Keeping your files safe in the post-Snowden era with SXFS
Never trust anyone…

- Client side encryption
- Secure transfer
- Fault tolerance

But keep it all easy!
All-in-one solution

Encrypted filesystem backed by SX object storage

Licence: GPLv2

$ git clone http://git.skylable.com/sx
SXFS

Under the hood
User interaction

- FUSE API implementation
- Files are mapped to remote objects
- Task queuing
- Transfer resumes
Data transfer

• Files are divided into same sized blocks
• Parallel block transfers
• Consistent hashing

Only encrypted data is sent!
Client-side encryption

- AES 256 CBC + HMAC
- Deduplication on a file level
- Filename and file size encryption

FULLY DENIABLE!
Architecture

Object Storage Server

sx://server/vol

SX

443/TCP

HTTPS

AES 256

FUSE

SXFS Clients

/mnt/vol

HTTPS

AES 256

FUSE

/mnt/vol

HTTPS

AES 256

FUSE

/mnt/vol

HTTPS

AES 256

FUSE

/mnt/vol
Time to scale out!

Object Storage Cluster

- Fault tolerance
- Replication

SX

SXFS Clients

HTTPS

AES 256

FUSE

/mnt/vol

HTTPS

AES 256

FUSE

/mnt/vol

HTTPS

AES 256

FUSE

/mnt/vol
SXFS

Getting started
Supported platforms

Officially part of:
- Fedora
- Debian / Ubuntu
- Gentoo

Coming soon:
- CentOS SIG
- MacOSX Mac Ports
Installation

Fedora: `yum install skylable-sx`
Debian / Ubuntu: `apt-get install sx`
Gentoo: `emerge net-misc/sx`
From source

rpm-based:  yum install libcurl-devel zlib-devel nss-devel openssl-devel fuse-devel

deb-based:  apt-get install libssl-dev libcurl4-openssl-dev libz-dev libfuse-dev

$ wget http://cdn.skylable.com/source/sx-2.0.tar.gz

$ tar xzvf sx-2.0.tar.gz
$ cd sx-2.0
$ ./configure && make && sudo make install
SXFS

Server setup
sx@node1 # sxsetup
Enter the cluster name (use the same across all nodes: sx.foo.com
Path to SX storage[default=/var/lib/sxserver]: <ENTER>
Maximum size: 1T
Enter the IP address of this node: 192.168.10.1
Is this the first node of a new cluster? (Y/n) <ENTER>
Is this correct? (Y/n) <ENTER>
sx@node1 #
Create a user and a volume

$ sxacl useradd john@foo.com sx://admin@sx.foo.com
Enter password for user 'john@sx.foo.com'
Enter password:
Re-enter password:
User successfully created!

$ sxvol create -o john@foo.com -s 100G -r 1 -f aes256 \ sx://admin@sx.foo.com/vol-john
Volume 'vol-john' (replica: 1, size: 100G, max-revisions: 1) created.
SXFS

Client setup
Linux and MacOSX

$ sxinit sx://sx.foo.com
$ mount -t fuse.sxfs -o use_queues \ sx://sx.foo.com/your-vol /mountpoint

fstab example:

sx://sx.foo.com/your-vol /mountpoint fuse.sxfs
_netdev,fsname=sxfs,use_queues,allow_other 0 0
If you liked SXFS you might also like…
Like OwnCloud but with client-side encryption.

Available for:

- Windows
- Mac
- Linux
- Android
- iOS (coming soon)

www.sxdrive.io
THOSE WITH NOTHING TO HIDE HAVE NOTHING TO SAY
www.sxfs.io/faq

Robert Wojciechowski & Jakub Chyłkowski

follow @skylable
Fully distributed

No single point of failure

Choose your replica level
Join more nodes

Need more speed? Add more nodes.

Need more space? Add more nodes.
How to join more nodes

sx@node2  # sxsetup
Enter the cluster name: sx.foo.com
Path to SX storage [default=/var/lib/sxserver]: <ENTER>
Maximum size: 1T
Enter the IP address of this node [default=192.168.10.2]: <ENTER>
Is this the first node of a new cluster? (Y/n) n
Please provide the IP address of a working node in 'sx.foo.com'.
IP address: 192.168.10.1
Admin key or path to key-file [default=]:
0DPiKuNIrrVmD8IUCuw1hQxNqZcVPDD82Gkq7PMFYpk3qA8ddxxxxxxxx
Is this correct? (Y/n) <ENTER>

Server certificate:
SHA1 fingerprint: 198b0ce5161757ea9bc83fc77627eb8c0958d591
Do you trust this SSL certificate? [y/N] y

sx@node2  #