ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Inquiry Concerning the Deployment of	)	
Advanced Telecommunications Capability	)	
to All Americans in a Reasonable and Timely	)	CC Docket 98-146
Fashion, and Possible Steps to Accelerate	)	
Such Deployment Pursuant to Section 706 of	)	
the Telecommunications Act of 1996	)	

Reply Comments of Level 3 Communications, Inc.

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Summary

Level 3 Communications, Inc. ("Level 3") is building a nationwide and worldwide network based on the Internet Protocol, or "IP," a packet-switched data-oriented protocol which is designed to transport data with maximum efficiency, speed, and reliability. Upon its completion the Level 3 network will be the first all-IP end-to-end network in the world, offering its users very high quality, flexible, and robust communications capability at rates generally below those being charged today for similar services. The Level 3 network will thus be fundamentally different from the existing public switched telephone network ("PSTN") which is based on circuit switching, a technology more than 100 years old and not well suited for the transmission of data, graphics or video. Level 3 believes that eventually the PSTN will be largely replaced by IP systems.

The Level 3 IP network, one of the most advanced technologically in the world, will certainly constitute the provision of advanced telecommunications capacity. The network is based on IP, the protocol which is used in the Internet, but it will not be a part of the Internet. In fact it will be completely distinct physically and operationally and will connect to the Internet only insofar as its users wish to reach Internet locations. IP provides many transmission advantages over the older legacy circuit switched network. Transmission capacity can be fully utilized by interleaving a variety of messages, with respect to origin and destination and with respect to the type of material being transmitted. This in turn will allow higher quality and faster throughout, more user flexibility with respect to the operating parameters of the network facilities they lease, and lower costs.

Private investment in advanced communications facilities is proceeding at record levels, with companies like Level 3 and Qwest accepting classic entrepreneurial risks because they have identified market niches which are not being filled, or filled adequately, by the existing telecommunications industry or by other providers. No regulation of this element of Level 3's business is necessary since the market is open to entry, robustly competitive, and attractive to investors.

However, regulation is required for the originating and terminating elements of the public telecommunications network, at least for the foreseeable future. Until the system has been fully built-out, and for certain applications even after completion of the network, it will be necessary to rely on local loop facilities provided by ILECs. Duplication of this infrastructure is generally uneconomic and wasteful of social resources. It can create environmental problems and may be unacceptable to local rights-of-way authorities. Accordingly, Level 3 believes it is essential that the Commission, in analyzing the deployment of advanced telecommunications capabilities, give careful attention to the continuing need for the provision of unbundled local loops as well as related network elements including subloops, switching, and xDSL capabilities. Moreover such facilities must be made available to competitive carriers like Level 3 at long run incremental costs which exclude embedded and certain common costs.

The only entities able to provide these local loop and related facilities are the ILECs. Provision of advanced telecom capabilities by the ILECs is socially desirable and Level 3 does not object to their doing so. However, because they maintain a stranglehold on the bottleneck local loops and central offices, it is absolutely essential that they be closely regulated with respect to the availability of those facilities to competitors. As part of this close regulation, ILECs should be permitted to provide advanced telecommunications but only when they have divested themselves of existing bottleneck facilities, so as to assure that any conflicts of interests, favoritism, unequal access, or cost shifting can be prevented.

Table of Contents

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In the Matter of	)	
	)	
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the Telecommunications Act of 1996	)	

Reply Comments of Level 3 Communications, Inc.

Level 3 Communications, Inc. ("Level 3") respectfully submits the following reply comments in response to the Notice of Inquiry ("NOI") in the above-captioned proceeding concerning the deployment of advanced telecommunications capacity to all Americans.[1/]

I. Introduction and Summary

In its Initial Comments in this proceeding, Level 3 provided a broad overview of the company and its plans for the provision of advanced telecommunications capabilities ("ATC") to the public. In response to the large number of other initial comments, Level 3 will address the following general issues:

- Level 3's plans for a national and international Internet Protocol network;

[1/] *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Notice of Inquiry, FCC 98-187 (rel. Aug. 7, 1998) ("NOI").

- The relationships between circuit switched and IP technology;
- International deployment of ATC;
- Incentives for construction of ATC;
- What constitutes "reasonable and timely implementation"; and
- The appropriate kind and degree of regulation.

In its responses to each of these points, Level 3 emphasizes a common theme: provided that fair competitive opportunities exist, Level 3 and other similar entities have every positive motivation to fully develop advanced telecommunications facilities and services and will do so, as quickly as is commercially prudent. If the regulatory climate is appropriate, including, crucially, the presence of fair competitive opportunities in the remaining bottlenecks, Level 3 and other technology-based entrepreneurial companies will fulfill Congressional policy as articulated in the Telecom Act of 1996 and, specifically, Section 706 thereof. In the process, Level 3 and the telecommunications industry will contribute to the continued strength of the U.S. economy.

II. Level 3's IP Network

A) The IP Technology

In its initial comments Level 3 described briefly its plans to develop and construct a nationwide and international IP network. Level 3 believes that this network, the first to be all-IP end-to-end, will be among the most advanced in the world, offering its users very high quality, flexible, and robust communications capability at rates generally below those being charged today for similar services. Given the fundamental importance of the network to Level 3's plans and to its comments in this proceeding, some further discussion of the network and its technology may be helpful to the Commission and to the public.

The essence of the new technology represented by the Level 3 network is that it is packet switched, rather than circuit switched as is the existing public switched telephone network ("PSTN"). Packet switching permits messages to be transmitted among subscribers by converting voice, data, graphics or video information, or any combination of these elements, into a series of packets containing binary data. The data packets are then addressed and transmitted on a packet-by-packet basis. Each packet follows an individual route through the network, with all of the packets in any one message being reassembled in the correct order at the receiving point. The route selected for any one packet is determined dynamically to minimize transmission delay, assure security, or to meet other user-selectable transmission criteria. This process uses transmission capacity far more efficiently than circuit switched technology because circuits do not have to be opened and kept open throughout the duration of the call, and because many users can simultaneously use the same network facilities even to transmit different kinds of traffic. Packet switching also improves the through-put capacity of a normal 64kbps voice circuit by a factor of approximately 10.

An advanced form of packet switching, Internet Protocol, or "IP" transmission, distributes packet switching throughout the network instead of limiting it to a relatively small number of major switches. IP also allows the user far greater flexibility in selecting transmission criteria. As in the case of circuit switched networks, an IP network relies on originating and terminating local loops. network processors and local or long haul interoffice facilities. In the IP context, the centralized processors are not referred to as switches but as processing nodes or routers.[2/] Any information which can be transmitted by the PSTN can be transmitted in IP networks. When voice traffic is carried over an IP network it is referred to as "VOIP," or "voice over IP."

IP is the technology used in the Internet as well as in an increasing number of dedicated data applications. When an individual bit of data (or, more commonly a "byte," which consists of 8 data bits) is transmitted in a packet-switched mode, the data are processed by the sending office into individual packets, or electronic envelopes, and their transmission through the network is carried out by operations on those individual packets rather than on the individual bits. Essentially the packet-switched protocol processor translates incoming data (or digitizes analog voice signals) into packets, and transmits these packets using a variety of transmission routes depending on the alternative paths available as each packet arrives at the head of the transmission queue and the applicable

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[2/] These devices are all computers, of varying size and design. Although a modern telephone switch as found today in the PSTN, especially ATM switches, may also be thought of as a computer, there are important differences, albeit only of degree, between PSTN switches and IP routers. An ATM switch is a vastly larger and more complex device. Unlike simple PCs or work stations, an ATM switch may be reprogrammed only with substantial commitment of time and effort.

transmission criteria for the individual packets or messages. At the receiving end the packets, which have been transmitted over a variety of paths, are collected, reassembled in the proper order, and sent to the receiving facility as data, speech, graphics, video, or any appropriate combination. Packet switching is often described as "connectionless." When a packet is transmitted no device in the network looks forward to the designated reception point and establishes a path Instead the path is subject to readjustment throughout the journey.

Packet switching offers a number of advantages over the older circuit switched technology. Because it relies on the manipulation of a digital data stream it offers dynamic routing, *i.e.*, more flexibility with respect to network architecture. Routing through the network may be changed from moment to moment as conditions alter the availability of the fastest or most reliable path from origin to destination. Packets of data carrying portions of communications which differ as to origin or destination, by kind of communication, or other criteria can be interwoven in the data stream to take full advantage of network transmission capacity. The presence of computer power distributed throughout the network assures higher reliability and more rapid response to changing conditions. Address designations in a packet-switched mode may be non-geographic, *i.e.*, the identity of the designated receiving point may be established in numerous ways other than by fixed location. Packet switching is naturally and fully compatible with computer technology and with the efficient distribution of electronic information.[3/] Because all traffic on an IP network is composed of bits of data, voice and data applications, or voice and video, can easily be combined in one transmission. Collaborative white boarding and remote teleworking on text are frequently cited examples of this capability.

Competitive entry in the IP context is less daunting than in the traditional telephone mode. Market entry can be at a relatively low scale as compared with traditional PSTN technology, since the new IP network operator does not need to purchase and install massive central office facilities or switches. Moreover, packet switching is market-based, open, technologically dynamic and driven by competition, as opposed to the existing circuit switched telephone infrastructure which is largely based on historical factors, including regulated, monopoly-derived technology which is closed and minimizes innovation. IP is therefore more open to entrepreneurial entry and technical innovation. Indeed, unlike the top-down slow-to-change PSTN, IP is naturally compatible with constant, competitive technological or service upgrading.

[3/] Traditional telephone carriers' awareness of the importance of data processing to growth in their businesses has led them to introduce a variety of technical facilities to more efficiently and effectively handle data transmissions. Among these are frame relay and Asynchronous Transfer Mode, or "ATM," a packet or cell-based switching mode. Although both ATM switches and IP transmission rely on packet switching, the differences between them are substantial. An ATM switch embedded in a legacy or circuit switched environment is a relatively isolated device. IP transmission, on the other hand, is designed to distribute intelligence throughout the network thereby assuring high reliability, great flexibility and relatively lower costs.

In the computer-driven packet communications universe, applications and network facilities are to a large degree independent of each other. Service parameters, capabilities and limits are tied directly to software which is contained in users' PCs, workstations, servers, or routers. This flexibility is tremendously advantageous to the customer who can on-site (or remotely) configure the telecommunications capacity it has leased from the carrier in whatever way the customer wishes; reconfiguration can occur in real time and can be controlled by the customer without the carrier's intervention, provided only that the software changes made by the customer do not interfere with the governing network protocols established by the carrier.[4/]

B) The Internet and the Internet Protocol

To clarify the discussion which follows, it may be useful at this point to define some of the concepts and acronyms which are relied upon and to describe the important distinction between the Internet and the Internet Protocol. The world wide deployment of the Internet is, of course, one of the most fundamental changes in communications in

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[4/] Another illustration of the advantages inherent in IP technology is the ability of a customer to cache data on its PCs, work stations or routers. Caching is simply the storage of certain high-utility or frequently accessed data on a local storage device such as a hard drive to reduce access time and cost. IP users may cache data in their network configurations as they deem most efficient depending on the varying cost functions between storage (caching) or transmission, (not caching but going through the network to get the desired data). As these cost functions vary over time – which they surely will do in the highly dynamic world of computer communications, the customer can realign its caching activities to minimize costs, access time, security, convenience, or any other relevant aspect of its individual network use.

decades. The Internet is a series of data transmission links connected to host computers and so-called "root servers" accessed by thousands of Internet Service Providers ("ISPs").[5] Because it developed in the computer and information environment, it is centrally governed only in a very loose sense. There is relatively little centralized management or standard setting for the Internet. It relies on computer-to-computer data communication which is transmitted using the TCP/IP protocol.[6] To many people the acronym "IP" is closely associated with the Internet; given the inclusion of the word "Internet" in IP, and the frequent reference to "IP telephony," this association is quite understandable. In fact, however, there is an important distinction between IP as a transmission protocol and "IP telephony," and that distinction is crucial to a full understanding of Level 3's business plan.

IP is a transmission and network design which differs fundamentally from the traditional telephony voice network. Whereas the traditional voice network is circuit-switched with the network intelligence concentrated in a relatively few central offices or wire centers, the Internet developed as a PC-based packet-switched system in which the intelligence was largely dispersed throughout the network. Unlike traditional telephony, in

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[5] The root servers may be thought of as the main processing nodes for the network: they receive and retransmit traffic so as to dynamically balance the transmission load, minimize transmission time, and manage the network. By analogy they may be thought of as equivalent to major network switches in the PSTN.

[6] Transmission Control Protocol/Internet Protocol. Use of the TCP/IP allows hardware in many parts of the world, and of many different types and configurations, to present to the user what appears to be a functionally designed integrated system. In actuality the dispersed intelligence of the Internet simply accommodates substantially different equipment and network design to create a virtual and apparently seamless system.

which delay or failure in transmission is simply unacceptable, the Internet, being, at least until now, overwhelmingly data-oriented, was not sensitive to time delays and the occasional failure to successfully complete an intended transmission was not deemed crucial to the value of the system. The Internet Protocol, on which the Internet's topology is based, is simply a data-oriented, delay-tolerant network design with most of the intelligence provided by the initiating and receiving apparatus, *i.e.*, computers.

Although the Internet was originally designed to be a data transmission system, and still predominately is, advances in information technology and software have made practical the digitizing of analog voice signals so that voice transmission can be sent over the Internet as a data stream. When voice telephony is offered today over the Internet, whether by using PCs and modems at each end or telephone instruments, it is described as "Internet telephony" and is a somewhat awkward blend of the two precursor systems. The Internet was never designed to carry voice traffic, and it is difficult to provide quality service on the existing infrastructure. Moreover no entity which participates in Internet telephony has, or can have, responsibility for the end-to-end communication. Rather, Internet telephony "rides" on a third party transmission platform. As a result voice quality and service reliability is frequently inferior to that provided by traditional telephone plant.

Internet telephony and communications using the IP are thus two different things altogether. The former is the presently available, somewhat rickety blend of traditional circuit switched and packet switched services; it is Internet based and, while growing rapidly, is most suitable for casual or everyday applications. The latter is transmitted based on a packet switching protocol and may be offered over facilities completely unrelated to the Internet. Put another way, the technical substrate of the Internet - the IP - must be distinguished from the Internet itself.

What Level 3 intends to offer the public is not Internet telephony, but IP communications, offered over Level 3's fully separate network which it has designed and is building from the ground up using IP technology to maximize the technical capabilities of IP for advanced, high quality, high volume, and specialized uses. There will be no occasion to employ the Internet and the only physical connections between Level 3's network and the Internet will be those which arise from a Level 3 customer's decision to communicate to an Internet address by going off the Level 3 network.[7/]

C) Integration of PSTN and IP Networks

Heretofore the PSTN and IP networks have been presented as two distinct and essentially unrelated systems. Although Level 3 has committed considerable resources to IP technology because it believes the future of communications lies in the direction of IP, nevertheless Level 3 recognizes that extremely important transitional issues exist. While IP represents the future, the PSTN is here now, is ubiquitous, and will continue to

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[7/] Level 3 will, however, offer its customers extensive web-based services, such as web-hosting and real time interactive access to network configuration tools. In addition, internet service providers may choose to employ elements of the Level 3 network to provide service to their customers.

provide service for many years to come. The PSTN, including its ATM and frame relay technologies, is firmly entrenched today in backbone telephone networks and in many corporate networks as well. Level 3 intends to make some use of ATM as an element of its network design, especially in the early period of network construction. No new design or technology can hope to succeed in the marketplace if migration issues are not carefully considered and adequately resolved. All existing services, and the devices that support them today, must continue to be available on sound financial and operational terms. Level 3, together with other carriers and equipment vendors, is devoting significant resources to assuring that the transition is economical and operationally smooth.[8/]

Level 3 believes that ultimately IP will become the dominant technology for both voice and data applications because its advantages will make it superior in the long run to ATM embedded in the outmoded circuit switched environment of the PSTN. The traditional circuit switched network architecture, if it survives at all, will fulfill only a narrow niche for specialized applications while the great mass of communications – even voice telephony

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[8/] An industry-based Technical Advisory Committee ("TAC") has been working for some time to develop technical specifications for a new protocol suite designed to bridge current circuit-based public networks and IP networks. The new protocol suite, called Internet Protocol Device Control (IPDC), will allow seamless integration between Level 3's IP-based network and the PSTN and will accelerate the development of new Internet-based products and services. The new protocol contemplates external control and management of data communications equipment operating in the emerging multi-service packet networks. The TAC has described these devices as "media gateways." They include voice over IP gateways, modem banks, and circuit cross-connects. The ITU and other standard-setting bodies have been asked to review the IPDC design.

- will be carried on IP-based computer networks Whether Level 3's vision is correct, however, can be determined only in the future What is important now is that the network operators, customers, and regulators understand how these various technologies fit together, their relative strengths and weaknesses, and the feasibility of blending them gracefully to achieve the highest capability at the lowest cost for the using public. This integration of technologies is essential to Level 3's provision of flexible, high-quality service and therefore to its business plan. Level 3 must be able to offer services to the public that are highly reliable, transparent to the user in terms of the underlying technology, and compatible with the existing PSTN.

Level 3's IP network has been carefully designed to fulfill these goals. Indeed, the integration, which is proprietary, is at the heart of Level 3's service and business plan. Without providing unnecessary detail, it suffices to note that Level 3 will be aggregating voice and data traffic from its customers initially on ordinary or high speed PSTN local loops and transferring such traffic to Level 3's own network nodes. At the heart of the equipment at the nodes will be a router, which is simply a specially configured PC or work station which takes the PSTN traffic and packetizes and transmits it over Level 3's own network to a distant Level 3 node where the data will be converted by the distant-end router back into PSTN signals for delivery to the receiving party. The transition from PSTN to IP and back will be handled by Level 3's proprietary soft switch, which is a crucial element in facilitating the conversion by translating packetized information into a form that the PSTN recognizes as circuit switched.

As Level 3's customer base grows and as its own backbone network is more fully built out, Level 3 will serve its high-volume customers primarily on its own dedicated facilities for end-to-end service. Level 3's reliance on the PSTN will thus gradually diminish while the quality and flexibility of its service increases. Meanwhile, Level 3's throughput will be crucially dependent on the availability at cost-based rates of advanced local loops and central office collocation.

D) The Worldwide Network

Level 3's business plan contemplates a worldwide network. In its initial comments (pp. 6-7) Level 3 briefly described its domestic network. However, in light of the closely integrated nature of all advanced economies, Level 3's plans include significant investment in international facilities. Applications are pending or will shortly be filed in most Western European countries for licensing authority to construct and operate an IP network throughout the European Community. The market for advanced services in the EC, like that in the U.S., is growing rapidly. The need for advanced communications is perhaps greater in the EC because until very recently the almost-universal approach to telecommunications in Europe has been the government-owned monopoly model, an approach which by and large has not measured up to the needs of the most sophisticated European users.

Today, on the other hand, the EC has adopted a revolutionary series of market-opening directives[9/] and the EC countries, in varying degrees and with varying diligence, have begun to implement a deregulatory, pro-competitive approach to the provision of telecommunications. As a consequence Level 3 sees a major opportunity to provide advanced services both within the EC and between the EC and the U.S. and among those two regions and the Pacific. Level 3's plans for network construction and inauguration of service are essentially the same in Europe and the U.S. although the initial roll-out will be somewhat slower and less widespread in Europe. In phase one it plans to be serving the major capitals and commercial centers of Western Europe within the next few years and to expand beyond those hubs to medium sized communities once the facilities for the major markets have been constructed and placed in operation. As in the U.S. Level 3 plans to rely initially on leased facilities from existing carriers and to migrate its customer base to its own facilities as soon as it can do so. Important issues remain to be resolved in the EC, including interconnection rates and terms, collocation, the availability of unbundled local loops and other network elements, number portability, and universal service policy.

III. Integrating the Level 3 Network with Existing Facilities

As the foregoing demonstrates, Level 3 has committed itself to the creation of a very extensive national and international network which will offer the public extremely high

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9/ See, e.g., Interconnection Directive 97/33/EC.

quality services. As the network buildout continues, Level 3 contemplates constructing high capacity links to many of its customers' premises. Nevertheless, in the early stages it will not be physically or financially possible to build IP facilities to each customer's location and Level 3 must necessarily rely on the existing infrastructure of PSTN local loops. It is crucial to the success of Level 3's plans that these local loops be fully unbundled, capable of handling high-speed traffic, and available at rates based on incremental pricing. With an extraordinary degree of imagination and tenacity the gatekeepers of the local loop such as the RBOCs and GTE, have defended their turf for many years, displaying a dogged and determined intention to retreat from their control of bottleneck facilities only when and if forced to do so, either by positive regulatory action at the state and federal level, or by the lure of Section 271's promise of interLATA market entry.[10] There is no reason to think that this strategy will change or even be moderated in coming years unless the Commission and/or the Congress adopt a divestiture program with respect to local loops along the lines suggested by Level 3 in its Comments in Docket 98-5 or in its recent initial comments in the Docket 98-147 NPRM recommending divestiture of local loop bottlenecks as a precondition to any RBOCs' offering of ATC.

The local loop/central office bottleneck problem presents itself in three critical areas: access to local loops on an unbundled basis, equitable access to xDSL or other through-put enhancing technologies, and collocation. It simply will not do for the local loop/central

[10] 47 U.S.C. § 271.

office gatekeepers to have better or more favorable access to these critical elements of network infrastructure than their competitors. In their comments in this proceeding as well as in related proceedings, the ILECs have insisted that because the ATC Market is competitive there is no need to impose regulatory constraints on their own provision of such services.[11/] Level 3 would agree, if it were true that the ILECs did not have a stranglehold on the critical local loop/central office features which are crucial even to networks as advanced as that contemplated by Level 3. It is, however, not true. Only a tiny fraction of the telephone traffic carried today does not pass through some LEC central office. To be sure at some point in the future Level 3 expects to have built dedicated IP facilities to many of its customers, but the economics of this deployment are such that these links are some years away and even then lower-usage or lower-density subscribers may not enjoy the benefits of dedicated local channels from their businesses or homes to a Level 3 network node for the foreseeable future or ever. In short, the local loop remains critical; in most cases it is uneconomic, environmentally hazardous, and unesthetic to duplicate it.[12/] Absent unusual circumstances doing so would be a waste of social resources. Municipal authorities with the responsibility to administer local rights of way could be expected to rebel at the additional disruption and maintenance costs that a program of duplication would inevitably require

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11/ Bell Atlantic Comments at 4, 15; US West at 26;

12/ See, e.g. MCI comments at 22-3.

There will be some wireless local loop availability but the well-known spectrum, security and reliability limitations of this technology will not permit such systems to provide more than a small fraction of the need. Cable system access may also serve a small fraction of the market but in the present state of the art cable systems suffer from severe capacity and reliability problems and from geographic limitations arising from the general absence of cable facilities in commercial or industrial areas.

There is therefore no way around the need -- the immediate need -- for cost-based, unbundled and equitable access to the ILECs' local loop plant. In its comments in the companion Section 706 NPRM, Level 3 contends that these access problems compel the conclusion that any provision of ATC by the RBOCs or GTE must be on a fully-divested basis.[13/] Here, Level 3 merely notes its agreement with prior comments that historically the major barrier to the rollout of ATC has been, and Level 3 would expect it to continue to be, the ILECs' collective failure to respond to the procompetitive mandates of the 1996 Act.[14/] Indeed, the rapid deployment of ATC is dependent on vigorous regulatory enforcement of Sections 251 and 252 of the 1996 Act. The Commission must require the ILECs to satisfy their Section 251 (c) obligations by fully unbundling local loops, OSSs, switching elements and other UNEs, including xDSL and other pair gain facilities, DSL modems and DSLAMs. As suggested by Qwest and Allegiance in their comments, the ILECs must be compelled

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13/ Level 3 Comments, at 3-6.

14/ *See, e.g.*, MCI comments at 3, AT& T at 23, ICI comments at 11.

to lease dark fiber to other carriers, both in the local loop and in the ILECs' interoffice networks.[15]

The same problem exists in regard to collocation. As Level 3 plans the construction schedules for its nationwide network, one of its constant and most time consuming problems is securing reasonable collocation from ILECs. To be clear, by "reasonable" Level 3 refers to the availability of space, in a desirable area of the central office or switching center, with reasonable access, and at a price based on the long run marginal or incremental cost to the ILEC. Level 3 does not want to expropriate the property of ILECs. It understands that they are also operating complex businesses and Level 3 is willing to try to resolve collocation issues through good faith negotiations. The problem is that the great majority of the ILEC managers do not approach collocation issues with a mindset which emphasizes the overriding need to solve a problem; on the contrary, too frequently their goal appears to be to proceed slowly and to preserve their monopoly status as long as possible. Here too it is crucial that the Commission, together with the various state PUCs, exercise close regulatory supervision.

One possible approach to accelerate collocation is to establish a presumption that any given collocation request can be filled and put the burden on the ILEC to demonstrate the contrary, if it can do so. Given the ILECs' seemingly limitless penchant for delay and lack of cooperation, Level 3 suggests that few remedial steps would contribute more to the

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15/ Qwest comments at 23, Allegiance comments at 4-6.

acceleration of ATC deployment than to establish some sort of expedited regulatory process to resolve collocation disputes. Such resolutions should be handled as informally as possible, within a predetermined time frame of perhaps 45 days, and result in binding administrative determinations and compulsory orders, if the Commission and/or state PUCs should find that the requested collocation should be provided. This simple step, far more than lofty principles or rhetorical flourishes, will materially advance the deployment of ATC.

IV. Incentives for Investment in ATC

The NOI seeks comment on the incentives for investment in ATC (NOI at ¶ 69 *et seq.*). Level 3's incentive arises from the perceived opportunity to serve a segment of the market which is not being served today by the myriad of existing carriers which are using PSTN technology. That segment is the high end of the commercial customer base which has unmet needs for very high quality and highly flexible communications. Specifically, it includes businesses that operate or wish to operate virtual private networks, intranets, extranets, web-related communications, and other such applications. Although frame relay and ATM can meet some of these needs, they cannot do so in the time frame or in the fashion which an IP network can. Given the growing importance of information-intensive commercial activity, Level 3 anticipates that this segment of the market will grow rapidly and will make ever more sophisticated demands on infrastructure and service providers. Level 3's incentive, therefore, is that of any entrepreneurial enterprise: to develop goods and services which the market desires and will purchase on terms and conditions which will be economically rewarding to the enterprise's investors.

V. Reasonable and Timely Implementation

Among the issues posed by the NOI is that of the reasonable and timely implementation of advanced services (NOI at ¶ 59 *et seq.*). Level 3's answer to this question is the same as the answer proferred by numerous commenters in this proceeding – the marketplace, and only the marketplace, should determine when the implementation of advanced services is reasonable. If demand exists, in the absence of artificial constraints such as those discussed in Section III capital and expertise (both managerial and technical) will come together to provide the desired goods and services.

Notwithstanding this general principle, as suggested above, regulation is needed to overcome historical barriers to the market. But if used too broadly, regulation can interfere with the market in a number of ways: it can create demand which would not exist in the absence of artificial stimulation, and it may artificially suppress demand which does exist. Accordingly, regulation should be kept to a minimum so that the resource-allocating functions of the free market can work their magic. Based on this approach, Level 3 submits that the reasonable and timely implementation of IP technology is now: demand exists, the technology exists, and in a market unconstrained by bottleneck impedimenta there are opportunities for risk taking entrepreneurs to earn profits from the provision of such services.