

White Paper

Database Management, An Expensive and Complex Problem

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Database Management: A Complex Problem

The document imaging community has a tendency to casually speak about a database as if its management is routine; however, the complexity of a database system goes beyond the skill level of most avid computer users. Although database management may not be an issue for organizations that enjoy a full complement to their IT staff, it is problematic for organizations that do not employ both a network manager and a database administrator. Database management is so complex that database administrators – largely responsible for the day-to-day management and operations of database systems – receive an \$80,000 - \$90,000 salary (according to the Data Warehousing Institute).



A database refers to a collection of interrelated data, plus a set of programs to access, modify, and maintain the information. A database's primary function is to store and manage large amounts of information. When used with a document imaging system, the database contains the key search words which are mapped (pointed) to the associated documents. The integrity of this relationship must be maintained to retrieve a document.

DIS-Imaging™ embeds the key search words into each individual document in a way that allows a user the freedom to choose one of several hundred indexes for search and retrieval. Indexes perform a similar function of a database, but do not require a high-level of expertise for management. Therefore, unless an organization has access to the specialized level of expertise needed to service and maintain a document-imaging database, they should narrow their selection to index system.

A High-Level of Expertise



Databases require a skill-set that even large and most midsize companies do not possess. The technical skill-set of a database requires that your organization has access to an individual who can understand database terminology when speaking to technical support. This can either be an internal IT person, or an external consultant. If either is not readily available, your organization should either purchase on-site support, or purchase an indexing system.

How much does this requirement for specialized skill-set personnel add to the cost of a document imaging system? A good starting point in evaluating the total cost of ownership is the price of a service agreement. An on-site service agreement will cost more than one that solely provides telephone support, but the added costs may be offset by not using your in-house IT staff's time.

A High Frequency of Database Problems

The need for support is based on the frequency of database problems. Therefore, *how frequent are database problems?* The answer to this question can be extrapolated from the answer to another question: *have you ever had a problem with your computer system?* It is fair to say that almost everyone has experienced computer problems, with such frequency that even a medium size organization can justify full-time IT personnel to keep a system running properly.

The same is true with a database. **No matter how stable a document imaging system is, you will experience problems with both databases and indexes.** So just how easy are they to fix?

With an index, the worst-case scenario is that you will need to wipe out your old index and replace it with a new one. This process can take 15-30 minutes with DIS-Imaging™. With a database system, you cannot wipe out the old database because you will lose all the information needed to search and retrieve your documents. You must fix the database!

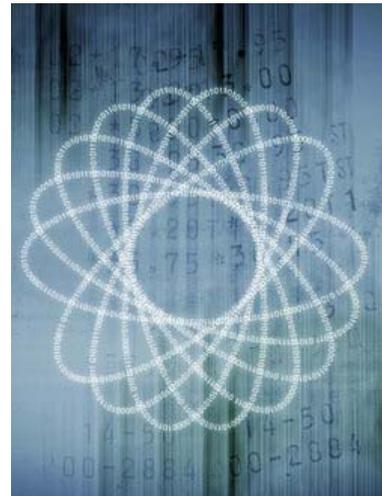
Fixing a database is often not an easy task. For example, there is considerable effort required to resolve deadlock, which is one of the more elusive problems of databases. Deadlocking represents a failure of processes to work and play together. Identifying deadlocks is not difficult – the server complains with a *1025 error* message. Resolving deadlocks is a different story. “With a large database and a complex application, tracking down issues caused by mismatched database schemas can take weeks,” according to Drew Georgopoulos, Adjunct Professor of Computer Science at Marymount College.

Just How Complex are Databases?

Does your organization want to take on the complexity of managing a database document imaging system? A further explanation of databases may provide more insight:

According to a study by Gartner Dataquest, in 2001 the three major databases were Oracle (32%), IBM DB2 (31.6%), and Microsoft SQL Server (16.3%). But managing databases gets more complicated with subspecialization: UNIX, Windows, Linux, MVS, Open VMS, NUMA-Q, OS/2 and AS/400. Where the prices of the three major databases are comparable,

skills required to maintain them are a different story. “Database expertise is a costly thing and is usually in short supply. Make no mistake about it: this is a long-term commitment, as switching database vendors is an extremely painful and costly procedure,” according to Alex Kriegal and Boris Trukhnov, authors of *The SQL Bible*.



Database management includes such things as protecting the database from unauthorized logins, accidental information deletions/ modifications, general maintenance, as well as hardware failures. The following lists some of the tasks that a database administrator will perform:

- Manage logins, database users, and database roles
- Schedule jobs
- Backup and restore databases and develop maintenance plans
- Create new databases
- Browse table contents
- Manage database objects, such as tables, indexes and stored procedures
- Manage replication
- Import and export data
- Transfer data between servers
- Monitor SQL Server activity and error logs



In addition, one must be competent to handle security at different levels. To be useful, the information must be accessible to many users simultaneously at different levels of security. Certain groups of users may be allowed to modify several pieces of information, browse other parts of it, and be prevented from viewing yet another part. Security is enforced at the server level, the database level,

and at the database object level. One of the benefits of a database system is the ability to serve more than a single application. In this kind of environment, it is impractical to expect the developers of each application to agree on an identical set of standards for maintaining data integrity. The best way to manage this environment – and to ensure that the data stays consistent and usable by everyone – is to enforce a set of rules at the database level. This is accomplished through the database objects, including rules, defaults, triggers, stored procedures, and data-integrity constraints. Because this goes beyond just basic computer skills, you will need an expert in databases to maintain a database document imaging system.

Conclusion

When pitching a document imaging system, a salesperson often talks about a database as if someone with just basic computer skills can accomplish managing and maintaining one. Nothing can be further from the truth. Databases can be wonderful tools to an organization that possesses the knowledge to maintain them, but they can be your worst nightmare if you cannot afford the support. Keep in mind, though; whether you possess the required knowledge or not, databases are time-consuming and expensive to maintain.

Therefore, before purchasing any database document imaging system, you need to decide who will service and maintain the database. Even more importantly, you need to find out the capabilities of the vendor selling the system. Will they provide on-site service of the database system, or do they only provide telephone support? If your documents are the lifeblood of your organization, these issues must be weighed carefully before you purchase a database document imaging system.

The other choice to a database system is an indexing system. Indexes are easy to setup and maintain, providing an excellent alternative to a database system. The most widely known indexing system is Google, which indexes hundreds of millions of website pages (documents) on the Internet. Unlike databases, where three main companies control the market, there are literally hundreds of indexes from which to choose. These include indexes from companies like Microsoft, Adobe, dtSearch, etc. Unless an organization has access to the specialized level of expertise needed to service and maintain a document-imaging database, they should narrow their selection to an indexing document imaging system.

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