

History of North American Telecommunications Networks

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History of Phone Networks in the United States and Canada

Introduction

The development of telephone networks in the United States and Canada spans nearly 150 years, from Alexander Graham Bell's 1876 invention to today's converged digital and mobile infrastructure. This report presents a comprehensive historical timeline, comparing and contrasting the evolution of telephone systems in both countries. It covers key technological milestones – from early switchboards and analog trunk lines to digital switching, fiber optics, and [Voice over IP \(VoIP\)](#) – as well as major regulatory and corporate developments. The parallel histories of the US and Canadian phone networks reveal both similarities (shared technologies and close economic ties) and differences (distinct regulatory approaches and ownership models). The following sections provide an in-depth chronological narrative, divided by era, highlighting

technical innovations, regulatory milestones (FCC in the US and CRTC in Canada), antitrust actions, and the rise and fall of corporate monopolies. The goal is to give [telecommunications professionals](#) and policy experts a detailed understanding of how the [modern North American telephone network](#) came to be.

Invention and Early Telephone Networks (1876–1900)

Figure: An early telephone demonstration. (Actor portraying Alexander Graham Bell speaking into a prototype telephone, circa 1926 AT&T promotional reenactment (Source: [commons.wikimedia.org](#))). The telephone's history begins with the invention of the device by Alexander Graham Bell in 1876. On March 10, 1876, Bell transmitted the first intelligible speech over a wire, summoning his assistant with the famous words, "Mr. Watson, come here, I want to see you," using his experimental apparatus (Source: [wired.com](#)) (Source: [wired.com](#)). Bell's work, building on earlier ideas (including those of Antonio Meucci and Elisha Gray), led to a patent granted in 1876 – a patent that would establish Bell's company as the pioneer of telephone services (Source: [supreme.justia.com](#)). In the United States, Bell and his financial backers formed the Bell Telephone Company, which by 1880 evolved into the **American Bell Telephone Company** to supply instruments to local licensee firms (Source: [bell.com](#)). By 1885, Bell's affiliate **American Telephone & Telegraph Company (AT&T)** was established to operate long-distance lines, earning the nickname "the long-distance company" (Source: [bell.com](#)). In Canada, Bell's invention had direct roots – Bell conducted early experiments at his family's home in Brantford, Ontario – and the first Canadian telephone business, **Bell Telephone Company of Canada**, was organized in 1880 (Source: [itu.int](#)). Cross-border links also appeared early: in 1881, Bell's company laid the world's first international telephone cable, connecting Windsor, Ontario to Detroit, Michigan (Source: [itu.int](#)).

During the initial patent period (1876–1893), Bell's companies held an effective monopoly on telephone technology, which limited competition. In the US, Bell's fundamental patents expired in 1893–1894, "**opening the door to competition**" as hundreds of [independent telephone companies](#) sprang up (Source: [opnews.substack.com](#)) (Source: [bell.com](#)). Over the next decade, more than **6,000 independent telephone companies** emerged in the United States to challenge the Bell system (Source: [memorial.bellsystem.com](#)). Similarly in Canada, Bell's early dominance faced a challenge: in 1885, key Bell telephone patents were **declared void by the Canadian government**, enabling independent telephone companies to enter the market (Source: [thecanadianencyclopedia.ca](#)). Consequently, by the late 19th century both countries saw rapid growth in telephone subscribers served by a patchwork of companies. The first telephone exchanges were small manual switchboards: for example, the world's first commercial telephone exchange opened in New Haven, Connecticut in 1878 with only 21 subscribers (Source: [history.com](#)). Early telephones were initially leased in pairs (direct lines between offices), but the invention of the switchboard (and later the automatic switch) allowed any subscriber to connect through an operator (Source: [en.wikipedia.org](#)). By 1900, telephone service had expanded from major cities to many towns. In Canada's rural regions and frontier areas, however, telephone penetration lagged and sometimes relied on community-owned lines or rudimentary exchanges. Still, the foundational infrastructure – poles, wires, switchboards – was in place, and the stage was set for larger unified networks. The concept of telephone "trunk lines" for long-distance calling was also introduced in

this period, although early long-distance calls were limited by the range of analog wire technology. Notably, Bell's company installed the first long-distance circuits between major cities (e.g. New York–Boston) and experimented with electrical amplifiers (loading coils) to extend range (Source: en.wikipedia.org). Both the U.S. and Canada entered the 20th century with telephone as a proven technology but with industry structure still in flux due to the rise of independent providers.

The Era of Monopoly and Expansion (1900–1940)

By the early 20th century, the telephone industry saw consolidation into monopolies under government oversight. In the United States, AT&T, led by CEO **Theodore N. Vail**, pursued a strategy of unifying the nation's phone system. Vail's famous credo was "One Policy, One System, Universal Service," reflecting AT&T's ambition to either buy out or interconnect with independent companies to create a single network (Source: historyofcomputercommunications.info). AT&T (which had become the parent of the Bell System in 1899 (Source: bell.com)) aggressively acquired competitors until the government intervened. In 1913, facing an antitrust lawsuit, AT&T reached the **Kingsbury Commitment** with the U.S. Department of Justice: AT&T agreed to **stop acquiring independent telcos without approval and to allow interconnection** of non-Bell companies to the long-distance network (Source: bell.com) (Source: bell.com). This deal, combined with the earlier 1910 extension of the Interstate Commerce Commission's authority over telephones (Source: bell.com) (Source: bell.com), effectively sanctioned AT&T's monopoly in exchange for government regulation. The result was a **regulated monopoly** model: AT&T's Bell System provided nearly all local and long-distance service in the US (except a few independents like GTE, SNET, and cooperatives) and was subject to rate regulation ensuring reasonable public access. Notably, AT&T's Long Lines unit completed the first transcontinental phone line in 1914, enabling the inaugural coast-to-coast call by 1915 (Source: bell.com) (Source: en.wikipedia.org). During World War I, the U.S. government even nationalized the telephone system for a year (1918–1919) under the Postmaster General, before returning it to private AT&T control (Source: bell.com). By 1934, federal regulation was solidified with the **Communications Act of 1934**, which created the [Federal Communications Commission \(FCC\)](https://federalcommunicationscommission.gov) and transferred interstate telephone oversight to the FCC (Source: bell.com). This mid-Depression era reform recognized telephony as a vital public utility: the FCC regulated rates and practices, reinforcing AT&T's universal service obligation in return for monopoly status (Source: bell.com).

In Canada, the trajectory was somewhat different. The Bell Telephone Company of Canada (chartered in 1880) initially held sway in major markets (notably Ontario and Quebec), but vast portions of the country were sparsely populated and not immediately served by Bell. In the early 1900s, several provincial governments took a more direct role in telephone service, seeing it as an essential public utility. **Manitoba, Saskatchewan, and Alberta established government-owned telephone systems**, partly driven by populist sentiment and frustration with Bell's limited rural investment (Source: jstor.org) (Source: cjc.utppublishing.com). For example, the province of Alberta acquired Bell's Alberta operations in 1906 and formed a provincial telephone system (later known as Alberta Government Telephones) (Source: itu.int). Saskatchewan created the Department of Telephones in 1908 and similarly bought out Bell's local network by 1909, founding what would become SaskTel (Source: esask.uregina.ca). These public networks rapidly expanded access in the Prairie provinces.

Meanwhile, Bell Canada continued as a private (but regulated) monopoly in central Canada. In 1903, the Canadian federal government brought Bell Canada under federal jurisdiction via the **Railway Act**, requiring rate changes to be approved by the Board of Railway Commissioners (Canada's early national regulator for transportation and utilities) (Source: itu.int). Thus, by the 1910s, Canada had a **mixed system**: Bell Canada as a dominant private company in the populous east (subject to federal rate regulation), alongside provincially-run telephone systems in the west, and a scattering of small independent or municipal phone companies elsewhere. Despite this patchwork, the Canadian networks cooperated to achieve nation-wide connectivity. In 1932, all major telephone operators joined to form the **TransCanada Telephone System (TCTS)** alliance, which provided for **coast-to-coast long-distance service entirely over Canadian lines** (Source: itu.int) (Source: itu.int). Prior to that, cross-country calls had to route partly through the U.S.; by July 1932, TCTS (later renamed Telecom Canada and known as Stentor) established an all-Canada network linking east and west (Source: itu.int).

Throughout 1900–1940, telephone subscribership grew enormously under these monopolies. By the 1920s, telephone service had become commonplace in urban areas in both countries. The Bell System invested heavily in infrastructure like underground cables in cities and pole lines between towns. Automatic (dial) switching also started to replace manual operators in larger American exchanges by the 1920s – the first automatic “Strowger” switch had been introduced in 1892 in the US, and Bell began deploying panel and crossbar switches by the 1920s–30s. In Canada, automatic dialing was introduced around 1924 in some locales (Source: itu.int). Long-distance calling remained a premium service but improved with technology such as **vacuum-tube repeaters** (1910s) that amplified voice signals, and **carrier multiplexing** on open-wire lines. The first international long-distance call between the US and Canada occurred in 1881 (Windsor–Detroit cable) (Source: itu.int), and by the 1920s regular cross-border calling was established under agreements between AT&T and Canadian carriers. By 1930, North America's telephone network was the largest in the world. However, rural service lagged: in the U.S., only about **38% of farms had telephone service by 1940**, a situation addressed by federal loans after WWII (Source: library.cqpress.com)(Source: eh.net). In summary, the early 20th century saw the **entrenchment of telephone monopolies** (AT&T in the US; Bell Canada and provincial telcos in Canada) with government oversight that prioritized universal access and interconnection. This period laid the groundwork for technical innovations and expansion that would accelerate mid-century.

Technological Advances and Mid-20th Century (1940s–1960s)

The 1940s through 1960s brought major technological upgrades to the telephone network, transforming what was still a primarily analog, operator-assisted system into a more automated, high-capacity network. One key development was the use of **coaxial cables and microwave radio systems** for long-distance trunk lines. In 1941, AT&T rolled out the first L-carrier coaxial cable system, and by 1951 a coaxial cable linked the US east and west coasts for telephone and television transmission (Source: itu.int). In parallel, **microwave relay towers** emerged as a faster-to-deploy alternative: the first long-haul microwave route (between New York and Boston) opened in 1947 in the US, and a transcontinental microwave network was completed by AT&T in 1956. Canada followed a similar trajectory: Saskatchewan's SaskTel completed its leg of a cross-country microwave

system in 1957, and by 1958 Bell Canada's president Thomas Eadie realized his vision of an all-Canadian microwave network stretching 6,400 km from coast to coast (Source: itu.int). These microwave routes, in combination with coaxial links, vastly expanded long-distance calling capacity and reliability. They also enabled real-time broadcast of television across North America (for example, the microwave network carried the first "**Hockey Night in Canada**" national TV broadcasts in the late 1950s) (Source: itu.int).

Switching technology also saw dramatic improvement. **Direct Distance Dialing (DDD)** was introduced, allowing callers to place long-distance calls without operator assistance. The first customer-dialed long-distance call in North America was made in 1951 in the US (Englewood, NJ to Alameda, CA) as a trial, and Bell Canada inaugurated DDD for some routes in 1956 (Source: itu.int). Underlying DDD was the creation of a unified numbering plan. In 1947, AT&T developed the **North American Numbering Plan (NANP)**, assigning area codes to regions of the US and Canada (and certain neighboring countries) to facilitate automated routing of calls using electromechanical switches. By the 1960s, most urban areas had converted from manual exchanges to automatic dial systems (step-by-step or crossbar switches), and the ranks of "telephone operators" – once a ubiquitous occupation – began to decline (Source: history.com). The "**hello girls**" on cord switchboards were gradually replaced by machines, a process essentially completed by the 1970s except in the most remote exchanges (Source: sciencemuseum.org.uk).

Another leap was the advent of **electronic switching and signaling**. In 1965, Bell Telephone Laboratories deployed the first **electronic switching system (#1ESS)** in New Jersey – a transistorized, software-controlled switch that could handle 65,000 lines and offered new features such as call forwarding and three-way calling (Source: telephoneworld.org) (Source: telephoneworld.org). This was followed by improved electronic switches and, by the early 1970s, the beginnings of **digital switching**. For instance, AT&T's first digital toll switch, the #4ESS, was installed in 1976 (Source: telephoneworld.org), and Northern Electric (Nortel) demonstrated its digital switch (DMS series) in the mid-1970s (Source: telephoneworld.org). These switches converted voice to digital format (PCM – pulse code modulation) inside the exchange, improving call quality and capacity. They also relied on advanced computer control, foreshadowing the convergence of computing and telephony. Signaling between switches also evolved: in the late 1960s and 1970s, the Bell System developed **Common Channel Interoffice Signaling (CCIS)**, a precursor to the global **Signaling System No. 7 (SS7)** (Source: en.wikipedia.org) (Source: en.wikipedia.org). Unlike traditional in-band tones, SS7 used a separate data network to exchange signaling messages for call setup, teardown, and features like Caller ID. **SS7 was introduced in the 1970s** in the US between new electronic switches (e.g., 4ESS and 4A crossbar), greatly speeding up call setup and enabling network-wide services (Source: en.wikipedia.org). Canada adopted similar signaling upgrades through the 1980s as digital switches (like Nortel's DMS-100 for local switching) proliferated in its networks.

In addition to landline advancements, this era saw the birth of **mobile telephony**. Early mobile telephone service was extremely limited – e.g. AT&T's Mobile Telephone Service (MTS) in 1946 allowed a few radio-telephone calls in select cities – but these systems were manually connected and had very low capacity. It was not until cellular concepts were developed (Bell Labs outlined cellular in 1947 and refined it in the 1960s) that mobile could scale. A major milestone was the **launch of cellular 1G networks**: the first commercial cellular

call in the US was made in 1983 when Ameritech opened a cellular system in Chicago (Source: cengn.ca). In Canada, the first 1G networks went live by the mid-1980s (Rogers Cantel and provincial telcos launched cellular service around 1985) (Source: cengn.ca). These analog cellular networks (AMPS in the US, similar standards in Canada) initially operated separately from the landline telephone network except at gateways, but over time they were integrated into the public switched telephone network (PSTN) for seamless calling.

Meanwhile, voice communications were also extending beyond the ground. **Satellites** became a part of the telephone network in the 1960s. In July 1962, AT&T, in collaboration with NASA, launched **Telstar 1**, the world's first active communications satellite. Telstar successfully **relayed telephone calls (and television signals) across the Atlantic** for the first time (Source: en.wikipedia.org). Although Telstar was a low-earth orbit satellite with limited operational life, it proved the concept. Geostationary satellites followed: in 1965, Intelsat I ("Early Bird") provided the first commercial geosynchronous satellite circuit between the US and Europe. Canada, notably, was the **first country to launch a domestic geostationary comsat, Anik A1** in 1972, to serve its own territory (Source: en.wikipedia.org#:text=The%20Anik%20A%20satellites%20were,the%20Canadian%20North%20for%20the). ~~The Anik satellites gave Canada the ability to bring telephone service (as well as TV) to far flung northern communities that were expensive to reach by terrestrial lines~~ (Source: en.wikipedia.org#:text=The%20Anik%20A%20satellites%20were,the%20Canadian%20North%20for%20the). By the late 1970s, satellite links were commonly used for overseas calls and for remote regions in North America (for example, Alaska and Canada's Arctic relied heavily on satellite circuits until fiber optic cables reached them later).

It is also during the 1950s–1960s that telephony began to intersect with computer technology in another way: early **data transmission** over phone lines. The Bell System introduced the first commercial modem (the Bell 101 dataset) in 1958 allowing digital data over telephone circuits. This set the stage for **packet-switched networks**, which emerged in the late 1960s. While the US ARPANET (1969) pioneered packet switching for research computers, the telephone companies developed their own data networks. Canada was a leader in public data networking: **DATAPAC**, launched in 1976, was the world's first public packet-switched network using the X.25 protocol (Source: en.wikipedia.org) (Source: en.wikipedia.org). (France's Transpac followed in 1978.) Datapac was operated by Canada's TransCanada Telephone System and provided nationwide data connectivity, illustrating how telcos were expanding beyond voice into computer communication. Although these early packet networks were separate from the voice PSTN, they laid groundwork for the eventual integration of voice and data (and foreshadowed the internet's rise).

Regulatory developments in the mid-century kept pace with technological change. In the US, the **antitrust scrutiny of AT&T** re-emerged after WWII. In 1949 the Justice Department filed suit, alleging AT&T and its manufacturing arm Western Electric were stifling competition (Source: bell.com). This led to a **1956 consent decree** in which AT&T agreed to restrict itself to the regulated telephone business and exit other fields (notably computing) (Source: bell.com) (Source: bell.com). Western Electric remained part of AT&T but was limited to supplying Bell System needs. This decree preserved the Bell System intact but on a shorter leash. In Canada, federal regulation evolved with the creation of the **Canadian Radio-Television Commission (CRC)** in

1968, which took over broadcast regulation, and its expansion into telecommunications in 1976 (renamed the **Canadian Radio-television and Telecommunications Commission, CRTC**) (Source: crtc.gc.ca)(Source: thecanadianencyclopedia.ca). From 1968–1976 telecom rates and interconnection issues in Canada transitioned from the old Board of Transport Commissioners to the CRTC (Source: thecanadianencyclopedia.ca). The CRTC's new mandate reflected a philosophy similar to the FCC's: to supervise monopoly telcos in the public interest. During this period, Canada's provincial telcos largely remained publicly owned (except BC Tel and a few others) and Bell Canada remained dominant in Ontario/Quebec. Thus, by 1970, North America's telephone networks were at a high point of centralized control: AT&T's Bell System was a vast unified entity in the US, and Canada's Telecom Canada alliance coordinated service among Bell and the provincials. Both countries had nearly universal phone service (over 80–90% of households had phones by the 1970s), setting the stage for the upheavals of competition and new technology in the final decades of the 20th century.

Digital Revolution and Competition (1970s–1980s)

The 1970s and 1980s were transformative years, as the phone networks transitioned to digital technology and faced the introduction of competition through regulatory and legal changes. On the technology front, **digital transmission** became widespread. AT&T first deployed **T1 digital carrier systems** (1.5 Mbps lines carrying 24 digitized voice calls) in the 1960s; by the 1970s, digital carriers and microwave links were common in backbone networks. The pinnacle was the adoption of fiber optics: in **1977, AT&T installed the first fiber-optic telephone link** under downtown Chicago, with each fiber carrying 672 voice channels (Source: corning.com). Just weeks later, GTE (a large independent U.S. telco) deployed a fiber link in Los Angeles, demonstrating fiber's broad appeal (Source: ecmag.com). Similarly in Canada, Bell and other carriers trialed fiber in the late 1970s; by 1984, SaskTel had completed a **400-km fiber route**, one of the longest at the time (Source: itu.int). Fiber optics offered enormous bandwidth and reliability, eventually replacing copper coax and microwave on major routes. In switching, the **digital switch** took over: AT&T's #5ESS and Nortel's DMS-100 (both introduced in the early 1980s) became the workhorses of local exchanges, fully digitizing voice in the network core. Common-channel signaling (SS7) was standardized internationally in 1980 and quickly adopted across North America in the 1980s, enabling features like toll-free (800) numbers, call waiting, and Caller ID by providing fast signaling between digital switches (Source: en.wikipedia.org)(Source: en.wikipedia.org). Telephone users experienced clearer calls and new services, while operators saw productivity gains and network efficiency from these upgrades.

Perhaps the biggest change, however, came from **deregulation and competition**. In the United States, a series of FCC decisions and court cases in the 1970s broke AT&T's stranglehold bit by bit. The **FCC's Carterfone decision in 1968** was an early catalyst – it allowed customers to attach non-Bell equipment (like third-party phones or modems) to the network, ending Western Electric's monopoly on customer premises gear (Source: bell.com). Soon after, **MCI (Microwave Communications Inc.)** challenged AT&T's long-distance monopoly. The FCC in 1969 granted MCI a license to build a private microwave network (Chicago-St. Louis), and by **1971 MCI began offering competitive long-distance circuits** (Source: bell.com). AT&T fought

back legally, but the landmark **ExecuNet decision (1977)** ultimately permitted MCI (and others) to offer ordinary long-distance to the public, introducing competition in that segment. The final blow to the Bell System monopoly came via antitrust law: in 1974, the U.S. Justice Department filed an antitrust suit against AT&T – a case settled by the **1982 Modified Final Judgment**, which ordered the **breakup of AT&T**. Effective January 1, 1984, AT&T divested its 22 local Bell Operating Companies into **seven independent Regional Bell Operating Companies (RBOCs)**, popularly called the “Baby Bells” (Source: bell.com). AT&T was left with only long-distance operations, Bell Labs, and Western Electric manufacturing (and was barred from re-entering local service for some time). The seven RBOCs (Ameritech, Bell Atlantic, BellSouth, NYNEX, Pacific Telesis, Southwestern Bell, and US West) took over local telephone service in different regions of the country (Source: bell.com). For example, Pacific Telesis served California/Nevada, and Bell Atlantic served the mid-Atlantic states. They also inherited the Bell brand/trademark jointly (along with two smaller independents that had been affiliated, SNET and Cincinnati Bell) (Source: bell.com). This divestiture profoundly reshaped the U.S. telecom landscape: local service remained a regulated monopoly under each Baby Bell (initially), but **long-distance became a competitive market** overnight, with AT&T, MCI, Sprint, and others vying for customers. Consumers saw new choices and often lower long-distance rates throughout the 1980s, while AT&T’s loss of monopoly status spurred rapid innovation and cost-cutting.

In Canada, the move toward competition was more gradual but followed a parallel logic. Through the 1970s and 1980s, Bell Canada and other carriers still operated under monopoly licenses, but the CRTC increasingly introduced **competitive elements**. For example, in 1979 the CRTC allowed CNCP Telecommunications (a joint venture of Canadian National and CP Rail companies) to provide some competitive data and telegraph services in competition with Bell, foreshadowing voice competition (Source: cjc.utppublishing.com). The major turning point came in 1992: after extensive hearings, the CRTC issued **Decision 92-12** which opened **long-distance telephone service to competition** (Source: cjc.utppublishing.com). A new competitor, Unitel (backed by Rogers and AT&T Corp), was allowed to connect to Bell and other networks and offer long-distance to customers. This was analogous to the US MCI/Sprint entry, though Canada’s timeline lagged by a decade. Leading up to this, in 1984 Bell Canada had restructured, creating **Bell Canada Enterprises (BCE)** as a holding company and divesting Northern Telecom (Nortel) as a separate entity; this was partly to position for a changing environment. The Canadian provincial telcos also formed closer alliances – in 1990 they rebranded the Telecom Canada alliance as **Stentor**, for joint marketing and technology coordination. However, once competition was introduced, the cozy Stentor alliance began to break down, and it was dissolved by the late 1990s as companies pursued their own strategies.

Another aspect of 1980s competition was the emergence of **cellular telephony as a competitive sector**. In the US, cellular licenses were awarded to two carriers in each market (one typically a Baby Bell or wireline company, and one non-wireline, often an independent like McCaw Communications). Thus, from the start, mobile was a competitive duopoly rather than a Bell monopoly. For instance, Ameritech launched the first US cellular network in Chicago (1983) (Source: cengn.ca), while in New York both NYNEX Mobile and a competitor (MetroOne) began service around 1984. In Canada, a similar model saw **Cantel (later Rogers Wireless)** given a national cellular license in 1984 to compete with the incumbent telephone companies’ cellular divisions. The

first Canadian cellular call was made in Montreal in 1985, and by the late 1980s cell service was available in all major cities. Though initially expensive and limited, cellular telephony would become the primary growth engine of the telecom industry in the 1990s and beyond.

Deregulation and Convergence (1990s–2000s)

By the 1990s, the monopoly era was definitively over, and both the US and Canada embarked on full telecom **deregulation**, embracing competition in nearly all segments of the market. In the United States, the milestone was the **Telecommunications Act of 1996**, a sweeping update of telecom law – the first major revision since 1934. The 1996 Act aimed to **open local telephone markets to competition**, breaking the remaining monopolies of the RBOCs, and also encouraged cross-entry between telephone, cable, and other communications markets (Source: bell.com). Under the Act, competitive local exchange carriers (CLECs) could lease infrastructure from incumbents and provide local phone service. At the same time, the Act allowed the RBOCs to enter the long-distance market (something they were barred from post-1984) once they met conditions for local competition. The FCC implemented rules for interconnection, number portability, and unbundled network elements to facilitate new entrants (Source: bell.com) (Source: bell.com). The late 1990s thus saw dozens of CLECs emerge, although many later consolidated or exited after the dot-com bust. On the long-distance side, AT&T's dominance eroded as MCI, Sprint and others captured significant market share. Ironically, by the mid-2000s, the industry consolidated again: **SBC (Southwestern Bell Corp) acquired AT&T Corp in 2005** (and adopted the AT&T name), Verizon (Bell Atlantic + GTE) acquired MCI, and **AT&T (SBC) then bought BellSouth in 2006**, reuniting many Baby Bells. As a result, two mega-carriers (AT&T and Verizon) reconstituted much of the old Bell System, though under competitive conditions and without vertical manufacturing integration.

In Canada, following the introduction of long-distance competition in 1992, the CRTC proceeded to open up **local telephone competition**. In **CRTC Decision 97-8 (1997)**, the Commission established a framework for local exchange competition, allowing new entrants to interconnect with incumbent networks and compete for residential and business customers (Source: crtc.gc.ca). This led to the rise of CLECs in Canada such as Sprint Canada and group telecoms, and notably the entry of cable companies (like Rogers and Shaw) into telephony. By the early 2000s, Canadians in urban areas could choose alternate providers for both local and long-distance service. The incumbent regional companies underwent changes as well: many of the provincially owned telcos were privatized or merged. For example, Alberta's AGT had transformed into Telus, which in 1999 acquired BC Tel to form a west-Canada giant (Telus Corp) competing nationally. Bell Canada retained dominance in Ontario/Quebec and expanded by acquiring Winnipeg's MTS (Manitoba Telecom) in 2017 and partnering in the Atlantic region (Aliant). By the 2000s, **Bell, Telus, and Rogers** (which had grown from wireless and cable roots) emerged as the "Big Three" telecommunications companies across Canada. Each offered a full range of services: local, long-distance, wireless, internet, and TV. A notable difference from the US is that **Canada still has one significant publicly-owned telco, SaskTel**, which remains a provincial crown corporation in Saskatchewan and an active market player.

On the technology side, the 1990s–2000s saw the **convergence of voice and data networks**. The explosion of the public Internet and broadband services forced telcos to adapt quickly. **Voice over IP (VoIP)**, once a niche technology, matured in the late 1990s. In 1995 the first commercial internet phone software by VocalTec enabled PC-to-PC calls (Source: historyofinformation.com). By the early 2000s, startups like Vonage offered VoIP home phone service over cable/DSL, and major carriers began migrating their own voice traffic to IP networks internally. Telephone exchanges evolved into **softswitches** – software-driven systems running on servers, interfacing with media gateways that handle voice packets. Traditional circuit-switched TDM networks are in decline; for instance, AT&T and Verizon have both announced plans to fully **sunset legacy PSTN switches in favor of IP** in the 2020s. In Canada, the trend is similar: Telus has already converted many rural exchanges to VoIP, and Bell is leveraging fiber (FTTH) and wireless to replace old copper landlines. The integration of wireless networks with the broader telephone network also reached completion. Initially, mobile calls were bridged to the PSTN via gateway switches, but now, with technologies like **VoLTE (Voice over LTE)**, cellular voice itself is packetized and uses IP core networks, seamlessly interworking with the “wireline” phone network which is itself increasingly IP-based. Mobile subscriber counts overtook landlines in both countries by the early 21st century, reflecting consumers’ shift. As of the mid-2020s, a large portion of the population relies entirely on mobile or VoIP for voice service, with traditional copper landlines in steady decline.

Regulators have continued to play a role in this modern era. The FCC and CRTC oversee issues like number portability (implemented in the US in 1998 for local numbers, and in Canada by 2007 for wireless and wireline), enhanced 911 emergency service, and consumer protection (e.g., do-not-call lists, relay services for the disabled). They also manage spectrum for mobile networks (e.g., auctioning new frequencies for 3G, 4G, 5G) and set policies to encourage broadband deployment. A key focus has been maintaining **universal service** in a competitive market. Both countries transformed their subsidy systems: the US expanded the Universal Service Fund to support rural telephony and internet, while Canada created mechanisms to ensure high-cost rural regions remain served as competition drove down urban prices. Notably, the **role of public infrastructure vs private investment** has shifted – historically, government-owned telcos and cooperatives were crucial to serve rural/remote areas (e.g., rural cooperatives in the US supported by 1949 REA telephone loans (Source: eh.net), and provincial systems in Canada’s prairies). Today, most networks are privately owned, but governments still inject funds for rural broadband or cellular coverage to fill gaps where pure market forces might not invest. In effect, the **public-private balance** evolved from direct government operation (early 1900s) to regulated private monopolies (mid-1900s) to open competition with targeted public subsidies (2000s).

Major Industry Players: Then and Now

It is instructive to highlight the major corporate actors in the phone network’s history and their status today:

- **Bell System / AT&T (USA)** – From 1877 to 1984, the Bell System under AT&T was the colossus of American telephony, controlling equipment manufacturing (Western Electric), R&D (Bell Labs), long-distance (Long Lines), and local service (via Bell Operating Companies) (Source: bell.com)(Source:

bell.com). Post-breakup, AT&T Corp continued as a long-distance and equipment company until it was absorbed by one of its progeny (SBC, now AT&T Inc.) in 2005. Today's AT&T Inc. is again a telecom giant, comprising several former Baby Bells and offering wireline, wireless, and broadband nationally (it is also a major Internet provider and media company after acquisitions).

- **Regional Bell Operating Companies (USA)** – The seven Baby Bells created in 1984 have mostly merged into two successors: **Verizon** (which grew from Bell Atlantic + NYNEX plus GTE, an independent) and **AT&T Inc.** (formerly SBC, which acquired Pacific Telesis, Ameritech, and BellSouth). A third, **CenturyLink (Lumen)**, includes Qwest (which was US West) and some independents. These carriers dominate local telecommunications to this day in their regions, while also competing nationally in enterprise and long-haul markets. **Verizon and AT&T are the two largest carriers in the US**, and along with **T-Mobile** (a pure-play wireless carrier that absorbed Sprint in 2020) they account for the vast majority of telephone subscribers.
- **Independent and Competitive Carriers (USA)** – Historically, companies like **GTE** (General Telephone & Electronics) operated outside the Bell System in many areas; GTE was folded into Verizon in 2000. **MCI** and **Sprint** were iconic challengers in long-distance; MCI is now part of Verizon, and Sprint's legacy is now within T-Mobile. Countless smaller rural local carriers (co-ops, family-owned utilities) still exist – approximately 1,300 independent telcos serve rural communities in the US, often represented by NTCA (Rural Broadband Association) (Source: ntca.org). Cable television companies also emerged in the 2000s as major phone providers via VoIP – for example, **Comcast and Charter** now have substantial phone subscriber bases, making them important players in local telephony.
- **Bell Canada and Regional Telcos (Canada)** – **Bell Canada** historically served the populous provinces of Ontario and Quebec and was known colloquially as “Ma Bell” akin to AT&T. It is the flagship of **BCE Inc.**, which today also owns Bell Aliant (Atlantic Canada) and Bell MTS (Manitoba). In Western Canada, **Telus** (formerly AGT and BC Tel) is the dominant incumbent. **SaskTel** remains government-owned in Saskatchewan and is a major regional provider. During the 1990s, the coalition of these regional incumbents was called the **Stentor Alliance**, but after competition increased, many merged or partnered (Bell now owns pieces of Aliant and MTS, Telus stands alone but national, etc.).
- **New Entrants (Canada)** – **Rogers Communications**, originally a cable TV company, became a telecom heavyweight through wireless (Rogers Wireless was Cantel) and by offering cable telephony and internet. **Shaw Communications** did similarly in Western Canada (though Shaw's telecom assets were acquired by Rogers in 2023). **Quebecor (Videotron)** is a Quebec-based cable firm that also runs a wireless network and is expanding as a telecom competitor, recently acquiring spectrum and subscribers (including the Freedom Mobile brand). In long-distance and business markets, companies like **Allstream** (formerly AT&T Canada, which was Unitel) came and went through mergers. By the 2010s, the Canadian telecom market had consolidated such that **over 90% of mobile subscribers are with Rogers, Bell, or Telus** (often called “the Big Three”) (Source: en.wikipedia.org), and a similar share of home phone and internet services are controlled by a few providers.

The **public vs private investment** theme runs through these corporate histories. The Bell System's infrastructure was privately funded but under strict regulation to ensure universal access. In Canada, many rural and cross-country facilities were built with public funds (e.g., provincial governments or federally-backed projects like TCTS) in the early days. Over time, most of those assets transitioned to private companies (SaskTel excepted). Today, infrastructure investment (such as fiber deployment or 5G networks) is primarily driven by private telecom firms, yet governments still incentivize builds in unprofitable areas through grants and funds, acknowledging that some communication services are a social necessity akin to the old universal telephone service goal.

Modern Network Characteristics and Conclusion

By the 21st century, the distinction between "telephone network" and "data network" has blurred. The term **Public Switched Telephone Network (PSTN)** traditionally referred to the global circuit-switched voice network. Now, both the US and Canadian PSTN operate as hybrid networks transitioning toward **All-IP architectures**. Calls may originate on traditional analog phones, but are often converted to digital and even to VoIP for transmission, then possibly converted back for analog endpoints. Major incumbents have been upgrading local loops (using DSL and fiber) and core networks (using MPLS and internet protocols) to support not just voice, but broadband and television services. This convergence means that regulatory frameworks crafted for voice are adapting to an era of **bundled services and internet voice applications** (like Skype or WhatsApp calling, which bypass traditional telcos entirely). Regulators have had to consider how 911 emergency calling works on VoIP, how to enforce service reliability without the old Bell System hardening, and how to maintain competition when one company can dominate multiple service verticals.

Yet, looking back, many foundational principles remain. **Universal service**, first articulated by Theodore Vail in the early 1900s, is still an objective – now expanded to include internet access. **Interconnection** remains vital: a phone user on one network can call a user on another, thanks to standards and regulatory requirements tracing back to the Kingsbury Commitment's insistence on inter-carrier connection (Source: [bell.com](https://www.bell.com)). **Numbering plans** and standards like SS7 ensure that despite competition, the network functions as one. The **FCC and CRTC** continue to oversee these aspects, just as they did for analog voice. Antitrust and competition policy still loom large as mergers periodically test the limits of market concentration – for instance, debates occur whenever a major telecom merger is proposed, echoing the concerns of AT&T's monopoly era.

In conclusion, the history of the phone network in the United States and Canada is one of innovation, growth, and constant adaptation. From Bell's first telephone call in 1876 (Source: [wired.com](https://www.wired.com)) to the latest fiber-optic links and 5G wireless nodes, the core mission has been connecting people. The two countries, while different in regulatory approach (the US breaking up its monopoly, Canada largely managing competition without a breakup), have ended up in a similar place: robust, digital communication networks operated by a handful of large private carriers, supplemented by smaller players, and regulated to balance public interest with market forces. This historical journey underscores how technological evolution (analog to digital to IP) went hand-in-hand with regulatory evolution (monopoly to open competition). Understanding this history is crucial for

today's telecom professionals and policy-makers, as it provides context for current issues like net neutrality, rural broadband funding, and the shift to next-generation networks. The telephone network has come a long way from hand-crank phones and live operators to smartphones and cloud-based call routing – a trajectory shaped by the inventors, engineers, entrepreneurs, and regulators who collectively built the modern communications world.

Sources: The information in this report was drawn from a variety of primary and secondary sources documenting telecom history, including historical timelines (Source: [bell.com](https://www.bell.com))(Source: [bell.com](https://www.bell.com)), academic analyses, regulatory archives, and company records. Key sources have been cited throughout in the format source[†]lines for reference.

Tags: telecommunications history, telephone networks, north america, telecom regulation, digital communications, voip, analog systems, fiber optics, corporate monopolies, alexander graham bell

About ClearlyIP

ClearlyIP Inc. — Company Profile (June 2025)

1. Who they are

ClearlyIP is a privately-held unified-communications (UC) vendor headquartered in Appleton, Wisconsin, with additional offices in Canada and a globally distributed workforce. Founded in 2019 by veteran FreePBX/Asterisk contributors, the firm follows a "build-and-buy" growth strategy, combining in-house R&D with targeted acquisitions (e.g., the 2023 purchase of Voneto's EPlatform UCaaS). Its mission is to "design and develop the world's most respected VoIP brand" by delivering secure, modern, cloud-first communications that reduce cost and boost collaboration, while its vision focuses on unlocking the full potential of open-source VoIP for organisations of every size. The leadership team collectively brings more than 300 years of telecom experience.

2. Product portfolio

- **Cloud Solutions** – Including *Clearly Cloud* (flagship UCaaS), **SIP Trunking**, **SendFax.to** cloud fax, **ClusterPBX OEM**, **Business Connect** managed cloud PBX, and **EPlatform** multitenant UCaaS. These provide fully hosted voice, video, chat and collaboration with 100+ features, per-seat licensing, geo-redundant PoPs, built-in call-recording and mobile/desktop apps.
- **On-Site Phone Systems** – Including CIP PBX appliances (FreePBX pre-installed), ClusterPBX Enterprise, and Business Connect (on-prem variant). These offer local survivability for compliance-sensitive sites; appliances start at 25 extensions and scale into HA clusters.
- **IP Phones & Softphones** – Including CIP SIP Desk-phone Series (CIP-25x/27x/28x), fully white-label branding kit, and *Clearly Anywhere* softphone (iOS, Android, desktop). Features zero-touch provisioning via Cloud Device Manager or FreePBX "Clearly Devices" module; Opus, HD-voice, BLF-rich colour LCDs.

- **VoIP Gateways** – Including Analog FXS/FXO models, VoIP Fail-Over Gateway, POTS Replacement (for copper sun-set), and 2-port T1/E1 digital gateway. These bridge legacy endpoints or PSTN circuits to SIP; fail-over models keep 911 active during WAN outages.
 - **Emergency Alert Systems** – Including **CodeX** room-status dashboard, **Panic Button**, and **Silent Intercom**. This K-12-focused mass-notification suite integrates with CIP PBX or third-party FreePBX for Alyssa's-Law compliance.
 - **Hospitality** – Including **ComXchange** PBX plus PMS integrations, hardware & software assurance plans. Replaces aging Mitel/NEC hotel PBXs; supports guest-room phones, 911 localisation, check-in/out APIs.
 - **Device & System Management** – Including **Cloud Device Manager** and **Update Control (Mirror)**. Provides multi-vendor auto-provisioning, firmware management, and secure FreePBX mirror updates.
 - **XCast Suite** – Including Hosted PBX, SIP trunking, carrier/call-centre solutions, SOHO plans, and XCL mobile app. Delivers value-oriented, high-volume VoIP from ClearlyIP's carrier network.
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3. Services

- **Telecom Consulting & Custom Development** – FreePBX/Asterisk architecture reviews, mergers & acquisitions diligence, bespoke application builds and Tier-3 support.
 - **Regulatory Compliance** – E911 planning plus **Kari's Law**, **Ray Baum's Act** and **Alyssa's Law** solutions; automated dispatchable location tagging.
 - **STIR/SHAKEN Certificate Management** – Signing services for Originating Service Providers, helping customers combat robocalling and maintain full attestation.
 - **Attestation Lookup Tool** – Free web utility to identify a telephone number's service-provider code and SHAKEN attestation rating.
 - **FreePBX® Training** – Three-day administrator boot camps (remote or on-site) covering installation, security hardening and troubleshooting.
 - **Partner & OEM Programs** – Wholesale SIP trunk bundles, white-label device programs, and ClusterPBX OEM licensing.
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4. Executive management (June 2025)

- **CEO & Co-Founder: Tony Lewis** – Former CEO of Schmooze Com (FreePBX sponsor); drives vision, acquisitions and channel network.
- **CFO & Co-Founder: Luke Duquaine** – Ex-Sangoma software engineer; oversees finance, international operations and supply-chain.
- **CTO & Co-Founder: Bryan Walters** – Long-time Asterisk contributor; leads product security and cloud architecture.
- **Chief Revenue Officer: Preston McNair** – 25+ years in channel development at Sangoma & Hargray; owns sales, marketing and partner success.
- **Chief Hospitality Strategist: Doug Schwartz** – Former 360 Networks CEO; guides hotel vertical strategy and PMS integrations.

- **Chief Business Development Officer: Bob Webb** – 30+ years telco experience (Nsight/Cellcom); cultivates ILEC/CLEC alliances for Clearly Cloud.
 - **Chief Product Officer: Corey McFadden** – Founder of Voneto; architect of EPlatform UCaaS, now shapes ClearlyIP product roadmap.
 - **VP Support Services: Lorne Gaetz** (appointed Jul 2024) – Former Sangoma FreePBX lead; builds 24x7 global support organisation.
 - **VP Channel Sales: Tracy Liu** (appointed Jun 2024) – Channel-program veteran; expands MSP/VAR ecosystem worldwide.
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5. Differentiators

- **Open-Source DNA:** Deep roots in the FreePBX/Asterisk community allow rapid feature releases and robust interoperability.
 - **White-Label Flexibility:** Brandable phones and ClusterPBX OEM let carriers and MSPs present a fully bespoke UCaaS stack.
 - **End-to-End Stack:** From hardware endpoints to cloud, gateways and compliance services, ClearlyIP owns every layer, simplifying procurement and support.
 - **Education & Safety Focus:** Panic Button, CodeX and e911 tool-sets position the firm strongly in K-12 and public-sector markets.
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In summary

ClearlyIP delivers a comprehensive, modular UC ecosystem—cloud, on-prem and hybrid—backed by a management team with decades of open-source telephony pedigree. Its blend of carrier-grade infrastructure, white-label flexibility and vertical-specific solutions (hospitality, education, emergency-compliance) makes it a compelling option for ITSPs, MSPs and multi-site enterprises seeking modern, secure and cost-effective communications.

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