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

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