# Dd的使用

<https://czmmiao.iteye.com/blog/1748748>

## dd指令使用

语法格式  
dd   [option]   
dd指令选项详解

if=file：输入文件名，缺省为标准输入

of=file：输出文件名，缺省为标准输出  
ibs=bytes：一次读入 bytes 个字节（即一个块大小为 bytes 个字节）  
obs=bytes：一次写 bytes 个字节（即一个块大小为 bytes 个字节）  
bs=bytes：同时设置读写块的大小为 bytes ，可代替 ibs 和 obs  
cbs=bytes：一次转换 bytes 个字节，即转换缓冲区大小  
skip=blocks：从输入文件开头跳过 blocks 个块后再开始复制  
seek=blocks：从输出文件开头跳过 blocks 个块后再开始复制。（通常只有当输出文件是磁盘或磁带时才有效）  
count=blocks：仅拷贝 blocks 个块，块大小等于 ibs 指定的字节数  
conv=ASCII：把EBCDIC码转换为ASCIl码。   
conv=ebcdic：把ASCIl码转换为EBCDIC码。   
conv=ibm：把ASCIl码转换为alternate EBCDIC码。   
conv=block：把变动位转换成固定字符。   
conv=ublock：把固定位转换成变动位。   
conv=ucase：把字母由小写转换为大写。   
conv=lcase：把字母由大写转换为小写。   
conv=notrunc：不截短输出文件。   
conv=swab：交换每一对输入字节。   
conv=noerror：出错时不停止处理。   
conv=sync：把每个输入记录的大小都调到ibs的大小（用NUL填充）。   
注意：指定数字的地方若以下列字符结尾乘以相应的数字：b=512, c=1, k=1024, w=2, xm=number m，kB=1000，K=1024，MB=1000\*1000，M=1024\*1024，GB=1000\*1000\*1000，G=1024\*1024\*1024

## dd使用实例

假设了如下的情况：  
要备份的数据文件：30720KB  
block 0 =8 KB.  
raw offset 64 KB.  
设定 bs=8k  
1、从raw设备备份到raw设备  
dd if=/dev/rsd1b of=/dev/rsd2b bs=8k skip=8 seek=8 count=3841   
2、裸设备到文件系统  
dd if=/dev/rsd1b of=/backup/df1.dbf bs=8k skip=8 count=3841   
3、文件系统到裸设备  
dd if=/backup/df1.dbf of=/dev/rsd2b bs=8k seek=8   
4、文件系统到文件系统，你可以为了提升I/O把bs设为较高的数值  
dd if=/oracle/dbs/df1.dbf of=/backup/df1.dbf bs=1024k   
5、备份/dev/hdx全盘数据，并利用gzip工具进行压缩，保存到指定路径（bzip2工具也一样可使用）  
dd  if=/dev/hdx  |  gzip > /path/to/image.gz 

6、生成1G的虚拟块设备Sparse File(稀疏文件)  
dd if=/dev/zero of=1G.img bs=1M seek=1000 count=0 

Sparse File是什么，稀疏文件，也就是说，是一个拥有空的空间的文件，磁盘块将并没分配给这些文件。如果这些空的空间填满ASCII的NULL字符，那么文件才会是实际的大小。  
7、拷贝光盘数据到backup文件夹下，并保存为cd.iso文件，再进行刻录  
dd  if=/dev/cdrom  of=/backup/cd.iso  
cdrecord -v cd.iso   
8、将内存里的数据拷贝到backup目录下的mem.bin文件  
dd if=/dev/mem of=/backup/mem.bin bs=1024   
9、将软驱数据备份到当前目录的disk.img文件  
dd if=/dev/fd0 of=disk.img count=1 bs=1440k   
10、将备份文件恢复到指定盘  
dd if=/backup/df1.dbf of=/dev/rsd1b   
11、将压缩的备份文件恢复到指定盘  
gzip -dc /path/to/image.gz | dd of=/dev/hdx 

12、测试磁盘写能力

time dd if=/dev/zero of=/test.dbf bs=8k count=300000   
因为/dev/zero是一个伪设备，它只产生空字符流，对它不会产生IO，所以，IO都会集中在of文件中，of文件只用于写，所以这个命令相当于测试磁盘的写能力。  
13、测试磁盘读能力  
time dd if=/dev/sdb1 of=/dev/null bs=8k   
因为/dev/sdb1是一个物理分区，对它的读取会产生IO，/dev/null是伪设备，相当于黑洞，of到该设备不会产生IO，所以，这个命令的IO只发生在/dev/sdb1上，也相当于测试磁盘的读能力。  
14、测试同时读写能力  
time dd if=/dev/sdb1 of=/test1.dbf bs=8k   
这个命令下，一个是物理分区，一个是实际的文件，对它们的读写都会产生IO（对/dev/sdb1是读，对/test1.dbf是写），假设他们都在一个磁盘中，这个命令就相当于测试磁盘的同时读写能力

15、备份磁盘开始的512Byte大小的MBR信息到指定文件  
dd  if=/dev/hdx  of=/path/to/image  count=1  bs=512   
16、恢复MBR  
dd if=/mnt/windows/linux.lnx of=/dev/hda bs=512 count=1

17、 得到最恰当的block size。 通过比较dd指令输出中所显示的命令执行时间（选时间最少的那个），即可确定系统最佳的block size大小  
dd if=/dev/zero bs=1024 count=1000000 of=/root/1Gb.file  
dd if=/dev/zero bs=2048 count=500000 of=/root/1Gb.file  
dd if=/dev/zero bs=4096 count=250000 of=/root/1Gb.file  
dd if=/dev/zero bs=8192 count=125000 of=/root/1Gb.file

## **Oracle数据库的dd备份**

说明，以下实验操作系统版本为RHEL 5.4没有offset 

**Raw offset**  
在一些os上，在裸设备上的文件的开头是被os使用的。这些存储空间被叫做raw offset，Oracle不会备份和恢复这些内容(字节)。因此，备份的时候要跳过含有offset的字节。 目前只有AIX和Tru64系统的裸设备存在offset，详细信息如下  
UNIX　　　　　OS Reserved Size  
------------　----------------  
SUN Solaris　　　　　　   　0  
HP-UX　　　　　　　　　      0  
IBM AIX　　　　　　　　     4k      
Tru64 UNIX　　　　　　　   64k  
Linux　　　　　　　　　　    0

在 Aix环境中，如果是使用了原始VG，或者是Big VG，但是创建LV的时候没有指定-T O标签，创建出来的LV都带有4K保留空间，如果把这些LV作为裸设备使用，则需要注意这个4K的问题。如果是使用了Scalable-type VG，或者是使用Big VG，而且在创建VG的时候使用了-T O标签，则创建的LV没有4K保留空间，称为DS\_LVZ类型的LV。

在AIX平台下，我们可以使用$ORACLE\_HOME/bin路径下的dbfsize命令确认裸设备是否包含offset  
下面是包含offset的裸设备  
#dbfsize /dev/rlv\_data01\_10g  
Database file: /dev/rlv\_data01\_10g  
**Database file type:raw device**   
Database file size: 1048448 8192 byte blocks   
下面是不包含offset的裸设备  
#dbfsize /dev/rlv\_data01\_10g  
Database file: /dev/rlv\_data01\_10g  
**Database file type:raw device without 4K starting offset**   
Database file size: 1048448 8192 byte blocks   
**block 0**  
在 每个oracle文件的开头，os系统放置了一个块叫做block 0。 这个块的大小和其所在数据文件的oracle块大小相同。 一般的oracle 代码不能识别这个块，但是这个块是包含在os上的文件大小里面的。就是说oracle认为datafile1大小为100块，但是os看来，datafile1大小为101块(100+block 0). 注意，利用dd备份时，需要包含block 0。因为block 0位于offset之后，而block 0是所有数据文件都需要的，无论它是基于裸备还是文件系统，且block 0的大小只与oracle的block size有关，所以，把block 0也dd出来是必要的，不需要skip数据文件的block 0。

**计算数据文件的占用的实际空间大小**   
实际的数据文件大小是在dba\_data\_files中的bytes + 1\* blocksize  
SQL> select file\_name,bytes from dba\_data\_files;  
FILE\_NAME BYTES BLOCKSIZE  
---------------------------------------- ---------- ----------  
/opt/oracle/oradata/test1/system01.dbf 360710144 8192   
在操作系统查看文件大小：  
# ls -l system01.dbf  
-rw-r--r-- 1 oracle oinstall 360718336 Nov 15 11:53 system01.dbf   
360718336 = 360710144 + 8192 (8192是数据文件所在表空间的blocksize)  
那么一个裸设备的数据文件最多可以是多大？  
这个和具体的操作系统和数据文件所在表空间的blocksize有关。  
假设裸设备的大小是r，操作系统裸设备的offset为f，数据文件所在表空间的blocksize是b，则数据文件的最大大小为：  
d=r – f – b\*1 (1为block 0)  
如裸设备大小为1008k，offset为0，表空间的blocksize为4k，则在此裸设备的数据文件的最大大小为：  
d=1008-0-1\*4=1004(k)

**实例测试**

**从裸设备到裸设备拷贝ORACLE数据文件**

1、创建裸设备

# fdisk /dev/sdd  
The number of cylinders for this disk is set to 25856.  
There is nothing wrong with that, but this is larger than 1024,  
and could in certain setups cause problems with:  
1) software that runs at boot time (e.g., old versions of LILO)  
2) booting and partitioning software from other OSs  
   (e.g., DOS FDISK, OS/2 FDISK)  
  
Command (m for help): n  
Command action  
   l   logical (5 or over)  
   p   primary partition (1-4)  
l  
First cylinder (4201-4485, default 4201):   
Using default value 4201  
Last cylinder or +size or +sizeM or +sizeK (4201-4485, default 4485): +10M  
  
Command (m for help): n  
Command action  
   l   logical (5 or over)  
   p   primary partition (1-4)  
l  
First cylinder (4212-4485, default 4212):    
Using default value 4212  
Last cylinder or +size or +sizeM or +sizeK (4212-4485, default 4485): +20M  
  
Command (m for help): n  
Command action  
   l   logical (5 or over)  
   p   primary partition (1-4)  
l  
First cylinder (4232-4485, default 4232):   
Using default value 4232  
Last cylinder or +size or +sizeM or +sizeK (4232-4485, default 4485): +30M  
  
Command (m for help): n  
Command action  
   l   logical (5 or over)  
   p   primary partition (1-4)  
l  
First cylinder (4262-4485, default 4262):   
Using default value 4262  
Last cylinder or +size or +sizeM or +sizeK (4262-4485, default 4485): +40M

Command (m for help): p  
  
Disk /dev/sdd: 27.1 GB, 27111981056 bytes  
64 heads, 32 sectors/track, 25856 cylinders  
Units = cylinders of 2048 \* 512 = 1048576 bytes  
  
   Device Boot      Start         End      Blocks   Id  System  
/dev/sdd1               1        3816     3907568   83  Linux  
/dev/sdd4            3817        4485      685056    5  Extended  
/dev/sdd5            3817        3912       98288   83  Linux  
/dev/sdd6            3913        4008       98288   83  Linux  
/dev/sdd7            4009        4104       98288   83  Linux  
/dev/sdd8            4105        4200       98288   83  Linux  
/dev/sdd9            4201        4211       11248   83  Linux  
/dev/sdd10           4212        4231       20464   83  Linux  
/dev/sdd11           4232        4261       30704   83  Linux  
/dev/sdd12           4262        4300       39920   83  Linux  
  
Command (m for help): w  
The partition table has been altered!  
  
Calling ioctl() to re-read partition table.  
The new table will be used at the next reboot.  
Syncing disks.

# partprobe

# raw /dev/raw/raw3 /dev/sdd9  
/dev/raw/raw3:  bound to major 8, minor 57  
# raw /dev/raw/raw4 /dev/sdd10  
/dev/raw/raw4:  bound to major 8, minor 58  
# raw /dev/raw/raw5 /dev/sdd11  
/dev/raw/raw5:  bound to major 8, minor 59  
# raw /dev/raw/raw6 /dev/sdd12  
/dev/raw/raw6:  bound to major 8, minor 60 

2、基于裸设备创建表空间  
SQL>create tablespace mytest datafile '/dev/raw/raw3' size 5m,'/dev/raw/raw6' size 10m;  
Tablespace created.   
3、从小裸设备到大裸设备  
# dd if='/dev/raw/raw3' of='/dev/raw/raw4'  
22496+0 records in  
22496+0 records out  
11517952 bytes (12 MB) copied, 104.599 seconds, 110 kB/s   
4、从大裸设备到小裸设备，但数据文件比小裸设备小  
# dd if='/dev/raw/raw6' of='/dev/raw/raw5' bs=1024k count=12  
12+0 records in  
12+0 records out  
12582912 bytes (13 MB) copied, 3.34273 seconds, 3.8 MB/s   
注意：这里bs\*count要大于原裸设备上的数据文件尺寸   
5、重启数据库至mount状态  
SQL> shutdown immediate;  
Database closed.  
Database dismounted.  
ORACLE instance shut down.  
SQL> startup mount;  
ORACLE instance started.  
Total System Global Area  369098752 bytes  
Fixed Size                  1219472 bytes  
Variable Size             125830256 bytes  
Database Buffers          239075328 bytes  
Redo Buffers                2973696 bytes  
Database mounted.   
6、重命名数据文件，并打开数据库  
SQL> alter database rename file '/dev/raw/raw3' to '/dev/raw/raw4';  
Database altered.   
SQL> alter database rename file '/dev/raw/raw6' to '/dev/raw/raw5';  
Database altered.  
SQL> alter database open;  
Database altered.   
从这个测试可以看出：  
1、从小裸设备到大裸设备，只需把小裸设备的所有数据块dd到大裸设备即可  
2、 是否可以把大裸设备上的数据文件dd到小裸设备，取决于位于大裸设备上的数据文件尺寸(+block 0)是否比小裸设备小。如果数据文件小于小裸设备，则可以把数据文件从大裸设备dd到小裸设备上，在dd过程中不需要太准确计算原来数据文件的大小，只要 保证dd的总量大于数据文件并小于小裸设备的尺寸即可。  
3、如果数据文件大于小裸设备的尺寸，则肯定不能把它从大裸设备拷贝到小裸设备上  
4、 裸设备之间拷贝数据文件比裸设备到文件系统之间拷贝的优点在于：不需要精确计算要拷贝多少数据，只需要保证覆盖了数据文件+block 0即可；而从裸设备到文件系统拷贝数据文件时，必须准确计算出要拷贝的数据量（数据文件+block 0），dd多一点或者少一点都会报错。  
5、 如果有offset的话，在裸设备之间拷贝数据文件的时候都要考虑（skip、seek）

**从文件系统到裸设备拷贝ORACLE数据文件**   
继续上面的实验，首先要保证裸设备的大小要大于等于oracle数据文件大小+ block 0，如果裸设备需要offset的话，则要保证更大，然后直接用dd就可以。  
1、创建表空间，数据文件大小为5m

SQL> create tablespace  mytest1 datafile '/home/oracle/mytest1.dbf' size 5m;  
Tablespace created.  
# ls -l /home/oracle/mytest1.dbf   
-rw-r----- 1 oracle oinstall 5251072 Dec 16 21:37 /home/oracle/mytest1.dbf  
2、dd文件到裸设备上

# dd if='/dev/zero' of='/dev/raw/raw3' bs=1024k  
dd: writing `/dev/raw/raw3': No space left on device  
11+0 records in  
10+0 records out  
11517952 bytes (12 MB) copied, 7.63555 seconds, 1.5 MB/s  
# dd if=/home/oracle/mytest1.dbf of=/dev/raw/raw3  
10256+0 records in  
10256+0 records out  
5251072 bytes (5.3 MB) copied, 35.9816 seconds, 146 kB/s   
注意：从文件系统到裸设备不用设置count   
3、重命名数据文件，打开数据库  
SQL> alter database rename file '/home/oracle/mytest1.dbf' to '/dev/raw/raw3';  
Database altered.  
SQL> alter database open;  
Database altered   
**从裸设备到文件系统拷贝ORACLE数据文件**

这里不并不是所有情况都能把整个裸设备拷贝到文件中，要看裸设备是否有offset，如果有offset，则肯定不能全拷贝出来，需要使用skip参数跳过offset，以下演示没有offset的情况

1、在mytest1表空间上创建表，并填充数据，然后将整个裸设备备份到文件系统

SQL> create table test tablespace mytest1  
  2  as  
  3  select \* from dba\_users;  
Table created. 

#dd if='/dev/raw/raw3' of='/home/oracle/mytest2.dbf' bs=512k  
21+1 records in  
21+1 records out  
11517952 bytes (12 MB) copied, 0.804403 seconds, 14.3 MB/s   
2、重启数据库，并充命名数据文件

SQL> shutdown immediate;  
Database closed.  
Database dismounted.  
ORACLE instance shut down.  
SQL> startup mount;  
ORACLE instance started.  
Total System Global Area  369098752 bytes  
Fixed Size                  1219472 bytes  
Variable Size             134218864 bytes  
Database Buffers          230686720 bytes  
Redo Buffers                2973696 bytes  
Database mounted.  
SQL> alter database rename file '/dev/raw/raw3' to '/home/oracle/mytest2.dbf';  
Database altered.  
SQL> alter database open;  
alter database open  
\*  
ERROR at line 1:  
ORA-01113: file 9 needs media recovery  
ORA-01110: data file 9: '/home/oracle/mytest2.dbf'  
可以看到数据库无法打开，这是因为裸设备已被数据文件使用部分的逻辑块与未使用部分的逻辑块大小不一致。这种情况下，只能拷贝裸设备中数据文件大小 + block 0部分。这里用到两个工具  
dbfsize 求出在裸设备或者文件系统上的oracle数据文件的大小，由oracle提供。  
blockdev 求出裸设备的大小，操作系统自带。  
要计算出要要拷贝的大小，否则报错，如：  
$ dbfsize /dev/raw/raw3  
Database file: /dev/raw/raw3  
Database file type: raw device  
Database file size: 640 8192 byte blocks

$ blockdev --getsize /dev/raw/raw3  
22496

一般一个OS BLOCK大小是512字节，所以22496\*512/1024/1024= 10.9(m) 就是裸设备的大小。

$ rm /home/oracle/mytest2.dbf  
$ dd if='/dev/raw/raw3' of='/home/oracle/mytest2.dbf' bs=8k count=641   
SQL> alter database open;  
Database altered 

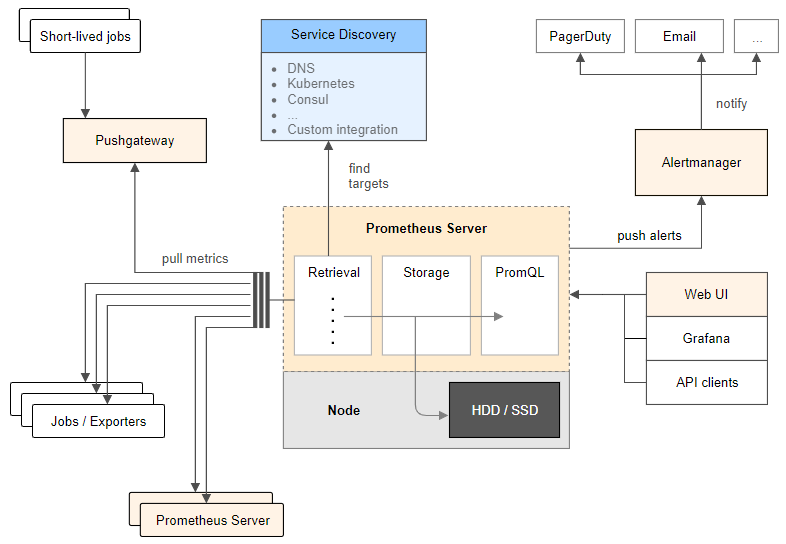
参考至:http://hi.baidu.com/linuxtrip/item/9d2b32261dc8b7dfa417b646  
              http://blog.csdn.net/wenbingcai/article/details/6250756  
              http://www.2cto.com/os/201201/116333.html  
              http://blog.licess.org/linux-dd/  
              http://space.itpub.net/8242091/viewspace-619756  
              http://www.2cto.com/os/201201/116333.html  
              http://www.233.com/linux/fudao/20100226/092633340.html  
              http://wenku.baidu.com/view/1d341cd076eeaeaad1f330c8.html  
              http://hll142475.blog.163.com/blog/static/621382009249558136/  
              http://www.itpub.net/thread-868663-1-1.html  
              http://oracle.chinaitlab.com/serial/393799.html  
              http://www.cnblogs.com/rootq/articles/1487267.html

# Promethuse

<https://github.com/prometheus/node_exporter>

<https://github.com/prometheus/prometheus>

[https://prometheus.io/download/](https://prometheus.io/download/#node_exporter)



<https://songjiayang.gitbooks.io/prometheus/content/exporter/nodeexporter.html>

# node\_exporter

<https://github.com/prometheus/node_exporter>

## help

usage: node\_exporter [<flags>]

Flags:

### -h, --help

Show context-sensitive help (also try --help-long and --help-man).

### --path.procfs="/proc"

procfs mountpoint.

### --path.sysfs="/sys"

sysfs mountpoint.

### --path.rootfs="/"

rootfs mountpoint.

### --web.listen-address=":9100"

Address on which to expose metrics and web interface.

### --web.telemetry-path="/metrics"

Path under which to expose metrics.

### --web.disable-exporter-metrics

Exclude metrics about the exporter itself (promhttp\_\*, process\_\*, go\_\*).

### --web.max-requests=40

Maximum number of parallel scrape requests. Use 0 to disable.

### --log.level="info"

Only log messages with the given severity or above. Valid levels: [debug, info, warn, error, fatal]

### --log.format="logger:stderr"

Set the log target and format. Example: "logger:syslog?appname=bob&local=7" or "logger:stdout?json=true"

### --version

Show application version.

**--collector.diskstats.ignored-devices="^(ram|loop|fd|(h|s|v|xv)d[a-**z]|nvme\\d+n\\d+p)\\d+$"

Regexp of devices to ignore for diskstats.

### --collector.filesystem.ignored-mount-points

="^/(dev|proc|sys|var/lib/docker/.+)($|/)"

Regexp of mount points to ignore for filesystem collector.

### --collector.filesystem.ignored-fs-types

="^(autofs|binfmt\_misc|bpf|cgroup2?|configfs|debugfs|devpts|devtmpfs|fusectl|hugetlbfs|mqueue|nsfs|overlay|proc|procfs|pstore|rpc\_pipefs|securityfs|selinuxfs|squashfs|sysfs|tracefs)$"

Regexp of filesystem types to ignore for filesystem collector.

### --collector.netclass.ignored-devices="^$"

Regexp of net devices to ignore for netclass collector.

### --collector.netdev.ignored-devices="^$"

Regexp of net devices to ignore for netdev collector.

### --collector.netstat.fields

="^(.\*\_(InErrors|InErrs)|Ip\_Forwarding|Ip(6|Ext)\_(InOctets|OutOctets)|Icmp6?\_(InMsgs|OutMsgs)|TcpExt\_(Listen.\*|Syncookies.\*|TCPSynRetrans)|Tcp\_(ActiveOpens|InSegs|OutSegs|PassiveOpens|RetransSegs|CurrEstab)|Udp6?\_(InDatagrams|OutDatagrams|NoPorts))$"

Regexp of fields to return for netstat collector.

### --collector.ntp.server="127.0.0.1"

NTP server to use for ntp collector

### --collector.ntp.protocol-version=4

NTP protocol version

### --collector.ntp.server-is-local

Certify that collector.ntp.server address is the same local host as this collector.

### --collector.ntp.ip-ttl=1

IP TTL to use while sending NTP query

### --collector.ntp.max-distance=3.46608s

Max accumulated distance to the root

### --collector.ntp.local-offset-tolerance=1ms

Offset between local clock and local ntpd time to tolerate

### --collector.qdisc.fixtures=""

test fixtures to use for qdisc collector end-to-end testing

### --collector.runit.servicedir="/etc/service"

Path to runit service directory.

### --collector.supervisord.url="http://localhost:9001/RPC2"

XML RPC endpoint.

### --collector.systemd.unit-whitelist=".+"

Regexp of systemd units to whitelist. Units must both match whitelist and not match blacklist to be included.

### --collector.systemd.unit-blacklist=".+\\.(automount|device|mount|scope|slice)"

Regexp of systemd units to blacklist. Units must both match whitelist and not match blacklist to be included.

### --collector.systemd.private

Establish a private, direct connection to systemd without dbus.

### --collector.systemd.enable-task-metrics

Enables service unit tasks metrics unit\_tasks\_current and unit\_tasks\_max

### --collector.systemd.enable-restarts-metrics

Enables service unit metric service\_restart\_total

### --collector.systemd.enable-start-time-metrics

Enables service unit metric unit\_start\_time\_seconds

### --collector.textfile.directory=""

Directory to read text files with metrics from.

### --collector.vmstat.fields

="^(oom\_kill|pgpg|pswp|pg.\*fault).\*"

Regexp of fields to return for vmstat collector.

### --collector.wifi.fixtures=""

test fixtures to use for wifi collector metrics

## 指标启停

### --collector.arp enabled

Enable the arp collector (default: enabled).

### --collector.bcache enabled

Enable the bcache collector (default: enabled).

### --collector.bonding enabled

Enable the bonding collector (default: enabled).

### --collector.buddyinfo disabled

Enable the buddyinfo collector (default: disabled).

### --collector.conntrack enabled

Enable the conntrack collector (default: enabled).

### --collector.cpu enabled

Enable the cpu collector (default: enabled).

### --collector.cpufreq enabled

Enable the cpufreq collector (default: enabled).

### --collector.diskstats enabled

Enable the diskstats collector (default: enabled).

### --collector.drbd disabled

Enable the drbd collector (default: disabled).

### --collector.edac enabled

Enable the edac collector (default: enabled).

### --collector.entropy enabled

Enable the entropy collector (default: enabled).

### --collector.filefd enabled

Enable the filefd collector (default: enabled).

### --collector.filesystem enabled

Enable the filesystem collector (default: enabled).

### --collector.hwmon enabled

Enable the hwmon collector (default: enabled).

### --collector.infiniband enabled

Enable the infiniband collector (default: enabled).

### --collector.interrupts disabled

Enable the interrupts collector (default: disabled).

### --collector.ipvs enabled

Enable the ipvs collector (default: enabled).

### --collector.ksmd disabled

Enable the ksmd collector (default: disabled).

### --collector.loadavg enabled

Enable the loadavg collector (default: enabled).

### --collector.logind disabled

Enable the logind collector (default: disabled).

### --collector.mdadm enabled

Enable the mdadm collector (default: enabled).

### --collector.meminfo enabled

Enable the meminfo collector (default: enabled).

### --collector.meminfo\_numa disabled

Enable the meminfo\_numa collector (default: disabled).

### --collector.mountstats disabled

Enable the mountstats collector (default: disabled).

### --collector.netclass enabled

Enable the netclass collector (default: enabled).

### --collector.netdev enabled

Enable the netdev collector (default: enabled).

### --collector.netstat enabled

Enable the netstat collector (default: enabled).

### --collector.nfs enabled

Enable the nfs collector (default: enabled).

### --collector.nfsd enabled

Enable the nfsd collector (default: enabled).

### --collector.ntp disabled

Enable the ntp collector (default: disabled).

### --collector.perf disabled

Enable the perf collector (default: disabled).

### --collector.pressure enabled

Enable the pressure collector (default: enabled).

### --collector.processes disabled

Enable the processes collector (default: disabled).

### --collector.qdisc disabled

Enable the qdisc collector (default: disabled).

### --collector.runit disabled

Enable the runit collector (default: disabled).

### --collector.sockstat enabled

Enable the sockstat collector (default: enabled).

### --collector.stat enabled

Enable the stat collector (default: enabled).

### --collector.supervisord disabled

Enable the supervisord collector (default: disabled).

### --collector.systemd disabled

Enable the systemd collector (default: disabled).

### --collector.tcpstat disabled

Enable the tcpstat collector (default: disabled).

### --collector.textfile enabled

Enable the textfile collector (default: enabled).

### --collector.time enabled

Enable the time collector (default: enabled).

### --collector.timex enabled

Enable the timex collector (default: enabled).

### --collector.uname enabled

Enable the uname collector (default: enabled).

### --collector.vmstat enabled

Enable the vmstat collector (default: enabled).

### --collector.wifi disabled

Enable the wifi collector (default: disabled).

### --collector.xfs enabled

Enable the xfs collector (default: enabled).

### --collector.zfs enabled

Enable the zfs collector (default: enabled).

## Enabled by default

| **Name** | **Description** | **OS** |
| --- | --- | --- |
| arp | Exposes ARP statistics from /proc/net/arp. | Linux |
| bcache | Exposes bcache statistics from /sys/fs/bcache/. | Linux |
| bonding | Exposes the number of configured and active slaves of Linux bonding interfaces. | Linux |
| boottime | Exposes system boot time derived from the kern.boottime sysctl. | Darwin, Dragonfly, FreeBSD, NetBSD, OpenBSD, Solaris |
| conntrack | Shows conntrack statistics (does nothing if no /proc/sys/net/netfilter/ present). | Linux |
| cpu | Exposes CPU statistics | Darwin, Dragonfly, FreeBSD, Linux, Solaris |
| cpufreq | Exposes CPU frequency statistics | Linux, Solaris |
| diskstats | Exposes disk I/O statistics. | Darwin, Linux, OpenBSD |
| edac | Exposes error detection and correction statistics. | Linux |
| entropy | Exposes available entropy. | Linux |
| exec | Exposes execution statistics. | Dragonfly, FreeBSD |
| filefd | Exposes file descriptor statistics from /proc/sys/fs/file-nr. | Linux |
| filesystem | Exposes filesystem statistics, such as disk space used. | Darwin, Dragonfly, FreeBSD, Linux, OpenBSD |
| hwmon | Expose hardware monitoring and sensor data from /sys/class/hwmon/. | Linux |
| infiniband | Exposes network statistics specific to InfiniBand and Intel OmniPath configurations. | Linux |
| ipvs | Exposes IPVS status from /proc/net/ip\_vs and stats from /proc/net/ip\_vs\_stats. | Linux |
| loadavg | Exposes load average. | Darwin, Dragonfly, FreeBSD, Linux, NetBSD, OpenBSD, Solaris |
| mdadm | Exposes statistics about devices in /proc/mdstat (does nothing if no /proc/mdstat present). | Linux |
| meminfo | Exposes memory statistics. | Darwin, Dragonfly, FreeBSD, Linux, OpenBSD |
| netclass | Exposes network interface info from /sys/class/net/ | Linux |
| netdev | Exposes network interface statistics such as bytes transferred. | Darwin, Dragonfly, FreeBSD, Linux, OpenBSD |
| netstat | Exposes network statistics from /proc/net/netstat. This is the same information as netstat -s. | Linux |
| nfs | Exposes NFS client statistics from /proc/net/rpc/nfs. This is the same information as nfsstat -c. | Linux |
| nfsd | Exposes NFS kernel server statistics from /proc/net/rpc/nfsd. This is the same information as nfsstat -s. | Linux |
| pressure | Exposes pressure stall statistics from /proc/pressure/. | Linux (kernel 4.20+ and/or [CONFIG\_PSI](https://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git/tree/Documentation/accounting/psi.txt)) |
| sockstat | Exposes various statistics from /proc/net/sockstat. | Linux |
| stat | Exposes various statistics from /proc/stat. This includes boot time, forks and interrupts. | Linux |
| textfile | Exposes statistics read from local disk. The --collector.textfile.directory flag must be set. | any |
| time | Exposes the current system time. | any |
| timex | Exposes selected adjtimex(2) system call stats. | Linux |
| uname | Exposes system information as provided by the uname system call. | FreeBSD, Linux |
| vmstat | Exposes statistics from /proc/vmstat. | Linux |
| xfs | Exposes XFS runtime statistics. | Linux (kernel 4.4+) |
| zfs | Exposes [ZFS](http://open-zfs.org/) performance statistics. | [Linux](http://zfsonlinux.org/), Solaris |

## Disabled by default

The perf collector may not work by default on all Linux systems due to kernel configuration and security settings. To allow access, set the following sysctl parameter:

sysctl -w kernel.perf\_event\_paranoid=X

* 2 allow only user-space measurements (default since Linux 4.6).
* 1 allow both kernel and user measurements (default before Linux 4.6).
* 0 allow access to CPU-specific data but not raw tracepoint samples.
* -1 no restrictions.

Depending on the configured value different metrics will be available, for most cases 0 will provide the most complete set. For more information see [man 2 perf\_event\_open](http://man7.org/linux/man-pages/man2/perf_event_open.2.html).

| **Name** | **Description** | **OS** |
| --- | --- | --- |
| buddyinfo | Exposes statistics of memory fragments as reported by /proc/buddyinfo. | Linux |
| devstat | Exposes device statistics | Dragonfly, FreeBSD |
| drbd | Exposes Distributed Replicated Block Device statistics (to version 8.4) | Linux |
| interrupts | Exposes detailed interrupts statistics. | Linux, OpenBSD |
| ksmd | Exposes kernel and system statistics from /sys/kernel/mm/ksm. | Linux |
| logind | Exposes session counts from [logind](http://www.freedesktop.org/wiki/Software/systemd/logind/). | Linux |
| meminfo\_numa | Exposes memory statistics from /proc/meminfo\_numa. | Linux |
| mountstats | Exposes filesystem statistics from /proc/self/mountstats. Exposes detailed NFS client statistics. | Linux |
| ntp | Exposes local NTP daemon health to check [time](https://github.com/prometheus/node_exporter/blob/master/docs/TIME.md) | any |
| processes | Exposes aggregate process statistics from /proc. | Linux |
| qdisc | Exposes [queuing discipline](https://en.wikipedia.org/wiki/Network_scheduler#Linux_kernel) statistics | Linux |
| runit | Exposes service status from [runit](http://smarden.org/runit/). | any |
| supervisord | Exposes service status from [supervisord](http://supervisord.org/). | any |
| systemd | Exposes service and system status from [systemd](http://www.freedesktop.org/wiki/Software/systemd/). | Linux |
| tcpstat | Exposes TCP connection status information from /proc/net/tcp and /proc/net/tcp6. (Warning: the current version has potential performance issues in high load situations.) | Linux |
| wifi | Exposes WiFi device and station statistics. | Linux |
| perf | Exposes perf based metrics (Warning: Metrics are dependent on kernel configuration and settings). | Linux |

## Textfile Collector

The textfile collector is similar to the [Pushgateway](https://github.com/prometheus/pushgateway), in that it allows exporting of statistics from batch jobs. It can also be used to export static metrics, such as what role a machine has. The Pushgateway should be used for service-level metrics. The textfile module is for metrics that are tied to a machine.

To use it, set the --collector.textfile.directory flag on the Node exporter. The collector will parse all files in that directory matching the glob \*.prom using the [text format](http://prometheus.io/docs/instrumenting/exposition_formats/). **Note:** Timestamps are not supported.

To atomically push completion time for a cron job:

echo my\_batch\_job\_completion\_time $(date +%s) > /path/to/directory/my\_batch\_job.prom.$$

mv /path/to/directory/my\_batch\_job.prom.$$ /path/to/directory/my\_batch\_job.prom

To statically set roles for a machine using labels:

echo 'role{role="application\_server"} 1' > /path/to/directory/role.prom.$$

mv /path/to/directory/role.prom.$$ /path/to/directory/role.prom

## Filtering enabled collectors

The node\_exporter will expose all metrics from enabled collectors by default. This is the recommended way to collect metrics to avoid errors when comparing metrics of different families.

For advanced use the node\_exporter can be passed an optional list of collectors to filter metrics. The collect[] parameter may be used multiple times. In Prometheus configuration you can use this syntax under the [scrape config](https://prometheus.io/docs/prometheus/latest/configuration/configuration/#%3Cscrape_config%3E).

params:

collect[]:

- foo

- bar

This can be useful for having different Prometheus servers collect specific metrics from nodes.