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Linux / UNIX Find Out What Program / Service is Listening on a Specific TCP Port

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Q. How do I find out which service is listening on a specific port? How do I find out what program is listening on a specific TCP Port?

A. Under Linux and UNIX you can use any one of the following command to get listing on a specific TCP port:
=> **lsof** : list open files including ports.

[1]

=> **netstat** : The netstat command symbolically displays the contents of various network-related data and information.

lsof command example

Type the following command to see IPv4 port(s), enter:

```
# lsof -Pnl +M -i4
```

Type the following command to see IPv6 listing port(s), enter:

```
# lsof -Pnl +M -i6
```

Sample output:

```
COMMAND    PID     USER    FD    TYPE DEVICE SIZE NODE NAME
gweather- 6591     1000    17u   IPv4 106812      TCP 192.168.1.100:57179->140.90.128.70:80
firefox-b 6613     1000    29u   IPv4 106268      TCP 127.0.0.1:60439->127.0.0.1:3128 (ESTAP
firefox-b 6613     1000    31u   IPv4 106321      TCP 127.0.0.1:60440->127.0.0.1:3128 (ESTAP
firefox-b 6613     1000    44u   IPv4 106325      TCP 127.0.0.1:60441->127.0.0.1:3128 (ESTAP
firefox-b 6613     1000    50u   IPv4 106201      TCP 127.0.0.1:60437->127.0.0.1:3128 (ESTAP
deluge    6908     1000     8u   IPv4  23179      TCP *:6881 (LISTEN)
deluge    6908     1000    30u   IPv4  23185      UDP *:6881
deluge    6908     1000    45u   IPv4 106740      TCP 192.168.1.100:50584->217.169.223.161:3
deluge    6908     1000    57u   IPv4  70529      TCP 192.168.1.100:57325->24.67.82.222:2125
deluge    6908     1000    58u   IPv4 106105      TCP 192.168.1.100:38073->24.16.233.1:48479
..........
......
ssh       6917     1000     3u   IPv4  23430      TCP 10.1.11.3:42658->10.10.29.66:22 (ESTAP
```

First column **COMMAND** - gives out information about program name. Please see output header for details. For example, gweather* command gets the weather report weather information from the U.S National Weather Service (NWS) servers (140.90.128.70), including the Interactive Weather Information Network (IWIN) and other weather services.
Where,

1. **-P** : This option inhibits the conversion of port numbers to port names for network files. Inhibiting the conversion may make lsof run a little faster. It is also useful when port name lookup is not working properly.
2. **-n** : This option inhibits the conversion of network numbers to host names for network files. Inhibiting conversion may make lsof run faster. It is also useful when host name lookup is not working properly.
3. **-l** : This option inhibits the conversion of user ID numbers to login names. It is also useful when login name lookup is working improperly or slowly.
4. **+M** : Enables the reporting of portmapper registrations for local TCP and UDP ports.
5. **-i4** : IPv4 listing only
6. **-i6** : IPv6 listing only

netstat command example

Type the command as follows:

```
# netstat -tulpn
```

OR

```
# netstat -npl
```

Output:

```
Proto Recv-Q Send-Q Local Address          Foreign Address         State       PID/Program
tcp        0      0 0.0.0.0:6881           0.0.0.0:*               LISTEN      6908/python
tcp        0      0 127.0.0.1:631          0.0.0.0:*               LISTEN      5562/cupsd
tcp        0      0 127.0.0.1:3128         0.0.0.0:*               LISTEN      6278/(squid)
tcp        0      0 127.0.0.1:25           0.0.0.0:*               LISTEN      5854/exim4
udp        0      0 0.0.0.0:32769          0.0.0.0:*                           6278/(squid)
udp        0      0 0.0.0.0:3130           0.0.0.0:*                           6278/(squid)
udp        0      0 0.0.0.0:68             0.0.0.0:*                           4583/dhclien
udp        0      0 0.0.0.0:6881           0.0.0.0:*                           6908/python
```

Last column **PID/Program name** gives out information regarding program name and port.
Where,

- **-t** : TCP port
- **-u** : UDP port
- **-l** : Show only listening sockets.
- **-p** : Show the PID and name of the program to which each socket / port belongs
- **-n** : No DNS lookup (speed up operation)

/etc/services file

/etc/services is a plain ASCII file providing a mapping between friendly textual names for internet services, and their underlying assigned port numbers and protocol types. Every networking program should look into this file to get the port number (and protocol) for its service. You can view this file with the help of cat or less command:

```
$ cat /etc/services
$ grep 110 /etc/services
$ less /etc/services
```

Further readings:

- man pages - lsof, nmap, services, netstat

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