

Security Considerations on the Design of Supply Chain Networks

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INTRODUCTION

One of major issues in the design of the supply chain networks is security. Security becomes an even more important issue when the supply chain is a global network. The purpose of this paper is to incorporate the concept of the Bell-LaPadula model in the design of supply chain network. The Bell-Lapadula model is originally used in the military as a classification system (Bishop, 2003). Most suppliers are in a competitive position in bidding the price for the manufacturers; therefore, information should be classified as different security levels in the information sharing in a supply chain network.

THE BELL-LAPADULA MODEL

Many security models have been designed for security. These models include the Bell-LaPaudula Model, Biba Integrity Model, and Clark-Wilson Integrity Model among others. Bell-Lapadula model is originally designed for confidentiality in military. While these security models are familiar to the information security major, it is quite a new field for MIS major. An example mentioned in Bishop's book (2003) can be used to explain the Bell-Lapadula Model. As shown in Table 1, Bell-Lapadula Model includes four security classification levels or a set of security clearances: top security (TS), security (S), confidential (C), and unclassified (UC). The Bell-Lapadula model disallows read access to documents at a security classification higher than the subject's clearance (Bishop, 2003)

Security Classification	Personnel	Documents
Top Secret (TS)	Colonel	Personnel Files
Secret (S)	Major	E-mail Files
Confidential (C)	Sergeant	Activity Log Files
Unclassified (UC)	Solider	Telephone Lists

Revised from Source: Bishop (2003), P.124

Table 1: Security Classification

SECURITY DESIGN FOR SUPPLY CHAIN NETWORK

Figure 1 shows the relationship between a purchasing company (buyer) and their suppliers. Parties involved include: top officers in the purchasing company, the general employees in the purchasing company, and different suppliers, denoted as A, B, C, and D. Since suppliers A and B may be in competition position, certain documents from A to the purchasing company cannot be read by other suppliers. Also, certain documents cannot be read by the general employees in the purchasing company but the top officers in the purchasing company. Table 2 shows security classifications and clearance levels for a purchasing company and their suppliers.

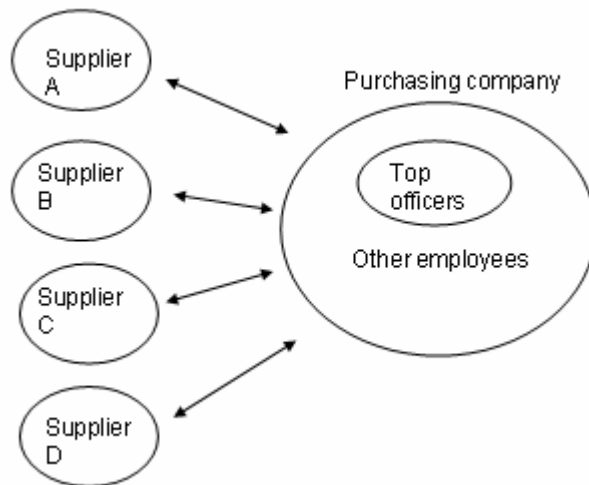


Figure 1: Purchasing Company and Their Suppliers

Security Classification	Purchasing Company Personnel and Their Suppliers	Documents
Top Secret (TS)	Top Officers in the purchasing company	Buying decisions; suppliers evaluation
Secret (S)	All the employers in the purchasing company	Quality about certain supplier's parts
Confidential (C)	An individual supplier	Price bidding from a individual supplier
Unclassified (UC)	All the Suppliers	Public bidding notice from buyer (company to all the suppliers)

Table 2: Security Classification in a SCM Network Environment

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