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TIME TO PAY UP: INTERNET SERVICE PROVIDERS' UNIVERSAL SERVICE OBLIGATIONS UNDER THE TELECOMMUNICATIONS ACT OF 1996

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I. INTRODUCTION

In 1996, Congress enacted the most comprehensive reform of telecommunications law in over fifty years. Part of this reform fundamentally changed the structure of Universal Service—the policy that everyone in the United States should have access to a telephone. Prior to the Telecommunications Act of 1996 ("1996 Act"), programs to implement Universal Service were funded by cross-subsidies within local telephone companies and by access charges imposed on subscribers and carriers. The 1996 Act changes the funding base for Universal Service by requiring *all* telecommunications carriers to contribute to Universal Service.

This change was necessary because the 1996 Act opens all telecommunications to competition, including local telecommunications. Since local telephone companies must now compete, they can no longer afford to maintain some of the cross-subsidies that traditionally funded Universal Service. In addition, the Federal Communications Commission ("FCC") recently removed most access charge funding of Universal Service and has begun to implement a new Universal Service funding mechanism.

The FCC has never specifically been granted jurisdiction to regulate the Internet. However, the Communications Act of 1934 gives the FCC broad jurisdiction—it directs the FCC to regulate "interstate and foreign commerce in communication by wire and radio."[1] Since information on

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1. 47 U.S.C. § 151 (1997).

the Internet mainly travels over telephone wires, it probably constitutes "communication by wire." Thus, under the Communications Act of 1934, the FCC can assert jurisdiction to regulate the Internet. The FCC is currently considering how it should govern the Internet.[2]

This article discusses the Internet governance issue of whether the FCC should require Internet service providers ("ISPs") to contribute to Universal Service. ISPs have been exempt from paying access charges and contributing to Universal Service since access charges were first imposed in 1983. The FCC is currently revisiting the ISP exemption. This article argues that the FCC should terminate the ISP exemption. As information and communications technologies converge, the FCC's service distinctions no longer make sense. The FCC needs a new, unified approach that obligates *all* who transmit information on the network, including ISPs, to contribute to Universal Service. In addition, failure to terminate the ISP exemption would create new incentives to bypass the telephone system and avoid Universal Service-related charges. Bypass is already occurring with the new Internet phone software. Since the 1996 Act attempts to solve the traditional bypass problem, the FCC should not create a new bypass problem by exempting a single type of carrier from Universal Service obligations.

Part II of this article reviews the history of Universal Service funding. It also describes the problems with Universal Service prior to the 1996 Act, such as the unclear signals sent by using implicit, internal subsidies to fund Universal Service, the lack of narrow targeting within Universal Service programs, and the bypass problem caused by exempting *some* carriers from contributing to Universal Service. Part II further discusses the recent attempts by Congress and the FCC to solve these problems by making all subsidies explicit, targeting subsidy recipients more carefully, and imposing Universal Service obligations on *all* telecommunications carriers to eliminate incentives to bypass the telephone system.

Part III reviews the history of the Internet. It also describes how the Internet works and how ISPs use the public telephone system in their business.

Part IV explains the origin of the ISPs' access charge exemption. Part IV also discusses the main arguments propounded by ISPs for why

2. *See* Kevin Werbach, *Digital Tornado: The Internet and Telecommunications Policy* (Mar. 1997) <http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp29.pdf> (analyzing the FCC's policy making role in regard to the Internet); In re Access Charge Reform, 11 F.C.C.R. 21, 354, at sec.x (released Dec.24, 1996) (Notice of Proposed Rulemaking, Third Report and Order, and Notice of Inquiry) [hereinafter Access Charge NPRM] (initiating an FCC notice of inquiry on the implications of information service and Internet usage and seeking comments on the costs Internet service providers impose on the telephone network and on whether Internet service providers should have Universal Service obligations).

their exemption should be maintained—that ISPs are not covered by the text of the 1996 Act and that imposing access charges and Universal Service obligations on ISPs would stunt the Internet's growth. Finally, Part IV argues that the FCC should terminate the ISP exemption so that all technologies are treated equally and so that new forms of bypass are discouraged.

II. UNIVERSAL SERVICE

A. THE IMPORTANCE OF UNIVERSAL SERVICE

Universal Service has been an accepted policy goal in the United States for over sixty years. During those sixty years, programs to further Universal Service have fairly successfully met their goals. The FCC reported that as of November 1996, 93.9% of U.S. households had telephone service.[3] However, that 93.9% is not evenly distributed among households. People who live in urban areas, and who are young, lower income, and African-American or Hispanic are less likely to have access to a phone.[4]

Universal Service is important both for those who receive the subsidies that allow them to have a telephone and for everyone else in the United States. For those who receive subsidies, access to a telephone is essential to education, health, and safety.[5] For others, the telephone network becomes more valuable as more people are connected to it. A household with a telephone has access to emergency medical services, law enforcement authorities, and fire departments.[6] This access is important for public health and safety.

In addition to providing health and safety functions, telephones support a democratic society. Democracy is based on decisionmaking by the public.[7] Telephones give people access to the information necessary to be an active part of society. They enable people to communicate with their government and to obtain the information required to participate in the political process. Telephones also give users access to educational services[8] and increase their ability to obtain and retain employment. People

3. FCC, *Tel. Subscribership Report*, 1997 F.C.C. LEXIS 283 (Jan. 16, 1997).

4. Milton Mueller & Jorge R. Schement, *Universal Service from the Bottom Up: A Profile of Telecommunications Access in Camden, New Jersey*, 12 THE INFO. SOC. 3 (1996).

5. Federal-State Joint Board on Universal Service, Notice of Proposed Rulemaking, 61 Fed. Reg. 10,499, 10,503 (Mar. 14, 1996) [hereinafter Universal Service NPRM].

6. *Id.*

7. KEVIN G. WILSON, TECHNOLOGIES OF CONTROL: THE NEW INTERACTIVE MEDIA FOR THE HOME 135 (1988).

8. NAT'L TELECOMMUNICATIONS AND INFO. ADMIN., NTIA TELECOM 2000: CHARTING THE COURSE FOR A NEW CENTURY 78 (Oct. 1988) (Special Pub. 88-21) [hereinafter NTIA TELECOM 2000].

can call about job listings, and employers can call potential employees about interviews or job offers.

Communication also reduces feelings of alienation,[9] and allows people to give meaning to their experiences and to participate in forming communities.[10] As a society, we want all people to participate in their communities. Thus, an important policy objective is to have telephones accessible to all, not depending on membership in an economic, social, political, or other community of interest.[11]

Universal Service is valuable to everyone else on the network as well. In economic terms, Universal Service creates positive externalities. Externalities arise whenever a transaction, such as hooking up a telephone, results in costs or benefits for individuals not involved in the transaction. For example, a neighbor of a person whose house is burning would benefit from that person being able to call the fire department, rather than waiting until the fire reaches a house with a telephone.

B. The History of Universal Service

The Universal Service concept was originated in the early 1900s by Theodore Vail, the President of the Bell System.[12] At that time, the Bell system[13] controlled almost the entire telephone system, having a monopoly in long distance service and telephone equipment and having about a 50% marketshare in local service. Vail believed that everyone should have access to a telephone for outgoing calls and that a single telephone company was necessary to meet that goal. He claimed that the telephone system was a natural monopoly, an industry where the costs of doing business drop the more business a company does.[14] Vail argued therefore, that competing telephone companies simply duplicate services and thus are inefficient.[15] Vail believed in Universal Service and that it should be supplied by one company, Bell.[16] Bell's slogan in 1908 was "One Policy, One System, Universal Service."[17] Bell "funded" Universal Service by keeping local rates artificially low and by setting business and

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9. Robert H. Anderson et al., Universal Access To E-Mail: Feasibility And Societal Implications 10 (1995), *available in* <http://www.rand.org/publications/MR/MR650>.

10. Wilson, *supra* note 7, at 143.

11. Larry L. Learn, *The Implications of Recent Telecommunications Developments for Abstracting and Indexing Services*, *in* Three Views of the Internet 7 (1993).

12. Michael K. Kellogg et al., Federal Telecommunications Law 11 (1992).

13. For clarity, this paper will use "Bell" to refer to the Bell company prior to its divestiture in 1982 and "AT&T" to refer only to the long-distance company after divestiture.

14. Robert B. Horwitz, The Irony of Regulatory Reform: The Deregulation of American Telecommunications 99 (1989).

15. *Id.*

16. Kellogg et al., *supra* note 12.

17. Kellogg et al., *supra* note 12, at 12.

long distance rates artificially high.[18]

Congress incorporated Vail's vision of universal access to basic communications into the Federal Communications Act of 1934 ("1934 Act").[19] The 1934 Act created the FCC to regulate all interstate and foreign communications by wire or radio. Under the 1934 Act, one of the FCC's purposes was to "make available, so far as possible, to all the people of the United States a rapid, efficient, nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges."[20]

At the time of the 1934 Act, Bell continued to fund Universal Service through cross-subsidies in several areas of service: (1) businesses were charged higher rates than residential customers for the same service; (2) urban and rural customers were charged the same monthly prices for basic service even though the cost of providing service in densely populated areas was lower; (3) long distance rates were priced above cost and local rates were priced below cost by allocating joint and common costs to long distance; and (4) nationwide rate averaging meant that the price per call was the same for the same distance even though the cost per call on heavily used routes was less than the cost per call on lightly used routes.[21]

Competition began making inroads into Bell's monopoly in customer premises equipment in the late 1940s[22] and in interstate long distance in the late 1950s.[23] In cases regarding this new competition, Bell argued that allowing competition would lead to "creamskimming." Creamskimming meant that competitors would take Bell's profitable business and leave Bell with only the customers who were expensive to serve. Bell claimed that creamskimming would harm Universal Service because some of Bell's cross-subsidies would no longer work if competition were

18. Ralph J. Andreotta, *The National Information Infrastructure: Its Implications, Opportunities, and Challenges*, 30 WAKE FOREST L. REV. 221, 227 (1995).

19. NTIA TELECOM 2000, *supra* note 8, at 79.

20. Communications Act of 1934, ch. 652 §1, 48 Stat. 1064 (1934), codified as amended at 47 U.S.C. §151 (1988).

21. THOMAS G. KRATTENMAKER, TELECOMMUNICATIONS LAW AND POLICY 467 (1994).

22. *See* Use of Recording Devices in Connection with Telephone Services, 11 F.C.C. 1033 (1947) (striking down Bell tariff provision that prohibited use of recording devices in connection with interstate service).

23. *See* Allocation of Frequencies in the Bands Above 890 Mc, 27 F.C.C. 359 (1959), *recon. denied*, 29 F.C.C. 825 (1960) (allowing company to use microwave signals to transmit its own long distance telephone traffic); MCI Telecommunications Corp. v. FCC [Execunet I], 561 F.2d 365 (D.C. Cir. 1977) (MCI was offering a service where customers could call MCI using a local line, and MCI would carry the long distance portion of the call. The D.C. Circuit remanded the case for an explanation of why competition was not in the public interest).

allowed.[24] Eventually, the FCC began to encourage competition.[25] It also sought to continue inexpensive local rates. However, by permitting competition, the FCC was slowing the revenue stream that had supported Universal Service.[26]

In 1974, the federal government sued Bell alleging antitrust violations in its long distance and equipment businesses.[27] In this case, Bell argued again that it needed to prevent competitors from creamskimming to protect subsidy flows for Universal Service.[28] The case was finally settled in 1982.[29] District Court Judge Greene reviewed and eventually approved the settlement known as the Modified Final Judgment ("MFJ"). Under the terms of the settlement, Bell was required to divest its local telephone companies. AT&T was allowed to keep the equipment and long distance businesses. The divested local business was split into seven Regional Bell Operating Companies ("RBOCs"). The RBOCs could not offer long distance, information services,[30] or equipment and could not participate in any competitive business. In addition to imposing these business restrictions on the RBOCs, the MFJ required the RBOCs to provide non-discriminatory access to its networks for all long distance carriers.

Maintaining inexpensive, undisrupted local service was a priority for Judge Greene.[31] However, divestiture necessitated replacement of the support for Universal Service, which had come from cross-subsidies. To support Universal Service, the MFJ allowed the RBOCs, under supervision of federal and state regulators, to levy access charges on long distance carriers. These access charges were intended both to cover the costs of local service, from which long distance carriers benefited through interconnection, and to continue the subsidies for local rates.[32] The access charges were significant. In 1983, the FCC estimated that $7 billion of revenue was transferred within the Bell system to reduce local service rates.[33]

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24. KELLOGG ET AL., *supra* note 12, at 503, 594.

25. *See* Use of the Carterphone Device in Message Toll Telephone Services, 13 F.C.C.2d 420, *recon. denied*, 14 F.C.C.2d 571 (1968) (allowing attachment of any customer premises equipment that did not adversely affect the telephone system's operation).

26. LEONARD S. HYMAN ET AL., THE NEW TELECOMMUNICATIONS INDUSTRY: EVOLUTION AND ORGANIZATION 151 (1987).

27. United States v. American Tel. & Tel. Co., 552 F. Supp. 131 (D.D.C. 1982); *aff'd*, 460 U.S. 1001 (1983).

28. *Id.* at 161.

29. *Id.* at 131.

30. The information services restriction was later lifted in United States v. Western Elec. Co., 993 F.2d 1572 (D.C. Cir. 1993).

31. KELLOGG ET AL., *supra* note 12, at 388.

32. KRATTENMAKER, *supra* note 21 at 510.

33. *Id.* at 467.

In 1984, the FCC decided to reprice telephone service by imposing a monthly, flat-rate charge on subscribers to replace part of the interstate carrier access charge levied on long distance carriers, also known as interexchange carriers ("IXCs").[34] Since then, the Universal Service system has been supported through a combination of explicit and implicit subsidies that have evolved over time.[35]

C. Problems With Universal Service Prior to the Telecommunications Act of 1996

To understand the Universal Service reforms in the 1996 Act, one must first understand the problems with Universal Service that existed at the time the law was passed. These problems are described below.

1. *Universal Service Programs Were Funded Through Implicit, Internal Subsidies*

Prior to the passage of the 1996 Act, many of the Universal Service programs were funded by implicit subsidies that were hidden in access charges. For instance, some programs like Long Term Support, required low-cost local telephone companies, also known as local exchange carriers ("LECs"), to subsidize high-cost LECs through the access charge system.[36] Others, like Link Up America, were funded by shifting LEC costs to IXCs.[37]

These internalized subsidies were inconsistent with competition.[38] Requiring IXCs to make large access payments to LECs resulted in all IXCs having similar cost structures. Thus, the amount of actual and potential price competition was reduced.[39] Since explicit subsidies for Universal Service would give better signals to users and result in efficiencies,[40] some commentators concluded that implicit, internal subsidies should be eliminated and that all subsidies should be made explicit.

2. *Universal Service Programs Were Not Narrowly Tailored*

Another problem with the Universal Service programs prior to the 1996 Act was that the programs were not narrowly targeted to serve

34. Robert W. Crandall & Leonard Waverman, Talk Is Cheap: The Promise of Regulatory Reform in North American Telecommunications 31 (1995).

35. Andreotta, *supra* note 18, at 227.

36. In re Federal-State Joint Board on Universal Service, 12 F.C.C.R. 87, at ¶ 190 (released Nov. 8, 1996) (recommended decision) [hereinafter Universal Service Recommended Decision].

37. Universal Service NPRM, *supra* note 5, at 10509.

38. NTIA Telecom 2000, *supra* note 8, at 31.

39. *Id.*

40. Hyman et al., *supra* note 26, at 179.

those with actual financial need. For instance, *all* local residential rates were subsidized by assigning a disproportionate burden of the costs to toll and business services.[41] Thus, under Universal Service prior to the 1996 Act, multiple lines going into a home would be subsidized. This lack of targeting resulted in a situation where one-seventh of African-Americans in the United States did not have telephones but multiple lines going into the homes of millionaires were being subsidized.[42]

In 1983, it was estimated that a 100% price increase would result in only an 8% decline in the total number of households with basic telephone service.[43] Thus, the demand for basic telephone service is highly inelastic.[44] Ideally, Universal Service would only subsidize the 8% who would otherwise lose their service.

3. *Universal Service Obligations Imposed Only on Local Exchange Carriers Led to Inefficient Bypass of the Local Telephone System*

By allowing competition in telephone service without imposing equal obligations on telecommunications carriers to contribute to Universal Service, the FCC created a problem. Since the access charges imposed by local telephone companies were priced above cost to fund Universal Service, IXCs had an incentive to bypass the LECs and seek to serve their customers without paying access charges. Bypass could be achieved using technologies like cellular service, dedicated microwave circuits or fiberoptic networks, and low orbiting satellites. [45] Thus, setting the access charges above cost encouraged bypass even in cases where LECs would actually be the most efficient providers of a service.[46]

Inefficient bypass results in welfare losses to society. Above-cost access charges may cause a customer to choose a provider who is not the most efficient service provider. When this happens, bypass customers and bypass carriers benefit, but society loses. A numerical example demonstrates how this can occur.[47] Assume a telephone customer spends $100,000 annually for long distance service that costs $50,000 to provide. The non-traffic sensitive cost of this customer allocated to long distance

41. NTIA TELECOM 2000, *supra* note 8, at 84.

42. FCC Chairman Reed Hundt, Speech at the Royal Inst. of Int'l Affairs (Sept. 4, 1996), *available in* 1996 F.C.C. LEXIS 5014.

43. *Id.*

44. HARRY M. TREBING, TELECOMMUNICATIONS REGULATION TODAY AND TOMORROW 125, 151 (Eli M. Noam ed., 1983).

45. CRANDALL, *supra* note 34, at 11; Tim Greene, *Carrier Hopes to Slice the Pie in the Sky via Global Satellite Net*, NETWORK WORLD, Oct. 9, 1995, at 14.

46. Access Charge NPRM, *supra* note 2, at ¶ 42.

47. This example is taken partially from Janusz A. Ordover & Robert D. Willig, *Local Telephone Pricing in a Competitive Environment*, *in* TELECOMMUNICATIONS REGULATION TODAY AND TOMORROW 267, 271 (Eli M. Noam ed., 1983).

is $20,000 annually and the traffic-sensitive portion is $30,000 per year. Thus, this customer contributes $50,000 annually to the telephone company in excess of the amount it costs the telephone company. The customer would choose to bypass the telephone company if any alternative method were priced at less than $100,000. However, such an alternative is efficient only if the annual cost of the alternative is less than $50,000. If the customer obtains service for $99,000 per year that costs $98,000 per year to provide, the customer would save $1000 per year and the bypass carrier would earn $1000 per year. However, the local telephone company would lose $50,000 in revenues. This loss must be borne either by the owners of the telephone company or by its other customers. The bypass is inefficient because its benefits only total $2000 per year while its costs total $50,000. The irony is that even though "competition" has increased through the bypass carrier's existence, the rates paid by the telephone company's customers increase.

The bypass incentive has had an enormous impact on the telephone system. A 1986 study by the General Accounting Office found that up to 30% of large customers were already bypassing the local telephone company to some degree and up to 53% were considering plans to initiate or increase bypass.[48] In 1984, an FCC model estimated $4 billion per year and a Bell Communications Research model estimated $10 billion per year in potential revenue losses to local telephone companies due to bypass.[49]

Prior to the passage of the 1996 Act, at least three potential solutions to the bypass problem had been proposed. These solutions included: (1) relying on competition to lower prices and removing Universal Service obligations completely; (2) funding the Universal Service programs with general tax revenues; and (3) imposing Universal Service obligations on *all* telecommunications carriers thereby eliminating incentives to bypass.

Some commentators argued that complete deregulation would solve the bypass problem.[50] This proposal was based on the theory that competition reduces prices for goods and services which makes them more affordable for more consumers and reduces the need for subsidies.[51]

In the example above, assume that the excess $50,000 the customer was charged was used to fund Universal Service. Under this proposal, the telephone company could have offered service for $50,000 a year be-

48. WALTER G. BOLTER, ET AL, TELECOMMUNICATIONS POLICY FOR THE 1990S AND BEYOND 232 (1990).

49. *Id.*

50. DANIEL L. BRENNER, LAW AND REGULATION OF COMMON CARRIERS IN THE COMMUNICATIONS INDUSTRY 26 (2d ed. 1996).

51. Inquiry on Universal Service and Open Access Issues Part III, 59 Fed. Reg. 48,112 at ¶ 11 (Sept. 19, 1994).

cause it would not have needed to collect the excess $50,000 to fund Universal Service. While this proposal is more efficient, it does not completely address the need for Universal Service. Even in a competitive market, some people would not be able to afford telephones. The deregulation proposal would not address the negative externalities caused by people not having telephones and the positive externalities people experience from having telephones. These include the negative externality of someone dying because a household does not have 911 access and the positive externalities people get from being able to call family, friends, local businesses, and potential employers. This proposal also ignores a pure equity argument for Universal Service. It is simply "fair" that everyone has access to a telephone.

A second proposal for solving the bypass problem was that the government should provide a pure public subsidy to the Universal Service program using general revenues.[52] Under this proposal, the government would purchase telecommunications services and distribute the services to those in need. In the example above, everyone's taxes would increase to cover the $50,000 cost of Universal Service. The telephone company could offer service for $50,000 a year. This proposal has three advantages. First, funding Universal Service with general revenues would remove the incentive for inefficient bypass because carriers no longer would have differing Universal Service obligations. Second, some economists argue that this proposal is efficient because it furthers the "benefit principle" that those who benefit from a service should pay for it. Funding Universal Service with general revenues would spread the costs of Universal Service to everyone who benefits from Universal Service—society as a whole. Third, the government could make its purchases conditional on certain development or support for underserved areas.[53] Thus, this proposal may encourage development by ensuring that development costs would be recovered.

While this proposal does appear to solve the bypass problem, it has several drawbacks as well. First, the "benefit principle" can also be invoked to support the third proposal discussed below, that all carriers should contribute to Universal Service. While society arguably benefits from Universal Service, those using the network benefit most from Universal Service, so those using the network should probably fund Universal Service.

In addition, imposing taxes on everyone to fund Universal Service would create additional work for the Internal Revenue Service without

52. *Id.* at ¶ 40; HYMAN ET AL., *supra* note 26, at 448.

53. MINISTER OF SUPPLY AND SERVICES CANADA, ACCESS, AFFORDABILITY AND UNIVERSAL SERVICE ON THE CANADIAN INFORMATION HIGHWAY 18 (Jan. 1995), *available at* <http://info.ic.gc.ca/info-highway/ih.html.>.

changing Universal Service much. Funding Universal Service through general revenues instead of through charges to carriers would impose additional costs only on those who currently have no telephone. While some people choose not to have a telephone, most people who do not have a telephone are probably too poor to have one. Those too poor to have telephones probably contribute little to the tax base and have the least ability to pay for Universal Service. Taxing them to pay for Universal Service makes no sense.

Further, the potential for encouraging development through government purchase of communications services may not offer a net benefit because the proposal and bid process often used by the government is time consuming and imposes additional costs.[54] Finally, in the context of the current political economy, raising taxes to fund new programs would not be well received. Therefore, this second proposal would offer some advantages but the proposal discussed below is more politically feasible.

A third solution proposed for the bypass problem was to impose Universal Service obligations on all carriers. This would remove the incentives for inefficient bypass since no carrier would have an exemption that it could use to lower its prices. As discussed above, this proposal would comply with the benefit principle which requires every company that benefits from the infrastructure of the telephone system to help build and support that infrastructure. If incumbent LECs no longer had the exclusive responsibility for Universal Service, they would no longer need to cross-subsidize.[55] In the example above, the telephone company and the bypass company would *each* have to contribute a percentage of their revenues to a centralized Universal Service fund that would finance Universal Service programs. The telephone company would get the customer's business because it is the most efficient service provider. Thus, this proposal encourages socially beneficial and efficient choices. This approach was adopted in the 1996 Act.

The disadvantage of requiring all carriers to contribute to Universal Service is that the system is complex to administer and is also subject to disputes over who should pay and who should be subsidized and by how much.[56] ISPs are currently at the center of such a dispute regarding whether they must contribute to Universal Service.[57]

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54. *Id.*

55. William G. Shepherd, *Concepts of Competition and Efficient Policy in the Telecommunications Sector, in* TELECOMMUNICATIONS REGULATION TODAY AND TOMORROW 79, 95 (Eli M. Noam ed., 1983).

56. MINISTER OF SUPPLY AND SERVICES CANADA, *supra* note 53, at 18.

57. *See* Section IV(B)(2) *infra*.

D. Universal Service Under The Telecommunications Act of 1996

1. *Overview of The Telecommunications Act of 1996*

The Telecommunications Act of 1996 makes sweeping changes in United States telecommunications law.[58] The 1996 Act opens *all* telecommunications markets to competition. This includes opening the local telephone market which has been held by regional monopolies since the Bell System was forced to divest its local companies in the Modified Final Judgment in 1982. In addition, to further encourage infrastructure growth, the 1996 Act requires *all* carriers to connect with other carriers.[59]

For the benefit of incumbent local monopolies, the 1996 Act eliminates the business restrictions and cross-ownership restrictions under which they had been operating. LECs are now free to enter the cable television market. LECs can also enter the long distance telephone market if they comply with certain requirements.[60]

In addition, the 1996 Act gives potential competitors new rights to help them compete with incumbent LECs. The 1996 Act confers three fundamental rights on potential competitors: the right to interconnect with local telephone companies at rates based on cost, including a reasonable profit;[61] the right to obtain access to unbundled pieces of the local network at cost-based rates;[62] and the right to obtain an incumbent LEC's retail services at wholesale discounts and the right to resell those services.[63]

In addition to opening the local telephone market to competition, the drafters of the 1996 Act also attempted to solve some of the problems with Universal Service. The 1996 Act requires that *all* providers of telecommunications service contribute to Universal Service and that the mechanism used to collect and distribute the Universal Service funds be specific, predictable, and sufficient to preserve and advance Universal Service.[64]

Congress directed the FCC to base its policies for the preservation and advancement of Universal Service on the following principles:[65]

58. Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (codified at 47 U.S.C. § 151 (1996)).

59. 47 U.S.C. § 251(a) (1996).

60. 47 U.S.C. § 271 (1996).

61. 47 U.S.C. §§ 251(c)(2), 252(d)(1) (1996).

62. 47 U.S.C. § 251(c)(3) (1996).

63. 47 U.S.C. § 251(c)(4) (1996).

64. 47 U.S.C. §§ 254 (b)(4),(5) (1996).

65. 47 U.S.C. § 254 (b) (1996).

(1) QUALITY AND RATES.—Quality services should be available at just, reasonable, and affordable rates.

(2) ACCESS TO ADVANCED SERVICES.—Access to advanced telecommunications and information services should be provided in all regions of the Nation.

(3) ACCESS IN RURAL AND HIGH COST AREAS.—Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas.

(4) EQUITABLE AND NONDISCRIMINATORY CONTRIBUTIONS.—All providers of telecommunications services should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service.

(5) SPECIFIC AND PREDICTABLE SUPPORT MECHANISMS.—There should be specific, predictable and sufficient Federal and State mechanisms to preserve and advance universal service.

(6) ACCESS TO ADVANCED TELECOMMUNICATIONS SERVICES FOR SCHOOLS, HEALTH CARE, AND LIBRARIES.—Elementary and secondary schools and classrooms, health care providers, and libraries should have access to advanced telecommunications services as described in subsection (h).

(7) ADDITIONAL PRINCIPLES.—Such other principles as the Joint Board and the Commission determine are necessary and appropriate for the protection of the public interest, convenience, and necessity and are consistent with this Act.

As well as including these general principles regarding Universal Service in the 1996 Act, Congress also specified procedures for determining the new Universal Service policies. The 1996 Act authorizes the FCC to institute and refer to a Federal-State Joint Board a proceeding to recommend changes that make FCC regulations consistent with the 1996 Act.[66]

In addition to its authorization to create the Joint Board on Universal Service, the FCC was authorized to institute proceedings to implement the local competition and access charge reform required by the 1996 Act. The FCC instituted such proceedings. The Local Competition Order was completed August 8, 1996.[67] The Joint Board on Universal

66. 47 U.S.C. § 254(a)(1) (1996).

67. Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, CC Docket No. 96-98, First Report and Order, 11 F.C.C.R. 15,499 (1996), Order on Reconsideration, CC Docket No, 96-98, 11 F.C.C.R. 13,042 (1996), petition for review pending and partial stay granted, sub nom. Iowa Utilities Board et. al v. FCC, No. 96-3321

Service released its recommendations November 8, 1996.[68] Finally, the FCC issued a *Notice of Proposed Rulemaking on Access Charge Reform* for which the comment period closed February 13, 1997.[69] In terms of Universal Service reform, both the recommendations of the Joint Board on Universal Service and the results of the Access Charge Reform proceeding are important because access charges and Universal Service have been closely related in the past.

The Joint Board on Universal Service consisted of eight people, three from the FCC, four state utility commissioners, and a designated consumer representative.[70] The Joint Board was to advise the FCC on implementing changes to its Universal Service program. The FCC wanted its Universal Service program to,

> [b]e as simple to administer as possible, technology-neutral, and designed to identify the minimum subsidy required to achieve the statutory goal of affordable and reasonably comparable rates throughout the country. It should be equitable and non-discriminatory in the burden that it imposes upon contributors, and its distribution procedures should be direct, explicit, and specific.[71]

After reviewing the recommendations of the Joint Board, the FCC issued its new Universal Service order and rules on May 8, 1997.[72]

In the Access Charge Reform proceeding, the FCC undertook a comprehensive review of its access charge regime to ensure that it complies with the 1996 Act.[73] The FCC's goal was to move towards significantly more cost-based access charges.[74] The FCC released a First Report and Order on the Access Charge Reform on May 16, 1997.[75]

Both the Joint Board on Universal Service and the FCC, in its Access Charge Reform proceedings, have attempted to solve some of the problems with Universal Service discussed in Section II(C) above.

2. *Solution to Implicit, Internal Subsidies*

Prior to the 1996 Act, Universal Service was funded by a combination of access charges and rate averaging systems. For instance, about

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and consolidated cases (8th Cir., Oct. 15, 1996), partial stay lifted in part, Iowa Utilities Board et. al v. FCC, No. 96-3321 and consolidated cases (8th Cir. Nov. 1, 1996).

68. Universal Service Recommended Decision, *supra* note 36.

69. Access Charge NPRM, *supra* note 2.

70. Steve Lohr, *A Nation Ponders Its Growing Digital Divide: Weighing Costs of Information-Age Access for Every School and Library*, N.Y. TIMES, Oct. 21, 1996, at C5.

71. Universal Service NPRM, *supra* note 5, at 10,504.

72. In re Federal-State Joint Board on Universal Service, 11 F.C.C.R. 13,708 (1996) (Report and Order) [hereinafter Universal Service Report and Order].

73. Access Charge NPRM, *supra* note 2, at ¶ 5.

74. *Id.* at ¶112.

75. In re Access Charge Reform, 1997 FCC LEXIS 2591 (released May 16, 1997) (First Report and Order) [hereinafter Access Charge First Report and Order].

25% of the cost of a local telephone company's connection to a customer was allocated to the interstate jurisdiction but only about 15% of the loop usage was interstate traffic.[76] These implicit subsidies created unclear signals regarding costs and reduced competition.[77] In the Congressional Committee Report on Section 254 of the 1996 Act, the section concerning Universal Service, the committee stated, "Conferees intend that any support mechanisms continued or created under new section 254 should be *explicit, rather than implicit* as many support mechanisms are today."[78] In addition, the 1996 Act states, "There should be *specific, predictable and sufficient* Federal and State mechanisms to preserve and advance universal service."[79]

The Joint Board on Universal Service proposed solving the problem of implicit subsidies by reducing access charges to cost and creating a new Universal Service mechanism with explicit subsidies. The Joint Board proposed that this new Universal Service mechanism would be funded by all interstate telecommunications carriers. These carriers would contribute to a fund based on a percentage of their telecommunications revenue less the amounts paid to other carriers.[80]

To demonstrate how these proposals will change the access charge system, five of the current access charges are analyzed below. The status of each access charge prior to the 1996 Act is described. Then the Joint Board proposals and the FCC decisions on how it should be administered to be consistent with the 1996 Act are summarized. Like these five access charges, other access charges will be changed in similar ways.

a. Subscriber Line Charge ("SLC") and Common Carrier Line Charge ("CCL")

Both the SLC and the CCL have been used by LECs to recover the interstate portion of local loop costs, the costs of connecting a customer to an LEC's central office. Prior to the 1996 Act, LECs recovered these costs through flat subscriber line charges to customers.[81] However, the SLC was capped at $3.50 per month for residential lines.[82] If an LEC did not recover the entire loop cost from the SLC, it recovered the remaining portion through a per-minute carrier common line charge paid by IXCs.[83] Charging the CCL on a per minute basis did not correlate with the fixed costs of maintaining the local loop. The result was that

76. Universal Service Recommended Decision, *supra* note 36, at n.2405.
77. *See* Section II(C)(1) supra.
78. Conference Report on Telecom Act of 1996 § 254, Feb. 1, 1996 (emphasis added).
79. 47 U.S.C. § 254(b)(5) (1996) (emphasis added).
80. Universal Service Recommended Decision, *supra* note 36, at ¶ 778.
81. Universal Service NPRM, *supra* note 5, at 10,516.
82. *Id.*
83. *Id.*

high volume long distance customers contributed more than the costs of their lines.[84]

The Joint Board did not decide whether this use-sensitive CCL was a support flow for Universal Service.[85] However, it did conclude that the current CCL is an inefficient method of cost recovery and recommended that LECs not be required to recover non-traffic sensitive costs on a traffic sensitive basis.[86] The FCC adopted an alternative approach based on a proposal by the Joint Board that LECs are to recover a flat charge on each line from a customer's presubscribed long distance carrier.[87] However, while the Joint Board had proposed that any balance be through the new Universal Service support mechanism,[88] the FCC decided to allow LECs to continue charging IXCs on a traffic sensitive basis for two to three years.[89]

b. Long Term Support ("LTS") Payments

LTS supports carriers with higher than average subscriber line costs (often rural carriers). LTS payments allow all LECs to charge a nationwide average CCL interstate access rate. Prior to the 1996 Act, LTS was funded by contributions from LECs with lower than average subscriber line costs.[90]

The Joint Board concluded that LTS payments constitute a Universal Service support mechanism that serves to equalize LECs' access charges by raising some carriers' charges and lowering others' charges.[91] The Joint Board recommended that LTS no longer be supported via the access charge regime but that high cost LECs continue to receive payments comparable to LTS from the new Universal Service support mechanism.[92] The FCC adopted the Joint Board's recommendations.[93]

c. Link Up America

Link Up America provides support for low income consumers by paying for a portion of telephone installation charges. Prior to the 1996 Act, it was funded by shifting local costs to IXCs.[94] The Joint Board recommended that the cost-shifting cease and that Link Up America be funded

84. *Id.*
85. Universal Service Recommended Decision, *supra* note 36, at ¶ 774.
86. *Id.* at ¶ 754.
87. Access Charge First Report and Order, *supra* note 75, at ¶ 72.
88. Universal Service Recommended Decision, *supra* note 36, at ¶ 776.
89. Access Charge First Report and Order, *supra* note 75, at ¶ 71.
90. Universal Service Recommended Decision, *supra* note 36, at ¶ 190.
91. *Id.* at ¶ 767.
92. *Id.* at ¶ 768.
93. Universal Service Report and Order, *supra* note 72, at ¶ 751.
94. Universal Service NPRM, *supra* note 5, at 10,509.

through contributions from all interstate telecommunications carriers to the new Universal Service mechanism.[95] The FCC adopted the Joint Board's recommendation.[96]

d. Lifeline

Lifeline provides support for low income consumers by waiving part or all of the Subscriber Line Charge. Prior to the 1996 Act, Lifeline was funded by shifting the SLC to IXCs.[97]

Even though the 1996 Act states that "nothing in this section shall affect the collection, distribution, or administration of the Lifeline Assistance program,"[98] the Joint Board recommended that the Lifeline support be delinked from the SLC and funded through the new Universal Service mechanism so that all carriers, not just long distance carriers, would contribute to supporting this program.[99] The FCC adopted this proposal by the Joint Board.[100] Now, all carriers that provide interstate telecommunications services will contribute to Lifeline on an equitable and nondiscriminatory basis.

3. *Solution to Subsidies Not Being Narrowly Tailored*

Prior to the 1996 Act, people who did not need subsidies were receiving subsidies. For example, a millionaire with multiple lines running into his house received Universal Service subsidies on each residential line.[101] To solve this problem, the Joint Board recommended that Universal Service support should not be provided for multi-line business or residential connections beyond the primary residential connection.[102] Under this recommendation, the initial primary residence line would be the only type of line fully supported and service to single-connection businesses would be supported at a reduced rate.[103] In its recent *Access Charge First Report and Order*, the FCC decided to raise the Subscriber Line Charges on multi-line businesses from $6.00 per month to $9.00 per month in the first year and to phase in increases for non-primary residential connections.[104] However, households and single line businesses that could afford to pay the full cost of a primary line will still be subsi-

95. Universal Service Recommended Decision, *supra* note 36, at ¶¶ 8, 423, 426.
96. Universal Service Report and Order, *supra* note 72, at ¶ 379.
97. Universal Service NPRM, *supra* note 5, at 10,509.
98. 47 U.S.C. § 254(j) (1997).
99. Universal Service Recommended Decision, *supra* note 36, at ¶¶ 8, 423, 426.
100. Universal Service Report and Order, *supra* note 72, at ¶ 364.
101. *See* Section II(C)(2) *supra*.
102. Universal Service Recommended Decision, *supra* note 36, at ¶¶ 89-92.
103. *Id.* at ¶¶ 4, 89.
104. Access Charge First Report and Order, *supra* note 75, at ¶ 39.

dized. Thus, the narrow tailoring problem will still only be partially resolved.

4. *Solution to Bypass*

As explained in Section II(C)(3) above, prior to the 1996 Act, imposing access charges that were above cost caused substantial bypass of LECs even though LECs may have been the most efficient providers of local service. To solve this problem, the 1996 Act requires that "*All* providers of telecommunications services should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service."[105] It also states that "[*e*]*very* telecommunications carrier that provides interstate telecommunications services shall contribute, on an equitable and nondiscriminatory basis, to the specific, predictable, and sufficient mechanisms established by the Commission to preserve and advance universal service."[106] Carriers can be exempted from this requirement "only . . . in cases where the administrative cost of collecting contributions from a carrier or carriers would exceed the contribution that carrier would otherwise have to make under the formula for contributions selected by the Commission."[107]

The Joint Board recommended that all carriers that provide interstate telecommunications services make contributions to the support mechanism based on their gross interstate and intrastate telecommunications revenues less payments to other telecommunications carriers.[108] The FCC adopted a modified proposal which would assess contributions based on interstate and intrastate revenues from end-user telecommunications for Universal Service programs related to schools, libraries, and health care providers.[109] For Universal Service programs covering high cost and low income consumers, the contributions would only be based on interstate end-user telecommunications revenues.[110]

The Joint Board also recommended that the requirement that *all* carriers that provide interstate telecommunications service be construed broadly: "We recommend requiring any entity that provides any interstate telecommunications for a fee to the public, or to such classes of eligible users as to be effectively available to a substantial portion of the public, to contribute to the fund."[111] To define which carriers are included in "*every* telecommunications carrier that provides interstate telecommunications," the Joint Board recommended that the FCC adopt a

105. 47 U.S.C. § 254(b)(4) (1997) (emphasis added).
106. 47 U.S.C. § 254(d) (1997) (emphasis added).
107. S. Conf. Rep. No. 104-230, 104th Cong., 2d Sess. 131 (1996).
108. Universal Service Recommended Decision, *supra* note 36, at ¶ 778.
109. Universal Service Report and Order, *supra* note 72, at ¶ 772.
110. *Id.*
111. *Id.* at ¶ 784.

similar definition of "interstate telecommunications" as that used for determining Telecommunications Relay Service ("TRS") support which includes "cellular telephone and paging, mobile radio, operator services, PCS, access (including SLC), alternative access and special access, packet switched, WATS, 800, 900, MTS, private line, telex, telegraph, video, satellite, international, interLATA and resale services."[112] The FCC adopted these proposals with minor changes.[113] The only change relevant to this article is that the FCC removed "packet switched" from the list of interstate telecommunications stating, "We agree with the Joint Board that "packet switched" services can qualify as interstate telecommunications, but we remove "packet switched" from our list because that term describes how information is transmitted rather than defining a particular service that would be ordered by a customer."[114] Thus, the FCC did not foreclose the possibility that packet-switched services, which will be explained below, might be subject to Universal Service obligations. This broad interpretation of interstate telecommunications should help solve the bypass problem described above because if all carriers must contribute the same percentage of their revenues, there is no incentive to engage in inefficient bypass.

One of the ongoing issues in Universal Service and Access Charge Reform is whether Internet service providers should be included as carriers required to contribute to Universal Service and pay access charges. This issue is discussed below. First, some background information on the Internet and Internet service providers gives context to the current issues.

III. THE INTERNET

A. THE INTERNET AND HOW IT WORKS

The Internet is a network of networks.[115] It allows people to communicate with each other through various interconnected communications networks.[116] These networks use twisted pair copper wire, coax cable, fiber optic cable, satellites, and wireless technologies to transmit information from one computer to another at speeds of billions of bits per second.[117] The networks are provided by LECs, IXCs, cable television providers, television and radio broadcasters, cellular carriers, competitive access providers, paging system providers, and satellite provid-

112. *Id.* at ¶¶ 780, 785.

113. Universal Service Report and Order, *supra* note 72, at ¶ 780.

114. *Id.*

115. BRENDAN P. KEHOE, ZEN AND THE ART OF THE INTERNET 4 (1993).

116. Andreotta, *supra* note 18, at 222.

117. *Id.*

ers.[118] The Internet allows users to communicate quickly and easily.

The average person uses the Internet to communicate with others, conduct research, shop, and read the news. Individual users usually connect to the Internet through universities, employers, or private Internet service providers like America Online, Netcom, Prodigy, or CompuServe. An individual's computer is connected to a host computer either by dialing the host computer and connecting with it using a modem or by being hard-wired to the host.

To access a dial-up connection, a user needs only a telephone line, a modem, and a computer.[119] Dial up access is now available for $15 to $100 per month.[120] To use dial-up access, the user calls a local number that connects the user's computer to a host computer.[121] Information then flows back and forth between the two computers. Every host on the Internet has a numeric address, called its Internet number or IP Address.[122] The host is connected to a regional network, which connects to an Internet backbone. At each stage, the computers know where to send the information by using routing information attached to the user's data.

The Internet uses a technology called packet-switching to transport data. Before a user's data are sent over the Internet, they are broken into small chunks called "packets."[123] Packets can contain data, digital voice, digitized images or video.[124] Each packet contains a header with its routing information.[125] Computers along the Internet examine the headers and move each packet along to the next site closer to its destination.[126] If one link fails, the computer selects an alternate route.[127] When one computer is not sending packets, the line is available for packets from other computers.[128] Packet-switching is an extremely efficient use of network resources because packets from different users can be mixed together and sorted at separate destinations.[129]

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118. *Id.* at 223.

119. Carol C. Henderson & Frederick D. King, *The Role of Public Libraries in Providing Public Access to the Internet, in* PUBLIC ACCESS TO THE INTERNET 161 (Brian Kahin & James Keller eds., 1995).

120. *Id.*

121. PAUL GILSTER, THE NEW INTERNET NAVIGATOR 33 (1995).

122. KEHOE, *supra* note 115, at 3.

123. Jeffrey K. Mackie-Mason & Hal R. Varian, *Pricing The Internet, in* PUBLIC ACCESS TO THE INTERNET 270 (Brian Kahin & James Keller eds., 1995).

124. JOHN C. MORLEY & STAN S. GELBER, THE EMERGING DIGITAL FUTURE: AN OVERVIEW OF BROADBAND AND MULTIMEDIA NETWORKS 71 (1996).

125. GILSTER, *supra* note 121, at 23.

126. *Id.*

127. *Id.*

128. Mackie-Mason & Varian, *supra* note 123, at 270.

129. Brian Kahin, *The Internet And The National Information Infrastructure, in* PUBLIC ACCESS TO THE INTERNET 12 (Brian Kahin & James Keller eds., 1995).

A "packet-switched" network differs from the network used for telephone calls, the "circuit-switched" network. When a telephone user dials a number using the circuit-switched network, a dedicated path is set up between the caller and the number called. That path is held open until the call is terminated.[130] When using a packet-switched network, no end-to-end circuit needs to be established.[131] Packets travel independently and may travel over different paths in a network to reach a common destination.[132]

Many different types of computers can communicate over the Internet because the Internet uses a standard protocol called TCP/IP.[133] This protocol is a set of conventions that determines how data are exchanged between different programs.[134] Transmission Control Protocol ("TCP") breaks up the messages into packets and specifies how to reassemble them.[135] Internet Protocol ("IP") provides the necessary information for computers acting as routers to move each packet to the next link towards its final destination.[136]

No single entity owns the Internet. The Internet is an overlay network that depends on the telephone infrastructure for transport and routing.[137] So, most lines connecting computers on the Internet are owned by telephone companies. The Internet could be considered a "virtual" private network because it uses facilities owned by telephone companies but is a private digital network.[138] However, the Internet differs from other private digital networks that might be owned by companies to transmit their own data, because it was built partially by the federal government and is managed in a highly decentralized fashion.[139]

B. THE HISTORY OF THE INTERNET

1. *From Remote Computing to Communications Tool*

The first ideas for the Internet and packet-switching were developed around 1961.[140] The Internet grew out of a network created for the Ad-

130. Mackie-Mason & Varian, *supra* note 123, at 270.
131. MORLEY & GELBER, *supra* note 124, at 71.
132. *Id.*
133. KEHOE, *supra* note 115, at 4.
134. GILSTER, *supra* note 121, at 21.
135. Mackie-Mason & Varian, *supra* note 123, at 270.
136. *Id.*
137. ANDERSON ET AL, *supra* note 9, at 80.
138. Paul E. Peters, *Product and Service Development Strategies in the Rapidly Developing Marketplace for Internet Information*, *in* THREE VIEWS OF THE INTERNET 21, 23 (Ann Marie Cunningham & Wendy Wicks eds. 1993).
139. *Id.*
140. Barry M. Leiner et al., *A Brief History of the Internet* (last modified Feb. 20, 1997) <http://www.isoc.org>.

vanced Research Projects Agency ("ARPA") of the U.S. Department of Defense called ARPAnet.[141] ARPAnet connected university, military, and defense contractors so that researchers could share information and could study computer-based command and control for the U.S. military.[142] By the end of 1969, four universities were connected to ARPAnet.[143]

At first, users could only log on and run programs on remote computers.[144] There was no concept of user-to-user communications in this stage.[145] In 1973, ARPA, under the new acronym, DARPA (Defense Advanced Research Projects Agency), began a project called the Internetting Project.[146] The goal was to examine packet switching by radio and satellite in two networks linked to ARPAnet; and to develop gateways that would allow information to pass seamlessly between them.[147] The designers of ARPAnet soon added file transfer, electronic mail and mailing list capabilities.[148] With these additions, users could communicate with each other over the network.[149]

2. *The Network Expands*

In 1983, the U.S. Defense Communications Agency mandated the use of the TCP/IP protocol for all ARPAnet hosts.[150] This established a standard which helped the Internet grow.

In the 1980s, ARPAnet expanded by allowing interconnection by groups like CSNET, a network linking computer science departments in several states.[151] In addition, the National Science Foundation ("NSF") developed NSFnet which connected university campuses to six supercomputing centers.[152] By 1986, NSF had expanded its efforts into a backbone network.[153] NSF also helped fund regional networks in-

141. C. BRYAN GABBARD & GEORGE S. PARK, THE INFORMATION REVOLUTION IN THE ARAB WORLD: COMMERCIAL, CULTURE AND POLITICAL DIMENSIONS—MIDDLE EAST MEETS THE INTERNET 11 (1995).

142. GILSTER, *supra* note 121, at 21.

143. Leiner, *supra* note 140.

144. GILSTER, *supra* note 121, at 21.

145. Terrence P. McGarty & Carole Haywood, *Internet Architectural And Policy Implications For Migration From High-End User To The New User*, *in* PUBLIC ACCESS TO THE INTERNET 234, 236 (Brian Kahin & James Keller eds., 1995).

146. GILSTER, *supra* note 121, at 21.

147. *Id.*

148. *Id.*

149. McGarty, *supra* note 145, at 237.

150. GILSTER, *supra* note 121, at 23.

151. *Id.*

152. *Id.* at 24.

153. *Id.*

tended to connect universities to NSFnet.[154] The original NSFnet backbone connected six sites by 56-kbps data circuits. This backbone was quickly overloaded.[155] From 1982 to 1986, the backbone was upgraded to the T1 rate (1.544 Mbps).[156] In 1987, NSF awarded a contract to Merit, Inc. (Michigan Education and Research Infrastructure Triad) in partnership with MCI and IBM to manage and operate the NSFnet backbone and continue its development.[157]

By July 1988, NSFnet had 13 nodes connected to its backbone.[158] Between July 1988 and July 1989, the network averaged 20% growth per month.[159] During this period, many local and regional networks were attached to the network.[160]

At the close of the 1980s, the networks of the Internet were still noncommercial and if not directly subsidized, were indirectly subsidized by their free use of the cross-country NSFnet backbone.[161] NSFnet's Acceptable Use Policy, which governed the use of its network, excluded "extensive use for private or personal business."[162]

3. *Commercial Use Begins and Government Involvement Declines*

In the early 1990s, commercial use of the Internet began, and the government began to withdraw funding for the Internet. Commercial Internet access was first offered by PSI and AlterNet beginning in early 1990.[163] In September 1990, NSF announced formation of Advanced Network & Services, Inc. ("ANS").[164] ANS was created by Merit, IBM, and MCI and operated under contract to Merit.[165] This contract required ANS to operate the T1 backbone and to build a new T3 backbone (45 Mbps) to supersede it.[166] The T3 backbone was completed in 1992.[167] This upgrade represented a 700-fold increase in power.[168] T3 lines carry data at the equivalent of 1,400 pages single-spaced text per

154. *Id.*
155. *Id.*
156. McGarty, *supra* note 145, at 237.
157. GILSTER, *supra* note 121, at 24.
158. *Id.*
159. *Id.*
160. McGarty, *supra* note 145, at 237.
161. Kahin, *supra* note 129, at 6.
162. GILSTER, *supra* note 121, at 41.
163. Kahin, *supra* note 129, at 6.
164. GILSTER, *supra* note 121, at 24.
165. *Id.*
166. *Id.*
167. Smoot Carl-Mitchell & John S. Quarterman, *The Recent History of the Internet and the Matrix* (visited Mar. 28, 1997) <gopher://akasha.tic.com:70/00/tic/history.recent>. GILSTER, *supra* note 121, at 24.
168. GILSTER, *supra* note 121, at 24.

second.[169] With the T3 backbone functioning, a new arrangement developed that allowed ANS to operate two separate networks over the same equipment: NSFnet would continue to support institutions reliant on government subsidies for connections and ANS CO+RE, a subsidiary, which would support commercial users of the Internet.[170] ANS was acquired by America Online in 1994.[171]

By 1994, commercial use of the Internet had grown to such an extent that the number of commercial Internet hosts exceeded the number of educational hosts.[172] Commercial Internet service providers like Prodigy, CompuServe, America Online, and GEnie began to link their users to the Internet.[173]

In April 1995, the funding for the NSFnet backbone was removed by NSF.[174] The ARPAnet had also been decommissioned in 1990.[175] Today, a few of the networks that make up the Internet are still subsidized by the government, but most are not.[176] Nevertheless, the assumption that the Internet is government-subsidized lingers.[177]

In 1996, the network moved to a gigabit-per-second backbone, allowing real-time access to multimedia processing, video, and supercomputer networking.[178] End users' computers may now have sufficient processing power and memory to be hosts.[179] One of the newest features on the Internet is the World Wide Web. It allows users to click on hypermedia links to see data no matter where the data are located. Many new users are connecting to the Internet to use the World Wide Web.[180] One of the other new trends on the Internet is real-time applications like Internet telephony products which are discussed in detail in Section IV(B)(2) below.

4. *The Internet Today*

Today the backbone of the Internet is run by internetMCI, a commercial service provider operating with SprintLink and ANSNET.[181] It can be operated over telephone lines, cable television lines, satellite

169. *Id.*
170. *Id.*
171. *Id.* at 25.
172. GABBARD & PARK, *supra* note 141, at 13.
173. Kenneth D. Suzan, *Tapping to the Beat of a Digital Drummer: Fine Tuning U.S. Copyright Law for Music Distribution on the Internet*, 59 ALB. L. REV. 789, 793 (1995).
174. Leiner, *supra* note 140.
175. GILSTER, *supra* note 121, at 23.
176. Kahin, *supra* note 129, at 6.
177. *Id.*
178. McGarty, *supra* note 145, at 237.
179. *Id.* at 238.
180. GILSTER, *supra* note 121, at 20.
181. *Id.* at 24, 25.

links, fiber-optic lines, or wireless communications systems. The mid-level networks are run by various entities: some are operated by states, some are run by consortia, some are run commercially, and some are managed by university computer scientists.[182] NSF has encouraged regional networks to connect to new sites and wean themselves of NSF support.[183] Each network is responsible for its own funding and its own administrative procedures.[184]

It is difficult to estimate the size of the Internet but estimates in January 1997 range from about 4 million to 16 million host computers connected.[185] These estimates are up from the estimates of one year earlier of 1.6 million to 9.4 million hosts.[186] In 1995, there were an estimated 22 to 30 million users and that number has surely risen since then.[187] However, extensive Internet use is by no means nationwide. Fifty percent of U.S. Internet hosts are located in just five states: California, Massachusetts, New York, Texas, and Virginia, and within those states the hosts are densely concentrated in a small number of metropolitan regions.[188]

Even though the federal government has removed most of its financial support for the Internet as the Internet has commercialized, President Clinton's Administration strongly supports Internet development. The Clinton Administration believes that all segments of U.S. society and sectors of the economy will depend upon access to reliable, affordable, and ubiquitous networks and networked information in the twenty-first century, just as society and the economy in the twentieth century depended upon access to reliable, affordable, and ubiquitous highways and transportation resources and services.[189]

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182. *Id.*

183. *Id.*

184. *Id.* at 38.

185. Network Wizards, *Internet Domain Survey* (visited Feb. 10, 1997) <http://www.nw.com>.

186. Network Wizards, *Internet Growth Summary* (visited Mar. 28, 1997) <http://www.mit.edu/people/mkgray/net/internet-growth-summary.html>.

187. *See* GILSTER, *supra* note 121, at 19.

188. Mitchell L. Moss & Anthony Townsend, *Leaders and Losers on the Internet* (last modified Sept. 11, 1996) < http://www.nyu.edu/urban/research/internet/internet.html>.

189. Peters, *supra* note 138, at 24. The Clinton Administration also supports moving toward including support for universal access to the Internet in Universal Service programs. The 1996 Act contains provisions that start the movement in that direction. Universal access to the Internet is beyond the scope of this paper, but there have been several proposals and analyses of this issue. *See* ANDERSON ET AL., *supra* note 9; Public Access to the Internet (Brian Kahin & James Keller eds., 1995).

C. How Internet Service Providers Use the Public Switched Telephone Network

An Internet service provider is an entity whose function is to allow dial-in users to access the Internet. ISPs vary in many dimensions including their target market served, their area of coverage, and their organizational form (for-profit versus non-profit).[190] ISP costs vary with these dimensions.[191] ISP entry costs are low—the hardware needed costs less than $15,000.[192]

To serve its customers, an ISP sets up a center which has modems, routers, World Wide Web servers, authentication servers, and mail servers.[193] From this dial-up center, customers' traffic is routed to the Internet backbone over dedicated facilities or to other on-line services.[194] ISPs like CompuServe and America Online usually lease long distance transmission facilities from common carriers such as AT&T and MCI.[195]

To lessen the expense of access for their customers, ISPs try to locate their dial-up centers so that subscribers can dial in by placing a local call.[196] An ISP's local communications costs are low because ISPs are considered regular business customers by current telecommunications regulations.[197] Thus, ISPs can lease a flat-rate business line that has no per-minute, usage-based charge for receiving calls from its customers.[198] For example, the price for a local business line in Virginia is $16.93 to $18.93 per month per line (including the subscriber line charge).[199] That price is all that an ISP would have to pay for a line because an ISP's traffic is all incoming, and current FCC regulations contain no charges for incoming calls, otherwise known as terminating access.[200] However, the FCC is now seeking comments on whether it should require parties receiving calls to pay for terminating access, so this may change.[201]

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190. Anderson et al., *supra* note 9, at 96.

191. *Id.*

192. *Id.* at 98.

193. *Report of Bell Atlantic on Internet Traffic*, (visited Mar. 28, 1997) <http://www.ba.com/ea/fcc/report.htm> [hereinafter Bell Atlantic Report].

194. *Id.*

195. Morley & Gelber, *supra* note 124, at 89.

196. Bell Atlantic Report, *supra* note 193.

197. *Id.*

198. In re Amendments of Part 69 of the Commission's Rules Relating to Enhanced Service Providers, 2 F.C.C.R. 4305 (released July 17, 1987) (Notice of Proposed Rulemaking).

199. Bell Atlantic Report, *supra* note 193.

200. Access Charge NPRM, *supra* note 2, at n.380.

201. *Id.* at ¶ 275.

IV. INTERNET SERVICE PROVIDERS' OBLIGATIONS TO PAY ACCESS CHARGES AND CONTRIBUTE TO UNIVERSAL SERVICE

A. ISPs' CURRENT EXEMPTION FROM ACCESS CHARGES

As explained above, Universal Service has been partially funded through access charges since 1983. However, ISPs have been exempt from paying access charges, so they also have been exempt from contributing to Universal Service.

ISPs are considered enhanced service providers ("ESPs") by the FCC. The FCC first distinguished "enhanced services" from "basic services" in its *Computer II* hearings.[202] In these hearings, the FCC attempted to determine which computer and telecommunications services to regulate.[203] The FCC had found its earlier distinction between "data processing" and "telecommunications" unworkable and wanted a new regulatory distinction.[204] In *Computer II*, the FCC defined "basic" services as transmission and switching only. Everything else was "enhanced" services.[205]

In 1983, when the FCC adopted its access charge plan, it temporarily exempted ESPs from having to pay access charges because it was concerned about rate shock. The FCC thought the shock on the ESPs might be too great if they suddenly had to go from paying only for a regular business line to paying full access charges.[206] At that time, the FCC said that the exemption was only temporary and that it wanted to develop a rate structure under which all exchange access users were charged on the same basis.[207] Nevertheless, the ESP exemption has continued since then.

In 1987, the FCC tentatively concluded that the exemption from access charges for ESPs should be removed and that they should be subject to access charges for using local exchange facilities.[208] The FCC was concerned that ESPs were not paying enough to cover the costs of exchange access facilities they use.[209] The FCC decided that the ESPs had been warned that they would be subject to access charges, so the rate

202. *See* In re Amendment of Section 64.702 of the Commission's Rules and Regulations (Second Computer Inquiry), 77 F.C.C.2d 384 (released May 2, 1980) (Final Decision) [hereafter Computer II].

203. *Id.* at 1.

204. *Id.* at 394.

205. *Id.* at 420.

206. *See* In re MTS and WATS Market Structure, 97 F.C.C.2d 682 (1983) (Memorandum Opinion and Order).

207. *Id.* at ¶ 77.

208. In re Amendments of Part 69 of the Commission's Rules Relating to Enhanced Service Providers, *supra* note 198.

209. *Id.*

shock rationale no longer applied. However, the FCC decided not to remove the ESP access charge exemption at that time because the ESP industry was entering a "unique period of rapid and substantial change."[210]

The exemption was reviewed again in 1989.[211] Not surprisingly, ESPs supported retention of their exemption.[212] LECs argued that the exemption should be phased out because it unfairly gives ESPs special preference and forces other users to absorb the costs not covered by ESPs.[213] The FCC noted that the ESP industry had an important need for stability in a transitional phase of its development.[214] However, the FCC also noted that the exemption places some burden on ordinary interstate ratepayers because ESP customers do not contribute to the interstate share of local exchange costs to the same extent that customers of other interstate services do.[215] The FCC balanced its desire to foster development of the enhanced services industry with its concern that special treatment of ESPs not unduly burden other interstate ratepayers.[216] After balancing, the FCC concluded that the ESP exemption should be retained.[217]

B. ISPs Under The 1996 Act

The 1996 Act does not address who must contribute to Universal Service except by saying that "[*a*]*ll* providers of telecommunications services should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service"[218] and that "[*e*]*very* telecommunications carrier that provides interstate telecommunications services shall contribute, on an equitable and nondiscriminatory basis, to the specific, predictable, and sufficient mechanisms

210. In re Amendments of Part 69 of the Commission's Rules Relating to Enhanced Service Providers, 3 F.C.C.R. 2631 (released Apr. 27, 1988) (Order).

211. In re Amendments of Part 69 of the Commission's Rules Relating to the Creation of Access Charge Supplements for Open Network Architecture, 4 F.C.C.R. 3983 (released May 9, 1989) (Notice of Proposed Rulemaking).

212. In re Amendments of Part 69 of the Commission's Rules Relating to the Creation of Access Charge Supplements for Open Network Architecture Policy and Rules Concerning Rates for Dominant Carriers, 6 F.C.C.R 4524, ¶ 56 (released July 11, 1991) (Report and Order & Order on Further Reconsideration & Supplemental Notice of Proposed Rulemaking).

213. *Id.* at ¶ 57.

214. In re Amendments of Part 69 of the Commission's Rules Relating to the Creation of Access Charge Supplements for Open Network Architecture, *supra* note 211, at 3987.

215. *Id.*

216. *Id.*

217. *See* In re Amendments of Part 69 of the Commission's Rules Relating to Enhanced Service Providers, *supra* note 210, at ¶ 60.

218. 47 U.S.C. § 254(b)(4) (1997) (emphasis added).

established by the Commission to preserve and advance universal service."[219]

In the Joint Board proceeding on Universal Service and the FCC proceeding on access charge reform, the issue of whether ISPs should be subject to access charges and Universal Service obligations has been discussed. In its recent Universal Service Order, the FCC concluded that information service providers and enhanced service providers are not required to contribute to Universal Service support mechanisms to the extent they provide information and enhanced services.[220] Unfortunately, this does not completely resolve the issue. The FCC has asked the Network Reliability and Interoperability Council, an advisory committee of industry representatives organized to advise the FCC, to analyze the effects of Internet usage on the public switched telephone network.[221] In addition, the FCC issued a *Notice of Inquiry on Implications of Information Service and Internet Usage* seeking comments on the costs ISPs impose on the telephone network and on whether some services provided by ISPs should produce Universal Service obligations.[222]

The ISPs' current exemption from paying access charges means that ISPs are exempt both from paying access charges that other telecommunications providers must pay and from contributing to Universal Service. Although this article primarily deals with Universal Service, a brief contextual discussion of access charges is warranted here.

1. *Applying Access Charges to ISPs*

As discussed in Section II(D) above, the Joint Board on Universal Service recommended and the FCC is moving toward discontinuing support of Universal Service through access charges and reducing access charges so they only represent the cost of local access. Thus, the issue of whether access charges are applied to ISPs will have more bearing now on cost recovery than on Universal Service.

No one has argued that ISPs should not pay for the costs they impose on the network. The current disagreement is over whether the ISPs *do* pay for their costs.

Some argue that ISPs are not paying for the costs they impose on network. They argue that since ISPs do not charge their customers on a time-sensitive basis, they are not covering their costs. For example, Pacific Telesis offered 20 hours of Internet access per month for $14.95, with each additional hour priced at 50 cents, up to a maximum charge of

219. 47 U.S.C. § 254(d) (1997) (emphasis added).

220. Universal Service Report and Order, *supra* note 72, at ¶ 788.

221. Access Charge NPRM, *supra* note 2, at ¶ 287.

222. *Id.* at sec. X. Comment Date Mar. 24, 1997, Reply Comment Date Apr. 23, 1997. Comments can be found at <http://www.fcc.gov/isp.html>.

$19.95 per month. A Pacific Telesis spokesman stated, "Even if you never hang up the phone it's still just $19.95."[223] Those arguing that ISPs do not cover their costs say this flat rate encourages overuse and inefficient use of resources.

LECs have conducted studies which show that most users do spend a great deal of time on-line. For instance, a Bell Atlantic study found that in one month, the average length of calls to ISPs was eighteen minutes, while other calls averaged four to five minutes.[224] Bell Atlantic estimates that its cost for ISP lines for 1996 was $30 million, while its revenue from those circuits was $8 million.[225]

If carriers have excess transmission and switching capacity, there is no problem with having flat rates for Internet access because the marginal cost of carrying traffic is zero.[226] However, some carriers are experiencing overloads and brownouts because of Internet use,[227] and their networks need to be upgraded to handle this heavier use.[228]

In addition, as described above, ISPs use local business lines to allow their customers to call into their service to be connected with the Internet. Since local customers are not charged for calls they receive (terminating access) but only those that they originate (originating access), ISPs need only pay the flat business rate for a line. The flat business rate does not cover the larger terminating access costs that an ISP imposes on the telephone network. ISPs pay 4.5% of the equivalent per-minute rate paid by IXCs for arguably the same service.[229] If ISPs do not cover their costs, the costs must be absorbed by the customers of the telephone companies. Many telephone company customers cannot afford a computer. Thus, if ISPs fail to cover their costs, those who cannot afford computers pay for the costs of the network by paying higher tele-

223. Leslie Cauley, *PacTel to Become First Regional Bell to Offer Unlimited Access to Internet*, WALL ST. J., May 28, 1996, at A3.

224. Timothy K. Stevens & James E. Sylvester, *Superhighway Traffic Taxes Current LEC Networks* (visited Mar. 28, 1997) <http://www.ba.com/ea/fcc/article.htm>.

225. *Id.*

226. ANDERSON ET AL., *supra* note 9, at 101.

227. There are several proposals for how Internet access could be priced to solve the efficiency problems discussed here including applying congestion pricing theory, overprovisioning capacity, using real-time pricing, offering multiple qualities of service, or using peak-load prices. Analysis of these pricing theories is beyond the scope of this paper but some excellent work on the topic has been done. *See* ANDERSON ET AL., *supra* note 9, at 102; *C.f.* Mackie-Mason & Varian, *supra* note 123, at 269; Scott Shenker, *Service Models And Pricing Policies For An Integrated Services Internet*, *in* PUBLIC ACCESS TO THE INTERNET 315 (Brian Kahin & James Keller eds., 1995).

228. *Internet Gridlock is Getting Worse: Bottlenecks are expected to increase*, S.F. CHRON., Apr. 15, 1996, at B1-B2.

229. Stevens & Sylvester, *supra* note 224.

phone bills to subsidize those who can afford computers.[230]

Currently, the FCC is studying the impact of ISPs on the public switched telephone network.[231] In the meantime, the FCC has concluded that the exemption from access charges should remain in place until the FCC's new access charge system is fully implemented.[232]

The ISPs' legal and policy arguments in the access charge context are similar to those they make regarding whether they should be subject to Universal Service obligations. Those arguments are analyzed in the section below.

2. *Applying Universal Service Obligations to ISPs*

The key issue in both the access charge and Universal Service proceedings is whether ISPs should be treated like telecommunications carriers and should be required to pay for their costs and to support Universal Service. ISPs make two main arguments why they should not be subject to Universal Service obligations: (1) that they are not covered by the text of the 1996 Act, and (2) that applying Universal Service obligations to ISPs will stunt the growth of the Internet. However, these arguments are flawed, and two stronger arguments can be made for ending the ISP exemption. First, due to the convergence of technologies currently occurring, the FCC should develop a coherent standard for all entities that carry information on the network. Second, if the ISP exemption is maintained, new forms of bypass will be encouraged, and the system will face the same problems it faced with bypass before the 1996 Act.

The ISPs' arguments regarding the text and intent of the 1996 Act center around the definitions of terms. The 1996 Act requires "All providers of telecommunications services"[233] and "Every telecommunications carrier that provides interstate telecommunications services"[234] to contribute to Universal Service.

ISPs argue that they are not providers of interstate telecommunications services and therefore should not be required to contribute to Universal Service support mechanisms.[235] The 1996 Act defines telecommunications as "the transmission, between or among points specified by the user, of information of the user's choosing, without change in

230. In re Amendments of Part 69 of the Commission's Rules Relating to Enhanced Service Providers, *supra* note 210.

231. *See supra* note 221 and accompanying text.

232. Access Charge First Report and Order, *supra* note 75, at ¶ 344.

233. 47 U.S.C. § 254(b)(4) (1997).

234. 47 U.S.C. § 254(d) (1997).

235. Universal Service Recommended Decision, *supra* note 36, at ¶ 782.

the form or content of the information as sent and received."[236] ISPs assert that on-line informational and Internet services do not meet the definition of "telecommunications" because users do not choose the destination of the information or the travel path when information is dynamically routed through the Internet; users do not choose the content of the information that is sent when they engage in functions such as browsing a World Wide Web page; and ISPs change the content and form of the information through the use of protocols and headers.[237]

ISPs also argue that the 1996 Act confirms their assertion that ISPs do not provide "telecommunications services" because it distinguishes "information services" from "telecommunications services" in section 254(h)(2).[238] Section 254(h)(2)(A) states:

> (2) Advanced services.—The Commission shall establish competitively neutral rules—
>
> (A) to enhance, to the extent technically feasible and economically reasonable, access to advanced telecommunications and information services for all public and nonprofit elementary and secondary school classrooms, health care providers, and libraries.[239]

ISPs argue that this distinction between information and telecommunications services is based on the FCC's basic and enhanced service distinction.[240] While these definitional distinctions may or may not be technically correct, the increasing convergence of technologies makes these old FCC distinctions unworkable in either case.

There are many cases of convergence in information and communications technologies. For instance, cable television operators are beginning to offer Internet access;[241] publishers are incorporating CD-ROMs as additions to bound titles; newspapers are publishing on the World Wide Web;[242] and LECs are offering video dialtone systems.[243]

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236. 47 U.S.C. § 153(43) (1997). The 1996 Act also defines *telecommunications carrier* and *telecommunications service*. Telecommunications carrier is defined as "any provider of telecommunications services . . . A telecommunications carrier shall be treated as a common carrier under this Act only to the extent that it is engaged in providing telecommunications services . . ." 47 U.S.C. § 153(44) (1997). Telecommunications service is defined as "the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used." 47 U.S.C. § 153(46) (1997).

237. Universal Service Recommended Decision, *supra* note 36, at ¶ 782.

238. *Id.*

239. 47 U.S.C. § 254(h)(2)(A) (1997).

240. *See supra* Section IV(A).

241. Harry A. Jessell, *High Speed Modems a Top Priority*, BROADCASTING & CABLE, Dec. 4, 1995, at 82.

242. GILSTER, *supra* note 121, at 591.

This convergence is occurring partially because of the growing use of digital technology. Digital technology erases the boundaries that separate the telephone, computer, and media industries.[244] Digital communications use only two electrical voltages. These voltages represent the binary values used in computers, ones and zeros. Photos, text, audio, and video can all be digitized by being converted into these two voltages. Since the Internet transmits digital packets, it can transmit any of these digitized items over the same lines used for telephone conversations. To network equipment, these digitized items are indistinguishable.

The future holds more convergence. We may be moving to unified messaging for voice, email, and fax.[245] Or, in the future a single cable may enter homes for telephone, cable television, and computer use. That cable may connect to a device that contains a multiplexer which sends voice to the telephone, television signals to the television, and research to the computer.[246] Netscape Communications Corporation Chairman Jim Clark has even predicted that the Internet will eliminate conventional telephones.[247] No one knows what the outcome of this convergence will be. In the meantime, but some technologies should not be given false advantages over others through regulatory distinctions. All technologies should support Universal Service equally.

The FCC has realized that distinctions between technologies are difficult. It originally tried distinguishing between "data processing" and "telecommunications" and found that distinction unworkable.[248] It currently attempts to distinguish between basic and enhanced services. Under this approach, audio sent in packets would not be regulated, but audio sent over the same lines in circuit-switched form would be regulated. This arbitrary distinction makes no sense.

As technologies that have been separate converge, the lines between "basic" and "enhanced" services, which have never been clear, become increasingly arbitrary.[249] Convergence requires a new unified approach. The best long-term approach for the FCC would be to impose the same obligations on all entities that transmit anything over the network. Under this approach, ISPs would be subject to Universal Service obliga-

243. Daniel Gonzalez, *Accelerating Beyond the On-Ramp: Telephone Company Entry onto the Information Superhighway Through Video Dialtone*, 1 B.U. J. SCI. & TECH. L. 7 (1995).

244. Mark Landler, *Haves and Have-Nots Revisited*, N.Y. TIMES, Oct. 9, 1995, at D4.

245. ANDERSON ET AL., *supra* note 9, at 91.

246. MORLEY & GELBER, *supra* note 124, at 72.

247. Judy Brown, *Internet can Carry Long-Distance Phone Chats Now*, MILWAUKEE J. SENTINEL, April 15, 1996, at 10.

248. Computer II, *supra* note 202.

249. KELLOGG ET AL., *supra* note 12, at 583.

tions like all other entities that transmit anything over the network for their customers.

In addition to their definitional distinction arguments, ISPs also argue that additional charges will stunt growth of Internet.[250] There is a legitimate concern that regulating a new technology at an inappropriate stage in its initial development may hinder something that would benefit society. However, with the Internet, many of the social benefits have been obtained; we already have the technology and standards necessary to have a workable Internet. Currently, the Internet is in the deployment stage where more people are gaining access to it. While having to contribute to Universal Service may increase prices and slow deployment, it would not make the Internet disappear.

In addition, the longer the ISP's "temporary" exemption lasts, the more difficult it becomes to eliminate it because those who benefit from it fight to keep it. The ISPs have been exempt for eleven years. Although ISPs are fighting to maintain their exemption, it is time for ISPs to be treated like all other technologies on the network.

All service providers who benefit from the network should pay for it.[251] As one comment to the Joint Board on Universal Service noted, "[a] few taking a different view obviously are trying to carve out an exception that would serve their commercial self-interest without regard for the public interest or the Act."[252]

Further, if ISPs are not required to contribute to Universal Service, there is a danger that the bypass problems of the past will be repeated. The 1996 Act tries to solve the bypass problem by requiring *all* telecommunications carriers to contribute to Universal Service.[253] However, any type of carrier that can get an exemption from this requirement will have a new opportunity for bypass. This could encourage customers to use economically inefficient messaging options.[254] A broad funding base for Universal Service would ensure that no non-contributor could gain an advantage over a competitor who is a contributor.[255]

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250. Universal Service Recommended Decision, *supra* note 36, at ¶ 782.

251. In re the Federal-State Joint Board on Universal Service, *Comments of America's Carriers Telecommunication Association*, CC Docket No. 96-45 (on file with THE JOHN MARSHALL J. OF COMPUTER & INFO. L.); In re the Federal-State Joint Board on Universal Service, *Comments of Fred Williamson & Associates, Inc.*, CC Docket No. 96-45 (on file with THE JOHN MARSHALL J. OF COMPUTER & INFO. L.).

252. In re the Federal-State Joint Board on Universal Service, *Reply Comments of Ameritech*, CC Docket No. 96-45 (on file with THE JOHN MARSHALL J. OF COMPUTER & INFO. L.).

253. 47 U.S.C. § 254(b)(4) (1997).

254. ANDERSON ET AL., *supra* note 9, at xx.

255. In re the Federal-State Joint Board on Universal Service, *Comments of the United States Telephone Association*, CC Docket No. 96-45 (on file with THE JOHN MARSHALL J. OF COMPUTER & INFO. L.).

If the FCC allows the ISP exemption to continue, it will encourage bypass of a new kind and society will face new bypass problems. The ISPs' exemption from having to pay access charges and Universal Service obligations creates incentives to use the Internet instead of the telephone. For example, electronic mail traveling from user A to user B would not be subject to access charges or Universal Service obligations but a telephone call going from user A to user B would be subject to access charges and Universal Service obligations, even though both use the same resources (local and long distance lines) and accomplish the same function (communicating an idea).

Ideally, a consumer's choice of messaging service should be based on economic costs and not on regulatory distinctions.[256] As economists would say, the optimal combination of services is that combination which would result from individual consumers choosing commodities priced at true costs of production in perfectly competitive markets.[257] If we want an optimal combination of services, we must ensure that ISPs are paying for the costs they are causing.[258] Due to its current exemption from access charges and Universal Service, an ISP pays 12% of what long distance carriers pay for a comparable local connection.[259] This price differential creates opportunities for bypass and should be eliminated by the FCC.

This price differential also explains the bypass of the public switched telephone network which is already occurring with Internet phone ("Iphone") products. Iphone software allows a user to make a long distance or international call over the Internet without paying long distance or international charges. Calls over the Internet are inexpensive because ISPs are exempt from access charges and Universal Service obligations.

The first Iphone software was introduced in early 1995.[260] There are now over twenty Iphone software products.[261] To use these products, a user needs the software (which costs about $50 to $100), a modem, a

256. ANDERSON ET AL., *supra* note 9, at 109.

257. Bolter, *supra* note 48, at 64.

258. *See supra* Section IV(A).

259. Letter from Alan Ciamporcero, Pac Bell Vice President for Federal Regulatory Affairs, to FCC Common Carrier Bureau chief James Schlicting *in* Mark Walsh, *The Internet Free-For-All: Efforts To Regulate Software That Turns A PC Into A Telephone Are Meeting Quiet, But Effective, Opposition*, THE RECORDER, July 19, 1996 at 11.

260. *Internet phone carriers criticized: Small Firms want FCC to regulate new product*, WASH. POST, Mar. 9, 1996.

261. *The Internet Telephony Consortium* (visited Mar. 30, 1997) <http://itel.mit.edu/>. Examples include WebPhone by Netspeak Corporation, *see* < http://www.itelco.com/> (visited Mar. 28, 1997) and Internet Phone by VocalTec, Inc., *see* <http://www.vocaltec.com> (visited Mar. 28, 1997).

sound card, a microphone, and speakers.[262] Iphone software products digitize the user's voice, convert it into packets, and send the packets over Internet.[263] Iphone software must include audio compression capabilities because audio takes much more bandwidth than text.[264]

The availability of Iphone products represents a significant threat of bypass. The Internet community views Iphone products as valuable. Microsoft and Netscape[265] are both including Iphone software in the new versions of their Internet browsers. Netscape Navigator has an installed base of 25 to 30 million and Microsoft has several million customers.[266] ISPs including America Online and CompuServe[267] are also offering Iphone capabilities.[268]

Some people argue that Iphone software is not a threat because: (1) the equipment needed is expensive; (2) Iphone calls lack privacy because they can be intercepted; (3) the sound quality is low and the delays are too annoying; (4) and the lack of standardization between Iphone products makes each product much less useful because a user can only call users who own the same brand of Iphone software. As described below, none of these problems will prove overwhelming to Iphone products. So, Iphones pose a significant threat as a new way to bypass the public switched telephone network.

First, consider the expense of the Iphone equipment. In October 1996, International Discount Telecommunications ("IDT") announced that it plans to release a new technology that allows calls over the Internet using a traditional telephone on each end of the call.[269] To use IDT's new product, users call a toll free number, a switch server converts the call to the packet switched network, the user enters an account number and the number he or she wishes to call, and the call travels over the Internet and is converted back to the telephone network.[270] Thus, soon the equipment will not even be needed, so its expense will be irrelevant.

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262. Steve Rosenthal, *Net Success*, MACUSER, May 1996, at 72.

263. *How Web Phones Work*, (visited Dec. 10, 1996) <http://www.cnet.com/Reviews/Compare/Webphone/ss04.html>.

264. *Id.*

265. Ric Manning, *The Web goes RADIO ACTIVE*, COURIER-J., Apr. 13, 1996, at 12S.

266. *The Internet Telephony Consortium* (visited Mar. 30, 1997) <http://itel.mit.edu/>.

267. Manning, *supra* note 265.

268. *See Internet phone carriers criticized: Small Firms want FCC to regulate new product*, WASH. POST, Mar. 9, 1996; *C.f.* Barbara Darrow, *Telcos, Developers Spar over Voice on the Internet*, COMPUTER RESELLER NEWS, Apr. 8, 1996, at 57; John Simons, *Wrestling over the future*, U.S. NEWS & WORLD REPORT, Apr. 15, 1996, at 53.

269. *IDT Announces Plans to Release Phone-to-Phone Technology Via the Internet* (last modified Oct. 1, 1996) <http://www.idt.net/10-1-96.html>.

270. *Id.*

Second, privacy problems can be solved using encryption. PGPfone is Iphone software that allows users to encrypt their conversations using Pretty Good Privacy ("PGP"), a popular encryption product.[271]

Third, the sound quality and delays will be improved and will not deter people if the price for calls is low enough. The current delay in receiving audio using Iphones ranges from a fraction of a second to several seconds.[272] If a computer contains a full duplex sound board, the delay is shorter because it can record and play at the same time.[273] In addition, Vocaltec is developing Iphone software compatible with cable modems which would also greatly reduce delay.[274] Cellular telephones offer lower quality than traditional telephones. Thus, the growth in the cellular telephone industry demonstrates that people are willing to give up a significant level of quality in exchange for other benefits.[275] The benefit of using an Iphone is its vastly lower price.[276]

Fourth, standards are being developed which will allow users of different Iphone products to call one another. Currently, to use most Iphone products, both parties need to be on-line and must be running the same Iphone software.[277] However, a standardization project is underway in MIT's Research Program on Communication's Policy.[278] The project, the Internet Telephony Interoperability Consortium, is focusing on providing interoperability between the Internet and the public switched telephone network and among Iphone applications.[279]

The threat of bypass using Iphones should be taken seriously. In the past, people have been wrong about the future of technology. For instance, Western Union Telegraph Company (the owner of the telegraph system in the 1800s) rejected an early offer to purchase Alexander Graham Bell's patents on the telephone saying that the product had no potential.[280] Iphones could represent the future of voice communication, especially with the convergence between computers and telecommunications that is occurring now.

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271. Jim Rapoza, *Internet Phones Still Need to Lose Rough Edges*, PC WEEK, Apr. 15, 1996, at N05.

272. *How Web Phones Work*, *supra* note 263.

273. Robert A. Hickling, *Internet Telephony: A Technical Discussion* (visited Jan. 25, 1997) <http://www.telescape.com>.

274. Thomas Maresca, *The Internet Phone Company?*, CONSUMER INFO. APPLIANCE, Feb. 1995, No. 55.

275. Reed Hundt, *A+B=C (Access + Bandwidth = Communications Revolution)*, Address Before the INET '96 Conference, Montreal, Canada (June 28, 1996), delivered by Blair Levin, FCC Chief of Staff (*available in* 1996 FCC LEXIS 4647).

276. *Id.*

277. Hickling, *supra* note 273.

278. *The Internet Telephony Consortium* (visited Mar. 30, 1997) <http://itel.mit.edu/>.

279. *Id.*

280. KELLOGG ET AL., *supra* note 12, at 6.

To avoid a new form of bypass, carriers of Iphone calls should be subject to the same requirements as telecommunications carriers. However, the only ways to regulate Iphones is to either ban Iphone software or to regulate ISPs.[281]

Shortly after Iphones were introduced, the FCC was asked to ban the sale of Iphone software. On March 4, 1996, a group called America's Carriers Telecommunication Association ("ACTA") petitioned the FCC to ban the sale of IPhone software.[282] ACTA's members are independent long distance telephone companies.[283] Its members generally buy long distance service from wholesaler carriers and sell it at a discount, largely to businesses.

In its petition to the FCC, ACTA argued that Iphone software providers are carriers under the 1996 Act[284] and should be subject to the same regulatory restraints to which other telecommunications carriers are subject.[285] The problem with this argument is that ISPs, rather than the Iphone software providers, provide transmission service.[286]

ACTA also argued that Iphones are bypass products and contribute nothing to the infrastructure they use.[287] The FCC has traditionally allowed bypass technologies without subjecting them to the same requirements as monopoly telecommunications carriers. However, under the 1996 Act, this has changed. All telecommunications carriers are subject to Universal Service obligations now.[288]

Banning Iphone software would cause several problems. If it banned Iphone software, the FCC would also have to ban videoconferencing and non-real time voice over the Internet. If these products were banned, social welfare could be reduced. Iphone software adds value in two ways: (1) speech compression saves bandwidth, and (2) packet switching allows for efficient use of telephone lines.[289] Also, these products are already available, so the only way to enforce a ban would be to

281. *Regulators Worldwide Admit They May Have Met Their Match with Internet Telephony*, COMPUTERGRAM INT'L, Oct. 2, 1995, No. 2761.

282. America's Carriers Telecommunication Association, Provision of Interstate and International Interexchange Telecommunications Service via the "Internet" by Non-Tariffed, Uncertified Entities, *Petition for Declaratory Ruling, Special Relief, and Institution of a Rulemaking*, RM-8775 (filed Mar. 4, 1996) [hereinafter ACTA Petition].

283. *At the Agencies*, COMPUTER LAW REPORTER, Apr. 1996, at 236.

284. ACTA Petition, *supra* note 282.

285. Darrow, *supra* note 268.

286. *Regulators Worldwide Admit They May Have Met Their Match with Internet Telephony, supra* note 281.

287. ACTA Petition, *supra* note 282.

288. 47 U.S.C. § 254(b)(4) (1997).

289. Mackie-Mason & Varian, *supra* note 123, at 271.

check the hard drive of every American.[290] Thus, a ban does not seem appropriate. However, the transmission of voice conversations using Iphone software should be subject to the same regulations as the transmissions of voice conversations using the traditional phone system. It makes no sense that these two types of conversation could occur over the very same lines and yet be treated quite differently by regulators.

The FCC will likely decide not to ban Iphone products. Reed Hundt, the Chairman of the FCC, has indicated in speeches that he is strongly inclined not to ban Iphone software.[291] Theoretically, the FCC could require ISPs to charge different prices for using Iphone software over the Internet to cover the access charges and Universal Service obligations. However, the problem with this approach is that ISPs cannot distinguish bits of voice from bits of data.[292] Both voice and data are digitized and look like ones and zeros to the computers on the Internet. Thus, the only way the FCC can regulate Iphones to prevent bypass is to regulate ISPs. As described above, this should be done by charging ISPs the same access charges and Universal Service charges as other carriers on the network. This would eliminate incentives for inefficient bypass because all entities that transmit information of any kind over the network would contribute. Users would be encouraged to choose the most cost-effective technology for communication and would not be lured into choosing a socially inefficient communication technology because of prices based on regulatory distinctions.

In the Modified Final Judgment, Judge Greene explained when regulation of bypass technologies should occur:

> Neither the Court nor those who object to the decree can halt the electronic revolution any more than the Luddites could stop the industrial revolution at the beginning of the last century. If and when bypass technology becomes technically and economically feasible for widespread use, it should have the effect of reducing telephone costs and charges across the board, to the benefit of consumers, the economy, and the nation. Should it turn out instead that, as some fear, this technology will be used to reduce charges unevenly so as to threaten the goal of Universal Service, then those with legislative authority may at that time wish to take steps, through a program of subsidies, special charges, or other regulatory means, to make the benefits of the new

290. America's Carriers Telecommunication Association, Provision of Interstate and International Interexchange Telecommunications Service via the "Internet" by Non-Tariffed, Uncertified Entities, *CPSR Comment on Internet Telephony Petition*, RM-8775 (filed May 2, 1996), *available at* <http://www.epsr.org/cpsr/nii/cyber-rights/acta-comment.html>.

291. Hundt, *supra* note 275.

292. America's Carriers Telecommunication Association, Provision of Interstate and International Interexchange Telecommunications Service via the "Internet" by Non-Tariffed, Uncertified Entities, *Reply Comments of the Joint Parties*, RM-8775 (filed June 10, 1996) (on file with THE JOHN MARSHALL J. OF COMPUTER & INFO. L.).

> technology available to all, including those who are relatively low-volume users of telephone service.[293]

Iphone software represents a technology that reduces charges unevenly and threatens the goal of Universal Service. The FCC should require ISPs to contribute to Universal Service to ameliorate this threat.

The FCC has indicated that it will hold proceedings on the legal questions regarding Internet telephony and the continued viability of the basic/enhanced dichotomy.[294] For the reasons stated here, the FCC should eliminate the basic/enhanced distinction and require ISPs to contribute to Universal Service as all other telecommunications carriers must.

V. CONCLUSION

The Internet provides exciting new opportunities for Americans. However, the FCC should not become so enamored with one technology that it fosters an unjust system where poor telephone users subsidize wealthy computer users. This can be avoided by requiring ISPs to pay for the costs they impose on the network and to contribute to the Universal Service fund.

In this new digital age, bits are bits. No technology or service provider should be favored over others. The exemption for ISPs must be terminated to prevent the bypass problems of the past from becoming the bypass problems of the future. All those who benefit from Universal Service must contribute to its continued existence.

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293. United States v. American Tel. & Tel. Co., 552 F. Supp. 131, 175 (D.D.C. 1982); *aff'd*, 460 U.S. 1001 (1983).

294. Access Charge NPRM, *supra* note 2, at n.385, n.438.