## Linux ip COMMAND CHEAT SHEET

IP QUERIES	
SUBCOMMAND	DESCRIPTIONS AND TASKS
addr	Display IP Addresses and property information (abbreviation of address)
	<b>ip addr</b> 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
	<b>ip link</b> Show information for all interfaces
	ip link show dev em1 Display information only for device em1
	<b>ip -s link</b> 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
	<b>ip maddr</b> 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
	<b>ip neigh</b> 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
	<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	
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	
	<b>ip addr add 192.168.1.1/24 dev em1</b> Add address 192.168.1.1 with netmask 24 to device em1	
addr del	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	
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	
	<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	
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	
	<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	
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