Universal Personal Communications in the New Telecommunications World Order

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Access to wireline networks

Rob Frieden

Growing demand for wireless telecommunication services raises questions about the terms and conditions for interconnection with incumbent wireline carrier facilities. What has been a minor adjunct to wireline facilities may evolve into an infrastructure capable of providing near ubiquitous telecommunications, with significant traffic volume that never traverses wireline facilities. This article explores the potential for wireless networks to establish parity of access and a correspondent relationship with incumbent wireline carriers. Such an examination anticipates that local exchange carriers will lose bottleneck control as proliferating networks and service options make telecommunications a more porous and less hierarchical process.

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Significant growth in the demand for cellular radio service and plans for even more ambitious terrestrial and satellite networks raise questions about the status, impact and regulation of wireless systems. As these networks grow in significance, the percentage of traffic never traversing wireline facilities will likewise increase. What has been a minor adjunct to wireline facilities may evolve into an infrastructure capable of providing near ubiquitous telecommunications, available for mobile applications via handheld terminals.

Heretofore, wireless technologies have provided localized services to relatively small user groups. They have operated in a manner that is ancillary, subordinate and reliant on the wireline infrastructure. Wireless networks have provided productivity and convenience enhancing services primarily to such niche market segments as:

- white-collar business elites who perceive the need for constant access to the rest of the world, eg doctors, lawyers and senior managers;
- 'road warriors' whose frequent travel makes them prime candidates for new ways to stay in touch; and
- people involved in a business or trade that involves frequent, primarily road travel and premises visits, eg sales people like real estate agents and service technicians like plumbers and delivery drivers.

Virtually all existing users of wireless networks require access to or from the conventional wireline network in the sense that most calls originate or terminate over wireline facilities. The wireline operator provides 'first mile' call origination to a wireless network call recipient, or 'last mile' call termination to a wireline network subscriber. Near absolute reliance on wireline network access confers an opportunity for owners of such facilities to establish and maintain a superior bargaining posture

on the terms, conditions and price of access. For most currently operating wireless networks, the local exchange network constitutes a bottleneck through which most traffic traverses.

Wireless network operators constitute customers of wireline access services. Their relatively insignificant traffic volume serves niche market applications, not functionally equivalent to wireline services. While they may be regulated as common carriers, wireless operators do not secure the kind of facilities interconnection typically established in carrier-to-carrier agreements.

By most accounts, traffic volumes carried by wireless networks will grow precipitously.[1] As these networks proliferate, a growing percentage of traffic will never traverse the wireline network. At some point, wireless network operators may perceive the opportunity to revamp the terms and conditions of access to wireline carrier facilities. There may come a time when incumbent local exchange carriers can no longer demand compensation for access to wireline facilities without having to compensate wireless systems for terminating a significant portion of their traffic. Should this scenario play out, wireless systems will evolve from subordinates to carrier correspondents, a status closer to parity with incumbents.

This article will explore the potential for wireless networks to evolve into a carrier correspondent relationship with incumbents like wireline local exchange and long-distance carriers. Such an examination anticipates that local exchange carriers will lose bottleneck control as proliferating networks and service options make telecommunications a more porous and less hierarchical process.

Proliferating wireless and wireline networks create the potential for facilities access parity. However, they also present countless logistical, operational, revenue division and facilities interconnection issues. Current debate on the type, quality and price of wireline network interconnection attests to the complexity and contentiousness of the process. The US Federal Communications Commission (FCC) worked mightily, over a number of years, to ensure parity of local exchange access between long-distance carriers.[2] The Commission has begun the task of determining the appropriate nature, type and price of access between incumbent and newcomer local service providers.[3]

In a broader sense, the FCC has addressed facilities access in terms of whether and how to order common carriers to make their network architectures more open.[4] A more accessible network requires that carriers reduce the interconnection process into a set of least common denominator elements and make them available on an *à la carte* basis. The terms, conditions and price of access are important for purposes of establishing a level competitive playing field among service providers who use basic service elements of the local exchange as building blocks for enhanced services and likewise for access to call originators and recipients.[5]

Past and current mechanisms for wireless network access

Relative to their incumbent wireline counterparts, wireless networks have yet to generate substantial traffic volumes.[6] Wireless network operators have concentrated on dense routes, primarily in urban and heavily trafficked suburban areas or rural corridors. Cellular radio operators are building out networks to the hinterland,[7] and have

[1] Several commenters in the FCC's consideration of personal communication networks filed studies containing estimates of future demand. Telocator, now known as the Personal Communications Industry Association, submitted a study concluding that the PCS market could have 60–90 million subscribers by the year 2002. Motorola estimates that PCS will have the technical capability to serve more than 150 million domestic subscibers by the year 2000. See Amendment of the Commission's Rules to Establish New Personal Communications Services, GEN Docket No 90-314, Second Report and Order, 8 FCC Rcd 7770, para 16; 1993 FCC Lexis 6517 at *14.

[2] See, eg, MTS and WATS Market Structure, CC Docket No 78-72, Phase I, Third Report and Order, 93 FCC 2d 241, *on recon* 97 FCC 2d 682 (1983), *on further recon* 97 FCC 2d 834 (1983), *aff'd sub nom* Nat'l Assn of Reg Util Comm'rs *v* FCC, 737 F2d 1095 (DC Cir 1984), *cert den* 469 US 1227 (1985). MTS and WATS Market Structure Amendment of Part 67 of the Commission's Rules and Establishment of a Joint Board, CC Docket Nos 78–72 and 80-286, Report and Order, 2 FCC Rcd 2953 (1987), *recon den* 2 FCC Rcd 4543 (1988), *pet for rev den sub nom* Pub Serv Comm of the District of Columbia *v* FCC, 897 F2d 1168 (DC Cir 1990); Transport Rate Structure and Pricing, CC Docket No 91-213, Report and Order and Further Notice of Proposed Rulemaking, 7 FCC Rcd 7006 (1992), *on recon* 8 FCC Rcd 5370 (1993), *on further recon* FCC 93-403 (rel 18 August 1993), *pet for rev pending sub nom* Full Service Computing Corp *v* FCC, No 93-1670 (DC Cir, filed 4 October 1993).

[3] See Expanded Interconnection with Local Telephone Company Facilities, CC Docket No 91-141, Report and Order and Notice of Proposed Rulemaking, 7 FCC Rcd 7369 (1992), *on recon* 8 FCC Rcd 127 (1992), *on further recon* 8 FCC Rcd 7341 (1993), *vacated in part and remanded sub nom* Bell Atlantic Inc *v* FCC, 24 F3d 1441 (DC Cir 1994), *on remand* 9 FCC Rcd 5154 (1994); Local Exchange Carriers' Rates, Terms and Conditions for Expanded Interconnection for Special Access, CC Docket No 93-162, 8 FCC Rcd 4589 (Com Car Bur 1993); Order Designating Issues for Investigation, 8 FCC Rcd 6909 (Com Car Bur 1993); Supplemental Designation Order and Order to Show Cause, 9 FCC Rcd 2742 (1994).

[4] See Amendment of Sec 64.702 of the Commission's Rules and Regulations (Third Computer Inquiry), Phase I, 104 FCC 2d 958 (1986), *on recon* 2 FCC Rcd 3035 (1987), *on further recon* 3 FCC Rcd 1135 (1988), *on further recon* 4 FCC Rcd 5927 (1989), *vacated sub nom* California *v* FCC, 905 F2d 1217 (9th Cir 1990); Phase II, 2 FCC Rcd 3072 (1987), *on recon* 3 FCC Rcd 1150 (1988), *on further recon vacated sub nom* California *v* FCC, 905

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F2d 1217 (9th Cir 1990); *on remand* 5 FCC 7719 (1990), *on recon* 7 FCC Rcd 909 (1992), *pets for rev den sub nom* California *v* FCC, 4 Fd 1505 (9th Cir 1993); Computer III Remand Proceeding: Bell Operating Company Safeguards and Tier 1 Local Exchange Company Safeguards, 6 FCC Rcd 7571 (1991), *partially reversed and remanded sub nom* California *v* FCC, 1994 West Law 566718 (9th Cir, rel 18 October 1994); Filing and Rev of Open Network Architecture Plans, 4 FCC Rcd 1 (1988), *on recon* 5 FCC Rcd 3084 (1990), *on further recon* 5 FCC Rcd 3103 (1990), *erratum* 5 FCC Rcd 4045, *pets for rev den sub nom* California *v* FCC, 4 Fd 1505 (9th Cir 1993); *on recon* 8 FCC Rcd 97 (1993), *on further recon* 8 FCC Rcd 2606 (1993); *pets for rev den sub nom* MCI Telecom Corp *v* FCC, No 92-70189, slip op (9th Cir, 23 September 1993).

[5]For an overview of the similarities and differences in how the USA and the European Union address the infrastructure access issues, see Frieden, Robert 'Open network policies for the United States and Europe: visions and realities' *Jurimetrics Journals* 1991 **31** 319–328.

[6]While one can consider the take-up of cellular radio service in the USA to be substantial, from less than 100 000 in 1984 to almost 14 million in 10 years, market penetration remains minor relative to conventional wireline services. As of 1991 cellular radio had achieved a penetration rate of 2.0 per 100 inhabitants: US Dept of Commerce, National Telecommunications and Information Administration *Telecommunications in the Age of Information* NTIA Special Publication 91/26, Government Printing Office, Washington, DC (1991) 173. In 1990 wireline penetration stood at approximately 40–54.5 per 100 inhabitants: *ibid* 172 (reporting 49.0 per 100 inhabitants); see also Staple, Gregory (ed) *Telegeography 1992: Global Telecommunications Traffic Statistics and Commentary* Inst of Int'l Comm (1992) 61 (reporting 54.5 per 100 inhabitants).

[7]See Amendment of Part 22 of the Commission's Rules to Provide for Filing and Processing of Applications for Unserved Areas in the Cellular Service and to Modify Other Cellular Rules, CC Docket No 90-6, Notice of Proposed Rulemaking, 5 FCC Rcd 1044 (1990), 1st Report and Order and Mem Op and Ord on Recon, 6 FCC Rcd 6185 (1991), Further Notice of Proposed Rulemaking, 6 FCC Rcd 6158 (1991), 2d Report and Ord, 7 FCC Rcd 2449 (1992), Report and Ord and Mem Op and Ord on Recon, 7 FCC Rcd 7183 (1992); see also Rules for Rural Cellular Service, CC Docket No 85-388, 1st Report and Order, 60 RR 2d 1029 (Pike & Fischer) (1986), 2nd Report and Ord, 2 FCC Rcd 2306 (1987), *modified* 4 FCC Rcd 5377 (1989); 3rd and Order on Recon, 3 FCC Rcd 4403 (1988), 4th Report and Order, 64 1391 (Pike & Fischer) (1988), *on recon* 4

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developed correspondent relationships to make it possible for 'roaming' users to activate service outside the local calling area on an *ad hoc* basis. Currently, wireless networks operate as islands of functionality that rely on, rather than bypass, the wireline network.

On the matter of access to wireline facilities, the ancillarity of wireless networks translates into subordination. Wireless operators have lacked traffic volumes and access alternatives sufficient to provide any degree of negotiating leverage with local exchange carriers (LECs). Even though inferior and costly access will handicap an LEC's wireless affiliate, the incumbent carrier appears to have perceived strategic advantages in doing so. With wireless networks like cellular radio treated as consumers of access, the LEC establishes a one-way compensation arrangement: from the wireless operator to the LEC, even for traffic originated on the wireline network. Cellular radio operators have been able to pass these expenses onto users by creating a definition of airtime that includes charges when either initiating or receiving a telephone call. Typically in wireline traffic routing arrangements the originating carrier pays for access, or divides toll revenues with the terminating carrier. Wireline LECs cannot expect call recipients to pay for the privilege of having local or long-distance calls delivered, yet that is the very mechanism currently in place for cellular radio networks.

LECs may also have perceived a strategic advantage in refusing to permit a high level of wireless traffic aggregation when interconnecting facilities. While cellular radio operators can aggregate traffic at one or few points of presence much like interexchange carriers, LECs have typically treated such traffic as nothing more than a batch of telephone numbers, or a traffic flow originating from a single customer's private branch exchange.

Growing wireless traffic volumes and increasing complexity in the switching and routing of roaming traffic will require LECs to provide interconnection at a higher level in the hierarchy of traffic interfaces. The concept of 'number portability' contemplates the ability of unaffiliated carriers to work together in devising software and signaling systems that enable database interrogation to determine the location and type of telecommunication device in use by an intended call recipient.[8] By dialing a single telephone number associated with an individual rather than a location or device, a caller can activate the capability of an intelligent network to find the individual, irrespective of location and the variety of devices the recipient may have activated.

Conventional carrier-to-carrier interconnection arrangements

Facilities interconnection between and among carriers usually involves a correspondent relationship that largely ignores market share or size. Once qualified as a correspondent, a carrier receives compensation for originating or terminating traffic. This arrangement may involve negotiations or application of a uniform revenue division plan. Generally, the access charge or revenue-sharing plan contemplates relative parity in terms of interconnection, traffic flows and negotiation leverage.

Some correspondent relationships appear to have inordinately favored the smaller and seemingly more dependent carrier. For example, before tariffed access charges for interexchange carriers in the USA, the 'settlements and separations' cost allocation process between AT&T

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FCC Rcd 4464 (1988), 5th Report and Ord, 3 FCC 6401 (1988) (*inter alia* eliminating wireline set-aside in unserved areas).

[8]The FCC has begun to examine telephone numbering issues including consideration of who should administer the system. See Administration of the North American Numbering Plan, CC Docket No 92-237, Phases One and Two, FCC 94-70, 1994 Lexis 1353 (rel 30 March 1994).

[9]Prior to imposition of the access charge system, 'the charges for using the long-distance network . . . [were] artificially inflated (on the order of sixty percent) because customers . . . [were] required, by the "separations and settlements" process . . . to contribute to the payments of costs that would not be avoided even if their long-distance calling were curtailed'. Kahn, Alfred 'The road to more intelligent telephone pricing' *Yale Journal on Regulation* 1984 **1** 139, 141–142. ' "Separations and settlements" is the process by which investments and expenses of telephone companies are allocated between the interstate and intrastate jurisdictions and similarly, between intrastate toll calling and local exchange rates. Such allocations provide a mechanism by which revenue requirements for interstate and interstate operations are developed': *ibid* 142, n 10.

[10]For a complete history of accounting rate regulation by the FCC, see Frieden, Robert 'International toll revenue division: tackling the inequities and inefficiencies' *Telecommunications Policy* 1993 **17** (3) 221–233; Johnson, Leland 'Dealing with monopoly in international telephone service: a US perspective' *Information Economics and Policy* 1989/91 **4** 225–247; Cheong, Ken and Mullins, Mark 'International telephone service imbalances in accounting rates and regulatory policy' *Telecommunications Policy* 1991 **15** (3) 107–118; Stanley, Kenneth 'Balance of payments deficits, and subsidies in international communications services: a new challenge to regulation' *Administrative Law Review* 1991 **43** 411–438; Frieden, Robert 'Accounting rates: the business of international telecommunications and the incentive to cheat' *Federal Communications Law Journal* 1991 **43** (2) 111–139; Ergas, Henry and Peterson, Paul 'International telecommunications settlement arrangements: an unsustainable inheritance?' *Telecommunications Policy* 1991 **15** (1) 29–48.

[11]In United States *v* AT&T, 552 F Supp 131 (DDC 1982), *aff'd sub nom* Maryland *v* United States, 460 US 1001 (1983), the divested Bell operating companies were prohibited from entering several lines of business including interexchange service. See also *ibid* 227; II(D)(1) of the Modification of Final Judgment; United States *v* Western Elec Co, Inc, 569 F Supp 990, 993, n 9 (DDC 1983) (specifying that the interexchange service prohibition applies

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and LECs constituted a major source of revenues for underwriting the below-cost provision of local exchange services.' For some rural LECs the toll revenue division process with AT&T Long Lines generated well over half of their total revenues.

The correspondent relationship considers carriers as equals involved in developing a complete routing of traffic. In international telecommunications, carriers match 'half-circuits' and agree to divide a previously negotiated accounting rate initially set to approximate the total cost of completing a call. Carriers often fail to renegotiate downward accounting rates to reflect lower transmission costs.[10] However, the carriers have established a framework that favors direct, efficient and streamlined traffic interconnection.

Once correspondents negotiate an accounting rate, regulators and carriers have latitude in determining how to subdivide the complete route for purposes of tariffing and accommodating multiple carriers, eg different local and national carriers. 'End-to-end' routing establishes a single rate for the completed call, while 'end-on-end' routing divides the route into separate increments, eg local, international gateway and international carriage elements often provided by different carriers, each entitled to a portion of the established international accounting rate.

US wireless operators currently have no opportunity to participate in end-on-end routing. They hand off local and long-distance calls without compensation. Alternatively, in the case of non-Bell operating company systems, which face no limitation on providing interexchange services,[11] they resell long-distance service.

Probable changes in interconnection and revenue division

Personal communication networks, enhanced specialized mobile radio, high-capacity digital cellular radio and a proliferation of satellite options in various types of orbits evidence the growing interest in wireless telecommunications.[12] These technologies serve user interests in ubiquitous access via portable transceivers. Beyond satisfying user interests in mobility and universal access, these technologies may also help operators to optimize the value and utility of certain services by migrating from closed circuit to wireless applications. Professor Nicholas Negroponte has noted the merit in service migration to and from wireless media, eg shifting broadcast television to cable television, but migrating many wireline telephone applications to more flexible and versatile wireless media.[13]

The growth of and migration to wireless applications present the prospect of far more robust traffic streams. If the wireless local loop challenges the incumbent wireline bottleneck and if mobile terrestrial and satellite options rival landline options, then wireless operators will develop greater leverage with incumbents on the matter of toll revenue settlements. AT&T's acquisition of McCaw Cellular Communications, Inc, and MCI's $20 billion campaign for finding alternatives to LEC facilities access evidence the stakes and degree of commitment already underway.

The future telecommunications environment may present alternatives to wireline first and last miles and a blurring of traditional service dichotomies like fixed versus mobile, wireline versus wireless and local versus long distance. When and if incumbent carriers face the need to

accommodate changed circumstances, they may resort to existing carrier correspondent revenue-sharing models, or devise something new. Set out below is an outline of some of the old models, followed by a prediction.

Meet point billing

Meet point billing typically involves telephone services requiring the joint participation of two or more wireline telephone companies with adjacent service territories. These carriers interconnect facilities to provide subscribers with an extended local toll-free calling area, or short-haul long-distance services. Where a toll charge applies, the carriers typically calculate their share on the basis of mileage from the telephone company office closest to the call originator to the point where lines interconnect and then from that 'meet point' to the telephone company office closest to the call recipient.

Meet point billing considers both carriers as equals, with compensation from toll charges accruing primarily as a function of mileage. This model can work for joint provisioning of service by separate wireless and wireline networks, assuming that each leg and each carrier constitute an integral part of an end-on-end route.

Access charges

Prior to the 1980s, AT&T managed the process for dividing toll revenues between its Long Lines division and independent telephone companies and within local and long-distance affiliates of the Bell System. The FCC subsequently ordered local exchange carriers to tariff this process with an eye toward mandating parity of LEC access between AT&T and other interexchange carriers in terms of price, type and quality. Before the access charge system and divestiture of AT&T's Bell operating companies, non-affiliated long-distance carriers like MCI secured inferior interconnection, but paid a substantially lower rate. AT&T Long Lines subscribers had 'one plus' dialing access to the 'trunk side' of the LEC facilities, thereby achieving speedy and efficient long-distance call set-ups. Customers of MCI and other interexchange carriers could only secure 'line side' long-distance access through a local seven-digit number after which they would have to dial several more digits: a personal identification code to activate the billing process, the area code and number.

MCI first achieved access to its customers for the price of a conventional business telephone line, a price substantially lower than the per minute settlement charges AT&T paid. After contentious legal and regulatory proceedings, it received explicit authorization to provide switched long-distance services.[14] The Bell System and new long-distance carriers negotiated an access arrangement that provided technically inferior access, but at a significant discount to what AT&T Long Lines paid for superior access.[15] Slowly, with the upgrading of facilities to provide one plus dialing to all interexchange carriers, uniform access charges have applied for all carriers.

The access charge process places interexchange carriers in the position of consumers of LEC facilities, but eliminates any other obligation to share toll revenues. This process exemplifies end-to-end routing, ie separate and discrete local exchange and interexchange elements. Such a model can apply to interconnection of wireless and wireline networks if incumbents agree to a reciprocal compensation arrangement when

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to traffic crossing local access and transport area borders).

[12]See eg Frieden, Robert 'Satellite-based personal communication services' *Telecommunications* 1993 **27** (12) 25–28. The FCC has responded with expedited consideration of spectrum allocation, licensing and regulatory issues. See Amendment of the Commission's Rules to Establish New Personal Communications Services, GEN Docket No 90-314, Notice of Inquiry, 5 FCC Rcd 3995 (1990), Policy Statement and Order, 6 FCC Rcd 6601 (1991), Notice of Proposed Rule Making and Tentative Decision, adding ET Docket No 92-100, 7 FCC Rcd 5676, 5678-5679 (1992, *erratum* 7 FCC Rcd 5779, 1992), Tentative Dec and Mem Op and Ord, 7 FCC Rcd 7794 (1992) (tentatively granting three Pioneer s Preferences for wideband PCS); First Report and Order, 8 FCC Rcd 7162 (1993) (establishing rules for narrowband PCS in the 900 MHz band and awarding one Pioneer's Preference), *on partial recon* 9 FCC Rcd 1309 (1994); Second Report and Order, 8 FCC Rcd 7700 (1993); 3rd Mem Op and Ord, FCC 94–265 (rel 19 October 1994).

[13]Negroponte, Nicholas 'Products and services for computer networks' in special issue: 'Communications, computers and networks' *Scientific American* 1991 **265** (3) 106

[14]See MCI Telecommunications Corp *v* FCC, 561 F2d 365 (DC Cir 1977) (Execunet-I), *cert den* 434 US 1040 (1978), *motion for order directing compliance with mandate granted* 580 F2d 590 (DC Cir) (Execunet-II), *cert den* 439 US 980 (1978).

[15]See Exchange Network Facilities for Interstate Access (ENFIA), CC Docket No 78-371, 71 FCC 2d 440 (1979). 'The ENFIA agreement was an interim measure [prior to implementation of access charges] to bridge the gap between the court decisions in the Execunet cases, which permitted the OCCs [Other Common Carriers] to offer services in direct competition with MTS and WATS [provided by AT&T] unless and until the Commission found that such competition was not in the public interest . . . The access to the local exchange provided these OCCs was inferior to that provided AT&T for its interstate services and, as a result, the ENFIA agreement included rates substantially below those paid by AT&T . . .': Fowler, Mark, Halprin, Albert and Schlichting, James 'Back to the future: a model for telecommunications' *Federal Communications Law Journal* 1986 **38** (2) 145, 178, n 94.

more than one carrier participates in either local or long-haul routes.

Cellular roaming agreements

Frequent roaming by cellular radio subscribers requires the establishment of reciprocal agreements by operators to accept the traffic of temporary users. The agreement among cellular radio operators does not involve the LEC, because the same access compensation requirements will apply. Nevertheless, roaming agreements require billing and record-keeping protocols, clearing houses to collect, process and format billing records and a central bank to receive and disburse funds. Wireless carriers will need to develop these functions as part of the correspondent relationships they establish.

Cybernet Corporation, a wholly owned subsidiary of the Cellular Telecommunications Industry Association, provides member carriers with standard protocols and billing formats for the exchange of roamer billing data. Two major clearing houses (GTE-TSI and EDS-PCC) collect billing data and submit the financial position of member carriers to Chase Manhattan Bank for receipt, or payment of funds.

In the case of transborder roaming, US, Canadian and Mexican carriers have executed agreements and implemented the necessary software programming for real-time 'backhauling' of roamer traffic to the cellular user's home carrier. Each operator has the capacity to meter roamer traffic, and apply the agreed toll rate.

Roaming in more distant nations has not yet generated significant traffic streams, primarily because a number of different technical standards and allocated frequencies limit the use of transceivers outside a region. Typically, a user must contact the operator to activate a radio, subject to a roaming agreement executed between the two carriers.

Cellular radio roaming agreements apply a carrier correspondent model of access and toll revenue division. The correspondents calculate minutes of carriage provided to roamers and settle accounts with the roaming customers' home base carrier. This model can work in the joint provisioning of service between wireline and wireless carriers, provided the former views the latter's function as equivalent service, making a minute of either service equally valuable for purposes of settling accounts.

End-to-end routing will predominate

In most countries domestic and international routing arrangements aggregate rate elements reflecting individual components of the complete route. Even where different carriers participate, a single accounting rate reflects services provided by the domestic LEC, the carrier operating an international satellite or cable gateway, two or more international carriers providing the international long haul, another gateway operator and another domestic LEC terminating the traffic.

However, in the USA laws, policies and regulations favor market segmentation, in part to define areas where cross-ownership and operational restrictions apply.[16] Ostensibly to guard against anticompetitive practices like predatory pricing, abuse of bottleneck control, cross-subsidization and discriminatory access, the Modification of Final Judgment, which divested the Bell operating companies from AT&T, created a bright line distinction between exchange access and exchange telecommunications on one hand, and interexchange service on the other hand.[17] Likewise the FCC's access charge system assumes that the

[16]In addition to the line of business restrictions imposed by the Modification of Final Judgment on the Bell operating companies, all telephone companies may not provide cable television service in their telephone service areas: Cable Communications Policy Act of 1984, Pub L No 98-549, 98 Stat 2779. Sec 613(b) of the Act, which imposes cross-ownership restrictions, is codified in the Communications Act of 1934 at 47 USC Sec 533(b). See also Telephone Co-Cable TV Cross-Ownership Rules, Secs 63.54–63.58, Further Notice of Inquiry and Notice of Proposed Rulemaking, 3 FCC Rcd 5849 (1988), Further Notice of Proposed Rulemaking, First Report and Order, and Second Further Notice of Proposed Rulemaking, 7 FCC Rcd 5781 (1992). The constitutionality of such restrictions has been challenged as a violation of telephone company First Amendment rights. See Chesapeake and Potomac Tel Co of VA *v* United States, 830 F Supp 909 (ED VA 1993).

[17]Section II(D((1) of the MFJ, United States *v* AT&T, 552 F Supp at 227, bars the BOCs from offering inter-LATA services. A catch-all restriction in Section II (D)(3) precludes the BOCs from providing 'any other product or service . . . that is not a natural monopoly service actually regulated by tariff'.

telecommunications marketplace logically divides into local and long-haul components.

The future appears more conducive to single end-to-end routing arrangements as networks proliferate and perhaps as incumbent LECs lose the kind of dominant market share that supports bottleneck control. If a variety of carrier options become available and if logical traffic routing arrangements integrate both wireline and wireless legs, then customers will expect the carriers to work out traffic routing and revenue division plans.

Customers and regulators obliged to serve the public interest will not welcome further proliferation of bills and rate elements when the carriers, if prodded, could settle accounts internally. Wireline callers in the USA have international direct distance dialing access to virtually every telephone in the world without operator intervention. This correspondent system has evidenced such utility that it has qualified for waivers of US government policies that generally prohibit commercial transactions with particular nations, eg Cuba.

A model for the future

If and when wireless networks develop significant traffic volumes, wireline incumbents must accept the duty to develop a correspondent relationship, or at least the obligation to file access tariffs and pay access fees when wireless networks terminate traffic generated by their subscribers. Issues of interconnection and revenue division go to the crux of the common carrier definition and mission. While the FCC did not require international common carriers to convey ownership interests in international cables to users or other carriers,[18] the Commission has repeatedly mandated the interconnection of facilities and provision of services, including ones carriers did not want to make widely available.[19]

The optimal model of the future establishes parity between wireline and wireless network operators for purposes of the duty to pay and the right to receive compensation for handling the traffic received from another carrier. The common carrier classification mandates the duty to provide access. Smart business sense supports carrier-to-carrier negotiation of a correspondent relationship and the settling of accounts in lieu of access tariffing. While tariffing institutionalizes a predictable and steady access compensation plan, a negotiated business arrangement presents the possibility for wireless and wireline operators to work as partners and to reward each other for traffic stimulation.

The type and nature of future access and revenue division arrangements depend in large part on how much traffic wireless networks generate and to what extent wireline network operators recognize the revenue-sharing potential in this development. Treating wireless networks as ancillary and subordinate is possible only when incumbent wireline carriers hold an upper hand by controlling most traffic. The future presents the possibility of a more diverse set of carrier options and a variety of traffic-rich routing arrangements. In that scenario, incumbents must accept the need to recognize new correspondents, or risk losing a stake in a number of new, alternative routing schemes.

[18]International Communications Policies Governing Designation of Recognized Private Operating Agencies, Grants of IRUs in International Facilities and Assignment of Data Network Identification Codes, CC Docket No 83-1230, Report and Order, 104 FCC 2d 208 (1986), *on recon* 2 FCC Rcd, 7375 (1987)

[19]See eg Local Exchange Carriers' Individual Case Basis DST Service Offerings, 6 FCC Rcd 4776 (1991) (establishing a common carrier duty to tariff the provision of unamplified ['dark'] fiber-optic cable capacity), *reversed and remanded sub nom* Southwestern Bell Co *v* FCC, 19 F3d 1475 (DC Cir 1994).