

# The Geographic Expansion of Atlantic.Net Internet Services

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## Introduction

The Industrial Revolution in the United States came to a close sometime between the late 1980s and early 1990s when it was replaced by the Information Revolution. During the 1990s the nation's information infrastructure began to undergo a massive restructuring, which continues today. Whole new sectors of the telecommunication industry that previously had not existed grew to enormous importance in a matter of a few years. The Internet Service Provider (ISP) was one of them. Internet Service Providers give businesses and individuals access to the Internet, and thus both email and the World Wide Web.

This study first provides a brief history of the Internet. This is followed by a discussion of how one ISP evolved from its inception to the present day. The ISP, Atlantic.Net, is analyzed geographically, with an emphasis on how it expanded from a small local provider to one that today has a strong regional presence. This geographical diffusion has been divided into three periods of time.

## The Internet: A Brief History

The Internet that we know today originated in the late 1960s and was funded in its early years by the US Department of Defense in the hopes of improving military communications. The system was based on a packet switching technology that allowed information to be exchanged in the forms of packets (Cerf et al. 2000). Packet switching remains at the core of Internet technology.

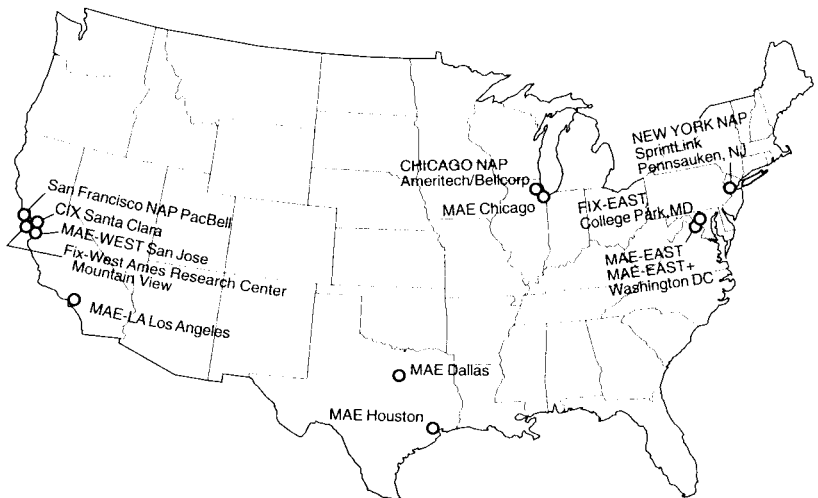
The modern Internet was initiated through funding provided by the National Science Foundation (NSF). The NSF set up the initial

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Internet "backbone" for the purpose of improving the exchange of information between scientific centers (O'Kelly and Wheeler 1999). As the commercial potential of the network became increasingly apparent, the federal government's role in its further development began to be a subject of considerable debate. In 1993, the National Science Foundation decided to turn control of the backbone over to the private sector. At that time the NSF announced that four Network Access Points (NAPs) would be built. These NAPs were to be physical points where Internet traffic could be exchanged. Telecommunication companies such as MCI, UUNet, PSInet, Sprint and Netcom undertook the task of becoming Network Service Providers by establishing connections with the four Network Access Points. On April 30, 1995, the NSFNET was shut down and the NAPs and their connecting backbones became today's Internet (The Internet 2000). Figure 1 shows the geographic location of today's network access points (NAPs) throughout the United States, as well as other exchanges. They all perform somewhat similar functions and are identified by their acronyms. Together they form the Internet's backbone.

**Figure 1**  
**The Backbone of the Internet**  
**Network Access Points (NAPs) and Other Exchanges**  
**Throughout the United States**



## **Internet Service Providers**

During the Internet's infancy, the average person experienced great difficulty in accessing information. Online service providers such as America Online (formerly Quantum Computer Services for Commodore Computers), CompuServe, and Prodigy were the "gatekeepers" to the Internet, controlling not only access to the Web, but because they provided the software, they controlled which Web sites could be viewed (Living Internet, 2000; Okrent 2000).

The development of Web browser software such as Netscape's Navigator and Microsoft's Internet Explorer eliminated the need to purchase the services of one of the large national ISPs and presented the possibility for smaller ISPs to open up all over the nation. By the middle of the 1990s, most computers had web browsers installed at the time of purchase. If a computer owner did not want to subscribe to a national ISP, he or she could seek the services of a local server. Like the large national servers, these local ISPs connected their customers through their servers to the Web by telephony technology (Greenstein 1999; Greenstein 1998). Easy access to the Web brought about an enormous expansion in the number of web sites. In June 1993 there were only 130, but in December 1999 their number had risen to 9.5 million (Zakon 1999).

ISPs today are divided by size into three categories: national, regional, and local (Greenstein 1999; Greenstein 1998). National firms are defined as those that maintain points of presence (POP) in more than 25 states (Greenstein 1998). Many of these national firms already had their infrastructure in place before they began offering Internet service. Since the Internet is run mainly via telephony technology, many of the large national ISPs have become divisions of national telephone companies. AT&T's Worldnet, MCIWorldCom's UUNet, and Sprint have large nationwide networks offering local access numbers in most major metropolitan areas. Other companies offering national access started small, and specialized in Internet access. They built their networks by purchasing equipment from the phone companies (phone lines) and hardware providers such as Cisco Systems (routers and modems). They connected their network to an Internet backbone provided by a network service provider (NSP). These NSPs built and created large high-speed backbone networks that would connect large servers. Hooking into a high-speed network allows ISPs to connect to the Internet without creating

their own network access point; therefore, they can concentrate on building a local access infrastructure (Engebretson 1999).

AT&T, MCIWorldCom, Sprint and PSInet are all network backbone providers as well as ISP providers to individual customers with Internet dialup accounts. However, there are national ISPs that provide only individual dialup accounts and do not provide a backbone. These national ISPs, such as American Online and Earthlink, usually have partnerships with backbone providers that allow them to buy backbone connectivity (Engebretson 1999).

The lines between national, regional and local ISPs continue to blur. Many small ISPs buy their service wholesale from larger ones. For example, Hitter Communications, a regional ISP in the Ocala, Brooksville, and Tampa Bay region of Central Florida, does all of its own marketing; however, all of its points of presence (POPs) are owned and operated by UUNet (Hitter Communications 2000). Atlantic.Net, which competes with Hitter for market share in the area, uses its own equipment and provides all of its technical support, a point that it emphasizes in its advertisements. This gives the company control over all aspects of the customer's Internet experience. Other ISPs claim to offer nationwide access, but they purchase technical support and online access wholesale from other companies.

### **Atlantic.Net**

Atlantic.Net Internet Services of Gainesville, Florida, is a good example of a local ISP that has grown into one that is regional. Two University of Florida students, Manoj "Marty" Puranik and Jose Sanchez, started the firm in 1994. Named Internet Connect Company (ICC Computers), it began as a retail computer store, but through the profits of the sale of computers the owners hoped to finance entry into the ISP industry (Atlantic.Net 2000d). At that time the University of Florida provided only very limited Internet service to its faculty and staff, and students did not have free access to it, as they do today. Confident that the Internet would quickly become as an important educational resource for students and faculty, in 1995 the two students had acquired sufficient capital to launch one of the first commercial Internet services in Gainesville (Atlantic.Net 2000a). The company, however, continued to sell computers until the spring of 1996, when it went exclusively into providing Internet access. At that time, management chose the name "Atlantic.Net" in order to establish the ISP's identity and to differentiate itself from other ISPs (Atlantic.Net 2000a).

An important reason that Atlantic.Net was able to grow and prosper was due to its close proximity to the University of Florida. The university has provided the firm with highly skilled labor as well as highly educated consumers. In addition, since the university at the time the ISP was opened only provided free Internet access to a relatively small number of its faculty, and even fewer students, those who were denied it had to look elsewhere for access to the World Wide Web and emailing capabilities (Miller 2000). Since then, like most higher educational institutions throughout the nation, the University of Florida began to provide free access to the Internet both to its faculty and students. However, there still is an enormous market in Gainesville for private ISPs to sell their services.

### **Stages of Growth**

*Stage One (1995 to Late 1998).* Atlantic.Net's original point of presence (POP) opened in 1995 in Gainesville (Table 1). Shortly afterwards it opened POPs in two more Florida cities (St. Petersburg and Ocala). In each city and town it moved into, it placed its Internet servers, routers, and modems in a local Sprint or MCIWorldCom facility. This permitted the firm to connect and route its traffic effectively through the Internet backbone (Bess 2000). Consumers who subscribed to their service had access to these servers through a local telephone call from their computer modem. As membership grew, Atlantic.Net began expanding to surrounding markets. To do this, it needed to install a POP in each locality so that its residents would not have to make a long distance phone call every time they wanted to log on to the Internet.

Although initially Atlantic.Net chose to compete in one large market (St. Petersburg), it later reached two moderate markets (Gainesville and Ocala). Furthermore, once they were established in these three cities, they began to open POPs in smaller communities nearby. They included Bronson (population 1,065), Live Oak (7,154), Mount Dora (9,329), Palatka (10,891), Starke (5,556) and Williston (2,455) (Bess 2000) (Table 1).

The firm also opened POPs in two small towns north of St. Petersburg (Brooksville and Spring Hill). American Online, the nation's largest ISP with 21 million subscribers as recently as 2000, did not have a POP in either town (Okrent 2000). However, for those who wished to subscribe to American Online, Atlantic.Net

**Table 1**  
**Atlantic.Net's POPs and Their Respective Populations**

Bronson (1)	1,065	New Smyrna Beach (3)	18,167
Brooksville (3)	8,561	North Dade County* (3)	50,772
Cedar Key (3)	898	North Naples (3)	19,404
Clearwater (3)	101,474	Ocala (1)	47,035
Cocoa (3)	18,508	Old Town (3)	493***
Crescent City (3)	1,905	Orlando (3)	181,175
Crystal River (3)	4,244	Palatka (2)	10,891
Daytona Beach (3)	65,136	Palm Coast (3)	29,000**
Deerfield Beach (3)	50,921	Pensacola (3)	58,193
Deland (3)	18,769	Port St. Lucie (3)	79,351
Fernandina Beach (3)	10,408	Sanford (3)	36,951
Ft. Lauderdale (3)	153,728	Sarasota (3)	51,035
Ft. Myers (3)	45,697	St. Augustine (3)	12,573
Gainesville (1)	92,648	St. Petersburg (1)	236,029
Jacksonville (3)	693,630	Starke (2)	5,556
Kissimmee (3)	38,542	Stuart (3)	12,385
Lake City (3)	10,756	Tallahassee (3)	136,628
Lakeland (3)	74,204	Tampa (3)	289,156
Live Oak (2)	7,154	Trenton (3)	1,770
Melbourne (3)	69,057	Vero Beach (3)	16,387
Miami (3)	368,624	West Palm Beach (3)	76,308
Mount Dora (2)	9,329	Wildwood (3)	3,534
New Port Richey (3)	15,024	Williston (2)	2,455
		Zephyrhills (3)	9,311

(1) Original Points of Presence (POPs)

(2) Early Additions

(3) Recent Additions

\* population listed is for North Miami Beach

\*\* approx figure from Palm Coast Web Site ([http://www.relo-florida.com/palm\\_coast/info.htm](http://www.relo-florida.com/palm_coast/info.htm))

\*\*\* Old Town is an unincorporated area of the county; there are no population figures. The population listed is for the neighboring town of Fanning Springs (<http://www.pe.net/~rksnow/flcountyfanningsprings.htm>)

was able to provide access. They had, however, to subscribe to both services.

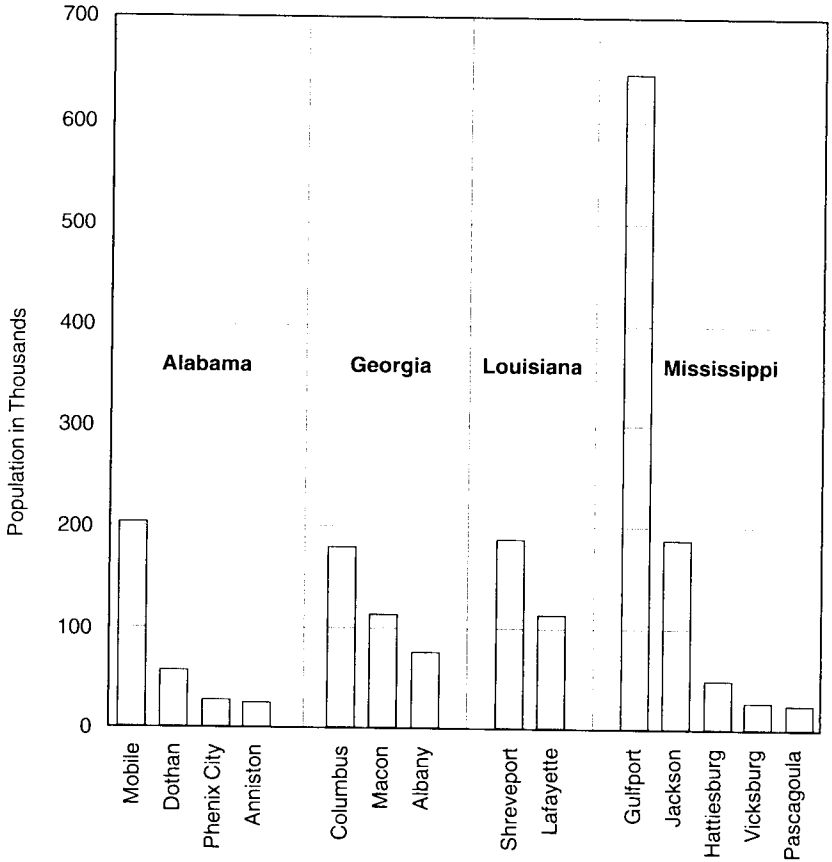
In the spring of 1997, there was a discussion in the trade press about the critical size of the market for an ISP to install a POP. The belief was that an ISP needs at least 200 regularly paying customers to maintain a POP with a high-speed backbone connection

(Greenstein 1998). In addition, it was thought that at least one-quarter of the community's households had to have sufficient income to purchase Internet access. Thus, the minimum population of a community to be served would have had to be approximately 800. If Greenstein's threshold is correct, for profitability, an Internet provider that enters a small community would have to control almost the entire market. Greenstein also notes that national ISPs typically locate in large markets and then branch out to smaller surrounding ones, if at all. Local ISPs typically serve the smaller rural areas that the nationals stay away from because proportionally there aren't as many paying customers. During the first stage of Atlantic.Net's expansion it took advantage of the rural markets that were untouched by the national providers and consequently within Greenstein's threshold population (Atlantic.Net 2000d; Atlantic.Net 2000e; Greenstein 1998).

*Stage Two (early 1999-2000)* During 1999 Atlantic.Net added a new technology, called SuperPOP, to its network architecture (Atlantic.Net 2000c). This permitted the company to enter the second stage of its commercial development. The SuperPOP is simply a set of POP's connected over an asynchronous transfer mode (ATM) backbone (Bay Networks 1997). Asynchronous transfer mode is a type of packet switching technology that permits the ISP greater flexibility in routing. Also, it allows for more traffic capability (bandwidth), including voice, video and all types of multimedia applications. These options have become increasingly popular with consumers and businesses. (Nortel ATM 1999).

The SuperPOP also eliminates the need for the conventional POP, since it can do the work of many. Atlantic.Net presently has numerous SuperPOPs in Florida, which allow the company to offer access to 93% of the state's population in 43 counties (Atlantic.Net 2000e). It also has permitted the company to begin closing some of its older POPs. Today a subscriber to Atlantic.Net in, for example, Bronson may or may not connect with the firm's local POP when he or she makes the local phone connection to the server. The call could as easily reach one of the firm's SuperPOPs. The SuperPOP also eliminates the concern of the Internet provider in assessing whether the community is able to provide a large enough market for profitability. This new technology not only dismisses Greenstein's population threshold theory, but also allows Atlantic.Net to serve almost the entire population of Florida easily

**Figure 2**  
**Population of Municipalities Where Atlantic.Net's**  
**Out-of-State POPs are Located**



and economically (Bay Networks 1997; Greenstein 1999; Greenstein 1999).

*Stage Three (late 1999 to the Present).* Atlantic.Net is now entering Stage Three in its transition. As a result of its adoption of SuperPOP technology, it has begun an expansion into other South-eastern States (Atlantic.Net 2000c; Bess 2000). Figure 2 shows the population of the municipalities where Atlantic.Net's out-of-state POPs are located.

While it still does not qualify as a national ISP using Greenstein's definition, Atlantic.Net has begun displaying charac-



teristics that could lead it to the level of a national firm. The firm now has a presence in five states, still well short of the 25 Greenstein considers the minimum for national ISP status. It should be noted, however, that Atlantic.Net continues to follow a different strategy than that practiced by many national ISPs. The typical national ISP enters the nation's largest metropolitan areas first and then progressively reaches smaller cities (Greenstein 1999). Atlantic.Net's expansion into other states has not been to the largest cities within those states, but to second tier cities with populations below 200,000 (Atlantic.Net 2000e) (Figure 2). Although at a different scale, this is somewhat similar to the firm's strategy when it began operations. With the exception of St. Petersburg, it entered small cities first, and then even smaller towns around these cities later. Although Atlantic.Net may not be following the strategy that today's national ISPs followed in their growth, it is nonetheless positioning itself to become one if it so chooses (Atlantic.Net 2000e; Bess 2000; Greenstein 1999).

## **Conclusion**

This paper looked at the three stages of Atlantic.Net's growth over the past six years. The firm, which once started out as a local ISP serving three local markets, has become a multi-state regional provider. Its SuperPOP network architecture has allowed it to expand its territory quickly without having to install hardware in each location. Atlantic.Net has also changed the way that ISP's serve their customers. Its attention on the smaller rural markets throughout Florida and the surrounding Southeastern states, including smaller "Tier 2" cities has helped the firm create a loyal following while capturing an exceedingly large portion of the rural market share. It is this type of strategy that has allowed Atlantic.Net to grow at a rapid pace and will be the dominating force in its national expansion aspirations.

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