

Computer & Communications Industry Association



2010

A Guide to the History of Telecommunications & Internet Policy

PREPARED BY

Computer & Communications
Industry Association

Dear Friends,

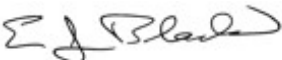
On the eve of the FCC's National Broadband Plan and its consideration of Open Internet rules, we feel that the time is right to examine the history of telecommunications and the Internet to understand the evolution of the underlying policies.

Over the last decade, Americans' use of telecommunications has changed dramatically. Ten years ago, most homes in the United States had a traditional phone line and a cable television connection. Now cable companies offer phone service, phone companies offer television, both offer Internet access, and massive consolidation has occurred. Where a cell phone was once a luxury, now nearly a quarter of the population has dropped their landline phone service altogether in favor of their mobile phones.

In that time the Open Internet has grown up as well and now forms the backbone of the global economy. In light of the changing face of technology and commerce, we applaud the FCC's decision to produce a comprehensive broadband plan and address the basic rules of the road for an open Internet. The longer we push implementation of these important decisions off, the worse off our country will be vis-à-vis the rest of the developed world. To fully realize the benefits of convergence and maximize our innovative potential, lawmakers must coordinate with the FCC and other federal agencies to ensure our nation's policies comport with the realities of the digital age in which we now live.

There is much to do. Barriers to entry must be reduced in order to foster free and open markets. The Universal Service Fund is woefully outdated and does not support "advanced telecommunications services," such as broadband deployment in rural areas, as called for by the Telecommunications Act of 1996. Decades-old spectrum management rules drastically limit the awesome potential of our radio spectrum and have held back the expansion of promising wireless broadband offerings. These are just a few examples. Congress and federal agencies must enact policies that increase connectivity for all Americans and restore our global leadership in telecommunications.

Sincerely,

A handwritten signature in black ink, appearing to read "Ed Black", written in a cursive style.

Ed Black
President and CEO

Telecommunications/Internet Glossary of Terms

Cable Modem – Appearing around the same time as DSL service, Cable Modems deliver high-speed Internet access over coaxial cable television infrastructure. According to the OECD, cable modems account for 29% of broadband Internet connections in the United States as of June 2009.

CLEC – A CLEC (Competitive Local Exchange Carrier) is a local telecommunications provider that competes with already established carriers, the ILECs. The Telecommunications Act of 1996 incorporated the successful attempts of several states to encourage telecommunications competition and established a national framework to allow local exchange competition. However, more CLECs than the market could bear sprang up and created the “telecom bubble” (alongside the “tech bubble”) that crashed in the early 2000’s. CLECs are dependent on the local ILECs from whom they leased wholesale transport. FCC and court decisions stripped away much of the regulations implementing the wholesale interconnection rights prescribed by the Telecom Act, and most of the CLECs either migrated to other lines of business or simply went out of business.

Cloud Computing – Cloud computing relies on high-speed broadband connections and off-site data centers to provide customers with advanced remote computing services (software, platforms, storage and services), relieving those customers of the need to operate their own on-site servers. Software-as-a-Service (SaaS) is one example of Cloud Computing.

DARPA (Defense Advanced Research Projects Agency) – Is a U.S. Department of Defense agency responsible for the development of new technology for use by the military. The agency developed the world’s first packet switched communications network, ARPANET, which eventually developed into the modern Internet.

Deep Packet Inspection (DPI) – DPI is the use of any IP network equipment in the middle of the network (i.e. not an “end point”) to monitor, inspect, and potentially block, alter, or make commercial use of the content of the data being sent over the Internet or a specific network.

DOCSIS – A relatively recent telecommunications standard that allows high-speed data transfer over existing Cable TV systems. Currently, DOCSIS 3.0 (the newest iteration currently being deployed to customers)

is the closest thing the cable companies have to fiber-optic network (e.g. FiOS) speeds. It also supports the emerging IPv6 Internet address standard.

DSL (Digital Subscriber Line) – DSL was one of the first widely available means of broadband Internet access and is still widely used today. DSL is a type of digital data transmission that utilizes the local telephone network and can be delivered simultaneously with regular telephone service. According to the OECD, 60% of all broadband connections in the United States were DSL connections as of June 2009.

ILEC – An ILEC (Incumbent Local Exchange Carrier) is a local telephone carrier that was in existence at the time of the break up of AT&T into the RBOCs (Regional Bell Operating Companies, aka “Baby Bells”). ILECs include the RBOCs.

TCP/IP – A set of rules (aka “protocol suite”) enabling data transfer over the Internet. It consists of rules stipulating correct formats for data representation, signaling, authentication and error detection among other things. IP is an abbreviation for “Internet Protocol,” and “TCP” is an abbreviation for “Transmission Control Protocol.”

Internet Access Provider (IAP) – A company that provides access to the Internet. IAPs use a range of different transmission technologies (e.g. dial-up, DSL, Cable, Fiber, wireless) to allow their customers to send and receive Internet Protocol “packets.” IAPs are also referred to as Internet Service Providers (ISPs) or Network Operators (Net Ops).

Internet Backbone – The primary long distance high capacity physical network facilities that link together other networks through peering arrangements to create the interconnected network of networks that makes up the Internet. This is the interstate (and global) highway system of the Internet.

IPv4/IPv6 – Different generations of Internet Protocol that make up the fabric of the Internet. Due to the exponential expansion of the Internet and the decreasing number of Internet addresses available, the switch to IPv6 (which has 4 times as many bits as IPv4) is deemed necessary in the near future.

LTE/WiMAX – LTE (Long Term Evolution) and WiMax are the two

Continued - Glossary of Terms

major 4th generation (4G) mobile broadband standards. Verizon and AT&T have announced that they are in the process of beginning to roll out LTE, while Sprint through its subsidiary, Clearwire (now known as “Clear”), has already deployed WiMax in several cities.

Open Internet – The basic open access, end-to-end character of the Internet as it was first conceived and commercially developed. The FCC has proposed to codify and enhance 2005 policy principles which recognize consumer rights in this area. The FCC would prevent IAPs from discriminating against, degrading or favoring lawful content, applications and services. Currently, the debate centers around the definition of a proposed exception to the new rule known as “reasonable network management.”

Packet – A formatted unit of data that can be transmitted over a communications network; including the Internet. As opposed to point-to-point telecommunications links, such as traditional phone service, communication involving packets is more efficient because it does not require a dedicated connection between two points, and therefore, less capacity is wasted.

Peering – The interconnection of separate networks, according to contractual arrangements, to enable the exchange of traffic between customers on different networks. Peer networks of similar sizes typically exchange traffic with each other free of charge.

Prioritization of Packets - Prioritizing packets means that network equipment is used to give priority to certain types of data over others (e.g. voice or video packets over data packets) or to data originating from certain sources.

Reasonable Network Management – A proposed qualifier to the FCC’s proposed 6 Principles of the Open Internet that would allow network operators/IAPs to reduce or mitigate the effects of traffic congestion, and to stop viruses, malware and other agents harmful to the network. CCIA believes these network management practices must further a legitimate technical, as opposed to commercial, purpose and be narrowly targeted to address that purpose. Unlawful content and activity on the Internet are unprotected by the 6 principles and outside the scope of the

FCC rulemaking. They must be dealt with pursuant to other statutory frameworks such as DMCA and CALEA.

RBOC - RBOCs (Regional Bell Operating Companies), formerly known as the “Baby Bells,” were the regional/local phone companies that resulted from the breakup of AT&T in 1984, separating local phone service from long distance, manufacturing/equipment, and information services.

List of Original Baby Bells:

- Ameritech – covered Illinois, Indiana, Michigan, Ohio and Wisconsin. It acquired by SBC in 1999.
- Bell Atlantic – covered most of the Central Atlantic Coast from Virginia to New Jersey. It acquired GTE in 2000 and changed its name to Verizon.
- BellSouth – covered most of the Southern United States. It was acquired by AT&T in 2006.
- NYNEX – covered New York and New England. It was acquired by Bell Atlantic in 1996.
- Pacific Telesis – covered California. It was acquired by SBC in 1997.
- Southwestern Bell – covered Texas and many of the Plains states. It changed its names to SBC in 1995 and acquired what was left of its former parent, AT&T Corp., in 2005. It then changed its name back to AT&T.
- US West – covered much of the Pacific Northwest and the mountain states. It was acquired by Qwest in 2000.

Special Access – Special access lines are high-speed, high capacity broadband connections to the Internet backbone in the U.S. Special access lines connect nearly every sector of the broadband economy (businesses, wireless carriers, hospitals, universities, governments etc.) to network access points. In most regions of the country, only one or two of the largest ILECs offer special access services, so they are almost always less competitive than the residential local Internet access market.

Spectrum - The radio spectrum is the range of different electromagnetic frequencies that radio transmitters can use to send audio, video, or data to receiving devices, enabling all forms of wireless communication. Historically, the U.S. government allocates certain frequency ranges for

private sector use and has assigned or licensed most of them to specific companies via rules, competitive applications or auctions. Some intentionally remain unlicensed and are used for things like wi-fi and garage door openers.

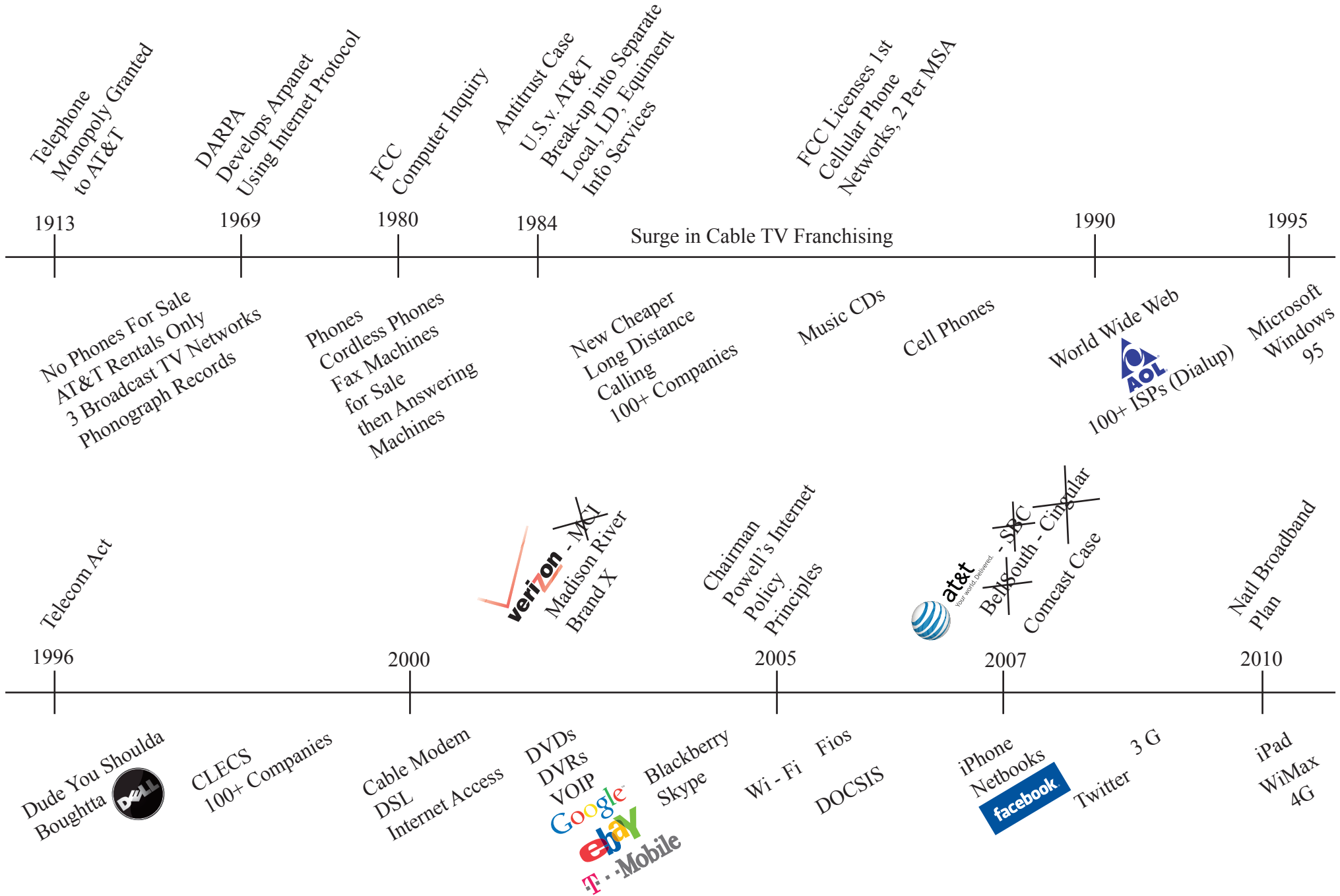
Telecommunications Act of 1996 – Updated the Communications Act of 1934. Provided for local service competition, the e-rate for schools and libraries, and determined that “advanced services” should be available to all Americans.

Universal Service Fund (USF) – The USF was created in 1997 to meet the goal of universal telephone service for the United States as mandated by the Telecommunications Act of 1996. It provides subsidies for telecommunications companies who serve rural and high-cost areas to keep consumer rates comparable across all parts of the country. It also provides funds to schools, libraries and health care providers for advanced telecommunications services. In order to generate money for the fund, all providers of telecommunications must contribute a percentage of their interstate and international revenues. Before the breakup of AT&T, the monopoly was able to perform this function implicitly through internal cross subsidizing and cost-averaging over its entire network.

Voice over Internet Protocol (VoIP) – VoIP is the name for the family of transmission technology software that converts voice to data streams and back to voice for the delivery voice communications over the Internet using Internet Protocol.

Wi-Fi – Wi-Fi is a type of wireless local area network (WLAN) commonly used to deliver short-range wireless Internet access to computers, smart phones and other properly configured devices.

Timeline of Telecom & Internet Evolution





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