NAME
      ethtool − query or control network driver and hardware settings

SYNOPSIS

      ethtool *devname*

      ethtool −h|−−help

      ethtool −−version

      ethtool −a|−−show−pause *devname*

      ethtool −A|−−pause *devname* [**autoneg on|off**] [**rx on|off**] [**tx on|off**]

      ethtool −c|−−show−coalesce *devname*

      ethtool −C|−−coalesce *devname* [**adaptive−rx on|off**] [**adaptive−tx on|off**] [**rx−usecs** *N*] [**rx−frames** *N*]
            [**rx−usecs−irq** *N*] [**rx−frames−irq** *N*] [**tx−usecs** *N*] [**tx−frames** *N*] [**tx−usecs−irq** *N*]
            [**tx−frames−irq** *N*] [**stats−block−usecs** *N*] [**pkt−rate−low** *N*] [**rx−usecs−low** *N*]
            [**rx−frames−low** *N*] [**tx−usecs−low** *N*] [**tx−frames−low** *N*] [**pkt−rate−high** *N*]
            [**rx−usecs−high** *N*] [**rx−frames−high** *N*] [**tx−usecs−high** *N*] [**tx−frames−high** *N*]
            [**sample−interval** *N*]

      ethtool −g|−−show−ring *devname*

      ethtool −G|−−set−ring *devname* [**rx** *N*] [**rx−mini** *N*] [**rx−jumbo** *N*] [**tx** *N*]

      ethtool −i|−−driver *devname*

      ethtool −d|−−register−dump *devname* [**raw on|off**] [**hex on|off**] [**file** *name*]

      ethtool −e|−−eeprom−dump *devname* [**raw on|off**] [**offset** *N*] [**length** *N*]

      ethtool −E|−−change−eeprom *devname* [**magic** *N*] [**offset** *N*] [**length** *N*] [**value** *N*]

      ethtool −k|−−show−features|−−show−offload *devname*

      ethtool −K|−−features|−−offload *devname feature* **on|off** *...*

      ethtool −p|−−identify *devname* [*N*]

      ethtool −P|−−show−permaddr *devname*

      ethtool −r|−−negotiate *devname*

      ethtool −S|−−statistics *devname*

      ethtool −−phy−statistics *devname*

      ethtool −t|−−test *devname* [**offline|online|external_lb**]

      ethtool −s *devname* [**speed** *N*] [**duplex half|full**] [**port tp|aui|bnc|mii**] [**mdix auto|on|off**] [**autoneg on|off**]
            [**advertise** *N*] [**phyad** *N*] [**xcvr internal|external**] [**wol p|u|m|b|a|g|s|f|d...**]
            [**sopass** *xx***:**yy***:**zz***:**aa***:**bb***:**cc*] [**msglvl** *N* | **msglvl** *type* **on|off** *...*]

      ethtool −n|−u|−−show−nfc|−−show−ntuple *devname*
            [**rx−flow−hash tcp4|udp4|ah4|esp4|sctp4|tcp6|udp6|ah6|esp6|sctp6** |
            rule *N*]

      ethtool −N|−U|−−config−nfc|−−config−ntuple *devname*
            rx−flow−hash tcp4|udp4|ah4|esp4|sctp4|tcp6|udp6|ah6|esp6|sctp6 m|v|t|s|d|f|n|r... |
            flow−type ether|ip4|tcp4|udp4|sctp4|ah4|esp4|ip6|tcp6|udp6|ah6|esp6|sctp6
            [**src** *xx***:**yy***:**zz***:**aa***:**bb***:**cc* [**m** *xx***:**yy***:**zz***:**aa***:**bb***:**cc*]] [**dst** *xx***:**yy***:**zz***:**aa***:**bb***:**cc* [**m** *xx***:**yy***:**zz***:**aa***:**bb***:**cc*]]
            [**proto** *N* [**m** *N*]] [**src−ip** *ip-address* [**m** *ip-address*]] [**dst−ip** *ip-address* [**m** *ip-address*]]
            [**tos** *N* [**m** *N*]] [**tclass** *N* [**m** *N*]] [**l4proto** *N* [**m** *N*]] [**src−port** *N* [**m** *N*]] [**dst−port** *N* [**m** *N*]]
            [**spi** *N* [**m** *N*]] [**l4data** *N* [**m** *N*]] [**vlan−etype** *N* [**m** *N*]] [**vlan** *N* [**m** *N*]] [**user−def** *N* [**m** *N*]] [**dst-mac** *xx***:**yy***:**zz***:**aa***:**bb***:**cc* [**m** *xx***:**yy***:**zz***:**aa***:**bb***:**cc*]] [**action** *N*] [**context** *N*] [**loc** *N*] |
            delete *N*

ethtool −w|−−get−dump *devname* [**data** *filename*]

ethtool −W|−−set−dump *devname N*

ethtool −T|−−show−time−stamping *devname*

ethtool −x|−−show−rxfh−indir|−−show−rxfh *devname*

ethtool −X|−−set−rxfh−indir|−−rxfh *devname* [**hkey** *xx***:***yy***:***zz***:***aa***:***bb***:***cc*:...] [**start** *N*] [**equal** *N* | **weight** *W0 W1 ...* | **default**] [**hfunc** *FUNC*] [**context** *CTX* | **new**] [**delete**]

ethtool −f|−−flash *devname file* [*N*]

ethtool −l|−−show−channels *devname*

ethtool −L|−−set−channels *devname* [**rx** *N*] [**tx** *N*] [**other** *N*] [**combined** *N*]

ethtool −m|−−dump−module−eeprom|−−module−info *devname* [**raw on|off**] [**hex on|off**] [**offset** *N*] [**length** *N*]

ethtool −−show−priv−flags *devname*

ethtool −−set−priv−flags *devname flag* **on|off** *...*

ethtool −−show−eee *devname*

ethtool −−set−eee *devname* [**eee on|off**] [**tx-lpi on|off**] [**tx-timer** *N*] [**advertise** *N*]

ethtool −−set−phy−tunable *devname* [**downshift on|off** [**count** *N*]] [**fast−link−down on|off** [**msecs** *N*]] [**energy−detect−power−down on|off** [**msecs** *N*]]

ethtool −−get−phy−tunable *devname* [**downshift**] [**fast-link-down**] [**energy-detect-power-down**]

ethtool −−reset *devname* [**flags** *N*] [**mgmt**] [**mgmt-shared**] [**irq**] [**irq-shared**] [**dma**] [**dma-shared**] [**filter**] [**filter-shared**] [**offload**] [**offload-shared**] [**mac**] [**mac-shared**] [**phy**] [**phy-shared**] [**ram**] [**ram-shared**] [**ap**] [**ap-shared**] [**dedicated**] [**all**]

ethtool −−show−fec *devname*

ethtool −−set−fec *devname* **encoding auto|off|rs|baser** [...]

ethtool −Q|−−per−queue *devname* [**queue_mask** *%x*] *sub_command ...*
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DESCRIPTION

ethtool is used to query and control network device driver and hardware settings, particularly for wired Ethernet devices.

devname is the name of the network device on which ethtool should operate.

OPTIONS

ethtool with a single argument specifying the device name prints current settings of the specified device.

−h −−help
Shows a short help message.

−−version
Shows the ethtool version number.

−a −−show−pause
Queries the specified Ethernet device for pause parameter information.

−A −−pause
Changes the pause parameters of the specified Ethernet device.

autoneg on|off
> Specifies whether pause autonegotiation should be enabled.

rx on|off
> Specifies whether RX pause should be enabled.

tx on|off
> Specifies whether TX pause should be enabled.

−c −−show−coalesce
> Queries the specified network device for coalescing information.

−C −−coalesce
> Changes the coalescing settings of the specified network device.

−g −−show−ring
> Queries the specified network device for rx/tx ring parameter information.

−G −−set−ring
> Changes the rx/tx ring parameters of the specified network device.

rx *N*   Changes the number of ring entries for the Rx ring.

rx−mini *N*
> Changes the number of ring entries for the Rx Mini ring.

rx−jumbo *N*
> Changes the number of ring entries for the Rx Jumbo ring.

tx *N*   Changes the number of ring entries for the Tx ring.

−i −−driver
> Queries the specified network device for associated driver information.

−d −−register−dump
> Retrieves and prints a register dump for the specified network device. The register format for some devices is known and decoded others are printed in hex. When *raw* is enabled, then ethtool dumps the raw register data to stdout. If *file* is specified, then use contents of previous raw register dump, rather than reading from the device.

−e −−eeprom−dump
> Retrieves and prints an EEPROM dump for the specified network device. When raw is enabled, then it dumps the raw EEPROM data to stdout. The length and offset parameters allow dumping certain portions of the EEPROM. Default is to dump the entire EEPROM.

raw *on|off*

offset *N*

length *N*

−E −−change−eeprom
> If value is specified, changes EEPROM byte for the specified network device. offset and value specify which byte and it's new value. If value is not specified, stdin is read and written to the EEPROM. The length and offset parameters allow writing to certain portions of the EEPROM. Because of the persistent nature of writing to the EEPROM, a device-specific magic key must be specified to prevent the accidental writing to the EEPROM.

−k −−show−features −−show−offload
> Queries the specified network device for the state of protocol offload and other features.

−K −−features −−offload
> Changes the offload parameters and other features of the specified network device. The following feature names are built-in and others may be defined by the kernel.

rx on|off
> Specifies whether RX checksumming should be enabled.

tx on|off
> Specifies whether TX checksumming should be enabled.

sg on|off
> Specifies whether scatter-gather should be enabled.

tso on|off
> Specifies whether TCP segmentation offload should be enabled.

ufo on|off
> Specifies whether UDP fragmentation offload should be enabled

gso on|off
> Specifies whether generic segmentation offload should be enabled

gro on|off
> Specifies whether generic receive offload should be enabled

lro on|off
> Specifies whether large receive offload should be enabled

rxvlan on|off
> Specifies whether RX VLAN acceleration should be enabled

txvlan on|off
> Specifies whether TX VLAN acceleration should be enabled

ntuple on|off
> Specifies whether Rx ntuple filters and actions should be enabled

rxhash on|off
> Specifies whether receive hashing offload should be enabled

−p −−identify
> Initiates adapter-specific action intended to enable an operator to easily identify the adapter by sight. Typically this involves blinking one or more LEDs on the specific network port.

> [*N*]   Length of time to perform phys-id, in seconds.

−P −−show−permaddr
> Queries the specified network device for permanent hardware address.

−r −−negotiate
> Restarts auto-negotiation on the specified Ethernet device, if auto-negotiation is enabled.

−S −−statistics
> Queries the specified network device for NIC- and driver-specific statistics.

−−phy−statistics
> Queries the specified network device for PHY specific statistics.

−t −−test
> Executes adapter selftest on the specified network device. Possible test modes are:

> **offline**   Perform full set of tests, possibly interrupting normal operation during the tests,

> **online**   Perform limited set of tests, not interrupting normal operation,

> **external_lb**
> > Perform full set of tests, as for **offline**, and additionally an external-loopback test.

−s −−change
> Allows changing some or all settings of the specified network device. All following options only apply if **−s** was specified.

speed *N*

> Set speed in Mb/s. **ethtool** with just the device name as an argument will show you the supported device speeds.

duplex half|full

> Sets full or half duplex mode.

port tp|aui|bnc|mii

> Selects device port.

mdix auto|on|off

> Selects MDI-X mode for port. May be used to override the automatic detection feature of most adapters. An argument of **auto** means automatic detection of MDI status, **on** forces MDI-X (crossover) mode, while **off** means MDI (straight through) mode. The driver should guarantee that this command takes effect immediately, and if necessary may reset the link to cause the change to take effect.

autoneg on|off

> Specifies whether autonegotiation should be enabled. Autonegotiation is enabled by default, but in some network devices may have trouble with it, so you can disable it if really necessary.

advertise *N*

> Sets the speed and duplex advertised by autonegotiation. The argument is a hexadecimal value using one or a combination of the following values:

0x001	10baseT Half	
0x002	10baseT Full	
0x004	100baseT Half	
0x008	100baseT Full	
0x8000000000000000	100baseT1 Full	
0x010	1000baseT Half	**(not supported by IEEE standards)**
0x020	1000baseT Full	
0x100000000000000000	1000baseT1 Full	
0x20000	1000baseKX Full	
0x20000000000	1000baseX Full	
0x800000000000	2500baseT Full	
0x8000	2500baseX Full	**(not supported by IEEE standards)**
0x1000000000000	5000baseT Full	
0x1000	10000baseT Full	
0x40000	10000baseKX4 Full	
0x80000	10000baseKR Full	
0x100000	10000baseR_FEC	
0x40000000000	10000baseCR Full	
0x80000000000	10000baseSR Full	
0x100000000000	10000baseLR Full	
0x200000000000	10000baseLRM Full	
0x400000000000	10000baseER Full	
0x200000	20000baseMLD2 Full	**(not supported by IEEE standards)**
0x400000	20000baseKR2 Full	**(not supported by IEEE standards)**
0x80000000	25000baseCR Full	
0x100000000	25000baseKR Full	
0x200000000	25000baseSR Full	
0x800000	40000baseKR4 Full	
0x1000000	40000baseCR4 Full	
0x2000000	40000baseSR4 Full	
0x4000000	40000baseLR4 Full	
0x400000000	50000baseCR2 Full	

0x800000000	50000baseKR2 Full
0x10000000000	50000baseSR2 Full
0x10000000000000	50000baseKR Full
0x20000000000000	50000baseSR Full
0x40000000000000	50000baseCR Full
0x80000000000000	50000baseLR_ER_FR Full
0x100000000000000	50000baseDR Full
0x8000000	56000baseKR4 Full
0x10000000	56000baseCR4 Full
0x20000000	56000baseSR4 Full
0x40000000	56000baseLR4 Full
0x1000000000	100000baseKR4 Full
0x2000000000	100000baseSR4 Full
0x4000000000	100000baseCR4 Full
0x8000000000	100000baseLR4_ER4 Full
0x200000000000000	100000baseKR2 Full
0x400000000000000	100000baseSR2 Full
0x800000000000000	100000baseCR2 Full
0x1000000000000000	100000baseLR2_ER2_FR2 Full
0x2000000000000000	100000baseDR2 Full
0x4000000000000000	200000baseKR4 Full
0x8000000000000000	200000baseSR4 Full
0x10000000000000000	200000baseLR4_ER4_FR4 Full
0x20000000000000000	200000baseDR4 Full
0x40000000000000000	200000baseCR4 Full

phyad *N*
> PHY address.

xcvr internal|external
> Selects transceiver type. Currently only internal and external can be specified, in the future further types might be added.

wol p|u|m|b|a|g|s|f|d...
> Sets Wake-on-LAN options. Not all devices support this. The argument to this option is a string of characters specifying which options to enable.

> **p**   Wake on PHY activity
> **u**   Wake on unicast messages
> **m**   Wake on multicast messages
> **b**   Wake on broadcast messages
> **a**   Wake on ARP
> **g**   Wake on MagicPacket™
> **s**   Enable SecureOn™ password for MagicPacket™
> **f**   Wake on filter(s)
> **d**   Disable (wake on nothing). This option clears all previous options.

sopass *xx***:***yy***:***zz***:***aa***:***bb***:***cc*
> Sets the SecureOn™ password. The argument to this option must be 6 bytes in Ethernet MAC hex format (*xx***:***yy***:***zz***:***aa***:***bb***:***cc*).

msglvl *N*
msglvl *type* **on|off** ...
> Sets the driver message type flags by name or number. *type* names the type of message to enable or disable; *N* specifies the new flags numerically. The defined type names and numbers are:

> **drv**   0x0001 General driver status

probe	0x0002	Hardware probing
link	0x0004	Link state
timer	0x0008	Periodic status check
ifdown	0x0010	Interface being brought down
ifup	0x0020	Interface being brought up
rx_err	0x0040	Receive error
tx_err	0x0080	Transmit error
tx_queued	0x0100	Transmit queueing
intr	0x0200	Interrupt handling
tx_done	0x0400	Transmit completion
rx_status	0x0800	Receive completion
pktdata	0x1000	Packet contents
hw	0x2000	Hardware status
wol	0x4000	Wake-on-LAN status

The precise meanings of these type flags differ between drivers.

−n −u −−show−nfc −−show−ntuple
> Retrieves receive network flow classification options or rules.

rx−flow−hash tcp4|udp4|ah4|esp4|sctp4|tcp6|udp6|ah6|esp6|sctp6
> Retrieves the hash options for the specified flow type.

tcp4	TCP over IPv4
udp4	UDP over IPv4
ah4	IPSEC AH over IPv4
esp4	IPSEC ESP over IPv4
sctp4	SCTP over IPv4
tcp6	TCP over IPv6
udp6	UDP over IPv6
ah6	IPSEC AH over IPv6
esp6	IPSEC ESP over IPv6
sctp6	SCTP over IPv6

rule N Retrieves the RX classification rule with the given ID.

−N −U −−config−nfc −−config−ntuple
> Configures receive network flow classification options or rules.

rx−flow−hash tcp4|udp4|ah4|esp4|sctp4|tcp6|udp6|ah6|esp6|sctp6m|v|t|s|d|f|n|r...
> Configures the hash options for the specified flow type.

m	Hash on the Layer 2 destination address of the rx packet.
v	Hash on the VLAN tag of the rx packet.
t	Hash on the Layer 3 protocol field of the rx packet.
s	Hash on the IP source address of the rx packet.
d	Hash on the IP destination address of the rx packet.
f	Hash on bytes 0 and 1 of the Layer 4 header of the rx packet.
n	Hash on bytes 2 and 3 of the Layer 4 header of the rx packet.
r	Discard all packets of this flow type. When this option is set, all other options are ignored.

flow−type ether|ip4|tcp4|udp4|sctp4|ah4|esp4|ip6|tcp6|udp6|ah6|esp6|sctp6
> Inserts or updates a classification rule for the specified flow type.

ether	Ethernet
ip4	Raw IPv4
tcp4	TCP over IPv4
udp4	UDP over IPv4
sctp4	SCTP over IPv4

ah4	IPSEC AH over IPv4
esp4	IPSEC ESP over IPv4
ip6	Raw IPv6
tcp6	TCP over IPv6
udp6	UDP over IPv6
sctp6	SCTP over IPv6
ah6	IPSEC AH over IPv6
esp6	IPSEC ESP over IPv6

For all fields that allow both a value and a mask to be specified, the mask may be specified immediately after the value using the **m** keyword, or separately using the field name keyword with **-mask** appended, e.g. **src-mask**.

src *xx*:*yy*:*zz*:*aa*:*bb*:*cc* [**m** *xx*:*yy*:*zz*:*aa*:*bb*:*cc*]
> Includes the source MAC address, specified as 6 bytes in hexadecimal separated by colons, along with an optional mask. Valid only for flow-type ether.

dst *xx*:*yy*:*zz*:*aa*:*bb*:*cc* [**m** *xx*:*yy*:*zz*:*aa*:*bb*:*cc*]
> Includes the destination MAC address, specified as 6 bytes in hexadecimal separated by colons, along with an optional mask. Valid only for flow-type ether.

proto *N* [**m** *N*]
> Includes the Ethernet protocol number (ethertype) and an optional mask. Valid only for flow-type ether.

src−ip *ip-address* [**m** *ip-address*]
> Specify the source IP address of the incoming packet to match along with an optional mask. Valid for all IP based flow-types.

dst−ip *ip-address* [**m** *ip-address*]
> Specify the destination IP address of the incoming packet to match along with an optional mask. Valid for all IP based flow-types.

tos *N* [**m** *N*]
> Specify the value of the Type of Service field in the incoming packet to match along with an optional mask. Applies to all IPv4 based flow-types.

tclass *N* [**m** *N*]
> Specify the value of the Traffic Class field in the incoming packet to match along with an optional mask. Applies to all IPv6 based flow-types.

l4proto *N* [**m** *N*]
> Includes the layer 4 protocol number and optional mask. Valid only for flow-types ip4 and ip6.

src−port *N* [**m** *N*]
> Specify the value of the source port field (applicable to TCP/UDP packets) in the incoming packet to match along with an optional mask. Valid for flow-types ip4, tcp4, udp4, and sctp4 and their IPv6 equivalents.

dst−port *N* [**m** *N*]
> Specify the value of the destination port field (applicable to TCP/UDP packets)in the incoming packet to match along with an optional mask. Valid for flow-types ip4, tcp4, udp4, and sctp4 and their IPv6 equivalents.

spi *N* [**m** *N*]
> Specify the value of the security parameter index field (applicable to AH/ESP packets)in the incoming packet to match along with an optional mask. Valid for flow-types ip4, ah4, and esp4 and their IPv6 equivalents.

l4data *N* [**m** *N*]
> Specify the value of the first 4 Bytes of Layer 4 in the incoming packet to match along with an optional mask. Valid for ip4 and ip6 flow-types.

vlan−etype *N* [**m** *N*]
> Includes the VLAN tag Ethertype and an optional mask.

vlan *N* [**m** *N*]
> Includes the VLAN tag and an optional mask.

user−def *N* [**m** *N*]
> Includes 64-bits of user-specific data and an optional mask.

dst-mac *xx***:***yy***:***zz***:***aa***:***bb***:***cc* [**m** *xx***:***yy***:***zz***:***aa***:***bb***:***cc*]
> Includes the destination MAC address, specified as 6 bytes in hexadecimal separated by colons, along with an optional mask. Valid for all IP based flow-types.

action *N*
> Specifies the Rx queue to send packets to, or some other action.
>
> | | |
> |---|---|
> | **-1** | Drop the matched flow |
> | **-2** | Use the matched flow as a Wake-on-LAN filter |
> | **0 or higher** | Rx queue to route the flow |

context *N*
> Specifies the RSS context to spread packets over multiple queues; either **0** for the default RSS context, or a value returned by **ethtool -X** ... **context new**.

vf *N*   Specifies the Virtual Function the filter applies to. Not compatible with action.

queue *N*
> Specifies the Rx queue to send packets to. Not compatible with action.

loc *N*   Specify the location/ID to insert the rule. This will overwrite any rule present in that location and will not go through any of the rule ordering process.

delete *N*
> Deletes the RX classification rule with the given ID.

−w −−get−dump
> Retrieves and prints firmware dump for the specified network device. By default, it prints out the dump flag, version and length of the dump data. When *data* is indicated, then ethtool fetches the dump data and directs it to a *file.*

−W −−set−dump
> Sets the dump flag for the device.

−T −−show−time−stamping
> Show the device's time stamping capabilities and associated PTP hardware clock.

−x −−show−rxfh−indir −−show−rxfh
> Retrieves the receive flow hash indirection table and/or RSS hash key.

−X −−set−rxfh−indir −−rxfh
> Configures the receive flow hash indirection table and/or RSS hash key.

hkey   Sets RSS hash key of the specified network device. RSS hash key should be of device supported length. Hash key format must be in xx:yy:zz:aa:bb:cc format meaning both the nibbles of a byte should be mentioned even if a nibble is zero.

hfunc   Sets RSS hash function of the specified network device. List of RSS hash functions which kernel supports is shown as a part of the --show-rxfh command output.

start *N*   For the **equal** and **weight** options, sets the starting receive queue for spreading flows to *N*.

equal *N*
> Sets the receive flow hash indirection table to spread flows evenly between the first *N* receive queues.

weight *W0 W1 ...*
> Sets the receive flow hash indirection table to spread flows between receive queues according to the given weights. The sum of the weights must be non-zero and must not exceed the size of the indirection table.

default Sets the receive flow hash indirection table to its default value.

context *CTX* | **new**
> Specifies an RSS context to act on; either **new** to allocate a new RSS context, or *CTX*, a value returned by a previous ... **context new**.

delete Delete the specified RSS context. May only be used in conjunction with **context** and a non-zero *CTX* value.

−f −−flash
> Write a firmware image to flash or other non-volatile memory on the device.

file
> Specifies the filename of the firmware image. The firmware must first be installed in one of the directories where the kernel firmware loader or firmware agent will look, such as /lib/firmware.

N
> If the device stores multiple firmware images in separate regions of non-volatile memory, this parameter may be used to specify which region is to be written. The default is 0, requesting that all regions are written. All other values are driver-dependent.

−l −−show−channels
> Queries the specified network device for the numbers of channels it has. A channel is an IRQ and the set of queues that can trigger that IRQ.

−L −−set−channels
> Changes the numbers of channels of the specified network device.

rx *N* Changes the number of channels with only receive queues.

tx *N* Changes the number of channels with only transmit queues.

other *N*
> Changes the number of channels used only for other purposes e.g. link interrupts or SR-IOV co-ordination.

combined *N*
> Changes the number of multi-purpose channels.

−m −−dump−module−eeprom −−module−info
> Retrieves and if possible decodes the EEPROM from plugin modules, e.g SFP+, QSFP. If the driver and module support it, the optical diagnostic information is also read and decoded.

−−show−priv−flags
> Queries the specified network device for its private flags. The names and meanings of private flags (if any) are defined by each network device driver.

−−set−priv−flags
> Sets the device's private flags as specified.

flag **on|off** Sets the state of the named private flag.

−−show−eee
> Queries the specified network device for its support of Energy-Efficient Ethernet (according to the IEEE 802.3az specifications)

−−set−eee
> Sets the device EEE behaviour.

eee on|off
> Enables/disables the device support of EEE.

tx-lpi on|off
> Determines whether the device should assert its Tx LPI.

advertise *N*
> Sets the speeds for which the device should advertise EEE capabilities. Values are as for
> **−−change advertise**

tx-timer *N*
> Sets the amount of time the device should stay in idle mode prior to asserting its Tx LPI (in
> microseconds). This has meaning only when Tx LPI is enabled.

−−set−phy−tunable
> Sets the PHY tunable parameters.

downshift on|off
> Specifies whether downshift should be enabled.

> **count** *N*
> > Sets the PHY downshift re-tries count.

fast-link-down on|off
> Specifies whether Fast Link Down should be enabled and time until link down (if supported).

> **msecs** *N*
> > Sets the period after which the link is reported as down. Note that the PHY may choose
> > the closest supported value. Only on reading back the tunable do you get the actual value.

energy-detect-power-down on|off
> Specifies whether Energy Detect Power Down (EDPD) should be enabled (if supported).
> This will put the RX and TX circuit blocks into a low power mode, and the PHY will wake
> up periodically to send link pulses to avoid any lock-up situation with a peer PHY that may
> also have EDPD enabled. By default, this setting will also enable the periodic transmission of
> TX pulses.

> **msecs** *N*
> > Some PHYs support configuration of the wake-up interval to send TX pulses.
> > This setting allows the control of this interval, and 0 disables TX pulses
> > if the PHY supports this. Disabling TX pulses can create a lock-up situation
> > where neither of the PHYs wakes the other one. If unspecified the default
> > value (in milliseconds) will be used by the PHY.

−−get−phy−tunable
> Gets the PHY tunable parameters.

downshift
> For operation in cabling environments that are incompatible with 1000BASE-T, PHY device
> provides an automatic link speed downshift operation. Link speed downshift after N failed
> 1000BASE-T auto-negotiation attempts. Downshift is useful where cable does not have the 4
> pairs instance.

> Gets the PHY downshift count/status.

fast−link−down
> Depending on the mode it may take 0.5s - 1s until a broken link is reported as down. In cer-
> tain use cases a link-down event needs to be reported as soon as possible. Some PHYs sup-
> port a Fast Link Down Feature and may allow configuration of the delay before a broken link

is reported as being down.

Gets the PHY Fast Link Down status / period.

energy−detect−power−down
Gets the current configured setting for Energy Detect Power Down (if supported).

−−reset
Reset hardware components specified by flags and components listed below

flags *N*   Resets the components based on direct flags mask

mgmt   Management processor

irq   Interrupt requester

dma   DMA engine

filter   Filtering/flow direction

offload   Protocol offload

mac   Media access controller

phy   Transceiver/PHY

ram   RAM shared between multiple components **ap** Application Processor

dedicated
All components dedicated to this interface

all   All components used by this interface, even if shared

−−show−fec
Queries the specified network device for its support of Forward Error Correction.

−−set−fec
Configures Forward Error Correction for the specified network device.

Forward Error Correction modes selected by a user are expected to be persisted after any hotplug events. If a module is swapped that does not support the current FEC mode, the driver or firmware must take the link down administratively and report the problem in the system logs for users to correct.

encoding auto|off|rs|baser [...]

Sets the FEC encoding for the device. Combinations of options are specified as e.g. **encoding auto rs** ; the semantics of such combinations vary between drivers.

auto   Use the driver's default encoding
off   Turn off FEC
RS   Force RS-FEC encoding
BaseR   Force BaseR encoding

−Q|−−per−queue
Applies provided sub command to specific queues.

queue_mask %x
Sets the specific queues which the sub command is applied to. If queue_mask is not set, the sub command will be applied to all queues.

sub_command
Sub command to apply. The supported sub commands include --show-coalesce and --coalesce.

BUGS

      Not supported (in part or whole) on all network drivers.

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AVAILABILITY

      ethtool is available from ⟨http://www.kernel.org/pub/software/network/ethtool/⟩