



Chapter XI

Integrated E-Enterprise Supply Chain Security Design and Implementation

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Abstract

Web technology has enabled many organizations to form an e-enterprise for effective communicating, collaborating, and information sharing. To gain competitive advantages, it is necessary for e-enterprises to integrate the entire lines of business operations and critical business data with external supply chain participants over the Web, which may introduce significant security risks to the organizations' critical assets and infrastructures. This chapter reports a case study of e-service security design and implementation at a leading U.S. company. First, the chapter reviews security concerns and challenges in front-end e-business and back-end supply chain operations. This is followed by the analysis of the company's e-service and its security problems. The case then presents an integrated e-enterprise security methodology to guide the company for

meeting its security needs. The results of this case study provides security professionals with practical steps and sustainable solutions for tackling the unique security challenges arising in an open, unbounded e-enterprise supply chain environment.

Introduction

Information technologies (IT) have brought about tremendous changes to the way businesses operate. Many of these changes revolve around and are concerned with the way firms interact with other participants operating as part of their supply chains (Parker & Russell, 2004; Shakir & Viehland, 2005). Competitive pressures are bound to make faster and leaner supply chains a primary goal for manufacturing, distribution, and retail companies. But even as this is occurring, there are further demands to incorporate supply chain agility, adaptation, and alignment all across the system. The potential of using the Internet as a new commercial communication channel has been widely explored. However, a critical assessment of its e-commerce integrated e-enterprise security has just started to receive attention.

Recognizing this vexing security issue, it is obvious that the effective management of e-enterprise security at an organizational level is important (Dess, Rasheed, McLaughlin, & Priem, 1995; Forcht, Saunders, Usry, & Egan, 1997). Nevertheless, due to the wide dispersion of the Internet-based networks, there has been a scarcity of e-enterprise security management guidelines for the e-era organizations. Without proper security management, each type of Internet-based online e-business exchange may raise significant issues and concerns, which threaten the system's fundamental strategic objective of establishing a secure trading environment between the organization and its e-business counterparts (customers, suppliers, and other business partners).

Increased uncertainty and risk threatens to cancel a significant portion of the benefits gained through enhanced supply chain collaboration in the form of increased openness and system-wide information access. Risk increase always carries with it increased costs. Higher risk requires a greater risk premium. Such premium increases are reflected in the total supply chain cost structure as greater value chain costs, which, in turn, lower the realized benefits and added value of systemic transparency.

Over the years, researchers have debated on different perspectives of information security and e-business security (Brunnstein, 1997; Stix, 2005; Yngstrom, 1995). Lichtenstein and Swatman (1997) suggest that the risks must be managed through policies, other management steps, and technical measures. An e-

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