

# ip COMMAND CHEAT SHEET

## for Red Hat Enterprise Linux

### IP QUERIES

SUBCOMMAND	DESCRIPTIONS AND TASKS
<b>addr</b>	Display IP Addresses and property information (abbreviation of address) <b>ip addr</b> Show information for all addresses <b>ip addr show dev em1</b> Display information only for device em1
<b>link</b>	Manage and display the state of all network interfaces <b>ip link</b> Show information for all interfaces <b>ip link show dev em1</b> Display information only for device em1 <b>ip -s link</b> Display interface statistics
<b>route</b>	Display and alter the routing table <b>ip route</b> List all of the route entries in the kernel
<b>maddr</b>	Manage and display multicast IP addresses <b>ip maddr</b> Display multicast information for all devices <b>ip maddr show dev em1</b> Display multicast information for device em1
<b>neigh</b>	Show neighbour objects; also known as the ARP table for IPv4 <b>ip neigh</b> Display neighbour objects <b>ip neigh show dev em1</b> Show the ARP cache for device em1
<b>help</b>	Display a list of commands and arguments for each subcommand <b>ip help</b> Display ip commands and arguments <b>ip addr help</b> Display address commands and arguments <b>ip link help</b> Display link commands and arguments <b>ip neigh help</b> Display neighbour commands and arguments

### MULTICAST ADDRESSING

SUBCOMMAND	DESCRIPTIONS AND TASKS
<b>maddr add</b>	Add a static link-layer multicast address <b>ip maddr add 33:33:00:00:00:01 dev em1</b> Add mutlicast address 33:33:00:00:00:01 to em1
<b>maddr del</b>	Delete a multicast address <b>ip maddr del 33:33:00:00:00:01 dev em1</b> Delete address 33:33:00:00:00:01 from em1

### MODIFYING ADDRESS AND LINK PROPERTIES

SUBCOMMAND	DESCRIPTIONS AND TASKS
<b>addr add</b>	Add an address <b>ip addr add 192.168.1.1/24 dev em1</b> Add address 192.168.1.1 with netmask 24 to device em1
<b>addr del</b>	Delete an address <b>ip addr del 192.168.1.1/24 dev em1</b> Remove address 192.168.1.1/24 from device em1
<b>link set</b>	Alter the status of the interface <b>ip link set em1 up</b> Bring em1 online <b>ip link set em1 down</b> Bring em1 offline <b>ip link set em1 mtu 9000</b> Set the MTU on em1 to 9000 <b>ip link set em1 promisc on</b> Enable promiscuous mode for em1

### ADJUSTING AND VIEWING ROUTES

SUBCOMMAND	DESCRIPTIONS AND TASKS
<b>route add</b>	Add an entry to the routing table <b>ip route add default via 192.168.1.1 dev em1</b> Add a default route (for all addresses) via the local gateway 192.168.1.1 that can be reached on device em1 <b>ip route add 192.168.1.0/24 via 192.168.1.1</b> Add a route to 192.168.1.0/24 via the gateway at 192.168.1.1 <b>ip route add 192.168.1.0/24 dev em1</b> Add a route to 192.168.1.0/24 that can be reached on device em1
<b>route delete</b>	Delete a routing table entry <b>ip route delete 192.168.1.0/24 via 192.168.1.1</b> Delete the route for 192.168.1.0/24 via the gateway at 192.168.1.1
<b>route replace</b>	Replace, or add if not defined, a route <b>ip route replace 192.168.1.0/24 dev em1</b> Replace the defined route for 192.168.1.0/24 to use device em1
<b>route get</b>	Display the route an address will take <b>ip route get 192.168.1.5</b> Display the route taken for IP 192.168.1.5

### MANAGING THE ARP TABLE

SUBCOMMAND	DESCRIPTIONS AND TASKS
<b>neigh add</b>	Add an entry to the ARP Table <b>ip neigh add 192.168.1.1 lladdr 1:2:3:4:5:6 dev em1</b> Add address 192.168.1.1 with MAC 1:2:3:4:5:6 to em1
<b>neigh del</b>	Invalidate an entry <b>ip neigh del 192.168.1.1 dev em1</b> Invalidate the entry for 192.168.1.1 on em1
<b>neigh replace</b>	Replace, or adds if not defined, an entry to the ARP table <b>ip neigh replace 192.168.1.1 lladdr 1:2:3:4:5:6 dev em1</b> 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>