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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)
Federal-State Joint Board)
on Universal Service)

CC Docket No. 96-45
REPORT TO CONGRESS

REPLY COMMENTS OF AMERICA ONLINE, INC.

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REPLY COMMENTS OF AMERICA ONLINE, INC.

America Online, Inc. ("AOL"),^{1/} by its attorneys, hereby submits these Reply Comments for consideration by the Federal Communications Commission ("FCC" or "Commission") in connection with the Report to Congress on the implementation of the provisions of the Telecommunications Act of 1996 relating to universal service.^{2/}

INTRODUCTION AND SUMMARY

In its initial comments, America Online explained its reasoning as to why the FCC's implementation of the universal service provisions of Section 254 of the Telecommunications Act of 1996 ("1996 Act") has been wholly consistent with the plain meaning of the statutory language and definitions set forth therein. Moreover, AOL demonstrated why it believes that the reclassification of advanced services as regulated basic telecommunications services would undermine the robust and developing market for Internet online and other advanced information services. Indeed, AOL underscored its support for the wisdom of the long-standing market-based federal policy for advanced services, noting the substantial benefits that have accrued to

^{1/} Headquartered in Dulles, Virginia, AOL is currently the leading Internet online company, with roughly 11 million members in the United States, Canada, the United Kingdom, France, Germany, Sweden, Switzerland, Austria and Japan. An Australian service is planned for 1998.

^{2/} Public Notice, Common Carrier Bureau Seeks Comment for Report to Congress on Universal Service Under the Telecommunications Act of 1996, CC Docket No. 96-45, DA 98-2 (rel. Jan. 5, 1998) ("Public Notice"); Order,

the American public, in terms of economic growth, public education, and social interaction. As such, AOL urged the FCC to continue this forward-looking policy course to further substantially the public interest.

Significantly, of the parties that commented in this proceeding on the statutory and definitional issues that are before the FCC, the majority support the FCC's interpretation of the language of Section 254.^{3/} Certainly, the comments do reflect a wide range of positions regarding the proper future development of universal service, as well as opinions on other aspects of telecommunications regulation, including interexchange carrier access charges, area codes and interconnection issues. In formulating its Report, however, the FCC should focus on the precise task before it – explaining its universal service decisions in light of the plain language of the 1996 Act.^{4/} In fact, given the enormous uncertainty that exists today with respect to interconnection and other basic obligations under the 1996 Act, fueled primarily by litigation over the FCC's decisions, it would be unnecessarily disruptive for the FCC to use this proceeding to reexamine now any of these issues.^{5/}

In preparing its Report to Congress, the FCC should seek to promote three overarching policy goals: (1) ensuring that universal service is preserved and advanced for all Americans; (2) fostering a fair and competitively neutral environment that promotes diversity and choice for

Federal State Joint Board on Universal Service, CC Docket No. 96-45, DA 98-63 (rel. Jan. 14, 1998) (Common Carrier Bureau extends comment deadlines to January 26, 1998 and February 6, 1998).

^{3/} Twenty of thirty-four commenters addressing definitional issues support the FCC's interpretation. See, e.g., Comments of Information Technology Industry Council and the Information Technology Association of America ("ITIC" and "ITAA") at 3-6; Comments of Worldcom at 2; Comments of Comcast at 5-8.

^{4/} See Public Notice at 1.

^{5/} See, e.g., Competitive Telecommunications Ass'n v. FCC, 117 F.3d 1068 (8th Cir. 1997); Iowa Utilities Bd. v. FCC, 120 F.3d 1068 (8th Cir. 1997); California Public Utilities Comm'n v. FCC 124 F.3d 934 (8th Cir. 1997) writ of mandamus issued sub nom. Iowa Utilities Bd. v. FCC, No. 96-3321 (8th Cir. Jan. 22, 1998) petition for cert. granted, Nos. 97-286, 97-829, 97-830, 97-831, 97-1075, 97-1087, 97-1099 and 97-1141 (U.S. Jan. 26, 1998); Southwestern Bell Telephone Co. v. FCC, Nos. 97-2618, 97-2661, 97-2856, 97-2866, 97-2873, 97-2875, 97-2877, 97-3012, 97-3271, 97-3272, 97-3274, 97-3477, 97-3557, 97-3720 (8th Cir. 1997); SBC Communications v. FCC, No. 7:97-CV-163-X, 1997 WL 800662 (N.D. Tex. Dec. 31, 1997), request for stay pending.

universal service beneficiaries; and (3) facilitating a robust market for advanced, cost-effective and innovative services for consumers.

The statutory mandate of Section 254 of the 1996 Act requires the FCC to administer universal service subsidies to ensure competitive neutrality – if telecommunications carriers receive universal service support for their provision of information services such as Internet access, then so too must non-telecommunications providers who offer those same services. If, on the other hand, the FCC chooses to eliminate advanced services from the scope of universal services, then no entity should be able to provide the services at a subsidized rate. Any other scheme would artificially diminish the diversity of choices for the schools and libraries that are the intended universal service beneficiaries.

In addition, the FCC should not use this proceeding as a back-door means to re-visit settled telecommunications issues, including whether interstate carrier access charges should be imposed upon Internet Service Providers (“ISPs”) and other enhanced service providers (“ESPs”). Indeed, the FCC has already concluded, based upon a voluminous record, that ISPs and other ESPs, as well as their customers, pay fully for the telecommunications services they use.^{6/} While some parties argue that providers of advanced information services will be getting a “free-ride” unless they are required to contribute directly to the universal service funding mechanism, the record in this proceeding demonstrates that universal service contributions are already made for every telecommunications service used by ISPs and other information providers.^{7/} Simply put, universal service goals are currently advanced under the present system.

^{6/} See, e.g., Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, Transport Rate Structure and Pricing and End User Common Line Charges, First Report and Order, 12 FCC Rcd 15.982 at ¶ 346 (1997) (“Access Charge Reform Order”).

^{7/} Comments of AOL at 17; Comments of ITIC and ITAA at 8-9.

Not only is the alleged “free-rider” problem simply thus illusory, the FCC would in effect impose an unjustified “double tax,” were it to require an additional direct contribution to universal service from advanced service providers.

Finally, the FCC should continue its future-directed policies rather than heed cries to regulate inchoate services. While recent announcements regarding telephony services based upon the Internet Protocol (“IP”) are attention-grabbing, the history of communications has been a series of “perceived threats” which have not materialized.^{8/} In fact, many emerging capabilities do much more than simply use a new technology to offer existing services; they enhance functionality to create new offerings such as multimedia, with simultaneous voice, data and video offerings.^{9/} As regulators around the globe agree, application of telephone regulation in these circumstances could chill the development of these services to the detriment of the public interest.^{10/}

I. THE FCC MUST ENSURE THAT SCHOOLS AND LIBRARIES HAVE THE BROADEST ARRAY OF SERVICE CHOICES

In the initial comments, parties were divided as to whether the FCC and the Federal-State Joint Board were correct in their interpretation of Section 254 of the 1996 Act that universal services subsidies for schools and libraries encompass certain non-telecommunications services, including Internet access.^{11/} Both the plain language and underlying policy of Section 254

^{8/} Comments of AOL at 17 n. 64.

^{9/} E.g., Kosiur, “Multicasting a wide net(work)”, PC Week, Nov. 10, 1997 at 146 (IP multicasting to allow data sharing, videoconferencing, training applications, and “shared whiteboards”); “Real Networks ships final version of RealSystem 5.0,” M2 Presswire, Nov. 26, 1997 (allowing cross-platform streaming delivery of audio, video, and animation); “One Touch Systems Extends Interactive Distance Learning Satellite Network to Desktop PCs with Front Row,” Business Wire, Nov. 6, 1997 (delivering real time audio, video, and data across organizational intranets for interactive distance learning); Shankar, “Emblaze takes Java path for streaming Web multimedia,” InfoWorld, Dec. 15, 1997 at 64 (browser-independent, Java-based viewer for delivering audio and video).

^{10/} Comments of AOL at 4, 11.

^{11/} See, e.g., Comments of Edlinc at 3-4 (noting that the language of Section 254(h)(2) and relevant legislative history supports the FCC’s decision); Comments of The Council of Chief State School Officers at 2 (urging the FCC to broaden rather than narrow the class of eligible services). But see Comments of SBC Communications, Inc. at 1

supports fully the decision to enhance access for schools and libraries by allowing them to secure advanced and non-telecommunications services at discounted levels.^{12/}

In fact, AOL submits that it is this interpretation that will serve best the core goals of promoting the widest diversity of choice for schools and libraries and fostering the continued growth of advanced and Internet online services, with their vast potential to ensure that rural consumers have access to the same information, education and services as consumers living in more populated areas. As President Clinton stressed in his recent State of the Union address, “The Information Age...is an education age...” and Internet online services play a pivotal role in empowering all children to “stretch a hand across a keyboard and reach every book ever written, every painting ever painted, every symphony ever composed.”^{13/} In affirming its original decision, the FCC should stress that the benefits that flow from this approach are not primarily to particular service providers, whether to ISPs or telecommunications carriers, but rather to U.S. schoolchildren and the future of the U.S. economy generally.^{14/}

AOL recognizes, however, that many parties advocate a different statutory interpretation, one that would deny schools and libraries a discount for advanced services obtained from non-telecommunications carriers.^{15/} AOL asserts that the FCC’s present decision properly concludes that to advance the overarching goal of ensuring that schools and libraries have the widest array

(stating that Congress intended for the availability of information services to be left to marketplace forces rather than come within universal service); Comments of the United States Telephone Association at 6 (urging that only telecommunications services should be eligible for support).

^{12/} Comments of AOL at 19-20.

^{13/} President William J. Clinton, State of the Union Address, Jan. 27, 1998.

^{14/} The economic and social benefits due to the growth of Internet online and other advanced services are substantial. See Jeffrey MacKie-Mason, “Layering for Equity and Efficiency: A Principled Approach to Universal Service Policy,” at Part V (Feb. 1998) (“USF Economics Study”) (attached hereto as Appendix A).

^{15/} See, e.g., Comments of Ameritech at 3-4; Comments of BellSouth Corporation at 8-9 (“BellSouth”); Comments of United States Telephone Association at 3-7 (“USTA”).

of services, as well as the statutory mandate of competitive neutrality among service providers,^{16/} universal service providers should not be limited only to telecommunications carriers.^{17/}

Moreover, if the FCC alters this decision and adopts the position that Congress did not in fact intend for universal service to encompass advanced and non-telecommunications services, then no entity, including telecommunications carriers, should be permitted to offer those services under the universal service program. In the absence of such “competitively neutral” treatment, the service market will be skewed and the choices that schools and libraries have in meeting their goals will be artificially limited. This the FCC can not allow.

II. THE COMMENTS DEMONSTRATE THAT ISPs AND THEIR CUSTOMERS DO PAY UNIVERSAL SERVICE COSTS

As AOL and numerous other parties noted in the initial comments, the FCC’s decision to retain its long-standing basic/enhanced framework in the context of its universal service decisions does not mean that providers of advanced services are unfairly avoiding paying their fair share of universal service costs.^{18/} As demonstrated in the attached report, “Layering for Equity and Efficiency: A Principled Approach to Universal Service Policy,” universal service contributions are already made for every communications channel involved in the provision of Internet access and other advanced, information services.^{19/} AOL alone expects to spend over a billion dollars this year for telecommunications services, with the rates that it pays implicitly

^{16/} 47 U.S.C. § 254(h)(2) (mandating that “[t]he Commission shall establish competitively neutral rules . . . to enhance, to the extent technically feasible and economically reasonable, access to advanced telecommunications and information services. . . .)

^{17/} Federal-State Joint Board on Universal Service, Report and Order, 12 FCC Rcd 8776 at ¶¶ 594-595 (1997).

^{18/} Comments of AOL at 17; see also, for example, Comments of the Internet Access Coalition at 14-15, Comments of Worldcom at 8-9; Comments of ITIS and ITAA at 8-9; Comments of the Commercial Internet Exchange at 10-11.

^{19/} USF Economics Study, Appendix A, at Part III.

reflecting the universal service contributions of the telecommunications carriers from whom AOL acquires services.^{20/}

In addition to adjustments in telecommunications service rates directly attributable to universal service contributions, ISPs and their customers are required to pay other, implicit universal service contributions, including increased presubscribed interexchange carrier charges (“PICCs”) and increased subscriber lines charges (“SLCs”) for second lines.^{21/} As noted in the attached report, the charges due to second lines alone, which are often used for data-based applications, generate significant revenue for universal service purposes.^{22/} Given that ISPs, other information service providers, and their customers already pay their fair share of universal service costs, proposals to single out ESPs, or an even narrower class such as ISPs, among all telecommunications service users to pay a double tax would be discriminatory and unfair.^{23/} The FCC should therefore reject arguments that ISPs are somehow “free-riders” as factually and economically incorrect.

The FCC should also disregard attempts by some parties to turn this proceeding into a broad, far-ranging reexamination of access charge, interconnection, and other bedrock telecommunications issues.^{24/} While AOL agrees that users of services should not be required to pay uneconomic rates and that subsidies should be explicit to the maximum extent possible, the fact is that Congress has asked for a relatively narrow report based upon the language of one

^{20/} AOL uses services from interexchange carriers, incumbent local exchange carriers, competitive local exchange carriers and others. See Comments of AOL at 17.

^{21/} Access Charge Reform Order, 12 FCC Rcd 15982 at ¶ 73-87, 91-105 (1997); Comments of AOL at 17-18.

^{22/} USF Economics Study, Appendix A, at Part III.

^{23/} See Central Railroad Co. v. Commonwealth of Pa., 370 U.S. 607, 612 (1962) (stating that “multiple taxation” of interstate operations offends the Commerce Clause), quoted in Cable Television User Tax, 50 FCC 2d 540, 552 (1975) (Comm’r Glen O. Robinson, dissenting). See also USF Economics Study, Appendix A, at Part II (B).

^{24/} See, e.g., Comments of GTE at 14-15, 21; Comments of TDS Telecommunications at 7-9; Comments of AirTouch Communications at 20.

provision of the 1996 Act. Moreover, numerous aspects of these important FCC rulings are being questioned by other commenters under appeal.^{25/} Surely in these circumstances the FCC should not now undertake the basic restructuring of telecommunications regulation that some parties urge.^{26/} Regardless of whether the FCC wishes to re-open these other proceedings at some point in the future, it should not do so here.

III. REGULATING EMERGING SERVICES BECAUSE OF THE PERCEIVED THREAT THEY MAY POSE WOULD BE PREMATURE AND COUNTERPRODUCTIVE

In its initial comments, AOL highlighted the tremendous benefits that have accrued to the American public as a result of forward-directed regulatory policies that have allowed marketplace forces, rather than government regulation, to foster growth and development. Indeed, AOL stressed the unprecedented emerging global consensus favoring a market-oriented approach towards advanced services.^{27/} Nothing in the comments that were filed undermines the critical importance of maintaining such a future-directed approach to advanced information and Internet online services. In fact, as the attached USF Economics Study illustrates, advanced services are likely to remain the cornerstone of future economic growth, enhanced education and improved access to services for all U.S. consumers, whether rural or urban.^{28/}

While some commenters point to recent announcements regarding telephone services that are based upon the Internet Protocol ("IP"),^{29/} the fact is that these services do not pose an

^{25/} See *supra*, n.5.

^{26/} See, e.g., Comments of GTE at 21, 23.

^{27/} AOL Comments at 10-11. Consistent with this approach, the Ministry of Economy of France recently recommended a similar "hands off" policy towards the Internet so that the French can attain a global leadership position. See "French Study Calls on Government to Nurture Unfettered Information Economy," Electronic Information Policy and Law Report, January 14, 1998 at 37.

^{28/} See USF Economics Study, Appendix A at Section V.

^{29/} See, e.g., Comments of Rural Telephone Coalition at 13-14; Comments of AT&T at 12-13; Comments of AirTouch Communications at 30-31; Comments of the State of Alaska at 8-9.

imminent threat to the bedrock public switched telephone network or to the universal service goals articulated in the 1996 Act. If anything, they appear to offer a model for transforming the current voice telephony infrastructure into a more dynamic system better suited to the emerging data-based society.

First, the technological development of these services seems to indicate that they will likely provide consumers something that does not simply duplicate existing services using a new technology, but rather will enhance these services, including multimedia capabilities and related value-added functionalities. For example, Internet-based voice services can facilitate conference calling with an unlimited number of parties and enable multiple participants to engage in “whiteboarding” (simultaneous discussion and manipulation of a document).^{30/}

Second, while many plans have been announced in the media, the details of the services are scant so that there is no factual predicate that would indicate the best course for regulation. For example, while AT&T has announced its intention to launch a market trial of IP-based voice services during the second quarter of 1998, it has not stated publicly the terms and conditions upon which it will be offering the service, nor has it described the particular technological and regulatory assumptions it has used to support the rates it anticipates charging consumers.^{31/}

Similarly, the announcement by Level 3 Communications to provide similar services in late 1999

^{30/} See David Bowermaster, “Calling Plans: Firms Ready to Make Internet Connections,” (visited Jan. 30, 1998) <<http://207.68.146.43/news/110400.asp>>; “Internet Phone Takes on Ma Bell,” (visited Jan. 31, 1998) <http://www.pcworld.com/software/in..._www/articles/jun97>; “Internet Whiteboard Tools Still Have a Few Kinks,” (visited Jan. 31, 1998) <<http://www.computerworld.com/guide/970428greenberg.html>>.

^{31/} See “‘New’ AT&T Unveils Innovative Consumer Offers,” AT&T Press Release, Jan. 26, 1998. Indeed, while technology is no doubt improving, there are still serious quality concerns. “Voice-over-IP starts to generate more interest – but user education and better service quality are needed before the market grows,” InternetWeek, Dec. 1997.

does not detail the precise manner in which the services will be offered, information that is critical to an assessment of the best regulatory policy that should be adopted.^{32/}

Rather than imposing a regulatory regime that will prematurely hamper the growth of these services, with their potential for service innovation, the FCC should recognize that they also offer the potential to provide a model to transform existing telephone networks to be more compatible with the data-based future.^{33/} At the recent World Economic Forum, senior technology executives agreed that the emergence of Internet-based services has become the impetus to restructure today's telephone networks.^{34/} Government policy should foster the growth and development of these services rather than risk hindering their development with premature regulation based upon theoretical threats.

Accordingly, AOL agrees with those parties, such as the State of Alaska, that urge the FCC to monitor developments in this area.^{35/} In doing so, the FCC should weigh the overall benefits to the economy that innovative services generate and be mindful of the critical role that they can play in stimulating more competitive offerings by today's telephone providers. If the FCC finds, based upon actual data rather than media hype, there is an adverse impact from these services on universal service, it can always act. This approach minimizes the potential chilling effect of application of inappropriate regulation to emerging services.

^{32/} See, e.g., Keller, "Ex-MFS managers Plan Global Network Based on Internet, Rivaling Phone Firms," The Wall Street Journal, Jan. 20, 1998 at A3; Schiesel, "Peter Kiewit Sons to Build National Fiber Optic Network," The New York Times, Jan. 21, 1998 at D10. See also "Qwest Announces First Nationwide IP Voice Service," Press Release, Dec. 17, 1997.

^{33/} Critically, the striking differences between the traditional circuit-switched and emerging packet-based networks also underscore the inefficiencies and burdens of trying to impose telephone regulation on the Internet. See USF Economics Study, Appendix A, at Section III.B.

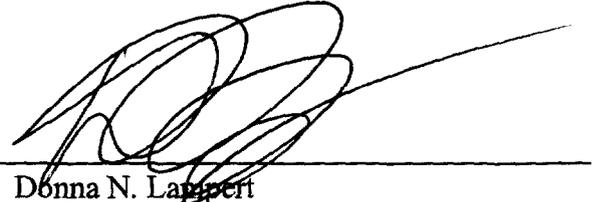
^{34/} See Lavin, "Internet Telephony May Cut Cost of Calls, Executives Say," The Wall Street Journal, Feb. 2, 1998 at B11B.

^{35/} Comments of the State of Alaska at 10.

CONCLUSION

America Online believes that the FCC carefully and properly fulfilled its universal service mandate under Section 254 of the 1996 Act. Moreover, the FCC's decision promotes the continued development of advanced and emerging services, with their vast potential to improve the nation's economic, educational and social well-being. Accordingly, and for the foregoing reasons, the FCC should reaffirm its decisions in its Report to Congress.

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**Layering for Equity and Efficiency:
A Principled Approach to Universal Service Policy**

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February 1998

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**Layering for Equity and Efficiency:
A Principled Approach to Universal Service Policy**

Prof. Jeffrey K. MacKie-Mason

*"The Internet is a virtual network that is built on top of facilities and services provided by telecommunications carriers."*¹

I. INTRODUCTION

I am Jeffrey K. MacKie-Mason, Associate Professor of Economics and Information at the University of Michigan. I have been asked by American OnLine, Inc., to prepare this study of the economics of taxation and expenditure for the Universal Service Fund. The opinions expressed herein are solely my own. I have provided a short biography as an attachment.

In this report I will not analyze nor dispute legal or regulatory interpretations of the 1996 Telecommunications Act. Instead, I present an economically sound approach to USF assessments and distributions. The driving objectives for my analysis are competitive neutrality and efficiency. I take a viewpoint that is forward-looking.

I find that a principled, forward-looking approach to telecommunications taxation and regulation requires a distinction between basic services, and advanced services that are built on top of the basic services. USF contributions are already made for every communication channel involved in Internet access. To impose a new obligation for USF contributions on Internet service providers would be to introduce discriminatory double-taxation directly on Internet users. Further, imposing direct USF contribution on ISPs would be harmful to competition because the taxes would not be equitably applied to competing information service providers. As for distribution of the USF, it is important — as it is in general in tax and expenditure analysis — to separate those who are taxed from those who participate in providing the programmatic benefits. The intent of USF is to benefit consumers; the greatest benefit for consumers will come from having the widest possible choice of providers.

**II. A PRINCIPLED, FORWARD-LOOKING APPROACH TO
TELECOMMUNICATIONS REGULATION REQUIRES A
DISTINCTION BETWEEN ADVANCED AND BASIC SERVICES**

In the current, dynamic telecommunications market, the U.S. needs policies and regulation that are forward-looking to allow our continued leadership in these industries.² To fulfill this need,

¹ Gong, Jiong and Padmanabhan Srinagesh, "The Economics of Layered Networks," in Internet Economics, Lee McKnight and Joseph Bailey, eds. (MIT Press: 1997).

² Kellerman, Aharon, "Fusion of information types, media, and operators, and continued American leadership in telecommunications," Telecommunications Policy, 21(6): 553-564, 1997.

our regulations generally must be based on defining principles rather than rely on case by case definitions. In addition, the U.S. needs to develop a consistent structure that encourages innovation while advancing policy goals such as universal service.

A. Information network technology consists of multiple vertically related, or layered services

Economists describe the goods and services purchased by consumers as “final” goods or services. In most markets, final goods are produced by firms that, in turn, have purchased goods and services from other firms. These goods and services, inputs to the production of final goods, are called intermediate goods. Economists describe final good producers and intermediate good producers as being “vertically-related.” For example, taxi companies buy cars from auto manufacturers and use streets provided by government. We say that taxi services, cars and streets are vertically-related: they are at different layers in a vertical supply chain. They are not competing in the same market.

Information network services consist of chains of vertically related layers.³ For example, for word-processing a user needs word processing application software, operating system software, and a computer. The application software uses the computer’s operating system as an input; the operating system in turn uses the computer hardware as an input. These are layers in a vertical chain, both technologically and economically: applications software does not compete with operating systems software in the market, nor do either compete with computer hardware. Vertically-related products of this sort are also known as complements: users require each of the products, rather than being able to substitute one for another.

Complementary relationships are widespread among telecommunications and information services: fax machines and basic telephone service are complements. Few people without telephone service purchase fax machines and the availability of fax machines increase demand for basic telephone service. The same is true for online services, computers, and basic telephone service.

³ See Economides, Nicholas, “The Economics of Networks,” International Journal of Industrial Organization, 14, 1996 for an overview.

TCP/IP Layer	Service Provided	
Application	Data meaning	}
Transport	Data between applications	
Internetwork	Data between hosts	
<hr/>		
Network Interface	Structured signal over physical media	}
Physical	Raw signal carriage	

The diagram shows a table with two columns: 'TCP/IP Layer' and 'Service Provided'. To the right of the table, two boxes are connected to the table by curly braces. The top box, labeled 'Information services', is connected to the top three rows (Application, Transport, Internetwork). The bottom box, labeled 'Telecommunications carriage', is connected to the bottom two rows (Network Interface, Physical).

This economic structure of complementary, or vertical, relationships is paralleled in the engineering design of communication networks. Layering is the fundamental design principle of modern networks.⁴ This is true whether one is providing Internet service (using the 5-layer TCP/IP technology), or OSI data service (7 layers), or an ATM phone network. Each information network system has distinct layers. For our purposes, there are crucial distinctions between telecommunications carriage (the “network interface” layer in the TCP/IP technology) and service (the “internetwork” and “transport” layers).

An ISP such as AOL provides enhanced information services built on top of the carriage layer. When a customer makes a call to AOL and connects her computer to AOL’s computers, she will do one or more of the following:

- send a stream of commands to AOL to select options from a menu; AOL’s computers interpret those commands, retrieve data from a database, and return the data to the user
- run an application that allows the user to edit stored data files owned by the user
- send commands directing AOL to connect the user to one of millions of databases on the Internet, where the user can fill out forms, and retrieve data, text, image, sound, video and other files
- transfer data files
- and so forth.

⁴ “Most networks are organized as a series of layers or levels, each one built upon its predecessor....in all networks, the purpose of each layer is to offer certain services to the higher layers.” Andrew Tanenbaum, Computer Networks, 2nd ed. (Prentice-Hall: 1989), p. 9.

All of these services involve more than just carriage. ISPs do not sell carriage *per se*. Accordingly, we should no more view ISPs as carriage providers than we view Yellow Cab as a street provider.

As of April 1995 (the final data for which public statistics were collected), nearly all of the transport on the Internet was for World Wide Web and data file transfer. Less than 5% of Internet service was for e-mail.⁵ This date was only about 16 months after the first successful Web browser (Mosaic) was released. Growth in the share of World Wide Web usage has continued. Thus, more than half of Internet services are the provision of data from static stored databases. For all of the hype, the technology and service provided by the Web largely resembles online database services such as Lexis/Nexis and Dialog. Most of the use is for individuals to contact a database, to select files (text, graphics, program code and other types), and to download the file for local viewing or further processing.

B. Horizontal equity for end consumers, and competitive neutrality for service providers, requires that regulation distinguish between layers

Horizontal equity for end consumers requires that the same type of consumers (e.g., residential) are treated the same.⁶ All end consumers of telecommunication carriage pay for carriage, including USF contributions, by direct payments to the carriage providers. In particular, end consumers already pay for their local phone connection to an ISP (and thus already pay Universal Service tax on that carriage), and the ISP already pays for local and long-distance lines (and thus already pay Universal Service tax on that carriage). To additionally impose Universal Service tax on ISPs would mean that some consumers — those who use the Internet — would pay the Universal Service tax twice for some of their use of the phone network. Because Internet services are in a different layer than basic telecommunication (indeed, ISPs and their customers purchase basic telecommunication as an input), not distinguishing between them would lead to double taxation.

Competitive neutrality is a generally accepted principle that is necessary for economic efficiency. For example, former FCC Chief Economist Michael Katz advocated it as one of the basic “regulatory principles for competitive markets”.⁷ Senators Burns and Stevens state that competitive neutrality was a principle “at the heart of the Telecommunications Act amendments.”⁸ ISPs, because they provide information services, do not compete in the same layer as do basic carriage providers, so there is no concern about competitive neutrality between ISPs and basic carriage.⁹ Instead, ISPs compete in a layer with any number of other information service providers, who would not pay the Universal Service tax, and thus ISPs would be competitively disadvantaged. Essentially all of the brief list of telephone-based services below

⁵ Merit Inc. data files. Merit was the contractual operator for the NSFNET. Statistics available at <http://www.merit.edu/nsfnet/statistics/>. Statistics are for bytes of traffic.

⁶ See, e.g., Joseph Stiglitz, *Economics of the Public Sector* (Norton: 1986), and Harvey Rosen, *Public Finance* (Irwin: 1985).

⁷ In various speeches, including the keynote address at the 3rd Int’l Telecom Systems Conference, Nashville, TN, March 1995.

⁸ Letter to William Kennard, FCC, 26 January 1998.

⁹ Some have argued that Internet voice services can compete with basic carriage. I address these services below.

have counterpart services offered online. If ISPs face double taxation or direct USF tax contributions, their versions of these services will be competitively disadvantaged compared to these (indirectly- and single-taxed) telephone-based offerings:

- Fax on Demand—customers call in and request that specific documents be sent to them. The consumers can choose from a voice menu, generally, or from a paper menu obtained elsewhere.
- Broadcast Fax—services that send a single fax to a “mailing list” of pre-programmed phone numbers—used for press releases, etc.
- Telephone Banking—bank customers call in to see whether checks have cleared, what their balance is, transfer balances between accounts and similar functions. Credit card companies generally offer similar services, as do brokerage houses
- Newspaper sponsored information line—for example, the Detroit News has a dial in line to check a plethora of sports scores, winning lottery numbers, sale dates for tickets to hot shows, book of the week, a calendar for Showtime!, the ability to check stock prices, and so on.
- Work-management services—Wildfire-type services. Wildfire is a voice activated telephone assistant that can be accessed from virtually anywhere. It offers advanced services like screening and forwarding callers to any phone, announcing new callers when you are already on the phone, and basic voicemail features. It also has a virtual phonebook that includes autodialing capabilities.

There are no economic efficiency arguments that would support treating the traditional telephony-based versions of these services differently than online versions.

C. ISPs buy telecommunication services as an input, and sell information services built on top of telecommunication services as an advanced service to end-consumers

AOL and other ISPs are not telecommunications carriage providers, and thus are not in horizontal competition with such providers. ISPs purchase telecommunications carriage as an input in order to produce their information service.¹⁰

Importantly, essentially all ISPs provide other additional inputs distinct from basic telecommunications services. Greenstein notes:

“While some ‘pure-ISPs’ still exist as of this writing (i.e., they only provide Internet access), it is a widely stated belief within the industry that

¹⁰ For a brief description of relationship between ISPs and carriers, see Gong, Jiong and Padmanabhan Srinagesh, “The Economics of Layered Networks,” MIT Workshop on Internet Economics, 1995

competitive forces are bidding revenues below the costs of establishing and operating a network that only provides access.”¹¹

That is, according to Professor Greenstein, ISPs cannot make a profit on the mere provision of access. Rather, they must offer various value-added services to make a profit: storing and retrieving customer information in the form of HTML files (“Web hosting”); providing file storage for customer e-mail accounts; “maintain[ing] servers [that store] software targeted to unique customer needs, compile lists of interesting web sites,” and so on.¹² This trend away from access-only ISPs was also noted by Inter@ctive Week in a report that questioned “the plausibility of generating profit on hundreds of thousands of \$19.95-per-month accounts.”¹³ They noted that some ISPs specialize in low-end areas such as “[Web hosting] service bundled with Internet access while others offer “custom integration and advanced system design.”¹⁴

Even e-mail is an advanced “information service” under the definition in the Telecommunication Act of 1996, because it involves generating, processing, storing, retrieving and transforming of information. Indeed, the fundamental Internet protocol for e-mail on the Internet is SMTP¹⁵, which, as with all Internet mail protocols, is a “store-and-forward” system. Mail store-and-forward requires complex processing at every “hop” or router (computer) encountered along a service path. At each hop the “header” or address block is modified by the computer. If a recipient host is temporarily unavailable, the protocol is designed to store and hold the message for at least three days while making repeated efforts to re-deliver. Other advanced operations that involve processing, data transformation, and storage also take place on routine mail traffic.

E-mail service is more akin to U.S. Postal Service than to ordinary circuit-switched voice telephony. The only telephony-based service that it bears some resemblance to is voice mail. It is my understanding that telecommunications carriers are not required to pay USF tax on their voice mail revenues, as they are enhanced services. E-mail is clearly squarely within the definition of an advanced service, built on top of the telecommunications carriage layer. It is not in the same layer of service as carriage, or “basic service.”¹⁶

¹¹ Greenstein, Shane, 1998, “Universal Service in the Digital Age: The Commercialization and Geography of US Internet Access,” Northwestern University mimeo, at <http://skew2.kellogg.nwu.edu/~greenste/research/papers/ISPACCES2.pdf> on 1/22/98, p. 9

¹² *Id.*

¹³ Barrett, Randy, “ISPs Blaze Diverse Trails Into Changing Market,” Inter@ctive Week, 27 January 1998.

¹⁴ *Id.* See also Steinert-Threlkeld, Tom, “Coming of Age: It Only Gets Tougher For The ISP,” Inter@ctive Week, 27 January 1998 for another article describing the growing difficulty in making money from Internet access.

¹⁵ Simple Mail Transfer Protocol

¹⁶ Some have asserted that e-mail is equivalent to paperless fax. This is quite incorrect. One obvious distinction was mentioned above: the network switches will hold email for three days or more if the recipient computer is broken or turned off. That is not true for fax service: the telecommunications carrier does not store the fax transmission and attempt to forward it to the recipient for three days. Perhaps the most important difference is that e-mail can be used for multimedia file transfer, which is not possible with fax. For example, while I was writing this report, my assistant and I worked on opposite sides of Ann Arbor, and exchanged drafts by attaching our Microsoft Word files to email messages that we sent each other. A received file could be opened in Word and edited. That is not possible with fax! The same service can also be used to transfer sound, video, binary data and other files.

D. The current FCC plan for Universal Service follows this forward-looking, principled approach

Economists at the FCC have endorsed this forward-looking approach. For example, Joe Farrell, while he was Chief Economist at the FCC, wrote that we should consider “the effects on the growth of competition of adopting a particular rule for when to deregulate. If deregulation will enhance incentives for efficient entry, then in order to get the greatest benefits, it may be necessary to commit in advance to a rule that will seem somewhat ‘too deregulatory’ in each instant application.” He further wrote “One likely strategy may be to start by deregulating ‘new’ services, to wall them off from the culture of entitlement. Again, proper consideration of long-run effects may imply a rule that would seem somewhat ‘too deregulatory’”.¹⁷ The Federal-State Joint Board on Universal Service endorsed using forward-looking cost models to attribute costs to separate layers in information networks and the FCC agreed.¹⁸ I gave an invited speech at the FCC explaining and endorsing this forward-looking approach in July 1996.¹⁹

E. If we redefine advanced information services as basic carriage, we adopt a backward-looking methodology that will lead to unworkable regulatory gridlock

Information services are being invented continuously, and rapidly evolving. Extending the reach of basic service regulation out of its horizontal layer by selectively applying it to one particular class within a higher, enhanced information service layer opens the door to an endless stream of redefinitions in the future. Each redefinition will yield a new series of procedural and legal proceedings, each slowing the introduction of advanced services.

The current FCC plan distinguishes between the basic carriage layer (telecommunications carriers) and complementary layers that depend on it. The FCC appropriately defines the basic carriage layer broadly in the horizontal dimension, encompassing wire, fiber, and wireless links. The FCC appropriately defines the basic carriage layer narrowly in the vertical dimension, instead of applying carriage-layer duties to content-layer firms. This principled, forward-looking approach is required to achieve the flexibility needed in today’s rapidly evolving market.

III. USF CONTRIBUTIONS ARE ALREADY MADE FOR EVERY COMMUNICATION CHANNEL INVOLVED IN INTERNET ACCESS

A. USF support is paid on all telecommunications components of every online session

AOL and other Information Service Providers (ISPs) obtain intrastate, interstate, and international telecommunications services from traditional infrastructure providers, such as

¹⁷ Speech at the FCC, “Prospects for Deregulation in Telecommunications”, 30 May 1997. Available at: <http://www.fcc.gov/Bureaus/OPP/Speeches/jf050997.html>

¹⁸ CC Docket No. 96-45, FCC 96J-3, rel. November 8, 1996 and CC Docket No. 96-45, FCC 97-157, May 8, 1997.

¹⁹ The slides are available at <http://www-personal.umich.edu/~jmm/presentations/fcc96-layering.pdf>

AT&T and the RBOCs, as well as from newer infrastructure providers, such as Sprint GTE BBN, MCI and various competitive local exchange carriers. The ISP generally leases some amount of transmission capacity from various telecommunications carriers: transmission capacity from the local switch to the ISP's local network node is leased from a LEC; transmission capacity from the ISP's local node to a regional node or NAP might be leased from a LEC or IXC, transmission capacity between regional nodes is likely leased from an IXC.²⁰ On leased telecommunications carriage, the lessor pays USF contributions on the revenue it receives from the lease. There is no special exemption given to telecommunications carriers for the revenue they earn from providing services to ISPs.

The only telecommunication leg generally not paid for by the ISP itself is the connection between the ISP's customers and their local PSTN switches. However, the ISP customers pay tariffed rates for their service from a telecommunications service provider, and thus pay the USF contribution on that service as well.²¹ Through the telecommunications services they use, ISPs make very significant contributions to USF funding. For example, AOL incurred over \$900 million in telecommunications expenditures in its most recent fiscal year.²²

There is no doubt that the leg between the ISP customer and her LEC also results in USF-contributing revenue. That customer pays for her local loop just as every LEC customer pays for his local loop.²³ It would strain logic to argue that she needs to pay an additional USF donation when she chooses to dial in to her ISP but not when she uses the same phone to call the reference desk at the local library, a current headlines news service, or make airline reservations.

B. There are compelling reasons not to assess USF contribution requirements directly on ISPs

Nearly all commenters seem to agree we do not want to tax advanced information services, although there is some disagreement about what constitutes an advanced information service. Rather, some commenters are suggesting we should tax the ISPs directly on services that use telecommunications carriage purchased as an input, from firms that already pay USF on that revenue. This proposal would be somewhat akin to taxing an automobile manufacturer for the

²⁰ See, for example

- "When an ISP connects to the Chicago NAP they usually purchase the long distance circuit from the Inter-Exchange Carrier of their choice..." Ameritech, *Chicago NAP Technical Information* at http://nap.aads.net/NAP_technical_info.html on 19 January 1998.
- ANSnet's "How we do it" at <http://www.ans.net/howedoit/>, 19 January 1998.

²¹ If a customer has a leased-line connection to her ISP, either the ISP or the customer will negotiate the lease with a telecommunications provider.

²² See AOL Comments on FCC 96-45 Report to Congress, 26 January 1998, at fn. 65

²³ Some customers have measured rate service, and for them USF contributions are paid on all of the incremental revenue generated by calls to their ISP. Other customers (including me!) obtain a second line solely for Internet usage, so all of the USF contribution on that line is attributable to calls placed to their ISP. Some customers share a single flat-rate line between Internet and other use — it is not a simple matter to determine how much of the USF contribution on that line to attribute to ISP calls, but the appropriate attribution is surely greater than zero. Richard Cawley of the European Commission's DG XIII reports that "about two-thirds" of US residential Internet users have 2nd lines for Internet access (Cawley, Richard A, "Internet, lies, and telephony," Telecommunications Policy, 21(6): 513-532, 1997 at 519), implying roughly 17 million 2nd lines attributable to Internet usage. The RBOCs have frequently attributed the dramatic growth in 2nd lines to demand for Internet access - See AOL Comment on CC Docket 96-45 at fn. 69.