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Unbundling Policy in the United States Players, Outcomes and Effects (*)

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Abstract: Building on attempts during the 1980s to establish principles of Open Network Architecture (ONA), unbundling obligations became a cornerstone of the framework for local competition devised by the *Telecommunications Act* of 1996. Several of the regulations developed by the Federal Communications Commission (FCC), including the impairment test to assess whether a network element had to be unbundled, the TELRIC pricing method, the obligation to re-bundle network elements to service platforms and the unbundling provisions for broadband networks were challenged repeatedly in court. In response to multiple defeats of earlier rules, the FCC had to refine its approach and define unbundling obligations more narrowly. Effective as of March 11th, 2005, unbundling obligations will essentially be limited to the local copper loop, dedicated interoffice transportation on routes connecting small markets, and high-capacity loops in small markets. Carriers presently using unbundled network elements that do not qualify under the new rules will have to transition to alternative solutions within 12-18 months. During this period, the FCC has set higher ceiling prices for these unbundled network elements. The Commission affirmed the elimination in 2003 of its unbundling obligations in broadband markets.

Key words: Unbundling, voice, broadband.

Unbundling is one of the most contested and in some respects poorly understood areas of communications policy. In particular, the dynamic effects of unbundling obligations on investment and innovation decisions of incumbents and new entrants are subject to considerable dispute. Predecessors to unbundling were introduced in the U.S. during the late 1980s, when Open Network Architecture (ONA) was developed as a blueprint governing access to essential network functions. Far-reaching unbundling requirements for incumbent local exchange carriers were mandated by the *Telecommunications Act* of 1996¹. The specific regulations crafted by the Federal Communications Commission (FCC) and

(*) Available as Quello Center Working Paper, <http://quello.msu.edu/wp/wp-05-02.pdf>.

¹ *Telecommunications Act* of 1996, Pub. L. No. 104-104, 110 Stat. 56. The 1996 Act amended the *Communications Act* of 1934, 47 U.S.C. § 151 et seq. Sections cited in this article refer to the amended legal text, which will be referred to as the "Act".

the 50 state Public Utility Commissions (PUCs) to implement the Act were more stringent and detailed than unbundling provisions in most other countries. They have been challenged by major stakeholders in court since, leaving the U.S. unbundling regime in a state of flux for more than eight years. In December 2004, responding to court directions, the FCC adopted an Order that substantially redefined the unbundling obligations of incumbent local exchange carriers (ILECs) in the narrowband markets. The full text of the Order was released on February 4, 2005 and will become effective as of March 11th, 2005 (FCC 2005)². It marks the current end point of the prolonged, eight-year legal struggle to translate the unbundling provisions of the Act, especially its "impairment" standard, into sustainable regulatory rules. Together with modifications that had been adopted in earlier Orders and survived court review, the latest Order constitutes the prevailing unbundling framework.

Compared to the initial rules adopted by the FCC in August 1996 and expanded in subsequent amendments, the unbundling obligations of ILECs have been drastically curtailed and the ILECs have gained considerable freedom to price network elements: although it will be possible for competitive local exchange carriers (CLECs) to buy unbundled network elements other than those that continue to be regulated, they are likely to have to do so at much higher market-based prices. Despite these major changes, the present rules cannot be regarded as a new "unbundling philosophy". Rather, they result from the confluence of several forces, including the need to find a pragmatic response to repeated defeats of earlier rules in the courts; a critical assessment of experiences with previous unbundling rules, a response to the changing technological basis of the industry and a new vision regarding the role of digital applications such as VoIP. The new rules also seem to reflect a shift in the political power balance in favor of incumbent carriers. At the heart of the FCC's approach continues to be trust in facilities-based competition with light-handed regulation only applied to cases where competitors would be impaired without access to unbundled network elements. With regard to narrowband, the new rules align the U.S. framework closer with unbundling policies in other countries. With regard to broadband, the new rules create a less regulated, more market-based environment.

² Regulatory and court decisions are referred to by issuing institution and year. Detailed case numbers are provided in the reference section at the end of the article.

This article reviews the main stages of the evolution of the unbundling rules in the narrowband and broadband markets and their rationales. It proceeds with a critical assessment of the foundations of the policy changes and their likely impact on the future development of competition. To keep the topic manageable, the emphasis is placed on the federal rules, which have determined the overall course and substance of unbundling, with only occasional reference to developments at the state level.

■ The long and winding search for a sustainable approach

The rationale and substance of the most recent Order can only be understood in the context from which it emerged. Space constraints do not permit a detailed discussion here, but this section offers a synopsis of the major milestones in this process³. The *Telecommunications Act* of 1996 codified many regulatory practices that had been adopted before its passage. The predecessors to the Act's unbundling provisions were the rules governing access to network facilities and services for enhanced service providers. These had evolved from earlier policies dating back to the Computer Inquiries, a series of proceedings that began in 1966 to delineate the rights and obligations of basic and enhanced service providers. From these deliberations, in the late 1980s the concept of Open Network Architecture (ONA) emerged, specifying rules whereby enhanced service providers could access essential network functions provided by carriers that also had a presence in enhanced service markets (NOAM, 2001, chapter 6). Whereas ONA was never fully implemented, unbundling became a cornerstone of the Act's objective to expand the reach of competition to local voice markets.

■ *Telecommunications Act* and Local Competition Order

The drafters of the Act envisioned that three forms of competition would emerge in local markets: facilities-based competition, service-based competition (resale) and competition via unbundled network elements

³ More detailed legal histories of the unbundling rules can be found in the relevant FCC Orders, most recently FCC (2003, 2005). See also the excellent discussion in NUECHTERLEIN & WEISER (2005, especially chapters 3 and 5).

(UNEs), a hybrid form in which carriers could combine network components purchased from incumbent service providers with their own facilities. Resale, and to some degree UNEs, were seen as transitory stages on the road to facilities-based competition. For resellers, ILECs were required to make their retail services available at wholesale at retail price minus avoided costs (such as marketing, invoicing and billing costs). With regard to unbundling, section 251(c)(3) of the Act proscribed that ILECs must provide requesting telecommunications carriers "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 requirements of this section and section 252". It further stated that incumbent local exchange carriers had to provide: "unbundled network elements in a manner that allows requesting carriers to combine such elements in order to provide such telecommunications service". This obligation to bundle UNEs for new entrants became one of the most hotly contested areas of the rules.

The FCC was instructed to use an "impairment" standard in determining which network elements had to be unbundled (section 251(d)(2)). More specifically, the Act stated that:

"in determining what network elements should be made available for purposes of subsection (c)(3) of this section, the Commission shall consider, *at a minimum*, whether (A) access to such network elements as are proprietary in nature is *necessary*; and (B) the failure to provide access to such network elements would *impair* the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer" (emphasis added).

It is the standard used to establish "impairment" that was at the heart of court challenges and eventually led to an elimination of many of the earlier unbundling rules. Section 252(d)(1) further required that such network elements must be made available at cost-based rates, "... however determined without reference to a rate-of-return or other rate-based proceeding". This last provision is often interpreted as requiring the use of price caps to set rates for unbundled network elements.

Implementing these provisions, the FCC, in its Local Competition Order in August 1996 (FCC 1996), specified seven unbundled network elements: (1) local loops, (2) network interface devices, (3) local and tandem switching, (4) interoffice transmission facilities, (5) signaling networks and call related databases, (6) operations support systems, and (7) operator services and directory assistance (FCC 1996). To price these unbundled network

elements and combinations, the FCC developed the TELRIC (Total Element Long Run Incremental Cost) standard, a forward-looking methodology to generate a benchmark based on the assumption that an efficient, modern network (rather than the legacy network) is in place. Even though the state PUCs challenged the FCC's costing guidelines and price benchmarks, most of them followed some form of long run incremental cost (LRIC) standard and, in fact, set prices that were in the range originally proposed by the FCC.

From this Order, two principal unbundling models emerged, with differentiated rules for the mass market (residential users and small businesses) and the enterprise market. New entrants could lease unbundled network element loops in conjunction with their own switching and transportation facilities. Most importantly, they could lease local loops, a model given the acronym "UNE-L". They could also lease re-bundled UNES from the ILECs. In the mass market, an unbundled network platform, consisting of local loop, switching and transportation ("UNE-P") emerged as an attractive model for new entrants. This allowed CLECs to enter the market without any complementary facilities investment. In the enterprise market, CLECs were able to request enhanced extended loops (EELs), combining a local loop, interoffice transportation, and cross-connect or multiplexing, if necessary. EEL enables CLECs to serve business customers without having to collocate in every local exchange by routing traffic to those central offices which contained their own switching equipment. Incumbent LECs claimed that UNE-P was a resale service in disguise at a price much lower than would have resulted from applying the retail price minus avoided cost formula. Conversely, new competitors and state PUCs argued that UNE-P was an important step in opening the local market up to competitors.

■ Early court challenges to USTA I

Several of the provisions of the Local Competition Order were challenged on procedural and substantive grounds by industry and state regulators. *Inter alia*, the FCC's authority to promulgate nation-wide rules, its standard to assess impairment and its guidelines for unbundled network element pricing were contested. The different cases were consolidated in the Eight District Court as *Iowa Utilities Board v. FCC*, which affirmed some of the rules and overturned others (Eight District Court, 1997). The FCC, MCI, AT&T and other incumbent LECs appealed different aspects of the decision to the U.S. Supreme Court. In *AT&T v. Iowa Utilities Board* the Court found that the

FCC had disregarded the Act's mandate by assuming that "any increase in cost (or decrease in quality) imposed by denial of a network element" would constitute impairment of the entrant (U.S. Supreme Court 1999, 389-390). However, while the court directed the FCC to reconsider the impairment standard, it did not limit the Commission's ability to require any element to be unbundled at cost-based rates. Furthermore, the FCC's authority to promulgate rules implementing section 251 of the Act and the TELRIC standard were upheld ⁴.

To remedy the weaknesses found by the U.S. Supreme Court, the FCC issued its UNE Remand Order in November 1999 in which the list of UNEs was narrowed by eliminating operator service and directory assistance from the list of network elements (FCC, 1999b). However, in a separate Order, the list was expanded by adding dark fiber, subloops, and the high frequency portion of the copper loop used to provide DSL as unbundled network elements (FCC, 1999a). In response to the FCC's limited effort to improve the impairment standard, the UNE Remand Order was again challenged by the incumbents in the D.C. Circuit Court of Appeals, which granted petitions for review. Early in 2001 — the FCC now composed of three Republican and two Democratic Commissioners — Republican Michael K. Powell, who was strongly in favor of light regulation, was appointed Chairman of the agency. While the appeals court case was pending, the FCC released its Triennial Review Notice of Proposed Rulemaking (NPRM) (FCC, 2003), in which it sought comment on whether the unbundling regime should be further modified to reflect changing technological and market conditions.

During the NPRM comment phase, the D.C. Court issued its decision in *United States Telecom Association v. FCC* (USTA I), in which it vacated and remanded the FCC's interpretation of the impairment standard and the list of UNEs based on it (D.C. Circuit Court, 2002). The court reasoned that the FCC's impairment analysis did not take into account differences in particular markets and customer classes and was hence not "sufficiently granular". It also found that the Commission's analysis had failed to adequately weigh the costs of unbundling, such as disincentives to invest for incumbent service providers, and that it had not distinguished between impairment cause by the natural monopoly characteristics of the market and cost disadvantages faces by all new entrants. Furthermore, it vacated and

⁴ The TELRIC standard was again challenged by the incumbent LECs as leading to rates so low that they were confiscatory. The D.C. Court of Appeals agreed with this claim but in *Verizon v. FCC*, the U.S. Supreme Court once again upheld TELRIC as one possible cost standard that the FCC could use (U.S. SUPREME COURT 2002).

remanded the FCC's line sharing requirements, arguing that the Commission had failed to consider competition from cable modem service, which actually was the market leader. In response, the FCC asked commenters in the Triennial Review NPRM also to respond to the issues raised by the court decision.

■ The Triennial Review Order and USTA II

The Triennial Review Order, adopted in February 2003 and released in August 2003, proposed a new impairment standard and narrowed the unbundling obligations in several areas. According to the refined standard, impairment existed "when lack of access to an incumbent LEC network poses a barrier or barriers to entry [...] that are likely to make entry uneconomic" (FCC, 2003, pp. 58-64). Relevant structural barriers to be considered in the impairment analysis were "(1) economies of scale; (2) sunk costs; (3) first-mover advantages; (4) absolute cost advantages; and (5) barriers within the control of the incumbent" (FCC, 2005, p. 8). In a political compromise, the two Democratic Commissioners and Republican Commissioner Martin agreed to keep the narrowband unbundling framework (UNE-L, UNE-P) in place, but to free ILECs from unbundling rules in the broadband markets⁵. For switching, high-capacity loops and dedicated transport, the Commission asked the states to conduct the impairment analysis on a granular basis. Against the votes of Chairman Powell and Commissioner Abernathy, who had considered keeping line sharing in place for copper lines to provide an additional incentive for ILECs to invest in fiber-based networks, but was opposed to UNE-P, the Order required that line sharing be phased out over a three-year period. Furthermore, new ("greenfield") fiber deployment was fully exempted from the unbundling rules. For overlays to existing copper networks and hybrid copper-fiber networks ("brownfield" projects), the Order established that only a narrowband channel needed to be unbundled. The Order delegated the task of promulgating the more granular rules required by the court decision to the state public utility commissions and set a strict time-table to that end. Various parties, including the United States Telecom Association (USTA) representing the ILECs, appealed several parts of the Order, including the

⁵ In separate statements, the democratic Commissioners Copps and Adelstein expressed their unease over dropping the line sharing rules to achieve compromise on the narrowband provisions of the order.

finding that the narrowband mass market switching and the enterprise markets were impaired and that the states should promulgate the more granular rules required by earlier court directions.

In March 2004, the D.C. District Court of Appeals decided *United States Telecom Association v. FCC* (USTA II), in which several rules were expressly upheld, one was vacated and others were vacated and remanded to the agency (D.C. Circuit Court, 2004). Among the Commission's findings in the Triennial Review Order that were expressly upheld are the three-year phase-out of line sharing, the decision not to require unbundling of FTTH, provisions governing hybrid copper-fiber loops, the elimination of enterprise switching, and the pricing and combination requirement. However, the court vacated the agency's sub-delegation of authority to the states to develop granular unbundling rules. Moreover, it vacated and remanded the FCC's finding of nationwide impairment with respect to mass market switching (and thus indirectly of UNE-P) and dedicated transport. In the switching market, the FCC had only relied on one particular method (the "hot cut" process) for transferring lines from an incumbent's to a competitor's switch and did not consider alternative procedures when assessing impairment. Finally, the court called into question certain aspects of the overall unbundling framework, including the efficiency level of competitors used when determining impairment, the FCC's lack of reliance on information from comparable markets, and the failure to consider alternatives to unbundling.

With Commissioner Martin changing his stance, neither the FCC nor the government appealed the decision to the U.S. Supreme Court. A petition by several parties, including state regulators and CLECs, to the Supreme Court was not granted *certiorari* (i.e., was not accepted for review). In August 2004, the FCC issued an interim Order to avoid disruption of the telecommunications markets and to gain time to develop a more detailed policy (FCC, 2004a). The December 2004 Order ("Triennial Remand Order"), published February 4, 2005, is the response to USTA II and addresses the concerns raised in that decision (FCC, 2005).

■ Present unbundling rules

The Triennial Remand Order together with provisions that survived the multiple court reviews unscathed, form the present unbundling framework. The latest Order refines the overall unbundling framework. It affected the

rules governing unbundling in the narrowband mass market and enterprise market. Rules regarding fiber developments and overbuilds, as well as rules related to line sharing, remained in place from earlier Orders.

■ Unbundling framework

The latest Order refines the framework developed in the Triennial Review Order with regard to impairment. The appeals court had criticized that the FCC did not specify the level of efficiency of competitors for whom lack of access to a network element poses a barrier or barriers to entry. In response, the FCC clarified that impairment needs to be determined with reference to a hypothetical "reasonably efficient" competitor (FCC, 2005, pp. 15-17). Thus, an entrant could not claim impairment if its business model was only workable contingent upon unbundled network elements. The Commission clarified that impairment can persist with regard to any telecommunications services (and not just in cases of core services offered in direct competition with the incumbent, as had previously been the case). Following the direction of the court in USTA II, the Commission decided, however, to prohibit the use of unbundling for exclusive service to competitive markets, specifically mobile wireless services and long distance services (FCC, 2005, pp. 17-25). In these market segments, it was reasoned that competitors were able to develop working business models without access to unbundled network elements and thus cannot be considered impaired. In its Order, the agency states that Congress did not introduce the unbundling framework to increase profits in competitive market segments. Given the direction of the USTA II court, the FCC had to come up with its own finding of market segments in which impairment existed. In order to facilitate such determination, the Order abandons national unbundling rules in favor of a more differentiated approach.

As will be discussed in more detail in the following subsections, "similar" markets are distinguished based on the expected revenue opportunities and/or the likely presence of competitive fiber facilities. The likelihood that "reasonably efficient" competitors will be impaired in these segments is then evaluated. Lastly, the FCC now takes alternative offerings, such as tariffed special access arrangements, into account when assessing impairment. However, the Commission refused to accept special access as a general indicator that new entrants were not impaired. Such a generic rule, as was proposed by major ILECs, would raise several concerns, among them the

ability of the ILECs to manipulate competition via these special access tariffs. Thus, availability of tariffed services was not considered a sufficient condition for non-impairment.

■ Mass market unbundling

In the mass market, comprising of residential and small business customers, after a transition period, only local loops will be available on an unbundled basis (UNE-L). Using the directions provided by the USTA II court, the FCC eliminated its earlier finding of impairment in the (residential and small business) mass market for local circuit switching. As a consequence, the widely used UNE-P platform will no longer be available after the 12 month transition period. Thus, in the future, carriers will either have to deploy some of their own facilities, lease network elements such as switching from other CLECs, or lease them from ILECs, but at non-regulated market prices. In justifying this new finding, the FCC points to recent developments in the mass market. First, it is argued that CLECs have deployed soft switches and packet switches in a growing number of exchanges. Between 1999 and 2003, 500 new switches were installed, bringing the total to 1,200 serving more than 3 million competitive access lines (FCC, 2005, pp. 112-115). The Bell operating Companies (BOCs) submitted evidence showing that competitive switches had been deployed in 137 of the top 150 Metropolitan Statistical Areas. Many of these new switches could be shared with other CLECs, thus reducing their dependence on ILEC switching services. Even though competitive switches are not deployed ubiquitously, they can reach a wide territory as dedicated transport arrangements facilitate the aggregation of traffic for switching in distant wire centers. Weighing all evidence, the FCC argues that the incremental costs of competitive switching do not impair reasonable efficient competitors. According to the Commission, this is demonstrated by the fact that several CLECs, including McLeodUSA, FDN Communications and Cavalier Telephone, use competitive switching in combination with UNE-L. Secondly, the FCC, analyzing alternatives to the "hot cut" process used to transfer lines from an ILEC's switch to that of a CLEC, found that other methods, such as batch cuts, are now available, meaning that CLECs are no longer impaired ⁶.

⁶ The CLECs had argued that hot cuts cost up to USD 50 upfront that could not be recovered due to high churn rates and low margins.

As of March 11th, 2005, ILECs are therefore under no obligation to offer unbundled mass market local circuit switching (and thus UNE-P). For existing unbundled switching customers, the FCC adopted a 12-month transition plan. During this period, competitive carriers will not be allowed to add new switching UNEs. Furthermore, UNE-P prices will increase. The FCC declares that, "during the transition period, competitive carriers will retain access to the UNE platform (i.e., the combination of an unbundled loop, unbundled local circuit switching and shared transport) at a rate equal to the higher of (1) the rate at which the requesting carrier leased that combination of elements on June 15th, 2004, plus one dollar, or (2) the rate the state public utility commission establishes, if any, between June 16th, 2004, and the effective date of this Order, for this combination of elements, plus one dollar" (FCC, 2005). The Commission has not released details to substantiate the magnitude of the price increases other than that it will ease the transition by avoiding a rate shock, while protecting the interests of the ILECs where unbundling will be eliminated.

■ Dedicated interoffice transport market unbundling

Unbundled dedicated interoffice transportation is used by carriers to aggregate end-user traffic both in the mass market and the enterprise market. The FCC differentiates DS1 (24 voice grade circuits), DS3 (28 DS1 lines) and dark fiber transport. To make the required granular assessment of impairment in these markets, the FCC first defined three tiers of markets. In defining markets, the FCC attempted to reflect the state of state of competition and the revenue potential of a service and used proxies to capture these features: the number of fiber-based collocators and the number of business lines served in a market. Tier 1 wire centers are characterized by the presence of four or more fiber-based collocators or over 38,000 business lines. About two thirds of the wire centers in this tier have more than 4 fiber-based collocators, signifying the existence of substantial revenue opportunities. According to the Commission's analysis, in this situation it is likely that a CLEC may either be able to deploy facilities itself or acquire services in the wholesale market ⁷. Approximately 5.4 percent of all

⁷ Stakeholders proposed widely different thresholds for business line counts: the RBOCs Bell South, Verizon and SBC proposed 5,000 lines and several CLECs more than the 38,000 proposed by the FCC (FCC, 2005, p. 68).

10,796 BOC wire centers fall into this category. Tier 2 wire centers have three or more fiber-based collocators or over 24,000 business lines. About two thirds of these wire centers have three or more fiber-based collocators. Approximately 3.2 percent of all BOC wire centers, serving 12.6 percent of all BOC business lines, fall into the Tier 2 category (FCC, 2005, p. 69). Tier 3 wire centers are all remaining centers.

Using these thresholds, the FCC found that requesting carriers are impaired without access to DS1 capacity "on all routes except those connecting two Tier 1 wire centers" (FCC, 2005, p. 72). In other words, on routes involving Tier 2 or Tier 3 wire centers, DS1 transport circuits have to be made available by ILECs on an unbundled basis. To maintain consistency with its DS3 unbundling rules, the FCC limits the number of unbundled DS1 transport circuits that one carrier may request to 10 (FCC, 2005, p. 73). DS3 loops have to be unbundled for all routes involving at least one Tier 3 wire center; no carrier may request more than 12 DS3 transport circuits (FCC, 2005, pp. 74-75). Likewise, dark fiber only needs to be offered on an unbundled basis on routes involving at least one Tier 3 wire center (FCC, 2005, pp. 75-77). Lastly, based on market evidence, the FCC determined that lack of access to entrance facilities (the facilities connecting a CLEC network to an ILEC network) does not constitute impairment (FCC, 2005, pp. 77-80). As in the case of mass market circuit switching, a 12-month transition plan was adopted for competing carriers to transition away from the use of DS1- and DS3-capacity dedicated transport where they are not impaired. For dark fiber, an 18-month plan was put into place. According to the FCC:

"these transition plans apply only to the embedded customer base, and do not permit competitive LECs to add new dedicated transport UNEs in the absence of impairment. During the transition periods, competitive carriers will retain access to unbundled dedicated transport at a rate equal to the higher of (1) 115% of the rate the requesting carrier paid for the transport element on June 15th, 2004, or (2) 115% of the rate the state commission has established or establishes, if any, between June 16th, 2004 and the effective date of this Order" (FCC, 2005, pp. 4-5).

The FCC has not released details to substantiate the magnitude of the price increases other than that it will ease the transition by avoiding a rate shock while protecting the interests of the ILECs where unbundling will be eliminated

■ High-capacity loops

High capacity loops are primarily used to serve business customers. Based on the directions provided by the USTA II court, the FCC examined whether such loops could be procured from third parties or self-provided. Based on the Commission's analysis, DS3 loops need to be unbundled to locations within a wire center serving fewer than 38,000 business lines or in which fewer than four fiber-based collocators are present (FCC 2005, p 98-100). For DS1 loops, the FCC recognized that stand-alone provision is economically rarely viable. Thus, it assumed that DS1 loops were only available on a competitive basis where sufficient DS3 capacity was present that could be leased at the DS1 level. For that reason, DS1 loops will need to be unbundled in wire centers containing fewer than 60,000 business lines or fewer than four fiber-based collocators. Thus, in both cases, unlike in the case of dedicated transport, the failure to meet one of the two indicators triggers an obligation to unbundle. The agency found that CLECs are not impaired without access to fiber loops in any instance.

As in the case of dedicated transportation, the FCC adopted "a 12-month plan for competing carriers to transition away from use of DS1- and DS3-capacity loops where they are not impaired, and an 18-month plan to govern transitions away from dark fiber loops" (FCC, 2005, pp. 108-109). Transition measures only apply to the embedded customer base "and do not permit competitive LECs to add new high-capacity loop UNEs in the absence of impairment. During the transition periods, competitive carriers will retain access to unbundled facilities at a rate equal to the higher of (1) 115% of the rate the requesting carrier paid for the transport element on June 15th, 2004, or (2) 115% of the rate the state commission has established or establishes, if any, between June 16th, 2004 and the effective date of this Order" (FCC 2005, p. 108-109). The FCC has not released details to substantiate the magnitude of the price increases other than that it will ease the transition by avoiding a rate shock, while protecting the interests of the ILECs where unbundling will be eliminated

■ Broadband markets

Unbundling provisions in broadband markets were not directly affected by the latest Order, but had already been vacated by the USTA I decision and/or phased out in the Triennial Review Order in 2003. As discussed

earlier, line sharing had been introduced as a separate network element in 1999. In *USTA I* the D.C. Court of Appeals vacated the line sharing rules with the argument that the FCC had not considered the market leadership of cable and the potential disincentives for ILECs and CLECs to innovate. In response, the Triennial Review Order had established a three-year timetable to phase out line sharing. Thus, until the transition is completed in 2006, ILECs have to allow line sharing, albeit at higher prices than in the past. According to the Order, prices are to increase to 25% of the full copper loop price in year 1, 50% in year 2, and 75% in year 3. Under the transition plan, new customers could only be added during year 1. ILECs are presently in year 2 of the transition. Furthermore, ILECs will have to allow line splitting, in which a CLEC acquires a local loop, but only uses the high-frequency circuit and makes the voice channel available to another CLEC.

The Triennial Review Order also had eliminated unbundling requirements for fiber deployment to the premises (FTTP) in new developments ("greenfield" projects) to stimulate investment in these next generation platforms. Responding to a request for reconsideration by Bell South and other ILECs, in October 2004 the Commission clarified that this exemption would also apply to fiber-to-the-curb (FTTC) projects, in which fiber extends to within 500 feet of all the customers served by that loop (FCC, 2004b). If an ILEC overbuilds copper loops, it will either have to keep the copper loop in service or make a narrowband channel available on an unbundled basis if the copper loop is retired. More specifically, ILECs must provide access to a voice grade channel via TDM technology or, if no TDM is available, make a 64kbps channel available. In the Triennial Order, the FCC had also eliminated the broadband sharing requirement for hybrid loops. In hybrid networks fiber is deployed to points that do not qualify as FTTP or FTTC. In such cases, CLECs may deploy their own networks to the fiber termination point of the ILEC ("remote terminal") and then lease the remaining copper loop (called "subloop"). Overall, interpreting the instruction in the *Telecommunications Act* to facilitate the deployment of advanced communications infrastructure and services, unbundling obligations in the broadband markets have been essentially eliminated.

■ Factors contributing to the new unbundling rules

The new unbundling regime has to be seen in the light of the legal battles driving its repeated overhaul for the past eight years. At the same time, it is a

response to the experience with earlier approaches to unbundling and a new assessment of the future of competition in the narrowband and broadband markets. Despite the changing rules, the FCC's mandate remains to ascertain the public interest. Thus, each set of rules can be seen as a specific expression of the agency's view as to which framework best serves the public interest. This is not always a decision based purely on factual evidence, but also on political considerations as to which course is the most opportune. In the context of the recent Order, the question arises why the Commission was willing to accept higher prices for unbundled network elements (at least in the short term) and more narrowly targeted unbundling obligations. Against this outcome, it is also interesting to ask how, in the Commission's view the Order's provisions serve the public interest, the ultimate test against which each decision will be judged. Several factors have contributed to the new unbundling rules.

■ Surviving future court review

First, reacting to several court defeats, the FCC had to define "impairment" in ways that would survive possible future legal challenges. The conceptual literature on interconnection and access is well developed under static conditions (see, for example, LAFFONT & TIROLE, 2000 and ARMSTRONG, 2002). Early unbundling policies at the federal and state levels were clearly inspired by a static view of unbundling and competition. For example, the TELRIC standard aimed at mimicking the competitive long run equilibrium price of an efficient supplier. As has already been pointed out by Joseph Schumpeter in the 1950s, the conditions for static efficiency need to be violated to achieve dynamic efficiency. More recent contributions to the research literature take into account the dynamic effects of unbundling rules (see, for example, CAVE & VOGELSANG, 2003; MANDY & SHARKEY, 2003; VALLETTI, 2003; PINDYCK, 2004; and BOURREAU & DOGAN, 2005). The new definition of "impairment" is influenced by a pragmatic dynamic notion of competition in which new entrants with access to new technology compete against an incumbent with a legacy network. Coaxed by several court defeats, the FCC has gradually expanded the weight attributed to the dynamic incentives for ILEC and CLEC investment created by its unbundling rules. This view is particularly important in the broadband markets, where substantial new investment is required.

At a practical level, earlier FCC regulations tested whether a competitor's lack of access to an unbundled network element would increase the cost of the entrant. The U.S. Supreme Court argued convincingly that this was inappropriate as entrants in any industry initially face higher costs than the incumbents. Thus, impairment had to be defined more narrowly with regard to wasteful duplication of investment and natural monopoly features. Consequently, the FCC proposed to include factors such as sunk costs, economies of scale, first-mover advantages, or other barriers within the control of an ILEC in assessing impairment (FCC, 2003). The most recent standard evaluates impairment with regard to the capabilities of a "reasonably efficient" competitor. The new standard emphasizes that impairment is not established solely by the existence of sunk costs or of cost increases for competing service providers. Rather, impairment exists if a reasonably efficient competitor would not be able to exert an effective check on the incumbent's market power. Following the instructions of the appeals court, the FCC now explicitly considers the existence of substitutes to unbundled network elements, which includes tariffed — but not price-regulated — forms of access, such as special access. Furthermore, the FCC weighs the potential costs of unbundling, especially in the form of reduced investment and innovation incentives. With its emphasis on "reasonably efficient competitors" and inter-modal competition, the new standard seems to improve, but not necessarily clarify the "impairment" threshold. In its latest Order, the FCC paid considerable attention to substantiating its rules with empirical evidence. At this point in time it is difficult to anticipate whether the ILECs, which had fought for even less stringent rules than the ones adopted, will continue their court challenges of the unbundling rules or whether they might shift to other strategies.

■ New technologies play more important role

A second development contributing to the new approach was the perception that new technologies were on the verge of commercial deployment and would intensify competition in local markets. In the narrowband voice markets, wireless services have developed into closer substitutes to fixed service; cable television companies have gradually expanded their share of the market and, as more systems upgrade to digital

cable, further growth is expected in the future⁸. In the broadband markets, in addition to the players just mentioned, the gradual migration toward 3G services and other wireless broadband platforms - e.g., WiFi (802.11), WiMax (802.16) or Mobile-Fi (802.20), both licensed and unlicensed, satellite-based services, and powerline communications promise additional competition. During the past few years, the FCC has adopted policies to facilitate the growth of these alternative platforms. For example, it has made more electromagnetic spectrum available for licensed advanced mobile services and expanded unlicensed bands, not least in support of Wireless Internet Service Providers (WISPs), and it has taken action to promote powerline communications. Moreover, it seems that the majority of Commissioners now envisions VoIP as the future of voice and considers the services offered by the new service providers as superior to those supplied by many CLECs⁹. From that vantage point, narrowband unbundling appears less important in the future. However, it might have been justified to retain line sharing at least until more robust platform competition has materialized. This apparently was the position of the majority of the Commissioners, but in a somewhat odd act of political logrolling it was abandoned to facilitate the political compromise underlying the Triennial Review Order. Ironically, that Order retained a broad range of narrowband unbundling provisions, which were later overturned by the appeals court, but eliminated line sharing and other broadband unbundling obligations. The FCC apparently did not find a way to re-insert line sharing into the latest Order, as had been predicted by some experts.

■ Experiences with narrowband unbundling

Thirdly, in contrast to earlier decisions, there is now an empirical record of outcomes under the previous unbundling rules, which undoubtedly influenced the decision. The aim of Congress in the Act was to stimulate

⁸ At the end of June 2004, cable provided about 45% of the facilities-based CLEC loops. This figure corresponded to about 10% of all CLEC access lines and about 2% of the total number of access lines. See Federal Communications Commission, *Local Telephone Competition, Status as of June 30, 2004*, available at http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/lcom1204.pdf.

⁹ This is not to say that there is agreement among the FCC Commissioners as to the appropriate regulation of VoIP. In fact, they hold widely different views with respect to such issues as mandatory emergency calling features, contributions to universal service, and law enforcement related to VoIP.

facilities-based competition. The implementation of the Act at the federal and state levels led to specifications of rules that had several unintended consequences. The TELRIC standard for the pricing of unbundled network elements resulted in charges based on a hypothetical, efficient greenfield technology. The Regional Bell Operating Companies (RBOCs — Bell South, Qwest, Verizon, and SBC) claimed that these prices were not cost-covering and implied a discount of 50-60% off the retail rate (compared to a mandated discount of about 20% for wholesale services sold to resellers). In addition to the TELRIC standard, ILECs had to recombine individual network elements and sell them at TELRIC prices as platforms (UNE-P). This changed the incentives for new market entrants by offering them a lower-risk alternative to facilities-based entry.

The empirical record reveals that UNE-P became the preferred entry strategy after the collapse of information and communication technology share prices in 2000. Overall, new market entrants were able to expand their share in fixed local access lines from about 3.2% in 1997 to 17.8% in 2004, a substantial increase (see figure 1). However, the envisioned influx of facilities-based competitors was lower than expected. Although the number of customers served via CLECs' own facilities increased from 4 to 7.4 million, UNE-P based lines increased even faster from 4.8 million in 2001 to 17.1 million in 2004.

Figure 1 - The growth of local voice competition (million access lines)

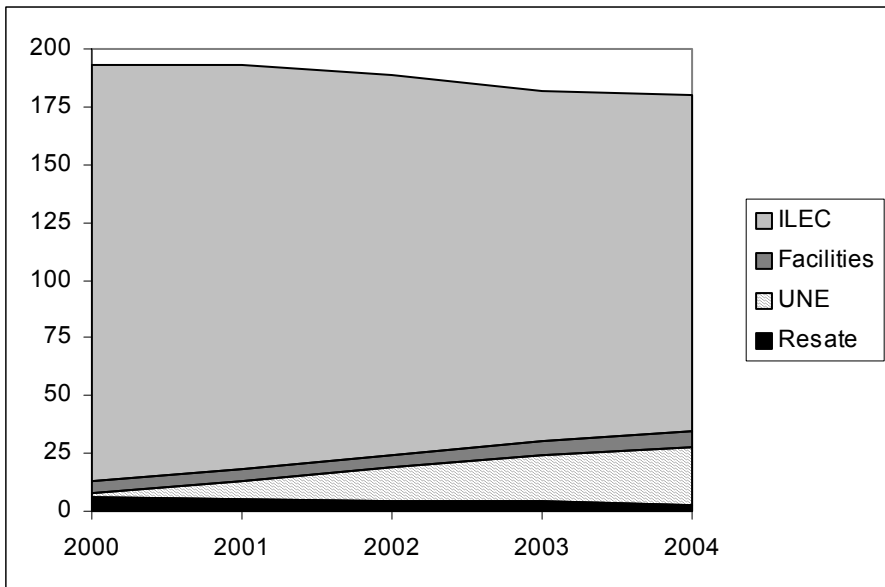
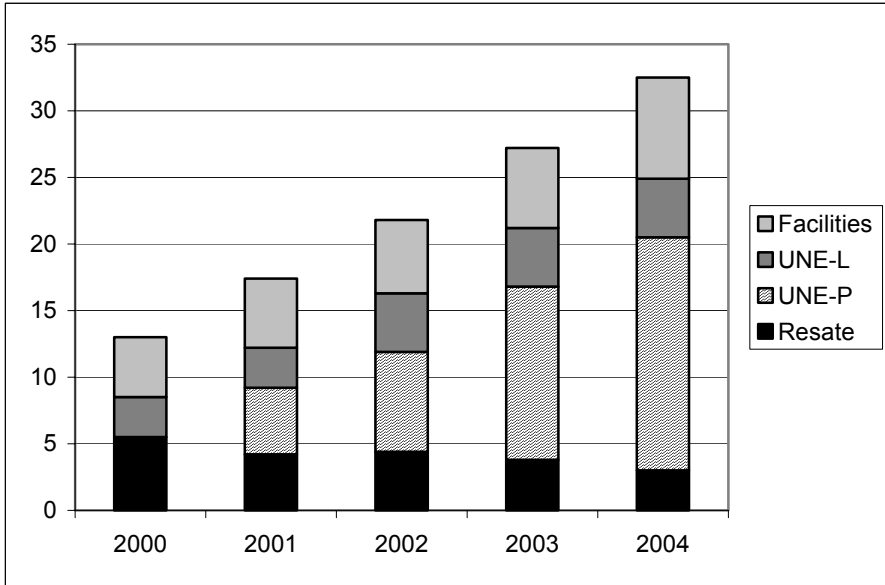


Figure 2 – Composition of competitive lines (million access lines)



Source: FCC Local Competition Reports, various years.

As a result, the share of CLEC facilities-based lines in total competitive lines declined from 31% in 2000 to 23% in 2004. During the same period, resale declined from 45% to 10% and UNE-L from 24% to 13% of all competitive lines. However, UNE-P lines increased from very low levels (there are no detailed data available for the early years) to 53% (see figure 2). The investment disincentive argument is not very convincing with respect to traditional copper loops, which are already sunk. Moreover, CLECs offered innovative services over UNE-P platforms, putting additional competitive pressure on the ILECs. The empirical data do not seem to support a strong claim that UNE-P was a first step toward facilities-based competition in the aggregate, although this is probably true in many specific cases.

■ Experiences with broadband unbundling

The dynamic incentives of unbundling rules are much more critical in the area of broadband communications, where substantial facilities upgrades and new investment are required. There is a widespread sentiment among

policy-makers and industry that the U.S. is losing ground in broadband vis-à-vis South Korea, Canada and other leading nations ¹⁰. There is a remarkable difference in the ranking with regard to cable modem and DSL availability: whereas the U.S. ranked number two in terms of households passed by cable modem ready systems, it only ranked number eighteen in DSL. BITTLINGMEYER & HAZLETT (2002) have attributed this gap to the difference in the legal treatment of cable (free from unbundling obligations) and telephone companies.

At the FCC and in the court rooms, this perception has probably further boosted the case against the past unbundling regime. Many contributions in this policy debate pointed out that the low UNE prices (often referred to as "government mandated discounts") have disadvantaged the ILECs — and especially the RBOCs, due to their stricter regulatory mandates — and thus weakened one major investor in advanced networks. Several studies, some financed by the ILECs, argued that UNE-P and TELRIC create a disincentive for ILECs to invest in advanced infrastructure (PINDYCK, 2004). Thus, while these rules may have advanced the short-run goal of attracting new entrants, they may have been in conflict with other goals of the Act, most importantly to accelerate broadband deployment. These short and long-term effects of unbundling on advanced service deployment are not fully investigated.

The net effect of unbundling rules depends on the outcome of contrary forces: the acceleration of market entry and its repercussions on the incumbent and the disincentive to invest for the incumbent (and possibly new entrants who had otherwise invested more in their own facilities). There is also evidence that unbundling has contributed to an acceleration in the deployment of advanced technology at the level of wire centers. However, even studies that indicate the overall positive effect of unbundling typically find that lower prices for UNEs constitute a disincentive for investment (GABEL & HUANG, 2003). Whereas these studies added some fuel to the discussion on the advantages and disadvantages of the past unbundling regime in broadband, they do not necessarily imply the framework laid out in the December 2004 Order.

¹⁰ For example, as of June 2004, the OECD (forthcoming) ranked the U.S. number 11 in broadband penetration.

■ Assessment and outlook

With the exception of the areas in which impairment continues to exist and where the TELRIC pricing guidelines apply, the new rules will probably increase prices for inputs sold to competitive carriers in the short run. The FCC adopted transition periods to avoid destabilization of the market position and business plans of CLECs and to facilitate a migration to other solutions. In the areas affected by the most recent Order, price increases during the transition are limited to 15% or USD 1.00 as stated. Where they are not considered impaired, competitive carriers will have to buy unbundled network elements under negotiated agreements or tariffed special access prices (or move away from the unbundling model toward resale or facilities-based competition) after the transition period. Currently, these unregulated special access prices typically exceed UNE prices considerably¹¹. In addition, previous changes in the line sharing provisions are likely to increase the costs of CLECs and broadband ISPs. A few carriers, for example Verizon and Covad, have announced private agreements but it is far from certain that smaller competitors will be able to negotiate such arrangements. However, it is not straightforward to assume that prices in wholesale markets will necessarily increase. BOURREAU & DOĞAN (2005) show that under certain conditions, unregulated incumbents may have an incentive to price unbundled network elements too low to delay facilities-based competition¹². Moreover, emerging technologies, such as very scaleable switches, may ease potential cost increases in the medium and long run. The granular analysis of the FCC did not rely on a detailed analysis of the costs for competitors in the market tiers and is thus a rough proxy. It remains to be seen whether the remaining unbundled elements will suffice to avoid serious cost disadvantages for new competitors in smaller and medium-sized markets.

After the collapse of telecommunication share prices in 2000, many of the surviving CLECs are in a weakened financial position and further industry consolidation seems likely. The implications of the new rules will also be felt by the inter-exchange carriers. Although this move is not driven solely by

¹¹ In a study for CompTel/ASCENT, a business association of competitive local exchange carriers, BRYANT & PELCOVITS (2004) found that the cost impact of a transition from DS1 UNEs to special access DS1 would raise the respective costs of CLECs by 100%, and in some cases up to 10-fold. Trade press information often suggests that special access is priced up to 300-500% above UNEs.

¹² At an anecdotal level, Sprint is pricing its wholesale services very aggressively low.

the new unbundling rules, it probably accelerated AT&T's decision to merge with SBC Communications, one of the RBOCs. MCI, is also in takeover talks with Verizon and Qwest. At this point, competition from wireless and VoIP is relatively weak and it remains to be seen whether it will be sufficient to discipline pricing by ILECs. On the positive side, even a small competitive fringe may be effective in controlling market power in markets with high sunk costs. On the negative side, the lower service quality of wireless and VoIP services are likely to limit their short-term effect. Moreover, as broadband is only available to 27% of U.S. households and open access provisions to broadband platforms are lacking, VoIP service providers remain vulnerable to price squeezes and other strategies, such as port blocking by ISPs that might tilt the playing field against them.

All this seems to imply that the most likely scenario is price increases for inputs in the short run, which may result in higher retail prices for vulnerable customer groups. Further industry consolidation is also likely. In the medium and long run, these developments may well stimulate investment and competition. They will certainly create stronger incentives for complementary facilities investment in the traditional voice markets. There is evidence that the ILECs have accelerated their DSL rollout and have initiated large-scale projects to bring fiber to the neighborhood (SBC's "Project Lightwave"), the curb (Bell South) or the home (Verizon). If the new framework avoids further court challenges, it should reduce the regulatory uncertainty that has plagued investors over the past decade and probably depressed investment levels. Overall, given the changing industry conditions and the necessity to compromise, at the end of the long struggle, the view seems to have prevailed that the potential negative effects of higher prices for unbundled access, and possibly retail services, pale compared to the benefits from stronger investment incentives, the long-term benefits of more robust facilities-based competition, and increased regulatory certainty. The Order was adopted against the strong protests of Commissioners Copps and Adelstein. However, given the past court record and present policy visions, it seems unlikely that stronger unbundling provisions will be reestablished in the near future. One unknown is the states, which, in principle, could adopt laws in favor of continued unbundling, although they would face the threat of federal preemption. The U.S. unbundling framework had been very tedious and intrusive; the past eight years also illustrate that in an environment with increasing competition such detailed regulatory rules are not sustainable. The present framework brings the U.S. more into line with the narrowband unbundling rules of other nations and introduces a more market-based framework for broadband services.

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