Attachment G

ANALOGIES BETWEEN ELP DEPLOYMENT AND IMPLEMENTATION OF INTEREXCHANGE EQUAL ACCESS

Evolution to an ELP architecture, necessary to improve local exchange competition, is analogous in many respects to the required technological changes necessary in the 1980s to improve interexchange competition. First, implementation of the ELP technology would create a local loop architecture that would permit local exchange carrier equal access analogous to that created to support interexchange equal access. More specifically, the Modification of Final Judgment ("MFJ") required the elimination of "any disparities in interconnection" so that all interexchange and information service providers could compete on an equal basis. (United States v. AT&T, 552 F.Supp. 131, 195 (D.D.C. 1982)). The interexchange equal access architecture consisted of direct trunk connections from a BOC end office to the Point of Presence ("POP") of an interexchange carrier within a Local Access and Transport Area ("LATA"), trunk connections from the BOC end office to an interexchange carrier's POP via an Access Tandem, or a combination of the two. (In the Matter of The Consolidated Application of American Telephone and Telegraph Company and Specified Bell System Companies for Authorization Under Sections 214 and 310(d) of the Communications Act of 1934, 96 F.C.C. 2d 18 ¶49 ("AT&T Authorization App.")). Equally important, a software defined means was used to control connections between retail customers and their desired interexchange service provider that made customer choice and change of service provider easy, inexpensive and accurate even with high levels of churn.

The fundamental equal access architecture required that a BOC establish toll quality trunk connections from its end offices to an interexchange carrier's POP in a LATA. This POP was a physical location designated by the interexchange carrier where that carrier's

interexchange facilities were to connect with the BOC's exchange access facilities and where the interexchange carrier was to receive traffic from retail customers whose loops terminated on subtending BOC local switches. With the designation of a POP by the interexchange carrier, the required trunk facilities could be engineered and the BOC end office switch could be programmed to deliver traffic to that point.[1]

Although providing trunk connections to POPs and routing specifications were necessary for long distance competition to develop, they were not sufficient. Equally important was the equal access requirement to institute the Primary Interexchange Carrier (or PIC) capability ("1+" dialing) that made the retail customer's selection of a service provider nondiscriminatory. Implementing the PIC capability required two steps: (1) modifying the BOC switches to include tables, that the switch processes could reference, so that a customer would be connected to the pre-designated interexchange carrier simply by dialing "1" + the long distance number, and (2) instituting a mechanized process to update the tables when a customer sought to change the pre-designated interexchange carrier. The PIC process was essential because it "unbound" customers from the AT&T interexchange network. Prior to that point, when a customer dialed "1+" there was no network option other than to route the call to the AT&T interexchange network.

A transition period was necessary to install the requisite trunking to POPs and to implement the PIC capability (in combination the equal access capability). Because of this, and in light of the competitive advantage AT&T derived from the fact that interexchange service customers being "hard-wired" to its network, AT&T paid a premium for access (Feature Group

[1] The analogous step in the local market for switched based local competitors is the establishment of Points of Interconnection ("POIs") for the hand-off of local exchange traffic, generally at a collocated site. As with POPs, the decision where to establish a POI is made by the competing local exchange carrier based on the volume and destination of traffic.

C access) until such time as the equal access capability (Feature Group D access) was available to all carriers seeking to serve customers in a particular end office.[2]

The Telecommunications Act of 1996 seeks to establish local exchange competition by requiring that incumbent LECs provide non-discriminatory equal access for competing local service providers, analogous to what the MFJ required for interexchange competition. (See 47 U.S.C. § 251 (detailing ILEC obligations to provide interconnection, access to unbundled network elements and resale, all on a non-discriminatory basis)). The current network architecture for supporting local exchange service competition, however, only partially reflects the approach taken to support interexchange service competition. Local competitors must establish the equivalent of POPs by investing in collocation and defining POIs. However, the similarity stops here, because customers *remain* hard-wired to the incumbents' local networks. No PIC-like process exists that unbinds customers and allows them to move their service between local carriers on a mechanized basis. Retail customers remain hard-wired to the incumbent's switch even though a number porting process was created that transfers telephone numbers between competing local carriers through electronic processes. Because retail customers remain "hard-wired" to the incumbent's local network, customer decisions to change to another switch-based local service provider that does not have its own loops are made only through a capacity limited, costly and error-prone manual process known as a "hot cut." This situation need no longer be tolerated. Technology exists in the market place today that allows the equivalent of the PIC process to occur for local carrier changes. As with interexchange equal access, the technology relies upon software tables (rather than

[2] Upon the availability of the equal access capacity from an end office, AT&T was no longer permitted to retain its "hard-wired" connections and customers were "balloted" to determine what carrier they wanted to use for interexchange service, with the customer's choice being reflected in the switch routing tables as a PIC choice.

physical wires) to define customer connections to the chosen service provider. Because the customer-carrier relationship is software defined, the customer choice is easy to update and quickly executable through computer controlled, rather than human, processes. For that reason, the combination of the technology and controlling software systems is referred to as Electronic Loop Provisioning (or ELP)

If broadly implemented, ELP would support an equal access architecture for local exchange competition that fully mirrors that for interexchange competition, and would eliminate the ILECs' ability to use the process for changing a customer's local service provider in ways that are adverse to their local service competitors. With ELP, the ATM module functions in much the same way as the end office switch in interexchange equal access – it uses software to identify the physical path to the appropriate local carrier's collocation (or other network interface point). Thus, changes in the path made necessary by a change in the customer's local service provider are instituted by table update rather than by physical re-wiring.

Because the relationship between the customer and the network of the customer's local service provider is defined in software tables accessed by the ATM, with ELP a customer's change of local service provider can be handled electronically, and without any manual work on underlying facilities. This is much like the result of MFJ's requirement that the BOCs deploy capabilities in their end office switching system for "1+" dialing to a telephone subscriber's "presubscribed interexchange carrier." As stated in the MFJ (Decree, App. B ¶A(2)(ii)), each BOC was required to offer, as part of equal access, a service that "permits each subscriber automatically to route, without the use of access codes, all the subscriber's interexchange communications to the interexchange carrier of the customer's designation." Similarly, ELP

would recognize the retail customer's off hook condition as a direction to connect the customer to the customer's chosen local carrier based on the software tables of the ATM.

Full deployment of ELP, as with full deployment of interexchange equal access, will require upgrades and investment in the local service network of the incumbent. The prospect of such an undertaking does not argue against implementation. Interexchange equal access required substantial changes in the software of the ILECs' switching systems, including changes to provide access to all interexchange carriers using a "10XXX" prefix; delivery of automatic number identification ("ANI") to interexchange carriers on all calls; the ability to pre-subscribe to an interexchange carrier and reach that carrier with "1+" dialing; call detail information needed for interexchange carriers to bill their own customers and the ILECs to bill the interexchange carriers for access services; call supervision; network control signaling; directory services' dialing parity; and rotary dial access. (See In the Matter of MTS and WATS Market Structure Phase III, 100 F.C.C. 2d 860 ¶56 ("MTS and WATS")).

ILECs were also required to make substantial changes in their physical plant, especially their trunking and switch software, to implement interexchange equal access. The MFJ required the BOCs to provide to interexchange carriers access "equal in type, quality and price" to that provided to AT&T, and defined equal access as "access whose 'overall quality in a particular area is equal within a reasonable range which is applicable to all carriers.'" (In the Matter of Investigation Into the Quality of Equal Access Services, 60 Rad. Reg. 2d (P&F) 417 ¶8 ("Quality of Access")). The BOCs determined to provide the requisite access through a new local network architecture that provided three equal access routing choices: (1) direct trunks to an interexchange carrier's POP; (2) access to an interexchange carrier's POP through an Access Tandem; or (3) a high usage direct trunk to the interexchange carrier's POP with overflow traffic

handled by an Access Tandem. (See "Current Planning For Equal Access," Attachment B to AT&T's Motion in Support of Proposed Plan of Reorganization at 2-3 (filed in No. 82-0192, D.D.C. Dec. 16, 1982) ("AT&T Attachment B") (referenced in AT&T Authorization App. ¶49)). The BOCs also had to make substantial changes in the local network plant to meet new required equal access service standards. For example, the BOCs had to ensure that the probability of "blocked" interexchange calls, regardless of carrier, and regardless of routing (direct or Access Tandem), remained under 1%. (Quality of Access ¶64). Thus, in order to deploy the requisite equal access architecture and to meet equal access service standards, the BOCs had to determine the appropriate mix of direct and tandem connections; upgrade to toll quality standards any switching system used as an Access Tandem that did not then perform a toll switching function; ensure that the trunk group between an interexchange carrier's POP and the Access Tandem was engineered to a new design objective chosen to ensure that the transmission quality on an Access Tandem connection was equal to that of a direct connection; and in general install toll quality trunks for all exchange access connections. (AT&T Attachment B at 1-9).

ELP should require less fundamental changes to the local network. ELP does not require changes other than in the loop plant of the incumbent LEC -- its circuit switched infrastructure is left undisturbed. Even then, the most costly aspect of the ILEC loop plant is unaffected – the copper distribution plant need not be modified (likewise, customer premises equipment and inside wiring is unaffected). ELP relies upon transmission equipment, such as ATM, that vendors are currently offering. Further, ELP builds upon, and improves, the transmission potential of all customers' loops, thereby making customer access to advanced services and service networks (including for offerings by ILECs) practical for virtually any customer where ELP is implemented. Thus, unlike with interexchange equal access, where the

changes the ILECs were required to make in their local network were not for their benefit at all, the ELP proposal will benefit all local service providers, including the ILECs, and will continue implementation of an infrastructure that the ILECs are already pursuing (e.g., copper/fiber hybrid loops).

As also was the case with interexchange equal access, ELP can be phased-in rather than implemented on a flash-cut basis. Although it would take considerable effort to implement ELP technology simultaneously on a nationwide basis, the architecture permits deployment of the necessary equipment by ILECs in stages. In fact, unlike equal access capabilities that affected all customers served by a particular central office, ELP can be implemented for even smaller areas within a single central office's serving area.

A phased-in approach to truly open markets is not without precedent. This is also how interexchange equal access was implemented in the 1980s. It was recognized right from the start that while the equal access features could be fully and quickly provided on large stored program control switching systems (e.g., the No. 1ESS, No. 1AESS, and No. 5ESS), and while the No. 4ESS and the Northern Telecom DMS-200 switching systems could readily be used as Access Tandems, deployment of equal access on certain electromechanical switching systems and small electronic switching systems required development that would not be completed for as long as three years. (AT&T Attachment B at 11-12). For other switching systems, such as the No. 5XB and No. 1XB switching systems, it was recognized that only partial equal access could be implemented, and even that partial equal access could not be fully implemented for several years. (AT&T Attachment B at 13-14; see also United States v. Western Elec. Co., 739 F.Supp. 1, *4, *5 (D.D.C. 1990)).

This same phase-in approach was adopted by the Commission when it effectively imposed the MFJ's equal access requirements on non-BOC local exchange carriers. The Commission expressly required that "[p]rogramming of existing stored program controlled central offices shall be modified, during a three year period . . . , to support access to the services of all interexchange carriers which is equal in all respects . . ." (MTS and WATS ¶59). Further, the FCC declared that electromechanically-equipped offices were to be converted only if possible, with no timeline set. (Id. ¶60).[3]

[3] In addition, local number portability, a critical enabler to competition, was adopted over a multi-year transition period.