

# 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
<b>arping</b>	Send ARP request to a neighbour host <b>arping -I eth0 192.168.1.1</b> Send ARP request to 192.168.1.1 via interface eth0 <b>arping -D -I eth0 192.168.1.1</b> Check for duplicate MAC addresses at 192.168.1.1 on eth0
<b>ethtool</b>	Query or control network driver and hardware settings <b>ethtool -g eth0</b> Display ring buffer for eth0 <b>ethtool -i eth0</b> Display driver information for eth0 <b>ethtool -p eth0</b> Identify eth0 by sight, typically by causing LEDs to blink on the network port <b>ethtool -S eth0</b> Display network and driver statistics for eth0
<b>ss</b>	Display socket statistics. The below options can be combined <b>ss -a</b> Show all sockets (listening and non-listening) <b>ss -e</b> Show detailed socket information <b>ss -o</b> Show timer information <b>ss -n</b> Do not resolve addresses <b>ss -p</b> Show process using the socket

## COMPARING NET-TOOLS VS. IPROUTE PACKAGE COMMANDS

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