

# Fiber to the Premises

**Mahesh S. Raisinghani**

*Texas Woman's University, USA*

**Hassan Ghanem**

*Verizon, USA*

## INTRODUCTION

Subscribers had never thought of cable operators as providers of voice services, or telephone companies as providers of television and entertainment services. However, the strategies of multiple system operators (MSOs) and telecommunication companies (telcos) are changing, and they are expanding their services into each other's territory. The competition between the MSOs and the telcos is just brewing up.

Many factors influence communications carriers' future and strategies. Among these factors are Internet growth, new Internet Protocol (IP) services such as Voice over IP (VoIP), regulatory factors and strong competition between the carriers. In the past, RBOC's have centered their competition among each other and ignored the threat of the cable MSOs. The cable modem service has a bigger market share than the digital subscriber line (DSL) service, and as the concept of the VoIP technology is being refined and validated, the cable companies will become major players in providing this service at a cheaper price than the regular telephone service and will compete with the RBOCs. Incumbent carriers are seeking ways to encounter the cable MSOs' threat.

## BACKGROUND

RBOCs are concerned about the VoIP technology, since this concept will pose a serious threat to their voice market. Vonage, a leader in VoIP over Broadband (VoB), has about 50,000 subscribers, compared to 187.5 million access lines that the RBOCs have. Cable operators can move into the telcos' territory and offer VoB as they did with Internet access. The cable companies could do this by offer-

ing this service through a partnership or by building their own services.

The VoB service is offered to broadband subscribers whether they are cable modem or DSL users. VoB providers do not have their own networks; they simply use the cable MSOs' or the telcos' broadband networks to carry their services. The appeal of the VoB services is the result of its cheaper packages. VoB companies such as Vonage and Packet8 are targeting cable MSOs as partners. For cable companies, this would create a bundle that includes cable modem services and VoB, which will provide a great appeal to the subscriber. Cable MSOs already are in the lead in providing broadband services to subscribers; by adding VoIP via broadband, they will be able to offer telephony at lower prices and have another advantage over the telcos.

Major cable operators have announced their interest in VoIP technology. Time Warner Cable has formed an alliance with MCI and Sprint, and the group has announced that by the end of 2004 it will offer VoIP to 18 million subscribers. Comcast is another cable operator already in the process of testing VoIP in many states, and will offer this service in the nation's largest 100 cities (Perrin et al., 2003a). The MSOs have continued to upgrade their networks to have a bigger share of Internet access and to enter the lucrative voice market. On the other hand, the telcos have continued to develop their networks around DSL and voice service, ignoring television and video services (Jopling & Winogradoff, 2002).

## FIBER TO THE PREMISES (FTTP)

To deal with the threat of VoB providers, telcos have to upgrade their networks to compete with the cable

MSOs. FTTP is a potential alternative to DSL. It is a great initiative to meet the growing demand of consumers and business to a faster Internet connection and reliable medium for other multimedia services. Since signals will travel through fiber optic networks at the speed of light, FTTP delivers 100 mega bits per second (Mbps), as opposed to 1.5 Mbps for DSL. Thus, FTTP delivers a higher bandwidth at a lower cost per megabyte than alternative solutions. This substantially increased speed will enable service providers to deliver data, voice and video ("triple play") to residential and business customers. As a result of this increase in speed, a new breed of applications will emerge and open horizons for the RBOCs to venture into a new territory. The deployment of FTTP will help eliminate the bandwidth limitations of DSL. DSL will still be a key player for the near future, but in the long run, DSL customers will be migrated to the new fiber network. FTTP will pave the way for the RBOCs to compete head to head with cable providers. Comcast Corp., based in Philadelphia, is the largest cable provider based in the United States. It is upgrading some of its customers' Internet services to 3 mega bits per second, which is significantly more than what phone companies can offer through their DSL network. FTTP will simulate competition in the communication industry and entertainment providers, and will provide RBOCs a medium with which to compete against cable companies.

### **FTTP COMMON SPECIFICATIONS AND EQUIPMENT**

In May 2003, BellSouth, SBC and Verizon agreed on common specifications for FTTP. This agreement has paved the way for suppliers to build one type of equipment based on the specifications provided by the three companies. By mid September, the three companies had short-listed the suppliers, and the equipment was brought to labs to be tested by the three companies, where they will select finalists based on the test results and proposals. The technology being evaluated is based on the G.983 standard for passive optical network (PON) (Hackler, 2003). This standard was chosen based on its flexibility to

support Asynchronous Transfer Mode (ATM) and its capacity to be upgraded in the future to support either ATM or Ethernet framing.

As the cost of electronic equipment has fallen dramatically in recent years, it is more feasible now to roll out FTTP than it was a few years ago. Many equipment manufacturers, such as Alcatel, Lucent, Nortel and Marconi, are trying to gain contracts from the big three RBOCs to manufacture and provide FTTP components. The bidding war for these contracts will be very competitive, and providers have to choose equipment suppliers based on the price and specifications of the equipment.

### **REGULATORY ENVIRONMENT AND THE FCC ORDER**

The regulatory environment will also be a major factor in the progress of the FTTP rollout. At the time of this writing, it was still unclear how the Federal Communications Commission (FCC) will handle this issue. Service providers are optimistic that the FCC decisions will favor them. RBOCs are hoping that the FCC will provide a clear ruling regarding national broadband networks.

### **WHY INVEST IN FTTP AND NOT UPGRADE COPPER?**

Several existing technologies can accommodate the triple-play services. For example, Asynchronous DSL (ADSL) is a broadband technology that can reach 8-10 Mbps, and ADSL2 has an even higher range of 20 Mbps. The ADSL technology can be deployed with a fast pace by using existing copper wiring. The disadvantage of the copper-based networks and DSL technology is that they have a regulatory constraint to be shared with competitors, which makes it less attractive to invest in this medium. Another disadvantage is that signals do not travel a long distance. They need expensive electronic equipment to propel the signal through. This expensive equipment will result in high maintenance and replacement costs. Another weakness of DSL technology is that the connection is faster for receiving data than it is for sending data over the Internet.

3 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/chapter/fiber-premises/17264](http://www.igi-global.com/chapter/fiber-premises/17264)

## Related Content

---

### Content Adaptation in Mobile Learning Environments

Sergio Castillo and Gerardo Ayala (2010). *International Journal of Multimedia Data Engineering and Management* (pp. 1-15).

[www.irma-international.org/article/content-adaptation-mobile-learning-environments/49146](http://www.irma-international.org/article/content-adaptation-mobile-learning-environments/49146)

### Multiple Description Coding with Application in Multimedia Watermarking

Minglei Liu and Ce Zhu (2009). *Handbook of Research on Secure Multimedia Distribution* (pp. 493-514).

[www.irma-international.org/chapter/multiple-description-coding-application-multimedia/21329](http://www.irma-international.org/chapter/multiple-description-coding-application-multimedia/21329)

### A Summary of Recent and Old Results on the Security of the Diffie-Hellman Key Exchange Protocol in Finite Groups

Ionut Florescu (2009). *Handbook of Research on Secure Multimedia Distribution* (pp. 181-200).

[www.irma-international.org/chapter/summary-recent-old-results-security/21313](http://www.irma-international.org/chapter/summary-recent-old-results-security/21313)

### Efficient Imbalanced Multimedia Concept Retrieval by Deep Learning on Spark Clusters

Yilin Yan, Min Chen, Saad Sadiq and Mei-Ling Shyu (2017). *International Journal of Multimedia Data Engineering and Management* (pp. 1-20).

[www.irma-international.org/article/efficient-imbalanced-multimedia-concept-retrieval-by-deep-learning-on-spark-clusters/176638](http://www.irma-international.org/article/efficient-imbalanced-multimedia-concept-retrieval-by-deep-learning-on-spark-clusters/176638)

### Multimodal Dance Generation Networks Based on Audio-Visual Analysis

Lijuan Duan, Xiao Xu and Qing En (2021). *International Journal of Multimedia Data Engineering and Management* (pp. 17-32).

[www.irma-international.org/article/multimodal-dance-generation-networks-based-on-audio-visual-analysis/271431](http://www.irma-international.org/article/multimodal-dance-generation-networks-based-on-audio-visual-analysis/271431)