

## Cisco IOS Quick Reference

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### Conventions

(explanation)	text in parenthesis is an explanation; don't type this
enable	command; type it as written
name	user argument to a command; type the value you care, the indicated value is an example
option	keyword to a command; type an accepted value; if in [ ] it's <b>optional</b> ; if in { } it's <b>mandatory</b> ; a list of the form     ..., it's the <b>list of acceptable keywords</b>
n	footer note: more explanation; don't type it
R> R# R(config)# ...	prompt of Cisco IOS router (or switch) shell; R (or S) is hostname; you don't type these
ipv6 ...	command about IPv6 configuration
to check	this command needs more investigations

Intermediate device (router, switch, ...) has different modes of operation. Every mode has its set of commands and it has a different command prompt. Below, when you consult a command, watch at the relative prompt, on the left side, to know in what mode it is available.

Below, R in prompt may indicate the command is about a router only, or it may indicate it is about a generic intermediate device. S in prompt indicates the command is about a switch only.

## Router modes and prompts

R> (user-mode)  
R# (privileged-mode)  
R(config)# (global configuration)  
R(config-if)# (configure interface)  
R(config-line)# (configure line)  
R(config-subif)# (configure subinterface)  
R(config-std-nacl)# (configure standard named ACL)

user	privileged	global conf.	config line/if
>	#	(config)#	(config-line)#
x -- enable -->	x-- configure terminal -->	x-- line [] -->	x
	x<-----	/- ctrl+z V end -x (to #)	
x <- exit / CR -x <-----	exit -----	x<-----	exit -----x
x <- disable -- x			

Ctrl+Z (or end) goes to *privileged-mode* either from *config* and from *config-line*

## Quick Start

R> enable  
R# configure terminal  
R(config)# [no<sup>1</sup>] hostname *host-name*<sup>2</sup>  
R(config)# exit  
R#  
R# ?<sup>3</sup>

- 1 no hostname: sets hostname to factory default
- 2 host-name: max len 64 chars, only {letters | digits | dashes}, start with letter
- 3 help about commands

R# disable  
R>

## More global configuration cmds

R(config)# [no] access-list *acl\_id* {deny | permit | remark} *source* [wildcard] [log]  
R(config)# [no] access-list *acl\_id* {deny | permit | remark} *host source* [log]  
R(config)# banner motd *delimiter message delimiter*<sup>4</sup>  
S(config)# boot system  
*flash:/c2960-lanbasek9-mz.150-2.SE/c2960-lanbasek9-mz.150-2.SE.bin*<sup>5</sup>  
R(config)# crypto key generate rsa general-keys modulus *1024*<sup>6</sup>  
R(config)# crypto key zeroize rsa<sup>7</sup>  
R(config)# no cdp run<sup>8</sup>  
R(config)# enable {password | secret} *password*<sup>9</sup>  
R(config)# ip access-list {standard | extended} *name*<sup>10</sup>

- 4 delimiter is a single character, usually #
- 5 set the boot env.variable to: storage device (flash), path to dir in file system (:/c2960...), filename of IOS (/c2960-...bin)
- 6 generate key needed by SSH. IOS filename must contain the string "k9"
- 7 erase all SSH configurations and it stops SSH server
- 8 disable globally cisco discovery protocol
- 9 privileged mode password stored in plain text / hashed form
- 10 create named ACL, then go to standard named ACL mode

```

R(config)# no ip domain-lookup 11
R(config)# interface gigabitethernet 0/0[.10] 12
R(config)# interface range gigabitethernet 0/0-15 13
R(config)# [no] ip access-group acl-id {in | out} 14
S(config)# ip default-gateway ip-addr 15
R(config)# ip domain-name domain_name 16
R(config)# ip route net_address subnet_mask
    {next_hop_address | interface} [distance] 17
R(config)# ipv6 route net_ip_address/prefix_len
    {next_hop_address | interface} 18
R(config)# ipv6 unicast-routing 19
R(config)# ip ssh version 2 20
R(config)# line {console 0 | vtty 0 15 | aux 0} 21
R(config)# login block-for 120 attempts 3 within 60 22
R(config)# router ? 23
R(config)# security password min-length 8
R(config)# service password-encryption 24
R(config)# username user_name secret password 25
S1(config)# [no] vlan vlan_id 26

```

## Line configuration

```

(select line type, then:)
R(config-line)# password password
R(config-line)# login [local 27]
R(config-line)# transport input ssh 28

```

- 11 disable DNS lookup, beware: it fights with next command
- 12 select interface: {*vlan 1* | *gigabitethernet 0/0* | *fastethernet 0/0* | *serial 0/0/0* | *loopback*}. If it uses a *g0/0.10* schema, it is a subinterface definition; usually the subinterface number (here: *10*) is the same of the vlan id.
- 13 select a group of interfaces to modify globally: {*vlan min-max* | *gigabitethernet 0/min-max* | *fastethernet 0/min-max* }
- 14 activate ACL on the interface
- 15 **no on routers**, unless routing is disabled
- 16 needed by SSH
- 17 configure an IPv4 static route; to configure a gateway of last resource, *net\_address* and *subnet\_mask* should be: *0.0.0.0 0.0.0.0*
- 18 configure an IPv6 static route; to configure a gateway of last resource, *net\_ip\_address/prefix\_len* must be *::/0*
- 19 enable IPv6 routing; without this *ipv6* cmds are usefulness
- 20 force to use SSH ver.2 (ver.1 has security flaws)
- 21 select line
- 22 block login for 120 secs if fails 3 times in 60 secs
- 23 list supported IPv4 dynamic routing protocols
- 24 perform password encryption service
- 25 create user for SSH
- 26 (reve enterly the indicated *vlan\_id*) create/select a VLAN. *vlan\_id* could be a range, as: 1, 2, 3, or: 1-3.
- 27 in case of SSH
- 28 to use SSH

```

R(config-line)# exec timeout 10 29
R(config-line)# exit

```

## Privileged mode commands

```

S# clear mac address-table dynamic 30
R# clock set hh:mm:ss MMM dd YYYY
S# delete flash:vlan.dat 31
R# erase startup.config
R# ping ip-addr
R# ping ipv6 ipv6-addr
R# reload 32
R# terminal history size 200
R# terminal [no] monitor 33
R# terminal [no34] length 0 35
R# traceroute ip-addr

```

## Interface configuration

```

(select interface, then:)
R(config-if)# description interface_description 36
R(config-if)# ip access-group {acl-id | acl-name} {in | out}
R(config-if)# ip address ip-addr subnet-mask
R(config-if)# ipv6 enable 37
R(config-if)# ipv6 address ipv6-addr/prefix-len
R(config-if)# ipv6 address FE80::1 link-local 38
R(config-if)# no cdp enable 39
R(config-if)# clock rate 128000 40
S(config-if)# duplex {auto | half | full}
S(config-if)# speed {auto | 100 | ...}
S(config-if)# mdix {auto | ...} 41
S(config-if)# mls qos trust {cos | device cisco-phone | dscp | ip-precedence} 42
R(config-if)# no shutdown
S(config-if)# [no] switchport access vlan vlan_id 43

```

- 29 **switch only**: disconnect idle users after 10 minutes
- 30 reset table port/mac addresses
- 31 remove all VLANs (after this. reload the switch)
- 32 reboots the router, loads startup-config
- 33 enable/disable log output to terminal vty
- 34 *terminal no length* restore default behaviour
- 35 0 length: doesn't pause output; not functioning in packet tracer
- 36 max description length: 240 characters
- 37 create link local IPv6 address even without IPv6 global unicast address has been assigned
- 38 IPv6 link local address is in FE80::/10, this is an example. Memo: ::1 is the IPv6 loopback address.
- 39 disable cdp on this interface
- 40 this only on serial interface **to DCE plug** of the cable
- 41 this requires *duplex* and *speed* set to *auto*
- 42 set the trusted state and indicat which fields are used to classify traffica. necessary for voice ip traffic
- 43 (remove from VLAN; in this case no *vlan\_id*) assign interface to VLAN, you can assign it directly to another VLAN

```

S(config-if)# switchport mode {access | trunk} 44
S(config-if)# switchport port-security 45
S(config-if)# switchport port-security mac-address
    allowed_address 46
S(config-if)# [no] switchport port-security mac-address
    sticky 47
S(config-if)# switchport port-security violation {protect |
    restrict | shutdown}
S(config-if)# [no] switchport trunk allowed vlan vlan-list 48
S(config-if)# [no] switchport trunk native vlan vlan-id 49
S(config-if)# switchport voice vlan vlan-id 50
R(config-if)# exit

```

## Subinterface configuration

---

```

(select subinterface, then:)
R(config-subif)# encapsulation dot1q vlan-id 51
(then, assign ip address as interface; when done, return
to interface and activate it52)

```

## Standard named ACL configuration

---

```

(create named CAL, then:)
R(config-std-nacl)# {permit | deny | remark} source
    [wildcard] [log]

```

## VLAN

---

```

(select vlan, then:)
S(config-vlan)# name vlan_name 53
S(config-vlan)# exit

```

## Keys combinations

---

```

command completion: tab
escape sequence: Ctrl+Shift+6
almost as end: Ctrl+Z 54

```

- 44 *mode access*: port used to link an host, it accepts only one VLAN. *mode trunk*, in this case more VLANs can traverse it, used to link another switch or a router; default: allowed all VLANs, native is vlan 1.
- 45 enable secure MAC address
- 46 set static secure MAC address
- 47 set (or unset) sticky secure MAC address
- 48 set the allowed VLANs in trunk. *no* (without *vlan-list*): all VLANs allowed
- 49 set native VLAN. *no* (without *vlan-id*): sets native vlan back to vlan 1
- 50 VLAN used to carry voice
- 51 define encapsulation type for subinterface on trunk. it is possible append the keyword *native* to set the native vlan.
- 52 interface activate all its subinterfaces. It is possible to (de)activate every single subinterface with the `[no] shutdown` command.
- 53 create VLAN
- 54 exec current command if existent; the `end` command doesn't

previous cmd in history: Ctrl+P or Up arrow  
next cmd in history: Ctrl+N or Down arrow

## Show commands

---

```

R# show access-lists
R# show cdp neighbors detail 55
R# show clock
S# show controllers ethernet-controller fa 0/1 phy 56
S# show flash
R# show history
R# show interface interface-id status
R# show interfaces {interface-id | vlan vlan_id |
    switchport} 57
R# show ip arp
R# show ip interface [brief] 58
R# show ipv6 interface [brief]
S# show ip [interface-id]
R# show ip route [static | dynamic] 59
R# show ipv6 route [static60 | network]
S# show ip ssh 61
S# show mac address-table 62
S# show port-security address [interface-id] 63
S# show port-security interface [interface-id]
R# show protocols
R# show privilege 64
R# show running-config [interface gigabitethernet 0/065]
R# show ssh 66
R# show version
S# show vlan {brief | id vlan_id | name vlan_name |
    summary}

```

## Filtering

```

R# show ... | {section | include | exclude | begin} a_filter

```

## Debug commands

---

```

R# [no] debug ip icmp
R# [no] debug all (not raccomandated)
R# [no] debug ip packet (not raccomandated)

```

- 55 CDP: cisco discovery protocol
- 56 show physical configuration of a single interface
- 57 statistics for all interfaces. *vlan* and *switchport* is about switch layer 2 only
- 58 IPv4 interfaces status; if *brief* is present, it's in table format with more infos, as IP addresses ...
- 59 shows routing table
- 60 not functioning in packet tracer
- 61 verify if it supports SSH, otherwise the command isn't recognized
- 62 it shows table port/mac addresses of the switch. another form could be `show mac-address-table`
- 63 display all secure MAC addresses configured on all switch interfaces, or on a specified interface
- 64 user is 1, privileged is 15
- 65 not functioning in packet tracer
- 66 check SSH connections to device

R# undebug all <sup>67</sup>

## Abbreviations and acronyms

---

ACL	Access Contrl List
DCE	Data Circuit-terminating Equipment
if	Interface
IOS	cisco Internetworking Operating System
IP	Internetwork protocol
LAN	Local Area Network
MAC	Media Access Control
SSH	Secure Shell
SVI	Switch Virtual Interface
VLAN	Virtual LAN

### Document

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<sup>67</sup> switch off all debug commands