



Diskeeper and Email Servers

Diskeeper works safely and effectively with email servers, whether they are Microsoft® Exchange, Lotus® Domino®, QUALCOMM® Eudora®, or others. Diskeeper is uniquely designed to run in the background while these applications are operational and available to users. There is no need to stop or shutdown these applications or services to defragment.

There are two types of volume-centric fragmentation with which Diskeeper is immediately concerned: file fragmentation and free space fragmentation. File fragmentation concerns computer files that are not contiguous, but rather are broken into scattered parts. Free space fragmentation describes a condition in which unused space on a disk is scattered into many small parts rather than a small number of larger spaces. File fragmentation causes problems with accessing data stored in computer files, while free space fragmentation causes problems creating new data files or extending (adding to) old ones.

Taken together, the two types of fragmentation are commonly referred to as “disk” or “volume” fragmentation. It is important to note that, when talking about fragmentation, we are talking about the file as a container for data and not about the contents (data) of the file itself.

Typically email application databases such as Microsoft Exchange and Lotus Domino are made up of a large container file that is pre-allocated in size at the point of creation. As the database increases beyond the initial assessment the file becomes fragmented.

People sometimes describe fragmentation as a condition in which a file has its records (internal contents) scattered about within the file, separated by numerous small gaps. This type of fragmentation may be a problem with the application which maintains the file; it is not inherent in the operating system or file structure.

Over a period of time, any popular email application server will experience this “*internal*” fragmentation of its database. This is where records are removed, but the space it occupied within the database is still there and is either reused for a new record or must be skipped over.

Let's say you have 250,000 records represented in an email server database. If an individual record (e.g. a deleted email) is removed, the location is simply marked as deleted. In the course of doing business hundreds, perhaps thousands of records are added and deleted. It doesn't take long for the internal organization of a database file, its indexes, and other related files to quickly become quite disorganized. The speed of locating a particular record or segment of information is directly related to the amount time spent skipping over these holes or internal fragments.

It is important to state that Diskeeper does not, under any circumstances, restructure or alter the internal contents of any file. After Diskeeper defragments a file it will be a bit for bit duplicate of the original. Altering or restructuring a file is a very dangerous thing to do as one would have to have a very intimate knowledge of a given file structure and be able to detect changes as the various databases evolved with new releases. Therefore any holes or 'records marked as deleted' within the database, prior to defragmentation are still present.

The tools for Microsoft Exchange (ESE and EDB Utilities) deal with this internal record fragmentation by rearranging the internal records/indexes on the fly when possible, and at times requiring a whole new copy of the database to be created and each record copied to the new file. Even if this copy is done to a freshly formatted volume or a defragmented volume with a free space chunk large enough to contain the entire database, it's quite likely that this new copy will become fragmented. It is strongly recommended to run Diskeeper after performing email maintenance that rewrites the database. Otherwise, it is possible to actually worsen mail server performance due to additional required disk I/O.

The benefit of defragmenting an email server environment is no different than defragmenting any other system. It simply takes less time and system resources to access a contiguous file than one broken into many individual pieces. This improves not only response time but also reliability of the system. Thorough database maintenance requires a combination of Diskeeper (disk defragmentation), and the email server utilities (internal record/index defragmentation), to achieve optimum performance and response time.

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