Comandos ip y tc en Linux 2.2

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Comando IP

- En Linux 2.2 el comando ip substituye a los comandos ifconfig, route, arp, etc

```
ip [OPTIONS] OBJECT [COMMAND[ARGS]]
```


Comando IP

- ip OPTIONS
  -statistics, -s: verbose (-s -s: more verbose…)
  -family, -f: followed by inet, inet6, link
  -r, -resolve: use DNS for resolving addresses

Comando IP

- ip OBJECT
  link: L2 device
  address: L3 address (IPv4 or IPv6)
  route: routing table
  neighbour: ARP(IPv4) or NDISC (IPv6) cache
  tunnel: tunnel over IP
  maddress: multicast address
  mroute: multicast route entry

Comando IP

- ip COMMAND ARGS
  - add
  - delete
  - show,list
  - help

Comando IP

- Ej:

```
$ip link ls eth0
3: eth0: <BROADCAST, MULTICAST> mtu 1500 qdisc cbq qlen 100
Link/ether 00:0a:00:00:cc:bb brd ff:ff:ff:ff:ff:ff
$ip link set up
$ip -s link ls eth0
3: eth0: <BROADCAST, MULTICAST, UP> mtu 1500 qdisc cbq qlen 100
Link/ether 00:0a:00:00:cc:bb brd ff:ff:ff:ff:ff:ff
RX:     bytes       packet    errors    dropped   overrun   mcast
    2229992929      0         0         0         0
TX:     bytes       packet    errors    dropped   carrier   collsns
    1123442566      0         0         0         0
```


Comando IP

- Ej:

```
$ip addr add 10.0.0.1/8 dev eth0
$ip addr ls eth0
3: eth0: <BROADCAST, MULTICAST, UP> mtu 1500 qdisc cbq qlen 100
Link/ether 00:0a:00:00:cc:bb brd ff:ff:ff:ff:ff:ff
Inet 10.0.0.1/8 brd 10.255.255.255 scope global eth0
$ip route add 11.0.0.0/8 via 10.0.0.2
$ip route ls
```

Etc…

Recordatorio ppp

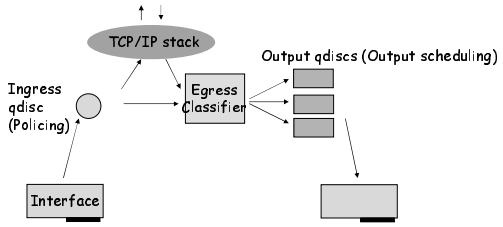
- En esta versión de Linux la UART ya está bien configurada...
- Comprobacion:

```
cat</dev/ttyS1
echo hola>/dev/ttyS1
```

- Comandos pppd:

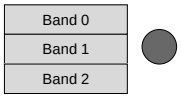
```
pppd /dev/ttyS1 local 11.0.0.1:11.0.0.2 &
pppd /dev/ttyS1 local noipdefault&
```

Queueing disciplines



Qdisc pfifo_fast

- Es la disciplina por defecto.
- Mantiene tres niveles de prioridad, (bandas), de forma que mientras haya paquetes de la banda 0, no se sirven los de la banda 1, ni de la 2, etc.
- Dentro de cada banda la disciplina es FIFO



Qdisc pfifo_fast

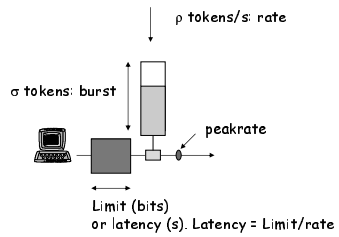
- La banda se asigna en función de los bits TOS de la cabacera IP (precedence(3), tos(4), mbz(1))
- 4 bits TOS:
  - 1000 -> Minimiza delay
  - 0100 –> Maximiza throughput
  - 0010 -> Maximiza fiabilidad
  - 0001 -> Minimiza coste
  - 0000 -> servicio normal
- Podemos tener combinaciones (1100, etc)

Qdisc pfifo_fast

- Ejemplo:
  - 0x0 => Band 1 (best effort)
  - 0x4 => Band 1 (max. Reliability)
  - 0x8 => Band 2 (bulk transfer)
  - 0x10 => Band 0 (Interactive)
- Además tiene una longitud de cola

```
ifconfig eth0 txqueuelen 10
Ip link set eth0 txqlen 10
```

Qdisc Token Bucket Filter




```
tc qdisc add dev ppp0 root tbf rate 20kbit latency 500ms
burst 1540
```