

**Florida Public Service Commission**

**White Paper  
on**

**Internet Pricing: Regulatory Implications and Future Issues**

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## **1.Introduction**

The growth of Internet traffic and other innovative applications has presented a new opportunity to telecommunication service providers and Internet Service Providers (ISPs). Growth of the Internet has been spurred by current ISP rates that typically permit all-you-can-surf for no more than \$20 a month. The flat-rate pricing of Internet access and usage has important implications for telecommunications policy and competition in the industry. For this reason, it is important for policy makers to understand the pricing characteristics of Internet service.

Due to the increased Internet traffic and the evolution of new applications, such as Voice over Internet Protocol (VoIP), new pricing challenges now exist in the telecommunications industry. As the clarity and quality of VoIP approaches that of the Public Switched Telephone Network (PSTN), this technology will be increasingly used as a substitute for traditional telephone service. The pricing of this service will ultimately determine the degree to which this service emerges as a threat to traditional telephone service. With consumer choice between PSTN and VoIP, the competitive effects of current pricing regulations need to be examined to ensure the growth of new technologies as well as existing networks.

This paper is designed to provide an understanding of the flat-rate pricing fundamentals of Internet access and how it differs from conventional telephony pricing. This paper will also provide an overview on the access charge exemption status granted to ISPs by the Federal Communication Commission (FCC), and the pricing effect of reciprocal compensation fees on ISPs.

## **2. Access Charges**

Like local telephone companies, most ISPs charge a flat, monthly fee to end users for local service, although some assess a per-hour charge above a certain monthly threshold. The vast majority of users reach their ISPs through the telephone network. The phone call to reach an ISP is usually considered a local call, because the ISP has established a Point of Presence (POP) in that local calling area.

The monthly flat rated Internet user fee is comprised of two expenses of the ISP. The first expense is for the basic business lines they acquire from the Incumbent Local Exchange Carrier (ILEC), and the second expense is the cost to provide network connections and facilities to the Internet. Both of these expenses are flat rated and the ISP incurs no usage expenses.

There are four fundamental reasons why Internet users do not pay usage charges:

1. Residential local service tends to be flat-rate based and ISPs have located their POPs to maximize the number of subscribers who can reach them with a local call.
2. Internet backbone providers tend to charge non-time sensitive rates to each other and to ISPs.
3. ISPs typically connect to Local Exchange Carriers (LECs) through business lines that have no usage charges for receiving calls (B1 or PBX trunk rates).
4. ISPs are not required to pay access charges via the FCC exemption.

## 2.1 No Access Charges on ISPs

Prior to implementation of the 1996 Telecommunications Act (The Act), the FCC had determined that electronic communications services, and subsequently Internet services, were not subject to regulation by the FCC under the 1934 Act because they were “enhanced” services different from conventional telephony.

Enhanced services were defined as including:

Services offered over common carrier transmission facilities used in interstate communications, which employ computer processing applications that act on the format, content, code, protocol or similar aspects of the subscriber’s transmitted information; provide the subscriber additional, different, or restructured information; or involve subscriber interaction with stored information.<sup>1</sup>

The Act maintained the distinction between basic and enhanced services using the terms “telecommunications services” and “information services” to differentiate the two. The Act defines “information services” as:

The offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications systems or the management of a telecommunications service.<sup>2</sup>

These regulatory classifications exempt ISPs from paying the switched access fees assessed on Interexchange Carriers (IXCs). Switched access charges are the fees long distance telephone companies pay to local telephone companies for access to their local phone network (see Attachment 1, diagram (D)). Most of these access charges are flat-rate charges, while some are usage sensitive, and others are embedded in the customer’s bill.

Carrier Common Line Charges, which make up the largest portion of switched access charges are subsidies used to finance the nearly ubiquitous basic telephone network that exists today. The collection mechanism for these subsidies is interstate and state switched access charges established by the FCC and state regulators. Providers of long distance service pay Carrier Common Line Charges (CCLC) and Presubscribed Interexchange Carrier Charges (PICC) to the LEC which originates and terminates the long distance calls. In addition, Section 254 of The Act requires all telecommunications carriers that provide interstate telecommunications services to contribute to a “universal services fund” that subsidizes access to telecommunication services for high-cost and low-income communities and public institutions, such as schools and libraries. Subscriber Line Charge (SLC) is a federally mandated surcharge placed on all telephone services that goes to fund the Universal Service. Recently, the FCC, in the Access Charges and Universal Service Reform Order issued on May 31, 2000, reduced these subsidies by replacing implicit subsidies with explicit

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<sup>1</sup> 47 C.F.R. 64.702(a).

<sup>2</sup> 47 U.S.C. §153(41).

interstate access universal service support. The Order permits a greater proportion of the local loop costs to be recovered through the SLC, rather than through the CCLC and the PICC.

As mentioned earlier, ISPs are exempt from switched access charges by the FCC because they are enhanced service providers. ISPs do not pay or participate in paying switched access charges during their normal business transaction. ISPs are considered to be local phone customers, and they purchase basic business lines (B-1) from the LECs. The LECs provide a basic B-1 line at a flat rate for unlimited local usage. Business lines usually include a flat monthly charge for local calls and a per-minute charge for making outgoing interstate or intrastate long distance (toll) calls. Because ISPs use the basic B-1 lines to receive calls to their location from their subscribers rather than making outgoing calls, they pay no switched access charges, which are normally associated with toll traffic. After a call is received by the ISP, it is then connected to the Internet via the high-speed Internet backbone. This backbone is primarily owned by MCI WorldCom and AT&T (See Attachment 1, diagram (C)).

## 2.2 Access Savings for ISPs

With Enhanced Service Provider (ESP) status, ISPs do not pay access charges. Therefore, there are no additional costs associated with using the local and long distance networks and subsidies that IXC's pay do not apply to ISPs. According to industry average data provided by Merrill Lynch in 1998 (see table below)<sup>3</sup>, IXC's face four basic cost elements for domestic circuit-switched long distance calls.

**Table: Average Long Distance Industry Cost Structure (using Switched Access)**

	Cost/min (\$)	% of Cost
Access Charges	0.050	45.50
Network Operations Expense	0.015	13.60
Depreciation Expense	0.010	9.10
Administrative Expense	0.035	31.80
Total Cost to IXC's	0.110	100.00

Access charges are the single biggest element at 45.50% of the cost for switched access service. It is clear that access charges provide opportunities for arbitrage by ISPs that can avoid payment of access charges levied on IXC's, thus providing ISPs with a cost advantage that can be translated into lower prices. ISPs taking advantage of the ESP exemption avoid long distance access fees. This offers a great competitive advantage to ISPs who provide voice service over the Internet.

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<sup>3</sup> Reproduced from "Can Carriers Make Money on IP Telephony" by Stuck and Weingarten. Business Communications Review, August 1998, pg. 39-44.

### 3. Reciprocal Compensation

A second form of payment for using another carrier's network is called reciprocal compensation. Established in The Act, Section 251(b)(5), reciprocal compensation is a mechanism for one Local Exchange Carrier (LEC) to compensate another LEC for completing a local call (Attachment 1, diagram (B)). In its Local Competition Order<sup>4</sup>, the FCC determined reciprocal compensation applies only to local traffic:

As a general matter, in the access charge regime, the long-distance caller pays long-distance charges to the IXC, and the IXC must pay both LECs for originating and terminating access service. By contrast, reciprocal compensation for transport and termination of calls is intended for a situation in which two carriers collaborate to complete a local call. In this case, the local caller pays charges to the originating carrier, and the originating carrier must compensate the terminating carrier for completing the call.

ISPs are considered an end user of the ILEC's switched network. ILECs convey calls that terminate at local ISPs. Unfortunately for the originating ILEC, calls only terminate at an ISP, and do not originate, so the originating ILEC is the only contributor to reciprocal compensation. ISPs can be the end user of a network in three ways. First, an ISP can have a contract with an ILEC to use its network. In this situation, the ILEC is the originating and terminating local network carrier and, therefore, no reciprocal compensation is paid by the originating ILEC for the termination of the local call. Second, an ISP can have a contract with a Competitive Local Exchange Carrier (CLEC) to use its network. Here, the ILEC originates the local call which terminates on the CLEC's local network. For reciprocal compensation, the ILEC pays the CLEC a per-minute terminating charge for the caller's use of the CLEC's network. Third, an ISP can have a financial affiliation with a CLEC, such as AT&T's ISP "Excite@Home." In this case, the ISP is a registered CLEC, owns its own network, and negotiates its own agreements with the ILECs. Reciprocal compensation for this third scenario is paid in the same manner as the aforementioned case.

Soon after the introduction of reciprocal compensation and with the number of ISPs increasing at a rapid rate across the nation, the issue of whether reciprocal compensation should apply to ISP traffic when affiliated with a CLEC became of eminent importance. The FCC received requests, beginning in September of 1996, to clarify if Section 251(b)(5) applied to CLEC affiliated ISP-bound traffic. In its Declaratory Ruling<sup>5</sup> determining inter-carrier compensation for CLEC affiliated ISP-bound traffic, the FCC made a number of decisions. Most importantly, the FCC found that "Internet traffic is jurisdictionally mixed and appears to be largely interstate in nature." As "largely interstate in nature," an ISP call would no longer qualify as a local call and reciprocal compensation would not apply. As a result, ILECs wanted these calls to be exempted in current agreements, but a majority of state commissions rejected this notion through arbitrations. In addition, the FCC decided that parties will remain bound by their interconnection agreements and

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<sup>4</sup> August 8, 1996 First Report and Order, Docket #96-98

<sup>5</sup> February 26, 1999 Order, Docket #96-98, 99-68.

state commissions will continue to enforce and establish reciprocal compensation obligations until further decisions or regulations can be made.

## **4.1 Regulatory Issues: Impact of Voice over Internet Protocol (VoIP)**

Voice over Internet Protocol (VoIP) is a term used in Internet Protocol (IP) telephony for a set of facilities which manage the delivery of voice information. In general, this means sending voice information in digital form in discrete packets rather than in the traditional circuit-committed protocols of the PSTN. A major advantage of VoIP and Internet telephony for customer is that it avoids the usage based toll rates charged by IXCs.

Looking forward, a key question to be resolved is whether VoIP providers qualify as telecommunications carriers, or as information service providers (or ESPs). Fundamental to this question is whether a service provided over the Internet that appears functionally similar to a traditionally-regulated service should be subject to existing regulatory requirements of traditional telephony. In this respect, VoIP providers could be considered as fundamentally analogous to switchless long-distance ‘resellers’, and thus be required to pay the same rates (access charges) to LECs for use of local networks to originate and terminate interstate calls.

The FCC, in its Universal Service Report, holds that from the perspective of the end user, “phone-to-phone” VoIP services appear to parallel conventional PSTN telecommunications. In a tentative set of conclusions, the FCC noted that:

To the extent we conclude that certain forms of phone-to-phone IP telephony service are “telecommunications services,” and to the extent the providers of those services obtain the same circuit-switched access as obtained by interexchange carriers, and therefore impose the same burdens on the local exchange as do other interexchange carriers, we may find it reasonable that they pay similar access charges.<sup>6</sup>

In the Universal Service Report, the FCC appeared prepared to distinguish between “computer-to-computer” and “phone-to-phone” VoIP offerings, placing emphasis on the location of the packetizing of the transmission. If the packetizing were performed using customer premises equipment (i.e., in a “computer-to-computer” scenario), then no common carrier regulation would follow. However, if the packetizing were performed at the facilities of an ISP or a VoIP gateway, then common carrier regulation might be appropriate.

### **4.1.1 Methods of Provision of Voice over Data Services**

#### **A. Computer to Computer**

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<sup>6</sup> Universal Service Report, para. 91.

The most basic and earliest form of IP voice service involves two parties originating and receiving calls routed over the data network on the computer. Both parties must install packetizing and routing software on their computers that is sufficiently powerful to packetize the sounds made through an attached microphone, a full duplex sound card to allow for simultaneous two-way communications, speakers to recreate the sound after it had been de-packetized and a modem capable of transmitting and receiving the packets through the Internet at high speed.

The ISPs through which each party connects to the Internet generally cannot determine whether the packets being sent by their subscribers contain data or portions of compressed voice conversations. As with any other Internet applications, such as e-mail, the role of the ISP is simply to route the subscriber's packets to the destination marked on their TCP/IP "envelopes."

## **B. Phone to Phone**

The major developing market for voice over data involves phone-to-phone communications utilizing the Internet as the transmission medium. In this manner, the regular PSTN connects each party to an IP voice provider, who in turn processes the call and gains the revenues therefrom.

For example, a customer service representative in New York could call a client in London, England, by routing the call through an IP voice provider to a node in England, where the call would then be switched to the PSTN for termination at a lower rate. An IP voice provider could, in this manner, engage in its own form of "switched hubbing," routing calls through centers attached to its network that offer the most favorable rates for off-net termination of calls over the PSTN.

It seems that the FCC made an artificial distinction between the location at which the packetizing occurs and the technology used to make the initial connection from the subscriber line. Thus, if it emits a stream of IP digital packets over a computer, it is not subject to common carrier regulation, and hence access charges do not apply; if it emits a Pulse Code Modulator (PCM) encoded digital bit stream, it's a phone and it is subject to the common carrier regulation and therefore access charges apply.

## **5. Internet Pricing Scenarios**

Currently, there is no doubt that the predominant form of Internet pricing revolves around an unlimited usage model with a fixed flat-rate fee. This fixed flat-rate Internet fee is primarily the result of the ISPs status as an ESP. This allows for the exemption of ISPs from access charges.

Many advocates of this flat-rate pricing system cite the evolving nature of the Internet as sufficient reason to retain the favorable ESP status of ISPs. Even the FCC has stated that it is "disinclined to take actions that would stifle, rather than enhance, the development of the Internet."<sup>7</sup> In fact, The Act states that the FCC intends "to preserve the vibrant and competitive free market that

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<sup>7</sup> Internet Access, The "Free Lunch" in Telecom Reform. Gartner Group, Strategic Planning Research Note, February 18, 1997.

presently exists for the Internet and other interactive computer services, unfettered by Federal or State regulations.”<sup>8</sup>

On the other hand, this flat rate Internet pricing regime allows for the potential over usage and misallocation of scarce bandwidth. If each user logs onto the Internet without consideration of usage time, congestion will surely occur and other users are then queued. The result of this flat rate pricing scenario is that bandwidth is allocated by time and patience rather than pricing signals. There is a social cost when some users who are willing to pay more for Internet time are made to wait. This is especially true of dedicated business users who have to transmit data or other time sensitive materials.

Given the above concerns, a pricing system which would incorporate the salient characteristics of both the flat rate and usage sensitive pricing may ultimately be more economically sound. Thus, a flat rate would be charged to cover the basic costs of phone network services and a variable component which would reflect an efficient method of relieving congestion. Another similar solution would be to charge a relatively high rate for usage during the day and a low, even zero, rate during the evening or late at night. While a usage based pricing system is an appealing economic solution for congestion management, it would by design limit the penetration of Internet technology and services. How this emerging Internet technology is priced will ultimately affect the rate of growth and number of people with access to this powerful medium.

## **6. Future Regulatory Issues**

Technological and marketplace conditions favor increased reliance on the Internet as the preferred medium for both interactive information and telecommunications services. Already the foundation exists for the Internet to merge with or become indistinguishable from the various carrier networks that provide telecommunications. Most incumbent telecommunications carriers already provide Internet services and increasingly, ISPs are providing telecommunications services, often via the telecommunication facilities of incumbent local and interexchange carriers.

The Internet has the capacity and versatility to become a one-size-fits-all telecommunication and information medium. This technological and marketplace convergence may necessitate legislative and regulatory responses to eliminate asymmetrical regulations and other anomalies that distort the marketplace. Until such adjustments occur, the Internet will continue to be a desirable alternative for routing telecommunications traffic, simply because both Internet carriers and consumers avoid having to pay access charges and toll rates that would apply for the conventional telephone network.

State and Federal regulators have often used asymmetrical (does not treat communication networks the same) regulation to incubate technologies and to stimulate competition. Due to the ESP status embodied by ISPs, the playing field has arguably been tilted in favor of ISPs and unnecessary marketplace distortion has been created with regard to conventional telephony. Regardless, the FCC

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<sup>8</sup> Ibid.



is committed to the continued growth of the Internet and has made no change in the exemption of access charges for ISPs. Until the FCC rethinks its stance on the exemption of access charges that ISPs currently enjoy, ISPs will continue to have a price advantage and will continue to charge a relatively low flat-rate price.

Recent pronouncements by the FCC with increasing pressure from IXC's seem to suggest that excluding ISPs from access charges might change in the future. The FCC, in its February 1999 Declaratory Ruling<sup>9</sup> regarding intercarrier compensation for traffic bound for ISPs finds that "Internet traffic is jurisdictionally mixed and appears to be largely interstate in nature." But it preserves the rule that exempts the Internet from interstate access charges. However, the U.S. Court of Appeals on March 24, 2000 in *Bell Atlantic Corp. et al. v. The FCC*<sup>10</sup>, remanded for further consideration the FCC's 1999 order for "want of reasoned decision making." The Court said, "calls to ISPs appear to fit the definition of termination" as contained in section 251(b)(5) of The Act. The Court stated further that "traffic is switched by the (carrier) whose customer is the ISP and then delivered to the ISP, which is clearly the called party." Even with this ruling, the FCC still thinks that calls to ISPs are interstate. If the FCC is successful, then the next step might be to require access charges on the interstate portion of the ISPs interconnection agreements.

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<sup>9</sup> February 25, 1999 Order, Docket #96-98, 99-68.

<sup>10</sup> Consolidated cases beginning at 99-1094.