ISPs (source: URL <http://thelist.internet.com>), up from 3,000 last year.

This growth is likely to be short-lived, however, as the ISP “industry” becomes subsumed into a fully voice/data converged (and deregulated) world. Clearly this process isn’t going to occur overnight, but the ISPs and Internet access service will gradually become indistinguishable from core telephony, and the players in what have heretofore been separate markets will either be consolidated or will compete head-to-head.

- This leaves ISPs with the following choices:
1. Become competitive LECs (CLECs), providing basic telephony plus Internet access.
 2. Sell out to incumbent LECs (ILECs) or CLECs before the value of a standalone ISP franchise becomes severely diminished.
 3. Focus on being a content provider, *à la* America Online and the Microsoft Network.
 4. Move from being a facilities-based ISP to a value-added provider and telecom reseller.
- If none of the steps above are taken, ISPs face a fifth, more bleak option: To be, as Trotsky put it, consigned to the dustbin of history

No Profit Model

The lack of profit among major ISPs is the most obvious signal that the standalone business does not have a long term future. For example, Netcom in 1996 had a \$44 million loss from operations, or 40 percent of revenues. Its loss per share has grown from 2 cents in 1994 to \$3.85 in 1996.

Nor has anyone described a clear business model within which continued growth cures the

FIGURE 1 ISP Stock Price Trends

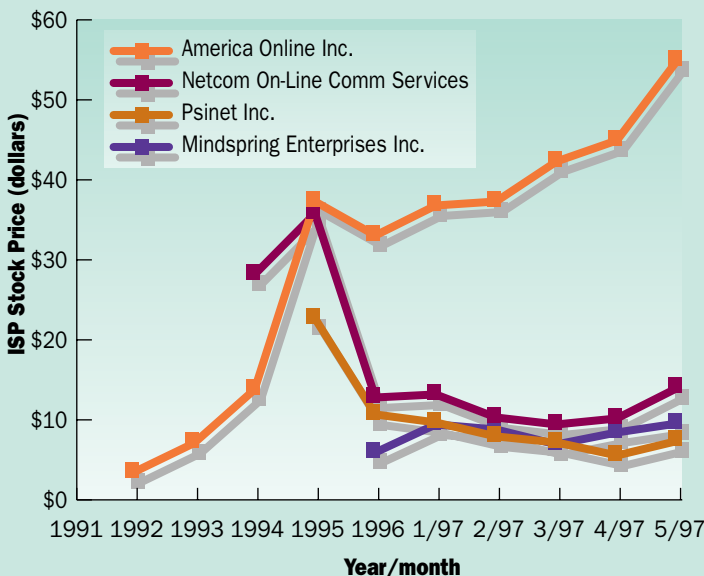
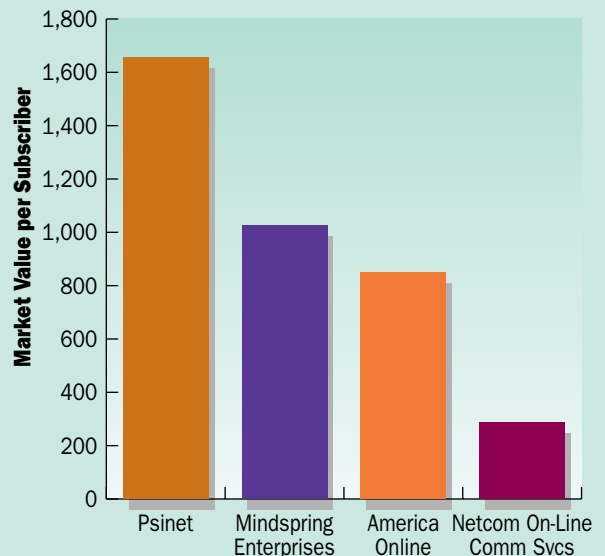
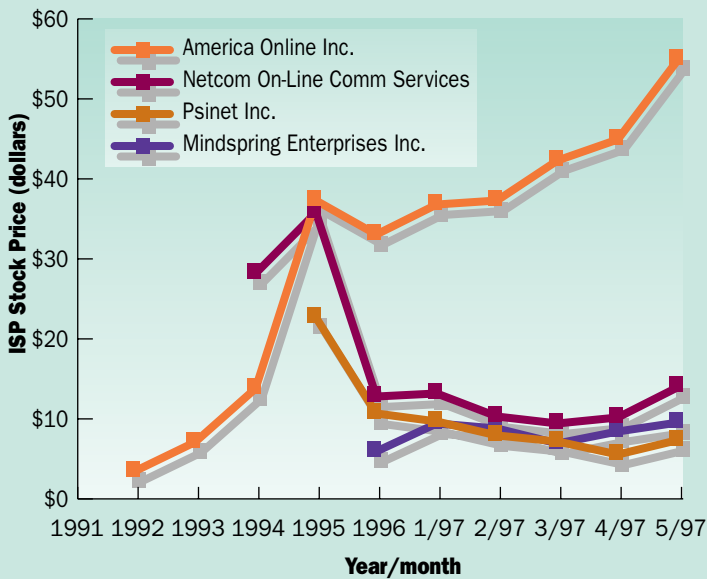


FIGURE 2 Market Value per Subscriber



Source: OneSource 5/97 market valuations, Salomon Bros. 12/97 subscribers

FIGURE 3 Subscribers by ISP



Source: Marc Usem (Salomon Bros.) *The Internet Industry—Catch the Wave*, 12/17/97

lack of profitability. This hasn't gone unnoticed; investors, despite a red-hot market, have pushed down the share prices for major non-content ISPs like Netcom and PSINet (see Figures 1 and 2).

The fact that some smaller, stand-alone ISPs have been profitable, and the continued growth of companies that want to call themselves ISPs, have led some observers to argue that there is a viable business model—that small ISPs, who can offer customized services and personalized attention, can succeed where the larger ISPs haven't.

That argument is unconvincing, however, for two reasons. First, despite the growth in the number of small ISPs, the top five ISPs/OSPs have 85 percent of the market, and that share is not declining (per a recent survey in *Interactive Services Report*; also see Figure 3). If the leaders aren't making money, the niche players simply are not large enough in aggregate to offset the loss.

Second, over time, the role of simplifying and customizing today's complex tasks will be filled not by employees of ISPs (large or small) but by new software that automates those processes. Consider the history of dialup access as a precedent. In the 1980s, making a modem call required that the user pay attention to things like checksum protocols and echo cancellation; today, with prepackaged communications software, we dial into

the Internet with relative ease, at speeds that were unimaginable 15 years ago.

Dependence on Continued Regulation

Moreover, as precarious as their situation is, the ISPs would be worse off if not for favorable regulatory treatment. The critical question is: How much longer will they continue to receive it?

Regulation has favored the ISPs in both implicit and explicit ways. But both will come under attack as the telecom industry deregulates:

Implicit Regulation—Fixed Versus Variable Interstate Pricing:

ISPs have benefited substantially from tariff structure that employ high minute-of-use (MOU) charges to subsidize below-cost, fixed charges (making basic phone service more affordable). The ISPs don't incur MOU charges, thanks to the ESP Exemption described below, and they have enjoyed the cushion of low, fixed Subscriber Line Charges.

However, in its recent Access Order, the FCC started to move prices closer to underlying costs. It began to reverse the earlier policy, substantially reducing usage-based fees and increasing flat monthly charges. The ISP industry has indignantly labeled this decision a "modem tax," and from their standpoint, perhaps it is: they will pay \$5.75 per line per month in higher fixed rates without benefiting from the proposed reduction in

MOU-based long distance access fees. However, its greater significance is that it suggests that ISP subsidies will eventually disappear.

Explicit Regulation—The ESP Exemption: Unlike long distance carriers, ISPs do not have to pay high per-minute fees to access the local network, thanks to an FCC decision made in 1983. At the time, in order to help create more long distance competition and to spur the evolution of new information/data services, the FCC gave an exemption to what were then called ESPs—Enhanced Service Providers. The ISPs have claimed that exemption as their own and pay a flat business local rate for unlimited call termination.

RBOCs have questioned the fairness of the ESP Exemption, citing increased burdens on central office (CO) switches from Internet traffic. The FCC has decided not to change its policy—for now. However, it's not likely the ESP Exemption can survive for another decade. The FCC will continue to push the alignment of prices to costs, and the ESP Exemption doesn't meet this criterion.

Moreover, there are simply too many inherent contradictions in the ISPs' position on the ESP Exemption. This provision rests on the premise that ISPs are a nascent industry in need of regulatory protection, a premise that becomes less valid by the day. Furthermore, ISPs cannot argue against government involvement in Internet issues such as free speech, encryption and 'Net commerce while backing continued intervention in pricing. Over the long term, therefore, the ESP Exemption will collapse under its own weight, and when it does many ISPs could get crushed.

Dependence on Free Interconnection

Turning from the local loop to the Internet backbone, the ISP industry depends on national and regional backbone providers who interconnect free of charge. This keeps rates down, but as with low-cost access, this system is beginning to erode.

The old system penalized large backbone providers and subsidized small ones and ISPs. Historically, a small provider could sell port space to end users at low costs and interconnect for free to a national backbone. Routers within the small provider's backbone can shift traffic to the larger carriers' network to alleviate congestion. Thus, the old system rewarded small backbone providers

for not building adequate transport, while forcing large providers to match smaller carriers' low prices.

Large providers have begun reacting to this situation, and to charge more for access to their backbones. UUNet announced it will no longer offer free interconnection to providers hooking up with less than an OC-3. Over time, this minimum will rise, and with it ISP port prices. This suggests that surviving ISPs will be absorbed by or integrated with large backbone providers.

Beginning of Major Telco Market Entry

At the same time that regulatory and interconnection realities are turning against them, standalone ISPs will face increasing competition from telcos. MCI and Sprint are already major Internet backbone providers and ISPs, and AT&T's Worldnet became the number two non-content-based ISP within one year of startup. In addition, over the past year, WorldCom bought MFS and UUNet, and GTE moved to acquire BBN.

Most Internet backbone capacity is owned by the traditional carriers. Furthermore, in 1996, AT&T, MCI and Sprint realized \$1.5 billion in frame relay service revenues for Internet and intranet carriage, growing 35 to 40 percent per year, up from nothing five years ago.

Compared with IXC's, RBOCs have been secondary players in the ISP business. To some degree, this reflects the RBOCs' "circuit-switched" mentality—the Internet took a long time to show up on their radar. Looking forward, however, RBOCs stand to gain ISP market share, because they are entering the business at a point when technology is blurring the difference between local loop and Internet access infrastructure.

Impact of New Technology

To defuse the controversy over the ESP Exemption while also delivering faster, better Internet connections, the FCC has endorsed technologies that bypass the voice network. But even though these technologies avoid the telcos' PSTN facilities, they pose a greater threat to ISPs; ironically, all the major bypass solutions actually perpetuate the incumbents' control over access to the network.

The technologies in question are:

- Originating switch bypass mechanisms.
- xDSL.

- Cable modems.
- LEC and CATV fiber options.

The *originating switch bypass mechanism* diverts ISP-bound traffic at the originating switch line side. Internet-bound traffic can be sent to a modem pool and frame relay network at the originating CO, bypassing the terminating switch for substantial savings.

From an ISP perspective, the problem with this solution is that it obviates the need for an ISP. With the RBOC performing the modem/FRAD function at its originating office, data traffic can be sent to an ISP office, much as dialup traffic is currently handed off to ISPs for packetization. However, with the bypass mechanism, the handoff would be redundant—all packetization functionality needed for Internet transmission would be already done by the LEC.

Both sides recognize these implications. Pac Tel has attempted to paper them over by claiming that switch bypass will "help ISPs efficiently grow and manage their Internet access business," a position ISPs consider disingenuous. AOL, for example, charged in an FCC filing that, "these solutions clearly reflect the desire of the ILECs to become the sole operator of any newly deployed data networks, just as they have been the monopoly provider of the voice network."

Many of the same issues apply to the *xDSL option*, even though it has been supported by all sides. In addition to the benefits created by switch bypass, DSL modems add substantially higher bandwidth, along with 24-hour connections.

Widespread DSL adoption, however, will yield the same result as switch bypass. DSL modems will be arrayed in ILEC end offices next to main distribution frames, where the traffic will be multiplexed and then sent over the Internet by some form of IP switch.

Under this arrangement, DSL-based Internet access will simply become another service provided by an ILEC or CLEC, not something used by standalone ISPs. Yet the Internet service providers support DSL, which we can only explain as short-sightedness: They see big near-term gains without weighing the long-term implications.

The *cable modem option* also shuts out the ISPs. For example, @Home, the leading (prospective) cable modem provider, plans to serve as its own ISP, connecting directly into the Internet, with no role for standalone ISPs.

ISP Survival through "Infranets"

Jim Fleming

To survive, ISPs must continue to look for opportunities at the edges of the network, as opposed to the core. The telcos will always gravitate to the core, but they do not understand how to make a profit at the edge of the network, where markets are undefined and sometimes chaotic.

ISPs can stay alive and even thrive in competition with large telcos by seeking new partners to help them extend the 'Net at the edges. These future cooperative ventures along the edge of the Internet can be thought of as "infranets."

Infranets leverage the existing infrastructure of a group, community, town, real estate development, etc., augmenting the existing core capital investments that are in place. Where the telcos are accustomed to central investment and control, infranets stress relationships and communities of interest that grow at the edges.

For example, an office building or shopping mall might use its infrastructure to create such an infranet, either becoming an ISP itself or partnering with an established ISP. Landlords and real estate developers could also become ISPs, offering the service along with the facilities at little incremental cost to themselves.

The value-add can go beyond the simple wiring and Internet access services, and cut across the advertising and promotional activities of the mall. The physical infrastructure of the mall can be augmented with a "virtual infranet" provided by the ISP.

This virtual infranet might offer new types of services to mall tenants and consumers. For example, there might be a bank just for the shoppers in that mall or the subscribers to the service. People could transfer cash that could be used at any of the stores (with a special discount) and use their bank account. Though a similar kind of service theoretically could exist now, it is likely to be much more common in an environment where electronic commerce has become widely accepted.

Similarly, a virtual home shopping service could be constructed, tailored to the merchants of that mall, even though a central distributor handles the deliveries. The merchants could be paid a commission and handle returns and warranty repairs with a fee paid from the manufacturer. The ISP could quickly construct these virtual services and offer them to some or all of the mall tenants.

Another infranet opportunity exists in the shared office suite arrangements found in many large buildings. Typically, the owner of the building or a tenant provides common services, such as central reception to a group of tenants that pay a premium for small office spaces on short-term agreements. These tenants are a ready market for an ISP to serve, and the best way to do that is by having the owner of the shared suite remarket the ISP's solution as its own.

The large telcos are at a disadvantage here because of their mass market approach. The ISPs can continue to prosper because they can establish special relationships and help to build infranets by adding to the existing businesses. If properly structured, the ISP can apply this development model and respond quickly to customers' needs□

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Furthermore, equal access rules don't apply, because cable companies aren't considered common carriers. Since there is no CATV Open Network Architecture or resale requirement, there is no long-term way by which independent ISPs can operate in the cable environment.

As with xDSL, the ISPs seem only to be looking at the short-term promise of cable modems. AOL, for example, calls two-way cable modems "an extremely attractive data traffic access alternative." We wonder why ISPs are so happy about cable modems when, if they succeed, the

service could become a substantial threat to standalone ISPs.

The fourth possibility, *fiber options* like hybrid fiber-coax or switched digital video, deployable by ILECs and cablecos, would lead to similar outcomes—a single high-bandwidth service provided by the facilities-based carrier.

In short, when you look at the new technologies, you find that there's only one business model in which ISPs play a necessary role: the current one—customers access the 'Net via the voice network. Any bypass mechanism requires the local loop carrier to add packetized functionality, and once that is done, the most efficient solution is to send the packets directly into the Internet, without going through a separate ISP.

Advent of Voice/Data Convergence

The bypass fix also involves a high degree of convergence between what used to be two different functions: LEC switch and ISP Internet gateway. This too raises serious questions about the long-term need for independent ISPs.

Convergence is an overused term and we dislike using it, except that (a.) the concept is dead-on correct, (b.) it will happen some day and (c.) when it does, it will be terribly important.

From the standpoint of ISP sustainability as a separate business, the conventional wisdom says that convergence favors packetized networks (read: ISPs) and hinders aging circuit-switched (read: ILEC) networks. To the extent that convergence means that Class 5 circuit switches eventually will become obsolete, we agree. However, we disagree with anyone who believes this means that ISPs will grow and ILECs are doomed; indeed, the reverse is true.

When we have full voice/data convergence, Class 5 switches will be replaced by some form of IP packetized switch, and one network will handle both voice and data. Since the ILECs already own local loop facilities, they must be considered the likeliest provider of this single, converged network.

The only reason for a standalone ISP operating without loop ownership will be if the telco overcharges for switching—which is not unimaginable. But if that happens, the door opens to CLECs, using either separate facilities or unbundled ILEC network elements. Either way, the winning model will be to provide converged LEC-ISP service, not ISP functionality alone.

Future of Standalone ISPs

There certainly are 'Netizens who won't agree with our analysis. They see a dynamic, forward-looking and technology-neutral ISP industry leveraging new technologies in a way that adds value to commoditized local loops. Indeed, they see the telcos as troglodytes who are mired in a circuit-switched mentality.

To give the 'Netizen view its due, never underestimate the power of inertia—RBOCs and IXC's won't dump the circuit-switched paradigm overnight. But that allegiance has less to do with a lack of imagination than simple finance: They're sitting on roughly \$300 billion of net undepreciated plant, which they're not eager to scrap.

Similarly, IXC's have little incentive to foster the growth of voice over the Internet, unless it becomes clear that large portions of their user base are migrating in that direction. More likely, ISPs will take the lead in luring voice customers onto the Internet as a way of avoiding long distance charges.

If this occurs, however, it will only accelerate the convergence that will ultimately entrap the ISPs: The more they

succeed in the near term (by congesting telco switches and by diverting voice toll traffic over to the Internet), the more they force the telcos to move toward converged networks, a process that inevitably makes the standalone ISP business nonviable. The ISPs' success carries the seeds of their own destruction.

Implications for ISPs

What all this means for ISP management is that they better launch a Plan B in a hurry. One possible option is to rely on proprietary content—a path that AOL and MSN have been pursuing. At the extreme, a company like AOL could get out of the ISP gateway business entirely, providing its service via a separate website (i.e., its ability to sell advertising or shopping mall space depends on traffic levels and response rates, rather than the particular access form).

A second possibility is for ISPs to leverage their excellent start by becoming CLECs and attacking the telcos. If the ISPs are as forward-looking as the 'Netizens believe, and if the telcos are indeed troglodytes, a judicious blending of

advanced packetized switching and the renting of ILEC unbundled network elements might be a defensible strategy. Alliances/joint ventures/mergers between ISPs and CLECs could accomplish the same objective.

A third option is to migrate from providing Internet access to offering expert systems integration and value-added support. Companies like IBM, EDS and Andersen make a great deal of money providing IT services, and perhaps ISPs can join the group.

There is a final option that also makes sense: sell, as UUNet and BBN have done. But this requires a good sense of timing. The ISPs and backbone providers have most of the expertise, infrastructure and customers, and they should take advantage of that while they can.

While a "rising tide" (i.e., the Internet) lifts all ships (i.e., ISPs), it is also true, as Shakespeare wrote in *Julius Caesar*, that "There is a tide in the affairs of men,/which taken at the flood, leads on to fortune;/Omitted, all the voyage of their life/Is bound in shallows and in miseries." For standalone ISPs, high tide has probably arrived □