Rocky Enterprise Linux 9.2 Manual Pages on command 'ip-xfrm.8'

$ man ip-xfrm.8

IP-XFRM(8) Linux IP-XFRM(8)

NAME

ip-xfrm - transform configuration

SYNOPSIS

ip [OPTIONS] xfrm { COMMAND | help }

ip xfrm XFRM-OBJECT { COMMAND | help }

XFRM-OBJECT := state | policy | monitor

ip xfrm state { add | update } ID [ALGO-LIST] [mode MODE] [mark

MARK [mask MASK]] [reqid REQID] [seq SEQ] [replay-win?

dow SIZE] [replay-seq SEQ] [replay-oseq SEQ] [replay-seq-

hi SEQ] [replay-oseq-hi SEQ] [flag FLAG-LIST] [sel SELEC?

TOR] [LIMIT-LIST] [encap ENCAP] [coa ADDR[/PLEN]] [ctx

CTX] [extra-flag EXTRA-FLAG-LIST] [output-mark OUTPUT-MARK

[mask MASK]] [if_id IF-ID] [tfcpad LENGTH]

ip xfrm state allocspi ID [mode MODE] [mark MARK [mask MASK]] [
reqid REQID] [seq SEQ] [min SPI max SPI]

ip xfrm state { delete | get } ID [mark MARK [mask MASK]]

ip [-4 | -6] xfrm state deleteall [ID] [mode MODE] [reqid REQID
] [flag FLAG-LIST]

ip [-4 | -6] xfrm state list [ID] [nokeys] [mode MODE] [reqid
REQID] [flag FLAG-LIST]

ip xfrm state flush [proto XFRM-PROTO]

ip xfrm state count

ID := [src ADDR] [dst ADDR] [proto XFRM-PROTO] [spi SPI]

XFRM-PROTO := esp | ah | comp | route2 | hao

ALGO-LIST := [ALGO-LIST] ALGO

ALGO := { enc | auth } ALGO-NAME ALGO-KEYMAT |
auth-trunc ALGO-NAME ALGO-KEYMAT ALGO-TRUNC-LEN |
aead ALGO-NAME ALGO-KEYMAT ALGO-ICV-LEN |
comp ALGO-NAME

MODE := transport | tunnel | beet | ro | in_trigger

FLAG-LIST := [FLAG-LIST] FLAG

FLAG := noecn | decap-dscp | nopmtudisc | wildrecv | icmp | af-unspec |

align4 | esn

SELECTOR := [src ADDR[/PLEN]] [dst ADDR[/PLEN]] [dev DEV]
[UPSPEC]

UPSPEC := proto { PROTO |
{ tcp | udp | sctp | dccp } [sport PORT] [dport PORT] |
{ icmp | ipv6-icmp | mobility-header } [type NUMBER] [code
NUMBER] |
gre [key { DOTTED-QUAD | NUMBER }] }

LIMIT-LIST := [LIMIT-LIST] limit LIMIT

LIMIT := { time-soft | time-hard | time-use-soft | time-use-hard } SEC?
ONDS |
{ byte-soft | byte-hard } SIZE |
{ packet-soft | packet-hard } COUNT

ENCAP := { espinudp | espinudp-nonike | espintcp } SPORT DPORT OADDR

EXTRA-FLAG-LIST := [EXTRA-FLAG-LIST] EXTRA-FLAG

EXTRA-FLAG := dont-encap-dscp | oseq-may-wrap

ip xfrm policy { add | update } SELECTOR dir DIR [ctx CTX] [mark
MARK [mask MASK]] [index INDEX] [ptype PTYPE] [action
ACTION] [priority PRIORITY] [flag FLAG-LIST] [if_id IF-ID
] [LIMIT-LIST] [TMPL-LIST]

ip xfrm policy { delete | get } { SELECTOR | index INDEX } dir DIR [
ctx CTX] [mark MARK [mask MASK]] [ptype PTYPE] [if_id
IF-ID]

ip [-4 | -6] xfrm policy { deleteall | list } [nosock] [SELECTOR]
[dir DIR] [index INDEX] [ptype PTYPE] [action ACTION] [
priority PRIORITY] [flag FLAG-LIST]

ip xfrm policy flush [ptype PTYPE]

ip xfrm policy count

ip xfrm policy set [hthresh4 LBITS RBITS] [hthresh6 LBITS RBITS]

ip xfrm policy setdefault DIR ACTION [DIR ACTION] [DIR ACTION]

ip xfrm policy getdefault

SELECTOR := [src ADDR[/PLEN]] [dst ADDR[/PLEN]] [dev DEV] [UP?
SPEC]

UPSPEC := proto { PROTO |
{ tcp | udp | sctp | dccp } [sport PORT] [dport PORT] |
{ icmp | ipv6-icmp | mobility-header } [type NUMBER] [code
NUMBER] |
gre [key { DOTTED-QUAD | NUMBER }] }

DIR := in | out | fwd

PTYPE := main | sub

ACTION := allow | block

FLAG-LIST := [FLAG-LIST] FLAG

FLAG := localok | icmp

LIMIT-LIST := [LIMIT-LIST] limit LIMIT

LIMIT := { time-soft | time-hard | time-use-soft | time-use-hard } SEC?
ONDS |
{ byte-soft | byte-hard } SIZE |
{ packet-soft | packet-hard } COUNT

TMPL-LIST := [TMPL-LIST] tmpl TMPL

TMPL := ID [mode MODE] [reqid REQID] [level LEVEL]

ID := [src ADDR] [dst ADDR] [proto XFRM-PROTO] [spi SPI]

XFRM-PROTO := esp | ah | comp | route2 | hao

MODE := transport | tunnel | beet | ro | in_trigger

LEVEL := required | use

ip xfrm monitor [all-nsid] [nokeys] [all
| LISTofXFRM-OBJECTS]

LISTofXFRM-OBJECTS := [LISTofXFRM-OBJECTS] XFRM-OBJECT

XFRM-OBJECT := acquire | expire | SA | policy | aevent | report

DESCRIPTION

xfrm is an IP framework for transforming packets (such as encrypting their payloads). This framework is used to implement the IPsec protocol suite (with the state object operating on the Security Association Database, and the policy object operating on the Security Policy Data? base). It is also used for the IP Payload Compression Protocol and fea? tures of Mobile IPv6.

ip xfrm state add add new state into xfrm

ip xfrm state update update existing state in xfrm

ip xfrm state allocspi allocate an SPI value

ip xfrm state delete delete existing state in xfrm

ip xfrm state get get existing state in xfrm

ip xfrm state deleteall delete all existing state in xfrm

ip xfrm state list print out the list of existing state in xfrm

ip xfrm state flush flush all state in xfrm

ip xfrm state count count all existing state in xfrm

ID is specified by a source address, destination address, transform protocol XFRM-PROTO, and/or Security Parameter Index SPI. (For IP Payload Compression, the Compression Parameter Index or CPI is used for SPI.)

XFRM-PROTO

specifies a transform protocol: IPsec Encapsulating Security Payload (esp), IPsec Authentication Header (ah), IP Payload Com? pression (comp), Mobile IPv6 Type 2 Routing Header (route2), or Mobile IPv6 Home Address Option (hao).

ALGO-LIST

contains one or more algorithms to use. Each algorithm ALGO is specified by:

? the algorithm type: encryption (enc), authentication (auth or auth-trunc), authenticated encryption with asso? ciated data (aead), or compression (comp)

? the algorithm name ALGO-NAME (see below)

? (for all except comp) the keying material ALGO-KEYMAT,

which may include both a key and a salt or nonce value; refer to the corresponding RFC

? (for auth-trunc only) the truncation length ALGO-TRUNC-LEN in bits

? (for aead only) the Integrity Check Value length ALGO-ICV-LEN in bits

Encryption algorithms include ecb(cipher_null), cbc(des), cbc(des3_ede), cbc(cast5), cbc(blowfish), cbc(aes), cbc(serpent), cbc(camellia), cbc(twofish), and rfc3686(ctr(aes)).

Authentication algorithms include digest_null, hmac(md5), hmac(sha1), hmac(sha256), hmac(sha384), hmac(sha512), hmac(rmd160), and xcbc(aes).

Authenticated encryption with associated data (AEAD) algorithms include rfc4106(gcm(aes)), rfc4309(ccm(aes)), and rfc4543(gcm(aes)).

Compression algorithms include deflate, lzs, and lzjh.

MODE specifies a mode of operation for the transform protocol. IPsec and IP Payload Compression modes are transport, tunnel, and (for IPsec ESP only) Bound End-to-End Tunnel (beet). Mobile IPv6 modes are route optimization (ro) and inbound trigger (in_trig? ger).

FLAG-LIST

contains one or more of the following optional flags: noecn, de? cap-dscp, nopmtudisc, wildrecv, icmp, af-unspec, align4, or esn.

SELECTOR

selects the traffic that will be controlled by the policy, based on the source address, the destination address, the network de? vice, and/or UPSPEC.

UPSPEC selects traffic by protocol. For the tcp, udp, sctp, or dccp protocols, the source and destination port can optionally be specified. For the icmp, ipv6-icmp, or mobility-header proto? cols, the type and code numbers can optionally be specified. For the gre protocol, the key can optionally be specified as a dotted-quad or number. Other protocols can be selected by name or number PROTO.

LIMIT-LIST

sets limits in seconds, bytes, or numbers of packets.

ENCAP encapsulates packets with protocol espinudp, espinudp-nonike, or espintcp, using source port SPORT, destination port DPORT , and original address OADDR.

MARK used to match xfrm policies and states

OUTPUT-MARK

used to set the output mark to influence the routing of the packets emitted by the state

IF-ID xfrm interface identifier used to in both xfrm policies and states

ip xfrm policy add add a new policy

ip xfrm policy update update an existing policy

ip xfrm policy delete delete an existing policy

ip xfrm policy get get an existing policy

ip xfrm policy deleteall delete all existing xfrm policies

ip xfrm policy list print out the list of xfrm policies

ip xfrm policy flush flush policies

nosock filter (remove) all socket policies from the output.

SELECTOR

selects the traffic that will be controlled by the policy, based on the source address, the destination address, the network de? vice, and/or UPSPEC.

UPSPEC selects traffic by protocol. For the tcp, udp, sctp, or dccp protocols, the source and destination port can optionally be specified. For the icmp, ipv6-icmp, or mobility-header proto? cols, the type and code numbers can optionally be specified. For the gre protocol, the key can optionally be specified as a dotted-quad or number. Other protocols can be selected by name or number PROTO.

DIR selects the policy direction as in, out, or fwd.

CTX sets the security context.

PTYPE can be main (default) or sub.

ACTION can be allow (default) or block.

PRIORITY

is a number that defaults to zero.

FLAG-LIST

contains one or both of the following optional flags: local or

icmp.

LIMIT-LIST

sets limits in seconds, bytes, or numbers of packets.

TMPL-LIST

is a template list specified using ID, MODE, REQID, and/or LEV? EL.

ID is specified by a source address, destination address, transform protocol XFRM-PROTO, and/or Security Parameter Index SPI. (For IP Payload Compression, the Compression Parameter Index or CPI is used for SPI.)

XFRM-PROTO

specifies a transform protocol: IPsec Encapsulating Security Payload (esp), IPsec Authentication Header (ah), IP Payload Com? pression (comp), Mobile IPv6 Type 2 Routing Header (route2), or Mobile IPv6 Home Address Option (hao).

MODE specifies a mode of operation for the transform protocol. IPsec and IP Payload Compression modes are transport, tunnel, and (for IPsec ESP only) Bound End-to-End Tunnel (beet). Mobile IPv6 modes are route optimization (ro) and inbound trigger (in_trig? ger).

LEVEL can be required (default) or use.

ip xfrm policy count count existing policies

Use one or more -s options to display more details, including policy hash table information.

ip xfrm policy set configure the policy hash table

Security policies whose address prefix lengths are greater than or equal policy hash table thresholds are hashed. Others are stored in the policy_inexact chained list.

LBITS specifies the minimum local address prefix length of policies that are stored in the Security Policy Database hash table.

RBITS specifies the minimum remote address prefix length of policies that are stored in the Security Policy Database hash table.

ip xfrm monitor state monitoring for xfrm objects

The xfrm objects to monitor can be optionally specified.

If the all-nsid option is set, the program listens to all network name? spaces that have a nsid assigned into the network namespace were the program is running. A prefix is displayed to show the network name? space where the message originates. Example:

[nsid 1]Flushed state proto 0

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