Competition in the Local Exchange Market: An Economic and Antitrust Perspective[1]

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Abstract

This paper presents an overview of the implications of the new Telecommunications Act as applied to the Local Exchange Market. It focuses on the issues of; the Act and its statements of competition, the underlying technological changes that will create a new competitive environment, the implications of Antitrust Law to this new market, and the implications that the new law and the existing statues will have on the development of a new industry structure. This paper also focuses on the various views that can be seen in the application of antitrust law and how these views are reflected in the legislation and the administrative rule derived therefrom. Unlike the deregulation of the long-distance market in 1984, the de-regulation of the local exchange market in 1996 will encompass a market that has three characteristic; it is three to five times the size of the long-distance market, it has survived in a monopoly structure protected under Clayton since its inception, and it evolves in a technological environment that both regulators and law makers have limited understanding of.

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1. INTRODUCTION

The Telecommunications Act of 1996 has provided for the open competition in the Local Exchange Carrier markets. There are several factors that make this new competitive environment dramatically different from that of the Inter Exchange Carrier markets in which AT&T and MCI and others found themselves in 1984. Specifically, there is a technological change wherein the issue of economic scale has been eliminated, namely there are de minimis entry barriers from an economic perspective. The barrier to entry is the issue of Interconnection, which simply stated is the need to connect from one new LEC entrant to the existing monopoly LEC player, specifically the RBOC. Thus there exist many new and significant legal issues relating to the implementation of such fair and equitable interconnection. The FCC in its role as Administrative Agency has taken steps effective August 8, 1996 to promulgate rules of behavior.[3] The alternatives available if such rule fail to provide for a competitive framework are the antitrust laws. This new area for antitrust law is one that rejoins many of the issues that were thought to be left behind at the time of the AT&T divestiture.

The Act as amended in 1996 has removed antitrust protection from the telecommunications industry.[4] In light of that fact, it is necessary to reexamine the implications of the many arrangements that have been customary practice, and view those arrangements in the light that all other similar arrangements can be viewed in all other industries. From an historical perspective, the Antitrust laws have been used to manage the gross misconduct of larger entities in existing competitive markets. In the case of local exchange telecommunications, however, there is a sharp distinction. Namely, the existing entities are the only player in the market and thus have essentially full monopoly control. The 1996 Act in Sections 251 and Sections 252 provide a vehicle that allows new entrants into the market so that a competitive environment may evolve. The issues however focus around the approaches taken in the new Act and how they may be interpreted.

Reed Hundt, the Chairman of the FCC and former practicing antitrust attorney, recently remarked about the relationship between interconnection and antitrust law:[5]

"When cases like Standard Oil and Alcoa were decided, our economy ran on oil and metal. Our economy now runs on impulses of digital bits transmitted via fiber, wire or the ether. It is high time that the communications industry (so vital to our country) operate under the same pro-competitive policy as every other industry in the U.S. And -- despite the intricacies of our legal culture, which has at least given an interesting and rewarding life to the lawyers in this room -- I am confident that this will happen and happen quickly."

It is clear that with the 8th Circuit Court intervening on the behalf of the monopolists and the Supreme Court has recently upheld this. Hundt's point is very significant in that the Courts have addressed monopolies I oil and transportation when they were the key elements of our society, whereas the Courts are seeming to take a strong pro-monopoly position when telecommunications is at the center of our growing economy.[6]

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[3] See FCC First Report and Order on the Implementation of the Local Competition Provisions in the Telecommunications Act of 1996. These relate expressly to Sections 251 and 252 of the Act.

[4] See Section 601 of the Act.

[5] See Hundt, October, 1996.

[6] Posner, see Posner references, has developed a significant theory of justice based upon the economic structure of utility and justice. I believe that one can take a Posnerian position that states that the monopoly should be totally abandoned and that there are clear economic structures in place that can handles these changes. The Courts on the other hand seem to be taking a mid-nineteenth century position which reflects pr-Sherman doctrines.

There seems to be no question but that Congress had the intent to create competition in the Local Exchange markets. The wording of the Act and its reflection in the Commission's attempt to clarify certain issues leads directly to that belief. However, it has been seen that the Incumbent LECs, namely the RBOCs, have a strong and vested interest in delaying or prolonging that effort. The track record of companies such as NYNEX are clear in their continued attempts to delay the entry of companies such as MFS and Teleport ,especially through the process of state regulatory delay. The Commission has the set of certain authorities in the new Act to facilitate this process and create a more competitive environment but the States retain certain controls and interests.

Furthermore, telecommunications has, as a result of the Act, become potentially a more competitive environment. Despite the intention to allow competition, the industry also has certain existing structures and interlocking relationships that permit the incumbents to retain significant share by blocking the entrance of new players. This paper focuses on the local exchange market in which the local exchange carrier, "LEC", is the principal player. Twelve years ago the interexchange market was opened up to full competition. The result is an network that allows for strong competition with even stronger competitors. The local exchange market is closed. This paper provides an overview framework for this market, the technological change agents that make it dramatically different from other markets, and the re-application of antitrust law from the perspective of maximizing the public welfare, independent of the individual competitors.

There are several significant changes that are also occurring in the delivery of these types of products that will allow for the dramatic entry of new competitors. These will also be explored. Specifically, technology allows for disaggregation of functions in the delivery of the product. Technology also allows these functions or product elements to be delivered at marginal prices since the inherent scale in the industry is disappearing. Namely the scale economies of copper wire and large switches is now being replaced by the scale-less technology of wireless and ATM or frame relay switching.

The main objectives of this paper are to discuss the following issues:

i. *What is the competitive environment that a new local exchange carrier faces in the market with the structures imposed by the modifications to the Act.*

ii. *How can the Incumbent Local Exchange Carriers ("I-LEC"), namely the RBOCs, exercise their current monopolistic control to delimit new entrants and how can the new Local Exchange Carriers compete. Specifically, is there a viable competitive dynamic in this market under the new law.*

iii. *What is the role of the Commercial Mobile Radio Service ("CMRS") and Competitive Local Exchange Carriers ("C-LECs"), and how are they integrated into the telecommunications environment.*

iv. *What are the unbundled elements that the I-LEC and the CMRS can provided to a the C-LEC in this competitive market.*

v. *What is the current Administrative and Federal law as regards this competitive environment and what is the impact on antitrust law as applied to this area.*

vi. *How are the un-bundled elements and interconnection and access currently provided and is the means and methods of the current provision a "tying arrangement" created by the incumbents as a means to eliminate any competition and is such action an antitrust violation?*

vii. *How should these unbundled elements and interconnection be priced and what is the relative pricing of these elements within the I-LEC and to the C-LEC. Namely, is predatory pricing an issue of concern hereby the I-LEC against the C-LEC and the CMRS.*

viii. Where is the point of regulatory control and where is the point of antitrust control in this market? Namely, does the Department of Justice Antitrust Division have any role to play or should this be disputed as civil proceeding amongst and between the competing parties. More specifically, is there an over-riding Federal concern[7].

2. REGULATORY FRAMEWORK

The regulatory framework has changed dramatically with the passing of the 1996 Act. The Act recognizes that the I-LECs, the incumbent LEC, namely the RBOCs, have had monopoly control, and that for competition to exist, the I-LECs must unbundle, interconnect, co-locate and provide other similar services. Failure to provide such services would result in the FCC refusing to allow the I-LECs to enter certain markets, such as long distance services and manufacturing.

The 1934 Act codified a monopoly around the AT&T structure. The first major crack occurred in the Modified Final Judgment and the separation of Interexchange Services. This allowed new entrants into the IEC business and thus permitted the rapid growth of Sprint, MCI, LDDS (now WorldCom), and others. In 1996 the IEC business is approaching a competitive market with prices generally reflecting commodity pricing with the market share distribution being that of a competitive market.[8]

The view also taken by Congress and the Commission is that there are two elements that are drivers for the rapid introduction for competition; technological innovation and price reduction. The Congress in the new Act has stated in many places that there is a need for technological innovation and that this can best be achieved via a competitive environment. The case of long distance has been a clear case where this has been proven to be the case.

There were previous arguments support monopoly in the case of a telecommunications environment, especially from Alfred Kahn who noted[9]

"We have already alluded to the technological explosion in communications after World War II,...The case for a national telecommunications network monopoly has the following aspects ... Aggregate investment costs can be minimized.. if the planning for the installation and expansion is done with an eye for the total system....Since any one of the 5 million billion possible connections that the system must stand ready to make at any point in time may be performed over a variety of routes....justifies the interconnection...completely dependent on its own resources alone."

This argument for interconnection, combined with transport and control (namely horizontal integration) was valid in 1970. It however is not valid today. They are separable functions and scale economies are in the hands of the CPE manufacturers not the network providers. In effect, there exists no monopoly in

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[7]The concern is that this is almost a trillion dollar industry representing over 20% of the GDP and the DoJ has spent a great deal of focus on the Microsoft antitrust issues despite the fact that there is a clear and present danger that the incumbent carriers, namely the RBOCs, have maintained a monopoly hold on this dominant part of our economy. The DoJ under the current administration has almost a totally laissez fair approach to regulating this industry and in fact in even enforcing the law.

[8]Economists will still argue whether the IEC business is competitive or a cartel. The measure of cartel like behavior is generally driven by the distribution of market share. Porter has shown that in a purely competitive commodity market the markets shares are 40%, 30%, 20%, and 10% going to all others. This case at hand is one wherein the AT&T share is about 60%, MCI at 20% and all others at 20%. Thus the argument may not be complete for full competition but is has gone a far distance in ten years.

[9]See Kahn, (II, p 127).

interconnect as a result of these technology changes. This is a dramatic change from 1971 and Kahn's analysis.

Historically, a more chilling argument trying to eliminate competition on the local loop was given by an AT&T executive. Consider what was written by a Bell System polemicist in 1977 at the 100th anniversary of the Bell System at MIT. The author was John R. Pierce, Executive Director at Bell Labs, who stated:

" Why shouldn't anyone connect any old thing to the telephone network? Careless interconnection can have several bothersome consequences. Accidental connection of electric power to telephone lines can certainly startle and might conceivable injure and kill telephone maintenance men and can wreak havoc with telephone equipment. Milder problems include electrically imbalanced telephone lines and dialing wrong and false numbers, which ties up telephone equipment. An acute Soviet observer remarked: "In the United States, man is exploited by man. With us it is just the other way around." Exploitation is a universal feature of society, but universals have their particulars. The exploitation of the telephone service and companies is little different from the exploitation of the mineral resources, gullible investors, or slaves.[10]

The readers should note that this was written nine years after the Carterfone decision and five years before the announced divestiture. Pierce had a world view of an unsegmentable telephone network. This paper has the view of a highly segmentable communications system. The world view of the architecture has taken us from "slavery" of Pierce to the freedom of the distributed computer networks of today. Kuhn has described technologists as Pierce as the "Old Guard", defenders of the status quo. They defend the old paradigms and are generally in controlling positions for long periods of time.

2.1 Legal Framework

The 1996 Act introduced the first glint of competition in the local exchange market. The Act thus amended the 1934 Act and took steps to eliminate the MFJ. The new Act allowed for entrants into the strongly monopolistic local exchange market. It must be noted that the LEC business is dramatically more complex than the IEC or long distance business. Long distance requires transport, simple switching and interconnection to a local carrier. All IECs pay the same rate to the I-LECs and thus they all have the “water” raised the same amount so that there is no inherent competitive advantage. However this is not the case in LEC competition. The new LEC must build out a plant and interconnect. It is this action of interconnection or accessing the incumbent LEC that is the issue for any antitrust concern. This is the point at which the existing monopolist can create a barrier to entry to any competitor. The new law mandates competition but the Administrative interpretation of that law can be weak and delayed. Both weakness and delay can eliminate any competitor no matter how well the words of the law are phrased.

Regulatory delay has been the strong card of any I-LEC in dealing with new entrants. The new entrant is much less capitalized than the RBOC and thus by dealing with the regulatory bodies the new entrant is weakened, has its financial resources reduced and ultimately is placed in a strongly disadvantageous position. We argue in this paper that the vehicle for effective competition in this new market is via the antitrust laws and not only by the Administrative process.

The legal framework that we shall pose are legal requirements posed in Sherman, Clayton and the FTC Act. These laws are at the heart of the Federal jurisdiction in controlling competition and ensuring that monopoly players would not have dominant control. Unlike the breakup of long distance telephony, the LEC market is a significantly greater monopoly. This monopoly is controlled by the RBOCs predominantly and thus they have dramatic power to control the rate of introduction of new LEC competitors, called the C-LECs. Evidence

[10] See .de Sola Pool Ed, Pierce, Social Impact of the Telephone, 1977, pp 192-194.

over the past fifteen years has shown that the RBOCs have taken all steps possible to delay, deter, and in any other way avoid the introduction of new competitors.

Thus the analysis of this paper is only that will be confined to a reading of the law and its interpretation to such factors as predatory pricing, tying arrangements, barriers to entry, and other specific actions that an I-LEC may take to ensure its survival.

2.2 The Opportunity and the Paradigm Change

The opportunity is that of new and significant competition in the local exchange market. The paradigm shift is one from a product which has significant scale in production to one that has de minimis scale. The author has shown elsewhere that the average capital per subscriber and the marginal capital per subscriber are equal at low percent penetrations of any market. In addition, due to the scalability of the technology, the plant can be arbitrarily expanded at capital per subscriber can be kept and the minimal scale level.[11] In addition, the author has shown, that the scale in operations costs can also be attained by outsourcing. The direct implication is that any new entrant can see costs at full scale in a short period of time. Thus if there were a fully open market, new competitors can compete as efficiently as the existing large companies, and in fact may be much more competitive in a shorter period of time.

There are two major trends in the process of allowing and enhancing disaggregation of networks. They are the development of a distributed processing environment and the loss of scale in infrastructure. We shall discuss each of these in some detail since they will be at the heart of our understanding of the new disaggregated networks.

2.2.1 Distributed Processing

Distributed processing is used in a most general fashion. We define Distributed Processing to mean the ability to place different processes (applications programs and other software elements) and processors (hardware computer units and the like) in different physical locations and that via the ability to intercommunication physically and via the ability of having either standard protocol interfaces or through protocol conversion processes, we can effect and virtual single entity from this distributed and physically and logically disconnected system.

The Internet is the paradigm of the distributed system. The antithesis of this is the current voice based telephone network. We argue that having an open and distributed system, both being synonymous, that we create a Petri dish for the rapid evolution of new services and opportunities. All one has to do is to look at the evolution of the Internet over the last three years.

In terms of a distributed system, the concept of "interconnection" used in its broadest sense has significant merit. An open of fully distributed system is one that allows for ultimate flexibility. The author has also argued in early 1993 reference that the Internet would be open and distributed and that it was this characteristic that would make it a public thoroughfare.[12]

2.2.2 Loss of Scale

Technology has had a dramatic influence on the cost of entry into a market. More importantly, there is the concept that "silicon is almost free". Namely that we can now construct systems that have low fixed costs

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[11] See the papers by the author as referenced.

[12] See McGarty, From High End User to "New User", Harvard Kennedy School, May, 1993.

and that the capital per subscriber, whether is be average or marginal are almost equal. This means that technological changes have driven scale economies out of the business.

There are three examples of loss of scale. The first is the advent of the ATM (voice packet) or Frame Relay (Long Packet) switches. Unlike the old Central Office switches which are priced at a fixed entry costs of $5,000,000, one can enter a switched voice or data market with an ATM at $50,000, and reach loss of scale at 50 to 100 lines or even less. Fundamentally, ATM fabrics present a level playing field to all entrants.

The second example is wireless, namely CDMA. It has been shown by the author that unlike analog or even TDMA, CDMA cellular reached a capital per subscriber of $200 or less at 30,000 subscribers or less.[13] In the analog world scale was not lost until the subscriber base was ten times that number. Thus PCS using CDMA is almost one tenth the capital per subscriber as the current wire based telecommunications business of the RBOCs.

The third example is the concept of outsourcing. This is the "virtual" loss of scale. One can use service bureaus for billing or customer services that allow for pricing at the margin. The provider of network services no longer is required to provides for all software, computers, personnel, training and infrastructure.

This loss of scale has several dramatic consequences to those entering and continuing to operate in the business;[14]

i. Barriers to entry are removed: This means any new entrant may get into some part of the business. Combined with the distributed element, the new entrant may do so at little costs.

ii. Economic and Regulatory Rationale for monopolies are eliminated: There is no longer the justification that one large entity, to who consumers are paying monopoly rents, is the best entity due to scale economies. One must re-look at the regulation.

iii. Change can be Effected More Swiftly: Loss of scale allow for rapid changes in service offerings by eliminating the concept of sunk costs. Albeit sunk costs are not to be considered in economic decisions they are frequently a significant factor in delaying change. The elimination of theses virtual burdens should allow for more rapid change.

We briefly show what the structure of the disaggregated network will look like and do so in the context of several specific examples.

2.3 Disaggregation Elements

The theory of disaggregation states that technology and industry has developed in such a fashion that it is possible to effect all elements of a business in a virtual form by obtaining all functions necessary to deliver a service by purchasing them from third parties each of whom has themselves other similar customers and thus each of whom can deliver their element of the functionality in a minimal marginal cost manner. The disaggregation theory then concludes with the result that in many technologically intense services business, a virtual company can exist wherein all the functions can be purchased from third parties or capital equipment may be purchased in a fully interconnected fashion so as to achieve near equality between

[13] See McGarty, TPRC, September, 1993.

[14] See the McGarty papers from 1993 through 1995. In these papers the author presents detailed financial and economic models of the wireless side of the business. More importantly, see the paper presented in March, 1996, at Columbia University, available on the CITI Web site, wherein the author takes this a step further and applies disaggregation theory to a broader set of telecommunications services.

average and marginal costs from the very commencement of the business. The Disaggregated Company is the embodiment of the virtual business. [15]

The existence of the disaggregated business is a challenge to the antitrust laws and especially to the implementation of the 1996 Act. What this implies is that as a disaggregated comp any any new entrant can achieve the same of better efficiencies of operation of its business as any incumbent, right from the start. This then states that competition is then based solely upon the actions of the monopolistic incumbent and that these actions relate to only one area, interconnection and unbundling.[16]

Disaggregation falls into three dimensions; technical, operational, and relational. We define each as follows:[17]

Technical: Technical disaggregation the ability to overlay applications and platforms a disparate backbone of transport facilities and create a whole. An example of technical disaggregation is the client server architectures and the LAN networks in common use. This type of disaggregation is a result of the many technological advantages that have occurred in telecommunications as a direct result of the 1984 MFJ agreement.[18]Another example of technical disaggregation is the ability to use a distributed system, such as PCS, Personal Communications Services, and have the actual "switching" occur at the end users handsets rather than at the old fashioned hierarchical central office. By distributing the technology and the intelligence we marginalizes the capital deployment requirement and thus achieve technical disaggregation. One example that we discuss in this paper is the concept of providing airtime. Namely the ability of a competitor to not only unbundle local loop, namely copper wire, but to unbundle frequency spectrum, namely airtime from an existing CMRS.[19]

Operational: Operational desegregation is the breaking apart of re-assembling in any fashion the operational or business elements to effect the successful provision of service. Namely we can separate billing, transport, sales, service, and network control into different pots and create a virtual corporate entity. We no longer have to do all. We only have to do that part that we do well. An example of operational disaggregation is the outsourcing business whereby a company, such as a Bell Operating Company, would

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[15]See the paper by the author at the Columbia University presentation, March, 1996.

[16]See Coll: William McGowan, one of the founders of MCI recognized this in the IEC business. He used a two prong approach to effecting his competitive position, first through the FCC and second via the antitrust laws.

[17]McGarty, March, 10996, paper presented at Columbia University.

[18]The author had started his career at Bell Labs in 1964 as a student. It was clear then that progress in the monopoly would be slow and that no challenge to the way things would be done would be tolerated. There are two anecdotes that show that the old Bell System, rather than being a national asset as has been stated, was a national liability. The first is the attempt by Bob Kahn, the father of the Internet, to obtain a 300 bps modem from AT&T. They refused to support ARPA and Kahn and his team thus were forced to create a modem apart form AT&T. This then led to the proliferation of PC modems and the ability now with the introduction by Intel of a 56 Kbps dial up modem that supplants ISDN. The second is the demand by the Chairman of AT&T for a digital switch. The Holmdel and Naperville management refused and he had to go to Bell Northern to do the development. At that time AT&T owned a significant interest in Bell Canada. The result of that was the growth of Northern Telecom, and the displacement in New York Telephone of Northern switches. These are two seminal events that shows that Bell Labs rather than being a national resources actually in a monopoly became a national liability.

[19]It should be noted that the FCC expressly stated that the CMRS was not a LEC and thus was not required to unbundle. In addition, in the FCC First R&O on Interconnection, August 8, 1996, it stated that an RBOCs LEC was not a subsidiary even though the author argued against that based upon the theory of agency.

use an outsourced customer service center to provide this function, or in another context of a bank who outsources all of its telecommunications network.

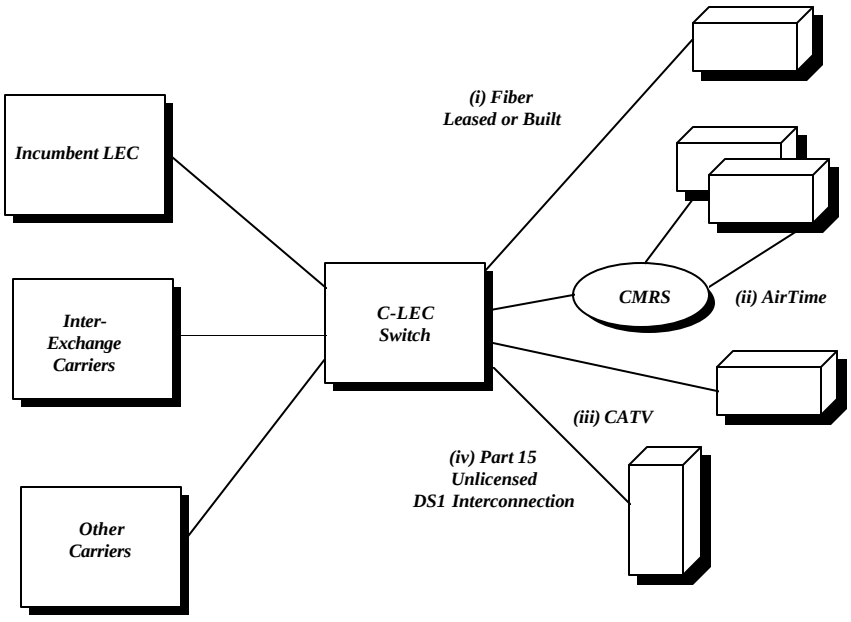
Relational: This will be the issue of who does what to whom in such entities as electronic marketing and distribution channels in a telecommunications cybernetwork. This is the most recent example of building cybernetworks via relationships. Unfortunately many of the current examples are examples of failure; Prodigy with IBM, CBS and Sears, or MCI and News Corp on the Internet side. In this paper we attempt to focus on the latter two elements. The first has been treated elsewhere.

This Disaggregator entity is a key differentiation in the market. The Disaggregator is one who may use the existing license holders access facilities as one of several means to provide service to a fixed customer base. In FCC Docket WT 96-6 the Commission raises the issue of allowing the CMRS to provide fixed services. Namely this allows the CMRS, as defined by the Commission, to be a purveyor of what is normally termed "LEC services" and for the purpose of WT 96-6 is called wireless local loop, "WLL". It is argued that the Disaggregator is a different entity altogether and more importantly it is argued that the disaggregator is the most likely evolutionary entity to change as full competition is presented in the wireless market.

The author believes that by acting as a "Disaggregator" it can effect this competitive position. The Disaggregator works on the following principles. The provision of wireless services is based upon the integration of the service elements. This integration may be performed as an aggregation or as a desegregation approach. The Aggregation is the way most of the CMRS entities now work, having control over all of the elements of "production". The Disaggregator may have control of certain strategic elements but will "outsource" others.

2.4 The Product

The C-LEC or the CMRS is in the business of providing exchange access and telephone exchange services. It does so in a fashion that utilizes a variety of local transport and interconnection means and methods. The C-LEC will use a system which is a telecommunications system which utilizes fixed local telecommunications circuits and connections in combination with wireless circuits which may use radio frequencies and is made up of intersecting base stations, dedicated interconnection facilities to the public switched telephone network, separate transmission facilities, and separate switching facilities. The System consists of an integrated wire-based and wireless-based network, as required to provide the User with Telecommunications Services. The following Figure depicts the proposed network that the C-LEC may implement for the provision of its services.



In the above, the C-LEC proposes to provide its services using a variety of methods and means to connect users of its service to its switch which is located. The switch will in turn connect to the Incumbent LEC, the Inter-Exchange Carriers, and other carriers as appropriate. The user interface to the C-LEC switch may be over the C-LEC owned and operated facilities such as the Part 15 license free DS-1 interconnections to fiber that the C-LEC may build and operate or it may be over other means using different methods and leased from third parties. Included in this third party lease is the provisions of interconnection means provided by a CMRS. The author argues that even though it may use CMRS services as one of several means that this does not make the C-LEC a CMRS. Specifically as defined below, the C-LEC is not per se a CMRS and is per se a Local Exchange Carrier.

The C-LEC intends to market and sell its services to users as if they were local exchange carrier services. It intends to compete with the Incumbent LEC and not necessarily compete with the Incumbent CMRS or the non-Incumbent CMRS. the C-LEC has selected a target market, a bundle of service offerings, and a pricing scheme that allows it to position itself as competitor to LECs. Unlike CMRS resellers who merely hold themselves out to the market as purveyors of cellular CMRS services, the C-LEC intends to hold itself out to the market as a local exchange carrier as specified by the FCC.

The C-LEC distinguishes itself from CMRS operators and CMRS reseller in two ways; means of user interconnection ("means") and offering made to the public ("offering"). The means that the CMRS uses is generally and currently exclusively the licensed based facility of its cell sites and other such facilities.[20]Thus the CMRS provider provides its service over a singularity of means. In contrast, the C-LEC plans to provide its services over a multiplicity of means. As to offering, the Incumbent CMRS offers "cellular" service only. This implies two elements. First it is an offering that is solely and completely dependent on the means available to the CMRS. Secondly, the means has the capability of crossing state boundaries and that, in addition, through roaming, the means allows interstate usage. In contrast, the

[20]It should be noted that under Sec. 601 of the Act the CMRS of the Incumbent LEC may now "bundle" together several offerings to the public and hold itself out as a provider of services that uses a multiplicity of means. the C-LEC bases its agreement that the Incumbent CMRS is now a CMRS alone on the fact that Sec. 601 has not been implemented.

offering of the C-LEC generally is one of local services and specifically the C-LEC intends to be a purveyor of services. Thus the C-LEC is different in both means and offering from a CMRS.

3. THE TELECOMMUNICATIONS ACT

3.1 The Act

The 1996 Telecommunications Act, the Act, became law on February 8, 1996. The law mandated that the FCC in its role as Administrative agency establish the appropriate renderings of the law into administrative procedures in the Code of Federal Regulations, and thus amending the current CFR. The FCC took this mandate and on August 8, 1996, six months after the law was effective, issued a set of administrative rulings regarding the implementation of several key elements of the law. Specifically the FCC ruled on the issues of interconnection and unbundling of the plant. The issues still before the FCC are access and universal service.

The following is a list of the key portions of the 1996 Act. Each is a Section and each will be reviewed and rendered into administrative code by the FCC. The total number of sections are significant and they cover telephony, satellites, cable and broadcast. We shall not deal with satellites, cable and broadcast in this paper.

Section	*Topic*	*Issue*
SEC 251	***INTERCONNECTION***	This section deals with interconnection and unbundling of the local exchange carrier. It proposes that such a set of procedures be established and that such procedures reflect a maximally competitive environment for the local exchange business.
SEC 252	***PROCEDURES FOR NEGOTIATION, ARBITRATION, AND APPROVAL OF AGREEMENTS***	This section details processes, procedures and remedies for the failure to effectively provide for the provisions under 251.
SEC 253	***REMOVAL OF BARRIERS TO ENTRY***	This section broadly requires the removal of any and all barriers to entry in the market. This section is a classic antitrust statement of competition in the local market.
SEC 254	***UNIVERSAL SERVICE***	This section details the universal services provision.
SEC 601	***APPLICABILITY OF CONSENT DECREES AND OTHER LAW***	Eliminates Clayton exemption from Antitrust laws for all of the RBOCs.

3.2 The FCC First Report and Order

On August 8, 1996 the FCC issued a report and Order, the First, on 251 and 252. They detailed in almost 800 pages the interpretation of the law as a result of the Notice of Public Rulemaking process. There were approximately a dozen law suits filed, mostly by the RBOCs objecting to this R&O. The RBOCs clearly feared local competition of any form and their filings attacked the FCC and the suits are filed in every District Court available.

3.3 Interconnect

Section 251 is the key section in establishing competitive local exchange access. The key elements of Section 251 state the following:

*"(a) **GENERAL DUTY OF TELECOMMUNICATIONS CARRIERS**- Each telecommunications carrier has the duty (1) to interconnect directly or indirectly with the facilities and equipment of other telecommunications carriers; and (2) not to install network features, functions, or capabilities that do not comply with the guidelines and standards.....*

*(b) **OBLIGATIONS OF ALL LOCAL EXCHANGE CARRIERS**- Each local exchange carrier has the following duties: (1) RESALE- The duty not to prohibit, and not to impose unreasonable or discriminatory conditions or limitations on, the resale of its telecommunications services. (2) NUMBER PORTABILITY- The duty to provide, to the extent technically feasible, number portability in accordance with requirements prescribed by the Commission. (3) DIALING PARITY- The duty to provide dialing parity to competing providers of telephone exchange service and telephone toll service, and the duty to permit all such providers to have nondiscriminatory access to telephone numbers, operator services, directory assistance, and directory listing, with no unreasonable dialing delays. (4) ACCESS TO RIGHTS-OF-WAY- The duty to afford access to the poles, ducts, conduits, and rights-of-way of such carrier to competing providers of telecommunications services on rates, terms, and conditions that are consistent with section 224. (5) RECIPROCAL COMPENSATION- The duty to establish reciprocal compensation arrangements for the transport and termination of telecommunications.*

*(c) **ADDITIONAL OBLIGATIONS OF INCUMBENT LOCAL EXCHANGE CARRIERS**- In addition to the duties contained in subsection (b), each incumbent local exchange carrier has the following duties: (1) DUTY TO NEGOTIATE- The duty to negotiate in good faith in accordance with section 252 the particular terms and conditions of agreements to fulfill the duties described in paragraphs (1) through (5) of subsection (b) and this subsection. The requesting telecommunications carrier also has the duty to negotiate in good faith the terms and conditions of such agreements. (2) INTERCONNECTION- The duty to provide, for the facilities and equipment of any requesting telecommunications carrier, interconnection with the local exchange carrier's network..... (3) UNBUNDLED ACCESS- The duty to provide, to any requesting telecommunications carrier for the provision of a telecommunications service, nondiscriminatory access to network elements on an unbundled basis at any technically feasible point..... (4) RESALE- The duty-- (A) to offer for resale at wholesale rates any telecommunications service that the carrier provides at retail to subscribers who are not telecommunications carriers; and (B) not to prohibit, and not to impose unreasonable or discriminatory conditions ..... (6) COLLOCATION- The duty to provide, on rates, terms, and conditions that are just, reasonable, and nondiscriminatory, ...*

*(d) **IMPLEMENTATION**-..... (3) PRESERVATION OF STATE ACCESS REGULATIONS- In prescribing and enforcing regulations to implement the requirements of this section, the Commission shall not preclude the enforcement of any regulation, order, or policy of a State commission that-- (A) establishes access and interconnection obligations of local exchange carriers; (B) is consistent with the requirements of this section; and (C) does not substantially prevent implementation of the requirements of this section and the purposes of this part."*

3.4 Universal Service

Universal service has been in effect de facto since the Kingsbury decision of 1913.[21] This implicitly allowed AT&T to retain its monopoly subject to the agreement to provide, ultimately, universal service. The

[21] See Weinhaus, p. 9.

universal service would mean that there would be access to all people to telephone services and that for poor people that service would be subsidized. The state PUCs then followed up on this and embodied this in state regulatory requirements. In effect, AT&T and the BOCs were transferring wealth fro the "rich" to those who could not pay for such services, either because of their income or because the costs to provide services to that individual would be prohibitive. This was then an enforced payment, established and managed by the BOCs, for the purpose of collecting moneys from the haves for redistribution by the BOCs to what was perceived as the have nots. Needless to say this is per se taxation. From a Constitutional perspective such rights inure solely to the states and the Federal governments and under the Commerce Clause it is highly problematic that any independent third party has any right to tax especially as regards to interstate commerce. Needless to say there has never been a challenge here.

The Universal services fund was and still is a taxation by the BOCs to redistribute income.[22] It also is a pool of funds to be used by them as a vehicle to bar competition. The universal services issue however goes to the heart of the interconnection issue. The RBOCs have used this ruse as a means to control competition in two ways. First, in interexchange access they have charged an access fee disproportionately higher than costs since it was then used as a basis for universal services. This was the taxation issue. Second, they have used a unilateral fee for any other interconnect player. Thus cellular companies, arguable providing local services, pay for initiating ad terminating calls. This has been changed by the new Act.

The Act has mandated a separate Universal Services fund to be managed by the Government, and thus the Governments powers to tax are valid and this is a legal act in contrast to the arguably illegal actions of the RBOCs in the pursuit of taxation. Second, the Act mandates balanced interconnection.

To better understand where the legal applications will be addressed we first present an overview of the major theories behind the applications of the antitrust laws. This will be important since these theoretical basis are not only applied to antitrust law but also to the enactment of the administrative regulations in the application of the Telecommunications Act. The litigation of any case in this area will require an understanding of the philosophical framework underlying its application.

Universal Services is the mandate to provide services by any carrier to any person not individually financially able to obtain the service in the area in which the inhabit.[23] Namely the low income and rural customers. The universal services provisions are as follows:

" (b) UNIVERSAL SERVICE PRINCIPLES- The Joint Board and the Commission shall base policies for the preservation and advancement of universal service on the following principles: (1) ***QUALITY AND RATES.....****-(2)* ***ACCESS TO ADVANCED SERVICES****- ..... (3)* ***ACCESS IN RURAL AND HIGH COST AREAS****- ..... (4)* ***EQUITABLE AND NONDISCRIMINATORY CONTRIBUTIONS*****.....**

(c) DEFINITION (1) IN GENERAL- Universal service is an evolving level of telecommunications services that the Commission shall establish periodically under this section, taking into account advances in telecommunications and information technologies and services..... such telecommunications services; (A) are essential to education, public health, or public safety; (B) have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers; (C) are being deployed in public telecommunications networks by telecommunications carriers; and (D) are consistent with the public interest, convenience, and necessity....."

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[22]This is a Rawlsian approach to justice, ensuring that the least amongst us in the society has equal benefit to society asses. Baumol has taken this principle and applied it to monopolies supplanting the individual with the monopolist. The Baumol-Willing theorem takes the utilitarian approach and uses it as a basis for demanding the continuation of access. What Baumol does it create a Rawlsian universal service for the monopolist.

[23]See McGarty, October, 1996.

Universal service has been in effect de facto since the Kingsbury decision of 1913.[24] This implicitly allowed AT&T to retain its monopoly subject to the agreement to provide, ultimately, universal service. The universal service would mean that there would be access to all people to telephone services and that for poor people that service would be subsidized. The state PUCs then followed up on this and embodied this in state regulatory requirements. In effect, AT&T and the BOCs were transferring wealth fro the "rich" to those who could not pay for such services, either because of their income or because the costs to provide services to that individual would be prohibitive. This was then an enforced payment, established and managed by the BOCs, for the purpose of collecting moneys from the haves for redistribution by the BOCs to what was perceived as the have nots. Needless to say this is per se taxation. From a Constitutional perspective such rights inure solely to the states and the Federal governments and under the Commerce Clause it is highly problematic that any independent third party has any right to tax especially as regards to interstate commerce. Needless to say there has never been a challenge her.

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The Act has mandated a separate Universal Services fund to be managed by the Government, and thus the Governments powers to tax are valid and this is a legal act in contrast to the arguably illegal actions of the RBOCs in the pursuit of taxation. Second, the Act mandates balanced interconnection.

3.5 Code Changes of the First R&O

The First Report and Order ("R&O") by the FCC mandated certain changes to interconnection. These changes are as follows:[25]

"§ 51.305 Interconnection.

(a) An incumbent LEC shall provide, for the facilities and equipment of any requesting telecommunications carrier, interconnection with the incumbent LEC's network: (1) for the transmission and routing of telephone exchange traffic, exchange access traffic, or both; (2) at any technically feasible point within the incumbent LEC's network.....; and (5) on terms and conditions that are just, reasonable, and nondiscriminatory.....

(b) A carrier that requests interconnection solely for the purpose of originating or terminating its interexchange traffic on an incumbent LEC's network and not for the purpose of providing to others telephone exchange service, exchange access service, or both, is not entitled to receive interconnection.....

(c) Previous successful interconnection at a particular point in a network, using particular facilities, constitutes substantial evidence that interconnection is technically .....

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[24] See Weinhaus, p. 9.

[25] The following are U.S.C. 47.

(d) Previous successful interconnection at a particular point in a network at a particular level of quality constitutes substantial evidence.....

(e) An incumbent LEC that denies a request for interconnection at a particular point must prove to the state commission that interconnection at that point is not technically feasible.

(f) If technically feasible, an incumbent LEC shall provide two-way trunking upon request. "

The above mandates that the I-LEC interconnect itself to any purveyor of services that may become a competitor. This is the first time that the FCC has mandated such a requirement.

The following are the rules for interconnection pricing. There are several factors that are key. First is the reciprocal nature of the rules, second the method and means at which the prices for interconnect are to be determined, and third the bill and keep, or zero access fee, option.

"§ 51.701 Scope of transport and termination pricing rules.

(a) The provisions of this subpart apply to reciprocal compensation for transport and termination of local telecommunications traffic between LECs and other telecommunications carriers.

(b) Local telecommunications traffic. For purposes of this subpart, local telecommunications traffic means: (1) telecommunications traffic between a LEC and a telecommunications carrier other than a CMRS provider that originates and terminates within a local service area established by the state commission; or (2) telecommunications traffic between a LEC and a CMRS provider that, at the beginning of the call, originates and terminates within the same Major Trading Area.....

(c) Transport. For purposes of this subpart, transport is the transmission and any necessary tandem switching of local telecommunications traffic .... from the interconnection point between the two carriers to the terminating carrier's end office switch that directly serves the called party, or equivalent facility provided by a carrier other than an incumbent LEC.

(d) Termination. For purposes of this subpart, termination is the switching of local telecommunications traffic at the terminating carrier's end office switch, or equivalent facility, and delivery of such traffic to the called party's premises.

(e) Reciprocal compensation. For purposes of this subpart, a reciprocal compensation arrangement between two carriers is one in which each of the two carriers receives compensation from the other carrier for the transport and termination on each carrier's network facilities of local telecommunications traffic that originates on the network facilities of the other carrier.

§ 51.703 Reciprocal compensation obligation of LECs.

(a) Each LEC shall establish reciprocal compensation arrangements for transport and termination of local telecommunications traffic with any requesting telecommunications carrier.

(b) A LEC may not assess charges on any other telecommunications carrier for local telecommunications traffic that originates on the LEC's network.

§ 51.705 Incumbent LECs' rates for transport and termination.

(a) An incumbent LEC's rates for transport and termination of local telecommunications traffic shall be established, at the election of the state commission, on the basis of: (1) the forward-looking economic costs of such offerings.....; (2) default proxy.....; or (3) a bill-and-keep arrangements.....

(b) In cases where both carriers in a reciprocal compensation arrangement are incumbent LECs, state commissions shall establish the rates of the smaller carrier on the basis of the larger carrier's forward-looking costs.....

§ 51.707 Default proxies for incumbent LECs' transport and termination rates.

(a) A state commission may determine that the cost information available to it with respect to transport and termination of local telecommunications traffic does not support the adoption of a rate or rates for an incumbent LEC that are consistent with the requirements.....

(b) If a state commission establishes rates for transport and termination of local telecommunications traffic on the basis of default proxies, such rates must meet the following requirements.....

§ 51.709 Rate structure for transport and termination.

(a) In state proceedings, a state commission shall establish rates for the transport and termination of local telecommunications traffic that are structured consistently with the manner that carriers incur those costs.....

(b) The rate of a carrier providing transmission facilities dedicated to the transmission of traffic between two carriers' networks shall recover only the costs of the proportion of that trunk capacity used by an interconnecting carrier to send traffic that will terminate on the providing carrier's network. Such proportions may be measured during peak periods.

§ 51.711 Symmetrical reciprocal compensation.

(a) Rates for transport and termination of local telecommunications traffic shall be .....

(b) A state commission may establish asymmetrical rates for transport and termination of local telecommunications traffic only if the carrier other than the incumbent LEC (or the smaller of two incumbent LECs) proves to the state commission on the basis of a cost study.....

(c) Pending further proceedings before the Commission, a state commission shall establish the rates that licensees in the Paging and Radiotelephone Service .....

§ 51.713 Bill-and-keep arrangements for reciprocal compensation.

(a) For purposes of this subpart, bill-and-keep arrangements are those in which neither of the two interconnecting carriers charges the other for the termination of local telecommunications traffic that originates on the other carrier's network.

(b) A state commission may impose bill-and-keep arrangements if the state commission determines that the amount of local telecommunications traffic from one network to the other is roughly balanced with the amount of local telecommunications traffic flowing in the opposite direction, and is expected to remain so.....

(c) Nothing in this section precludes a state commission from presuming that the amount of local telecommunications traffic from one network to the other is roughly balanced with the amount of local telecommunications traffic flowing in the opposite direction and is expected to remain so, unless a party rebuts such a presumption."

The bill and keep approach is the approach that is the most economically efficient approach, is allowed by the law, and allows fore the ,most effective means to establish competition in the market. In the remainder of this paper we shall focus on this issue.

4. THE ELEMENTS OF THE TELECOMMUNICATIONS BUSINESS

The telecommunications environment in the local exchange market is composed of several players. In this section we present that structure, as also determined by the Act, and demonstrate the roles played by each participant.

4.1 Market Players

Principally the market is composed of the following players[26]:

Incumbent Local Exchange carrier ("I-LEC"): [27]For the most part this is the Regional Bell Operating Company ("RBOC") or the equivalent. They are the existing monopoly player in the market and have until February 8, 1996 been protected from any and all antitrust violations by virtue of the clause in *Sec. 3* of Clayton.

Competitive Local Exchange Carrier ("C-LEC"): The C-LECs are new entrants that may provide local exchange service by means of their own transmission facilities or switches or via other similar facilities. Generally the C-LEC would have its own switch and provide other similar operational services.

Commercial Mobile Radio Service Provider ("CMRS"): [28]The CMRS is the owner of a radio license from the FCC and provide two way telecommunications services by means of that license.

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[26]See McGarty, Harvard, November, 1990. In that paper the author developed a canonical industry structure which has survived the new telecom legislation. It demonstrates the ability of the different players to compete and also argues for certain monopoly powers for CATV companies while arguing against monopoly powers for local exchange carrier companies.

[27] The following definitions are from the Act as modified. ***Local Exchange Carrier:*** A LEC is defined as per the Act in Sec. 3(a)(2)(44).
"The term Local Exchange Carrier means any person that is engaged in the provision of telephone exchange service or exchange access. Such term ***does not include a person insofar as such person is engaged in the provision of a commercial mobile service under Section 332(c), except to the extent that the Federal Communications Commission finds that such service should be included in the definition of such term****. Specifically,*

EXCHANGE ACCESS- As per the Act, Sec.3(b)(2), the term Exchange Access means the offering of access to telephone exchange services or facilities for the purpose of the origination or termination of telephone toll services.

TELEPHONE EXCHANGE SERVICE - Telephone Exchange Service is defined in 47 U.S.C. Sec. 153 (r)means service within a telephone exchange, or within a connected system of telephone exchanges within the same exchange area operated to furnish to Subscribers intercommunicating service of the character ordinarily furnished by a single exchange, and which is covered by the exchange service charge."

[28]The CMRS is defined in the Act as follows:

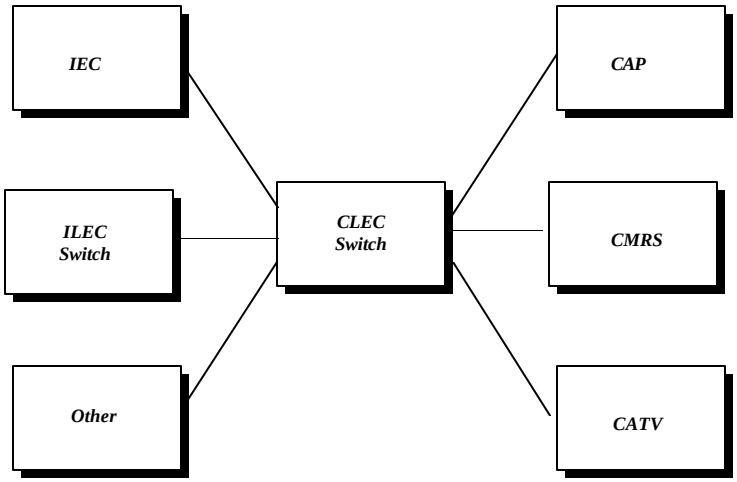
"(i) CMRS: *A Commercial Mobile Radio Service ("CMRS") as defined by 47 U.S.C. Section 332 and from the Code, Section 153 (n). Specifically, Commercial Mobile Radio Service means any mobile service (as defined in section 47 U.S.C Section 153(n)) that is provided for profit and makes interconnected service available (A) to the public or (B) to such classes of eligible Users as to be effectively available to a substantial portion of the public, as specified by regulation by the Federal Communications Commission."*

"(ii) MOBILE SERVICE *: As defined in section 47 U.S.C Section 153(n), Mobile Service means a radio communication service carried on between mobile stations or receivers and land stations, and by mobile stations communicating among*

Competitive Access Provider ("CAP"): A CAP is a provider of access and interconnection to a I-LEC or to a the C-LEC. The CAP generally has a fiber bypass network and may or may not have a switch.

Cable Television Provider ("CATV"): The CATV company may provide telecommunications services of its own accord but that is to be seen as a large scale opportunity. CATV companies have been allowed to act as such since 1984 with the Cox and MCI decision before the FCC.

The relationship between the C-LEC and the other players is shown in the following Figure.



The specific interconnections that we shall deal with in this paper are those between the I-LEC and the CMRS. These are specifically shown in the following Figure.

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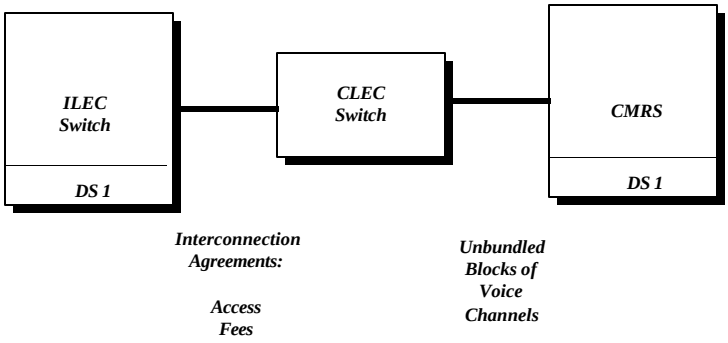
*themselves, **and includes** (1) **both one-way and two-way** radio communication services, (2) a mobile service which **provides a regularly interacting group of base, mobile, portable**, and associated control and relay stations (whether licensed on an individual, cooperative, or multiple basis) for private one-way or two-way land mobile radio communications by eligible Users over designated areas of operation, **and** (3) any service **for which a license is required** in a personal communications service established pursuant to the proceeding entitled "Amendment to the Commission's Rules to Establish New Personal Communications Services" (GEN Docket No. 90-314; ET Docket No. 92-100), or any successor proceeding."*

The mobile service definition requires three elements; two way communications, over a an infrastructure and that the operator is in possession of an FCC license to provide such services. The author argues that the license is a "bright line" test that makes C-LEC a LEC but not necessarily a CMRS.



Namely, in this description above, the C-LEC requires access to the facilities from the CMRS and the I-LEC. In both cases the lease of a DS-1 circuit, namely a circuit transmitting at the rate of 1.544 Mbps. On the CMRS side the DS-1 represents access to 24 voice channels at any one time, the risk of filling those channels is placed upon the C-LEC. On the I-LEC interconnection, the request is the interconnection of the C-LEC to the I-LEC with a DS-1 connection using a D4 channel bank or an equivalent.

4.2 Local Exchange Interconnection and Elements

The LEC elements are composed of two general categories of goods. They are the inside plant and the outside plant. The inside plant is the switch and all of its elements and the outside plant is composed of the wireless, fiber cables and other outside connection facilities.

In the inside plant, each call can be attributed to the use and allocation of certain determinable facilities, directly, or though a well determined allocation process. For example, if one desires a single call connection, it is know that a call uses certain line terminating equipment, certain processor capabilities and capacity, and certain trunk terminating facilities. Thus the allocations of the total good to the specific good for any single call is determinable. In effect, one who requests the use of the facilities from the I-LEC is in essence requesting the product of a combination of capital plant and ancillary support services for some time certain. It is not the provision of a service as determined by the Court.[29]

4.3 Interconnection and Elements

The C-LEC and the CMRS provider provide certain access facilities to connect between the use and a switch by means of a set of radio stations and a concentrator switch which may or may not provide for the ability to hand-off from one cell to another. Interconnection establishes the ability of one provider of services to establish a connection with the other provider of services.

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[29]Note that we have phrased this as a purchase of two or more elements. This is consistent with the Court ruling in *Students Books v. Washington Law Book*, 232 F. 2nd 49 (DC Cir. 1955) and the sales of these are contemporaneous as in *Atlanta Trading Corp. v. FTC*, 258 F. 2nd 365 (2nd Cir. 1958).

4.4 Unbundling

The unbundling of the system elements of the I-LEC has been mandated by the 1996 Act. Specifically, the Act mandates unbundling, interconnection, co-locations and other similar facilities provisioning. Unbundling is the key issue. Unbundling has two parts; first, how does one take an I-LEC and break it into useful parts that are unbundleable, and second, what are the costs of those parts and how do common facilities get allocated across parts, if at all. In reality all of the facilities are capital plant facilities that have been commonly placed in the rate base of the former regulated I-LEC. The allocation of parts to rate base is not necessarily the way to allocate parts for unbundling.

We consider the unbundling of a CMRS first and then of the I-LEC. For the CMRS, the system is composed of the following four elements: capital, operations, sales, and over-head.

Capital: This includes the capital plant and equipment and such equipment may be provided in whole or in part. The capital costs include both hard ad soft costs. The hard costs are the costs paid to vendors and the soft costs are the costs provided to the engineering and construction contractors. The three main components of the capital equipment for a CMRS, for example, are: (i)Cell Sites, (ii) switches, (iii) Interconnection Network

Operations: These costs elements relates to the providing of the service and relate to the operations and maintenance of the system and not related to the costs of supporting customers. These costs are: (i) Operations and maintenance, (ii) Network Management, (iii) Spares and repairs.

Sales: Theses are all of the costs related to the acquisition, implementation, integration, and support of customers. They are typically: (i)Billing, (ii) Customer Service, (iii) Provisioning, (iv) Sales.

Overhead: The overhead costs are such elements as administration, planning, research and development, lobbying, regulatory, and other such areas.

We have presented detailed models of these costs elsewhere. In this case, if we decide to provide cellular services, then we can use the capital per subscriber numbers that have been presented elsewhere.

Example 1:

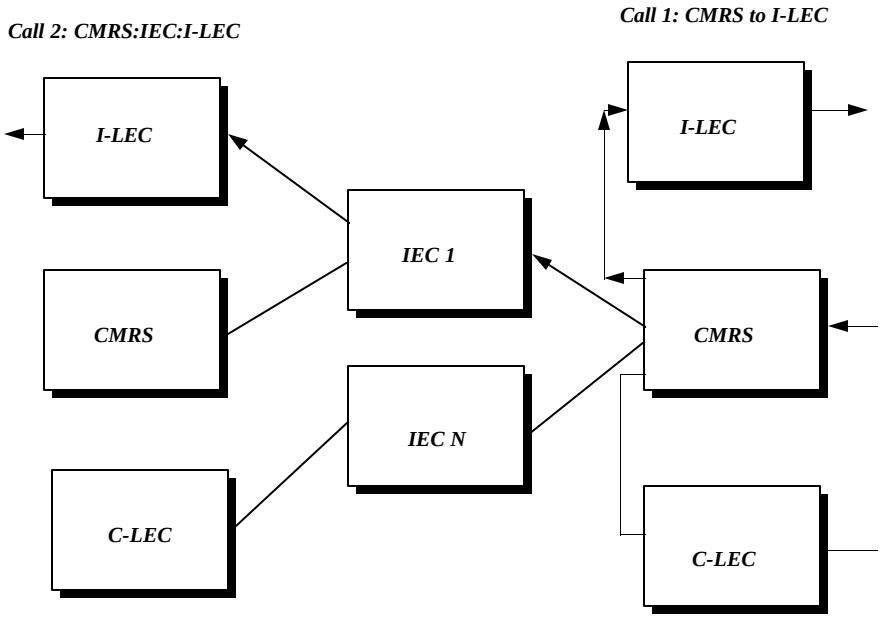
For example, in analog cellular, the capital per subscriber at 50% penetration is about $500. This includes all capital element as described above. This amounts to $12,000 per 24 subscribers equivalent, at 50% loading. If the single user uses the system at 0.01 Erlang per user, then the capital per DS-1 trunks is $600,000. At higher Erlang loads the capital per DS-1 actually decreases.

Example 2:

Calculated in a different fashion, we note that a DS-1 is 24 voice channels, a fully loaded cell is 72 voice trunks or 3 DS-1s. A fully loaded cell is $750,000 or $250,000 per DS-1. As per the previous calculations, we can see that calculated on a per subscriber basis the capital is higher. Much of this is dominated by the issue of coverage versus capacity. If the $500 numbers at 25% loading then the number goes to $300,000 per DS-1. Typically the cell is at 25%.

4.5 Principle of Cost Based Pricing

The above examples present the key issues of interconnect and unbundling. We conclude this with the Principle of Cost based Pricing. The principle can be explained via the following example. Consider the interconnection shown in the following Figure. Here we have a CMRS, an I-LEC, a C-LEC, sever IECs, and their interconnection. The CMRS will be the focal point. The CMRS connects to the IECs and to the I-LEC and C-LEC as well as to other similar players on the other side of the IECs.



Consider two calls. Call 1 goes from the CMRS to the local I-LEC. Call 2 goes from the CMRS, over an IEC to a customer at a distant I-LEC. Both calls are originated by a CMRS customer and terminate on an I-LEC customer.

Today, any IEC call must pay an interconnection access fee to the I-LEC to terminate on their network. As we indicated this is a wealth transfer policy and does not reflect any true cost. The CMRS before the Act paid the I-LEC a termination or origination fee and there was no compensation from the I-LEC to the CMRS. As we have demonstrated that is no longer the case.

The Principle of Cost base Pricing states the following: The consumer should pay for each link separately and they should pay only for those links for which they are customers of that link provider. The payment the customer makes should reflect a price that is in turn based on the costs of that link.[30]

[30]The issue here is a quid pro quo issue of parity in providing interconnection in a commodicizable market. For example, if two or more LEC or LEC like carriers enter a market, then there should be not interconnection fee and each carrier should

Thus, in the Case 1 example, the Principle of Cost Based Pricing states that a CMRS customer pays for the costs of accessing the CMRS system up to the demarcation point between the CMRS and the I-LEC. The I-LEC customer should pay all costs for the access to the I-LEC facilities. Thus the Principle states that there should be not access fees. The classic economist states that the I-LEC has externalities that the other providers should pay for. The theory of competitive markets states that such externalities are inefficiencies in clearing of the markets since they burden all other players with the costs of the inefficient provider.

In Case 2 the Principle applies as follows. The Customer should pay for the CMRS costs at a cost based pricing method and the Customer should pay their IEC a price on a similar cost based principle. The termination is on a customer of the I-LEC who pays for their access and thus does not burden the call initiating party.

Let us examine why this is a fair principle. Simply, the consumer will have multiple providers of local access and long distance access. The consumer will then be able to select a provider whose prices reflect their costs and no other costs. Thus the price of the most efficient provider will be the lowest price and the consumer will spend the least amount. This allow for clearing of the market in the most efficient manner. If the I-LEC has inefficient plant it has several alternatives. One is to write off the plant more rapidly and to effect greater efficiencies in services provisioning. This is what AT&T was forced to do in the IEC competitive markets and it successfully did so. MCI and Sprint did not pay for the AT&T externalities, whatever they may have been.

The Principle the we propose is also one that is consonant with the antitrust laws since it ensures without and government intervention fair and equitable pricing and it eliminates predatory pricing and barriers to entry. It also applies equally to both the Lec type companies and to the IEC companies. The Universal Service option is now taken care of separately via the service fund that is established under the law. Finally, this Principle also is supported by the Bill and Keep provision of the law.

5. THE ELEMENTS OF COMPETITION

The key argument in this paper is that there has been a technological and industrial change that has led to the elimination of scale in the local exchange technologies as well as the elimination of scale by the availability of outsourced services in the delivery of everything from sales channels to billing systems. Namely, the new entrant can obtain process that are at the margin and thus the new entrant does not necessarily face high initial costs and can achieve industry scale levels almost instantaneously.

5.1 Loss of Scale

Technology has had a dramatic influence on the cost of entry into a market. More importantly, there is the concept that “silicon is almost free”. Namely that we can now construct systems that have low fixed costs and that the capital per subscriber, whether is be average or marginal are almost equal. This means that technological changes have driven scale economies out of the business.

There are three examples of loss of scale. The first is the advent of the ATM (voice packet) or Frame Relay (Long Packet) switches. Unlike the old Central Office switches which are priced at a fixed entry costs of $5,000,000, one can enter a switched voice or data market with an ATM at $50,000, and reach loss of scale at 50 to 100 lines or even less. Fundamentally, ATM fabrics present a level playing field to all entrants.

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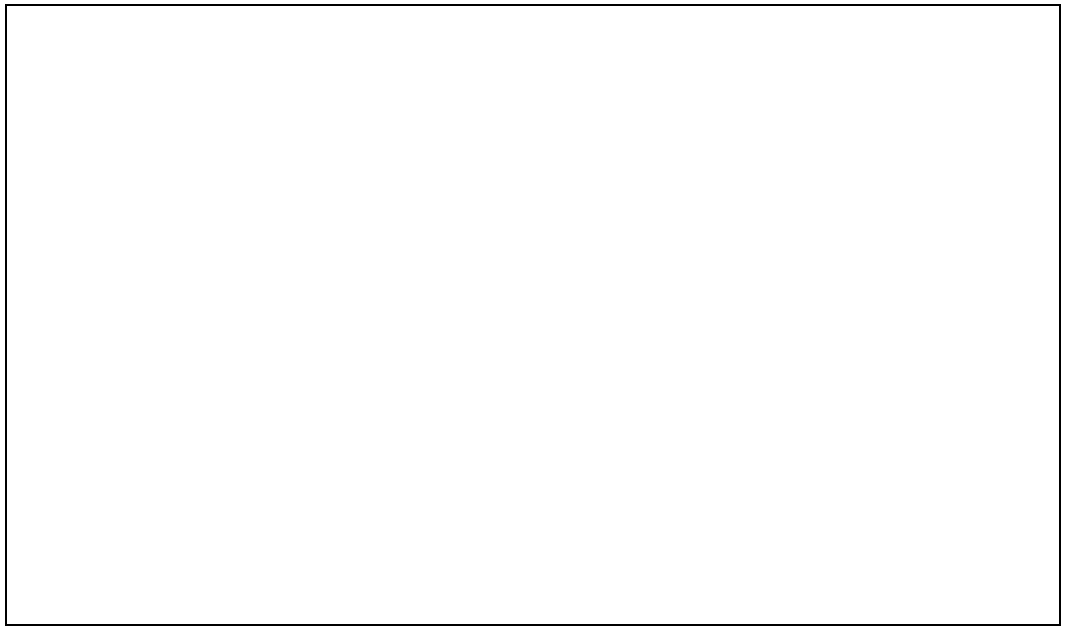
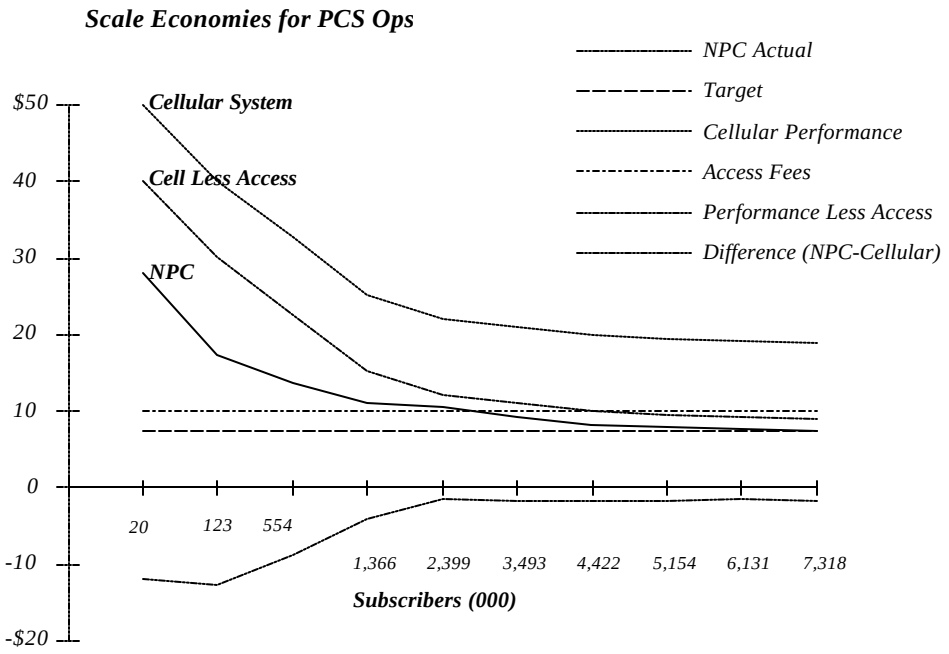
price their services at the price based upon their costs and have no third party intervenor establish a de facto subsidization. If however, one carrier provides a service such ad aggregation to more efficiently interconnect, then this added non pari passu facility should be compensated at an equal, comparable, and costs based level, shared amongst all players.

The second example is wireless, namely CDMA. It is shown below that unlike analog or even TDMA, CDMA cellular reached a capital per subscriber of $300 or less at 50,000 subscribers or less.[31] In the wire based world or the wireless analog world, scale was not lost until the subscriber base was ten to one hundred times that number. Thus, PCS, using CDMA is almost one tenth the capital per subscriber as the current wire based telecommunications business of the RBOCs. The following Figure depicts this analysis. This is for a 10 MHz CDMA system, where we have plotted the capital per subscriber versus the number of subscribers. The curves have been parameterized on total coverage area. The observation to note is that by the time the penetration is 50,000 subscribers, no matter how large the area of coverage the average and marginal capital per subscriber is almost the same, about $300. Although at low penetrations there may be high fixed costs, scale is lost in this technology at very low penetrations. Recall that the typical cellular system sells more than 5,000 subscribers per month, thus scale is eliminated in less than the first year of operation.



The third example is the concept of outsourcing. This is the "virtual" loss of scale. One can use service bureaus for billing or customer services that allow for pricing at the margin. The provider of network services no longer is required to provides for all software, computers, personnel, training and infrastructure. The following Figure depicts the costs per subscriber per month for all operations costs of the telephone operations. This is derived on the basis of actual operational numbers from current cellular systems and from the outsourcing that can be obtained from such companies as AMS, NPC, IBM, EDS and others. We have plotted the cellular costs plus their access fees. We then plot the costs less access. The observation is that a cellular company does not eliminate scale until they reach over 2 million subscribers. However, by least cost outsourcing this can be achieved at lower levels as shown. This chart shows that scale can be eliminated and the costs for all operations can be lower than $8 per subscriber per month.

[31] See McGarty, TPRC, September, 1993. McGarty, T.P., Access Policy and the Changing Telecommunications Infrastructures, Telecommunications Policy Research Conference, Solomon's Island, MD, September, 1993. Also, McGarty, T.P., Spectrum Allocation Alternatives; Industrial; Policy versus Fiscal Policy, MIT Universal Personal Communications Symposium, March, 1993. McGarty, T.P., Wireless Access to the Local Loop, MIT Universal Personal Communications Symposium, March, 1993. McGarty, T.P., Access to the Local Loop; Options, Evolution and Policy Implications, Kennedy School of Government, Harvard University, Infrastructures in Massachusetts, March, 1993.



This loss of scale has several dramatic consequences to those entering and continuing to operate in the business;[32]

i. Barriers to entry are removed: This means any new entrant may get into some part of the business. Combined with the distributed element, the new entrant may do so at little costs.

ii. Economic and Regulatory Rationale for monopolies are eliminated: There is no longer the justification that one large entity, to who consumers are paying monopoly rents, is the best entity due to scale economies. One must re-look at the regulation.

iii. Change can be Effected More Swiftly: Loss of scale allow for rapid changes in service offerings by eliminating the concept of sunk costs. Albeit sunk costs are not to be considered in economic decisions they are frequently a significant factor in delaying change. The elimination of theses virtual burdens should allow for more rapid change.

We briefly show what the structure of the disaggregated network will look like and do so in the context of several specific examples.

5.2 Disaggregation Elements

The theory of disaggregation states that technology and industry has developed in such a fashion that it is possible to effect all elements of a business in a virtual form by obtaining all functions necessary to deliver a service by purchasing them from third parties each of whom has themselves other similar customers and thus each of whom can deliver their element of the functionality in a minimal marginal cost manner. The disaggregation theory then concludes with the result that in many technologically intense services business, a virtual company can exist wherein all the functions can be purchased from third parties or capital equipment may be purchased in a fully interconnected fashion so as to achieve near equality between

[32] See the McGarty papers from 1993 through 1995. In these papers the author presents detailed financial and economic models of the wireless side of the business. More importantly, see the paper presented in March, 1996, at Columbia University, available on the CITI Web site, wherein the author takes this a step further and applies disaggregation theory to a broader set of telecommunications services.

average and marginal costs from the very commencement of the business. The Disaggregated Company is the embodiment of the virtual business. [33]

The existence of the disaggregated business is a challenge to the antitrust laws and especially to the implementation of the 1996 Act. What this implies is that as a disaggregated company any new entrant can achieve the same of better efficiencies of operation of its business as any incumbent, right from the start. This then states that competition is then based solely upon the actions of the monopolistic incumbent and that these actions relate to only one area, interconnection and unbundling.[34]

Disaggregation falls into three dimensions; technical, operational, and relational. We define each as follows:[35]

Technical: Technical disaggregation the ability to overlay applications and platforms a disparate backbone of transport facilities and create a whole. An example of technical disaggregation is the client server architectures and the LAN networks in common use. This type of disaggregation is a result of the many technological advantages that have occurred in telecommunications as a direct result of the 1984 MFJ agreement.[36]Another example of technical disaggregation is the ability to use a distributed system, such as PCS, Personal Communications Services, and have the actual "switching" occur at the end users handsets rather than at the old fashioned hierarchical central office. By distributing the technology and the intelligence we marginalizes the capital deployment requirement and thus achieve technical disaggregation. One example that we discuss in this paper is the concept of providing airtime. Namely the ability of a competitor to not only unbundle local loop, namely copper wire, but to unbundle frequency spectrum, namely airtime from an existing CMRS.[37]

Operational: Operational desegregation is the breaking apart of re-assembling in any fashion the operational or business elements to effect the successful provision of service. Namely we can separate billing, transport, sales, service, and network control into different pots and create a virtual corporate entity. We no longer have to do all. We only have to do that part that we do well. An example of operational disaggregation is the outsourcing business whereby a company, such as a Bell Operating Company, would use an outsourced customer service center to provide this function, or in another context of a bank who outsources all of its telecommunications network.

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[33]See the paper by the author at the Columbia University presentation, March, 1996. McGarty, T.P. , "Disaggregation of Telecommunications", Presented at Columbia University CITI Conference on The Impact of Cybercommunications on Telecommunications, March 8, 1996. McGarty, T.P., The Economic Viability of Wireless Local Loop and its Impact on Universal Service, Presented at Columbia University CITI Conference on Universal Service, October, 1996.

[34]See Coll: William McGowan, one of the founders of MCI recognized this in the IEC business. He used a two prong approach to effecting his competitive position, first through the FCC and second via the antitrust laws. Coll, S. The Deal of the Century, Atheneum (New York), 1986.

[35]McGarty, March, 1996, paper presented at Columbia University.

[36] The first is the attempt to open the data monopoly of the AT&T was by Bob Kahn, the father of the Internet, to obtain a 300 bps modem from AT&T. AT&T refused to support ARPA and Kahn and his team thus were forced to create a modem apart form AT&T. This then led to the proliferation of PC modems and the ability now with the introduction by Intel of a 56 Kbps dial up modem that supplants ISDN.

[37]It should be noted that the FCC expressly stated that the CMRS was not a LEC and thus was not required to unbundle. In addition, in the FCC First R&O on Interconnection, August 8, 1996, it stated that an RBOCs LEC was not a subsidiary even though the author argued against that based upon the theory of agency.

Relational: This will be the issue of who does what to whom in such entities as electronic marketing and distribution channels in a telecommunications cybernetwork. This is the most recent example of building cybernetworks via relationships. Unfortunately many of the current examples are examples of failure; Prodigy with IBM, CBS and Sears, or MCI and News Corp. on the Intemet side. In this paper we attempt to focus on the latter two elements. The first has been treated elsewhere.

This Disaggregator entity is a key differentiation in the market. The Disaggregator is one who may use the existing license holders access facilities as one of several means to provide service to a fixed customer base. It is argued that the Disaggregator is a different entity altogether and more importantly it is argued that the disaggregator is the most likely evolutionary entity to change as full competition is presented in the wireless market.

The author believes that by acting as a "Disaggregator" it can effect this competitive position. The Disaggregator works on the following principles. The provision of wireless services is based upon the integration of the service elements. This integration may be performed as an aggregation or as a desegregation approach. The Aggregation is the way most of the CMRS entities now work, having control over all of the elements of "production". The Disaggregator may have control of certain strategic elements but will "outsource" others.

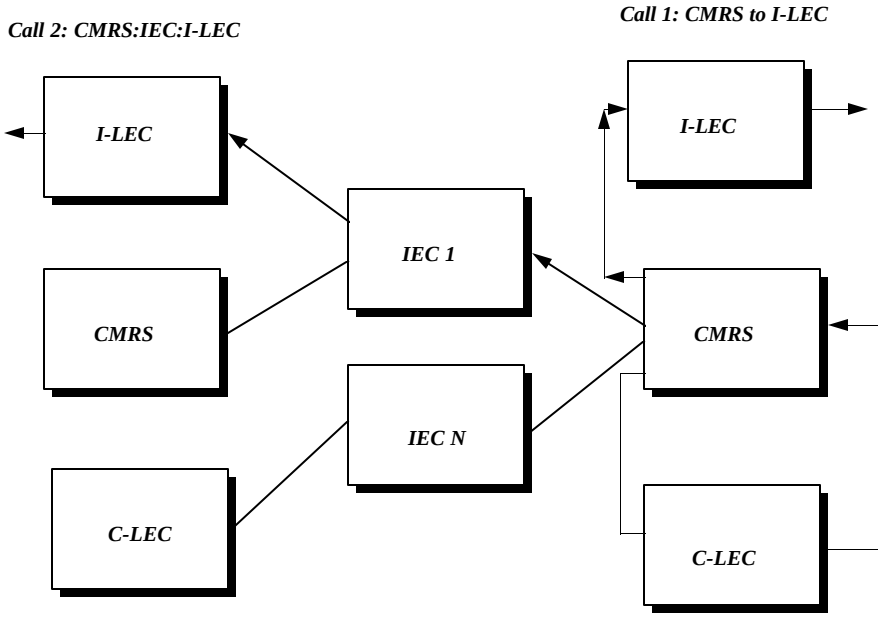
5.3 Local Exchange Interconnection and Elements

The LEC elements are composed of two general categories of goods. They are the inside plant and the outside plant. The inside plant is the switch and all of its elements and the outside plant is composed of the wireless, fiber cables and other outside connection facilities. In the inside plant, each call can be attributed to the use and allocation of certain determinable facilities, directly, or though a well determined allocation process. For example, if one desires a single call connection, it is know that a call uses certain line terminating equipment, certain processor capabilities and capacity, and certain trunk terminating facilities. Thus the allocations of the total good to the specific good for any single call is determinable. In effect, one who requests the use of the facilities from the I-LEC is in essence requesting the product of a combination of capital plant and ancillary support services for some time certain. It is not the provision of a service as determined by the Court.[38]

6. PRINCIPLE OF COST BASED PRICING

The above examples present the key issues of interconnect and unbundling. We conclude this with the Principle of Cost based Pricing. The principle can be explained via the following example. Consider the interconnection shown in the following Figure. Here we have a CMRS, an I-LEC, a C-LEC, sever IECs, and their interconnection. The CMRS will be the focal point. The CMRS connects to the IECs and to the I-LEC and C-LEC as well as to other similar players on the other side of the IECs.

[38]Note that we have phrased this as a purchase of two or more elements. This is consistent with the Court ruling in *Students Books v. Washington Law Book*, 232 F. 2nd 49 (DC Cir. 1955) and the sales of these are contemporaneous as in *Atlanta Trading Corp. v. FTC*, 258 F. 2nd 365 (2nd Cir. 1958).



Consider two calls. Call 1 goes from the CMRS to the local I-LEC. Call 2 goes from the CMRS, over an IEC to a customer at a distant I-LEC. Both calls are originated by a CMRS customer and terminate on an I-LEC customer.

Today, any IEC call must pay an interconnection access fee to the I-LEC to terminate on their network. As we indicated this is a wealth transfer policy and does not reflect any true cost. The CMRS before the Act paid the I-LEC a termination or origination fee and there was no compensation from the I-LEC to the CMRS. As we have demonstrated that is no longer the case.

The Principle of Cost Based Pricing states the following: The consumer should pay for each link separately and they should pay only for those links for which they are customers of that link provider. The payment the customer makes should reflect a price that is in turn based on the costs of that link.[39]

The basis for the Principle is the same basis for the Baumol Willig theorem, namely maximizing consumer welfare. The argument is based upon the theory of Ramsey pricing. The classic approach taken by Baumol and Willig is as follows:

maximize $^{\{P1, \ldots, Pm\}}$ [CS + PS]; subject to PS = F

[39]The issue here is a quid pro quo issue of parity in providing interconnection in a commodicizable market. For example, if two or more LEC or LEC like carriers enter a market, then there should be not interconnection fee and each carrier should price their services at the price based upon their costs and have no third party intervenor establish a de facto subsidization. If however, one carrier provides a service such ad aggregation to more efficiently interconnect, then this added non pari passu facility should be compensated at an equal, comparable, and costs based level, shared amongst all players. The Baumol-Willig approach can apply here if we merely eliminate the artifact of ensuring a profit to the monopolist as Baumol has consistently done. By maximizing consumer welfare at the expense of the suppliers, namely by creating a competitive market, one arrives at the principle of cost based pricing.

where CS is the consumer welfare and PS is the production surplus or the profit of the monopolist provider.[40] If however, we eliminate the monopolist totally, that is maximize it on the basis of consumer welfare alone, and if we assume a fully displaceable and commodicizable service, and if we further assume the change in technology that eliminate scale in toto, then the resultant position is the Principle of Cost Based Pricing. Namely, each separate provider sells their service on the basis on their own costs and the interconnection is free and reflects not costs to the consumer.

We now can apply the principle of cost based pricing to the case on I-LEC interconnection.

7. THE GOODS AND SERVICES OFFERED TO THE MARKET

The delivery of telecommunications services, be they by wire or by wireless, are in effect the same services. They are the same as viewed by the consumer of these services even if they are implemented in a fashion that is different from the perspective of the provider. Standard wire based telephony is the same as cellular and is the same as any wireless based telephony.

7.1 Telephone Service

Standard telephone service is the provision of voice and/or data communications in a fashion so that it may be delivered in a national network. The delivery of switched telecommunications can now be achieved via the existing telephone network, which is a monopoly, protected by the 1934 Federal Communications Act. There are new and innovative forms of technology that can and do deliver the same service. Cellular is one that has been in operations for over ten years and is a service and market controlled by eleven dominant players; the seven, now potentially six, RBOCs (excluding Air Touch), GTE, McCaw (AT&T), Sprint, and Air Touch. A third alternative will be available in the next year or two, as approved by the FCC in its Fifth Report and Order dated July 15, 1994, namely, PCS, or Personal Communications Services.[41]

PCS provides, at a minimum, the ability of any new entrant to deliver toll grade quality voice services in a seamless interoperable nation network. This service or product offering is the provision, at a minimum, of voice grade service. It is the same as the service offered by the current Local Exchange Carriers, LEC, and is the same that could be potentially offered by the existing cellular carrier.[42]Arguably, there is nothing preventing the Cellular provides from doing the same.

This states that PCS, and other wireless means for telephony, are nothing more than “plain old telephone service”. It clearly has the potential of providing telephone service at a more competitive price than a wire based service. It is totally cross elastic with a wire based service. Namely, the consumer cannot differentiate with either offering other than possibly through the extra mobility afforded by PCS. In essence, PCS makes wire and wireless telephone service a simple commodity, indistinguishable to the consumer solely on the

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[40] See Brown and Sibley, The Theory of Utility Pricing, Cambridge University Press, 1986, p. 39.

[41] It should be noted that AT&T has recently announced that their TDMA IS-54 services, which have been operational in New York and other cities for four years are now called PCS. AT&T did nothing more than recognize that PCS is merely the provision of cost accessible wireless services and have nothing to do with spectrum allocation. The author had indicated as such in FCC filings in 1992. Moreover, the consumer cannot recognize the difference, namely the service is commodicizable.

[42] In McGarty, 1990 [1], the references being detailed at the end of this filing, the demonstration is made that the networks as evolved with wireless can be constructed in a fully open and distributed fashion. It was in this paper that the concept of commoditization was first presented.

basis of the technology. The distinguishing feature will most likely be the price and only the price, as it is with all commodities. PCS allows for the commoditization of local exchange service.[43]

PCS, cellular, and wire based local exchange services are indistinguishable from the perspective of the buyer. Therefore, PCS can and should compete with the LEC and the wire based service.

If the intent is to create a competitive alternative to the local loop, and, simultaneously, to expand the telecommunications services offered, then PCS offers a significant alternative means to do so. Experimental efforts to date have indicated that the consumer does not necessarily view PCS as a separate service offering. If priced competitively, and positioned competitively, the consumer views PCS as a displaceable alternate to the wire based telephone.[44]

7.2 The Market

The "Market" for PCS is the same as the "Market" for the LEC based services of today. The "Market" for cellular is the same as the PCS "Market". Namely the Market is the local exchange telephone service business. There is no material or other observable or measurable difference in the offering of PCS and wire based service and the markets for both are the same. The consumer may choose between the two.[45]

PCS enables the commoditization of voice services and establish the possibility for any new entrant to sell the same service to the consumer, with the consumer purchasing the commodicized service solely on the basis of price. PCS allows for the total cross elasticity of supply to the consumer of telephone service. It is argued that the service offered by the dominant entity or the RBOC LEC is fully displaceable by PCS and that as such competes with the LEC in its primary market.[46]

New entrants into the PCS business do not face economies of scale in capital plant that have been faced by prior entrants, thus justifying the prior monopoly position of the LEC. PCS entrants, by means of outsourcing, can also obtain all support and sales services at marginal prices and thus each Local Service Operator, CMRS, does not have a scale economy in the operations and sales sides of the business. Thus there are no economies of scale in the PCS business and the justification for any monopoly player is no longer valid on economic principles.

It has been shown that new entrants have the ability to establish capital plant in such a way as to have marginal capital and average capital be almost the same at very small market penetrations, less than 0.5%. Thus there are de minimis scale economies in capital plant. In addition there may be scale in support and operating services, but by outsourcing, and using the economy scope of a third party, such as an ISSC or EDS or CSC (as did NEXTEL), an entrant may purchase such service at the margin. Thus any new entrant may see entry costs all at the margin.[47] This implies that there is no natural monopoly. In fact this implies that competition may be quite significant.

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[43]Telmarc Telecommunications, Inc., NPRM Comments to the FCC, November 9, 1992.

[44]Telmarc Quarterly Report, July 1, 1993, which details extensive market research in this area.

[45]The Court, in *United States v. E.I. duPont de Nemours & Co.* (Cellophane), 351 U.S. 377 (1956), introduced the concept of cross elasticity to determine the market. Although there is no true market measure at this time, extensive market research indicates that there is anticipated to be great cross elasticity as defined by the Court in the aforementioned.

[46]In the decision of *Telex Corp. v. IBM Corp.*, 367 F. Supp. 258, 355-356 (N.D. Okla. 1973), the Tenth Circuit Court ruled that IBM had monopolized the market on the basis of the sale of peripheral products that were commodicizable in the terms in which we use herein.

[47]McGarty, 1994 [1], and Telmarc Quarterly Report to the FCC, April 1, 1994.

8. COMPETITION

The Incumbent LECs have control of almost 100% of the market in wire based distribution of the telephone service, with some diminution due to local bypass entities. The existing entities have control over almost 75% of the current wireless market as a means of distribution of telephone services.[48]

8.1 Cellular and PCS

There is some mis-perception that the cellular carriers differ in some way with PCS. The cellular carriers, having 25 MHz of spectrum each, half of which was given to the RBOCs free of any cost, and half won in lotteries, and subsequently purchase, half of that being by RBOCs, is just bandwidth. The RBOCs can and are doing with 800 MHz bandwidth what can and may be done with the 1.8 GHz bandwidth. Bandwidth is fungible. Pac Tel had stated in 1990 that they could provide service to all of Los Angeles using CDMA and the existing 25 MHz 800 MHz spectrum.[49]

Telephone services, as a commodicized entity, do not differ in any way if delivered by a wire or wireless means. The consumer perceives the service as the same in either case. Thus there is complete cross elasticity in a commodicized market.

The delivery of telephone service, when differentiated by wire based or wireless, is the same service but sold through a different sales and marketing channel. There is no basic product differentiation between a wire based service and a properly delivered wireless service. The only difference is price as reflected throughout the distribution channel.

The essence of what makes wireless and wire based services different is merely the sales or distribution channel. The sales channel is a different company, although owned by the same holding company. Pac Tel was the only RBOC to publicly recognize this and separate the two entities. The current differential between the two services is price, and this is driven by capital and operation inefficiencies in the analog technology. These will disappear in the digital technologies.

The current wireless market is controlled by Duopoly Players, one being an existing entity, called the B side wireline carrier, who was granted at no cost the 25 MHz of spectrum, and another A side player, called the non-wireline player. More that 50% of the current wireline players are existing entities, namely RBOCs or GTE. All of these entities may deliver a telephone service comparable to that on the wire based side. Some of them currently do.

The current cellular market is at best a duopoly and in some sense a monopolistic market. With few exceptions, the market shares are the same. The exceptions are most pronounced in the markets of Bell Atlantic NYNEX Mobile ("BANM"). Notwithstanding the differences, the control of the telecommunications market, be it wire or wireless based, is under the control of the RBOCs or other Existing Entity.

8.2 Local Competition

The value of a telecommunications property is dependent on the net present value of the property. That value is a function of the revenue, expenses, capital, auction fee, access fee, and cost of capital as perceived by the bidder. If all operators face the same revenue stream, capital requirement, and expense stream, the

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[48] Wireless Communications; Donaldson, Lufkin & Jenrette, Report, Summary, 1994.

[49] Statement of Craig Farrill, Vice President of Pac Tel, at CTIA in January 1991, talking on their choice of CDMA.

property values will reflect access fee, auction fee, and cost of capital differences. This will advantage those with low costs of capital and control over access.[50]

The existing entity may have the ability to use their existing monopoly powers to ensure preservation of their monopolies in the upcoming bidding for wireless licenses. This would create a new barrier to entry to any new entrants, and continue the existing barriers to entry. The existing entities face the lowest cost of capital of any provider and in addition have a monopoly rent value that increases their valuation per PoP. In addition these existing entity bidders, as a group, have control over some of the means of production, including but not limited to access fees. Thus these players, per force of their existing monopoly franchise, have a higher value per PoP, assured by the government franchises, and thus can outbid any player in a free and open auction.

Access Fees are a key means of production. They are currently viewed as a means of compensating the RBOC for use of its facilities and payment for certain yet to be defined network externalities. Access fees include the costs of interconnect plus other costs and services that go beyond interconnect. Access fees are not unbundled costs for interconnect.[51]

The RBOCs have bundled many costs into access. For example, the IEC may face a $0.05 per minute access whereas the cellular carrier may face a $0.11 per minute for comparable service. Recently, NYNEX proposed changing access in New England from $0.07 to $0.035 per minute. These fees load such items as Bellcore and internal Science and Technology costs, which may for the most part have nor relation to access. In fact, these R&D costs relate to new products and services and not to unbundled access.[52]

Competition from other entities, specifically the Incumbent LECs, who may perforce of their lower operating costs and lower cost for infrastructure capital, may be able to offer a more competitive service than any other entity if they were to obtain a license.

The Incumbent LECs have entrepreneurial capabilities that will permit lower costs and a competitive market. It has been argued by many such groups that represent these entities that a set aside is the only way for them to compete. Notwithstanding this, a set aside may be appropriate for the Incumbent LECs but a set aside for the RBOCs only, delimited to at most one band, is essential for there to be any long term competition.

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[50] Such an action, if actually exercised, is predation.

[51] As shown in McGarty, 1993 [1] through [4], and 1994 [1], access fees tie together elements such as interconnect, R&D, sales and services, and other elements of the telephone companies services, and have been indicated as such by the LECs in filing to various Public Service Commissions. Interconnect is what is sought, and unbundled from any and all other elements. It can be argued that this "tied" offering, which provides ability for interstate traffic and commerce, which is not expressly conveyed to the access buyer, which can be separated into a multiplicity of products as evidenced by the actions of Ameritech, and over which the LEC has significant economic power to control both availability and price, and which ostensibly has not clear business justification, implies that access fees are potentially tying claim, as per *Jefferson Parish Hospital No. 2 v. Hyde*, 466 U.S. 2 (1984).

[52] Companies such as NYNEX have over 500 staff in their internal R&D facilities as well as sharing a significant portion of the of Bellcore which has been over $200 million per year for Bellcore and almost $100 million per year for the NYNEX S&T operation. In particular, NYNEX S&T significantly burdened the cellular entity for developments that were marginally related to the business. The author has personal knowledge as formed Head of R&D for NYNEX and as COO of NYNEX Mobile. It also should be noted that Bellcore is now allegedly for sale and that as of this writing a possible buyer has surfaced. This is a clear reflection that Bellcore no longer has a strategic interest to companies who may in many cases be competitors.

It is clearly to the RBOCs advantage to merge, to integrate, to improve the position of their existing channels, and to perform other acts that ensures them greater share of the market prior to the entry of any competition.[53] This is the same set of issues that were prevalent in the 1970s during the early stages of the AT&T breakup.[54]

9. TYING ARRANGEMENTS

The ability to offer a local exchange service in a competitive manner depends upon any new entrant being able to collect together five elements; user connection, switch interconnection, billing, customer care, and sales. How these are obtained are dependent upon each user. The user connection may be obtained via the unbundled connection capability purchase from the I-LEC, from the deployment of the purveyor's own fiber network, from air time purchased from a third party, or from a wide variety of means. Namely, as we have already argued, there is a multiplicity of means available for the purveyor and these means may be owned and constructed by the purveyor or they may be provided as products from some other third party. The switch interconnection is the ability to have access to any and all other purveyors to assure universal interconnectivity. We shall focus on this latter element, interconnection, in a later section. In this section we focus on the unbundling of the elements, specifically airtime. This analysis applies to the unbundling of any of the elements as specified in Section 251.

We can now proceed with a detailed analysis of the product offered and how they may be purchased from other players, especially dominant market player, or the monopoly player in the market. At the hear of this analysis is the argument that there are clear and evident tying arrangement present. As we have argued, the following facts are self evident:

i. Local Exchange services is the product being provide to the customer.

ii. Local Exchange Service can be provided by the agglomeration of such "operational components" or "products" as air time, I-LEC/CMRS interconnection (namely the interconnection between the CMRS switch and the I-LEC switch), I-LEC interconnection which is the direct interconnection to the I-LEC switch no matter what the source of the interconnection, billing, customer service, network management, sales, switching, local interconnection, and other elements as may be required.

iii. The competing player in this market may provide the product by delivering several of the "operational components" directly themselves and by obtaining some of the missing operational components from the monopoly Incumbent LEC.

iv. The 1996 Act mandates that the I-LEC unbundle amongst other requirements.

v. The 1996 Act removes the Antitrust protection from the I-LEC.

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[53]Recent pricing of cellular at such rates as $19.95 per month for unlimited local service in Boston by Southwestern Bell is an example of pricing to obtain market share. Recent estimates put Southwest Bell's subsidiary in Boston at over 400,000 subscribers of a market of 4.5 million, almost 10% market share. It will be very difficult for any new entrant to get that share away from them. In addition, although Telmarc has been arguing for access fee elimination in Massachusetts, neither the Bell Atlantic NYNEX Mobile ("BANM") nor Southwest have raised that issue, as a means to provide a more competitive service. In a duopoly market, such a fee is common to both players and is not a barrier. In a fully competitive market, this would change. The Parties argue that the fact that BANM in the Massachusetts market has not attempted to act as a LEC implies that BANM cannot and does not act independently of the LEC portion of NYNEX and that in what can be observed externally, the LEC interests dominate even over the unregulated and non-LEC operations.

[54]Temin, P., Fall of the Bell System, Cambridge, 1987, p. 129. Here the author recounts Van Deerling suggestions of abandoning FCC control and oversight and reintroducing the antitrust laws which control competitive markets. It can be argued that the same effect is taking place here.

vi. The Incumbent LECs have monopoly control of the Local Exchange market.

vii. The Incumbent LEC has, through its holding company, directly or through interlocking agreements, overt control over the CMRS which is related to it.

9.1 Tying Arrangements Defined

To quote from the Court in *Kodak*:[55]

"A tying arrangement is "an agreement by a party to sell one product but only on the condition that the buyer also purchases a different (or tied) product, or at least agrees that he will not purchase that product from any other supplier." Northern Pacific R. Co. v. United States, 356 U.S. 1, 5-6 (1958). Such an arrangement violates 1 of the Sherman Act if the seller has "appreciable economic power"' in the tying product market and if the arrangement affects a substantial volume of commerce in the tied market. Fortner Enterprises, Inc. v. United States Steel Corp., 394 U.S. 495, 503 (1969)."

A tying arrangement exists only when a producer of a desired product sells it only t those who also buy a second product from it.[56] Consider the arrangement made by the CMRS. If a local exchange carrier who is not the I-LEC desires to enter the local exchange market by purchasing air time from the CMRS, then the CMRS may tie with the air time such services as network management, customer service, engineering services and other such services. In addition the CMRS generally ties together the interconnection between the switch of the CMRS and the switch of the I-LEC. The latter is a separable set of product offerings and the forced tying arrangement we argue is a per se violation. The Court has ruled in *Jefferson Parish Hospital v. Hyde* that when "forcing" occurs with a company that has "market power" that such is unlawful.

The elements of an illegal tying arrangement have been articulated by the Court in *Jefferson Parish Hospital v. Hyde*. Specifically the elements for a successful claim are:[57]

i. the tie must affect more than a de minimis amount of interstate traffic;

ii. where the tying arrangement is not express, buyers must in fact have been coerced into buying the tied product as a condition of buying the tying product;

iii. the two products must be separate;

iv. the defendant must have economic power in the tying market;

v. there must not be any valid business justification for the tied sale.

We shall now go through each of these elements in turn for the case of the I-LEC and CMRS relationship.

9.2 Interstate Traffic

The issue of interstate traffic is a forgone conclusion in the case of telecommunications. The overall product that is to be sold is local exchange service combined with inter-exchange carrier service. Since the I-LEC is

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[55] See *Eastman Kodak Company v. Image Technical Services, Inc. et al.* (June 8, 1992).

[56] Areeda & Kaplow, p. 704.

[57] Ross, p. 285.

by definition a monopoly player in all markets in which it acts it has the market power and in view of the CMRS it is a duopoly player in an interstate market. The specificity of the interstate issue has been joined and resolved by the Congress and is stated in U.S.C. 47 Section 332.

9.3 Coercion

The contracts with the CMRS explicitly require the purchase of the tied elements. Namely, if one were to go to any existing CMRS provider the service offered is that of the air time plus the I-LEC interconnection. As we shall argue, these are clearly two separate products and in fact there should be no reason that the CMRS should in any way refuse to connect to the competitive the C-LEC. The refusal is a barrier to entry to the C-LEC. It is argued that that refusal is a *per se* violation.

9.4 Separate Products

In *Kodak* the Court ruled that products or services are separate when there is sufficient consumer demand to justify firms providing one item without the other.[58] Let us consider the products being offered. For the CMRS they are:

Air Time: This is the provision of access to the cell transport facility allocated on a block of trunk voice channels which can be readily allocatable by the switch software. This allocations is common practice in all MTSO or MSC trunk routing software. The air time is the provision of end to end trunk circuits.

Field Service: These are the costs allocated to the servicing of cells and the switch of the I-CMRS provider.

Network Management: This is the management associated with the provision of the CMRS services.

The CMRS will bundle the interconnection, as follows into this product.

I-LEC Interconnection: This is the connection from the CMRS switch trunk side to the I-LEC line side. There is no functional reason why this cannot be terminated on the C-LEC switch. The reason provided by the I-LEC is that it would allow for IEC access to the C-LEC and thus avoid the payment of access fees.

We bundle these three elements into an airtime fee for service. In addition to these the CMRS provides the following products. It should be noted that the CMRS also provides line item costing and pricing for these demonstrating that they exist and are separable.

Billing: This is the full bill service from tape collection at the switch, issuance of the bill, provisioning of the switch, and collections process.

Customer Service: This is the provision of all incoming customer service calls.

Sales: This is the sales, set, provisioning, collections and other functions.

Administration: This is the overhead management of the system in addition to the normal operations of the business. It may not generally have any relation to the delivery of any products provided.

Planning, R&D, Overhead: These are general overheads related to the service that may be related to new services and products that the CMRS may offer but would have no relation to general air time.

[58] Ross, p. 289.

9.5 Economic Power of Incumbent

It is beyond a doubt that the incumbent has economic power. As a duopoly player aligned with the monopolist player this is without a doubt. The cartel formed by the A and B band cellular providers who are for the most part the I-LEC affiliates or agents is prima facie proof of this power.

9.6 Business Justifications

There are no viable business justifications for the bundling of such services. It can be argued that the 1996 Act recognized that unbundling and other similar requirements are a necessary step for the I-LECs to be allowed entry to the IEC market.

10. PRICING ARRANGEMENTS

Prices charged can be used as a barrier to entry and a per se violation of the antitrust laws. The issue of separate products and the prices applied thereto is key to the understanding of the pricing mechanism in the antitrust sense.

10.1 The Products and The Prices

We have introduced the following set of distinct products that can be provided; Wireless Connection, I-LEC Interconnection, Billing, Customer Service, Sales, and Overhead. The costs are generally presented as fixed costs plus variable costs. We have shown elsewhere that the Wireless Connection, the I-LEC connection, billing, customer service and sales can all be obtained on a marginal basis and that there are thus de minimis fixed costs and thus de minimis scale. Therefore, we have in the case of the CMRS business an Average Total Cost equal to the Average Variable Cost, which is approximately equal to the Marginal Cost.[59]

Specifically, in the referenced papers by the author, values of these costs have been presented. In addition, the author has demonstrated, herein and elsewhere, that the AVC for the Wireless Connection, which we shall call air time although it includes some other variable costs, is less than 20% of the sum of all AVC elements. Sales is over 20% of the sum of all AVC, billing and customer service is about 20% and the remaining costs are overhead and access fees for interconnection.

The questions that we ask are two:

i. Does the CMRS sell itself air time at a price that is below the AVC?

ii. Does the CMRS sell airtime at a price that is dramatically above AVC?

The counter to these questions are also asked concerning the cost of interconnection to the I-LEC regarding access fees. Specifically:

i. Does the I-LEC sell itself interconnection at a price that is below the AVC?

ii. Does the I-LEC sell interconnect at a price that is dramatically above AVC?

10.2 Price Discrimination

[59] McGarty, 1993-1994 papers on access. The author derives the detailed costing model for all of these elements.

Price discrimination exists when a seller provides its product to two buyers in such a fashion that one sale has a different rate of return than the other. Namely, one buyer is discriminated against by being forced to sustain a higher rate of return to the seller than another. As has frequently been noted, in a purely competitive business wherein the good being market is a commodity there should be no price discrimination. Let us consider the issue of air time.

In the ideal world after the PCS licenses, there will be two 800 MHz cellular carriers, six PCS carriers, namely three at 30 MHz bandwidth and three at 10 MHz bandwidth, and an SMR carrier. This is a collection of at least nine providers of air time. We have also argued that air time is a separable product, that it is in essence a commodity, namely there is generally no discernible difference in the market other than price, and thus one would anticipate the evolving of a commodity market that is competitive for airtime.[60]

Let us consider a simple market case. Let us assume that there are two sellers of local exchange service and let us further assume that the service is composed of agglomerating the products of: airtime, interconnect, billing, customer service, and sales. This is a simple case of five products being blended together to deliver the overall product to the customer.

Let us further assume that there are costs related to these products for each provider. Namely:

- A_k = *Airtime for supplier k.*
- I_k = *interconnect for supplier k.*
- B_k = *billing for supplier k.*
- C_k = *customer care for supplier k.*
- S_k = *sales for supplier k.*

Then the supplier have an assumed rate of return of R_k. The price to the consumer, P_k is given by:

$$P_k = (A_k + I_k + B_k + C_k + S_k)(1 + R_k)$$

Thus is Supplier 2 is the most efficient supplier and is airtime is priced at commo dity rates, then all things being equal the price of Supplier 2 should be lower than the price of supplier 1.

If however, Supplier 1 controls the airtime, and if Supplier one sells itself airtime at a rate that is equal to or above the AVC, but sells Supplier 2 airtime at a rate that is dramatically higher than it sells it to itself, then, although there is no per se violation, there is price discrimination. Namely, the Supplier 1, who perforce of market power due to its duopoly presence, is allowed for the interim to sell airtime at disproportionately higher rates, does so with the intent of controlling the market.

It should also be made clear that Supplier 1 may, if it so chooses, to be a purveyor of air time only and thus reap adequate returns on its investment. It, however, wants to reap larger returns by selling the consumer the bundled product at higher prices even though a competitor Supplier 2 could deliver lower costs on all other elements, except airtime, since Supplier 2 does not have an FCC license.

We can define the situation better as follows. If P is the price, we define E as the excess costs. Then:

$$P_k = (A_k + E_k)(1 + R_k)$$

If Supplier 2 is much more efficient than Supplier 1 in providing all but the air time element, then:

[60] It should be noted that NextWave, the dominant winner in the C Band PCS auctions proposes to be solely a purveyor of airtime on a wholesale basis.

$E_2 << E_1$

But the Supplier 1 charges airtime to itself at a dramatically lower rate than it charges Supplier 2. Specifically:

$A_1 << A_2$

Then clearly the consumer will be forced to pay the excess charge for airtime, which would accrue to Supplier 1 as excess oligopoly rents.

Recall that Section 2 of *Clayton*, namely the *Robinson Patman Act*, states:

"It shall be unlawful for any person engaged in commerce, in the course of such commerce, either directly or indirectly, to discriminate in price between different purchasers of commodities of like grade and quality, where either or any of the purchases involved in such discrimination are in commerce, where such commodities are sold for use, consumption, or resale within the United States or any Territory thereof or the District of Columbia or any insular possession or other place under the jurisdiction of the United States, and where the effect of such discrimination may be substantially to lessen competition or tend to create a monopoly in any line of commerce, or to injure, destroy, or prevent competition with any person who either grants or knowingly receives the benefit of such discrimination, or with customers of either of them..."

Recall also that this regulates consistency of prices and not consumer welfare. In this above example, however, consistency of prices, through the aggregation effect, also maximizes consumer welfare. In fact it does not material disadvantage the supplier of airtime who may still reap an adequate return on their air time investment. It does, however, drive from the market the producers of "excess" product elements that can more efficiently be provided by alternative suppliers. It allows for the ultimate commoditization of airtime. We shall return to this later.

10.3 Predatory Pricing

Predatory pricing generally means that the competitor sells its product at artificially low prices. Generally it is illegal for a firm to sell below cost where the intent its to drive competitors out of the market or to ensure that competitors do not enter the market. Competition should drive prices to the margin and this is what one would expect in a market wherein true competition exists. In the local exchange market we are starting with a monopoly situation and we are seeking to allow new entrants.

We shall focus on two elements in this business from two competitor. The two competitors are the I-LEC and the CMRS. In all markets the CMRS is affiliated with the I-LEC and that affiliation has been allowed to be more closely affirmed under Section 601 of the 1996 Act. In effect, the author has argued elsewhere that the relationship can be viewed within the context of the law of Agency and it can be seen that the Incumbent's CMRS is acting as one and the same with the I-LEC. Thus they are indistinguishable in the market and have pari passu equal power.

From the I-LEC the product that we will concern ourselves with is the switch interconnection product. For the CMRS perspective, the product is airtime.

Predatory pricing has been analyzed by the use of the Areeda-Turner test. Specifically the test states:

i. If the Price offered by the competitor to the market is greater than the Average Total Cost then there is no issue of predatory pricing.

ii. If the Price offered by the competitor to the market is greater than the Average Variable Costs then there is no predation.

iii. If the Price offered by the competitor to the market is less than the AVC then the price is predatory and it is unlawful.

We now want to consider the two cases. However we must remember that the price of the bundled product, namely LEC service, is the sum of the prices of the separate products that are combined to offer that end product.

10.3.1 I-LEC and Access

As we shall demonstrate latter in this paper, the I-LEC sells itself interconnection. It also sells interconnection to other parties. First it sells interconnection to the inter-exchange carriers, "IEC"s. They pay a significantly higher price than all other entities.

Let us assume that the price that the I-LEC charges the customer is the sum of the price for the interconnection plus all other prices. Namely, the price to the customer is the sum of the two product prices:

$P_C = P_I + P_O$

where P_I is interconnection price and P_O is all other prices. Let us assume that C_I is the cost of interconnection and C_O is the cost of all other elements. We shall assume that these costs are the AVC costs. The question is, can the I-LEC charge the customer for the LEC service a price that reflects a predatory rate, whereby we define a predatory rate as one where:

$P_I << C_I$

How can this be achieved. Quite simply. If the I-LEC charges the IEC a Price for Interconnect as follows:

$P_{I,IEC} >> C_I$

Thus the I-LEC makes up for losses in the local exchange area to ensure a sustainable monopoly position, by charging much higher interconnection prices in the interexchange area. This is a cross-subsidy scheme that ensures that the interexchange market subsidizes the monopoly position of the local exchange market. We have argued elsewhere that the I-LEC charges should reflect the totality of the I-LEC and should not select subsidies, costs from other competitors or any other market pricing distortion. We shall return to this latter.[61] We argue, however, that interconnection is predatory and falls in the collection of Class 3 Areeda-Turner violations.

10.3.2 CMRS and Airtime

The argument on predatory pricing for an I-LEC does not apply to the CMRS. We cannot argue that the bundled offering is priced at below costs. Unlike the I-LEC case where there is a "back-door" subsidy to allow below AVC and allegedly Marginal costs pricing, there is no similar argument here for the CMRS. Notwithstanding that observation, we do argue that the tying arrangements are themselves per se violations.

11. UNBUNDLING OF CMRS

[61] See McGarty, "Access...", 1994. That paper demonstrates the LEC's access AVC and shows that there is Areeda-Turner problems.

The unbundling has been applied to the I-LEC via the Act. We now want to consider another issue of unbundling, namely the unbundling of the CMRS carriers.

The CMRS carriers fall into several categories. The oldest is the A and B Band cellular providers who have had their license since 1984. They are dominated by the RBOCs, who receive the B Band elements free and purchased over 50% of the A Band players. The other elements are the A-F Band PCS players, operating at 1.9 GHz and not 800 MHz as does cellular. They are also dominated by the RBOCs through PRIMECO and other directly controlled entities. If as we have argued, via disaggregation a new entrant can compete, then we extend the unbundling a step further. Namely, we seek to unbundle the CMRS carrier, especially the one controlled by an RBOC. We propose that this can be accomplished via an unbundling of what has been termed airtime.[62] This section presents the argument for this type of unbundling.

The CMRS provider however is currently deferred from the unbundling requirement. As we have just shown, the CMRS provider can be one of several elements in the facilitating of the competitive environment in the LEC market. The distinction here is that the FCC has issued a finite number of CMRS licenses and thus there is an inherent barrier to entry to any new player who desires to enter the LEC market by utilizing the CMRS air time facility amongst others.

11.1 Unbundling Alternatives

The unbundled elements for the CMRS fall into the following categories; air time and interconnection. Interconnection is a well defined product that connects the CMRS to any LEC. Currently the CMRS connects only to the I-LEC thus preventing by means of an artificial barrier to entry the new LEC entrant, entering the market by a multiplicity of means, to have direct access and thus increasing the costs of service assuring that the new entrant cannot effectively compete.

There are at least four ways in which air time may be provided. The following subsections discusses each of these requests in some detail.

11.1.1 Type 1: Current Airtime Offerings

This is what is available to the current resellers. The CMRS, generally the duopolistic cellular company, sells minutes of connect time from the customer to the RBOC LEC line side of the switch. This approach or proposal is to purchase or buy straight Airtime at the standard reseller rates. These are generally at the range of $0.20 per minute. This has already been provided by the major cellular companies.

11.1.2 Type 2: Airtime Connection at Trunk Termination

This is the sale of cellular minutes from the customer to the trunk side of the CMRS switch. In this proposal the company is to terminate on the MSC with a DS-1 circuit and to have the connection from the CMRS carrier to the LEC be a competitor connection. It allows the competing LEC to sell service from that point on and allows the competing carrier to become a Local Exchange Carrier in its own right and seek appropriate interconnect and access pricing agreement from the monopoly local exchange carrier, the RBOC. This has been proposed to the cellular companies and has yet to be accepted. It would reduce the rates to approximately $0.18 to $0.15 per minute.

11.1.3 Type 3: Bulk Voice Channel Buys with Trunk Termination

[62] There is an existence proof of this with the C Band winner called NextWave. They are selling airtime and MCI has used that company as its means to enter wireless.

This is the purchase of DS-1 or 24 voice channels from the CMRS cellular purveyor, from the users to the trunk side of the CMRS switch. This is the critical step that allows for success in local market competition and has been proposed under several other state dockets. What is being requested in this Phase is the purchase of a DS-1 bank of voice channels. This is not a per minute rate, rather it is a buy of air time at risk.

The new carrier takes the risk of loading these circuits up and then sell them. This is what is done today in the LEC market. It is mandated to LECs that are not CMRS by the 1996 Act but is not done so yet in this area of the CMRS. The new entity is a desegregated entity and this entity can only be developed if the Commission utilizes its powers under the 1996 Act to treat the CMRS as any LEC and to apply the un-bundling requirements thereto.

The question then posed is the one that asks if this new disaggregated entity is itself a CMRS. The author has argued that the law is clear in that a CMRS must hold a license from the Commission and that this "bright line" test is all that suffices. Further, what is asked and addressed to and by the Commission is the issue of whether this new disaggregated entity can effectively compete with the Incumbent LEC and its agents, affiliates, and associated entities on the basis of a "Bill and Keep" or more preferably a "Zero Access" interconnect interface. Is there an "equal protection" issue here that states that the Disaggregator has rights that are pari passu with those of the CMRS or are that separate. We argue that the rights to access on a free and open basis convey without the position as LEC competitor and not merely as a CMRS. The Commission in CC 95-185 and in WT 96-6 has joined these questions.

11.1.4 Type 4: "Dark Hertz" Access; "IF" Access with Trunk Termination[63]

This form of air time disaggregation is the most extreme. It allows, depending upon availability of spectrum, the purchaser to buy from the license holder, IF Bandwidth. The term IF means "intermediate frequency" and is used as a term of art since this is where one technically wants to gain unbundled. The following depicts the fourth option, type or proposal. This is the proposal that requests that the CMRS provide only IF interfaces at intermediate frequencies, "IF", to a disaggregator. Namely, the license holder will provide the transmitters and receivers at the sites but the buyer will provide all signaling behind this. This form has been advocated by several people in various forms before. The author has commented on the Gilder Conjectures and this type of Airtime is a way, under the 1996 Act, to begin implementation of this approach.[64] This will especially be important in the context of the proliferation of spectrum with the completion of the PCS auctions.

11.2 Unbundled Pricing

The issue of what are the true costs or in turn the fair prices for these types of airtime can be answered by understanding that if there were a truly competitive market the market mechanisms would clear the market and allow a truly competitive price to be reflected. Unfortunately this is not the case. As such we calculate a price using the classic rate base approach and providing a more than adequate rate of return on that investment.

The following simple calculation how such an approach could be priced:

- *Cell Capital at about $750,00 fully loaded per cell.*

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[63] See McGarty, TPRC, September, 1994. The author argues that there should be a possible way to have a dark hertz provider and that such an approach has certain economic and technological advantages. The author presents a detailed explanation of what was called the Gilder conjectures.

[64] See McGarty, TPRC September, 1994.

- *In an analog system, 30 KHz per voice channel, 15 MHz per band, reuse of 7, yields (15000/(30*7)) or 72 instantaneous trunks per cell, or three DS-1.*

- *The capital per DS-1 is $250,000.*

- *The lease rate for seven years at 18% annual interest is 2% per month or $5,000 per DS-1 per month.*

- *A uses is busy 1% of the time at 100 minutes per month. Thus a DS-1 can handle 2,400 users. That is $2 per user per month.*

- *At 100 minutes per user this is $0.02 per minute, a factor of 10 less than the Phase 1 Rates!*

If we further assume that there is a less than 100% loading and that the usage is less than 100%, and we use 50% in both cases, the effective rate per minute is $0.08. It is this strategy that shows how one can achieve the result of expanding competition and in un-bundling.

The author further notes the following facts:

- Under the most conservative calculations, the above pricing scheme for analog voice provides Air Time at almost one-third of what the current providers are selling it at. This is comparable to building a DS-1 from 24 DS0 circuits because the LEC refuses to sell a DS-1.

- The above calculation assumes a very costly cell capital structure. Most analog cells may be half to one third of this, even with full capital allocation and cost allocation.

- Digital cells have five to twenty times the capacity as analog and thus for the same of similar capital the capacity is five to twenty times as much per unit capital. Thus digital introduction should drive down the costs by a similar amount.

- Other overhead factors can and should be appropriately allocated but the disaggregation approach requires appropriate location of costs. The CMRS should not allocate costs on a basis that disadvantages the new entrant. Specifically, the author will use its rights under Section 252 of the 1996 Act hereto.

- The competing carrier would take the risk of filing the channels with traffic.

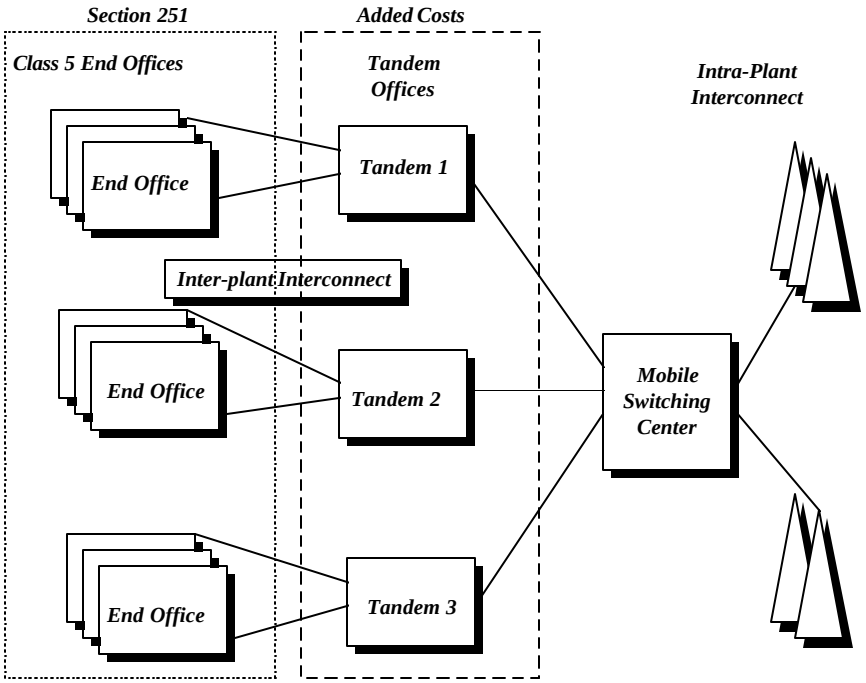
The conclusion reached in this section is that such unbundling is feasible, that it is an extension of the powers given the FCC via the Act and that the same antitrust argument convey to the RBOCs via their control of this means of transport.

12. ACCESS AND INTERCONNECTION

In this paper we also develop the concept of access because it is through access that competing carriers meet and it is through access that the dominant carrier may have the power to control the nondominant. We have discussed in the past few sections the issue of unbundling. We have viewed that from the perspective of the CMRS, which is an innovative way to do so since the FCC had not done this in their order. However the principles developed follow over directly to those elements that the FCC mandated as unbundled. In this section we develop the analysis for interconnection. This assumes that the provider, say a CMRS, has obtained all of the elements and has assembled them into a complete services offering. Now we ask the question, can we apply the Principle of Cost Based Pricing and if so what is the implications of that application. We have argued before that the direct consequence if Bill and Keep.

Interconnection is the process whereby the competent LEC connects with its competitor to allow traffic to flow from one direction to another. The operative issue associated with interconnection is access.

The interconnection issue is a major factor in the deployment of wireless systems. This report provides an analysis of the interconnect problem from the Commercial Mobile Radio Services, CMRS's, facilities to the Incumbent Local Exchange Carrier, I-LEC. As has been discussed in previous reports, the interconnect issue for a wireless carrier falls into two categories; intra-plant and inter-plant. The intra-plant issue is that between cell sites and the carriers own switch and the inter-plant facility is between the carrier's switching facilities and the I-LEC's facilities. The overview of these interconnections is shown below.



This Figure depicts three issues: first, the intra-plant facilities are generally under the total control of the carrier. Second, the end office I-LEC interconnect is clearly under the control of the Section 251 reciprocal compensation rule. Namely, such agreements as those between WinStar and NYNEX allow for termination of traffic on a mutual compensation basis. Third, the real problem is how does one get from a single MSC, to several access tandems and then ultimately to dozens of end offices. This report addresses those issues.

The overall goal of this report is twofold. First to address the technical issues related to the interconnection, especially what options are available to tandem interconnection. Second, what are the resultant regulatory options that may be available to the carrier.

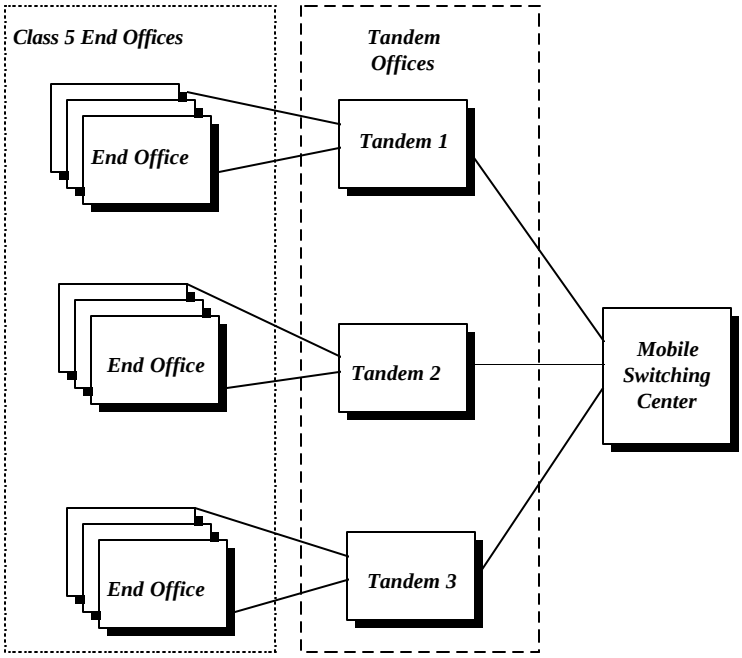
Any new carrier must be aware of these options before they interconnect since these interconnection options present significant fixed costs to the carrier and there may be ways to move these monthly fixed costs into some variable form or to move them into a form of carrier owned facilities.

12.1 Interconnectivity Options

There are several interconnectivity options for the inter carrier case. This section depicts them. The issue is clearly, how does the competitive non-ILEC carrier enter the ILEC domain and what are the ways in which end office Interconection, namely class 5 switch access, be achieved. Some alternatives are shown herein.

12.1.1 Option 1: Classic Approach

The following is an example of the classic approach. It uses the MSC access to a set of access tandems. Each access tandem must be interconnected with in a region. The costs of this are the costs of the access tandem connections plus the costs of the terminations on the end office switches. If the question is posed to the ILEC that there may be a more efficient mode of interconnection than the one so described, the response is that this is the only design that the I-LEC will provide.



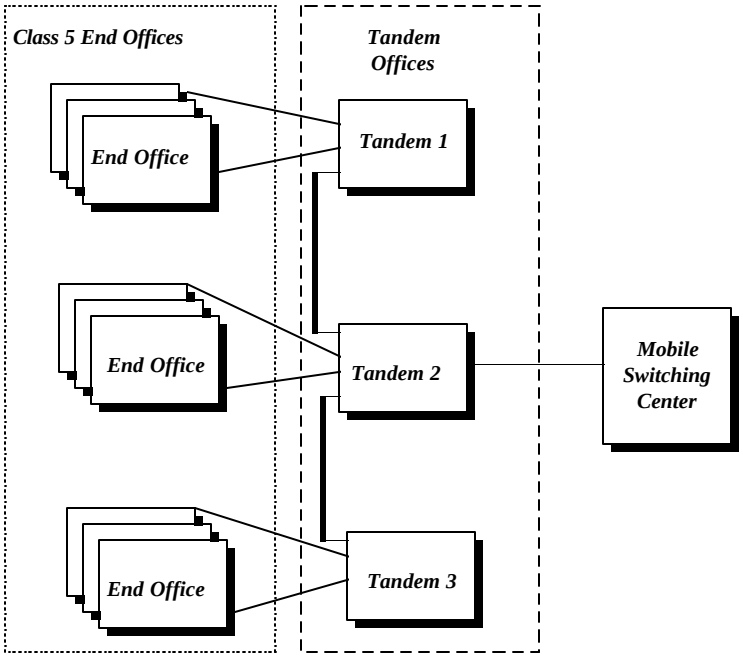
The CFR stipulates MTA coverage of this interconnection.[65] However with the Eighth Circuit Court of Appeals stay on the FCC rulings this may still be an issue. The issue above is that the MSC must connect to the Tandems but there is also the connection via an IEC and then to Tandems.[66]

12.1.2 Option 2: ILEC Tandem Connection

The ILEC may also interconnect via their Tandems. This is shown in the following Figure, in this case the ILEC has one single Tandem interconnect with the MSC and then they in turn connect via their own tandem trunks to the other access tandems.

[65]The issue of MTA coverage is a significant issue for the CMRS. This means that, if Section 251 stands the test of the Courts then, a CMRS can connect to the closest access tandem and get MTA coverage. It should be remembered that an MTA, Metropolitan Trading Area, covers several LATAs. This makes the I-LEC provide inter-LATA service, a possible conflict.

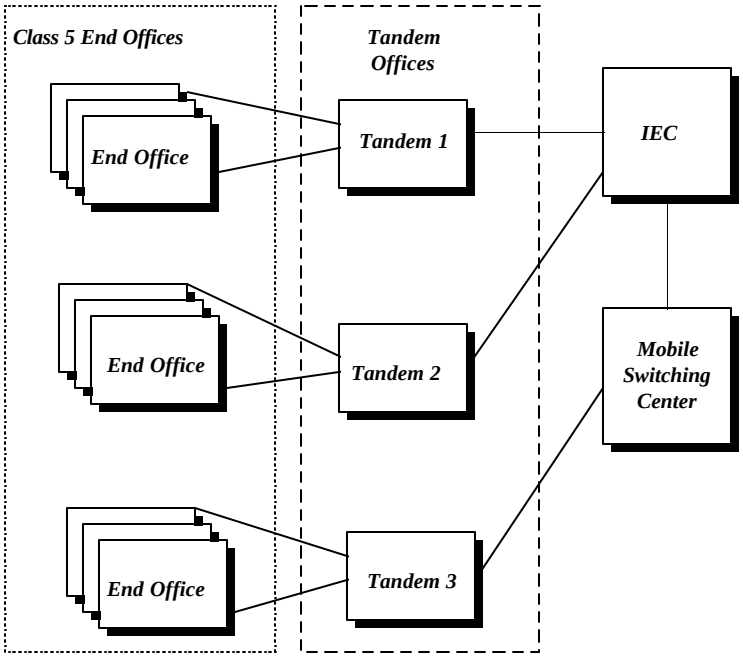
[66]The author has been negotiating with several of the I-LECs to obtain interconnection. They have generally delayed on several fronts in order to secure strong barriers to entry. First, they require inefficient multiple tandem access connections. Second, they charge $0.027 per minute, as compared to the FCC rates of $0.0015, almost a factor of twenty more. The I-LEC clearly is making confiscatory profits on this rate and they have moved the barrier to entry pricing from the local access to the tandem access. The author anticipates significant antitrust litigation to be a result of this action.



The issue here is this the concern of the CMRS or of the ILEC. We have argued elsewhere that this is the ILEC concern. In our current negotiations this has been agreed to by several ILECs.

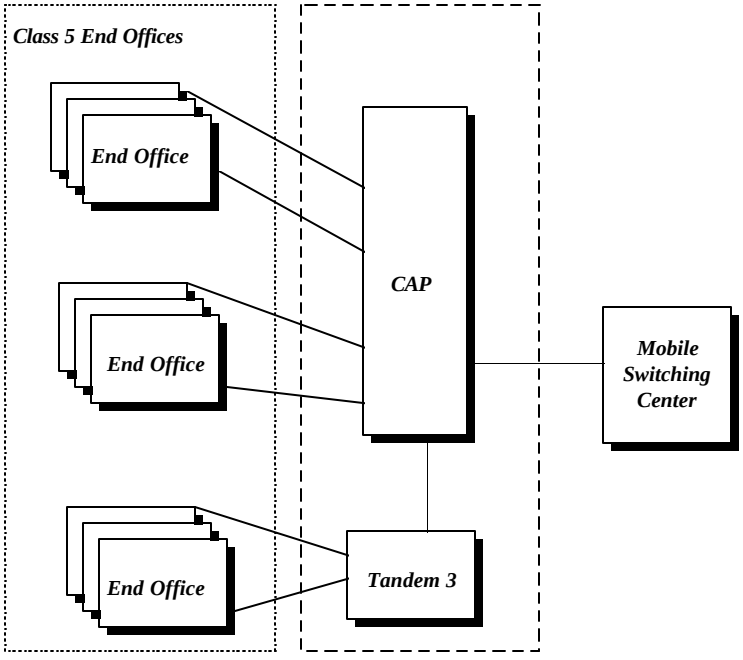
12.1.3 Option 3: ILEC and IEC Option

The next option shows the connection between the MSC and using the Inter Exchange Carrier, IEC, as the intermediary to the ILEC. The IEC generally has connections between the ILEC access tandems and this allows for the most effective use of a national backbone. This connection may even be an intra-LATA connection as well as inter LATA connections.



12.1.4 Option 4: CAP, ILEC and IEC Options

The CAPs, competitive access providers or C-LECs, may provide another alternative. The figure below shows the possibility to connect with the CAP and then in turn with the end offices directly of via the access tandems. There are several concerns with this approach. First there are may CAPs and they are not necessarily the same in quality. Second, ultimately the CAPs may be competing with the CMRS carriers as a purveyor of local service.



12.2 Views of Access

There are three views of access that are currently in use. These are:

1. ***Access as Externality***: This is the long standing concept of access that is the basis of the current access fee structures. The RBOC contends that it has certain economic externalities of value that it provides any new entrant and that the new entrant brings nothing of value to the table in the process of interconnecting. The RBOC has the responsibility of universal service and furthermore permits the new entrant access to the RBOCs customers, which brings significant value to the new entrant. In fact, RBOCs argue that a new entrant would have no business if the RBOC did not allow it access to "its" customer base. This school of access is the Unilateral school. Commissioner Barrett has stated publicly on several occasions that any new entrant should reimburse the RBOC for the value the RBOC brings to the table. The RBOCs, especially Bell South, are strong supporters of this view.

2. ***Access as Bilateralism***: This is the view currently espoused by the Commission in some of its more recent filings. It is also the view of the New York Public Service Commission in the tariff allowing Rochester Telephone and Time Warner Communications to interoperate. It also is the view of Ameritech in its proposed disaggregation approach. Simply stated, Bilateralism says that there are two or more LECs in a market. LEC A will pay LEC B for access or interconnect and LEC B will pay LEC A. It begs the question of what basis the reimbursement will be made, what rate base concept, if any, will be used, and what process will be applied to ensure equity.[67] This is akin to reinventing the settlements process of pre-divestiture days. Bilateralism is rant with delays, with expensive legal reviews and administrative delays. It clearly plays to the hand of the established monopolist. Suffice it to say that U.S, West owns a significant share of Time Warner and one would suspect that there presence in this Bilateralism approach is seen.

3. ***Access as Competitive Leverage***: This concept of access assumes that there is a public policy of free and open competition and that the goal is providing the consumer with the best service at the lowest possible price. It argues that no matter how one attempts to deal with access in the Bilateral approach, abuses are rampant. Thus the only solution in order to achieve some modicum of Pareto optimality from the consumer welfare perspective is to totally eliminate access fees. The Competitive access school say that the price that the consumer pays for the service should totally reflect the costs associated with its providers and not with the provider of the service to the person that the individual wants to talk to. For example, my local telephone rate does no change if I desire to talk to someone in Mongolia, even if their rates are much higher due to local inefficiencies. In addition, if I mail a letter to Poland then I only attach a U.S. stamp and am not required to also pay a Polish fee by buying a Polish stamp. The Competitive Access school says that externalities are public goods, created perforce of the publicly granted monopoly status of the past one hundred years. It states further that Bilateralism is nothing more that an encumbrance that allows the entrenched monopolist to control the growth of new entrants, and is quite simply an artifact of pre-divestiture AT&T operations. The only choice for the Competitive Access school is no access at all and price at cost.

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[67] See Baumol and Sidak. The authors assume Bilateralism and then work from there. They do not event broach the question of what is best for the industry. Their approach is an academic treatise on what are optimal reimbursement mechanisms, rather that what allows competition. Also see Brown and Sibley who show that the use of the Baumol-Wilig theorem dictates payment to the incumbent. This is however an ad hoc propiter hoc argument in the extreme. The theorem maximizes welfare subject to a constraint on the monopolists profit being above a rate of return. The counter to this theorem is to eliminate any subsidy to the monopolist and thus the Baumol Willig theorem in a competitive market mandates zero access fees.

12.3 Access as a barrier to Entry

The cost model for the effects of the proposed tariff structures on the development of the technological infrastructure has been developed below. Specifically, recognizing the proposed bilateral access structure, the model that depicts the results. This section summarizes those results. The model for the pricing is shown below. Here we assume that "P" is the price and that "C" are costs. "A" is the local allocation of costs to price and "T" is the transfer allocation. This model of access is what has been proposed by the FCC. We shall show that this form leads to the strong possibility of predatory pricing on the part of the existing monopolist and thus is a per se violation of the antitrust laws.[68]

Let the prices charged to the customer be given by:

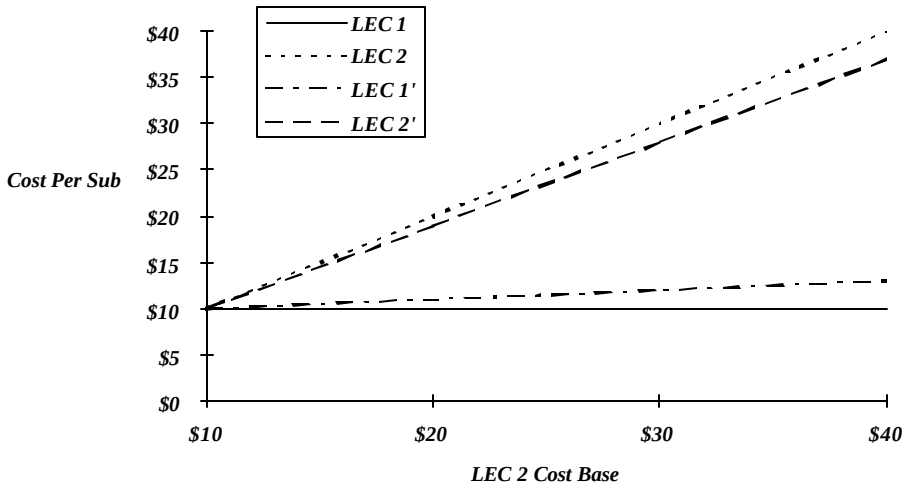
$$P_1 = A_1 C_1 + T_{1,2} C_2$$

$$P_2 = A_2 C_2 + T_{2,1} C_1$$

$$T_{1,2} = 1 - A_2, T_{2,1} = 1 - A_1$$

We now consider two cases. In Case 1 we depict an example of where access costs are prorationed on and equal basis, namely 10% of the base each. In this case it is clearly shown that the efficient carriers is taxed by the inefficient and furthermore the inefficient is subsidized by the efficient. Thus in the case of equal proration of transfer rates, the less efficient carrier dominates the efficient through a subsidy.

Case 1; A=0.9, T=0.1 for Both LECs

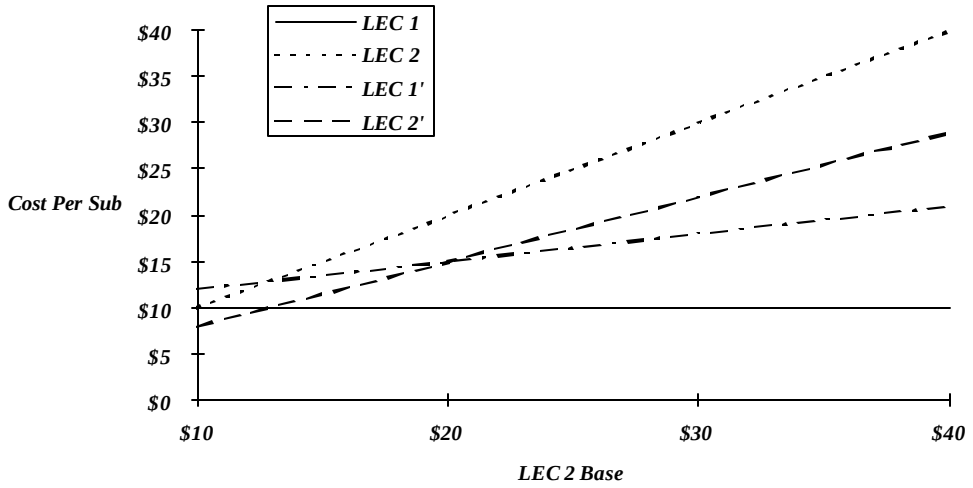


In the Case 2 example, we assume that the efficient carrier is allowed to place only 10% of its base in an access charge, and the inefficient carrier places 30% of its base in access charge. The Figure depicts a very

[68] See Addendum 1 at the end of the Ex Parte filing by Telmarc on August 17, 1994 in the matter of FCC 90-314. The issue was to show the significant Antitrust Issues that arise as a result of the access fees being based on any means other than those of Zero Access.

important finding. Namely, if the inefficient carrier is allowed to place an excess amount in the base assigned to access, then it is possible for the inefficient carrier to have a lower price to the consume, and in turn drive the price of the efficient carrier above theirs by means of the cross linking of access. The following Figure depicts the fact that until the inefficient carrier is almost twice the efficient t that the inefficient is less than the efficient. This market distortion goes to the heart of where technology and rate base allocations are for access. If the fees are kept, even as reciprocal, but based on underlying technology, the inefficient technology may drive out the efficient, a form of Gresham's Law of technology.

Case 2; A_1=0.9, T_{12}=0.3, A_2=0.7, T_{21}=0.1



The conclusion of this is obvious;

- *Under equal allocations of base and percentage, the inefficient carrier is penalized by the inefficiencies of the inefficient carrier.*

- *Under the case of misallocated costs, the inefficient carrier may actual use the efficient carriers costs to price below the efficient, thus driving the efficient out of the market.*

- *The driving of the efficient from the market by the inefficient, occurs only in those market situations wherein an imbalance via government regulations occur. These markets are not cleared and reflect dramatic distortions.*

12.4 Access Implications

The provision of wireless telecommunications services is essential the provision of local exchange service. The service offering is that of a wireless toll grade voice or data service provided through a seamless interoperable national network service. Simply stated, this is the commoditization of local exchange service. Namely, the wireless operator is offering, from the consumers perspective, the same product as the existing monopoly local exchange carrier.

There are several implications from this analysis. First let us review the conclusion made.

- Scale does not exist in capital plant if the plant is allowed to cover the area where the majority of customers are. Scale is significant in capital if there is a demand to cover all customers, no matter how

economically efficient. Scale in capital plant is an artifact of social policy mandated by Universal Service.

- Scale exists in the operations support services perforce of common shared processing equipment and common use of software and human resources. There is a natural need for agglomerated back office or operations support Outsourcers to service the C-LEC. The "Market" will allow such entities to be developed and serve the C-LECs as is done with current outsourcing.

- Scale is not a problem for the C-LEC. The C-LEC has de minimis scale from local capital and has access to the Operating Support Services on a marginal price basis from a NSE. The CMRS can compete with the entrenched carrier since the CMRS faces no scale and can price the service to market in a short period of time. The C-LEC does not need large capital resources to do this.

- Commoditization of the product offering, namely voice, allows for competition on the basis of price only. The C-LEC competitor can compete against the LEC RBOC if there is no access fees. Access fees are diseconomies of scale to the new entrant. They act as a financial barrier to entry to any new competitor.

- An new entrant, in an access free environment can compete against the entrenched monopolist with orders of magnitude less investment by leveraging off of an outsourced Operations Support Provider structure and using the new wireless technology. Quality is maintained by the outsourcing of the back office operations. There is no qualification for entry to new competitors other than local operations expertise. The scale and scope in the existing monopolists can be nothing more than an added capital burden on the new entrant.

- Bilateral access fees are determined on two key factors: the providers cost base and the providers allocation of assets to access. The analysis of access clearing or settlements using this algorithm leads in all cases to a control of the price and the existence of a monopolists controlled barrier to entry through a manipulation of access fees. Only through the elimination of access fees can any new entrant hope to compete on price and thus benefit the buyer.

There is a premise that new entrants must have significant capital. The analysis shows this not to be the case. In fact the capital required may be quite low. Thus the FCC's analysis is based on old paradigms of operations resident in RBOC and CATV monopoly operations and do not reflect the cost of competitive service provision.

The current wireless market is dominated by the RBOCs with 75% or more of the spectrum under their control. Using their control of the wire market, this leaves less than 5% currently available to competitors. The FCC is establishing an auction process which may allow the RBOCs in all bidding groups. Their capital power will drive out any new competitor and thus ensure the continuation of a de facto monopoly. The only way to avoid this is to mandate that any RBOC be prohibited from bidding for any new spectrum. This is the only way to establish local loop competition.

The RBOCs through control of spectrum, control of access, and control of switching, present a barrier to entry to any new entrant. If the objective is to establish competition, then it is necessary to prevent the continued dominance and to allow for ease of access. The only way to do this is total elimination of any and all access fees between competing LECs.

13. CONCLUSIONS

This paper has argued that effective competition in the local exchange market can only be achieved by the timely unbundling of the I-LEC as well as the existing CMRS as well as of the new CMRS. In addition the unbundling should be done at fair and equitable prices. Furthermore we have argued that zero cost access was also an essential element in this overall process. We have developed these arguments based upon three

elements; fundamental changes in the technological and operational environment, the application of the new Telecommunications Act, and the direct application of the existing antitrust laws.

In many ways this is no longer an FCC or State PSC issue but has been risen to the civil and possibly criminal level of Clayton and Sherman respectively. The latter issue is one of blatant sustained anti-competitive behavior in the local exchange market. Recent evidence brought before the FCC and the State Commissions clearly indicate that there is more than just grounds for investigation.

This paper argues further, that the regulatory and administrative law process is rant with delays and inefficiencies. Further, we argue that although the antitrust laws are vehicles for appropriate remedies we should not expect the Federal Government to act on these issues. Thus, it is argued that the civil application of these laws may be the most used and most efficient vehicle for the true development of a truly competitive local, exchange market. Many authors have argued against the antitrust laws but these arguments have been based on much less market power and control that is evident in this case.[69]

The essence of antitrust law is promote competition and not competitors. To do so in telecommunications one must recognize several significant principles. Firs, the loss of scale. Namely as we have argued, technology is driving scale out of telecommunications. All costs are marginal costs and all average costs approach margin in a precipitous fashion. Second, disaggregation allow for marginal pricing in all elements of the business. Capital plant has been marginalized as a result of technology and operations costs are marginalized as a result of the restructuring of industry. Third, commoditization is the driving factor in telecommunications. A connection is just a connection and differentiation is driven to the periphery of the network. Fourth, prices is cost based, and this means that such artifacts of Rawlsian economics as the Baumol-Willig theorem have no place in a competitive environment, and the only maximization allowed is consumer welfare.

These four conclusions drive our analysis along antitrust grounds. Telecommunications, especially at the local exchange level has and still is a monopoly. The 1996 Act took away any last vestige of antitrust protection from the I-LECs, namely the RBOCs. The main issue is interconnection and the secondary issue is unbundling. Interconnection is dominated by tying arrangements which are directed at the elimination or thwarting of any competition as well as the competitors. Thus, the conclusion is quite clear. Implementation of the 1996 Act will require aggressive prosecution of the antitrust laws. This prosecution will most likely be done by the new incumbents and not by the Government since such acts on the Governments side have become a conflict between all three branches of the Government. Chairman Hundt has courageously taken the lead in this area and it is hopeful that fate has placed an antitrust attorney in such a position at such a time.

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[69] See the works by Bork and Posner. We generally agree with Posner that economic analysis is the key to determining how to best apply the law in these cases. In fact, we argue that the Posner approach is most likely to be the basis for many of the briefs developed in subsequent litigation.

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SUPREME COURT DECISIONS

Case	*Cite*	*Decision*	*Relationship*
United States v. Loew's, Inc.	466 U.S. at 13-14 citing 371 U.S. 38 (1962)	Court held that Loew's violated § 1 Sherman because of block booking despite having only 8% or market share but Court ruled that "requisite economic power is presumed when tying product is patented or copyrighted".	Any patent protection by the RBOC is putatively proof. The extension to this is the RBOCs ability via the standards setting body or even via the regulatory bodies to establish de factor "patent" rights by their presences in the market as the participant controlling the definition of interfaces.
United States v. Jerrold Electronics Corp.	466 U.S. at 23, aff'd per curiam, 365 U.S. 567 (1961)	Issue of two separate products. Court focused on three elements: 1. Firms other than Jerrold sold the products separately. 2. Jerrold priced the product separately. 3. Jerrold's packages were customized suggesting separate products.	The issue is the separability of such products as I-LEC interconnection and airtime. Also airtime as merely the provision of connections and not bundled with other separable products.
United States v. Fortner Enterprises (Fortner I)	394 U.S. 495 (1969)	Reiterated Northern Pacific. Namely; ...a total monopoly is not essential, rather the key is whether some buyers can be forced to "accept a tying arrangement that would prevent free competition for their patronage in the market for the tied product"	This is the case with I-LEC and the airtime issue. The tying applies to the bundled CMRS opportunity as well as the bundling into the pricing algorithms used by the PUCs. The clear way to eliminate this ruling is to go to Bill and Keep.
United States Steel Corp. v. Fortner Enterprises (Fortner II)	429 U.S. 610 (1977)	US Steel credit company had insufficient market power. The Court concluded that a tying arrangement existence is insufficient unless the entire deal makes consumer worse off than they would be in a competitive market.	The issue is the consumer welfare and this is driven by clearing the market with the most efficient use of capital by the most efficient producer of the overall product. Clearly, in the case of interconnection, be it for local service or interconnect, the consumer is better off with a lower price, which has been shown via the IEC competition to be a direct result of competition.
United States Shoe Corp. v. United States	258 U.S. 451 (1922)	The Court ruled that "while the clauses enjoined do not contain specific agreements not to use the machinery of a competitor of the lessor the practical effect of these drastic provisions is to prevent such use."	Clearly the specific enjoining of usage is not required only the effect thereto. The application herein relates to the specific use of tandem offices that may be a back door into increasing access fees.

Case	*Cite*	*Decision*	*Relationship*
Unger v. Dunkin' Donuts of America, Inc.	531 F.2d 211) 3d Cir. 1971)	Court held that the seller's power could be inferred from: 1. coercion. 2. resolute enforcement of a policy to "influence" buyers to take both products. 3. widespread purchase of both products by buyers.	Clearly there is a form of coercion as argued supra and there is significant influence. There is no widespread purchase of both other than is the small segment of competitors. We have demonstrated these elements in this paper.
Times Picayune Publishing Co. v. United States	345 U.S. 594 (1953)	Clayton was only to commodities. Government evoked § 1 of Sherman. However although in § 3 of Clayton either "monopolistic position" or restraint of significant volume of trade was required, in Sherman both were required.	The issue is whether the products are products or services. If ruled services still have protection but a sharper issue to prove. Clearly the issue here is services.
Siegal v. Chicken Delight, Inc.	448 F.2d 43 (9th Cir. 1971), cert. denied, 405 U.S. 955 (1972)	Court found against Chicken by stating that if it had been secret recipe than it would have been acceptable but that defendant could have provided specifications for materials and the Plaintiff could have achieved the same results. Court ruled that three elements must be shown: 1. the scheme in question has two distinct items and provides that one may not be obtained without the other. 2. the tying product posses sufficient economic power to appreciably restrain competition in the tied product area. 3. a "not insubstantial" amount of commerce is affected.	Two distinct have been proven supra, economic power id evident via the monopoly control, and commerce is telecommunications which is per se "not insubstantial".
Northern Pacific Railway Co. v. United States	356 U.S. 1 (1958)	Court condemned the freedom of choice for consumers. Court held could show monopolistic control by simply showing "sufficient economic power to impose an appreciable restraint on free competition of the tied product". Court held the per se rule by stating:	Argue that "per se" rule can be applied directly. This is applicable to all elements of these arguments.

Case	*Cite*	*Decision*	*Relationship*
		"tying arrangements serve hardly any purpose beyond the suppression of competition..."	
Kentucky Fried Chicken Corp. v. Diversified Packaging Corp.	549 F.2d 368 (5th Cir. 1977)	Court upheld Kentucky because there was no real coercion. Kentucky had approved other suppliers.	Not allowed to choose other suppliers thus a violation and Kentucky does not apply. This also applies since the monopolist controls the market.
Jefferson Parish Hospital District No. 2 v. Hyde	466 U.S. 2 (1984)	Set out five elements for successful tying: 1. must effect more than de minimis amount of interstate traffic. 2. tie is not express and coercion to buy the tyed product is evident. 3. two products must be separate. 4. defendant must have economic power. 5. no valid business reason for tying. Court in Jefferson ruled that Jefferson had only 30% of market power and thus did not force "customer" to buy product. Court stated, dicta, that: "to force a purchaser to do something that he would not do in a competitive market" was condemned.	Have proved all elements supra. Also this extends the per se rule to this violation. This case has been discussed extensively in the body of the paper.
International Sale Co. v. United States	332 U.S. 392 (1947)	Defendant may insist upon a tied sale when the quality of the tied product affects the operation of the tying product. Tying arrangement is not justified when the defendant can set quality standards for the tied product.	No issue of quality changes can be made in the issue of interconnection. Specifically, with the establishment of standards there is now a set of open and definable interfaces and performances and certifications that these interfaces must comply with. Thus any grounds from this case do not apply.
International Business Machines v. United States	298 U.S. 131 (1936)	When the tied sale is not accompanied by escape clause for the buyer who finds a better price then the tying arrangement can be used to price discriminate.	No escape clause allowed is one option to consider an antitrust case. We extend this to cover the inability to interconnect as a per se barrier to entry since it automatically precludes any competitor to enter the market in any efficient manner.
Henry v. A.B. Dick	224 U.S. 1 (1912)	Allowed defendant to force users of patented duplicating to	This cases may have some benefit t o the I-LEC but we believe that

Case	*Cite*	*Decision*	*Relationship*
		use its paper.	it is irrelevant since the defendant in this case had no monopoly position and it could be shown that there was some justification for the tying. Again, in the interconnection world there is a clear precedent for separation and the elimination of the tying arrangement.
Eastman Kodak Co. v. Image Technical Services, Inc.	112 S.Ct. 2072 (1992)	Court reaffirmed the view that products are separate when there is sufficient consumer demand to justify firms providing one without the other.	This extends the per se rule and reads onto the cases presented in this paper Moreover, the issue of bundling is at the heart of the current debate regarding interconnection. The I-LEC is forcing companies to interconnect at the access tandem levels and will not allow them to select their own interconnect. They are bundling transport and switching and pricing it a factor of ten to twenty times their Long Run Average Costs. .