



A Switch to Packet: U.S. Central Office Switch Market Brief, Issue 2

The largest telephone companies in the U.S. are undergoing a total-business transformation, seeking to stop competitive losses and grow revenue with triple-play services delivered on all-packet next generation platforms. The local circuit switch sits in the middle of the road, potentially as a \$40 billion stumbling block to their IP future. Needless to say there will be significant challenges to overcome in this risky endeavor.

The ILECs are pressing ahead with major deployments of broadband access as well as IPTV, softswitches, and IMS. The companies have announced new IP-based services such as VoIP and IPTV. AT&T's Project Lightspeed and Verizon's FiOS are two such two high-profile market and technology initiatives.

How well will the new technologies and services integrate with the existing platforms and business processes? How can ILECs utilize the circuit switch as a stepping-stone rather than a roadblock? Can ILECs protect profits during the transformation? What are the implications for the equipment vendors? How should the regulators respond?

We analyzed these questions and the underlying complex business, market, and technology factors and published a comprehensive report on how we expect this transformation to unfold. This report, **A Switch to Packet: U.S. Central Office Switch Market Brief, Issue 2** from **Millennium-Skyline Project** offers an in-depth analysis of the U.S. central office switch market and its conversion to packet. The presentation style and graphics are easily understandable by any industry professional. Key topics include:

- Services required in the competitive future.
- Why some circuit switches are already obsolete and others soon will be.
- How VoIP must overcome current limitations to offer premium options.
- The relationship of today's voice to tomorrow's video and multimedia.
- The challenges in implementing IMS and its interworking with IPTV.
- The major triggers for implementing NGN switching.
- Why independent ILECs took the early lead in deploying softswitches.
- How IPTV and multimedia will accelerate NGN switching.
- The future of softswitches and IMS.
- Why certain ILECs have taken the lead, while others are moving more slowly.

We estimate that it will take \$35-40 billion in capital investment to replace the entire base of circuit switches with packet systems given the size of the current installed base and the asset value on ILEC balance sheets. The ILECs are already replacing certain obsolete

circuit switches. A more widespread replacement will begin in earnest over the several years, driven by multimedia services. We expect full replacement of the installed base to take 15-20 years.

Who should buy this Report?

- Telephone company network planners, business developers, and regulatory administrators,
- Federal and State regulators,
- Business development, marketing and sales staff among telecom equipment vendors – CO switches and routers, media gateways, NGN access systems, terminating/connecting equipment, AC & DC power systems, batteries.
- Financial analysts, investment bankers, and private equity investors.

This Report is important because it:

- **Analyzes** the current environment, the technologies required to provide tomorrow's services, the announced ILEC plans, and the current vendor products.
- **Assesses** these complex interrelated factors and projects a most-likely scenario of how the circuit-to-packet conversion will unfold.
- **Recommends** actions by the various industry stakeholders to accelerate the conversion, thereby increasing the benefits to the industry and public alike.

A Switch to Packet: U.S. Central Office Switch Market Brief, Issue 2, published September 2006, 224 pages, 90 charts. To order, refer to enclosed **Table of Contents, Prices and Order Form**.

About MSP and the Authors

Millennium-Skyline Project is a joint venture of Skyline Marketing Group and Millennium Marketing focusing on telecom network research and publishing. TPC Consulting, Inc. is a MSP associate.

Morris Westerhold (Lead Author), is founder and Principal of TPC Consulting, Inc. that provides strategic advice to communications companies. He has almost 40 years telecommunications experience at Bell Labs, Illinois Bell, AT&T, and Ameritech with significant circuit/packet switch and AIN experience. He played a key role in the implementation of leading-edge switching technologies and related services from both circuit and packet platforms

John Celentano, President of Skyline Marketing Group, has more than 35 years experience in telecommunications engineering, marketing, sales, and management, beginning at Bell Canada and continuing through Nortel Networks and NBI/Gartner. He founded Skyline Marketing Group in 1990.

Kermit Ross, founder and Principal of Millennium Marketing, has over 38 years in the telecommunications industry, beginning with 10 years at Indiana Bell. He later served in sales, marketing and executive positions at Raychem, Danavox (now GN Netcom),

Seiscor Technologies, Optilink (now Alcatel), Teltone, Teledata (now ADC) and Taqua Systems. He founded Millennium Marketing in 1996.

Report Highlights

Chapter 1 Executive Summary

The Executive Summary encapsulates our overall findings and conclusions as to how the CO switch circuit-to-packet migration will unfold. We also provide strategic recommendations for the industry stakeholders, the ILECs, their equipment suppliers, and the regulators.

Chapter 2 Introduction

Here we describe the methodology that we used in preparing the report. To put the study in context, we also provide an overview of the telecom industry structure, the changing business environment, and how these factors are impacting the traditional public switched telephone network (PSTN).

Chapter 3 Current Business Environment for Large ILECs

This chapter discusses the large ILEC revenue sources, cost structure, and network capital investments, and how access line losses are impacting these financial metrics. We also discuss changing customer needs, deregulation, and local service competition. We also assess the impact of new services including VoIP, ILEC video, and multimedia. We also discuss the importance of a level playing field in a competitive environment.

Chapter 4 Characterization of Today's ILEC Network

This chapter looks at the technical aspects of the public switched network and how new technology platforms are changing the overall network architecture. We discuss the significance of software developments in softswitch and IP multimedia subsystem (IMS), and draw parallels with previous developments for the advanced intelligent network (AIN). We also look at the influence of next-gen access xDSL, FTTx and xPON on the switched network. Finally, we present the ILEC planning, engineering, and purchase process, and the factors that will trigger decisions to convert a circuit switch to packet.

Chapter 5 ILEC Switch Market Analysis

In this chapter, we present a detailed analysis of the switching system installed base for each of the major telcos. A key consideration in where and when a telco will migrate to packet is their start point, namely, the installed base. We look at the Top 5 ILECs along with the largest Independent telcos from several aspects – their existing base of switches, their current switch vendors, and their next generation network plans. This chapter includes comprehensive statistics on the U.S. CO switching market including:

- POTS and broadband access lines by ILEC.
- ILEC total installed base by application and by switch vendor.
- CO switch average line size by ILEC.
- Host/remote ratios by ILEC.
- Top 5 ILEC and leading IOC installed base by application.
- CO switch vendor market shares among Top 5 ILECs and leading IOCs.

We wrap up this chapter with an outlook of how we see the circuit-to-packet migration unfolding in several key phases through 2025

Chapter 6 Switching Systems Vendors

This chapter presents an overview of the CO switch vendors, both established suppliers, and upstart softswitch vendors. We present their switching product portfolios, including circuit switches and NGN products, along with a discussion of each company's marketing strategy.

Chapter 7 Strategic Recommendations

In this final chapter, we lay out a series of strategic recommendations, and their implications, that we believe must be considered by the ILECs, their CO equipment vendors, and their regulators, respectively.

Appendix

The Appendix presents a breakdown of capital expenditures among the RBOCs and Independent telcos annually and quarterly from 2003 to 2005 with an outlook for 2006e.

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