

Re: Data integrity

Source: <http://www.derkeiler.com/Newsgroups/microsoft.public.sqlserver.security/2003-05/0136.html>

From: Christian Rosenzweig (*Christian.Rosenzweig_at_medvision.de*)

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Thanks for your answer.

I do not expect 100% integrity, what I mean by that is "as much as reasonable possible". Sorry for my misunderstandable statement...

My problem is the following: I have to prove (expected by government officials) that medical data which I store will be the same when I read it back any time.

If I use for example a simple text file I have to implement at least following features to my application:

1. after writing the data to file, I have to read it back and compare it to the RAM data to be quite sure the writing process was ok
2. before writing the data to file I have to create a kind of fingerprint which will be written to file as well to be able to compare it to the data any time
3. I have to do reading twice and compare both results to be quite sure that there was no reading failure which caused data changes

So I thought: it will be better to use a professional database like MS SQL server to get build-in integrity checks for point 2. But the government officials told me that they do not believe that there are such build-in mechanisms in the database and I have to use fingerprints etc. in my application layer.

I asked Microsoft to give me documents which say: "Yes, MS SQL server provides guarantee against possible data damage during period of data storage by those mechanisms:"

But I did not get something like this and nobody could tell me whether there are such mechanisms.

Some years ago I got a document by IBM for the DB2

database which pointed out the data integrity mechanisms and it was accepted by government officials.

How can I get such a document from Microsoft?

>-----Original Message-----

>Christian,

>

>*The physical database files contain both data and metadata. If the bit that you change is metadata, you might very well end up with a corrupted database. If the bit that you change is data, then to some extent the question becomes "What is SQL Server doing at the moment that the bit changes?".*

>

>*For example, SQL Server could have read the data from the physical medium a moment before you changed the bit, and then be about to write back to the physical medium new data. In this sequence, the bit change you made is going to be "invisible" because the changed bit is going to be overwritten without being used.*

>

>*Of course, much more likely, if you change a bit, then the next time that SQL Server reads the bit, it's going to just read the changed bit, and not know that it has changed.*

>

>> *If there is no internal security mechanism in SQL server I*

>> *have to implement crc or hash algorithms for any data*

>> *storing in my application.*

>

>> *I need it for certification of a product which is used in*

>> *a medical product which claims for 100% data integrity.*

>

>*I don't mean to be difficult, but even the use of crc or hash algorithms do not guarantee 100% data integrity. In fact, NOTHING guarantees 100% data integrity. It just ain't possible in the real world ... you can get very, very close to 100%, but you can never actually there. As an analogy ... both fingerprints and DNA is acceptable legal evidence at least in the USA to "uniquely" identify an individual. Problem there is, if you read the scientific literature carefully, neither fingerprints nor DNA are actually 100% "safe" in that regards. There is a very, very, very low probability of two people having the same fingerprints, but the probability just ain't zero. With DNA, the easiest counterexample are identical twins :-)*

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>-----
>BP Margolin
>Please reply only to the newsgroups.
>When posting, inclusion of SQL (CREATE TABLE ...,
INSERT ..., etc.) which
>can be cut and pasted into Query Analyzer is appreciated.
>
>"Christian Rosenzweig"
<Christian.Rosenzweig@medvision.de> wrote in message
news:02d301c3185e\$fc189dd0\$a301280a@phx.gbl...
>> Hallo,
>>
>> when I change any bit in the database (e.g. by hex
editor)
>> or any bit changes by physical effects like magnetism
what
>> happens with my SQL server? Does it recognize such
>> manipulations? Is there a warning? Or do I get wrong
data
>> according to changed bits?
>>
>> Microsoft seems to refuse to give me a official
statement.
>> I need it for certification of a product which is used
in
>> a medical product which claims for 100% data integrity.
>>
>> If there is no internal security mechanism in SQL
server I
>> have to implement crc or hash algorithms for any data
>> storing in my application.
>>
>> Thanks for any helpful answers.
>.
>