

Note: To use SAT you must run it with root access (needed to mount files).

Note: On ANDROID you can operate on mounted image using ONLY TERMINAL !!!

Note: After flashing a modified system image, it is recommended to resize /system partition

Naming:

SPARSE_IMG - source .img file that you want to unpack

RAW_IMG - it is a unpacked .img file, it can be mount and modify on M_DIR

M_DIR - mount point directory, when RAW_IMG is mounted (default: /mnt/sat/loop)

OUT_SPARSE_IMG - output image file (after repack)

Auto mode:

Unpack SPARSE_IMG, then repack (it makes sense when using some additional options)

Usage:

```
sat -a SPARSE_IMG OUT_SPARSE_IMG
```

or:

```
sat -a SPARSE_IMG
```

(OUT_SPARSE_IMG name will be generated automatically)

Unpack mode:

unpack SPARSE_IMG to RAW_IMG, then mount to not busy M_DIR

Usage:

```
sat -u SPARSE_IMG RAW_IMG
```

or:

```
sat -u SPARSE_IMG
```

(RAW_IMG name will be generated automatically)

Repack mode:

Usage:

```
sat -r RAW_IMG OUT_SPARSE_IMG
```

Repack RAW_IMG to OUT_SPARSE_IMG

or:

```
sat -r RAW_IMG
```

Repack RAW_IMG to OUT_SPARSE_IMG (automatically generated name)

or:

```
sat -r
```

will repack **last** created RAW_IMG to OUT_SPARSE_IMG (automatically generated name)

No-mode:

This mode is triggered:

- after each unpack
- before each repack
- when none of -a, -u, -r mode is used

It operates on last created RAW_IMG (can be changed by -m option).

Additional options:

-m M_DIR

change mountpoint directory to M_DIR

-o

overwrite all files (if you don't want overwrite files, script will create new names/dirs)

-dm

(for unpack) disable automatic RAW_IMG mounting

-c

(for no-mode) umount and delete all M_DIR's

-vndk X

where X is one of numbers: 26, 27, 28, 29 (you can pass how many numbers do you want). It will automatically delete corresponding vndk folders: /lib/vndk-X, /lib/vndk-sp-X, /lib64/vndk-X, /lib64/vndk-sp-X

-ab2a

converts system from AB architecture to A-only.

-debug

allow to display errors (by default some errors and messages are not displayed)

-ml

prints list of mounted M_DIR's

-dc

disable colorful UI

-resizeoff

disable resize2fs -M RAW_IMG command before repacking

-free SIZE

(unpack option) set up free space for unpacked RAW_DIR, where SIZE is values in MB

Note: when RAW_DIR will be mounted the available free space will be a little lower than SIZE

-ds

(unpack option) delete source SPARSE_IMG after unpack it

-update

just update the script (your changes in default.conf will be kept)

How it works?

SAT basically follows with below process:

Unpack mode:

```
simg2img SPARSE_IMG RAW_IMG
mkdir -p M_DIR
mount RAW_DIR M_DIR
```

No-mode

Here SAT makes some changes in M_DIR (for example when -vndk, -ab2a etc. options is used).

Repack-mode

```
umount M_DIR
e2fsck -fy RAW_IMG
resize2fs -M RAW_IMG
img2simg RAW_IMG OUT_SPARSE_IMG
```

Auto-mode

Just perform all whole process.

Change default settings:

Some of default settings can be changed using „default.conf” text file. List of available values below:

enable_color=true/false

when set to true, the tool will turn on colorful UI

use_tool_binaries=true/false

when set to true, the tool uses tool's binaries. Otherwise it will use system packages.

do_resize=true/false

when set to true, resize2fs -M RAW_IMG command is always called before repacking

M_DIR=PATH

change default M_DIR directory to PATH

m_mount_dir=PATH

change directory, where tool creates new M_DIR's to PATH

Some example uses:

I. reduce size of Generic System Image (GSI)

You must know, which vndk folders you can delete. It depends of your device's vendor. If you don't know, then check vndk version using Treble Info app (available in Google Play). To reduce size of .img file delete unnecessary vndk folders by running:

```
sat -a SPARSE_IMG -vndk 26 27 29
```

(in that case you will remove all folders related to 26, 27, 29 vndk version)

It will unpack SPARSE_IMG to RAW_DIR, then mount it in M_DIR, deleting vndk folders, resize RAW_DIR and repack to OUT_SPARSE_IMG.

II. converting system from AB architecture to A-only.

```
sat -a SPARSE_IMG -ab2a
```

Note : If you want you can do 1. and 2. operation by running:

```
sat -a SPARSE_IMG -vndk 26 27 29 -ab2a
```

Tip : When you using -a option, it is good practice to use it with -o (if you are sure that tool won't overwrite important files)

III. Unpack SPARSE_IMG and mount, do something with files, repack it

```
sat -u SPARSE_IMG
(do something with files in M_DIR)
sat -r
```

IV. Unpack SPARSE_IMG, delete it, set up 300 MB of free space for RAW_DIR and mount it on default M_DIR

```
sat -u SPARSE_IMG -ds -free 300
(now you can add some files in M_DIR)
```