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July 28, 2005

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JUL 28 2005
Federal Communications Commission
Office of Secretary

Marlene H. Dortch, Esq.
Secretary
Federal Communications Commission
445 12th Street, SW, Room 8B201
Washington, DC 20554

Re: SBC Communications Inc. and AT&T Corp.
Applications for Consent to Transfer of Control
WC Docket No. 05-65
Verizon Communications and MCI, Inc.
Applications for Consent to Transfer of Control
WC Docket No. 05-75
Written Ex Parte Communication

Dear Ms. Dortch:

I am writing this letter on behalf of our client Cox Communications, Inc. ("Cox") to transmit to you the attached paper, "Vertical Integration with Network Effects," by Dr. Gerald W. Brock, to be included in the dockets of the above-referenced proceedings. Copies of this letter and the paper also are being provided to members of the Commission's merger teams for these proceedings who have met with Cox.

Dr. Brock's paper analyzes certain economic issues raised by vertical mergers, such as the proposed AT&T-SBC merger and the proposed MCI-Verizon merger, that occur in markets that exhibit network effects, and applies that analysis to the transactions now before the Commission. In combination with the considerations described in Cox's comments in this proceeding (such as the loss of AT&T and MCI as leaders in the interconnection arbitration process), this analysis supports the conclusion that the Commission should adopt specific remedies in these proceedings to prevent harm to the public interest. Those remedies include the following:

1. The merged companies should be required to provide interconnection to providers of voice over IP and other hybrid services on the same terms available to CLECs under Sections 251 and 252 of the Communications Act, regardless of the legal and jurisdictional classification of their services.

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2. The merged companies should be required to permit CLECs, providers of voice over IP and providers of other hybrid services operating within the SBC and Verizon territories, respectively, to adopt any whole arbitrated interconnection agreement or any whole section of such an agreement, from any state where, respectively SBC or Verizon operates (with appropriate modifications for any clearly state-specific terms). A similar requirement was adopted in the SBC-Ameritech and Bell Atlantic-GTE merger proceedings.
3. The merged companies should be prohibited from unilaterally terminating any existing agreement or other arrangement for peering, interconnection, or provision of services for a reasonable period of at least two years or more from the time the mergers are approved, notwithstanding any termination rights that might be included in such agreements or arrangements. During this time, the other party to an agreement (e.g., a CLEC) would be permitted to terminate the agreement if it chose to do so. Cox notes that the New York Public Service Commission staff has suggested a three-year period for a similar condition relating to interconnection agreements in connection with the MCI-Verizon transaction, and Cox believes this would be reasonable.

In accordance with the requirements of Section 1.1206 of the Commission's rules, an original and one copy of this letter and its attachment are being filed in the docket for the AT&T-SBC proceeding and two copies of this letter and its attachment are being filed in the docket for the MCI-Verizon proceeding.

Please inform me if any questions should arise in connection with this letter.

Respectfully submitted,

J.G. Harrington
Counsel to Cox Communications, Inc.

JGH/cmf

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Vertical Integration with Network Effects[1]

Gerald W. Brock

July 21, 2005

Summary

The proposed mergers of SBC-AT&T and Verizon-MCI represent a major change in industry structure. The new structure is significantly different than the structure contemplated in the Telecommunications Act of 1996 and in many policy decisions of recent years. Most significantly, the mergers have the potential to reduce the competitive nature of the Internet and of hybrid services composed in part of Internet services. While competition still can flourish if the mergers take place, that can only occur if strict enforcement of interconnection policies prevents the ability of the merged companies to use network effects and interconnection restrictions to eliminate the opportunities for facilities-based CLEC competition. Non-facilities-based local competition already has been largely eliminated and there is a real danger that facilities-based competitive opportunities could be eliminated as well. Because the mergers create potential competitive policy problems, they should only be approved with conditions designed to prevent the merged companies from using the new market structure to increase their market power.

1. Introduction – The Mergers Represent a Major Change in Industry Structure and Corresponding Policy Choices

In recent years telecommunication policy has been based on an industry structure containing the following elements:

(1) Long distance service providers that were free to enter the local exchange voice market, but were independent of the ILECs;

(2) ILECs that dominated the local exchange market but were subject to interconnection and other obligations to allow entry into the market, and were free to enter the long distance market;

(3) Wireless telephone providers that were generally associated with one or more of the major local or long distance providers and that provided an alternative route to the customer with imperfect substitution for wireline service;

(4) Competitive Internet access through a wide variety of providers, using either dial-up or broadband facilities;

(5) Competitive Internet backbone providers with voluntary negotiated interconnection arrangements.

The broad trend of policy has been to reduce emphasis on detailed common carrier regulation and to utilize the unregulated Internet as a model. Insofar as services are moving toward Internet provision, the assumption has been that they will be provided in a competitive manner without regulatory intervention. Newer media have not been subjected to traditional regulation (cable modem access service, Internet backbone

[1] Cox Communications asked me to review the proposed SBC-AT&T and Verizon-MCI mergers for potential competitive problems that the mergers could create for facilities-based CLECs. This paper is the result of that review.

service, ILEC fiber to the home service) or have faced limited regulation (wireless service). The optimistic view of dynamic industry structure has been that the competitive unregulated Internet is gradually absorbing the regulated common carrier services, shrinking the scope for regulation and eliminating the problem of legacy monopoly services.

The proposed mergers can potentially disrupt this optimistic scenario. They integrate the largest two long distance carriers and Internet backbone providers with the two largest ILECs. In the context of traditional voice communications, this is a vertical merger. Standard economic analysis suggests that a vertical merger with a competitive firm does not increase market power. However, the separate local and long distance markets are in significant part a creation of regulatory policy and the implications of the proposed mergers cannot be fully evaluated from textbook analyses of vertical integration. Furthermore, the mergers also integrate Internet access providers with Internet backbone providers. Because the Internet is exempt from most regulation, the merging parties will be free to take advantage of network effects to increase their market power. As developed in detail below, the combination of network effects and vertical integration may limit competitive opportunities if no restrictions are placed on their conduct. Thus while the mergers should be allowed to occur, they should be conditioned on provisions that protect competitive opportunities and limit the ability of the combined firms to utilize their increased market power to establish a monopoly. Two conditions should be imposed as part of the merger approval:

(1) The merged companies should be required to allow any service provider within their respective service territories to adopt any Section 252(b) arbitrated interconnection agreement from any state within the respective territory (with appropriate modifications for any clearly state-specific terms) without regard to the specific state in which the arbitration occurred, the stated termination date of the interconnection agreement, or the specific service intended by the requesting party.

(2) The merged companies should be prohibited from unilaterally terminating any existing agreement for peering, interconnection, or provisions of services for two years from the time the mergers are approved.

2. Strategic Factors Relevant to the Merger

Several economic characteristics of the current market affect the analysis of the mergers. The first is that terminating service is intrinsically a monopoly, regardless of the service provider's market share. Normally, a customer subscribes to only one company's service of a particular type (voice telephone service, Internet access). Thus any other customer that wishes to send a message to that customer must go through the customer's sole service provider. Insofar as a company wishes to offer universal terminating service, it must have direct or indirect interconnection arrangements with all service providers. In general, the current industry structure and rules have prevented terminating market power from creating a bottleneck. In the voice market, the terminating monopoly has been limited as a strategic weapon through required interconnection and limits on the prices that can be charged for terminating service (Section 251 and 252 requirements for local service and access charges for terminating long distance service). Additional policies that limit voice market power include resale

requirements, equipment interconnection requirements, and the common carrier principle of non-discrimination in the content carried. These policies have been developed over many years to allow competition despite monopoly power. While some of the past policies become less significant when there is competition in the market, others remain important because even a reduced market share of the total access market still gives a company monopoly power over communications directed toward its set of customers.

Second, there are a limited number of significant facilities-based participants in each segment of the market. Despite the strenuous policy efforts to develop competition (particularly facilities-based competition) in telecommunications and the availability of new technologies, the markets are still highly concentrated. Furthermore, the different market segments are interrelated. Thus a limited number of companies engage in strategic interaction with each other. That strategic interaction is not simply the setting of an oligopoly price as in textbook economics models, but includes the use of network effects, interconnection arrangements, service bundles, and complex pricing patterns to gain an advantage or counteract a competitor. While these interactions are signs of competition in the market, they complicate the analysis of a merger because a merger affects the overall strategic game among a small number of players.

Third, network effects are a critical part of the strategic interaction among companies. Network effects often lead to a period of intense competition followed by entrenchment of a monopoly or a dominant firm. Competition with network effects is frequently described as "competition for the market" or a "winner take all" situation rather than "competition for individual customers". When there are several symmetric firms, they have an incentive to interconnect voluntarily, but departures from symmetry can create incentives to refuse cooperation and attempt to eliminate the weaker firm from the market. The Commission has long recognized the barrier to entry created by network effects when there is an existing dominant firm. However, the success of the voluntary interconnection arrangements in the Internet has obscured the risk that network effects may be used to transform a reasonably competitive market into a monopoly market if one of the competitors can gain a significant advantage over the others. For example, the introduction of the first microprocessor in 1971 and rapid improvements to microprocessors by several companies initiated a highly competitive segment of the data processing market. In contrast to IBM's dominating position in "serious computing" at the time, many companies introduced computers, operating systems, and application programs utilizing microprocessors. However, during the 1980's the operating systems, word processors, and spreadsheet programs from Microsoft all achieved dominance and most firms that provided direct competition to Microsoft's primary products either went out of business or developed compatible complementary products.[2]

Fourth, use of the Internet and IP technology for all or part of a service does not guarantee that it will be offered competitively. The Internet has been the most competitive portion of the telecommunication industry and services offered over the Internet have generally been free from regulatory intervention or monopoly problems. However, there is no guarantee that the same will be true in the future. In particular, hybrid services such as VoIP use portions of the Internet or employ Internet Protocol technology but still require access to traditional telephone resources for signaling and

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[2] See Paul Ceruzzi, A History of Modern Computing (MIT Press, 1998) for an overview of computer developments.

universal termination. For example, Cox's version of VoIP uses Cox's dedicated facilities for transport rather than the public Internet in order to ensure high quality. However, Cox still needs access to signaling and other resources controlled by the telephone companies in order to offer its service. Companies that control those resources have a continuing incentive to use them strategically and that incentive will be accentuated by the proposed mergers. Thus close attention is needed to requirements for effective competition, rather than an assumption that Internet-related services always will be offered competitively.

3. The Proposed Mergers and Interconnection Incentives

In a network industry, interconnection benefits all participants. However, that does not guarantee that the participants will reach efficient voluntary interconnection agreements.[3] Symmetric competition provides incentives for voluntary interconnection, but asymmetry creates the possibility of a price war. As developed below, a two level market (such as Internet access and backbone service) provides indirect interconnection among competitors and therefore reduces the significance of asymmetry in the access market. However, vertical integration between an access provider and a backbone provider can create incentives for monopolization in place of earlier incentives for interconnection.

This section is developed through a series of simple numerical examples that illustrate the interconnection incentives under various scenarios. The cases are a stylized representation of the Internet market and how it could change with the vertical integration created by the proposed mergers. The focus is on bargaining and market incentives in the absence of regulatory requirements for interconnection. In each case we assume that there are 1,000 potential customers and that each customer places a value of $.01 on the option to exchange any amount of traffic with any other customer. Thus each customer places a value of $10.00 on the right to subscribe to a network that gives the customer access to all other customers with no separate usage charges. There is no distinction between incoming and outgoing traffic or between customers composed of individuals or web sites. The cost to supply access is $4.00 per customer, regardless of the amount of traffic generated by that customer.

Case 1: Symmetric duopoly with barriers to entry

Each firm has 500 customers and there is no threat of entry. Without interconnection, each firm could charge a maximum of $5.00 per customer (because each customer can only reach 500 customers and values reaching each customer at $.01)[4]. If each network considers itself an isolated monopoly, it will charge $5.00, incur a cost of $4.00 per customer, and earn a profit of $1.00 per customer or $500 total. Now consider

[3] There is an extensive literature on the economics of interconnection. See Mark Armstrong, "The Theory of Access Pricing and Interconnection" in M. Cave, S. Majumdar, and I. Vogelsang, Handbook of Telecommunications Economics, Vol. 1(North-Holland, 2002) for a comprehensive review and list of references.

[4] More precisely, each customer can be charged a maximum of $4.99 because in a universe of 500 customers, the network is only facilitating communication with 499 other customers. All of the numbers are computed as if customers could be charged for communicating with themselves for simplicity, but the simplification does not affect the results.

the bargaining over interconnection and assume that the physical interconnection itself is costless. Interconnection adds a value of $5.00 per customer (ability to reach 1,000 customers instead of 500) with no additional cost. If the firms continue to operate as cooperative duopolists charging the monopoly price, they can increase their profits to $6.00 per customer through interconnection. While either firm would prefer to monopolize the industry than to share the potential profits with the other firm, neither has an incentive to start a price war because symmetry means there is no assurance that the firm initiating the price war would be the survivor. Bargaining theory confidently predicts that the firms will voluntarily interconnect. In general, the division of the benefits from the interconnection is indeterminate so long as both firms gain some benefit, but in this symmetric case it is very likely that they will interconnect and share the benefits of interconnection equally.

Case 2: Asymmetric duopoly with barriers to entry

Consider the same conditions as above, but with an initial 60-40 split of the customers (firm A has 600 customers and firm B has 400 customers). If each network considers itself an isolated monopoly, A will charge $6.00 and earn a profit of $2.00 per customer ($1,200 total) while B can only charge $4.00 (the maximum value that each of its customers places on a 400 person network) and will earn zero profits. Both firms are viable as independent non-interconnected networks, but B only earns competitive zero profits. Now consider bargaining over interconnection. If the distribution of customers is fixed, each firm sees the same total benefit from interconnection. Each of the 600 customers of firm A values the ability to communicate with the 400 customers of firm B at $4.00 for a total value of interconnection equal to $2,400. Each of the 400 customers of firm B values the ability to communicate with the 600 customers of firm A at $6.00 for a total value of interconnection equal to $2,400. With the distribution of customers fixed (because, for example, each firm only has physical facilities to its own customers who are in different geographical areas), we can confidently predict voluntary interconnection, and with less confidence can predict equal sharing of the benefits of interconnection.

The incentives for interconnection bargaining change significantly when there is competition for the customers rather than a fixed set of customers available to each firm. With interconnection, the total potential profit for the combined firms is $6,000 (charge $10 to each of 1,000 customers and serve them at a cost of $4 each.) An even split of the benefits of interconnection gives A profit of $3,600 and B profit of $2,400. A would like to use its larger customer base to extract more of the total profit. Each customer that A can attract from B adds to A's profit and weakens B's strategic position. For example, suppose that A refuses to negotiate for interconnection and instead offers a promotional price of zero to any customers of B that will switch.[5] When one customer switches, A's initial 600 customers each gain an additional value of $.01 from communication with the new customer (allowing A to raise its price to $6.01), for a total network benefit of $6.00. The cost to A of serving the new customer is $4.00 and therefore A gains additional profit of $2.00 from serving the new customer at zero price, compared to the original non-interconnected scenario. B's defensive options are limited by its smaller size. It can respond with a promotional price of zero for A's customers. When B attracts one

[5] The Wall Street Journal (June 29, 2005, p. D4) reported that SWB is offering a promotional price of zero for three months to current broadband cable customers who switch to DSL.

customer, its initial 400 customers each gain a value of $.01 and the total value of $4.00 is just enough to cover the cost of serving the new customer. However, customers who are being offered a zero price from both companies will observe that A is a more attractive network than B (consumer surplus of $6.00 from subscribing to A at a zero price versus consumer surplus of $4.00 from subscribing to B at a zero price). Simply matching A's promotion will be an inadequate response and will result in customers moving from B to A. Each customer that moves makes B's position more precarious and B will exit the market unless it can find some way to equalize the bargaining power.

If price discrimination is infeasible or prohibited, A could initiate a price war with some confidence that its larger initial customer base will allow it to be successful. In a "modest" price war, A reduces its price from the monopoly level of $6 to the competitive level of $4. A now earns zero profits and each of its customers receive consumer surplus of $2 (value of $6 for the 600 person network and price of $4). To retain its customers, B must now reduce its price to $2 (giving each one consumer surplus of $2 just as they would get from joining the A network), but now B loses $2 per customer. If B has limited financial resources or believes that A will maintain the low price over a long period of time, it will go out of business. If B believes that A will abandon the price war quickly and negotiate a favorable agreement to allow both of them to earn profits, it will reduce its price and accept the losses while attempting to negotiate.

In an "extreme" price war, A reduces its price to $1.90, losing $2.10 per customer and allowing each of its customers to receive a consumer surplus of $4.10 (value of $6.00 minus price of $1.90). Now even if B reduces its price to zero (losing $4.00 per customer), its customers still have an incentive to switch to A's network because at a price of zero, B's customers receive consumer surplus of $4.00 from staying with B while they get consumer surplus of $4.10 by switching to A. Thus regardless of B's financial reserves and ability to accept temporary losses, it will have to find some way of paying its customers (effective price below zero) to stay on its network to remain in business. As in the previous scenario, each customer that switches from B to A further weakens B's position.

Standard economic analysis states that price wars will occur rarely if at all and that the threat to initiate a price war is generally not credible. That conclusion is based on the assumption that if necessary, the smaller firm can simply exit the market for the duration of the price war and reenter when prices are later raised. However, in this case the network effect prevents reentry. Suppose, for example, that A begins a price war and B chooses not to respond, allowing its customers to switch to A. After B exits the market, A raises its price to the new monopoly level of $10.00. Even if B retains its facilities and ability to serve customers, it has no way to attract a critical mass of subscribers and therefore cannot reenter the market.

If both parties understand that A can win a price war, then they do not have to actually experience the price war to reach a solution. B might conclude that its prospects are bleak and exit the market. Alternatively, the parties could negotiate an interconnection agreement that allows B to continue in the market but gives all of the profits to A. For example, A could agree to interconnection but demand that B pay $6.00 per customer to A for the privilege of interconnection, while A pays nothing to B. B could then charge the monopoly price of $10.00 for offering access to the entire network, but would incur a cost per customer of $4.00 for its own cost plus $6.00 of

interconnection payments to A, leaving zero net profit. A would serve only its original 600 customers but earn the potential monopoly profit of $6,000 from the entire market ($6.00 profit from its own customers and $6.00 interconnection fees from B's customers). B will agree to onerous interconnection terms that allow A to earn all or most of the potential profit if it believes that the alternative is losing a price war.

This example illustrates that even modest asymmetry significantly affects the incentives for interconnection between duopolists. Voluntary interconnection with equal terms should be expected when the two firms are truly symmetric (case 1), but that is not a stable situation. If one firm gains an advantage, that advantage may be exploited with unequal interconnection terms that accentuate the initial advantage and lead toward market dominance.

Case 3: Duopoly access market with competitive IB/LD market

For this case, assume that the 1,000 potential customers are separated into two distinct geographical markets, with 500 in each market. The same duopolists provide access in both markets with a 60-40 market share split, but the two separate regions can only be connected through a separate long distance (or Internet backbone) company that is independent of the access providers. The LD market is contestable.[6] Assume that the cost of transmitting communications between the two regions is zero.[7] In a contestable market, the price will then be zero as well. Each access company orders service from one or more long distance companies and the long distance companies all interconnect.

With a two-tier market of access and long distance, the access market shares are less significant than in the previous examples. Each company can now interconnect directly with the other company or indirectly through the long distance provider. Because the smaller access company has an indirect route to the customers of the larger access company, the larger access company loses the ability to exploit its market share for competitive advantage. Multiple access companies can coexist in the same geographical area without a tendency toward monopoly. Because of indirect interconnection, companies can compete for customers as in a non-network market while being confident that they can reach any other customer. With the price of long distance service set equal to zero as in this example, there is no difference between direct connection and indirect connection through the long distance companies. If the price of long distance service were positive, then access companies in the same geographical area would have an incentive to negotiate direct interconnection agreements to avoid funneling traffic unnecessarily through the long distance company, but the option to go through the long distance company would strengthen the bargaining position of the smaller firm when negotiating for direct connection.

Case 4: Vertical integration between access and long distance

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[6] A contestable market has no barriers to entry or exit. It may have any number of firms but no firm has market power because of the threat of entry. A contestable market exhibits the textbook characteristics of perfect competition without necessarily requiring that a large number of firms actually operate in the market at any one time.

[7] The zero cost assumption is a simplification to keep the numbers consistent with the previous examples. There would be no significant change in the results if we assume a positive cost.

Starting from the situation of case 3, assume that the larger access firm vertically integrates with one of the long distance firms. In the absence of network effects, vertical integration with a competitive firm would have no effect on market power. However, in this case it significantly affects the opportunity to use interconnection as a strategic weapon. Suppose that the integrated firm now only sends or receives traffic from its subsidiary long distance company. The bargaining situation among long distance companies is no longer symmetric. The long distance companies carrying traffic from the smaller access company must get access to the integrated firm and are at a bargaining disadvantage. Integration with a competitive firm eliminates the safeguard of indirect interconnection and reduces this case to essentially the same as Case 2: the larger firm will use its network effects to either dominate the market or capture all of the potential profits through high interconnection fees imposed on the smaller firm. Thus vertical integration increases the market power of the integrated firm and reduces the viability of the competitive access firms.

4. Application

A. Common Carrier voice market segment

In Case 4 above, vertical integration increases market power by reducing the interconnection opportunities. There is some protection against that negative result in the access and interconnection requirements developed after the AT&T divestiture. However, consider a modest modification to the current market and regulatory structure. Assume that local telephone companies (both ILEC and CLEC) provide both long distance and local service to their customers. They provide local service over their own facilities and purchase long distance service for resale under their own brand names. The long distance market is contestable and therefore all local companies see the same competitive input prices for the provision of long distance service. Long distance companies voluntarily interconnect and exchange traffic and therefore it is unnecessary for each long distance company to have direct interconnection with each local exchange company. Assume that the FCC observes that long distance service is competitive and removes all regulations related to the relationship between long distance providers and local exchange companies.

Now assume that the proposed SBC-AT&T and Verizon-MCI mergers take place.[8] In the absence of network effects, the vertical integration of a service provider with the provider of an input supplied through a contestable market would not increase market power, but with network effects such a merger creates new strategic opportunities. Suppose, for example, that the long distance affiliates of the new vertically integrated SBC and Verizon agree to freely exchange traffic between themselves, but not to exchange traffic with any other long distance providers. The local service operations of Verizon and SBC only purchase long distance service from their affiliates. They accept terminating traffic from any long distance company, but impose a substantial terminating

[8] For this scenario, assume that MCI and AT&T provide only long distance service and are participants in a contestable long distance market. Both assumptions are simplifications to clarify the vertical integration issues separately from all other issues related to the mergers.

access charge on traffic received from any non-affiliated long distance company. Assume that the long distance affiliates of Verizon and SBC offer long distance service at a competitive price to all local exchange companies outside of their geographical territory, but refuse long distance service to CLECs operating within their geographical territory. CLECs within the Verizon or SBC territories must then take service from a long distance company that will incur higher cost (because of the terminating access charge) for any traffic delivered to a Verizon or SBC customer. That higher cost will be reflected in the price that the long distance company charges the CLEC for service and subsequently in the price that the CLEC charges its customers for service. In the absence of regulation, the terminating access charge can be made arbitrarily high and can be economically equivalent to a refusal to accept traffic from non-affiliated long distance companies.

With no strategic response, the above scenario leads to the exit of long distance companies other than the affiliates of Verizon and SBC and to the exit of CLECs within the Verizon or SBC territory. LECs outside of the Verizon/SBC territories will accept the offer of long distance service from those companies' affiliates because it is cheaper than the service offered by other long distance companies that have to pay a terminating access fee with the relevant territories. CLECs within the territories are unable to compete because they cannot offer a competitive long distance service to their customers. The market power in this scenario is created by the combination of vertical integration and market share. The relevant market share is the percentage of total U.S. telephones served by the merging companies. When that number is large (as it is in the case of the combined Verizon and SBC), then many calls from the CLECs will terminate on phones served by the merged companies and incur the high terminating access charge (or alternatively, the CLEC customers will see a reduced value of service by being unable to call phones served by the merging companies).

The opportunities for strategic response depend upon the relative market shares of the merged companies and the CLECs within the geographic territory of the merged companies.[9] The CLECs could impose a retaliatory terminating access charge on traffic coming from the merged companies (or refuse to accept long distance traffic originating with the merged companies).[10] If the CLECs within the relevant territory can coordinate their efforts and if the combined CLECs control 50 percent or more of the phones within the territory, then they can make a credible retaliation threat but otherwise they cannot. If the combined CLECs within the relevant territory have less than 50 percent of the phones, then an interconnection war will leave them at a disadvantage. As in Case 4 above, the combination of vertical integration and large access market share allows the integrated firm to utilize network effects to gain market dominance.

B. Internet market segment

[9] In this scenario, the out-of-territory LECs have no reason to make a strategic response because they are offered a competitive price by the long distance affiliates of the merged companies.

[10] A retaliatory charge could be imposed without vertical integration if the companies could distinguish traffic originating with the merged companies from traffic originating from CLECs. Alternatively, the CLECs could purchase one of the remaining independent long distance companies and set up a parallel structure to that of SBC and Verizon.

When vertical integration restricts a substantial share of the market from open competition among long distance companies, then the bargaining power of the integrated firm is increased. In the current Internet backbone (IB) segment of the industry, that result will not occur because of the wide range of Internet access firms in various places and the customer requirement to reach all of the firms. Thus a threat from SBC-AT&T to cut off interconnection with other Internet backbone providers is not credible because the SBC access customers need to reach web sites or customers served by other backbone providers. However, there is no reason to assume that the current Internet backbone will remain in its current form or that all Internet-related communications will be carried over a single interconnected network, and modified forms of the Internet could facilitate the creation of market power through the combination of vertical integration and network effects.

Consider, for example, a potential scenario after SBC merges with AT&T and Verizon merges with MCI. Real-time services such as VoIP and video conferencing require greater assurance of adequate capacity and timely packet delivery than services such as e-mail for which modest transmission delays are not significant. To promote real-time services, suppose that AT&T and MCI form a "high-quality Internet" (HQ network) for sensitive services. They agree on standards among themselves and agree to interchange traffic freely among themselves, but do not agree to interchange premium traffic with other Internet backbone providers.[11] Verizon and SBC establish VoIP and video conferencing services using the AT&T-MCI premium service. Verizon and SBC only connect into their respective captive companies and AT&T-MCI exchange traffic on a peering basis, effectively making the network a version of the pre-divestiture AT&T. They offer to connect any access provider (that meets appropriate standards), but refuse to interconnect the HQ network with the general Internet backbone. Access providers then have the option of using the general Internet (with potentially lower quality), or interconnecting with the HQ network. If the HQ network offers the same prices as other backbone companies, it will gradually attract the access providers and may become the dominant network. Other service providers could respond by forming a high-quality network of their own.[12] The effectiveness of that response would depend upon relative shares of the Internet access market and the ability of the non-ILEC access providers to coordinate their efforts. Vertical integration with no interconnection requirements creates an incentive to attempt to dominate the market if the vertically integrated company can gain an advantage over its competitors in the access market. While this particular scenario may not occur, the mergers will create opportunities to use pockets of market power and interconnection bottlenecks in a strategic manner and decrease the opportunities for stable competition among different sized firms.

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[11] In this scenario, they continue to carry "regular" traffic as well and to exchange it with other backbone providers as at present.

[12] The situation would be similar to the early 20th century efforts of the local competitors of the Bell companies to form an alternative long distance company to overcome their disadvantage from being refused service by the AT&T long distance network. At that time, the combined competitors had almost as many phones as the Bell System, but the competitors were fragmented and had difficulty coordinating their efforts against the unified Bell System. The effort to create an alternative long distance network failed and many small firms agreed to merger with the Bell companies before interconnection rights were granted in the Kingsbury Commitment.

C. Hybrid services market segment

Many future services are likely to consist of some combination of elements resembling current common carrier and Internet services. For example, Cox's version of VoIP does not use the public Internet. Calls are originated over Cox's Internet access facilities in IP format and are carried over Cox's dedicated facilities either to the terminating customer or to a point at which they are converted into standard PSTN calls and handed off to another carrier for transmission to the terminating customer. Other VoIP providers use the public Internet for transmission, but still need terminating access to standard telephones and connection with 911 services. In both implementations of VoIP, providers need varying combinations of elements from circuit switched voice service and Internet service.

The regulatory treatment of hybrid services is in flux and there are many unsettled policy issues related to hybrid services that are unrelated to the proposed mergers. However, hybrid services are especially subject to strategic manipulation after the mergers because jurisdictional and regulatory uncertainty means that questions are being raised about whether hybrid services are subject to the interconnection requirements currently imposed on common carrier services. The mergers give SBC and Verizon direct control of substantial long distance and Internet backbone facilities. They reduce the purely commercial incentive to offer interconnection to a wide variety of long distance providers. Their ability to utilize their integrated structure for strategic advantage is somewhat limited by regulatory requirements in the common carrier voice market segment and by competitive constraints in the current Internet market segment. However, the hybrid services market could more easily be monopolized in the current conditions.

5. Remedies[13]

The economic problem of potential abuse of vertical integration and network effects for strategic advantage is not a new problem. Both the FCC and the Department of Justice closely examined a wide range of observed and potential problems in attempting to develop policies to facilitate competition with the pre-divestiture AT&T.[14] A central theme in the Commission's efforts to develop competition has been the imposition of interconnection requirements. The Commission has long recognized that interconnection is a necessary condition for competition and, beginning with the 1971 Specialized Common Carrier decision, has regularly imposed interconnection conditions. Just as regularly, dominant firms have resisted interconnection or attempted to impose

[13] The remedies suggested here are designed specifically to limit the ability of the merged companies to utilize the combination of vertical integration and network effects to gain a strategic advantage over competitors. They are not designed to deal with concerns in the merger record that are not examined in this paper.

[14] For an important early example of an effort to develop competitive conditions without extensive regulatory intervention, see Jerry B. Duvall and Micahel D. Pelcovits, "Reforming Regulatory Policy for Private Line Telecommunications Services: Implications for Market Performance," FCC OPP Working Paper 4 (December 1980). For an overview of the Commission's efforts to create conditions that facilitate competition, see Gerald Brock, Telecommunication Policy for the Information Age: From Monopoly to Competition (Harvard University Press, 1994).

onerous terms on their competitors, beginning with the multi-year fight over the implementation of the 1971 interconnection requirements and continuing into current controversies over interconnection for local competition. However, the long history of disputed interconnection requirements and the many detailed interconnection agreements arbitrated under the terms of the Telecommunications Act of 1996 provide many precedents for dealing with interconnection controversies.

The proposed mergers will not be in the public interest if they facilitate the exclusion of facilities based CLECs or if they reduce the ability of competitive companies to develop new hybrid services that do not fit neatly into existing regulatory categories. However, vertical integration in general can improve efficiency and therefore the mergers can be in the public interest if appropriate safeguards against anticompetitive behavior are imposed. The necessary safeguards can be drawn directly from established policy tools. The primary requirement is strong enforceable interconnection requirements that limit the delay and cost of further arbitrations. One reasonable way of guaranteeing adequate interconnection based on existing policy would be to require each of the merged companies to allow any service provider within their respective service territories to adopt any Section 252(b) arbitrated interconnection agreement from any state within the respective territory (with appropriate modifications for any clearly state-specific terms) without regard to the specific state in which the arbitration occurred, the stated termination date of the interconnection agreement, or the specific service intended by the requesting party. Thus providers of VoIP and other hybrid services would be entitled to interconnection with the merged companies, regardless of the legal and jurisdictional classification of their services. The state arbitrations have already found that the particular terms of each agreement are a reasonable accommodation to the respective positions of the ILEC and the CLEC at the time the agreement was arbitrated. The substantial set of arbitrated agreements should be taken as settled policy toward interconnection, allowing competitive carriers to adopt one of the existing agreements rather than all parties incurring the delay, cost, and uncertainty of arbitration for new agreements.

A second requirement should be a "stand-still" requirement that prohibits the merged companies from unilaterally terminating any existing agreement for peering or provision of services for two years from the time the mergers are approved. The purpose of this provision is to provide adequate time for competitive companies to evaluate and adjust to the new industry structure created by the mergers, and if necessary to seek regulatory relief for problems not anticipated during the merger review process. The mergers will change the incentives of the merged firms in some predictable and some unpredictable ways. For example, Cox and other CLECs lease facilities from AT&T and/or MCI to supplement their own transport infrastructure. In the current market structure, AT&T and MCI leases are routine commercial transactions of mutual benefit to the parties involved. After the mergers, such leases become the provision of facilities to competitors and could lead to an effort to disadvantage competitors by cutting off access. Similarly, CLECs have negotiated various voluntary agreements for the exchange of Internet traffic with SBC and/or Verizon and the incentives to maintain those agreements may change after the merger. These issues are adjustment problems rather than long term issues with the vertically integrated market structure.

6. Conclusion

The proposed mergers should be allowed subject to conditions designed to ensure that the merging companies cannot use the new market structure to foreclose competition from facilities-based CLECs and providers of hybrid common carrier and Internet services. Facilities-based CLECs and providers of hybrid services require interconnection and access to facilities and services provided by ILECs at reasonable prices. The technological trend of providing previously distinct services over the Internet or other IP platforms cannot be assumed as a guarantee that future services will be provided on a competitive basis. .

If telecommunication continues to evolve toward an integrated IP platform, as many experts predict, then the most significant competition is likely to be for providing individual customers with broadband access. However, that competition will occur not only over price and quality of the access itself, but also over the characteristics of the services offered and the interconnection terms that the access providers obtain. The proposed mergers create the possibility of using the new market structure to disadvantage other access providers. If one or both of the resulting integrated firms is able to use the new market structure to gain a dominant position in the broadband access market, it will be very difficult (if not impossible) to restore competition.

Because the cost of bulk transport is so low, there is no substantial economic difference between local and long distance services. However, the "two-level" structure of the current market provides a safeguard regarding interconnection. In the numerical models discussed in section 3 above, the existence of long distance companies with interconnection to all local providers eliminates the incentive of the larger provider to attempt to drive out the smaller provider. Similarly, in the current Internet market, the ability to connect indirectly through Internet backbone providers increases the incentive to voluntarily reach direct connections among competing companies. Vertical integration can eliminate one of the two independent routes for traffic to flow from one carrier to another. That is not a problem so long as interconnection is available on favorable terms from the remaining route, but it increases the incentive for the larger firm to refuse voluntary interconnection. Thus it is appropriate to strengthen local interconnection requirements for the merged companies in order to compensate for their changed incentives after the merger.

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EDUCATION

B.A. (magna cum laude) Harvard University 1970, applied mathematics.

Ph.D. Harvard University 1973, economics with specialization in industrial organization, dissertation advisor Richard Caves.

RESEARCH INTERESTS

Telecommunication policy, Internet policy, regulation and technological progress, the economics of the telecommunication industry, and interconnection of network services. Current research examines the relationship between the regulated voice communication sector and the unregulated data communication sector, looking for insight regarding factors that facilitate technological progress and flexibility in economic institutions.

EXPERIENCE

2003-present: Professor of Telecommunication, Public Policy and Public Administration, The George Washington University.

2004-present: Director, MPP and Telecommunication M.A. degree programs

1990-2003: Professor of Telecommunication, The George Washington University.

1994-2001: Director, Graduate Telecommunication Program, The George Washington University.

1987-1989: Chief, Common Carrier Bureau, Federal Communications Commission; responsible directly to the Chairman and Commissioners for all aspects of common carrier regulation, including tariffs, accounting, licensing, and new policy initiatives; issued final orders on delegated authority or prepared

recommended orders for Commission vote; supervised staff of 300 economists, engineers, attorneys, accountants, and other professional and support personnel; member of the career Senior Executive Service.

1986-1987: Chief, Accounting and Audits Division, Common Carrier Bureau, FCC; responsible to the Bureau Chief for the administration of accounting and separations rules, the development of cost allocation methodologies, and the auditing of telephone company compliance with FCC financial rules; supervised staff of 65 economists, accountants, auditors, and support personnel; promoted into the career Senior Executive Service in December 1986.

1983-1986: Economist, Office of Plans and Policy, FCC; responsible for economic research and policy analysis for major FCC initiatives.

1979-1983: Economic consultant; major projects included work for the Department of Justice in the suit that led to the divestiture of AT&T, work for the Federal Trade Commission in its program to evaluate the effects of past antitrust enforcement, and work on a private antitrust suit.

1978-1979: Associate Professor and Department Chairman, Economics Department, Bethel College, St. Paul, Minnesota; responsible for teaching undergraduate economics courses and revising the economics curriculum.

1973-1978: Assistant Professor, Economics Department, University of Arizona; taught undergraduate and graduate courses in economic theory and industrial organization, conducted economic research, advised students, and participated as a consultant and expert witness in computer industry antitrust litigation.

PUBLICATIONS

Books

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"The Economic Efficiency Benefits of the Current Subscriber Line Charge" (Office of Plans and Policy, Federal Communications Commission, 1987)

Expert Testimony

U.S. Federal Court (Los Angeles), California Computer Products v IBM, testimony on market definition in the computer industry on behalf of California Computer Products in antitrust litigation.

Canadian Radio and Television Commission, testimony on U.S. experience with competition on behalf of Unitel in proceeding concerned with allowing long distance competition in Canada.

Canadian Radio and Television Commission, testimony on behalf of Unitel in proceeding concerned with the regulatory structure for long distance services in Canada.

Board of Tax Appeals, Ohio, testimony on behalf of MCI on FCC regulation categories as they relate to MCI's public utility status under Ohio law.

Board of Tax Appeals, Ohio, testimony on behalf of MCI on FCC regulation of access charges as it relates to Ohio's gross receipts tax.

State Tax Appeal Board of Montana, testimony on behalf of AT&T on FCC regulation of customer premises equipment as it relates to Montana tax classifications.

Canadian Radio and Television Commission, testimony on behalf of the Canadian Cable Television Association in proceeding concerned with allowing local telephone competition in Canada.

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Federal Communications Commission, written submission entitled "Interconnection and Mutual Compensation with Partial Competition" submitted on behalf of Comcast Corporation, 1994.

Federal Communications Commission, written submission entitled "Incremental Cost of Local Usage" submitted on behalf of Cox Enterprises, 1995.
[The three FCC papers above, along with an introduction, were distributed under the title "The Economics of Interconnection" by Teleport Communications Group, 1995.]

Massachusetts Department of Public Utilities, testimony on behalf of Teleport Communications Group in proceeding concerned with allowing local telephone competition in Massachusetts.

Public Service Commission of Maryland, testimony on behalf of Teleport Communications Group in proceeding concerned with allowing local telephone competition in Maryland.

Illinois State Court, testimony on behalf of AT&T Wireless in Original IFPC Shareholders, Inc. v. AT&T Wireless Services, Inc., et al (1998).

Canadian Radio and Television Commission, PN 2003-10, written testimony regarding the economic effects of bundling filed on behalf of Rogers Communications and the Canadian Cable Television Association.