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ORIGINAL

November 13, 1998

VIA HAND DELIVERY

Ms. Blanca Bayó
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

Re: Undocketed Special Project No. 980000A-SP - Fair and Reasonable Residential Basic Local Telecommunications Rates

Dear Ms. Bayó:

Enclosed are 15 copies of FCCA's Post-Workshop Comments to be filed in the above docket.

I have enclosed an extra copy of the above document for you to stamp and return to me. Please contact me if you have any questions. Thank you for your assistance.

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Sincerely,

Joe McGlothlin

Joseph A. McGlothlin

ORIGINAL

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

Fair and Reasonable Residential Basic Local Telecommunications Rates.	)	Undocketed Special Project No. 980000A-SP
	)	Filed November 13, 1998

FCCA'S POST-WORKSHOP COMMENTS

The Florida Competitive Carriers Association ("FCCA"), hereby submits its Post-Workshop Comments. In these comments, FCCA will summarize the key points from earlier oral and written submissions -- which points, FCCA submits, remain valid.

The Legislature directed the Commission to:

> Study and report... the relationships among the costs and charges associated with providing local basic service, intrastate access and other services provided by local exchange telecommunications companies.

Further, the Commission is to:

> Report... its conclusions as to the fair and reasonable Florida residential basic local telecommunications service rate considering...
>
> (1) affordability,
>
> (2) value of service,
>
> (3) comparable residential basic local telecommunications services in Florida, including the proportionate share of joint and common costs.

To carry out this legislative mandate, the Commission must (1) bear in mind the purpose of its exercise, and (2) avoid misconceptions that would distort its analysis.

exists. When that comparison is made, FCCA submits, the Legislature will see that in the aggregate residential customers are profitable to serve.

It has also been suggested that one purpose of the Commission's report is to help gauge whether the local exchange companies' business and residential rates should be restructured or rebalanced. At the outset, the FCCA regards this notion as counterintuitive. The Legislature has expressed clearly its desire to foster competition in the local exchange market. It would be illogical for the Legislature to prescribe a monopoly-like rate structure at the same time it is actively seeking to increase competition so that the market can perform the functions for which it used regulation as a substitute in the past.

That being said, one theme apparently associated with the idea is that increasing the rates for basic, local residential service may have the effect of spurring competition in the local exchange market. This rationale embodies a serious misconception. The Commission should reject it. For competition to occur in the local residential market, it must be possible for a new entrant to mass market ubiquitous local service and provision that service inexpensively. The only way in which a new entrant can accomplish this now, and for the foreseeable future, is by ordering everything necessary to provide residential service from the network of the incumbent local exchange company. Presently, an expensive structural barrier exists that would prevent competition from flourishing in the local exchange market, even if the Commission were to increase local residential rates significantly. For instance, if a new entrant were to order a loop, switch, and other elements needed to provide local

residential service from BellSouth, BellSouth would insist on dismantling the loop and switch manually and would offer them as separate components, at a PSC-prescribed cost to the new entrant of $178.00. To this amount, the new entrant would have to add its own cost of manually recombining the facilities needed to make customer migration possible. In short, the service that costs only $1.45 to perform electronically would cost the new entrant $178.00. None of this cost is necessary. Further, even if this cost is recovered over an entire year, it amounts to approximately $15.00 per month. In other words, even if the Commission were to increase local residential rates by almost $15.00 per month, the increase would not result in an increase in competition, because of the barrier to entry presented by the non-recurring charge. Removing unwarranted, existing barriers to entry would do far more than an increase in residential rates to foster competition in the local residential market.

To further illustrate this latter point, FCCA is attaching a COMPTEL publication entitled "Broadening The Base: Combining Network Elements To Achieve Widespread Competition," which FCCA incorporates by reference.

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CompTel

Broadening the Base:

Combining Network Elements To Achieve Widespread Local Competition

This white paper is sponsored by the Competitive Telecommunications Association (CompTel). CompTel is a national industry association representing a broad spectrum of members pursuing a variety of strategies to compete in the local, long distance and information services markets. Of paramount interest to CompTel and its members is assuring that the conditions for competition exist across the entire market, bringing the benefits of competition to residential and business consumers throughout the nation.

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the basic components of exchange service: the loop, local switching and shared transport.[2] As explained below, a software-based solution known as "recent change" can be readily adapted to provide entrants access to combine these particular network elements in a nondiscriminatory manner. This electronic solution stands in stark contrast to the proposals of the monopoly ILECs that involve needlessly complex, manual systems and unnecessary collocation requirements that serve no purpose beyond inflating their competitors' costs. Of course, the consequence of complicated and expensive systems to combine network elements would be truncated local competition, with fewer choices and higher prices for consumers -- and higher profits for ILECs.

In the paper which follows, CompTel demonstrates that access to the recent change capabilities of the local switch to combine network elements will be necessary if the Act's promise of widespread and rapid competition is to become a reality. Without an automated system to combine elements, mass market competition for average consumers will not develop. And, if widespread local competition does not develop, the Act's parallel policies reforming access charges, universal service and the removal of interLATA restrictions on the Bell Operating Companies will fail. But the ultimate harm will be suffered by the intended beneficiary of the Act -- the American consumer -- whose prices and service choices will be artificially constrained.

II. The Importance of Achieving Widespread Competition

A. Background

The federal Act imposes a clear and unambiguous requirement on incumbent local exchange carriers to make the existing network available to entrants on a non-discriminatory

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[2] The remaining network elements necessary to provide local exchange and exchange access service (such as signalling, operator functions and directory access) can typically be accessed through the local switching network element for an additional charge.

basis, at cost-based rates. The cornerstone of this obligation is described in Section 251(c)(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 on rates, terms, and conditions that are just, reasonable, and nondiscriminatory in accordance with the terms of the agreement and the requirements of this section and section 252. An incumbent local exchange carrier shall provide such unbundled network elements in a manner that allows requesting carriers to combine such elements in order to provide such telecommunications services.

This provision makes clear that entrants have a right to access network elements individually, as well as a right to combine network elements to provide service. Importantly, in its decision implementing the local competition provisions of the Act,[3] the Federal Communications Commission (FCC) did not directly address how entrants would be provided access to combine elements obtained from an ILEC. Rather, the FCC ordered the ILEC to combine elements on behalf of the entrant (compensated for the cost that the ILEC incurred) and, where network elements were already combined, the FCC prohibited the disruption of such combinations, unless requested by the entrant.[4] Because the FCC expected that the ILECs would combine requested elements, it was unnecessary for it to also define the access methods that an ILEC would provide an entrant to combine the elements itself.

On appeal, the Eighth Circuit vacated the FCC's rules, finding that the federal Act did

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[3] Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, First Report and Order, 11 FCC Rcd 15499 (1996), aff'd in part and rev'd in part, Iowa Utilities Board v. FCC, 120 F.3d 753 (8th Cir. 1997), cert. granted ("Local Interconnection Order").

[4] 47 CFR § 51.315(b) (1996) provided that: "Except upon request, an incumbent LEC shall not separate requested network elements that the ILEC currently combines."

not impose an obligation on the ILEC to combine elements for the entrant:

> The FCC and its supporting intervenors argue that because the incumbent LECs maintain control over their networks it is necessary to force them to combine the network elements, and they believe that the incumbent LECs would prefer to do the combining themselves to prevent the competing carriers from interfering with their networks. Despite the Commission's arguments, the plain meaning of the Act indicates that the requesting carriers will combine the unbundled elements themselves; the Act does not require the incumbent LECs to do all of the work. Moreover, the fact that the incumbent LECs object to this rule indicates to us that they would rather allow entrants access to their networks than have to rebundle the unbundled elements for them.[5]

The key assumption underlying the Eighth Circuit's opinion is that an ILEC would prefer to provide the entrant access to combine network elements than to combine the elements on their behalf. This assumption has never been tested, however, because the minimally acceptable access arrangements to combine elements under the Act have not yet been defined by regulators. Although the Eighth Circuit's decision is on appeal to the Supreme Court, the full implication of this decision must be addressed in the interim so that: (a) the entrant's right to access and combine elements can be enforced, (b) local competition can proceed, and (c) the appropriate standard can be applied to any Section 271 application for in-region, interLATA authority. The core issue created by the Eighth Circuit decision is relatively straight-forward: How shall the incumbent LEC provide entrants access to combine network elements, including the recombination of previously connected elements requested by an entrant?

Before addressing the specific combination/recombination systems necessary to support *widespread* local competition, however, it is important to appreciate that the loop/switch combination is not the only critical issue. Entrants also need access to combine

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[5] Iowa Utilities Board v. FCC, 120 F.3d 753, 813 (8th Cir. 1997), cert granted. ("Iowa Utilities Board")

combination procedures for itself that are the most efficient possible, providing entrants nondiscriminatory access to comparable procedures should also foster competition, promote lower prices and provide consumers with maximum choice. Nondiscrimination is not simply a legal requirement, it is also a standard necessary to maximize the benefits of competition for consumers.

In addition to being nondiscriminatory, the access method used to combine network elements should also have widespread application in order to maximize consumer benefits. That is, the method itself should not create entry barriers or impose unnecessary costs or delay. This criterion is also recognized by the Eighth Circuit which determined that an entrant cannot be required to own telecommunications facilities before it may use network elements to provide service:

> ... the plain language of subsection 251(c)(3) indicates that a requesting carrier may achieve the capability to provide telecommunications services completely through access to the unbundled elements of an incumbent LEC's network. Nothing in this subsection requires a competing carrier to own or control some portion of a telecommunications network before being able to purchase unbundled elements.[7]

Finally, it is equally important to understand one issue *not* raised by the Eighth Circuit's opinion. There should be no more debate concerning the entrant's right to provide service entirely using network elements obtained from the incumbent LEC.[8] Therefore, the sole issue created by the Eighth Circuit's decision is not *whether* entrants can use network

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[7] Iowa Utilities Board, 120 F.3d at 814.

[8] In Iowa Utilities Board (120 F.3d at 815) the Court made clear:

> We conclude that the [Federal Communications] Commission's belief that competing carriers may obtain the ability to provide finished telecommunications services entirely through the unbundled access provisions in subsection 251(c)(3) is consistent with the plain meaning and structure of the Act.

elements in this manner, but only *how* the elements will be combined. Furthermore, because how network elements can be combined is affected by the manner in which they are originally separated, it is important that both processes (i.e., separation and recombination) be addressed together.

Overall, the above discussion provides a basic policy framework to evaluate alternative methods to access and combine network elements. The goal should be the adoption of whatever method is best suited to promote competition. Access methods should be *least*-cost and as simple, reliable and as automated as the systems used by the ILECs themselves. Any deviation from these standards will distort competition, increase prices and reduce the choices available to consumers.

C. The Core Policies of the Telecommunications Act Depend on Achieving Widespread Local Competition

One important measure of the success of the Telecommunications Act is by whether consumers actually enjoy local choices, lower prices and innovative services. Success by these metrics means that competition must not occur solely in metropolitan areas for large business customers, but must extend broadly throughout the market to average consumers, residential and small businesses alike. The level of local competition will be directly decided by the systems used to provision and combine network elements. Efficient, automated systems will promote competition; while complex and burdensome manual processes will not.

The Congressional vision of a fully competitive telecommunications market cannot be realized unless the principal means to serve the broad market -- network elements[9] -- are

---

[9] Incumbent LECs may argue that service resale -- i.e., the resale of retail services at a wholesale discount as described is Section 251(c)(4) -- is sufficient to promote widespread local competition. Such a claim, however, is false. Although service-resale may be an appropriate

> ... under the provisions of section 251, a competitor will be able to purchase unbundled network elements to compete with the incumbent LEC's offering of local exchange access. Therefore, so long as an incumbent LEC is required to provide unbundled network elements *quickly*, at economic cost, and in *adequate quantities*, an attempted price squeeze seems likely to induce substantial additional entry in local markets.[12]

If entrants cannot use network elements "rapidly" and in "adequate quantities" -- that is, as quickly and ubiquitously as carriers today use access services -- then network elements are not a viable substitute to access service and the FCC's access reform initiative fails. Only if systems provide entrants an automated ability to combine and use network elements to compete across the same set of customers that today obtain long distance services over switched access will network elements become the versatile entry strategy assumed by the Access Reform Order.

Second. A key criteria of the universal service system adopted by the Federal-State Joint Board is that the universal service system should be competitively neutral.[13] Competitive neutrality means that an entrant has the same effective opportunity to win a customer and earn support (if available) as the incumbent. As the FCC stated when it extended universal service support to carriers providing service using network elements:

> If we interpreted the term "own facilities" not to include the use of unbundled network elements, the end result would be that the entry strategy that includes the exclusive use of unbundled network elements would be the *only* form of entry that would not benefit from, either directly or indirectly, universal service support. A carrier that has constructed all of its facilities would certainly be eligible for support under section 214(e)(1), as would an entrant that offers service through a mix of facilities that it had constructed and resold services. A pure reseller indirectly receives the benefit of the support

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[12] Access Reform Order, paragraph 279.(emphasis added).

[13] Federal-State Joint Board on Universal Service, CC Docket No. 96-45, Recommended Decision, 12 FCC Rcd at 101 (1996).

payment, because, as discussed above, the retail rate of the resold service already incorporates the support paid to the underlying incumbent carrier. Such an environment -- in which some forms of entry are eligible for support but one form of entry is not -- is not "competitively neutral."[14]

The universal service reform called for by the Act can only be "competitively neutral" if entrants have a meaningful and nondiscriminatory ability to serve customers using network elements -- a result possible only if entrants have fully automated, nondiscriminatory access to combine network elements to provide service.[15]

Third. The competitive reason that RBOCs seek interLATA authority is because it will provide them the ability to compete offering packages of local and long distance services (i.e., to compete as a one-stop provider).[16] Once an RBOC obtains the legal authority to provide in-region, interLATA services, it will be able to immediately offer one-stop packages to each and every customer in its territory.

The combined effect of a market-preference for "one stop" shopping -- and the RBOCs full participation as a one-stop full-service provider -- will have a dramatic effect on

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[14] In the Matter of the Federal-State Joint Board on Universal Service, First Report and Order, Federal Communications Commission Docket CC 96-45, May 5, 1997 paragraph 165. (footnotes omitted).

[15] Furthermore, cost studies used to determine the potential subsidy payment only consider the cost of the network facilities/elements involved, and do not make any allowance for the higher cost that an entrant would incur to needlessly recombine elements gratuitously separated by an incumbent.

[16] This characterization of the RBOC's strategic intentions is easily confirmed by their entry behavior to date. No RBOC has mounted a serious effort to compete as a conventional long distance carrier outside of its region (that is, by trying to provide long distance service to a customer obtaining local service from another ILEC). The explanation for this (non)entry pattern is simple -- without the ability to offer a *package* of local and long distance service, the RBOC has no comparative advantage in the long distance market. Of course, the reverse is equally true -- without the ability to offer local in conjunction with long distance service, (the companies formally known as) long distance carriers have no practical ability to compete against an RBOC.

III. The Three Options to Combine Network Elements

A. Prohibit the Unnecessary Separation of Network Elements

As a threshold observation, it should be understood that no valid public policy is advanced by separating network elements that are currently combined. Separating network elements creates unnecessary costs that must ultimately be embedded in the prices paid by consumers. In those circumstances where a network element must be physically separated in order to effect a new configuration sought by an entrant -- for instance, where a loop is to be cross-connected to a new entrant's facilities -- then physical separation may be necessary. To demand separation simply for the sake of separation, however, wastes the resources of both the incumbent and the entrant, disrupts customers, and slows competitive activity.

Nevertheless, the Eighth Circuit has held that the federal Act sanctions the separation-for-no-purpose strategy embraced by the RBOCs. The best response to the RBOC's demand is for a state commission to determine that it has the authority under state law to require that combinations be provided without disruption. This is the path chosen by a number of state commissions, including:

> Michigan: The Commission therefore concludes that the requirement to combine elements at the request of the competitive LEC is not inconsistent with Section 251(c)(3) of the federal Act and may be imposed pursuant to the provisions of state law.[18]
>
> Washington: This Commission has an obligation to implement Washington statutes governing quality of service and incumbent discrimination against new entrants. To the extent those statutes create a need for incumbents to offer element combinations, the Commission must require them to offer combinations to the extent the Commission is able to do so. The following factors [listing technical feasibility,

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[18] Order Adopting Arbitration Decision, Michigan PSC Case No. U-11551 at 6.

-discrimination, and quality of service] compel the Commission to resolve the pending issue in this proceeding by requiring GTE to combine elements from the Network Interface Device (NID,) to the switch[.][19]

Colorado: . . . we [the Colorado PUC] determine that the Commission is empowered under State Law to require USWC to combine network elements for competitors as part of its obligations as an incumbent local exchange carrier.[20]

Only if a state determines that it does not have independent authority to prohibit the gratuitous separation of network elements that are already combined does the issue turn to deciding what method of separation/recombination complies with federal law. Two basic approaches have been identified: (a) the manual processes and collocation forms offered by the incumbent monopolists, or (b) access to automated systems (i.e., the recent change capabilities of the local switch) requested by potential competitors.

B. The ILEC Monopoly Proposal: Manual Processes and Unnecessary Collocation

Widespread local competition -- that is, competition for average customers regardless of geographic location -- can only develop if network elements become as simple to use by an entrant as they are by the incumbent. It must be as easy for a consumer to change local carriers in the future as it is to change long distance carriers today. Importantly, the Act intended to create just such an environment by requiring that entrants be afforded access to the ILEC's network on the same basis as the incumbent.

---

[19] Order Partially Granting Reconsideration, Washington Utilities and Transportation Commission Docket No. UT-960307, March 16, 1998, at Section IV.

[20] Decision Regarding Commission Authority to Require Combination of Network Elements, Docket 96S-331T, February 18, 1998, at 2-3. Although the Commission has decided it has the legal authority to require combinations, it has not yet completed the evidentiary hearings necessary to invoke the authority.

Importantly, the ILECs have largely automated their exchange networks. Indeed, a fundamental trend in telecommunications technology has been the automation of network provisioning systems. Over the past hundred years, telecommunications engineers have diligently worked to reduce potential points of failure and human intervention wherever possible. This principle was recently summarized by noted network engineer, Amos Joel before the New York PSC:[21]

> A simpler network with fewer components minimizes the number of points of failure, which are places in the network where manual activity occurs and creates an opportunity for error. It also permits more efficient trouble detection, identification, and repair, improves efficiency, and lowers costs. Another important theme has been to reduce the amount of manual activity needed to make the network operate. Like unnecessary hardware, manual activity brings with it opportunity for human error, as well as increases in delay and cost, that generally can be avoided through automation.[22]

It is useful to contrast this basic principle to the proposals offered by the ILECs. In response to the Eighth Circuit decision, the ILECs have offered a variety of proposals which they claim provide entrants access to combine network elements.[23] Although these proposals

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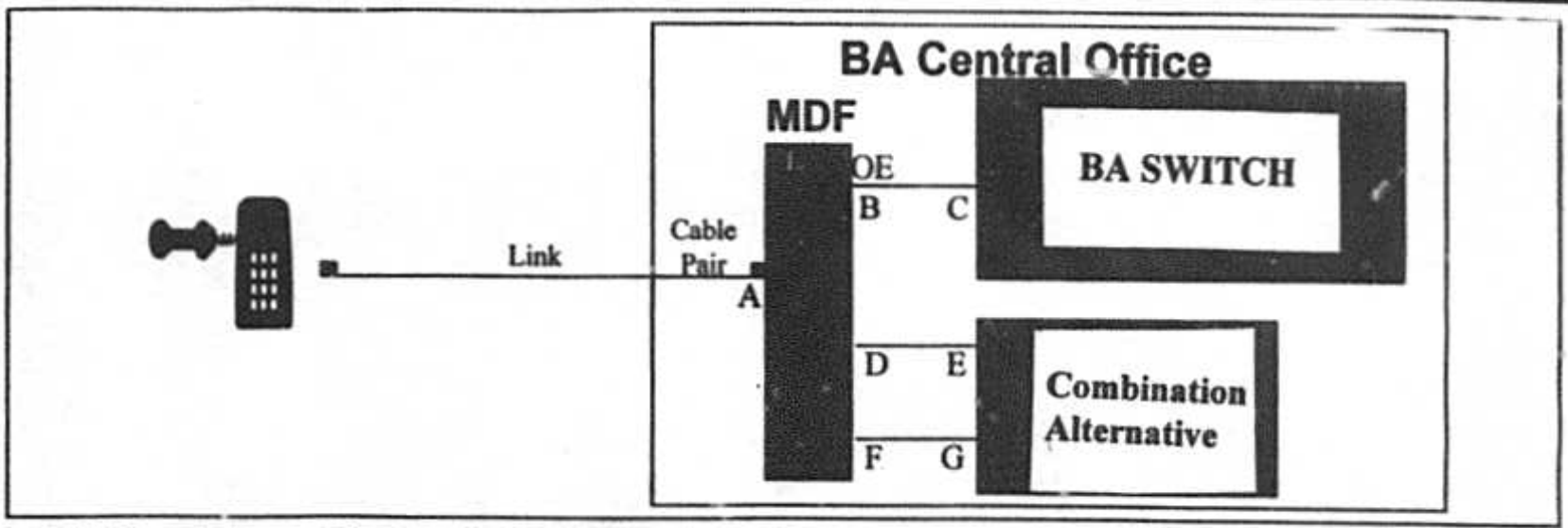
[21] Mr. Joel, formerly with Bell Labs, is a recognized expert in telecommunications network design. Mr. Joel has been President of the Institute of Electrical and Electronics Engineers (IEEE) Communications Society, and has been awarded the New Jersey Research & Development Council's Outstanding Patent Award (as a co-recipient), the IEEE Alexander Graham Bell Medal (co-recipient), the Franklin Institute-Stuart Ballantine Medal, the International Telecommunications Union Centenary Prize, the Columbian Medal, the Kyoto Prize from the Inamori Foundation of Japan, and the IEEE's Medal of Honour. In 1993, President Clinton awarded Mr. Joel the National Medal of Technology.

[22] Affidavit of Amos E. Joel, Jr. Proceeding on Motion of the Commission to Examine Methods by which Competitive Local Exchange Carriers Can Obtain and Combine Unbundled Network Elements, State of New York Public Service Commission, Case 98-C-0690, paragraph 22, June 15, 1998. Affidavit sponsored by AT&T.

[23] There are differences among the RBOCs concerning which network elements they will refuse to combine on behalf of the entrant. For instance, some RBOCs are willing to combine the loop with dedicated transport (i.e., the "extended loop") while others will not. What each of the RBOCs has in common, however, is the refusal to combine the loop and local switching network elements that are the subject of this white paper.

Bell Atlantic

Conversion of existing BA-NY end user to UNEs



1) CLEC cross-connects for loop (F-G) and port (D-E) tie cables, are pre-wired in collocation arrangement.
2) BA receives one LSR including Loop and Port tie cable assignment information.

Date Due Minus Two (days)

1) BA frame technician confirms correct telephone number is on loop at (A).
2) BA frame technician lays in loop cross-connect (A-F) "dead ended" at MDF (A).
3) BA frame technician runs port cross-connect (B-D). Dial-tone is now bridged through CLEC collocation arrangement.

Date Due (Cutover)

1) BA cutover coordinator contacts frame (MDF) and RCMAC (line translations) technicians.
2) BA frame technician re-verifies correct telephone number is on loop at (A).
3A) BA RCMAC technician activates unbundled port line translations.
3B) BA frame technician lifts A-B connection at (A), and places cross-connect (A-F) at (A). Cutover is complete.
4) BA frame technician removes A-B cross connect.

Figure 1 - Bell Atlantic's Illustrations of ILEC Combination Proposals

Appendix A discusses in detail the various manual collocation proposals offered by the ILECs, and more fully identifies the core discrimination embedded in each. Although these proposals may differ in detail, they all display the same discrimination: each requires the manual handling of two network elements (the local switch and local loop) that would be electronically reconfigured if that same customer chose the ILEC.[29]

The manual collocation proposals offered by the ILECs adversely effect local competition. As Appendix A explains, these proposals would:

(1) impose unnecessarily prolonged service interruptions for customers when they change to a CLEC as their local service provider;

(2) delay the CLECs ability to enter the market via network element combinations;

(3) degrade the quality of the end user customer's service;

(4) impose wasteful and unnecessary costs on CLECs; and

(5) severely restrict the rate at which CLECs could switch customers over to UNE-based service after the collocation arrangement is established.

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[29] Generally, the only time that an ILEC manually configures a premises' loop and switch connection is when the facilities are initially installed. This non-recurring event can continue to be performed by an ILEC even in an unbundled network element context since the functionality of the elements is not established by this physical connection. Alternatively, in those instances where an initial connection has not yet been established, an ILEC could provide the serving-entrant access to establish the initial connection with a right to recover this non-recurring cost from future entrants serving that premise. Since such an approach raises administrative difficulties (and costs) that are not necessary, this is not the alternative that CompTel recommends.

In summary form, the principal benefit of the recent change approach is that it can fully automate the combining of the loop and local switching network elements so central to widespread local competition. Under the ILEC's combination proposals, the ILEC alone is able to combine elements and provide service using automated systems -- entrants are relegated to manual processes fraught with human intervention. The recent change proposal, however, builds upon existing software to create a software-based alternative that is comparable to the access that the ILEC provides itself.

The recent change system is used by the ILECs today to update and assign the features and functions of the local switch. For instance, the recent change process is used by the ILEC when a new customer occupies an existing premise. Typically, physical facilities are installed to serve a particular premise, independent of its current occupant. As customers come and go, these physical facilities are not disrupted. Rather, the incumbent electronically defines the current occupant's service.[30]

This same process can be used to provision the loop and local switching network elements to a new entrant. The recent change process can electronically separate the functionality of the local switch from the functionality of the local loop.[31] In this way, the ILEC's legal right to separate the elements is honored, but the separation occurs in the most efficient manner possible. Then the same process can be used by the CLEC's provisioning system to recombine these elements, restoring service to the consumer with the least cost and

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[30] For instance, Bell Atlantic has testified that for customers who wish to terminate service, Bell Atlantic typically issues and provisions a service disconnection order using purely electronic means, and when a new customer moves into a location after a disconnect order has been implemented and orders basic service, no human being has to do anything to complete the provisioning of the service request. See Testimony of Thomas M. Aulisio, Bell Atlantic Massachusetts Department of Public Utilities, DPU 96-73/74, et. al., December 4, 1997. pp. 26-33.

[31] Appendix C explains the legal sufficiency of the recent change process to unbundle the local loop and local switching network elements.

minimal disruption. The nondiscrimination standard is satisfied because similar systems are used whether the customer chooses the entrant or the incumbent.

Furthermore, the recent change alternative is inherently more efficient and less costly than the manual systems being proposed by the ILECs. Figure 2 below contrasts the *total* steps needed to combine network elements using recent change with those steps that are *common* to each of the proposals of the ILECs.[32] As shown in Figure 2, the recent change option eliminates 12 manual steps and substitutes a single electronic event.

By relying of automated, software-based systems to separate and recombine network elements, the recent change alternative is capable of providing customers the same service intervals when they change local carriers as they today enjoy when changing long distance carriers. Achieving such parity is not only sound policy because it promotes fair competition between today's long distance carriers and the incumbent LEC in the full service marketplace, but it is also necessary to satisfy an important FCC rule applicable to the local switching network element, 47 C.F.R. § 51.319(c)(1)(ii):

> An incumbent LEC shall transfer a customer's local service to a competing carrier within a time period no greater than the interval within which the incumbent LEC transfers end users between interexchange carriers, if such transfer requires only a change in the incumbent LEC's software.

Of course, because each of the ILEC's proposals requires multiple manual steps to combine elements, the ILEC proposals would allow them to avoid this rule and thus assure that it would always be simpler for a customer to move its long distance service to the ILEC than to change its local service to its current long distance provider.

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[32] The steps in Figure 2 are developed from the Bell Atlantic - New York exhibit explained in the previous section (shown as Figure 1). As discussed, the listed steps are only those activities which are common to each of the ILEC proposals -- in addition to these steps, each ILEC alternative has other unique requirements that are avoided by recent change.

In addition to being more efficient and nondiscriminatory, adapting the recent change process to the purpose of combining the loop and local switching network elements is also a logical next step to implementing the overall framework of the Act. First, entrants are *already* entitled to access the recent change process because it is a inherent capability of the local switch:

> CFR § 51.319 (c)(1)(i) -- Local Switching Capability
>
> (C) all features, functions, and capabilities of the switch, which include, but are not limited to:
>
> (1) the basic switching function of connecting lines to lines, lines to trunks, trunks to lines, and trunks to trunks, as well as the same basic capabilities made available to the incumbent LEC's customers, such as a telephone number, white page listing, and dial tone; and
>
> (2) all other features that the switch is capable of providing, including but not limited to custom calling, custom local area signaling service features, and Centrex, as well as any technically feasible customized routing functions provided by the switch. [33]

Processes required to access the recent change capability of the switch also are part of the operations support systems (OSS) network element. In the environment which preceded the Eighth Circuit's decision, the FCC had determined that entrants only required indirect access to the recent change process -- i.e., that the entrant would request the activation/deactivation of features, functions and capabilities of the switch, while the ILEC would process the actual request.[34] The Eighth Circuit's view that the incumbent LEC should not "do all the work," however, now means that entrants should be provided a direct mechanism to effect changes in their subscribers' services by directly accessing the network

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[33] 47 C.F.R. § 51.319(c)(1)(i)(C).

[34] Interconnection Order at para. 415.

elements they have obtained for the ILEC. Recent change accomplishes this result.

Second, the need to modify recent change software so that entrants would have direct access to define their own customers' services would have arisen eventually, even if the Eighth Circuit had not created an immediate need to provide entrants access to combine network elements. As local competition develops, it is reasonable to expect that entrants would seek improvements in switch software to gain greater autonomy from their incumbent rival.[35] The use of recent change as a method to combine network elements may have accelerated this trend, but its end result -- the entrant having an ability to control its customers' services without interference from the ILEC -- is the inevitable consequence of creating a nondiscriminatory local switching network element that treats all providers the same.

Third, the ILECs have already shown that the recent change process can be selectively opened because they today allow some *customers* this access to configure their own Centrex services. It is now time that the same approach can be modified to provide *competitors* access to their subscribers. Furthermore, at least one vendor has indicated that it could quickly -- i.e., within six months -- develop software that would work with existing ILEC systems.[36] The issue is not whether the recent change process *can be* opened, the only question is whether it *will*.

Finally, the recent change alternative is the only alternative compatible with

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[35] Improving switch software has been central to the development of competition. Equal access essentially made one function of the local switch -- its use to originate/terminate long distance traffic -- available to multiple carriers. IntraLATA equal access applied this same principle to a larger base of traffic. Providing entrants direct control of the recent change process for their own customers is simply an extension of the underlying trend to redefine the local switch as a common resource that "houses" more than one competitor.

[36] See Presentation of COMMTECH Corporation, Open Forum Concerning Methods to Combine Network Elements, Federal Communications Commission, June 4, 1998.

the requirements of the 1996 Act and the holdings in Iowa Utilities Board v. FCC.[40] The recent change process is an existing, well-established functionality of the ILECs' local switching network element. Requesting carriers have the right to use these capabilities for any purpose including for the purpose of combining network elements.[41]

Significantly, there is nothing in the federal Act, industry precedent or the FCC's Interconnection Order to support the proposition that unbundling requires the *physical* separation of network elements. Network elements in general, and the unbundled local switching network element in particular, are defined by their *functionality*. Unbundling occurs when the *functionality* of one element is separated from the *functionality* of another. Recent change separates the functionality of the local switch from the functionality of the local loop in the most efficient manner possible, thereby satisfying the Department of Justice's requirement that ILECs who choose to separate network elements should be required to do so in a manner that permits the most efficient recombination of those elements and minimizes the costs imposed on CLECs.[42]

In contrast, limiting CLECs to collocation and other manual methods of combining network elements, violates both the Act and the Eighth Circuit's decision. The ILEC's proposals discriminate against competitors by imposing on them costs, difficulties, delays, and other limitations not incurred or experienced by the ILECs when they provide service over the same network elements. Further, these proposals impose on the CLEC a facilities-requirement that squarely contradicts the Eighth Circuit's admonition that no such

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[40] Iowa Utilities Board v. FCC, 120 F.3d 753 (8th Cir. 1997), *cert. granted*.

[41] 47 C.F.R. § 51.309(a) ("An incumbent LEC shall not impose limitations, restrictions, or requirements on requests for, or the use of, unbundled network elements that would impair the ability of a requesting telecommunications carrier to offer a telecommunications service in the manner the requesting telecommunications carrier intends.").

[42] Letter from Joel L. Klein, Assistant Attorney General, Department of Justice, Antitrust Division, to John O'Mara, Chairman, New York Public Service Commission, dated April 6, 1998, at 2 ("Letter from Joel Klein").

The clear dichotomy between these proposals was eloquently summarized by Mr. Joel:

> Having reviewed the MDF [i.e., collocation] and the recent change methods proposed for combining network elements, for me, the choice among them is clear cut. I cannot recommend using the various MDF jumper methods to separate and recombine network elements. Those methods add significant amounts of manual processing and rely heavily on outdated equipment. At best, they would make the network less reliable, delay provisioning, and add needless cost; they also seem unlikely to be able to support an active, competitive market. Given the long history of efforts by engineers to eliminate manual processes and replace reliance on equipment with reliance on software, the MDF jumper methods will impose upon CLECs trying to compete in the 21st century a network design based upon 19th century ideas. Because it does not further any of the criteria for evaluating changes in network design, but actually undermines them, it is not an acceptable engineering solution.
>
> The recent change process, by contrast, seeks to capitalize on the improvements and efficiencies engineers have introduced into the network. As a solution that takes advantage of the enhanced functionality of the switch made possible by stored program control, it is consistent with current approaches to network engineering. It is more reliable, more functional, and more efficient than the MDF approach, and is therefore, in every important respect, a preferable solution. Moreover, it will allow CLECs to use the same software-based tools to combine elements that Bell Atlantic [and other ILECs] and its customers use today.[43]

To achieve widespread competition requires that the automated recent change process be made available to local entrants to combine network elements. Only in this way will the fundamental purpose of the Act -- lower local prices, greater local choices and innovative local products - become a reality.

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[43] Affidavit of Amos E. Joel, Jr. Proceeding on Motion of the Commission to Examine Methods by which Competitive Local Exchange Carriers Can Obtain and Combine Unbundled Network Elements, State of New York Public Service Commission, Case 98-C-0690, paragraphs 59 and 60, June 15, 1998. Affidavit sponsored by AT&T. For a summary of Mr. Joel's qualifications, see footnote 21.

The Adverse Consequences of Unnecessary Collocation

I. Introduction

This appendix describes in detail the adverse consequences from any requirement that an entrant install collocated facilities (or otherwise rely on a manual process) to access and combine network elements. Specifically, the appendix explains that collocation:

(1) imposes unnecessarily prolonged service interruptions for customers when they change to a CLEC as their local service provider;

(2) delays the CLEC's ability to enter the market via network element combinations;

(3) degrades the quality of the end user customer's service;

(4) imposes wasteful and unnecessary costs on CLECs; and

(5) severely restricts the rate at which CLECs could switch customers over to UNE-based service after the collocation arrangement is established.

As demonstrated below, imposing an unnecessary collocation requirement does not provide CLECs with nondiscriminatory and just and reasonable access to combine unbundled network elements. Before discussing the effects caused by unnecessary collocation, however, it is useful to begin with a brief description of the typical loop and local switching architectures used by ILECs today.

II. The Starting Point

There are two basic architectures used to connect loops to the local switch. The first, and most common, involves conventional copper loops and a Main Distribution Frame (MDF). In the second, more modern architecture, an Integrated Digital Loop Carrier (IDLC) system carrying numerous multiplexed digital loops bypasses the MDF and attaches directly to the switch.

A. The Conventional Copper Architecture

The typical configuration for attaching copper loops to switch ports uses the MDF, which consists of a series of connector blocks attached to ironwork uprights anchored to the floor and ceiling. On each side of the MDF is a series of connector blocks which typically contains 200 terminals at which individual wires can be connected. To aid frame technicians in distinguishing the two sides of the MDF, the connector blocks on the line side are arrayed vertically, and the connector blocks on the switch side are arrayed horizontally.

Copper loops are typically attached to switch ports in the following manner. First, cables carrying multiple loops enter the central office and run to the MDF. At the frame, each loop (typically a pair of copper wires) is segregated from these cables and connected (by being installed at the appropriate position on the block and then either wire wrapped or soldered) to the specific terminal on a connector block to which it is assigned. This "hard-wired" connection is installed at the time the cables are brought into the central office. Barring cable replacement, ILEC technicians never touch these connections.

A second wire, known as a "cross-connect" (sometimes called a "cross wire" or "jumper"), is then attached to those same line side terminals. The cross-connect runs to the other (switch) side of the MDF, where it is attached to a specific terminal on another connector block. From those terminals, a pair of wires runs to the switch port (also known as the "line card" or "line termination unit"). This final connection from the terminal to the line card is also a "hard-wired" connection that the switch vendor establishes when the switch is installed. Again, barring equipment failure or replacement, it is never moved or altered.

ILECs maintain a software data base inventory of the numbers assigned to each piece of equipment making up the loop-switch combination. They typically track each copper loop by its cable and pair number, and record its place on the connector block ("block assignment") by assigning a number to each terminal on each block. Similarly, the line units (on line ports) on the switch are assigned identifying numbers.

Although most copper loops are attached to the switch in this manner, some are not. For various reasons, it is sometimes preferable to introduce a second frame, called the Intermediate (or "Tie Pair") Distribution Frame (IDF), when connecting to the switch port.[1]

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[1] An IDF is used primarily to minimize the length of jumper wires traveling across and MDF, or to insert additional technologies between the loop and port (such as amplifiers or special services equipment). In all cases, the ILEC has control over whether or not to install an

dedicated to, a CLEC. Such space is often located at a significant distance from the MDF -- possibly hundreds of feet and/or several floors away. Typically, such space is enclosed with a wire mesh cage, with entry through a locked door controlled (except in emergencies) by the CLEC. Within the cage, a CLEC that wanted to combine the loop and switching elements would need to install its own "mini-MDF," tie-cables to the ILEC's frame, and cross-connects.

Any form of collocation involves, at a minimum, the installation of a set of tie cables between the MDF and the CLEC's pre-wired frame.[3] Assuming that: (a) space is available, and (b) that the physical collocation node has already been constructed and is operational,[4] requiring collocation introduces an entire sequence of unnecessary *recurring* steps to provision service to each individual customer using the loop and switch network elements. The discussion below describes the steps needed to provide UNE-based service to the typical single-line customer who wishes to switch over to a CLEC, using assumptions designed to maximize efficiency.[5]

In the most efficient approach, the ILEC would pre-wire all of the cross-connections on the connector blocks at the IDF (if an IDF were used). This would effectively establish a connection from new connector blocks on the MDF, through the tie-cables to the IDF, through the CLEC's pre-wired cross-connection frame in the collocated space. From the CLEC's pre-wired frame, the connection would go back to the IDF and finally back to the MDF, where it originated. This pre-wire creates a giant "U" shaped circuit, with the new connector blocks on the ILEC MDF waiting to have loops and switch ports connected to them.

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[3] Or, in those ILEC offices which use IDFs, between the MDF and the IDF, and then between the IDF and the CLEC's pre-wired frame.

[4] There are a long list of issues concerning the initial establishment of collocated space that are not addressed here such as: space exhaust in some central offices, excessive non-recurring costs to condition space, planning horizons, construction intervals, etc....

[5] Some ILECs have added an additional unnecessary layer of complexity to this process by adopting a policy of assigning a new switch port to all CLEC customers who the CLEC wishes to serve with a loop/switch combination. This policy prevents CLECS from using the most effective approach of accomplishing a customer cutover using a collocation arrangement. There is simply no technical necessity for this policy. Indeed, given that the customer's service, phone number and features are already programmed into the switch on the existing switch port, assigning a new switch port only adds another level of complexity, confusion and potential for error into the cutover process for CLEC customers.

Next, the CLEC would submit a service order requesting the loop and switch network elements for a specific customer. The request would specify the tie-down information such as the tie-cable and pair number, and the block assignments to connect that particular customer to the pre-wired "UJ" circuit through the CLEC's collocated frame and back to the MDF.

Assuming the pre-wiring described above is in place, the ILEC then performs the actual cutover of service. The most efficient way to accomplish the cutover is by performing a "hot-cut" -- i.e., a coordinated cutover of the customer's service -- to minimize customer downtime. To perform this work, the ILEC frame technicians would lay-in new cross-connection wires from the customer's loop and switch location on the MDF to the CLEC's connector blocks. The frame technician would then remove the existing cross-connection from the loop to the switch port, causing the customer to lose service. The technician would then connect the new cross-connections that were just laid in, and remove the old, previously disconnected, wires from the frame.

But even all of this activity does not complete the customer cutover. In order to complete that process, the ILEC's central office frame technicians must coordinate their work with the ILEC Software Control Center, which is typically located at a different site. Finally, the ILEC must test continuity from the new switch port termination at the MDF to the original loop termination at the MDF.[6]

B. Virtual Collocation

In a typical virtual collocation, the above description for physical collocation changes in one notable respect. With virtual collocation, the ILEC has complete control over the collocated equipment and may perform the recombining of the elements on behalf of the CLEC. Even if a CLEC virtually collocates a pre-wired frame, however, the ILEC would still need to independently engineer the entire connection, make all of the block assignments, and so forth.

In other words, virtual collocation retains each of the manual steps which characterize the physical collocation scenario. The sole distinction concerns the final cross-connection between the loop and port which, in the virtual collocation environment, could

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[6] If continuity is not established, or if the incorrect switch port has been attached to the loop, then the ILEC and the CLEC must together troubleshoot the daisy chain of tie-pair cables and cross-connect wires until customer service is restored.

The final category of proposals similarly tries to conceal the basic problems associated with collocation by calling the collocation arrangement something different. These proposals include the Bell Atlantic "Assembly Room and Assembly Point" proposals and the U S WEST SPOT frame. The SPOT frame and Assembly Room are nothing more than a collocation frame shared by the CLECs which is installed by the ILEC in non-traditional, non-central office space (such as a basement, former janitor's closet, former office space, etc...).[9] Although these proposals are put forward as "alternatives", they all share the same problems of any collocation arrangement -- cost, delay and manual processes.

IV. The Anticompetitive Consequences of Manual Recombination and Collocation

Introducing manual processes and complex coordination obligations each time a single customer wants to change local service providers will severely restrict the number of customers that can change their local carrier. Moreover, designing processes with extensive and unnecessary activity and coordination only creates the likelihood for extensive human error and associated customer dissatisfaction, all of which will be focused on the CLEC's service.

Even under the best of circumstances, manual reconnection of the loop and switch via collocation through the manual processes described above is cumbersome and inefficient. In particular, the approach imposes four serious obstacles to effective competition:

(A) It requires that the CLEC customer's line be taken completely out of service and creates a substantial risk of an extended outage;

(B) It will prevent CLECs from using loop/switch combinations to: a) to serve any customers soon; b) to ever serve competitively significant numbers of customers; and c) to serve some customers (e.g. those on IDLC) at all;

(C) It will impose inferior service on CLEC customers compared to the service that ILEC customers receive; and

(D) It will impose excessive and entirely unnecessary costs that could, by themselves, effectively foreclose competition via loop/switch combinations.

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[9] The Assembly Point is a collocation arrangement which is located on the exterior walls of the central office building.

Collectively, the obstacles mean that any manual process -- most especially manual processes which require the unnecessary installation of collocated facilities -- will introduce an effective barrier to prevent broad-scale local competition from developing.[10]

A. Loss of Service During Cutover

With any form of collocation, there is no escaping the problem that the customer is placed out-of-service for some period of time in order to disconnect and then reconnect network facilities. In the best-case scenario described above, the pre-wiring by the ILEC and CLEC reduces the time that the customer is without service to the time it takes to perform a "hot cut" -- that is, to disconnect both ends of a cross-connect and to reestablish two new cross-connections, without having previously removed the dial tone at the switch.[11]

There is significant room for discretion, however, within the parameters of a "hot cut" to perform the procedure so it has greater or lesser impact on the customer. For example, the ILEC's frame technicians should check in advance of the cutover to make sure that there is no active call on the line. Similarly, the sequence for disconnecting and reconnecting each terminal will affect the amount of time that the customer's service is interrupted. And, because two cross-connections must be made to provision any one customer, the number of technicians that the ILEC uses to provision each order will also affect the amount of customer downtime.

If the assumptions underlying the best-case scenario do not hold, however, then the chances for a prolonged outage increase. Indeed, there are many reasons why the time for a cutover could increase substantially. For example, the best-case scenario assumes that the ILEC is willing to adhere to procedures that require complete pre-wiring to the point that the new cross-connections are tied down on the blocks ready to be cut over (as is typically done with collocation hot-cut arrangements). If any of the pre-wiring is not completed, then

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[10] It should be understood that there are some forms of entry (such as a loop being reconfigured to a different switch) which may require some form of collocation. Where collocation is *needed*, it should be done as efficiently as possible. Where collocation is unnecessary, however, it not only imposes additional costs on the entrant that does not desire collocation, but it also diverts scarce space and resources from those entrants which do. As a result, requiring unnecessary collocation harms *all* competitors by imposing unnecessary costs on some, and diverting important resources from others.

[11] The best-case scenario also assumes that the ILEC would establish methods and procedures to ensure that each hot cut is performed correctly by an experienced crew, so that the amount of time the customer would be kept out of service would be minimized.

the time that the customer will be out of service will significantly increase.[12]

An even longer outage could occur if the pre-wiring is done incorrectly. Examples of predictable errors include misidentified block assignments or cable and pair numbers, defective connections, and "assignments not spare."[13] Given the difficulty of maintaining completely accurate and parallel ILEC/CLEC inventories of all block assignment and frame locations, as well as the numerous points of potential failure on the collocation circuit, there is a substantial chance that such problems would occur.[14] The best-case scenario also assumes that the ILEC will devote the substantial resources -- for instance, overnight shifts of experienced frame technicians -- needed to minimize customer service interruption.[15]

Finally, the best-case scenario assumes that the ILEC will reuse the customer's existing switch port, which is not the announced policy of some ILECs. If an ILEC unilaterally decides to assign a new switch port for every cutover, the process is further complicated because it would then require the precise coordination of two separate work groups who operate at different sites. This, in turn, serves no useful purpose and subjects

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[12] If *no* pre-wiring is done, the out-of-service time will be quite substantial, because at least two individual disconnect/reconnect procedures (two each at the MDF) would need to be completed. Further, if an IDF is involved, the need for two additional procedures at the IDF would further increase customer outage time.

[13] An "assignment not spare" occurs when a technician is given a *correct* block assignment but discovers on the job that the terminal is occupied by another wire that was mistakenly not removed during a previous job.

[14] Notably, the chances for error are higher than with simple provisioning of unbundled loops, because provisioning the loop/switch combination requires twice as many cross-connections as is required simply to roll a single loop for a CLEC to combine with its own switch (i.e., two cross-connects instead of one, assuming no IDF). To date, however, even in the relatively simpler world of "pure" unbundled loop provisioning (where only one disconnect/new connect need occur in a hot cut), it is clear that CLEC customers have been subjected to substantial service outages. Far from quickly cutting over service in the dead of night, ILECs have frequently left new CLEC customers without service for hours at a time in mid-day.

[15] The need for ILECs to hire and train these technicians should not be underestimated. To handle competitive volumes, it is reasonable to expect that three shifts of technicians would be needed to work around the clock. Today, at many suburban -- and virtually all rural -- central offices, there are no frame technicians on site as a regular matter at any time, because the offices are unmanned. Consequently, to achieve the best-case scenario would likely require a significant increase in ILEC personnel.

A second source of market entry delay is the manual work needed to establish the cross-connection on the MDF (and possibly the IDF). As described above, this involves two basic steps that would typically be performed by a team of three technicians: one person working on the line side of the frame, one on the switch side, and a third who coordinates their activity by calling out assignments and block appearances on the frame. This wiring must be done on a customer-by-customer basis, which limits the number of customers that could be provisioned with UNE service in any one day.

Further, in every case where ILEC technicians install new wires on the MDF to accomplish a recombination of the loop and switching elements for an existing customer, the technicians would also have to perform a separate job (or jobs) to disconnect and remove (or "mine") the existing wires from the MDF. Thus, each loop-switch recombination will require at least three (and possibly four) job orders for ILEC technicians at the MDF, which could significantly reduce the number of customers who could actually be moved to a loop-switch combination.

The limits that this manual work places on the number of CLEC customers that can be provisioned on any given day translates directly into restrictions on the CLECs' ability to market their services. CLECs would not be able confidently to engage in mass marketing (for example, radio, television, and print advertisements) because that would likely lead to demand at a given central office far beyond what the ILEC could provision.[17]

The third factor that causes mandatory collocation to gate market entry is the fact that mandatory collocation denies entrants access to IDLC loops. Because individual loops cannot be separated from an IDLC system, mandatory collocation would force customers from this technology if they chose an alternative local provider. Instead, these customers would either be moved to a spare analog copper wire pair or placed on a parallel universal digital loop carrier (UDLC) system.[18] Of course, the analog alternative is only possible

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NY *returned* more collocation applications for lack of space than it processed.

[17] As the FCC has observed in discussing nondiscriminatory access to an ILEC's operations support systems, ILECs must be able to handle "the order volumes and fluctuations reasonably expected in a competitive marketplace," particularly during the early stages of competitive entry when "order volumes" will "be relatively volatile."

[18] UDLC is an older version of digital loop carrier equipment that converts the loops back to an analog service in the central office, thereby allowing an individual customer's line to be accessed at the MDF. This digital-to-analog conversion, however, may degrade the quality of service for the customers involved.

will CLEC (and ILEC) service failures.

Further, a typical ILEC loop connection in a wire center has only two points of connection to a frame -- one on the terminal connecting to the loop, and the other on the terminal making the connection to the switch port. These points of connection are "points of failure," because they are places where the loop connection is most likely to come apart, as well as points where there is a potential for human error because these connections are established through the manual work of a technician. With mandatory collocation, loops recombined with switching will require an absolute minimum of four points of failure, and could require up to 8 or more such points depending on whether an intermediate frame is used to reach a CLEC's collocation space. Thus, mandatory collocation at least doubles the possibility that CLEC loops will fail or be subjected to the possibility of human error during installation.

The potential for human errors that occur in customer installations will also at least double. In addition to the "ordinary work" (i.e., the work associated with basic loop provisioning) of directing a loop to the correct tie cable corresponding to the CLEC's collocation equipment, technicians must also connect the CLEC's return tie cable to the correct terminals on the MDF block that corresponds to the correct switch port. Thus, technicians will have to perform twice the amount of work for CLEC customers served by the loop/switch combination.

Further, when there is trouble on a circuit, CLECs and the ILEC would have to coordinate efforts to determine whether the source of failure is in the collocated space, the ILEC tie pairs, the jumpers, the MDF, or the software change that made the new switch port assignment. This process will become even more difficult over time, as inevitable errors in recombination work cause incorrect disconnections and incorrect pairings of loops and switch ports.[20]

The additional loop length that would result from mandatory collocation could also require changes in the ILEC's records to reflect the changed characteristics of the loop. If the ILEC does not make these changes, maintenance and repair functions could be impacted. For example, changing the length of loops could have an impact on mechanized loop test (MLT) results, because when the make-up of a loop is changed (that is, the loop in effect becomes longer as it runs to and from the mandatory collocation cage), the MLT could give improper results.

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[20] In contrast, when there is trouble on an ILEC customer's line, no such complicated coordinated effort is required.

monitoring its equipment and obtaining maintenance from the ILEC.

All of these costs are in addition to "ordinary" service-order charges that a CLEC would typically pay an ILEC to obtain network elements. Significantly, none of these charges enable CLECs to provide customers with a single additional functionality. In fact, as described above, these additional steps and facilities come at the cost of increased customer outage, lower service quality, and significant gating of competition.

V. Conclusion

Proposals calling for mandatory and unnecessary collocation arrangements for the combination of network elements are inherently discriminatory and create substantial barriers to competition. All collocation proposals suffer from the same infirmity -- an extensive reliance on manual processes and repetitive cross-connections to combine elements circuitously that are connected directly in ILEC networks. Collocation does not satisfy the ILEC's legal obligation to provide entrants non-discriminatory access to combine network elements.

Using Recent Change to Combine Network Elements

I. The Operation of Recent Change Software

"Recent change" is an industry term used to describe the capability of a switch that allows a LEC to update the office specific software of its switch. ILECs use the recent change capability, among other things, to establish the electronic connections that combine the functionality of the loop with the functionality of the switch, so that a customer can originate or terminate telephone service.

In order to describe how the recent change software works, it is important to understand the two different kinds of software systems that ILECs employ in their local switches. "Generic" software is provided by the switch vendor and used to perform functions that instruct the switch how to process and record calls. Such software is developed and maintained directly by the switch vendors, not the LEC. Updates to the generic software come from the vendor at infrequent intervals, generally no more than once a year.

In contrast, "office specific" software permits identical switches from a single vendor to differ from each other. The switch vendor initially supplies this software, but the software is designed so that it can be maintained and updated by the LEC itself. Office specific software enables the LEC to define switch specific items, such as what NXX codes the switch serves, where traffic originating or terminating at the switch should be routed, and the feature capabilities, telephone number and blocking that is assigned to each customer line. Most important for these purposes, this software also allows the LEC to initiate or discontinue service on specific customer lines. On a typical business day, a LEC makes large numbers (hundreds or even thousands) of recent change updates to its office specific software for each switch.

The recent change process is generally triggered off of an ILEC's ordering and provisioning systems. When a ILEC customer service agent takes an order and enters it into its ordering systems, the customer specific data flows from the ordering systems, through the ILEC's provisioning systems and updates the switch software on the due date of the order. For example, if a customer wants to add a new feature such as call waiting, the ILEC service agent takes the order, establishes an installation date with the customer (often that day), and sends the order into the ILEC ordering systems. At the designated time, the ILEC's provisioning systems send a recent change message to the switch that enables the customer's line to use the newly ordered feature.

The recent change process is also used to make other changes to a customer's line, such as the change of a primary IntraLATA toll carrier or interexchange carrier. This activity alone accounts for tens of millions of recent changes implemented by ILECs annually. In 1997, customers changed their long distance carrier 53 million times.[1] Each of these changes were provisioned through the ILEC's recent change systems -- none required any physical work inside or outside the central office.

Another example of ILEC's use of the recent change capability -- and the one most relevant to evaluating the access given an entrant to combine network elements -- is when existing ILEC customers request to have service discontinued because, for example, they are moving. Upon receiving a disconnection request from the customer, the ILEC customer service agent enters keystrokes that generate an order in the ILEC ordering systems. The ILEC ordering systems then trigger the ILEC provisioning systems to send a recent change message to the switch on the date the customer requests. When the recent change is implemented, the ILEC switch electronically disconnects the loop from the functionality of the switch through a process which is entirely automated. Once the agent enters the customer's service request, the information automatically flows through the ILEC's systems, and no manual work is necessary to disconnect the customer's service.[2]

Similarly, when a new customer moves into the location vacated by the first customer, an ILEC uses the recent change process to reconnect the functionality of the loop and switch. Again, the agent takes an order from the customer and enters keystrokes into a terminal. The service request then passes through the ILEC's ordering systems, which send a message to the ILEC's provisioning systems to send an appropriate recent change message to the switch at the requested service start date. At that time, the ILEC's provisioning systems direct the switch to reconnect the functionality of the loop and switch, thus provisioning the customer's service. As with the disconnect order, this process is fully

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[1] Affidavit of Glenn Hubbard and William Lehr, California Public Service Commission, Docket R.93-04-003, et. al., paragraph 47.

[2] Some ILECs have indicated that they do not always use recent change in these circumstances, in order to keep facilities in use where they are needed. This is a sound engineering practice in those new central offices with limited spare capacity relative to demand. In these offices, rather than have the vacated switch port remain idle waiting for a new customer to arrive, it is immediately reused to provide service to a customer who may have been on a "hold order" because of a lack of spare facilities in the central office. However, this circumstance has no relevance at all in cases where a CLEC wants to obtain a combination of elements from the ILEC, because the ILEC's facilities will be *immediately* used by the CLEC to provide its own service.

II. The Application Of The Recent Change Process To Enable CLECs To Combine Unbundled Network Elements

A. Overview

As explained above, the recent change process is a important component in the ILEC's network management. Just as the ILEC uses the recent change process to manage the network elements its uses to provide services, in several key circumstances recent change can similarly be used by CLECs to combine and manage network elements obtained from the ILEC.

In abbreviated form, CLECs could use the recent change process to combine the local loop and local switching network elements as follows:[4]

1) The CLEC receives a service request from a customer wishing to change carriers.

2) The CLEC service agent issues a service order to the ILEC for the network elements needed to serve this customer.

3) As part of the processing of the CLEC order, the ILEC prepares a "disconnect" order that will electronically uncombine the loop and switch port serving the customer at the appointed time.

4) After the CLEC receives a firm order confirmation from the ILEC, the CLEC provisioning system initiates a recent change that will be held in the buffer of the firewall and, at the appropriate time, will electronically reconnect the loop and switch elements.

5) On the due date of the order, the ILEC's systems issue the disconnect order on the customer's line. This order is matched to the CLEC's reconnect order that is held in the firewall's buffer. The electronic disconnect recent change order will instruct the switch to remove the functionality of the loop from the switch and, immediately following this activity, the CLEC's reconnect recent change order will

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[4] The local switching network element also provides access to the other network elements necessary to provide exchange services, such as signalling, operator and directory systems and shared transport.

recombine the functionality of the loop with the functionality of the switch for the CLEC's customer.

6) When the ILEC system completes its disconnect command, the switch would notify the system that the disconnect order was performed. Assuming the CLEC correctly issued a reconnect command, the system would initiate the associated CLEC recent change request from the buffer. Such activities could be completed within a matter of seconds and be performed automatically during off-peak hours, to minimize customer outage.

CLECs can use the recent change process to combine both existing and new loops with unbundled switching. When a CLEC wants to combine the functions of a new (i.e., not previously existing) ILEC loop and switching, it is important to note that at least two separate work activities are necessary before service can be provided on the new line. Clearly, some physical work must be done. Generally, this work occurs both outside the central office to connect a spare loop facility to the customer's premises, and within the central office to connect the loop to a spare switch port. However, the physical work by itself does not make the customer's line functional.

A second, separate activity is just as essential to create the customer's new serving arrangement: combining the functionality of the switch with the customer's new loop. This is accomplished by performing a recent change on the switch software to assign the line a telephone number, to implement any features or screening the customer requested, and to provide the customer dial tone for outgoing calls. Indeed, it is the implementation of the recent change process, rather than any mere physical connection, which gives the customer's line any functionality and establishes service for the customer. Without the latter, the customer's line is as useless as if the physical links were never installed.

B. Systems Used to Provide Access to Recent Change Capabilities

The recent change process is implement through specific OSS provisioning systems. These provisioning systems are separate from the ILEC's ordering systems and are the software-based tools that the ILEC uses to implement service orders, both for its own retail customers and for CLECs.

Significantly, even today the capabilities of these provisioning systems are not accessed solely by the ILEC. ILECs also allow large business customers who purchase Centrex services to perform recent changes on its switches. Among other things, these

customers are permitted to issue software-based instructions that can: disable a line, enable a line, add or remove features from a line, move a line within the customer's location and apply screening codes that prevent certain types of calls (e.g. 900, international) from being dialed.

The ILECs generally use two different OSS systems that permit Centrex customers to access the recent change process. TOMMTECH Corporation manufactures one, called MACSTAR, and Bellcore manufactures the other, which is called CCRS. These systems have the capability to operate with all types of switches in the ILEC's network. The fact that this capability is available and used today by the ILEC's Centrex customers demonstrates that it is technically feasible to make the capability available to entities other than the ILEC, without any threat of network security or harm.

Centrex customers access the recent change capabilities of the switch through an OSS that serves as a "firewall" between the Centrex user and the ILEC's switches. The provisioning OSS that the Centrex customers use is partitioned for each user. Within the partition, the OSS is populated with the contiguous block of codes (phone numbers) that have been assigned to the specific Centrex user. The OSS allows the Centrex user to perform specific types of recent changes only on the lines that are subscribed by that customer. Because individual Centrex customers can only access the switch to make authorized types of changes for lines that are assigned to them, they cannot perform a recent change that would impact any other customer on the switch.

In the ILEC's network the MACSTAR system is directly connected to the switches the system serves. Centrex customers access MACSTAR either through a dial-up arrangement or a dedicated line to initiate a recent change on their line(s). Once MACSTAR recognizes that the customer is authorized to perform the requested activity on the affected line(s), it interfaces directly with the ILEC switch to effect the recent change.

The practical implication of these customer-accessed provisioning systems to the recent change capability of the switch proves that it is technically feasible to create systems that access the ILEC's recent change process without creating any risk to network security or reliability.

C. The Development of CLEC-Access Systems to Recent Change is Both Practical and Feasible

It is both practical and feasible to create a means for CLECs to access the ILEC's recent change process. As explained above, even after a loop is physically attached to a

switch, the ILECs use the recent change to combine the functionality of these two network facilities. Similarly, if CLECs are given nondiscriminatory access to the recent change process in the same way that the ILEC and its Centrex customers are, they can perform these recent changes themselves and combine the local loop and local switching network elements so that service may be provided to end users.

To provide CLECs access to the recent change capabilities of the local switch will require investment and OSS development by both the CLECs and ILECs. As explained above, ILEC systems will need to be implemented which establish "firewalls" similar to those which exist in the Centrex environment today.

From the CLEC's perspective, however, new provisioning systems will be needed to effect recent change commands that are very different from the OSS systems that CLECs need to place service requests, to obtain information from the ILEC, and which interface with the ILEC's pre-ordering and ordering OSSs. To use recent change requires that the CLEC obtain a separate provisioning capability that will interact directly with the firewall interface to the ILEC's own recent change administration systems. Unlike any other OSS, access to this system will enable the CLEC to give direct commands that can be passed (via the ILEC interface and provisioning system) into the switch.

The CLEC's OSS interface will have to be properly programmed, again at the CLEC's expense, to send the correct instructions to the ILEC interface. If the CLEC fails to do so, or if in any particular case a CLEC service representative forgets to issue the proper commands or issues incorrect ones, the CLEC customer will not receive service as requested.

Using this process, the CLEC would inform the ILEC, through its service order, that the ILEC should initiate a disconnect recent change command for the customer involved, which would electronically separate the functionalities of the previously combined loop and port.[5] The CLEC would separately initiate a "reconnect" recent change provisioning command to recombine the functionality of the loop and the switch. These two functions would be coordinated by having the CLEC's electronic reconnect activity held in a buffer until the ILEC's disconnect order is sent. At that time, the CLEC provisioning command would be associated with the ILEC disconnect command, so that both can be processed with the minimum amount of customer disruption. In addition, to avoid customer impact, as well

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[5] As discussed in detail in the body of this white paper, CompTel does not believe there is any rational justification to separate network elements solely for the purpose of forcing the entrant (and ultimately, the entrant's customers) to incur the cost (and customer outage) involved with recombination.

The first change can be made through the development of a database table that is updated via the ILEC's provisioning process and identifies each of the telephone numbers or lines for which a specific CLEC may send modifications through the ILEC firewall interface into the recent change process of the switch. Table-driven databases are a standard type of development project that require no special background in telephony. Moreover, because the CLEC's use of the recent change for a particular customer will not occur until after the ILEC sends its disconnect message, there will be sufficient time for the ILEC to populate the database with information regarding the identification code of the new carrier chosen by the customer.

Establishment of the coordination between the ILEC and CLEC provisioning commands requires only the establishment of a buffer that holds the CLEC's recent change until the ILEC sends its own message to the switch software. This is also a simple development project.

The preliminary estimate of the right-to-use fee from COMMTECH is $3 million per RBOC. Based on current input regarding system requirements, it appears that no other systems development will be required on any of the ILEC legacy OSSs. The equipment platform for this system uses existing technology (HP 9000K series hardware), which would cost approximately $250,000 per unit, and no more than two units (with one serving as a back-up) would be needed to serve an entire state.[8]

III. Advantages of the Recent Change Process

Recent change is significantly better for CLECs and consumers than any of the collocation-based methods suggested by the ILEC for the following reasons:

(a) Recent change does not entail the substantial delay required to establish a collocation arrangement in each and every ILEC central office for the sole purpose of combining loops and ports;

(b) Recent change, if developed and implemented properly, substantially reduces the customer outage associated with collocation;

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[8] These costs are particularly modest when compared with the enormous expense of implementing the ILEC collocation proposals. See Appendix A for a description of their proposals.

(c) Recent change eliminates all of the manual processes and the associated human error inherent in the ILEC's proposals;

(d) Recent change works for all types of loop technologies, including IDLC loops. This would eliminate the need to move a customer off of this state-of-the-art loop technology simply because the customer wants to change local service providers. It also eliminates all of the outage, cost and service degradation that occurs in moving a customer off of the IDLC system,

(e) The automated nature of recent change does not have the same competition gating effect as the manual processes involved with collocation. Because the capacity of the recent change process is effectively limitless, it will allow for the robust competition envisioned by the Act;

(f) Recent change is a more cost effective means to allow the CLECs to combine the elements;

(g) Recent change does not add the additional points of failure on the ILEC's frames and the associated potential for service failure; and,

(h) In contrast to collocation, recent change does not require the CLEC to own or control any of its own network facilities simply to be able to use combinations of network elements, consistent with the Eighth Circuit Order.

In sum, recent change puts the CLECs at near parity with the ILEC, because it is how the ILEC operates its own network in similar circumstances.

Legal Analysis of the Incumbent LEC Proposals and Recent Change

I. Introduction

Recent change is the only means of combining network elements that satisfies both the requirements of the 1996 Act and the holdings in Iowa Utilities Board v. FCC.[1] Limiting CLECs to the use of collocation and other manual methods of combining network elements, by contrast, violates both the Act and the Eighth Circuit's decision. Contrary to the ILECs' claims, nothing in either the 1996 Act or Iowa Utilities Board requires the physical separation of network elements or the combination of network elements through collocation. Indeed, the 1996 Act gives CLECs the right to choose which methods of access and combination work best for them, provided those methods are technically feasible.

The recent change process is an existing, well-established functionality of the ILECs' local switching network element. Access to the switch's recent change capability also is part of the OSS network element. Requesting carriers have the right to use these capabilities for any purpose including for the purpose of combining network elements.[2] For ILECs who insist on providing network elements in their separated form, recent change both accomplishes the separation of network elements contemplated by the Eighth Circuit, and provides a means of combining network elements that meets the nondiscrimination requirements of the 1996 Act. Moreover, it does so in a manner consistent with the Department of Justice's admonition that ILECs who choose to separate network elements should be required to do so in a manner that permits the most efficient recombination of those elements and minimizes the costs imposed on CLECs.[3]

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[1] Iowa Utilities Board v. FCC, 120 F.3d 753 (8th Cir. 1997), *cert. granted.*

[2] 47 C.F.R. § 51.309(a) ("An incumbent LEC shall not impose limitations, restrictions, or requirements on requests for, or the use of, unbundled network elements that would impair the ability of a requesting telecommunications carrier to offer a telecommunications service in the manner the requesting telecommunications carrier intends.").

[3] Letter from Joel L. Klein, Assistant Attorney General, Department of Justice, Antitrust Division, to John O'Mara, Chairman, New York Public Service Commission, dated April 6, 1998, at 2 ("Letter from Joel Klein").

II. Limiting CLECs to Collocation and Other Manual Combination Methods Discriminates Against CLECs in Violation of Sections 251(c)(3), 252(d)(1), and 271(b)(2)(c)(ii) of the 1996 Act and the Eighth Circuit's Decision in Iowa Utilities Board.

Sections 251(c)(3), 252(d)(1), and 271(c)(2)(B)(ii) of the 1996 Act each impose on ILECs an obligation to provide competitors with nondiscriminatory access to network elements. Section 251(c)(3) requires ILECs to provide "nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms, and conditions that are just, reasonable, and nondiscriminatory."[4] Section 251(c)(3) further requires ILECs to provide these network elements "in a manner that allows requesting carriers to combine such elements in order to provide such telecommunications services."[5] Section 252(d)(1) provides that the rates charged by ILECs for access to unbundled network elements must be nondiscriminatory and based on cost.[6] In addition, Section 271(c)(2)(B)(ii) requires BOCs seeking in-region interLATA authority to provide "nondiscriminatory access to network elements in accordance with the requirements of sections 251(c)(3) and 252(d)(1)."[7]

The FCC has determined that the term "nondiscriminatory access" in Section 251(c)(3) requires that ILECs provide access to network elements that is "at least equal-in-quality to that which the incumbent LEC provides to itself."[8] The FCC also has determined that ILECs must provide such access on terms and conditions that are "no less favorable to the requesting carrier than the terms and conditions under which the incumbent LEC

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[4] Letter from Joel L. Klein, Assistant Attorney General, Department of Justice, Antitrust Division, to John O'Mara, Chairman, New York Public Service Commission, dated April 6, 1998, at 2 ("Letter from Joel Klein").

[5] Id.

[6] Id. § 252(d)(1)

[7] Id. § 271(b)(2)(c)(ii)

[8] Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, 11 FCC Rcd 15499, 15658, para. 312 (1996) ("Local Competition Order"), *vacated in part in other respects sub nom.*, Iowa Utilities Board v. FCC, 120 F.3d 753 (8th Cir. 1997), *cert. granted*; 47 C.F.R. § 51.311(b).

CLEC's reputation among consumers who see the CLEC as the culprit, not the ILEC.

Collocation and other manual combination methods also severely restrict the number of customers that can be converted to a competitor to a level far below that of an ILEC, and impose on competitors myriad costs that the ILECs do not themselves incur in providing service over the same network elements. These costs include application and administrative costs; site preparation costs; cage construction costs; equipment purchase costs; equipment installation and conductivity costs; cabling costs; power costs; maintenance costs; and the costs of leasing floor space.[14]

Michigan, Montana, and Texas have rejected ILEC attempts to require collocation and other manual combination methods as the only means by which competitors can combine network elements.[15] In taking this action, the Montana Public Service Commission stated as follows:

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[14] See, e.g., Statement of Rocky N. Unruh, Counsel for LCI International Telecom Corp., Before the FCC Forum on Combinations of Unbundled Network Elements, June 4, 1998, at 6-7; Comments of Gary Ball, Vice President of Regulatory Policy, Worldcom, Inc., at the FCC Forum on Combinations of Unbundled Network Elements, June 4, 1998, at 2.

[15] Application and Complaint of MCI Metro Access Transmission Services, Inc., against Ameritech Michigan Requesting Non-Discriminatory, Efficient and Reasonable Use of Unbundled Loops Using GR303 Capability, Opinion and Order, Case No. U-11583 (Michigan Pub. Serv. Comm'n June 3, 1998), at website version p. 11 ("the Commission twice recently acknowledged that collocation is not required for interconnection"), *citing, inter alia*, In the Matter on the Commission's Own Motion to Consider the Total Service Long Run Incremental Costs and to Determine the Prices of Unbundled Network Elements, Interconnection Services, Resold Services, and Basic Local Exchange Services for Ameritech Michigan, Order on Rehearing, Case No. U-11280 (Michigan Pub. Serv. Comm'n January 28, 1998) at 28.; Petition of AT&T Communications of the Mountain States Inc. Pursuant to 47 U.S.C. § 252(b) for Arbitration of Rates, Terms and Conditions of Interconnection with U.S. West Communications, Inc., Docket No. D96.11.200, Order on Supplemental Disputed Issues, Order No. 5961d (Montana Pub. Serv. Comm'n April 21, 1998), at paras. 13, 15-17, 19 ("Montana Order"); and see Investigation of Southwestern Bell Telephone Company's Entry Into the Texas InterLATA Telecommunications Market, Order No. 25 Adopting Staff Recommendations; Directing Staff to Establish Collaborative Process, Project No. 16251 (Texas Pub. Util. Comm'n June 1, 1998), at Attachment 1, Commission Recommendation, pp.2, 4 ("Texas 271 Order"); see also Petition for Arbitration of AT&T and GTE, Order Granting Partial Reconsideration, Case No. UT-960307, (Washington Utils. and Transport. Comm'n March 16, 1998).

> US West's advocacy is that CLECs can only obtain access to UNEs by collocating equipment in each central office that a CLEC wants to provide service from. Collocating a "cage" and the accompanying cost of connecting with US West's network in every central office and by every CLEC is likely to be quite costly to new entrants and perhaps to US West as well. Every CLEC wishing to use UNEs will have to collocate its own equipment in each US West central office serving area the CLEC wishes to serve. This will drive up the cost for CLECs to provide service in competition with the ILEC and may constitute a barrier to CLEC entry, which this Commission cannot support.[16]

Requiring competitors to combine network elements using collocation and other manual methods, while reserving for themselves the recent change capability of the local switching element, does not -- and cannot -- constitute access "equal-in-quality to that which the incumbent LEC provides to itself."[17] Indeed, the ILECs' attempt to hamstring competitors in this manner constitutes a direct violation of the nondiscrimination requirements in Sections 251, 252, and 271 of the Act. The nondiscrimination requirements of the 1996 Act can only be satisfied if the ILECs permit requesting carriers to combine network elements using the same method the ILECs use in providing service to their own retail customers: recent change.

Requiring CLECs to combine network elements only through collocation also violates the Eighth Circuit's decision in Iowa Utilities Board. The Eighth Circuit held that a requesting carrier is not required to "own or control some portion of a telecommunications network before being able to purchase unbundled elements."[18] Collocation, however, requires competitors to own or control network components such as frame equipment, cross-connection cabling, and the cross connects that make the combination of elements possible. Permitting carriers to combine network elements only through collocation, therefore, is prohibited.

The Massachusetts Department of Public Utilities ("DPU") recently held that a requirement that a requesting carrier install collocated facilities as a prerequisite for

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16 Montana Order at para. 15.

17 Local Competition Order, 11 FCC Rcd at 15658, para. 312.

18 Iowa Utilities Board, 120 F.3d at 814.

> We [the FCC] conclude that we should adopt our proposed interpretation that the terms "access" to network elements "on an unbundled basis" mean that incumbent LECs must provide the facility or functionality of a particular element to requesting carriers, separate from the facility or functionality of other elements, for a separate fee.[23]

The standard relevant to judging whether a network element has been unbundled is by whether the *functionality* of one element is separated from the *functionality* of another.[24] This is particularly true because most network elements are themselves defined as a functionality and not as tangible, physical, pieces of equipment or investment. For instance, the local switching network element so central to the disputes in this proceeding is defined as the functionality of the local switch, and not the physical equipment itself. In fact, the network element itself is named the "local switching capability network element," and it is defined in terms of the functionality of the switch.[25]

Other examples of network elements defined by function (rather than physical equipment) include interoffice transport, [26] operational support systems, operator systems, databases, and signaling. With modern digital loop carrier technology, even the local loop is becoming a functionality (at least from the central office to a remote concentrator near the home) and is no longer a distinct physical facility.[27]

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[23] Local Interconnection Order, at para. 268.

[24] The 1996 Act recognizes that it is unnecessary to define unbundled network elements in terms of physically separated facilities by defining "network elements" not only as facilities or equipment, but also as the "*features, functions, and capabilities* that are provided by means of such facility or equipment." 47 U.S.C. § 3(29) (emphasis added). Such features, functions, and capabilities include subscriber numbers, databases, signaling systems, and information sufficient for billing and collection or used in the transmission, routing, or other provision of a telecommunications service. Id.

[25] 47 CFR § 51.319 (c)(1)(C) specifically defines the Local Switching Capability to include "*...all features, functions and capabilities of the switch...*" (emphasis added).

[26] In a fiber environment, both "shared" and "dedicated" transport are digital bit streams on a common fiber medium. Dedicated transport assigns specific capacity on a semi-permanent basis to a single use/user, while shared transport assigns capacity for the length of individual transmissions. The physical transmission equipment, however, is shared in either arrangement.

[27] The only network element typically provisioned as a defined physical element is the Network Interface Device (NID) used in residential applications -- yet no ILEC is proposing a

Because network elements are typically defined by their underlying functionality -- and, with respect to the local switching capability network element, defined expressly by its functionality -- the forced unbundling sanctioned by the Eighth Circuit is accomplished once the functionality of two elements is separated. This is the limit of the ILEC's legal authority. Any action in excess of this measure (for instance, a physical disruption of underlying facilities) goes beyond their legal right and is nothing more than an attempt to impose unnecessary costs on their rivals that they themselves can avoid.

Electronic separation accomplishes this separation of functions and capabilities, and therefore satisfies the separation contemplated by the Eighth Circuit for ILECs that insist on delivering network elements in their separated form. Indeed, the recent change process separates and reconnects network elements "as clearly as if [the ILEC] had gone and ripped all those connections out."[28] Moreover, electronic separation provides a means of separating network elements consistent with the Department of Justice's recent statement that ILECs who choose to separate network elements should be required to so in a manner that permits the most efficient recombination of those elements and minimizes the costs imposed on CLECs.[29]

In addition, the Eighth Circuit's statement (in connection with its holding that a CLEC may achieve the capability to provide services completely through access to network elements) that it would expect the combination of network elements by CLECs to impose some costs and risks on CLECs that resale does not impose (Iowa Utilities Board, 120 F.3d at 815) similarly supports the use of recent change. While recent change is the most efficient means by which a competitor can combine network elements, recent change still imposes costs. The question under the Act, however, is not whether a method of combining elements imposes costs on a CLEC. The question is whether the costs imposed on a CLEC are greater than or the same as those imposed on the ILEC. With collocation, the costs imposed on a CLEC are greater than those imposed on the ILEC. With recent change, the costs imposed are the same -- precisely what the Act requires.

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single limitation on providing this element in combination with the loop (so far).

[28] Post-Hearing Brief of AT&T Communications of the Southwest, Inc. filed in Investigation of Southwestern Bell Telephone Company's Entry Into The InterLATA Telecommunications Market, Texas Public Utility Commission Project No. 16251 (submitted May 6, 1998), at 48, *quoting* Testimony of Nancy Reed Krabill, April 22, 1998, Hearing Transcript at Tr. 527.

[29] Letter from Joel Klein at 2.

method.[35] Had Congress intended to limit the method of combining network elements to collocation, it could easily have done so by either including such a limitation in Section 251(c)(3) or stating in Section 251(c)(6) that ILECs have a "duty to provide . . . *only* for physical collocation." But Congress did not do so.

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[35] Indeed, the legislative history of the 1996 Act shows that Congress included this explicit requirement in response to the D.C. Circuit's holding in Bell Atlantic v. FCC, 24 F.3d 1441 (D.C. Cir. 1994) that the FCC lacked authority to require LECs to provide physical collocation as part of the FCC's expanded collocation requirements for competitive access services.