

inotify

Fermi Linux Users Group
August 29 2012

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- "Busy" polling processes can add up
- Race between files added/deleted and reread

inotify

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- Replaces dnotify

System Calls

- `inotify_init()`
Instantiates subsystem in the kernel
- `inotify_add_watch()`
Creates a watch; takes a pathname and event(s) , returns identifier
- `inotify_rm_watch`
Takes identifier, removes watch

inotify-tools

- Available from epel.
- Provides two commandline programs:
`inotifywatch` and `inotifywait`.

inotifywait

Uses the inotify interface to wait for changes to files.

- r, --recursive
- m, --monitor (otherwise exit on event)
- s, --syslog
- o, --outfile

```
# inotifywait -r -m /home/bonniek/foo
```

inotifywait

`-e <event>`

`access|modify|close|open|move|create
|delete|unmount ...`

`-@<file>` (exclude file or directory)

`--format <fmt>` (printf-like syntax):

- `%w` file name
- `%e` events
- `%T` time as (can be specified with `--timefmt`)

inotify example (from man page)

```
#!/bin/sh
while inotifywait -e modify /var/log/messages; do
    if tail -n1 /var/log/messages | grep httpd; then
        # Do something!  Maybe this (probably not this).
        kdialog --msgbox "Apache needs love!"
    fi
done
```

inotifywatch

Outputs a table showing number of times an event occurred for each watched file or dir.

- t, --timeout <seconds> (otherwise exit on signal)
- r, --recursive
- e <event>, --event <event>
- fromfile <file> (read filenames to watch from file)

inotifywatch

```
[bonniek@gerda]$ inotifywatch -v -e access -e modify -e open -e  
close -r -t 30 /var/log/
```

Establishing watches...

Setting up watch(es) on /var/log/

OK, /var/log/ is now being watched.

Total of 17 watches.

Finished establishing watches, now collecting statistics.

Will listen for events for 30 seconds.

total	modify	close_write	close_nowrite	open	filename
21	3	3	6	9	/var/log/
12	12	0	0	0	/var/log/httpd/

inotifywatch: more options

-z, --zero (output table rows even if count is zero)

@<file> (exclude file)

--exclude <pattern> (exclude files matching <pattern> regex)

--excludei <pattern> (like --exclude but case-insensitive)

lsyncd

Available from epel, uses inotify to monitor for events, then spawns process(es) to sync (usually rsync).

```
# lsyncd [OPTIONS] -rsyncssh SOURCEDIR  
TARGETHOST TARGETDIR
```

...for local file ops:

```
# lsyncd [OPTIONS] -direct SOURCEDIR  
TARGETDIR
```


incron

Like cron, but schedule jobs according to filesystem events.

With incrond running:

```
# incrontab -e file
```

incron

```
/home/bonniek/foo IN_DELETE,IN_MOVE touch $@/$#  
/home IN_CREATE mail -s "Welcome to Fermilab" $#@fnal.gov <  
/some/mail.txt
```

Wildcards:

\$\$ dollar sign

\$@ watched filesystem path (see above)

\$# event-related file name

\$% event flags (textually)

\$& event flags (numerically)

incron

Events:

IN_ACCESS File was accessed (read) (*)

IN_ATTRIB Metadata changed (permissions, timestamps, extended attributes, etc.) (*)

IN_CLOSE_WRITE File opened for writing was closed (*)

IN_CLOSE_NOWRITE File not opened for writing was closed (*)

IN_CREATE File/directory created in watched directory (*)

IN_DELETE File/directory deleted from watched directory (*)

IN_DELETE_SELF Watched file/directory was itself deleted

IN_MODIFY File was modified (*)

IN_MOVE_SELF Watched file/directory was itself moved

IN_MOVED_FROM File moved out of watched directory (*)

IN_MOVED_TO File moved into watched directory (*)

IN_OPEN File was opened (*)

fsnotify

Better performance on whole filesystems.

New in 2.6.31

`inotify` (and `dnotify`) are re-implemented on top.

more info

<https://github.com/rvoicilas/inotify-tools/wiki/>

<http://www.ibm.com/developerworks/linux/library/l-ubuntu-inotify/index.html>

<http://lwn.net/Articles/311850/>