

Chapter VIII

Convergence of the Internet and Telecommunications

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ABSTRACT

The local exchange telephone market is no longer considered to be a natural monopoly as a result of technological advancements. In particular, the power, versatility, and adaptability of digital technology has enabled traditional telecommunications companies to transition their network architecture from one based on copper wires and circuit switches dedicated to the provision of high quality transmission of point-to-point voice signals to a multi-faceted, general network based on fiber optic cables and packet switches capable of providing an array of voice, data, and video services. A network layers model is introduced to conceptualize the process of convergence to the Internet model. Convergence is fundamentally changing the nature of what it means to be a telecommunications company and promises to alter the market structure of many voice, data, and video markets. Convergence has pitted wireline telecommunications companies in a fierce rivalry with cable companies for voice, data, and, increasingly, video services. More generally, this research provides a framework to explain the convergence of communications networks and identifies and analyzes key issues that confront public policymakers. One key competition issue, termed network neutrality, addresses the concern that the evolving broadband network architecture will enable network providers to favor the provider's services or affiliated services at the expense of independent rivals.

INTRODUCTION

At the close of the 20th century, a traditional, prototypical telecommunications company provided high quality point-to-point voice services utilizing a technology specially designed for transmitting voice signals. This wireline architecture was comprised predominantly of copper-based local loops, circuit switches, and local transport and long distance conduits that incorporated some fiber-optic technology. In such centralized phone networks, intelligence resided in the core of the network in the switch technology, not in the end devices connected to the network as it does in the decentralized Internet architecture. In such a network, the provision of the service, voice, was closely identified with the underlying physical infrastructure that provided the service. For much of the 20th century, United States telecommunications companies were thought to be natural monopolies in the provision of voice services and thus subject to regulation in dual jurisdictions, at the state and federal levels. More generally, regulation of electronic communications networks was based on the premise that a particular service (such as voice, data, or video) was inextricably linked to a specific underlying infrastructure used to provide the service.

With technological improvements in digital and network technology and the spectacular growth of broadband technology and the Internet at the end of the 20th century, the traditional architecture of phone networks (and other communications networks) and the scope of regulation of telecommunications companies are gradually changing. Telephone companies are transforming their provision of voice and other broadband services from copper-based networks to advanced fiber-optic networks. The purpose and scope of this research is to describe and analyze the restructuring of telecommunications networks and telecommunications companies as they respond and adapt to technological and economic changes.

As telecommunications/entertainment/information networks converge to an advanced, multifaceted architectural broadband platform that is capable of offering an integrated bundle of voice, data, and video broadband services, it is incumbent on regulatory authorities to change the nature of the regulatory approach toward these telecommunications companies. A pattern of deregulation is in process but there still exist unanswered questions regarding the appropriate regulatory response to convergence. Convergence is creating new competition/regulatory issues in a variety of formerly distinct industries. Peha, Lehr, and Wilkie (2007), three leading Internet scholars, argue that “At root, the debate is about the future of regulatory policy for the communications sector as we move toward a post-convergence world where legacy industry boundaries and regulation of cable television, broadcasting, and telecommunications need to be reconciled with the challenges of competition among broadband platform services, based on the Internet” (p. 710). For instance, as the telecommunications network converges on the Internet model, telephone companies have discussed implementation of a two-tiered (non-neutral) Internet that would replace the standard practice by Internet service providers of treating generally all kinds of packets in the same manner (i.e., neutrally) regardless of the application or provider. Observing a neutrality principle implies that broadband access providers do not favor some packets at the expense of others, that is, there exists a lack of discriminatory behavior toward applications and content utilizing the network.

A two-tiered Internet can be viewed as a strategic maneuver by vertically integrated broadband service providers to gain a competitive advantage in the market for Internet services and applications. Richard Notebaert, Chief Executive Officer of Qwest Communications, for example, argues that telephone companies should be able to negotiate commercial agreements with content

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