

Self-Managing Technology in Database Management Systems

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1. The Problem

We are increasingly dependent on information systems for business as well as for personal usage. However, for information systems to provide value to their customers, we must reduce the complexity associated with their deployment and usage. While the cost of hardware and software in such systems continue to decrease dramatically through technological advances and competition, the total cost of ownership (TCO) of information technology is increasingly dominated by people costs.

2. Self-Managing Technology

All major providers of information technology have acknowledged the importance of the TCO problem and have attempted to rectify it in one way or another by making their systems more self-managing or “autonomic”. While the idea of self-managing is easy to articulate, it is extremely challenging to design and build a completely self-managing information system. The range of solutions and techniques that have been developed to improve self-manageability of systems vary, and so does the degree to which they reduce the total cost of ownership. While we have no “magic bullet” as yet, progress is being made on many fronts to improve the manageability of systems through a variety of techniques.

3. Outline of the Tutorial

This tutorial will introduce the motivation of the problem and the core concepts in self-managing technology. It will then focus on providing self-manageability for relational database management systems, and how recent releases of IBM DB2, Microsoft SQL Server, and Oracle have embedded tools and techniques to enhance self-

manageability. Finally, it will provide our perspectives on this challenging problem and the research topics that remain to be solved.

4. Intended Audience

The core concepts and examples of self-managing database technology to date, as well as the potential research topics, will be useful for researchers who are interested in contributing to this fruitful area of reducing total cost of ownership for databases. Users of database systems who are not familiar with some of the more advanced self-managing features of these products should also be interested in the details of these systems and the outlook for the future.

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