Block layer statistics in /sys/block/<dev>/stat

This file documents the contents of the /sys/block/<dev>/stat file.

The stat file provides several statistics about the state of block device <dev>.

Q. Why are there multiple statistics in a single file? Doesn't sysfs normally contain a single value per file?
A. By having a single file, the kernel can guarantee that the statistics represent a consistent snapshot of the state of the device. If the statistics were exported as multiple files containing one statistic each, it would be impossible to guarantee that a set of readings represent a single point in time.

The stat file consists of a single line of text containing 11 decimal values separated by whitespace. The fields are summarized in the following table, and described in more detail below.

Name	units	description
read I/Os	requests	number of read I/Os processed
read merges	requests	number of read I/Os merged with in-queue I/O
read sectors	sectors	number of sectors read
read ticks	milliseconds	total wait time for read requests
write I/Os	requests	number of write I/Os processed
write merges	requests	number of write I/Os merged with in-queue I/O
write sectors	sectors	number of sectors written
write ticks	milliseconds	total wait time for write requests
in_flight	requests	number of I/Os currently in flight
io_ticks	milliseconds	total time this block device has been active
time_in_queue	milliseconds	total wait time for all requests

read I/Os, write I/Os

These values increment when an I/O request completes.

read merges, write merges

These values increment when an I/O request is merged with an already-queued I/O request.

read sectors, write sectors

These values count the number of sectors read from or written to this block device. The "sectors" in question are the standard UNIX 512-byte sectors, not any device- or filesystem-specific block size. The counters are incremented when the I/O completes.

read ticks, write ticks

These values count the number of milliseconds that I/O requests have waited on this block device. If there are multiple I/O requests waiting, these values will increase at a rate greater than 1000/second; for example, if 60 read requests wait for an average of 30 ms, the read_ticks field will increase by 60*30 = 1800.

in_flight
=========

This value counts the number of I/O requests that have been issued to the device driver but have not yet completed. It does not include I/O requests that are in the queue but not yet issued to the device driver.

io_ticks
========

This value counts the number of milliseconds during which the device has had I/O requests queued.

time_in_queue
=============

This value counts the number of milliseconds that I/O requests have waited on this block device. If there are multiple I/O requests waiting, this value will increase as the product of the number of milliseconds times the number of requests waiting (see "read ticks" above for an example).