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Planning object database security using Zachman framework

Abstract

Object databases are more complex than (mathematical) relational databases. They incorporate features such as flexible data structures, inheritance and encapsulation. Security models, developed for object databases, make use of the concepts of encapsulation, inheritance, information hiding and methods. These models differ in many aspects because they make different assumptions about the object database model or because they focus on different features of the database security problem or because they make different assumptions about what constitutes a secure database.

There is no consensus on what security features should in an object database satisfy in order for it to be called secured. Existing security models for object databases separately focus on individual features of a secure object database and do not relate different security features in a single framework. These models typically are restricted to representing a single view or perspective. This leads to disjointed and incomplete understanding of the organizational security strategy. Without general integration of features, of secure object database models, an object database system is partially secured. This makes it difficult for an enterprise to reconcile different security requirements as expressed by different levels of users.

To facilitate this task, the Zachman framework may be used. This research study shows how Zachman Framework relates together various security features to define, design and implement an effective security policy on an object database environment in order to align the object database system security with the organizational security strategy. It provides a consolidated view of an object database security, to whatever level of detail a model chooses.

The main advantage of the planning of object database security using Zachman Framework is the simplicity and conceptual clarity with which security policies can be stated and enforced. It is a tool for complex thinking and planning but simple, comprehensive and effective. It offers a balance between the holistic, contextual view and the pragmatic, implementation view.

The Zachman Framework establishes a common vocabulary and set of perspectives for describing complex secure object database security system. The set of rules, given by Zachman Framewo governs an ordered set of relationships that are balanced and orthogonal. By designing a secure object database system according to these rules, the architect can be assured of a design that is clean, easy to understand, balanced, and complete in itself.

This approach is useful for object database security for some reasons: an object database system is partially secured without general integration, security measures could be standardized, and security needs to be discussed from various aspects. After the completion of this planning, the explicit and directive based object database security requirements can be applied into the framework, reconciling the implicit, working model.