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# Rocky Enterprise Linux 9.2 Manual Pages on command 'tc-ematch.8'

## \$ man tc-ematch.8

```
ematch(8)
                                                            ematch(8)
                                Linux
NAME
    ematch - extended matches for use with "basic", "cgroup" or "flow" filters
SYNOPSIS
    tc filter add .. basic match EXPR .. flowid ..
    EXPR := TERM [ { and | or } EXPR ]
   TERM := [ not ] { MATCH | '(' EXPR ')' }
    MATCH := module '(' ARGS ')'
    ARGS := ARG1 ARG2 ..
MATCHES
 cmp
    Simple comparison ematch: arithmetic compare of packet data to a given value.
    cmp( ALIGN at OFFSET [ ATTRS ] { eq | It | gt } VALUE )
    ALIGN := \{ u8 \mid u16 \mid u32 \}
    ATTRS := [ layer LAYER ] [ mask MASK ] [ trans ]
   LAYER := { link | network | transport | 0..2 }
 meta
    Metadata ematch
    meta( OBJECT { eq | It |gt } OBJECT )
    OBJECT := { META_ID | VALUE }
    META_ID := id [ shift SHIFT ] [ mask MASK ]
    meta attributes:
```

```
loadavg 1 Load average in last 5 minutes
      nf_mark Netfilter mark
      vlan Vlan tag
      sk_rcvbuf Receive buffer size
      sk_snd_queue Send queue length
  A full list of meta attributes can be obtained via
  # tc filter add dev eth1 basic match 'meta(list)'
nbyte
  match packet data byte sequence
  nbyte( NEEDLE at OFFSET [ layer LAYER ] )
  NEEDLE := { string | c-escape-sequence }
  OFFSET := int
  LAYER := { link | network | transport | 0..2 }
u32
  u32 ematch
  u32( ALIGN VALUE MASK at [ nexthdr+ ] OFFSET )
  ALIGN := { u8 | u16 | u32 }
ipset
  test packet against ipset membership
  ipset( SETNAME FLAGS )
  SETNAME := string
  FLAGS := { FLAG [, FLAGS] }
  The flag options are the same as those used by the iptables "set" match.
  When using the ipset ematch with the "ip_set_hash:net,iface" set type, the interface can
  be queried using "src,dst (source ip address, outgoing interface) or "src,src" (source ip
  address, incoming interface) syntax.
ipt
  test packet against xtables matches
  ipt( [-6] -m MATCH_NAME FLAGS )
  MATCH_NAME := string
  FLAGS := { FLAG [, FLAGS] }
  The flag options are the same as those used by the xtable match used.
```

canid Page 2/3

```
ematch rule to match CAN frames

canid( IDLIST )

IDLIST := IDSPEC[IDLIST]

IDSPEC := { ?sff? CANID | ?eff? CANID }

CANID := ID[:MASK]

ID, MASK := hexadecimal number (i.e. 0x123)
```

### **CAVEATS**

The ematch syntax uses '(' and ')' to group expressions. All braces need to be escaped properly to prevent shell commandline from interpreting these directly.

When using the ipset ematch with the "ifb" device, the outgoing device will be the ifb de? vice itself, e.g. "ifb0". The original interface (i.e. the device the packet arrived on) is treated as the incoming interface.

#### **EXAMPLE & USAGE**

```
# tc filter add .. basic match ...

# 'cmp(u16 at 3 layer 2 mask 0xff00 gt 20)'

# 'meta(nfmark gt 24)' and 'meta(tcindex mask 0xf0 eq 0xf0)'

# 'nbyte("ababa" at 12 layer 1)'

# 'u32(u16 0x1122 0xffff at nexthdr+4)'

Check if packet source ip address is member of set named bulk:

# 'ipset(bulk src)'

Check if packet source ip and the interface the packet arrived on is member of "hash:net,iface" set named interactive:

# 'ipset(interactive src,src)'

Check if packet matches an IPSec state with reqid 1:

# 'ipt(-m policy --dir in --pol ipsec --reqid 1)'
```

## **AUTHOR**

The extended match infrastructure was added by Thomas Graf.

iproute2 6 August 2012 ematch(8)