

NAME

sudo_logsrvd - sudo event and I/O log server

SYNOPSIS

sudo_logsrvd [-**hnV**] [-**f** *file*] [-**R** *percentage*]

DESCRIPTION

sudo_logsrvd is a high-performance log server that accepts event and I/O logs from **sudo**. It can be used to implement centralized logging of **sudo** logs. The server has two modes of operation: local and relay. By default, **sudo_logsrvd** stores the logs locally but it can also be configured to relay them to another server that supports the `sudo_logsrv.proto(5)` protocol.

When not relaying, event log entries may be logged either via `syslog(3)` or to a local file. I/O Logs stored locally by **sudo_logsrvd** can be replayed via the `sudoreplay(8)` utility in the same way as logs generated directly by the **sudoers** plugin.

The server also supports restarting interrupted log transfers. To distinguish completed I/O logs from incomplete ones, the I/O log timing file is set to be read-only when the log is complete.

Configuration parameters for **sudo_logsrvd** may be specified in the `sudo_logsrvd.conf(5)` file or the file specified via the **-f** option.

sudo_logsrvd rereads its configuration file when it receives `SIGHUP` and writes server state to the debug file (if one is configured) when it receives `SIGUSR1`.

The options are as follows:

-f *file*, **--file**=*file*

Read configuration from *file* instead of the default, `/etc/sudo_logsrvd.conf`.

-h, **--help**

Display a short help message to the standard output and exit.

-n, **--no-fork**

Run **sudo_logsrvd** in the foreground instead of detaching from the terminal and becoming a daemon.

-R *percentage*, **--random-drop**=*percentage*

For each message, there is a *percentage* chance that the server will drop the connection. This is only intended for debugging the ability of a client to restart a connection.

-V, --version

Print the **sudo_logsrvd** version and exit.

Securing server connections

The I/O log data sent to **sudo_logsrvd** may contain sensitive information such as passwords and should be secured using Transport Layer Security (TLS). Doing so requires having a signed certificate on the server and, if *tls_checkpeer* is enabled in `sudo_logsrvd.conf(5)`, a signed certificate on the client as well.

The certificates can either be signed by a well-known Certificate Authority (CA), or a private CA can be used. Instructions for creating a private CA are included below in the *EXAMPLES* section.

Debugging sudo_logsrvd

sudo_logsrvd supports a flexible debugging framework that is configured via *Debug* lines in the `sudo.conf(5)` file.

For more information on configuring `sudo.conf(5)`, refer to its manual.

FILES

<i>/etc/sudo.conf</i>	Sudo front-end configuration
<i>/etc/sudo_logsrvd.conf</i>	Sudo log server configuration file
<i>/var/log/sudo_logsrvd/incoming</i>	Directory where new journals are stored when the <i>store_first_relay</i> setting is enabled.
<i>/var/log/sudo_logsrvd/outgoing</i>	Directory where completed journals are stored when the <i>store_first_relay</i> setting is enabled.
<i>/var/log/sudo-io</i>	Default I/O log file location
<i>/var/run/sudo/sudo_logsrvd.pid</i>	Process ID file for sudo_logsrvd

EXAMPLES**Creating self-signed certificates**

Unless you are using certificates signed by a well-known Certificate Authority (or a local enterprise CA), you will need to create your own CA that can sign the certificates used by **sudo_logsrvd**, **sudo_sendlog**, and the **sudoers** plugin. The following steps use the `openssl(1)` command to create keys

and certificates.

Initial setup

First, we need to create a directory structure to store the files for the CA. We'll create a new directory hierarchy in */etc/ssl/sudo* for this purpose.

```
# mkdir /etc/ssl/sudo
# cd /etc/ssl/sudo
# mkdir certs csr newcerts private
# chmod 700 private
# touch index.txt
# echo 1000 > serial
```

The serial and index.txt files are used to keep track of signed certificates.

Next, we need to make a copy of the *openssl.conf* file and customize it for our new CA. The path to *openssl.conf* is system-dependent but */etc/ssl/openssl.conf* is the most common location. You will need to adjust the example below if it has a different location on your system.

```
# cp /etc/ssl/openssl.conf .
```

Now edit the *openssl.conf* file in the current directory and make sure it contains "ca", "CA_default", "v3_ca", and "usr_cert" sections. Those sections should include at least the following settings:

```
[ ca ]
default_ca      = CA_default

[ CA_default ]
dir             = /etc/ssl/sudo
certs           = $dir/certs
database        = $dir/index.txt
certificate     = $dir/cacert.pem
serial         = $dir/serial

[ v3_ca ]
subjectKeyIdentifier = hash
authorityKeyIdentifier = keyid:always,issuer
basicConstraints    = critical,CA:true
keyUsage            = cRLSign, keyCertSign
```

```
[ usr_cert ]
basicConstraints      = CA:FALSE
keyUsage              = nonRepudiation, digitalSignature, \
                      keyEncipherment
subjectKeyIdentifier = hash
authorityKeyIdentifier = keyid,issuer
```

If your *openssl.cnf* file already has a "CA_default" section, you may only need to modify the "dir" setting and enable the "keyUsage" settings if they are commented out.

Creating the CA key and certificate

In order to create and sign our own certificates, we need to create a private key and a certificate for the root of the CA. First, create the private key and protect it with a pass phrase:

```
# openssl genrsa -aes256 -out private/cakey.pem 4096
# chmod 400 private/cakey.pem
```

Next, generate the root certificate, using appropriate values for the site-specific fields:

```
# openssl req -config openssl.cnf -key private/cakey.pem \
  -new -x509 -days 7300 -sha256 -extensions v3_ca \
  -out cacert.pem
```

Enter pass phrase for private/cakey.pem:

You are about to be asked to enter information that will be incorporated into your certificate request.

What you are about to enter is what is called a Distinguished Name or a DN.

There are quite a few fields but you can leave some blank.

For some fields there will be a default value,

If you enter '.', the field will be left blank.

Country Name (2 letter code) [AU]:US

State or Province Name (full name) [Some-State]:Colorado

Locality Name (eg, city) []:

Organization Name (eg, company) [Internet Widgets Pty Ltd]:sudo

Organizational Unit Name (eg, section) []:sudo Certificate Authority

Common Name (e.g., server FQDN or YOUR name) []:sudo Root CA

Email Address []:

```
# chmod 444 cacert.pem
```

Finally, verify the root certificate:

```
# openssl x509 -noout -text -in cacert.pem
```

Creating and signing certificates

The server and client certificates will be signed by the previously created root CA. Usually, the root CA is not used to sign server/client certificates directly. Instead, intermediate certificates are created and signed with the root CA and the intermediate certs are used to sign CSRs (Certificate Signing Request). In this example we'll skip this part for simplicity's sake and sign the CSRs with the root CA.

First, generate the private key without a pass phrase.

```
# openssl genrsa -out private/logsrvd_key.pem 2048
# chmod 400 private/logsrvd_key.pem
```

Next, create a certificate signing request (CSR) for the server's certificate. The organization name must match the name given in the root certificate. The common name should be either the server's IP address or a fully qualified domain name.

```
# openssl req -config openssl.cnf -key private/logsrvd_key.pem -new \
  -sha256 -out csr/logsrvd_csr.pem
```

Enter pass phrase for private/logsrvd_key.pem:

You are about to be asked to enter information that will be incorporated into your certificate request.

What you are about to enter is what is called a Distinguished Name or a DN.

There are quite a few fields but you can leave some blank.

For some fields there will be a default value,

If you enter '.', the field will be left blank.

Country Name (2 letter code) [AU]:US

State or Province Name (full name) [Some-State]:Colorado

Locality Name (eg, city) []:

Organization Name (eg, company) [Internet Widgets Pty Ltd]:sudo

Organizational Unit Name (eg, section) []:sudo log server

Common Name (e.g., server FQDN or YOUR name []):logserver.example.com

Email Address []:

Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:
An optional company name []:

Now sign the CSR that was just created:

```
# openssl ca -config openssl.cnf -days 375 -notext -md sha256 \  
-in csr/logsrvd_csr.pem -out certs/logsrvd_cert.pem
```

Using configuration from openssl.cnf

Enter pass phrase for ./private/cakey.pem:

Check that the request matches the signature

Signature ok

Certificate Details:

Serial Number: 4096 (0x1000)

Validity

Not Before: Nov 11 14:05:05 2019 GMT

Not After : Nov 20 14:05:05 2020 GMT

Subject:

countryName = US

stateOrProvinceName = Colorado

organizationName = sudo

organizationalUnitName = sudo log server

commonName = logserve.example.com

X509v3 extensions:

X509v3 Basic Constraints:

CA:FALSE

X509v3 Key Usage:

Digital Signature, Non Repudiation, Key Encipherment

X509v3 Subject Key Identifier:

4C:50:F9:D0:BE:1A:4C:B2:AC:90:76:56:C7:9E:16:AE:E6:9E:E5:B5

X509v3 Authority Key Identifier:

keyid:D7:91:24:16:B1:03:06:65:1A:7A:6E:CF:51:E9:5C:CB:7A:95:3E:0C

Certificate is to be certified until Nov 20 14:05:05 2020 GMT (375 days)

Sign the certificate? [y/n]:y

1 out of 1 certificate requests certified, commit? [y/n]y

Write out database with 1 new entries

Data Base Updated

Finally, verify the new certificate:

```
# openssl verify -CAfile cacert.pem certs/logsrvd_cert.pem
certs/logsrvd_cert.pem: OK
```

The `/etc/ssl/sudo/certs` directory now contains a signed and verified certificate for use with **sudo_logsrvd**.

To generate a client certificate, repeat the process above using a different file name.

Configuring **sudo_logsrvd** to use TLS

To use TLS for client/server communication, both **sudo_logsrvd** and the **sudoers** plugin need to be configured to use TLS. Configuring **sudo_logsrvd** for TLS requires the following settings, assuming the same path names used earlier:

```
# Listen on port 30344 for TLS connections to any address.
listen_address = *:30344(tls)

# Path to the certificate authority bundle file in PEM format.
tls_cacert = /etc/ssl/sudo/cacert.pem

# Path to the server's certificate file in PEM format.
tls_cert = /etc/ssl/sudo/certs/logsrvd_cert.pem

# Path to the server's private key file in PEM format.
tls_key = /etc/ssl/sudo/private/logsrvd_key.pem
```

The root CA cert (*cacert.pem*) must be installed on the system running **sudo_logsrvd**. If peer authentication is enabled on the client, a copy of *cacert.pem* must be present on the client system too.

SEE ALSO

`sudo.conf(5)`, `sudo_logsrvd.proto(5)`, `sudo_logsrvd.conf(5)`, `sudoers(5)`, `sudo(8)`, `sudo_sendlog(8)`, `sudoreplay(8)`

AUTHORS

Many people have worked on **sudo** over the years; this version consists of code written primarily by:

Todd C. Miller

See the CONTRIBUTORS.md file in the **sudo** distribution (<https://www.sudo.ws/about/contributors/>) for an exhaustive list of people who have contributed to **sudo**.

BUGS

If you believe you have found a bug in **sudo_logsrvd**, you can either file a bug report in the sudo bug database, <https://bugzilla.sudo.ws/>, or open an issue at <https://github.com/sudo-project/sudo/issues>. If you would prefer to use email, messages may be sent to the sudo-workers mailing list, <https://www.sudo.ws/mailman/listinfo/sudo-workers> (public) or [<sudo@sudo.ws>](mailto:sudo@sudo.ws) (private).

Please not report security vulnerabilities through public GitHub issues, Bugzilla or mailing lists. Instead, report them via email to [<Todd.Miller@sudo.ws>](mailto:Todd.Miller@sudo.ws). You may encrypt your message with PGP if you would like, using the key found at <https://www.sudo.ws/dist/PGPKEYS>.

SUPPORT

Limited free support is available via the sudo-users mailing list, see <https://www.sudo.ws/mailman/listinfo/sudo-users> to subscribe or search the archives.

DISCLAIMER

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