SOPS Encrypted secrets files

START HERE

`sops edit <file>`
Edit decrypted, save encrypted

`sops exec-env <file> '<cmd>'`
Run with secrets as env vars

`sops encrypt -i <file>`
Encrypt a file in place

`sops rotate -i <file>`
New data key, re-encrypt

`sops decrypt <file>`
Print plaintext to stdout

`sops encrypt --age <recipient> <file>`
Encrypt to an age key

`sops updatekeys <file>`
Apply .sops.yaml key changes

`sops decrypt --extract '["a"]["b"]' <file>`
Read one value

Plaintext file YAML, JSON, ENV, INI → `encrypt / edit` → **Data key** AES256-GCM per file → `wrapped by` → **Master keys** age, PGP, KMS, Vault

CONCEPTS

sops encrypts the values and leaves keys readable, so encrypted YAML/JSON files still diff and review well in git.

Each file has one random data key; master keys (age, PGP, cloud KMS) only wrap it, so you can add or remove people without re-encrypting values.

Commit .sops.yaml next to the secrets: it picks keys by file path so nobody has to remember flags.

EDIT & READ

`sops edit <file>`
Edit a file in your editor, re-encrypting on save
Uses SOPS_EDITOR, then EDITOR, then vim, nano or vi. A new file needs keys from .sops.yaml or flags.

`sops decrypt <file>`
Print the decrypted file to stdout

`sops decrypt -i <file>`
Decrypt a file in place

`sops decrypt --extract '["<key>"][<n>]' <file>`
Print a single value

`sops decrypt --output <out> <file>`
Write plaintext to another file

EDIT & READ (cont.)

`sops decrypt --output-type json <file>`
Convert format while decrypting

ENCRYPT

`sops encrypt -i <file>`
Encrypt in place using .sops.yaml rules

`sops encrypt <file> > <out>`
Encrypt to a new file

`sops encrypt --age <recipient> <file>`
Encrypt to age recipients
Comma-separate several recipients.

`sops encrypt --pgp <fingerprint> <file>`
Encrypt to PGP keys

`sops encrypt --kms <arn> <file>`
Encrypt with AWS KMS keys

`sops encrypt --encrypted-regex '^(data|stringData)$' <file>`
Encrypt only keys matching a regex
Typical for Kubernetes Secrets: keep metadata readable.

`sops encrypt --unencrypted-regex '<regex>' <file>`
Leave matching keys in plain text

ENCRYPT (cont.)

`sops encrypt --input-type <type> --output-type <type> <file>`
Force formats (json, yaml, dotenv, ini, binary)

`sops encrypt --filename-override <name>`
Match rules by name when reading stdin

`sops encrypt --azure-kv <url> <file>`
Encrypt with Azure Key Vault

CHANGE VALUES

`sops set <file> '["a"]["b"]' '"<value>"'`
Set a value; value is JSON

`sops set --value-stdin <file> '["a"]["b"]'`
Read the value from stdin
Keeps secrets out of the process list.

`sops unset <file> '["a"]["b"]'`
Delete a key

RUN WITH SECRETS

`sops exec-env <file> '<cmd>'`
Run a command with values as env vars

`sops exec-file <file> '<cmd> {}'`
Run a command with a temp file path in {}

RUN WITH SECRETS (cont.)

`sops exec-file --no-fifo <file> '<cmd> {}'`
Use a regular temp file, not a FIFO
For programs that read the file twice or seek.

`sops decrypt --output-type dotenv <file>`
Print as KEY=value lines

KEYS & CONFIG

`sops updatekeys <file>`
Sync a file's keys with .sops.yaml

`sops updatekeys -y <file>`
Same, without the confirmation prompt

`sops rotate -i <file>`
New data key, re-encrypt all values

`sops rotate -i --add-age <recipient> <file>`
Add an age recipient while rotating

`sops rotate -i --rm-age <recipient> <file>`
Remove an age recipient

`sops --config <path> <command>`
Use a specific config file
Otherwise sops searches parent directories for .sops.yaml.

ENVIRONMENT

`SOPS_AGE_KEY_FILE=<path>`
Age identity file for decryption
Default is keys.txt under the sops config dir, e.g. ~/.config/sops/age/keys.txt.

`SOPS_AGE_KEY=<key>`
Age secret key given directly
Handy in CI.

`SOPS_AGE_RECIPIENTS=<list>`
Age recipients to encrypt to

`SOPS_EDITOR=<editor>`
Editor for sops edit

On macOS the default age key path is ~/Library/Application Support/sops/age/keys.txt; Linux uses ~/.config/sops/age/keys.txt.

.SOPS.YAML

Creation rules (first match wins)

```
creation_rules:
  - path_regex: \.prod\.yaml$
    age:
age1prod...,age1admin...
  - path_regex: secrets/.*
    age: age1dev...
    encrypted_regex: '^(data|
stringData)$'
  - age: age1admin...
```

A rule without path_regex matches everything, so put it last. Run sops updatekeys after changing recipients on existing files.

.SOPS.YAML (cont.)

Other rule keys: kms, gcp_kms, azure_keyvault, hc_vault_uris, pgp, unencrypted_regex, encrypted_suffix.

RECIPES

Start with age

```
age-keygen -o key.txt
export SOPS_AGE_KEY_FILE=$PWD/
key.txt
# put the public key (age1...)
in .sops.yaml
sops encrypt -i secrets.yaml
sops edit secrets.yaml
```

Kubernetes secret

```
sops encrypt --encrypted-regex
'^(data|stringData)$' \
  -i secret.yaml
sops decrypt secret.yaml |
kubectl apply -f -
```

Readable git diffs

```
echo '*.yaml diff=sopsdiffer'
>> .gitattributes
git config
diff.sopsdiffer.textconv 'sops
decrypt'
git diff secrets.yaml
```

Add a teammate

```
# add their age key
to .sops.yaml, then
sops updatekeys secrets.yaml
git commit -am 'Grant access'
```