SECURITY ISSUES WITH DROPBOX

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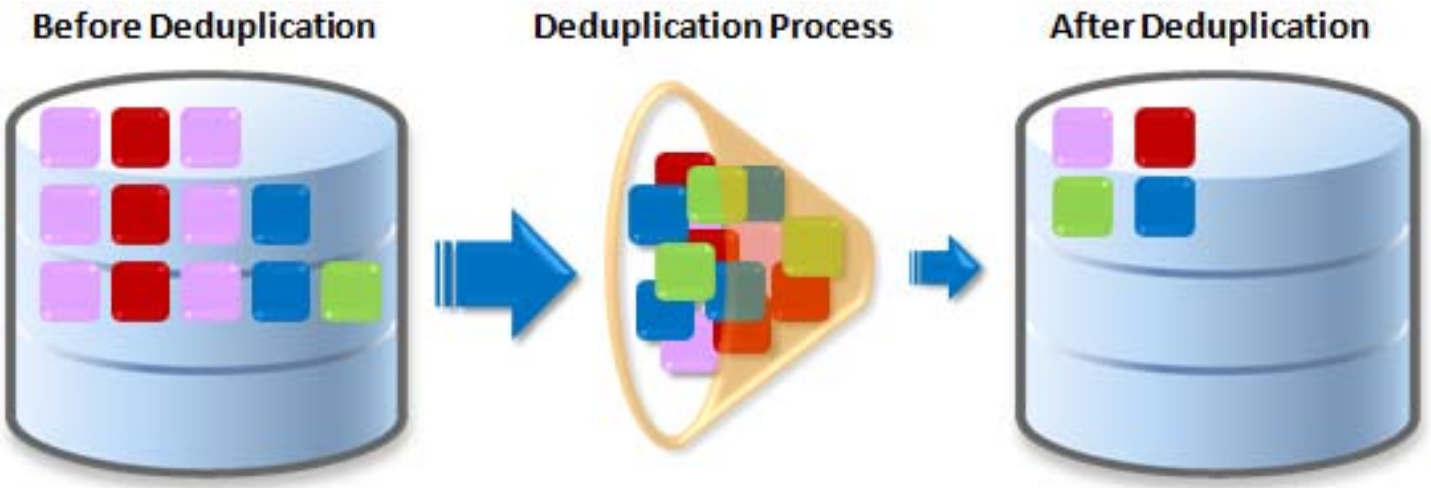
How Dropbox works?

Dropbox is a Web-based file hosting service operated by *Dropbox, Inc.* that uses networked storage to enable users to store and share files and folders with others across the Internet using file synchronization

Using deduplication to save *storage* space and *bandwidth*

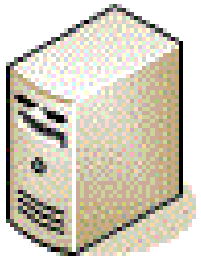


Deduplication

Hash(f)

Upload f

f



File exists, does not ask for uploading

Hash(f)

Is deduplication Secure?!

No!

It is possible to determine if any given file is already stored by one or more Dropbox users

If you have the hash of file, you have the file itself.

You can guess a hash and tell Dropbox you want to upload a file with that hash, if a file with that hah exists, you are the file's owner.

Any solution?

Proof-of-ownership is a protocol in two parts between two players on a joint input F.

First the verifier summarizes the input file F and generates a verification information v.

Later, the prover and verifier engage in an interactive protocol in which the prover has F and the verifier only has v, at the end of which the verifier either accepts or rejects.

Encryption

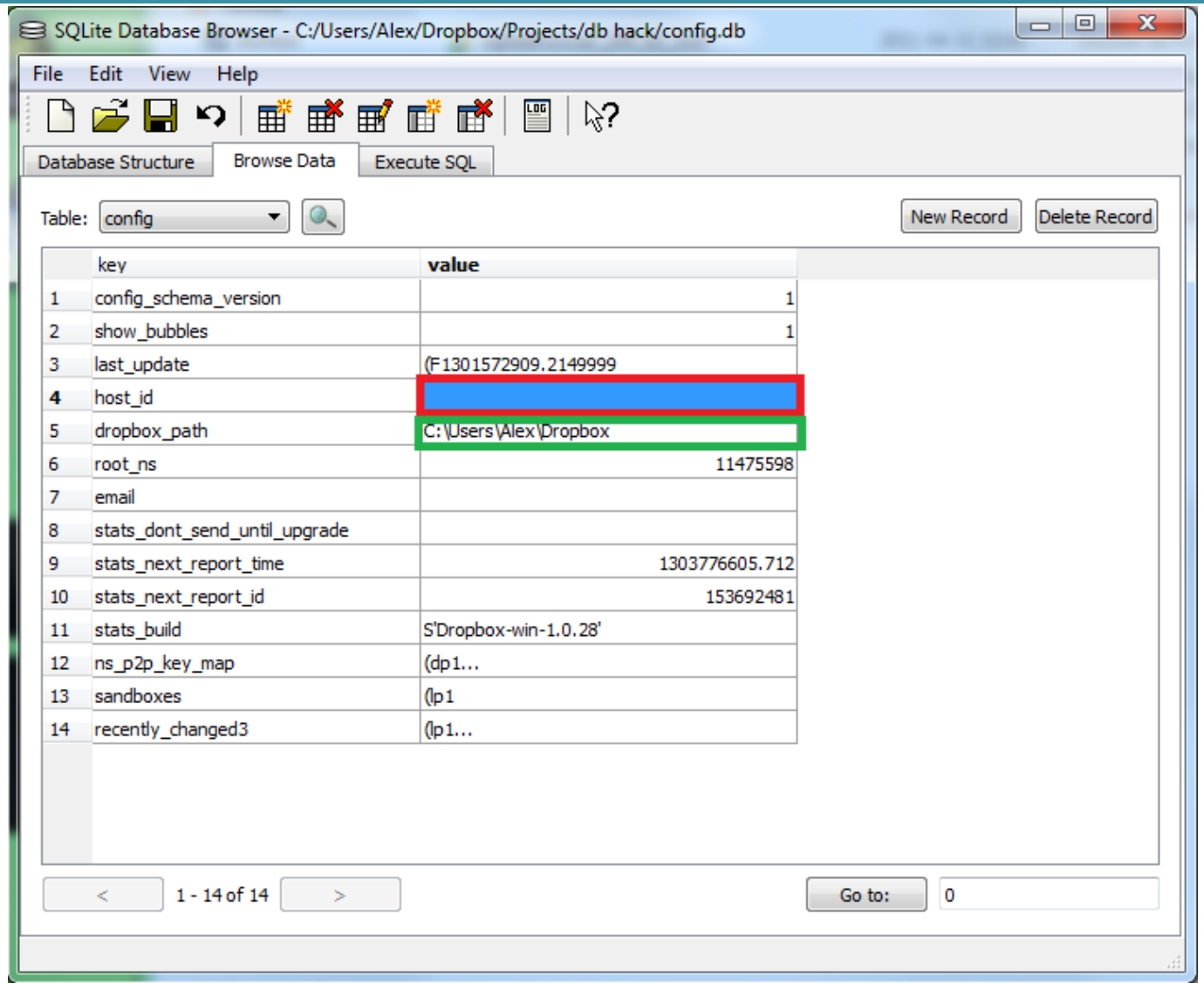
The service tells it "uses the same secure methods as banks and the military to send and store your data" and that all files stored on Dropbox servers are encrypted (AES-256) and are inaccessible without users' password.

Dropbox does not ask for Key! Is key stored at Dropbox??

But Dropbox claims its employees do not have access to encrypted files

Is it possible to have both encryption and deduplication!?

Authentication



Any problem?

In Windows, the config.db file is completely portable and is **not tied** to the system in any way

If you gain access to a person's config.db file (or just the host_id), you gain complete access to the person's Dropbox until such time that the person removes the host from the list of linked devices via the Dropbox web interface

Reference:

- http://dereknewton.com/2011/04/dropbox-authentication-static-host-ids/
- http://paranoia.dubfire.net/2011/04/how-dropbox-sacrifices-user-privacy-for.html?showComment=1302661727678
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- http://en.wikipedia.org/wiki/DropBox#cite_note-76
- *Proofs of Ownership in Remote Storage Systems*, Shai Halevi, Danny Harnik, Benny Pinkas, Alexandra Shulman-Peleg, ACM-CCS 2011