

Interview with **Prof. Ingo Vogelsang**  
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Conducted by **Dr. Karl-Heinz NEUMANN, WIK, Bad Honnef**

**Karl-Heinz NEUMANN:** The concept of unbundling is a well-established regulatory concept in the USA and in the EU. It was introduced into the U.S. regulatory framework two years earlier than in Europe. Could you give us a short overview of the reasons and the conceptual framework for its introduction?

**Ingo VOGELSANG:** The earlier U.S. experience with the emergence of competition in the long-distance market had shown a crucial dependence of competition on the ability of new competitors to resell the incumbent's services in order to be able to provide a full set of services and geographic coverage, while building their own networks. In contrast to long-distance networks, local telecommunications networks contain bottlenecks that may not be worth duplicating. It is therefore both economically efficient and enhances competition to allow entrants to utilize such bottlenecks owned by the incumbent(s) and complement them with their own networks.

This suggests that competitive entry is best achieved by a combination of privately-own networks, resale and the purchase of unbundled network elements. Thus, the starting point is the desirability of competition in local markets. The unbundling requirement then evolves because (a) it enhances competition and helps avoid duplication of costly bottlenecks and (b) incumbents do not voluntarily provide it.

**KHN:** In which form was unbundling implemented by the FCC and the State Regulatory Commissions?

**IV:** The U.S. Telecommunications Act of 1996 (1996 Act) gives some criteria for unbundling and leaves it to the FCC to define the network elements to be unbundled. The FCC, in its Local Competition Order, came up with a list of

such elements that went much further than anything suggested in Europe or elsewhere. The FCC's rationale was that an entrant should be able to acquire all network elements necessary to deliver local network services. The elements included local loops, switching, signalling, access to databases, access to operations support systems (OSS) and more. It turned out that only some of these elements, such as local loops and access to OSS, would be demanded as individual elements, while others, such as switching, were not. However, the FCC also obliged incumbents to offer a combination of unbundled network elements (UNEs) in such a way that entrants do not have to own a local network at all. This combination, called UNE-P, became enormously popular among local entrants, particularly those with a long-distance network.

While the FCC defined the UNEs to be delivered and the pricing methodology to be used, the state public utilities commissions (PUCs) arbitrated the actual agreements between incumbents and entrants and therefore influenced, or even determined, the conditions used in each specific agreement. In particular, there is a fair amount of variation in the prices for UNEs across the country, even if adjusted for differences in network density and geological conditions.

**KHN: The Telecommunications Act and the FCC impose several forms of unbundling. Could you please describe them for us?**

**IV:** The form of unbundling depends on the physical and economic characteristics of the UNEs. Some elements can be physically separated from the incumbent's network, while others have to remain part of it. Each individual network element therefore requires a different contractual and access arrangement. An unbundled local loop is essentially rented out and becomes part of the entrant's network. In order to hand the loop over from the incumbent to an entrant, the entrant needs to be collocated in the incumbent's central office and the loop has to be connected to the entrant's equipment. Thus, there is a one-time set-up price and a monthly rental.

This is most pronounced for full local loop unbundling and, to a lesser extent, for line sharing. In contrast, unbundled switching is provided by an incumbent's switch that continues to be used by the incumbent and other entrants. It is priced on a per-minute basis. As a consequence of this diverse approach to each element, the UNE-P contains a blend of pricing. UNE-P as a platform is most closely related to the resale of local network services, which continues to be mandated by the law.

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**KHN: For our European audience the UNE platform is a form of unbundling, which is not well known to us because it is not applied in Europe. Could you go a little more into the economic nature of that particular unbundling concept?**

**IV:** This wholesale service is a combination of UNEs that allows an entrant to avoid collocating in all the incumbent's switching centers and yet to offer local services throughout the incumbent's local service territory. It is therefore very closely related to the resale of all the incumbent's local services. However, there are two main differences. The first is that the U.S. legal resale obligation with wholesale discounts only applies to end-user services, so that long-distance carriers moving into local services would not be able to acquire local origination and termination for long-distance calls at discounted prices. They are, however, included in the UNE-P. The second difference between resale and UNE-P is the pricing concept. Local resale is priced at retail minus avoided costs, while UNE-P is priced at long-run incremental costs. Since the incumbents' local service prices are above costs in some areas (mostly metropolitan) and below costs in others (mostly rural), this would suggest that entrants arbitrage the two entry opportunities UNE-P and resale. However, such a pattern has failed to emerge. Rather, UNE-P has largely crowded out resale in recent years.

**KHN: According to recent FCC figures, more than 17 % of all telephone subscribers in the USA get their telephone access via alternative operators. What is the importance and impact of unbundling on these numbers?**

**IV:** Out of the most recent 32 million access lines served by competitors, 17.1 million represented UNE-P, 4.3 million unbundled local loops, 3.1 million resale and 7.5 million competitor-owned local loops. While unbundled local loops and resale have been stagnating recently, UNE-P has been taking off. The same holds for coaxial cable as part of local loops owned by cable TV companies as new local competitors.

**KHN: You mentioned the declining relevance of resale for local competition. What is the reason for the decline of resale and what was the impact of resale in the beginning of opening local telephony for competition?**

**IV:** After the passage of the 1996 Act, resale quickly gained a dominating share in local competition, even though own lines by competitive access providers (CAPs) had already existed since the 1980s. Resale requires the least lead-time and the lowest capital commitment among the three entry strategies and the UNE-P was only available in later years. Resale is also most easily implemented by incumbents, while unbundling requires quite

complex organizational and technical solutions. Thus, the initial surge of resale is fully understandable. Its relative decline stems largely from the fact that resale opens the door for competition, but does not provide all the service and product differentiation, quality control etc. that the entrants want to provide. Thus, the decline of resale may be the result of its initial effectiveness. In the U.S. case, however, the superiority of UNE-P for the entrants is also to blame.

**KHN: Line sharing is one form of unbundling to produce DSL access services. What is the role of line sharing in the competition for DSL and for broadband access in general?**

**IV:** Line sharing is a further unbundling of the local loop such that voice service over the low-frequency portion is provided by the incumbent, while the high-frequency portion is rented out to entrants for providing DSL broadband access. The FCC had issued a line-sharing obligation for incumbents in its Line Sharing Order of 1999 and pushed line sharing through low rental rates. However, in the USA DSL only has about one third of the broadband access market, whereas two thirds are held by cable modem access (and a small portion by satellites). An appellate U.S. court therefore found in 2003 that DSL providers are non-dominant in the broadband access market and should not be obliged to provide line sharing as a result. The FCC therefore had to abandon its line-sharing policy in the recent triennial review.

**KHN: In its triennial review the FCC reviewed major parts of their competition policy and in particular the access concept of unbundling. What are the status and the future of unbundling in U.S. telecommunications after the triennial review?**

**IV:** The FCC has declared that it wants to limit unbundling in order to promote innovation and sustainable competition. Besides the abolishment of line sharing, the triennial review order is therefore phasing out mass-market local circuit switching as a required unbundled element and with it the UNE-P. The abolishment of UNE-P only came after a court rejected a previous FCC ruling that would have retained UNE-P in certain geographic areas. The FCC further lifts the unbundling requirements on new fiber-optic loops and feeders. Thus, the scope of unbundling has been reduced for the current networks and the share of the incumbents' networks that needs to be unbundled will decline in the future, as copper lines are replaced by optical fiber. However, the unbundling requirements remain for local copper loops and for most of the other UNEs. Resale with wholesale discounts also remains necessary for all the incumbents' local retail services.

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**KHN: When you try to make an overall assessment of the importance and the competitive impacts of unbundling in the USA, what would be your conclusion after a decade of experience?**

IV: We are currently at a crossroads. Looking back, local competition has made substantial inroads in the past ten years. In terms of market shares gained, most of that has been achieved through unbundling. Some commentators argue that a large fraction of that success is due to underpricing of UNE-P. Certainly, for the last few years, UNE-P has been the easiest and cheapest option for competitors. However, part of that success may be due to continued over-pricing of local origination and termination of long-distance calls. Thus, it could just as well be tariff arbitrage. In spite of the large market share gains, local competitors have had a bumpy ride and suffered heavily under the telecommunications sector crisis of 2000. The new FCC policy provides a further blow to some of these competitors, as expressed most drastically by AT&T's decision to abandon the local residential markets. From this perspective, the outlook of mandatory unbundling is not rosy. Obligatory unbundling will continue for a large part of the local loops and certain transport facilities. However, that part will decline over time, unless the FCC reverses itself for fiber loops. The interesting question now emerges if voluntary unbundling will replace unbundling obligations. In some cases that is occurring already. We are not only at a crossroads with respect to FCC policy, but also with respect to local competition. Inter-modal competition from mobile carriers, cable companies and satellites has emerged rapidly over the last few years and is severely threatening the incumbent local exchange carriers. In this new environment, excess capacities are bound to become a problem. Resale of services and sale and sharing of unbundled network elements could then well become attractive propositions for local network providers.

**KHN: You know that we have quite a disperse picture of unbundling in European Union member states. Full unbundling is a relative success (in terms of demand and numbers) in only a few countries. Alternative operators in Germany are now using nearly two million fully unbundled local loops, which is more than in the rest of the EU put together. What is your explanation for this disperse picture in Europe and are there similar experiences in the various states of the USA?**

IV: There appear to be two reasons for the difference between the USA and Europe when it comes to unbundling. The first is that the USA did not seriously begin unbundling until about 15-25 years after the liberalization process. Unbundling only became highly relevant, when competition in the local service area started. Secondly, unbundling in the USA was built on several predecessors. The essential facilities doctrine from antitrust policy had entered the regulatory arena in the 1970s. Resale of

telecommunications services was required in the same decade. In the 1980s, in the course of the computer inquiries, the concept of open network architecture (ONA) was developed. Collocation had become an issue of expanded interconnection into local networks in the late 1980s and early 1990s. So, with respect to unbundling, the USA had a definite head start compared to Europe. On top of that, the 1996 Act really pushed unbundling as a way to jump-start competition. The Europeans did not have this history and know-how. They also had the luxury of being able to learn from the U.S. experience. The Europeans had been going for a rebalancing of end-user prices early on. This would make a UNE-P type unbundling unattractive. That mostly leaves local loop unbundling and line sharing as the principal remaining areas for unbundling.

The disperse unbundling pictures in Europe partly have to do with the way networks developed. In the UK, local competition largely resulted from the late build-out of the cable TV networks that could therefore include telephony in their original architecture. By contrast, the German cable TV network was built earlier and was largely owned by the incumbent telephone operator. In Germany, local telephone competition was therefore much more remote and required a large push through local loop unbundling. This push was concretised by a number of city carriers, which were mostly building on pre-existing telecommunications networks of electric utilities. Having most of the necessary infrastructure ready at the time of liberalization, those city carriers especially needed local loops to offer local telephone services.

Large differences in the growth and amount of unbundling also exist between the various states in the USA. These differences are driven by the different local exchange carriers, by the PUCs and by geography (metropolitan areas with telecommunications-intensive services). A peculiar factor was Section 271 of the 1996 Act, which rewarded incumbents with sufficient local competition in a state with the permission to enter long-distance markets. Permission has now been granted throughout the USA. However, the early permissions were granted to incumbents in states where local competition faced the fewest hurdles in terms of the availability and conditions for UNEs and resale. These original differences tend to persist.

**KHN: A similarly disperse picture exists with regard to line-sharing. While there is only a very limited demand for this wholesale service in Germany and some other countries, it is a relative successful service for generating competition in the DSL market in some Member States. Do you have an explanation for these differences?**

**IV:** I do not have enough information about the individual countries to answer this question with any full authority. In the case of Germany, line

sharing started late, after Deutsche Telekom had already penetrated the DSL market and had established itself as an attractive provider. Besides that, line sharing just like local loop unbundling, requires specific investments by the entrants in each local switching area they want to serve. Line sharing is therefore subject to substantial effects of scale that need to be overcome. Given that DSL has a low (though fast growing) penetration rate, reaching optimal scales is hard.

**KHN: Bitstream access is another wholesale service, which is sometimes regarded as a part of the unbundling concept. Bitstream access contributes to a relevant degree to DSL competition in Europe. This access concept does not exist in the USA. Has it ever been discussed there?**

**IV:** As far as I know, it has not been discussed as a mandatory access concept in the USA.

**KHN: If we were to ask you to predict the future of the unbundling concept and areas in which it will be successful and needed in the future or otherwise, what would your answer be?**

**IV:** As suggested in an answer to an earlier question, as far as the future is concerned, I like to distinguish between obligatory and voluntary unbundling. We have seen voluntary unbundling for leased lines for a long time. So, this is by no means a new concept. It is my view that the future of voluntary unbundling is bright. Incumbent local exchange companies will be happy to rent out local loops that are idle because the customers are currently served by a cable TV company instead. On the other hand, I see the future of mandatory unbundling as neutral at best. I support it as a regulatory concept and would leave it to the market participants to use it wherever competition would suffer otherwise. It is my hope, however, that inter-modal competition will spread sufficiently so that mandatory unbundling can be delegated to low-density areas.