## Chapter X

# Applying Directory Services to Enhance Identification, Authentication, and Authorization for B2B Applications

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## Abstract

*System-to-system integration is an essential aspect of Business-to-Business (B2B) organizations. This chapter proposes a common infrastructure model for B2B applications, referred to as the IAAIBB model. It aims to centralize the Identification, Authentication and Authorization (IAA) infrastructures and to provide easy interoperability among business partners. The key technique is to incorporate the directory service into business applications. The directory service acts as the core repository of the IAAIBB model to support all functions associated with identification,*

*authentication and authorization. The chapter illustrates how IAAIBB enables a sound trust relationship for B2B applications, as well as the implementation of the IAAIBB model. Also reported is the evaluation of the IAAIBB model, which reveals a number of advantages. The IAAIBB model leverages on the strength of XML, the directory service, the PKI cryptography and role-based access control.*

# Introduction

Business entities face tough challenges nowadays. Companies are pressured to reduce costs and work with fewer resources, while at the same time develop marketing campaigns that hit the market faster, generate better leads, drive higher revenues and increase customer retention rates. It is widely accepted that business automation and integration would be a solution to meet these challenges. As observed by Olsen (2000), system-to-system integration is an essential aspect of the B2B segment that brings company internal business applications over the Internet, while interfacing with business partners electronically.

Advanced companies are going beyond simply specifying software architectures and creating a *business model* that provides a framework for all corporate applications. For example, unified modeling language (UML) is widely used for such modeling purposes (Li, Cao, Castro-Lacouture, & Skibniewski, 2003). Nevertheless, trust and interactivity are critical success factors throughout any business process (Wilson & Abel, 2002). A good B2B relationship implies that both organizational and personal needs should be addressed coherently (Tellefsen, 2002). This issue should be addressed as early as at the system definition and design phase. A directory service, which is tightly bound to a company's and its suppliers' structures, would be employed, for example, to address a purchasing manager's personal needs for dealing with various users by varying sense of control.

## Related  Work

Konstantopoulos, Spyrou and Darzentas (2001) pointed out that efforts should be given to the development of standard infrastructures for deploying directories and the use of public key infrastructure (PKI). B2Bexchange.com developed a hub-and-spoke concept to enable numerous communication protocols to be "translated" at the central exchange hub without overloading the end system at the company side. Oracle proposed a B2B integration technology architecture that consists of two repositories for interactions with pre-defined business processes (Bussler, 2002). IBM developed a conversation model providing conversation policy-based support, which performs as an exchange "glue" to handle message-centric B2B interactions (Hanson, Nandi, & Kumaran, 2002).

RosettaNet has been widely recognized as a B2B process standard in addition to B2B data standards (Lewis, 2000), but it focuses exclusively on the public business processes. Built upon the OSI 7 layer standard, all RosettaNet standards are at the application layer,

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