SS Inspect sockets

CONCEPTS

With no options ss shows only connected sockets. Add -l for listening ones, -a for both.

Socket type -t -u -x -4 -6
↓ state / -l / -a
State filter state established
↓ expression
Address filter sport = :443
↓ -n -p -e -i
Output columns + extras

Process info (-p) only shows sockets you own unless you run ss as root.

SELECT SOCKETS

ss -t
TCP connections

ss -u
UDP sockets

ss -x
Unix domain sockets

ss -l
Only listening sockets

ss -a
Listening and connected

ss -4 / ss -6
Only IPv4 / IPv6

ss -A *<type>,<type>*
Pick socket types by name

OUTPUT CONTROL

ss -n
Numeric ports and addresses

ss -p
Show owning process

ss -r
Resolve host names

ss -H
No header line

ss -O
One line per socket

ss -e
Extended info (uid, inode)

ss -o
Show timers (keepalive, timewait)

ss -m
Socket memory usage

OUTPUT CONTROL (cont.)

ss -i
TCP internals (rtt, cwnd, retrans)

ss -s
Summary of socket counts

FILTER BY STATE

ss -t state established
Only established

ss -t state listening
Only listening TCP

ss -t state time-wait
Sockets in TIME-WAIT

ss -t state close-wait
Peer closed, app has not

ss -t state syn-recv
Half-open incoming handshakes

ss -t state connected
Any non-listening state

ss -t exclude *<state>*
Everything except a state

FILTER BY ADDRESS

ss -tn 'sport = :*<port>***'**
Local port equals

ss -tn 'dport = :*<port>***'**
Remote port equals

ss -tn dst *<ip>*
Remote address

ss -tn src *<ip>*
Local address

ss -tn dst *<net>*/*<mask>*
Remote subnet

ss -tn dst *<ip>*:*<port>*
Remote host and port

ss -tn 'sport > :1024'
Port comparison

ss -tn '(sport = :80 or sport = :443)'
Combine with or / and

ss -tn 'dport = :ssh'
Service name instead of number

ss -x src *<path>*
Unix socket by path

ADVANCED

ss -E
Stream sockets as they are destroyed

ADVANCED (cont.)

ss -K *<filter>*
Force-close matching sockets

ss -N *<netns>*
Inspect a named network namespace

READING THE TABLE

Columns

Column	Meaning
Netid	Socket type: tcp, udp, u_str
State	LISTEN, ESTAB, TIME-WAIT...
Recv-Q	Bytes not yet read by the app
Send-Q	Bytes not yet acked by the peer
Local Address:Port	This end of the socket
Peer Address:Port	Remote end; * if none
Process	users: ((name,pid,fd)) with -p

On a LISTEN socket

Column	Means
Recv-Q	Connections waiting for accept()
Send-Q	Configured backlog size

Local 0.0.0.0 or [::] means all interfaces; 127.0.0.1 is reachable only from this host.

Recv-Q close to Send-Q on a LISTEN socket means the accept queue is full.

RECIPES

What is using port 8080?

```
sudo ss -ltnp 'sport = :8080'
# no output means nothing is listening
```

Count connections per state

```
ss -tanH | awk '{print $1}' | sort | uniq -c | sort -rn
```

Top remote hosts by connections

```
ss -tnH state established | awk '{print $4}' \
  | cut -d: -f1 | sort | uniq -c | sort -rn | head
```

Watch listeners live

```
watch -n 1 'ss -tulpn'
# slow connection: ss -ti dst <ip>
```