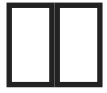


# Traffic Control 网络 网络



## TC网络

- TC ≠ Test Case, TC = Traffic Control
- 网络 网络 网络 , 网络 网络 网络 网络 网络 网络 网络 网络
- 网络 网络 网络 网络 网络 网络 10/100M, Half/Full 网络 网络 网络
- 网络 , NIC 网络 link auto negotiation 网络 网络 网络 or 网络 网络 Link Down 网络 网络
- 网络 网络 网络 网络 网络 网络 网络 . 网络 . 网络 .
- tc 网络 网络 网络 网络 , 网络 网络 网络 网络
- 网络 网络 网络 网络 , TC
- Iproute rpm 网络 网络 (Iproute 网络 网络 ) Iproute 网络 netstat, ifconfig, arp 网络 网络 网络

## Linux Traffic 网络 网络

image-1659585695104.png

PREROUTING : 网络 网络 网络 网络 网络 网络

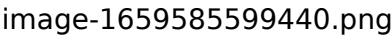
POSTROUTING : 网络 网络 网络 网络 网络

# Traffic Shaping

- Shaping?

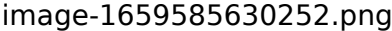
1. Traffic Shaping : `tc` / `htb` , `qdisc` `rate` `latency` `burst`
2. `tc` `qdisc` `htb` TBF / HTB `qdisc` ,

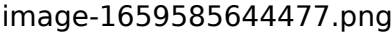
- TBF (Token Bucket Filter)

1. Packet `qdisc` Bucket `qdisc` `rate` `latency` , `qdisc` `rate` Traffic Shaping `qdisc`
2. Inbound `qdisc` `rate` `latency` `burst`
3. TBF Data Flow  


- HTB (Hierarchy Token Bucket)

1. `tc` `qdisc` TBF `qdisc`
2. `tc` Class `qdisc` `rate` `latency` `burst` IP `qdisc` `rate` `latency` `burst` 2 `qdisc` `rate` `latency` `burst`
3. Outbound `qdisc` `rate` `latency` `burst`  
HTB Data Flow



4. HTB Queue `qdisc`  
  
`Qdisc` `rate` `latency` `burst` Queue `qdisc` , `qdisc` Class `qdisc` `rate` `latency` `burst`  
`qdisc` Filter `qdisc` `rate` `latency` `burst` IP, `qdisc` `rate` `latency` `burst` `qdisc`  
Class `Qdisc` `rate` `latency` `burst` Filter `class` `rate` `latency` `burst` Queue `qdisc`

## TBF

1. TBF Traffic Shaping (eth0 `rate` `latency` `burst` 10Mbps, `rate` `latency` `burst` 70ms `qdisc` )

```
$ tc qdisc add dev eth0 root tbf rate 10mbit latency 70ms burst 1540
```

2. Shaping `qdisc` `rate` `latency` `burst`

```
$ tc qdisc show dev eth0
qdisc tbf 8012: root refcnt 2 rate 10000Kbit burst 1540b lat 70.0ms
```

### 3. Shaping [ ]

```
$ tc qdisc change dev eth0 root tbf rate 20mbit latency 70ms burst 1540
```

### 4. [ ] [ ] [ ]

```
$ tc qdisc show dev eth0
qdisc tbf 8012: root refcnt 2 rate 20000Kbit burst 1540b lat 70.0ms
```

### 5. tc [ ] [ ]

```
$ tc qdisc del dev eth0 root
```

## HTB [ ] [ ] [ ]

### 1. eth0 [ ] [ ] [ ] Limit [ ] 100Mbps [ ] [ ]

```
$ tc qdisc add dev eth0 root handle 1:0 htb default 10
$ tc class add dev eth0 parent 1: classid 1:1 htb rate 100mbit
$ tc class add dev eth0 parent 1:0 classid 1:10 htb rate 50mbit ceil 50mbit burst 10k prio 0
$ tc class add dev eth0 parent 1:0 classid 1:11 htb rate 20mbit ceil 20mbit burst 10k prio 0
$ tc filter add dev eth0 protocol ip parent 1:0 prio 0 u32 match ip dport 2049 0xffff flowid 1:10
$ tc filter add dev eth0 protocol ip parent 1:0 prio 0 u32 match ip dport 22 0xffff flowid 1:11
```

- destination port [ ] tcp/80 [ ] [ ] 50Mbps [ ] [ ]
- destination port [ ] tcp/22 [ ] [ ] 20Mbps [ ] [ ]
- rate : [ ] [ ] [ ]
- ceil : [ ] [ ] [ ]
- prio : [ ] [ ] 0 [ ] [ ] [ ] [ ] [ ] [ ]

### 1. [ ] [ ]

```
# qdisc [ ] [ ]
```

```
$> tc qdisc show dev eth0
qdisc htb 1: root refcnt 2 r2q 10 default 10 direct_packets_stat 17
```

# Class [ ] [ ] [ ] [ ]

```
$> tc class show dev eth0
class htb 1:11 root prio 0 rate 20000Kbit ceil 20000Kbit burst 10Kb cburst 1600b
class htb 1:10 root prio 0 rate 50000Kbit ceil 50000Kbit burst 10Kb cburst 1600b
class htb 1:1 root prio 0 rate 100000Kbit ceil 100000Kbit burst 1600b cburst 1600b
```

#Filter [ ] [ ]

# Match (Destination [ ] [ ] ) [ ] 16[ ] [ ]

```
$> tc filter show dev eth0
filter parent 1: protocol ip pref 49151 u32
filter parent 1: protocol ip pref 49151 u32 fh 801: ht divisor 1
filter parent 1: protocol ip pref 49151 u32 fh 801::800 order 2048 key ht 801 bkt 0 flowid 1:11
    match 00000016/0000ffff at 20
filter parent 1: protocol ip pref 49152 u32
filter parent 1: protocol ip pref 49152 u32 fh 800: ht divisor 1
filter parent 1: protocol ip pref 49152 u32 fh 800::800 order 2048 key ht 800 bkt 0 flowid 1:10
    match 00000801/0000ffff at 20
```

2. [ ] [ ] (20Mbit -> 200Mbit)

```
$> tc class change dev eth0 parent 1:0 classid 1:11 htb rate 200mbit ceil 200mbit burst 10k prio 0
```

3. [ ] [ ] [ ] [ ]

```
$> tc class show dev eth0
class htb 1:11 root prio 0 rate 200000Kbit ceil 200000Kbit burst 10200b cburst 1600b
class htb 1:10 root prio 0 rate 50000Kbit ceil 50000Kbit burst 10Kb cburst 1600b
class htb 1:1 root prio 0 rate 100000Kbit ceil 100000Kbit burst 1600b cburst 1600b
```

## NMS [ ] [ ] Traffic Shaping [ ] [ ]

1. Traffic Shaping [ ] ( [ ] 610Mbps [ ] [ ] [ ] )  
image-1659585668716.png

2. Taffic Shaping (100Mbps 77.84Mbps )  
image-1659585679519.png

# TC

TC, Queue, Packet Drop

TBF Packet Bucket Packet Drop

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