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Linux Kernel Parameter - Dirty ; Page cache control

: http://kakaodbe.blogspot.kr/2014/03/linux-kernel-parameters-and-mysql_2226.html

Overview

MySQL

Definition

Linux /proc/sys/vm , Page Cache , dirty data disk flush 6

Kernel Parameter	description	Default
dirty_background_ratio	dirty page , pdflush	10(%)
dirty_ratio	dirty page , process가 dirty page	40(%)
dirty_background_bytes	dirty_background_ratio (dirty_background_ratio 0 가	0
dirty_bytes	dirty_ratio (dirty_ratio , 0 가	0
dirty_writeback_centisecs	page flush dirty	500(1/100sec)
dirty_expire_centisecs	page dirty page가	3000(1/100sec)

Process

pdflush 'dirty_writeback_centisecs' writeback , ,
page cache dirty page
'dirty_background_ratio' 'dirty_expire_centisecs'
dirty page disk flush .

Opinion

dirty_background_ratio

. pdfflush disk flush dirty page ,
I/O I/O I/O
가 dirty_background_ratio
(DB insert update !)

dirty_writeback_centisecs

가
page 가 page

dirty_expire_centisecs

30 , disk
30 dirty data가 disk
InnoDB innodb_flush_method
innodb_max_dirty_pages_pct
) innodb_max_dirty_pages_pct : innodb buffer fool dirty page
==== Latest Issue and Kernel Parameters ==== i/o

가 가 가 Filesystem Cache
dirty data , swap cache unmap 가
dirty page 1 가 Cache Cache data dirty
data disk i/o가 가

. <code> /proc/sys/vm/dirty_background_ratio :

10 ==> 1 /proc/sys/vm/dirty_expire_centisecs : 3000 ==> 1000 </code>

dirty_background_ratio 1 cache 1% dirty page가
, dirty_expire_centisecs 10 dirty page가 cache

. ===== Details of Mysql_Cache_Unmap =====

Kakao DB Team Filesystem Cache swap cache_unmap

(url :
<http://kakaodbe.blogspot.kr/2013/09/mysql-linux-file-system-cache-2.html>)

cache unmap db

mysql_cache_unmap Matt 가
(: mysql_cache_unmap.c)

cache unmapping Crontab

```
# Crontab Setting
*/10 * * * * root LD_LIBRARY_PATH=/otp/mysql/lib:
/otp/mysql/admin/mysql_cache_unmap --defaults-file=/etc/my.cnf --
binary_os_cache_size=1024M > /otp/mysql/admin/mysql_cache_unmap.log2>&1
```

-defaults-file mysql server configuration files . cache unmap
binary log data file innodb redo log
. -binary_os_cache_size Linux OS Cache
cache_unmap (1024M) Linux OS
Cache

mysql_cache_unmap

.

```

root@host:~ 14:10:09> cat /opt/mysql/admin/mysql_cache_unmap.log
Read configuration
innodb_data_dir : /opt/mysql/data
innodb_log_dir : /opt/mysql/data
binary_log_dir : /opt/mysql/data/mysql-binary
binary_os_cache_size : 1073741824
relay_log_dir : /opt/mysql/data/mysql-relay
> unmap_file_all : datafile : /opt/mysql/data/dbname1/tablename1.ibd
> unmap_file_all : datafile : /opt/mysql/data/dbname1/tablename2.ibd
> unmap_file_all : logfile : /opt/mysql/data/ib_logfile0
> unmap_file_all : logfile : /opt/mysql/data/ib_logfile1
> skip unmap file: binary : /opt/mysql/data/mysql-binary.041728 : 0 ~
60083119
> skip unmap file: binary : /opt/mysql/data/mysql-binary.041727 : 0 ~
104857974
> skip unmap file: binary : /opt/mysql/data/mysql-binary.041726 : 0 ~
104857975
> skip unmap file: binary : /opt/mysql/data/mysql-binary.041725 : 0 ~
104857883
> skip unmap file: binary : /opt/mysql/data/mysql-binary.041724 : 0 ~
104857852
> skip unmap file: binary : /opt/mysql/data/mysql-binary.041723 : 0 ~
104857920
> skip unmap file: binary : /opt/mysql/data/mysql-binary.041722 : 0 ~
104857989
> skip unmap file: binary : /opt/mysql/data/mysql-binary.041721 : 0 ~
104857781
> skip unmap file: binary : /opt/mysql/data/mysql-binary.041720 : 0 ~
104857784
> skip unmap file: binary : /opt/mysql/data/mysql-binary.041719 : 0 ~
104857666
> unmap_file_segment : binary : /opt/mysql/data/mysql-binary.041718 : 0 ~
34920063 of 104857944
> unmap_file_all : binary : /opt/mysql/data/mysql-binary.041717 : 0 ~
104857764
> unmap_file_all : binary : /opt/mysql/data/mysql-binary.041716 : 0 ~
104857852
> unmap_file_all : binary : /opt/mysql/data/mysql-binary.041715 : 0 ~
104857772
> unmap_file_all : binary : /opt/mysql/data/mysql-binary.041714 : 0 ~
104857847

```

mysql_cache_unmap		filesystem cache	datafile	redo_log_file,
binary_log_file	unmap	. mysql_cache_unmap		centOS 5.x
Filesystem Cache	가	free memory가	memory	가
application	swap	.	memory	가
MySQL	MySQL	swap	,	
	가	.	가	

mysql_cache_unmap

cache size가

가

Attention

cache_unmap redo log innodb system data file Cache
purge redo log innodb data file (innodb_flush_method)
innodb_flush_method =O_DIRECT innodb data file direct io innodb redo
log direct_io가 cached io redo log cache
unmap , innodb_flush_method가 O_DIRECT ALL_O_DIRECT (MariaDB &
PerconaServer only) redo log Innodb data file cache unmap
mysql_cache_unmap

mysql_cache_unmap 'posix_fadvise' caching
unmap

```
## posix_fadvise SYNOPSIS
#define _XOPEN_SOURCE 600
#include <fcntl.h>
int posix_fadvise(int fd, off_t offset, off_t len, int advice);
```

fd가 len offset '0' , len bytes advice
가 '0' , 가

mysql_cache_unmap posix_fadvise cache
unmap

```
#define _XOPEN_SOURCE 600
#include <fcntl.h>
int unmap_file_segment(const char *fpath, size_t start, size_t len){
    int fd = open(fpath, O_RDONLY);
    if (fd < 0){
        fprintf(stderr, "ERROR : Failed to open %s\n", fpath);
        return 1;
    }
    int r = posix_fadvise(fd, start, len, POSIX_FADV_DONTNEED);
    if (r != 0){
        fprintf(stderr, "ERROR : posix_fadvise failed for %s\n", fpath);
    }
    close(fd);
    /* if posix_fadvise is succeeded, then sleep 25 milli seconds */
    usleep(25 * 1000);
    return 0;
}
```

advice		'POSIX_FADV_DONTNEED'			
advice	가	, 'POSIX_FADV_DONTNEED'			page
cache(filesystem cache)		file	offset	len	
unmapping		.			

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<https://atl.kr/dokuwiki/> - AllThatLinux!

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