



## **Chapter XII**

# **Toward a Profitable ISP Business in a Competitive Environment**

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## **ABSTRACT**

*The market of Internet service providers (ISPs) is highly competitive. Although many different pricing schemes could be deployed in this market, two types are mainly offered: flat rate pricing and per-minute pricing. These pricing schemes are criticised for limiting ISPs' revenues and for not addressing customer's requirements on service quality. We focus on the ISPs' business relationships and on their pricing strategies in order to analyse revenue sharing mechanisms. We argue that the introduction of incentive pricing schemes, such as dynamic pricing, may enable provision of service quality by improving revenue sharing among ISPs.*

## INTRODUCTION

The Internet has proliferated to a dynamic marketplace for trading products and services, worth several billions of dollars (Cook Report, 2002). In order to sustain and expand this business impetus, it is necessary to have the appropriate network infrastructure in place. ISPs offer flat-rate or per-minute pricing schemes. Such schemes are criticized for limiting the ISPs' revenues and reducing customer satisfaction by not addressing requirements on service quality. To offer service quality, more sophisticated pricing schemes, such as dynamic pricing, along with adequate charging technology for network services has to be introduced. However, the introduction of new charging technology may affect existing ISPs' business relationships, the market structure, and the provision of value-adding Internet services.

By observing the business relationships between the key players in the Internet market, it becomes obvious that several companies collaborate in order to achieve efficient service delivery. On the network level, collaboration is necessary for the interconnection of the various networks. On the application level, information service providers have to communicate their requirements for service quality to network service providers, in order to be able to offer highly customized services. For example, content providers (e.g., AOL-Time Warner) collaborate with content distribution network providers (e.g., Akamai) to speed up the content delivery to their consumers by caching information at the edges of the Internet.

Collaboration is not the only prerequisite for offering service quality. Cost compensation is another equally important parameter. When there is high internal traffic within a network, the provider incurs costs. In this case if the network service provider tries to sustain high quality for a specific customer, it may have to degrade quality for other customers (e.g., by decreasing the capacity allocated to them) or not admit new customers in its network. The provider incurs an opportunity cost that is not easily calculated. Offering incentives to the provider may alleviate this cost and enable provision of service quality. In addition, the price has to be shared efficiently when more than one party are involved in service provision to compensate them for the cost incurred. To achieve this objective, the introduction of charging technology, which supports the introduction of incentive pricing schemes, is necessary.

This chapter discusses the impact of incentive pricing schemes on the ISPs' revenue-sharing and cost-compensation mechanisms. The chapter is organized as follows. In the second section, we briefly present the main trends in the ISP market and existing pricing schemes as discussed in related research work. A reference model that facilitates the description of ISP business relationships is then introduced, and two ISPs (AOL-Time Warner and Exodus) are mapped into this reference model, in order to demonstrate the existing revenue-sharing schemes. We next discuss the introduction of incentive pricing schemes, the necessary charging technology, as well as three new roles that an ISP can take on. Two generic scenarios on the deployment of the new roles from the ISPs are discussed, before we conclude by highlighting the challenges faced by ISPs from the introduction of incentive pricing schemes and by identifying important issues for further research.

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