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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) , dirty_background_ratio 가	0
dirty_bytes	dirty_ratio (dirty_ratio , 0) , dirty_ratio 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 가 dirty_background_ratio . (DB insert update !)

dirty_writeback_centisecs

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 data dirty data disk i/o가 가

```
/proc/sys/vm/dirty_background_ratio : 10 ==> 1
/proc/sys/vm/dirty_expire_centisecs : 3000 ==> 1000
```

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-filesystem-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	caching	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		offset	len bytes	advice
	len	'0'	,	가
	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	가	'POSIX_FADV_DONTNEED'	.
advice		, 'POSIX_FADV_DONTNEED'	page
cache(filesystem cache)	file	offset	len
unmapping	.		

From:

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

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