

A *Very Brief* Summary of Cisco IOS Commands

Hans Kruse and Carl Bruggeman

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Navigation and Display

Logging In

To access one of the routers, use `telnet` from any command line to any interface on the router that is configured and “up”. Normally, you will use the IP address of the routers administrative interface, but there are occasions when another interface is more convenient. Because your network may not have access to a name server, use the IP address, e.g. to access *buell* use `telnet 132.235.201.40`.

Checking Interfaces

An example of the `show interface` command is shown below. For now, focus on the first three lines of output:

- In the first line, both the interface and the protocol should be “up”. If they are not, check wiring and make sure you have issued the `no shutdown` command.
- The third line of output lists the IP address and network mask for the interface. Make sure the value displayed is what you meant to configure.

```
buell#sh interface ethernet 0/5
Ethernet0/5 is up, line protocol is up
Hardware is cxBus Ethernet, address is 0060.5c61.9205 (bia 0060.5c61.9205)
Internet address is 132.235.201.40/25
MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
ARP type: ARPA, ARP Timeout 04:00:00
Last input 00:00:00, output 00:00:00, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 33
Queueing strategy: fifo
Output queue :0/40 (size/max)
5 minute input rate 0 bits/sec, 1 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
 178851 packets input, 42179146 bytes, 0 no buffer
  Received 71219 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
  0 input packets with dribble condition detected
 125143 packets output, 18652139 bytes, 0 underruns
```

```
0 output errors, 2123 collisions, 1 interface resets
0 babbles, 0 late collision, 0 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out
```

The Routing Table

The `show ip route` command displays all currently usable routes. An example is shown below. Notice that the output includes the definition of the codes used to describe each route. The ones you are likely to see are `S` for routes you put in with the `ip route` command, and `C` for routes that appear automatically when you bring up an interface. Notice also the last line of the output; `0.0.0.0/0` is the Cisco IOS way of saying *default*.

```
buell#sh ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route
```

```
Gateway of last resort is 132.235.201.126 to network 0.0.0.0
```

```
10.0.0.0/24 is subnetted, 1 subnets
C      10.0.1.0 is directly connected, Fddi3/0
132.235.0.0/16 is variably subnetted, 3 subnets, 2 masks
S      132.235.201.128/26 [1/0] via 10.0.1.253
S      132.235.201.192/26 [1/0] via 10.0.1.252
C      132.235.201.0/25 is directly connected, Ethernet0/5
S*    0.0.0.0/0 [1/0] via 132.235.201.126
```

Review the entire configuration

Sometimes the only way to see the entire router configuration is to dump the configuration commands. The command `show running-config` does that, an example is shown below (with some parts removed to save paper):

```
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
service udp-small-servers
service tcp-small-servers
no service single-slot-reload-enable
!
hostname buell
!
...
!
interface Ethernet0/3
```

```

no ip address
no ip proxy-arp
shutdown
!
interface Ethernet0/4
no ip address
no ip proxy-arp
shutdown
!
interface Ethernet0/5
ip address 132.235.201.40 255.255.255.128
no ip proxy-arp
!
...
!
ip classless
ip route 0.0.0.0 0.0.0.0 132.235.201.126
...

```

In this example, note that ethernet interfaces 0/3 and 0/4 are not configured, 0/5 has been set up.

Configuring the Router

Configure an Interface

Below is the list of commands to set up a router interface. <interface-type> is usually **ethernet** or **serial** in our labs.

- configure terminal
- interface `interface-type` `slot/port`
- ip address `addr` `mask`
- no shutdown
- exit
- exit

Configure Routing

You need the commands below to add a route to the configuration. The <next hop> part of the command is an IP address the router can actually reach directly. Look at your network diagram and determine which address on the target router you should use.

- configure terminal
- ip route `132.235.201.aaa 255.255.255.zzz` `next hop`
- exit