Sudo ninja

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About

This is a small tool suite for analyzing and batch-maintaining large, monolithic sudoers files. It is a work in progress and not quite alpha quality yet, much less beta, so please exercise extreme caution and consider it ready for unit and integration testing, but not yet production-ready.

This tool suite was started, inspired by a client seeking to reduce technical debt, but they weren't quite ready to move to IDM so we created this utility to help them bridge the gap.

Even once we achieve feature-completeness and a stable build, some analysis and configuration of filters will be essential, as the default configuration is not one size fits all and will vary from environment to environment.

The utility allows for flattening of sudoers rules and aliases definitions, splitting of monolithic sudoers files, automated pruning of expired rules (as specified by a `# EXP YYYY-MM-DD` comment string preceding a block of rules. That EXP date will apply to ALL rules in a continguous list (NO blank lines, and NO comments in the block), up to the next commented line. So, to end the expiration date's affect on rules (and aliases, etc.), end the block with a blank line, and then a `#commented-out line`

Processing the sudoers file

The goal of this project is to analyze the sudoers file and, if feasible, to propose a solution for cleaning up the sudoers file, with the pruning of expired and invalid users being among the most important features.

Because so many of the sudoers rules were multi-line, which is legal, but the sudoers file format lacks a heirarchical wrapper (such as XML) or structure (such as json), parsing the multi-line rules becaomes very challenging.

After analysis and testing, we felt that pre-processing and reformatting the sudoers file to “flatten” the rules to make them easier to parse, was the best approach.

We also split the rules into multiple files for easier processing, especially in regard to rules expiration.

There are limitations - without a full, large-scale development approach, we elected to rely on regular expression (regex) filter patterns to preserve aliases, rules, and other tokens which may be inadvertently matched by some of the processing routines. The process for this will be covered in detail in this document.

Prerequisites

1. The sudoers file

   For now, don’t run this against /etc/sudoers; I like to copy the sudoers file I am working with, to ~/$directory/nosudoers. In the example for this document, Xtool’s ASCT-1000 I am working with a file called nosudoers-east-paredmore.

2. A complete account list

   The tool makes no distinction betwene user, group, and host accounts/aliases. What you want to do for pruning invalid accounts, is to concatenate all of the active users, hosts, and groups into a SINGLE list, one account per line, strictly the account (login) name.

3. Sudo Ninja

The respository may be found at: https://github.com/klazarsk/sudo-ninja/

Installation

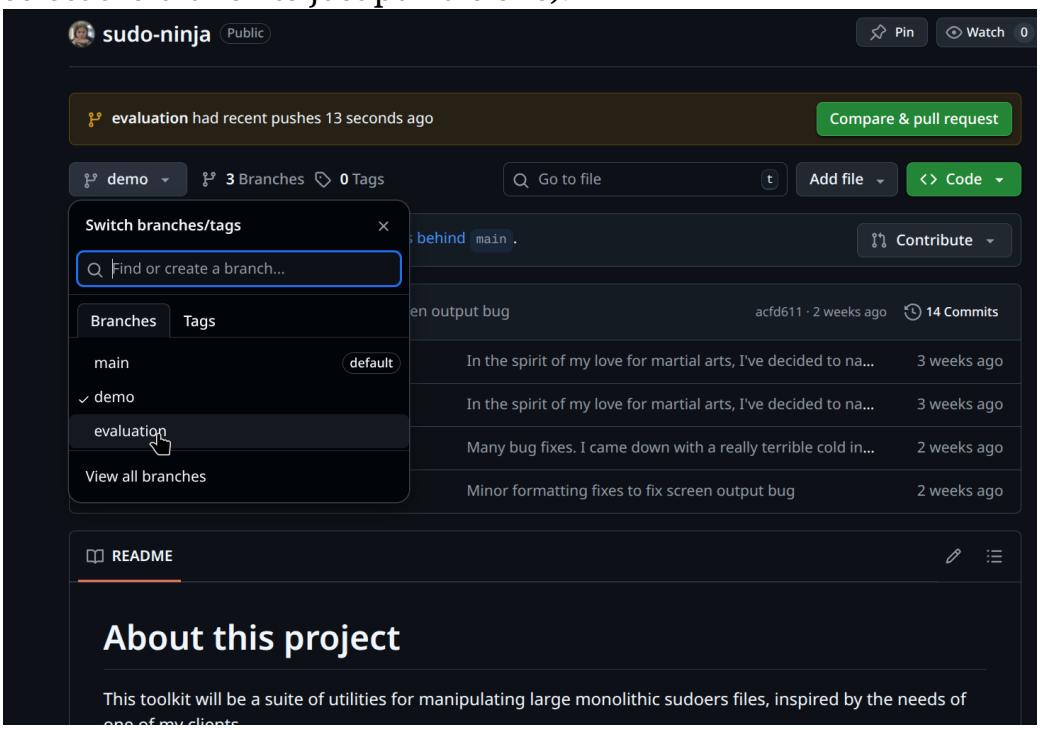
1. Ensure git is installed

   ```
   $ sudo dnf -y install git
   ```

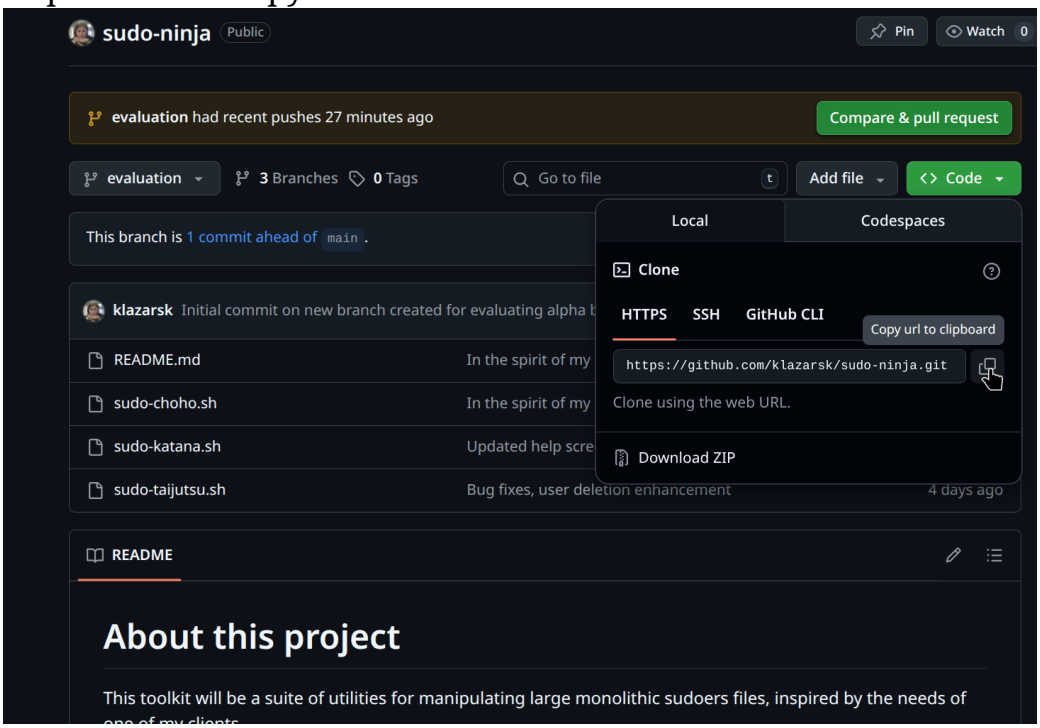
2. Open a terminal prompt and change to the directory where you want to clone sudo-ninja to

   ```
   $ cd ~/Download
   ```

3. Open the repository in a web browser (https://github.com/klazarsk/sudo-ninja/, and if you want to browse and review the code you will be installing, select the *evaluation* branch (you don't need to select the branch to just pull a clone):



4. Click the green “code” button toward the right, then from the dropmenu, then under the “Clone” tab in the dropmenu, select https and then copy the url



5. Back to the terminal, clone the repository to your current working directory:
   ```
   $ git clone git@github.com:klazarsk/sudo-ninja.git
   ```

6. Tell git to switch to the the *evaluation* branch:
   ```
   $ git checkout evaluation
   ```

7. Copy the utilities to a directory in your PATH (optionally add ~/bin to your PATH variable):
   ```
   $ sudo cp {sudo-katana.sh,sudo-taijutsu.sh} /usr/bin
   ```

8. Set the execute permission bit on the files
   ```
   $ sudo chmod +x /usr/bin/{sudo-katana.sh,sudo-taijutsu.sh}
   ```

9. Verify the utilities are accessible by trying to run the help screens:
   ```
   $ sudo-katana
   ```

Features

- Rules flattening (makes rules easier to process)
- File splitting (makes deleting expired rules easier)
- Expired rules deletion (implemented and ready for testing!)

- Batch user/group/host account deletion (implemented but not fully tested, ready for initial testing)
- Split files recombining into monolithic sudoers file
- Comments cleanup
  - Disabled/Commented rules and aliases
  - Comments which do not have a date string
- Handles multiple date formats
  - Reformats dates to ISO8601 (YYYY-MM-DD) format for easy sorting and processing
  - ***Strongly*** recommend using ISO8601 (YYYY-MM-DD date format) for future EXP dates.
- White space cleanup
  - squashes multiple spaces into single space
  - removes blank lines
  - Enforces blank line between each group of rules and the next comment+rules section

Roadmap

The full roadmap for this tool is TBD but the following features are coming:

- Reporting
  - Active Users
  - Inactive Users
- Single-user deletion
- Logging (partially implemented and ready for early testing)
- Split files validation BEFORE merging
  - Including reporting step
  - Including screen output to prompt user to manually intervene
  - will leverage `visudo -c -f ${filename}`
- RPM installer
  - Move dependencies check to rpm /installation stage
  - facilitate easier upgrades and uninstall/cleanup
  - Aliases/symbolic links to friendlier names

Considering:

- Relocating EXPIRED rule split files to subdirectory for archival
- Querying individual accounts

The command line options are still in flux!

The Tools

sudo-katana.sh

This tool splits monolithic sudoers files into individual files, flattens the rules for easier processing, optionally removes expired rules, and optionally re-merges the split files into monolithic sudoers files.

To facilitate edit, review, and manipulation of the sudoers rules, the utility can omit stages by simply not specifying them, allowing you process files in the –targetdir

In order for account deletion and expired rules deletion to work properly, the rules flattening and splitting MUST be leveraged!

Getting started

> info: the commands should accept either absolute or relative file paths, so you specify files in other directories. However, this is not currently fully tested. We have made efforts to escape all file names, so spaces in filenames *should* work, if you insist upon spaces in filenames.

Runtime Prerequisites

For the example in this document:

1. The monolithic sudoers file is `nosudoers-east-paredmore`
2. The working directory (`--targetdir`) will be `rules-east-paredmore`
3. The files prefix will be `sudo`
4. The output file will be recombined-east-paredmore
5. The combined active directory account list containing all active users, groups, and hosts named `active_account_list`
6. We will log output at `mylog.log`. (remember, logging is not fully implemented yet).

Prepare the sudoers file

1. Identify the monolithic sudoers file you wish you process

2. Relocate the sudoers file to a working directory (I also suggest renaming it to something like “nosudoers”)

3. copy AD account (user/host/group) list to a working directory

4. Create the target (working) directory rules-east-paredmore:

```
$ mkdir rules-east-paredmore
```

5. Let's issue a `sudo-katana` command to process a monolithic sudoers file `nosudoers-east-paredmore`, to ask it to flatten rules and split the file, placing the split files using a of `sudo` in subdirectory `rules-east-paredmore`. We're also going to instruct the utility to prune expired (anything aged older than $(today - 1 day)) rules, and to recombine the split files into output monolithic sudoers file `recombined-east-paredmore`.

```
$ sudo-katana.sh  --input nosudoers-east-paredmore --prefix
sudo --targetdir rules-east-paredmore --flatten --split  --
outputfile recombined-east-paredmore --expire  --recombine
```

> info: make sure you have the combined active account list (one account per line) available. The following command will `--delete` inactive users. Also, the utility WILL delete tokens which aren't actually accounts, so some of your environment-specific tribal knowledge will become essential.

6. Customize sudo-taijutsu.sh!

   Before running the commands, you will wait to tailor some of the token preservation pattern matches around line 35; these are regular expression patterns. We made some initial effort to lock out some tokens that were errantly matched early on in the process (such as all the zoom* accounts, apache, etc.). (Please note that pattern8,pattern9,pattern1,pattern2,etc are just placeholders to show you where to start inserting your own custom patterns)

```
#########################
#
# This is a customizable word filter, to filter out words that
our initial
# attempt at deleting non-account words from the sudoers file
missed, since
# it's impossible to arrive at a one-size-fits-all without a
massive increase
# in lines of code (for which bash isn't terribly efficient)

patCustomFilter='2c912219|_CISSYS|-cert-db|ALL|x10[01]
[[:alnum:]-]+|zoom[[:alnum:]-]+|apache|pattern8|pattern9|etc'
patCustomFilter2='pattern1|pattern2|etc'
```

```
#
########################
```

7. After you've performed your initial customization of the issue the following command to delete inactive accounts:

```
$ sudo-taijutsu.sh --active active_account_list --sudoersfile
recombined-east-paredmore --log mylog.log  --delete --commit
```

Now, open recombined-east-paredmore and review the finalized sudoers file!

> tip: It may be helpful to create a flattened, un-pruned nosudoers file for diffing purposes. For this example, we will create recombined-east-paredmore-unpruned:

```
$ sudo-katana.sh --recombine --input nosudoers-east-paredmore --
outputfile recombined-east-paredmore-unpruned --prefix sudo --
targetdir rules-east-paredmore --flatten --split
```