

Linux, the DIY OS

By Steve Litt

of Troubleshooters.Com

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Linux Makes Building Easy

- Small programs + narrow interfaces = modularity
- Modularity = easy construction and debugging
- Everything is a file
- One tree filesystem
- All the programming languages you need, free
 - Shellscripts
 - Interpreters/scripting languages
 - C
 - Other

Linux Has Small Programs

(Do One Thing and Do it Well)

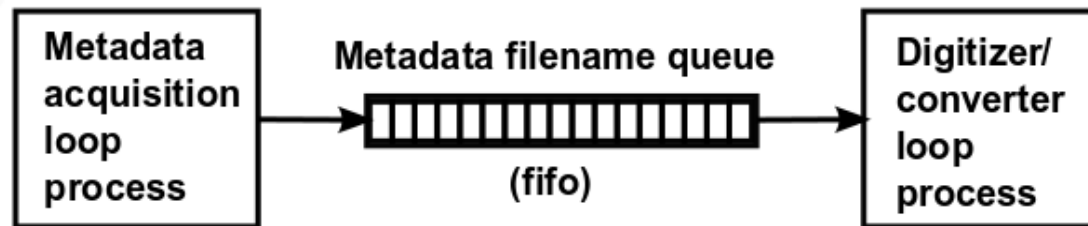
- ls
 - tee
 - cut
 - tr
 - grep
 - sed
 - cat
 - sleep
 - find
 - awk
 - mail
 - xargs
 - tr
 - test
- `find . -type f | grep 'pl$|sh$' | xargs ls -l {} \; | less`
 - Preceding called a “one liner”
 - Use a shellscript for anything more complex

Linux Has Narrow Interfaces

- Pipes

```
grep -v < weblog "\.gif " | grep -v "\.png | parselog.pl
```

- Named Pipes (FIFOs)



- Signals

```
kill -s SIGUSR1 $PID
```

```
trap "Received USR1" SIGUSR1 $PID  
trap "Received USR2" SIGUSR2 $PID
```

- Sockets

FIFOs Are Simple

```
#!/bin/bash

if ! test -p test.fifo; then
    mkfifo test.fifo
fi

while true; do
    read myline <test.fifo
    echo $myline
    if test "$myline" == "q"; then
        break
    fi
done
```

```
echo line 1 > test.fifo
echo line 2 > test.fifo
echo q > test.fifo
```

Signals Are Simple

```
#!/bin/bash

trap "echo got usr1" SIGUSR1
trap "echo got usr2" SIGUSR2
echo "pid is $$"

while true; do
    sleep 1
done
```

```
kill -s SIGUSR1 3412
kill -s SIGUSR2 3412
kill -s SIGUSR1 3412
kill -s SIGUSR2 3412
kill -s SIGTERM 3412
```

- 3412 is just an example. Use the pid (Process ID) displayed by the shellscript

The Builder's OS

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- Modularity = easy construction and debugging
- Everything is a file
- One tree filesystem
- All the programming languages you need, free
- ***Use it!***