

Log Rotation in Linux - Simple Explanation with Example

What is Log Rotation?

Log rotation is the process of automatically managing log file sizes by archiving, compressing, renaming, and deleting old log files. It prevents logs from consuming all disk space by rotating them periodically (daily, weekly, etc.).

Why Log Rotation is Needed?

When applications like Apache, MySQL, or system services run continuously, their log files grow larger over time. Without log rotation, these logs can fill up disk space, causing system crashes or application failures.

Real-Time Use Case: Apache Web Server Log Rotation

Scenario:

You're managing an Apache web server. Apache writes logs to `/var/log/httpd/access.log` and `error.log`. Due to heavy traffic, `access.log` becomes several GBs in a few days.

Solution:

Set up log rotation to:

- Rotate logs weekly
- Keep last 4 weeks of logs
- Compress older logs
- Create fresh empty logs after rotation
- Reload Apache after rotation

Logrotate Configuration (`/etc/logrotate.d/httpd`):

```
/var/log/httpd/*.log {
    weekly
    rotate 4
    compress
    missingok
    notifempty
    create 0640 root root
    sharedscripts
    postrotate
```

```
        /bin/systemctl reload httpd.service > /dev/null 2>/dev/null || true
    endscript
}
```

Explanation:

- weekly: Rotate logs every week.
- rotate 4: Keep 4 previous logs.
- compress: Compress old logs to save space.
- missingok: No error if log file is missing.
- notifempty: Do not rotate if log is empty.
- create: Creates a new log file with specified permissions.
- postrotate: Reload Apache to start logging into a new file.

How Rotated Logs Look:

```
access.log          <-- current log
access.log.1        <-- last week
access.log.2.gz     <-- 2 weeks ago (compressed)
access.log.3.gz     <-- 3 weeks ago
```

Benefits of Log Rotation

- Prevents disk space exhaustion.
- Keeps logs organized.
- Automatically manages old logs.
- No manual intervention needed.
- Ensures system and application stability.

Log rotation is an essential part of Linux server management!