

# Buffer and Cache

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 [s905060.gitbooks.io/site-reliability-engineer-handbook/content/buffer-and-cache.html](https://s905060.gitbooks.io/site-reliability-engineer-handbook/content/buffer-and-cache.html)

- Site Reliability Engineer HandBook
- Introduction

- Programming Language

## Python

- Time Format
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- TemporaryFile
- How to capture stdout in real-time with Python
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- python reference fragments
- getpass
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- Convert Unicode Object to Python Dict
- The dir( ) Function
- Python dictionary has\_key() Method
- glob – Filename pattern matching
- Lambda, filter, reduce and map
- doctest – Testing through documentation
- Load Python code dynamically
- Map, Reduce, Zip, Filter

- **DICTIONARY COMPREHENSION**

- Linux Command Line Tool
  - Basic
  - DIFF
  - AC
  - AWK
  - CHMOD
  - NMAP
  - NETSTAT
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  - Setup SSH Passwordless Login in OpenSSH
  - Parted
  - RSYNC
  - YUM
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  - Log Rotate
  - FREE
  - DF
  - DU
  - Sysctl
  - NICE
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- DD
- BC
- LDD
- getcap, setcap and file capabilities
- Linux\_Basename
- PMAP
- Alternative
- Readlink
- logrotate
- PIDOF
- Dmidecode
- lshw
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- Strace
- pstree
- USERMOD
- ltrace
- ethtool
- IP
- Sar
- nethogs
- zip
- FPM
- getent
- ipmitool
- Building RPMs
- Megacli
  - Megacli package version
- RKhunter
- fping
- blkid
- FSCK
- Package Manager
- mktemp
- ls
- Comm
- taskset
- fio
- tree
- ARP
- lsblk

- How-To
  - CentOS: nf\_conntrack: table full, dropping packet
  - How To Fix “Error: database disk image is malformed” On CentOS V Fedora
  - Finding the PID of the process using a specific port?
  - How-To create hashed SSH password
  - How to display and kill zombie processes
  - Shell command to bulk change file extensions in a directory (Linux)
  - 8 Powerful Awk Built-in Variables – FS, OFS, RS, ORS, NR, NF, FILENAME, FNR
  - Changing the Time Zone
  - HOW DO I DISABLE SSH LOGIN FOR THE ROOT USER?
  - How-To rename the extension for a batch of files?
  - How-To disable IPv6 on RHEL6 V CentOS 6 V etc
  - How to clear the ARP cache on Linux?
  - How-To crontab running as a specific user
  - Ansible – exclude host from playbook execution
  - HOWTO: Use Wireshark over SSH
  - How-To Change Network Interface Name
  - How-To Creating a Partition Size Larger Than 2TB
  - How-To Linux Hard Disk Format Command
  - Hadoop Troubleshooting
  - Hive Troubleshooting
  - HowTo Set up hostbased authentication for passphraseless SSH communication.
  - Difference between a cold and warm reboot
  - ls -l explained
  - df falsely showing 100 per cent disk usage
  - FSCK explained
  - Manually generate password for VetcVshadow
  - How To Change Timezone on a CentOS 6 and 7
  - Setting ssh private key forwarding
  - Persist keys in ssh-agent on OS X
  - SSH Essentials: Working with SSH Servers, Clients, and Keys
  - How to Change JVM Heap Setting (-Xms -Xmx) of Tomcat – Configure setenv.sh file – Run catalina.sh
  - SSH ProxyCommand example: Going through one host to reach another server
  - How to get Linux's TCP state statistics
  - Linux TCP retransmission rate calculation
  - How to determine OOM
  - How-to check Java process heapsize
  - Troubleshooting network issues
  - How to check what sudo access a user has?
  - How to copy your key to a remote server?
  - Linux date and Unix timestamp conversion
  - SSH client personalized configuration
  - How to Error Detection and Correction
  - How To Kerberos
  - How to identify defective DIMM from EDAC error on Linux
  - Howto Install and Configure Cobbler on Centos 6
  - How To Use GPG to Encrypt and Sign Messages on an Ubuntu 12.04 VPS
  - HowTo: Debug Crashed Linux Application Core Files Like A Pro
  - Create init script in CentOS 6
  - Linux Change Disk Label Name on EXT2 V EXT3 V EXT4 File Systems
  - How to retrieve and change partition's UUID Universally Unique Identifier on linux
  - Using Text-Mode Serial Console Redirection

- How to Write Linux Init Scripts Based on LSB Init Standard
- How to create a Debian package
- How to create a RPM Package
- How to solve EDAC DIMM CE Error
- How to solve fsck.ext4: Unable to resolve UUID\LABEL
- How to expand an existing LSI raid array using MegaCli
- How to change user GID and UID in Ubuntu
- How to read a segfault kernel log message
- How to add cron job via command line
- How to restrict process CPU usage using nice, cpulimit, and cgroups

- Storage
  - Object Storage
  - How an object store differs from file and block storage
- Monitoring
  - Nagios
  - Zabbix
  - Graphite

The architecture of clustering Graphite

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  - Insertion Sort
  - Hill Sort
  - Bubble Sort
  - Quick Sort
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  - Heap Sort
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Hive notes

- Elasticsearch
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- Zookeeper
- Automation Tool
  - Ansible
  - Salt

Salt use notes

- Networking Devices
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- Version Control



- Editor  
VIM



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Buffers are associated with a specific block device, and cover caching of filesystem metadata as well as tracking in-flight pages. The cache only contains parked file data. That is, the buffers remember what's in directories, what file permissions are, and keep track of what memory is being written from or read to for a particular block device. The cache only contains the contents of the files themselves.

### **Cache Pages:**

A cache is the part of the memory which transparently stores data so that future requests for that data can be served faster. This memory is utilized by the kernel to cache disk data and improve i/o performance.

The Linux kernel is built in such a way that it will use as much RAM as it can to cache information from your local and remote filesystems and disks. As the time passes over various reads and writes are performed on the system, kernel tries to keep data stored in the memory for the various processes which are running on the system or the data that of relevant processes which would be used in the near future. The cache is not reclaimed at the time when process get stop/exit, however when the other processes requires more memory then the free available memory, kernel will run heuristics to reclaim the memory by storing the cache data and allocating that memory to new process.

When any kind of file/data is requested then the kernel will look for a copy of the part of the file the user is acting on, and, if no such copy exists, it will allocate one new page of cache memory and fill it with the appropriate contents read out from the disk.

The data that is stored within a cache might be values that have been computed earlier or duplicates of original values that are stored elsewhere in the disk. When some data is requested, the cache is first checked to see whether it contains that data. The data can be retrieved more quickly from the cache than from its source origin.

SysV shared memory segments are also accounted as a cache, though they do not represent any data on the disks. One can check the size of the shared memory segments using `ipcs -m` command and checking the bytes column.

### **Buffers :**

Buffers are the disk block representation of the data that is stored under the page caches. Buffers contains the metadata of the files/data which resides under the page cache. Example: When there is a request of any data which is present in the page cache, first the kernel checks the data in the buffers which contain the metadata which points to the actual files/data contained in the page caches. Once from the metadata the actual block address of the file is known, it is picked up by the kernel for processing.