

SPIT and NS

/proc Counter Collectors

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Spit and ns are both counter collectors. They both access the /proc directory on a Unix machine and collect all the numbers present there. Spit simply outputs all the numbers in /proc, separating them by a tab. Ns on the other hand, has all (depends on machine /proc design) the numbers mapped to a suitable namespace.

Both of them are perl scripts, thus the user should have perl installed. The script also uses the GetOpt :: Long library from CSPAN. Scripts will not work without it.

SPIT

Usage:

```
% spit [-max i] [-rate f] [-period f]
```

If none of these numbers are defined, max becomes a big (infinite) number, while rate's default setting is 1 and period is calculated as reciprocal of the rate in this case. All these options affect a single snapshot. Snapshot is a single image of the /proc number data in a given time period. Thus for example

```
% spit -max 100
```

will take 100 snapshots of the entire /proc numerical image.

NS

Usage:

```
% ns [-max i] [-rate f] [-period f] [-name s] [-timestamp]
```

The first three function identically to the options in spit. Name is used to specify the namespace of the desired number. Multiple names are supported Timestamp is simply a trigger, which, when typed, will cause the script to print a timestamp at the beginning of each run. Ns will print results from counters (if there are more than one counter being collected, then the results will be printed side by side, separated by tab) in a column ordered fashion, one counter state in time per line. To compare free and total physical memory and stop at one-hundredth-line, one would type:

```
% perl ns -max 100 -name mem/physical/free -name  
mem/physical/total
```

Ns follows the namespace mapping explained below:

process/pid/num_mem_areas prints the number of mem areas in the process

process/pid/mem_area/area_no/address prints the address of the selected memory area

Example: perl ns -max 100 -timestamp -name process/1/mem_area/1/address

Note: pid can also be 'self'

process/pid/stat/pid
process/pid/stat/ppid
process/pid/stat/pgrp
process/pid/stat/session
process/pid/stat/tty
process/pid/stat/tpgid
process/pid/stat/flags
process/pid/stat/minflt
process/pid/stat/cminflt
process/pid/stat/majflt
process/pid/stat/cmajflt
process/pid/stat/utime
process/pid/stat/stime
process/pid/stat/cutime
process/pid/stat/cstime
process/pid/stat/counter
process/pid/stat/priority
process/pid/stat/timeout
process/pid/stat/itrealvalue
process/pid/stat/starttime
process/pid/stat/vsize
process/pid/stat/rss
process/pid/stat/rlim
process/pid/stat/startcode
process/pid/stat/endcode
process/pid/stat/startstack
process/pid/stat/kstkesp
process/pid/stat/kstkeip
process/pid/stat/signal
process/pid/stat/blocked
process/pid/stat/sigignore
process/pid/stat/sigcatch
process/pid/stat/wchan

process/pid/statm/no we access statm numbers with no, which ranges from 1 to 7

process/pid/status does not work

In the case of cpufreq ASCII file, since there can be more than one processor we'll use a pre-defined function, which will look at every line for the word processor and search until it finds a desired processor then extract what we want

cpu/cpu_no/family
cpu/cpu_no/mhz

cpu/cpu_no/cache_size
cpu/cpu_no/cpuid_level

time/time
time/date
time/epoch
time/freq
time/alarm

drive/ide/floppy/version
drive/ide/floppy/capacity
drive/ide/floppy/geometry
drive/ide/disk/version
drive/ide/disk/geometry

drive/scsi

does not work

ports/port_no

will print the address of a specified port

kernel/symbol/port_offset
symbol table

will look up a port at the passed-in offset in the kernel

loadavg/offset

print loadavg data at the offset

mem/physical/total/bytes
mem/physical/total/
mem/physical/used/bytes
mem/physical/free/bytes
mem/physical/free/
mem/physical/shared/bytes
mem/physical/shared/
mem/physical/buffers/bytes
mem/physical/buffers/
mem/physical/cached/bytes
mem/physical/cached/
mem/physical/active
mem/physical/inactive/dirty
mem/physical/inactive/clean
mem/physical/inactive/target
mem/physical/high/total
mem/physical/high/free
mem/physical/low/total
mem/physical/low/free

mem/swap/total/bytes
mem/swap/total/
mem/swap/used/bytes
mem/swap/free/bytes
mem/swap/free/
mem/swap/cached/
mem/swap/no_pages

net/arp/entry_no/IP_address
net/arp/entry_no/hw_type

entry_no is numerical and non-zero

net/arp/entry_no/flags
net/arp/entry_no/hw_address

net/dev/lo/transmit/bytes
net/dev/lo/transmit/packets
net/dev/lo/transmit/errs
net/dev/lo/transmit/drop
net/dev/lo/transmit/fifo
net/dev/lo/transmit/colls
net/dev/lo/transmit/carrier
net/dev/lo/transmit/compressed

net/dev/lo/receive/bytes
net/dev/lo/receive/packets
net/dev/lo/receive/errs
net/dev/lo/receive/drop
net/dev/lo/receive/fifo
net/dev/lo/receive/frame
net/dev/lo/receive/compressed
net/dev/lo/receive/multicast

net/dev/eth0/transmit/bytes
net/dev/eth0/transmit/packets
net/dev/eth0/transmit/errs
net/dev/eth0/transmit/drop
net/dev/eth0/transmit/fifo
net/dev/eth0/transmit/colls
net/dev/eth0/transmit/carrier
net/dev/eth0/transmit/compressed

net/dev/eth0/receive/bytes
net/dev/eth0/receive/packets
net/dev/eth0/receive/errs
net/dev/eth0/receive/drop
net/dev/eth0/receive/fifo
net/dev/eth0/receive/frame
net/dev/eth0/receive/compressed
net/dev/eth0/receive/multicast

net/route/index/destination
net/route/index/gateway
net/route/index/flags
net/route/index/refcnt
net/route/index/use
net/route/index/metric
net/route/index/mask
net/route/index/mtu
net/route/index/window
net/route/index/irrt

index is numeric, non-zero

net/snmp/ip/forwarding
net/snmp/ip/default_ttl
net/snmp/ip/in_receives
net/snmp/ip/in_hdr_errors
net/snmp/ip/in_addr_errors
net/snmp/ip/forw_datagrams

net/snmp/ip/in_unknown_protos
net/snmp/ip/in_discards
net/snmp/ip/in_delivers
net/snmp/ip/out_requests
net/snmp/ip/out_discards
net/snmp/ip/out_no_routes
net/snmp/ip/reasm_timeout
net/snmp/ip/reasm_rqds
net/snmp/ip/reasms_oks
net/snmp/ip/reasms_fails
net/snmp/ip/frag_oks
net/snmp/ip/frag_fails
net/snmp/ip/frag_creates

net/snmp/icmp/in/messages
net/snmp/icmp/in/errors
net/snmp/icmp/in/dest_unreaches
net/snmp/icmp/in/time_excds
net/snmp/icmp/in/parm_probs
net/snmp/icmp/in/src_quenchs
net/snmp/icmp/in/redirects
net/snmp/icmp/in/echos
net/snmp/icmp/in/echo_reps
net/snmp/icmp/in/timestamps
net/snmp/icmp/in/timestamp_reps
net/snmp/icmp/in/addr_masks
net/snmp/icmp/in/addr_masks_reps

net/snmp/icmp/out/messages
net/snmp/icmp/out/errors
net/snmp/icmp/out/dest_unreaches
net/snmp/icmp/out/time_excds
net/snmp/icmp/out/parm_probs
net/snmp/icmp/out/src_quenchs
net/snmp/icmp/out/redirects
net/snmp/icmp/out/echos
net/snmp/icmp/out/echo_reps
net/snmp/icmp/out/timestamps
net/snmp/icmp/out/timestamp_reps
net/snmp/icmp/out/addr_masks
net/snmp/icmp/out/addr_masks_reps

net/tcp/rto_algorithm
net/tcp/rto_min
net/tcp/rto_max
net/tcp/max_conn
net/tcp/active_opens
net/tcp/passive_opens
net/tcp/attempt_fails
net/tcp/estab_resets
net/tcp/curr_estab
net/tcp/in_segs
net/tcp/out_segs
net/tcp/retrans_segs
net/tcp/in_errs

net/tcp/out_rsts

net/udp/in_datagrams
net/udp/no_ports
net/udp/in_errors
net/udp/out_datagrams

net/sockstat/tcp/inuse
net/sockstat/tcp/orphan
net/sockstat/tcp/tw
net/sockstat/tcp/alloc
net/sockstat/tcp/mem

net/sockstat/udp/inuse

net/sockstat/raw/inuse

net/sockstat/frag/inuse
net/sockstat/frag/memory

net/softnet_stat/index_no

index_no is numeric, non-zero value

net/tcp/index_no/local_address
net/tcp/index_no/rem_address
net/tcp/index_no/st
net/tcp/index_no/tx_queue
net/tcp/index_no/rx_queue
net/tcp/index_no/tr
net/tcp/index_no/tm_when
net/tcp/index_no/retrnsmt
net/tcp/index_no/uid
net/tcp/index_no/timeout
net/tcp/index_no/inode/index_no2

net/udp/index_no/local_address
net/udp/index_no/rem_address
net/udp/index_no/st
net/udp/index_no/tx_queue
net/udp/index_no/rx_queue
net/udp/index_no/tr
net/udp/index_no/tm_when
net/udp/index_no/retrnsmt
net/udp/index_no/uid
net/udp/index_no/timeout
net/udp/index_no/inode/index_no2

net/unix/index_no/num
net/unix/index_no/ref_count
net/unix/index_no/protocol
net/unix/index_no/flags
net/unix/index_no/type
net/unix/index_no/st
net/unix/index_no/inode

partitions/index_no/major
partitions/index_no/minor
partitions/index_no/no_blocks

partitions/index_no/rio
partitions/index_no/rmerge
partitions/index_no/rsect
partitions/index_no/ruse
partitions/index_no/wio
partitions/index_no/wmerge
partitions/index_no/wsect
partitions/index_no/wuse
partitions/index_no/running
partitions/index_no/use
partitions/index_no/aveg

slabinfo/kmem_cache/index_no
slabinfo/ip_fib_hash/index_no
slabinfo/urb_priv/index_no
slabinfo/journal_head/index_no
slabinfo/revoke_table/index_no
slabinfo/revoke_record/index_no
slabinfo/clip_arp_cache/index_no
slabinfo/ip_mrt_cache/index_no
slabinfo/tcp_tw_bucket/index_no
slabinfo/tcp_bind_bucket/index_no
slabinfo/tcp_open_request/index_no
slabinfo/inet_peer_cache/index_no
slabinfo/ip_dst_cache/index_no
slabinfo/arp_cache/index_no
slabinfo/blkdev_requests/index_no
slabinfo/dnotify_cache/index_no
slabinfo/file_lock_cache/index_no
slabinfo/fasync_cache/index_no
slabinfo/uid_cache/index_no
slabinfo/skbuff_head_cache/index_no
slabinfo/sock/index_no
slabinfo/sigqueue/index_no
slabinfo/cdev_cache/index_no
slabinfo/bdev_cache/index_no
slabinfo/mnt_cache/index_no
slabinfo/inode_cache/index_no
slabinfo/dentry_cache/index_no
slabinfo/dquot/index_no
slabinfo/flip/index_no
slabinfo/names_cache/index_no
slabinfo/buffer_head/index_no
slabinfo/mm_struct/index_no
slabinfo/vm_area_struct/index_no
slabinfo/fs_cache/index_no
slabinfo/files_cache/index_no
slabinfo/signal_act/index_no
slabinfo/size_131072_dma/index_no
slabinfo/size_131072_/index_no
slabinfo/size_65536_dma/index_no
slabinfo/size_65536_/index_no
slabinfo/size_65536_dma/index_no
slabinfo/size_65536_/index_no
slabinfo/size_32768_dma/index_no
slabinfo/size_32768_/index_no
slabinfo/size_16384_dma/index_no

slabinfo/size_16384_/index_no
slabinfo/size_8192_dma/index_no
slabinfo/size_8192_/index_no
slabinfo/size_4096_dma/index_no
slabinfo/size_4096_/index_no
slabinfo/size_2048_dma/index_no
slabinfo/size_2048_/index_no
slabinfo/size_1024_dma/index_no
slabinfo/size_1024_/index_no
slabinfo/size_512_dma/index_no
slabinfo/size_512_/index_no
slabinfo/size_256_dma/index_no
slabinfo/size_256_/index_no
slabinfo/size_128_dma/index_no
slabinfo/size_128_/index_no
slabinfo/size_64_dma/index_no
slabinfo/size_64_/index_no
slabinfo/size_32_dma/index_no
slabinfo/size_32_/index_no

stat/cpu/whole/index_no
stat/cpu/cpu_index/index_no

the values for all the cpus

stat/page/index_no
stat/swap/index_no
stat/intr/index_no

stat/index_key

index key is used as a search key. Example:
% perl ns -name stat/btime -max 1

swaps/index_no/size
swaps/index_no/used
swaps/index_no/priority

sys/abi/index_key

index keys are text files in 'abi'

sys/dev/raid/index_key

index keys are text files in 'raid'

sys/fs/dentry_state/index_no
sys/fs/dir_notify_enable/
sys/fs/dquot_nr/index_no
sys/fs/file_max/
sys/fs/file_nr/index_no
sys/fs/inode_state/index_no
sys/fs/jbd_boom_retry
sys/fs/leases_enable
sys/fs/overflowuid
sys/fs/super_max
sys/fs/super_nr

sys/kernel/acct/index_no
sys/kernel/code_uses_pid
sys/kernel/ctrl_alt_del
sys/kernel/msgmax
sys/kernel/msgmnb
sys/kernel/msgmni

sys/kernel/osrelease
sys/kernel/overflowuid
sys/kernel/panic
sys/kernel/printk/index_no
sys/kernel/prof_pid

sys/kernel/random/boot_id
sys/kernel/random/entropy_avail
sys/kernel/random/read_wakeup_threshold
sys/kernel/random/uid
sys/kernel/random/write_wakeup_threshold

sys/kernel/real_root_dev
sys/kernel/rtsig_max
sys/kernel/rtsig_nr
sys/kernel/sem/index_no
sys/kernel/shmall
sys/kernel/shmmax
sys/kernel/shmmni
sys/kernel/sysrq
sys/kernel/threads_max
sys/kernel/version/day
sys/kernel/version/time
sys/kernel/version/year

sys/net/appletalk/aarp_expiry_time
sys/net/appletalk/aarp_resolve_time
sys/net/appletalk/aarp_retransmit_limit
sys/net/appletalk/aarp_tick_time

sys/net/core/index_key

sys/net/ipv4/route/index_key
sys/net/ipv4/tcp_mem/index_no
sys/net/ipv4/tcp_rmem/index_no
sys/net/ipv4/tcp_vmem/index_no
sys/net/ipv4/index_key

sys/net/ipx/pprop_broadcasting

sys/net/token_ring/rif_timeout

sys/vm/bdflush/index_no
sys/vm/buffermem/index_no
sys/vm/freepages/index_no
sys/vm/kswapd/index_no
sys/vm/max_map_count/index_no
sys/vm/max_readhead/index_no
sys/vm/min_readhead/index_no
sys/vm/overcommit_memory/index_no
sys/vm/pagecache/index_no
sys/vm/page_cluster/index_no
sys/vm/pagetable_cache/index_no

sysvipc/sem/index_no/key
sysvipc/sem/index_no/semid
sysvipc/sem/index_no/perms

sysvipc/sem/index_no/nsems
sysvipc/sem/index_no/uid
sysvipc/sem/index_no/gid
sysvipc/sem/index_no/cuid
sysvipc/sem/index_no/cgid
sysvipc/sem/index_no/otime
sysvipc/sem/index_no/ctime

sysvipc/shm/index_no/key
sysvipc/shm/index_no/shmid
sysvipc/shm/index_no/perms
sysvipc/shm/index_no/size
sysvipc/shm/index_no/cpid
sysvipc/shm/index_no/lpid
sysvipc/shm/index_no/nattch
sysvipc/shm/index_no/uid
sysvipc/shm/index_no/gid
sysvipc/shm/index_no/cuid
sysvipc/shm/index_no/cgid
sysvipc/shm/index_no/atime
sysvipc/shm/index_no/dtime
sysvipc/shm/index_no/ctime

tty/driver/serial

does not work

uptime/system
uptime/process

version/version
version/gcc_version
version/day
version/time
version/year