

ip COMMAND CHEAT SHEET

for Red Hat Enterprise Linux

IP QUERIES

SUBCOMMAND DESCRIPTIONS AND TASKS

addr Display IP Addresses and property information (abbreviation of address)

ip addr
Show information for all addresses

ip addr show dev em1
Display information only for device em1

link Manage and display the state of all network interfaces

ip link
Show information for all interfaces

ip link show dev em1
Display information only for device em1

ip -s link
Display interface statistics

route Display and alter the routing table

ip route
List all of the route entries in the kernel

maddr Manage and display multicast IP addresses

ip maddr
Display multicast information for all devices

ip maddr show dev em1
Display multicast information for device em1

neigh Show neighbour objects; also known as the ARP table for IPv4

ip neigh
Display neighbour objects

ip neigh show dev em1
Show the ARP cache for device em1

help Display a list of commands and arguments for each subcommand

ip help
Display ip commands and arguments

ip addr help
Display address commands and arguments

ip link help
Display link commands and arguments

ip neigh help
Display neighbour commands and arguments

MULTICAST ADDRESSING

SUBCOMMAND DESCRIPTIONS AND TASKS

maddr add Add a static link-layer multicast address
ip maddr add 33:33:00:00:00:01 dev em1
Add mutlicast address 33:33:00:00:00:01 to em1

maddr del Delete a multicast address
ip maddr del 33:33:00:00:00:01 dev em1
Delete address 33:33:00:00:00:01 from em1

MODIFYING ADDRESS AND LINK PROPERTIES

SUBCOMMAND DESCRIPTIONS AND TASKS

addr add Add an address
ip addr add 192.168.1.1/24 dev em1
Add address 192.168.1.1 with netmask 24 to device em1

addr del Delete an address
ip addr del 192.168.1.1/24 dev em1
Remove address 192.168.1.1/24 from device em1

link set Alter the status of the interface
ip link set em1 up
Bring em1 online
ip link set em1 down
Bring em1 offline
ip link set em1 mtu 9000
Set the MTU on em1 to 9000
ip link set em1 promisc on
Enable promiscuous mode for em1

ADJUSTING AND VIEWING ROUTES

SUBCOMMAND DESCRIPTIONS AND TASKS

route add Add an entry to the routing table
ip route add default via 192.168.1.1 dev em1
Add a default route (for all addresses) via the local gateway 192.168.1.1 that can be reached on device em1
ip route add 192.168.1.0/24 via 192.168.1.1
Add a route to 192.168.1.0/24 via the gateway at 192.168.1.1
ip route add 192.168.1.0/24 dev em1
Add a route to 192.168.1.0/24 that can be reached on device em1

route delete Delete a routing table entry
ip route delete 192.168.1.0/24 via 192.168.1.1
Delete the route for 192.168.1.0/24 via the gateway at 192.168.1.1

route replace Replace, or add if not defined, a route
ip route replace 192.168.1.0/24 dev em1
Replace the defined route for 192.168.1.0/24 to use device em1

route get Display the route an address will take
ip route get 192.168.1.5
Display the route taken for IP 192.168.1.5

MANAGING THE ARP TABLE

SUBCOMMAND DESCRIPTIONS AND TASKS

neigh add Add an entry to the ARP Table
ip neigh add 192.168.1.1 lladdr 1:2:3:4:5:6 dev em1
Add address 192.168.1.1 with MAC 1:2:3:4:5:6 to em1

neigh del Invalidate an entry
ip neigh del 192.168.1.1 dev em1
Invalidate the entry for 192.168.1.1 on em1

neigh replace Replace, or adds if not defined, an entry to the ARP table
ip neigh replace 192.168.1.1 lladdr 1:2:3:4:5:6 dev em1
Replace the entry for address 192.168.1.1 to use MAC 1:2:3:4:5:6 on em1

USEFUL NETWORKING COMMANDS (NOT NECESSARILY PROVIDED FROM IPROUTE)

SUBCOMMAND DESCRIPTIONS AND TASKS

- arping** Send ARP request to a neighbour host
arping -I eth0 192.168.1.1
Send ARP request to 192.168.1.1 via interface eth0
arping -D -I eth0 192.168.1.1
Check for duplicate MAC addresses at 192.168.1.1 on eth0
- ethtool** Query or control network driver and hardware settings
ethtool -g eth0
Display ring buffer for eth0
ethtool -i eth0
Display driver information for eth0
ethtool -p eth0
Identify eth0 by sight, typically by causing LEDs to blink on the network port
ethtool -S eth0
Display network and driver statistics for eth0

- ss** Display socket statistics. The below options can be combined
ss -a
Show all sockets (listening and non-listening)
ss -e
Show detailed socket information
ss -o
Show timer information
ss -n
Do not resolve addresses
ss -p
Show process using the socket

COMPARING NET-TOOLS VS. IPROUTE PACKAGE COMMANDS

NET-TOOLS COMMANDS	IPROUTE COMMANDS
<code>arp -a</code>	<code>ip neigh</code>
<code>arp -v</code>	<code>ip -s neigh</code>
<code>arp -s 192.168.1.1 1:2:3:4:5:6</code>	<code>ip neigh add 192.168.1.1 lladdr 1:2:3:4:5:6 dev eth1</code>
<code>arp -i eth1 -d 192.168.1.1</code>	<code>ip neigh del 192.168.1.1 dev eth1</code>
<code>ifconfig -a</code>	<code>ip addr</code>
<code>ifconfig eth0 down</code>	<code>ip link set eth0 down</code>
<code>ifconfig eth0 up</code>	<code>ip link set eth0 up</code>
<code>ifconfig eth0 192.168.1.1</code>	<code>ip addr add 192.168.1.1/24 dev eth0</code>
<code>ifconfig eth0 netmask 255.255.255.0</code>	<code>ip addr add 192.168.1.1/24 dev eth0</code>
<code>ifconfig eth0 mtu 9000</code>	<code>ip link set eth0 mtu 9000</code>
<code>ifconfig eth0:0 192.168.1.2</code>	<code>ip addr add 192.168.1.2/24 dev eth0</code>
<code>netstat</code>	<code>ss</code>
<code>netstat -neopa</code>	<code>ss -neopa</code>
<code>netstat -g</code>	<code>ip maddr</code>
<code>route</code>	<code>ip route</code>
<code>route add -net 192.168.1.0 netmask 255.255.255.0 dev eth0</code>	<code>ip route add 192.168.1.0/24 dev eth0</code>
<code>route add default gw 192.168.1.1</code>	<code>ip route add default via 192.168.1.1</code>